

| 2-finger parallel grippers, pneumatic | Type | Gripping force at 6 bars (N) | | Overall stroke in mm | | Mass (Kg) | Features |
|---------------------------------------|----------|------------------------------|------|----------------------|------|-----------|---|
| | OPP2-64 | 220 | 420 | 12 | 6 | 0.27 | 2 fingers Spring-packaged pressure plate Stabilised force Pressurisation Stroke control Page 11 |
| | OPP2-80 | 360 | 540 | 16 | 8 | 0.45 | |
| | OPP2-100 | 550 | 900 | 20 | 10 | 0.8 | |
| | OPP2-125 | 845 | 1520 | 26 | 13 | 1.4 | |
| | OPP2-160 | 1490 | 2680 | 32 | 16 | 2.6 | |
| | OPP2-180 | 1560 | 2800 | 40 | 20 | 4.4 | |
| | OPP2-200 | 2200 | 3950 | 50 | 25 | 6.2 | |
| | OPP2-250 | 3650 | 6150 | 60 | 30 | 12.4 | |
| | OPP2-320 | 4860 | 8410 | 72 | 36 | 19 | |
| | OPM 030 | 60 | / | 8 | / | 0.08 | 2 fingers High gripping force Spring-packaged pressure plate Stabilised force Pressurisation Stroke control Page 19 |
| | OPM 040 | 100 | / | 11 | / | 0.11 | |
| | OPM 050 | 190 | / | 14 | / | 0.2 | |
| | OPM 064 | 410 | 340 | 12 | 18 | 0.38 | |
| | OPM 080 | 650 | 540 | 16 | 24 | 0.68 | |
| | OPM 100 | 1100 | 920 | 20 | 30 | 1.2 | |
| | OPM 125 | 2000 | 1670 | 26 | 35 | 2.2 | |
| | OPM 160 | 3700 | 3100 | 32 | 42 | 4.3 | |
| | GHL 12 | 95 | | 12 - 48 | | 0.15... | 2 fingers Small dimensions Stroke control Large strokes Stroke Control Page 29 |
| | GHL 16 | 170 | | 16 - 64 | | 0.35... | |
| | GHL 20 | 270 | | 20 - 80 | | 0.65... | |
| | | | | | | | |
| | PEP 10 | 30 | 16 | 4 | 7 | 0.055 | 2 fingers Small dimensions 2 jaws version Stabilised force Large strokes Page 33 |
| | PEP 16 | 94 | 54 | 6 | 11 | 0.13 | |
| | PEP 20 | 150 | 86 | 10 | 17 | 0.23 | |
| | PEP 25 | 200 | 140 | 14 | 21 | 0.45 | |
| | PEP 32 | 290 | / | 22 | / | 0.75 | |
| | PEP 40 | 445 | / | 30 | / | 1.28 | |
| | PEP 56 | 950 | / | 47 | / | 2.6 | |
| | PEP 70 | 1.440 | / | 63 | / | 5.2 | |
| | SRO-64 | 200 | | 12 | | 0.45 | 2 fingers Rating IP 67 Stroke control Spring-packaged pressure plate Stabilised force Page 39 |
| | SRO-80 | 330 | | 16 | | 0.8 | |
| | SRO-100 | 510 | | 20 | | 1.3 | |
| | SRO-125 | 760 | | 26 | | 2.3 | |
| | SRO-160 | 1200 | | 32 | | 4.0 | |
| | SRO-180 | 1380 | | 40 | | 5.8 | |
| | SRO-200 | 1780 | | 50 | | 8.3 | |
| SRO-250 | 3200 | | 60 | | 16.5 | | |

| | | | | | |
|--|--------|------|---------|---------|--|
| | PLE 16 | 170 | 30-60 | 0.59... | 2 fingers Large strokes Stroke control Page 45 |
| | PLE 20 | 270 | 40-80 | 1.03... | |
| | PLE 25 | 420 | 50-100 | 1.7... | |
| | PLE 32 | 700 | 70-120 | 2.9... | |
| | PLE 40 | 1100 | 100-160 | 5.3... | |

| | | | | | |
|--|--------|------|---------|--------|--|
| | GPL 16 | 170 | 40-160 | 0.6... | 2 fingers Large strokes Stroke control Long fingers Page 49 |
| | GPL 25 | 460 | 80-160 | 1.7... | |
| | GPL 40 | 1050 | 80-300 | 3... | |
| | GPL 60 | 2400 | 120-400 | 5.6... | |

| | | | | | |
|--|---------|------|---------|-------|--|
| | GPRS 60 | 2300 | 100-300 | 17... | 2 fingers Large strokes Stroke control Long fingers Page 53 |
| | GPRS 80 | 5100 | 120-400 | 31... | |

| 3-fingers self-centring gripper, pneumatic | Type | Gripping force at 6 bars (N) | | Overall stroke in mm | Mass (Kg) | Features | |
|--|----------|------------------------------|-------|----------------------|-----------|----------|---|
| | MAC3-50 | 270 | / | 9 | / | 0.22 | 3 fingers Spring-packaged pressure plate Stabilised force Pressurisation Stroke control Page 57 |
| | MAC3-64 | 580 | 970 | 12 | 6 | 0.4 | |
| | MAC3-80 | 1000 | 2300 | 16 | 8 | 0.75 | |
| | MAC3-100 | 1800 | 4050 | 20 | 10 | 1.4 | |
| | MAC3-125 | 3000 | 5800 | 26 | 13 | 2.4 | |
| | MAC3-160 | 6000 | 11000 | 32 | 16 | 4.9 | |
| | MAC3-200 | 7100 | 16000 | 50 | 25 | 11.5 | |
| | MAC3-250 | 10300 | 18600 | 60 | 30 | 21.5 | |

| | | | | | |
|--|----------|-----|---|------|---|
| | GPS 3-30 | 75 | 4 | 0.06 | 3 fingers Small dimensions Stroke control Page 65 |
| | GPS 3-36 | 120 | 4 | 0.10 | |
| | GPS 3-42 | 185 | 6 | 0.14 | |

| | | | | | |
|--|---------|-------|----|------|--|
| | SRP-64 | 580 | 12 | 0.8 | 3 fingers IP 67 Spring-packaged pressure plate Stabilised force Hermetic Stroke control Page 69 |
| | SRP-80 | 1000 | 16 | 1.2 | |
| | SRP-100 | 1800 | 20 | 2.1 | |
| | SRP-125 | 3000 | 26 | 3.85 | |
| | SRP-160 | 6000 | 32 | 7.3 | |
| | SRP-200 | 7100 | 50 | 18 | |
| | SRP-250 | 10300 | 60 | 33 | |


| | | | | | |
|--|---------|------|----|------|---|
| | MFB-70 | 420 | 8 | 0.35 | 3 fingers Through hole Spring-packaged pressure plate Stabilised force Pressurisation Stroke control Page 75 |
| | MFB-85 | 1000 | 12 | 0.7 | |
| | MFB-110 | 1380 | 16 | 1.5 | |
| | MFB-140 | 2180 | 20 | 3.5 | |
| | MFB-170 | 3400 | 26 | 6 | |
| | MFB-220 | 5500 | 32 | 9.5 | |


| | | | | | |
|--|--------|-------------|-----|--------|---|
| | MCL 40 | 1650 (2790) | 64 | 5.5... | 3 fingers PN or ID (pneumatic or hydraulic) Spring-packaged pressure plate Pressurisation Stroke control Page 83 |
| | MCL 50 | 2440 (4100) | 110 | 12... | |
| | MCL 63 | 3060 (5160) | 200 | 28... | |
| | MCL 80 | 2600 / | 320 | 75... | |


| 4-fingers self-centring gripper, pneumatic | Type | Gripping force at 6 bars (N) | | Overall stroke in mm | | Mass (Kg) | Features |
|--|------|------------------------------|--|----------------------|--|-----------|----------|
|--|------|------------------------------|--|----------------------|--|-----------|----------|


| | | | | | | | |
|--|---------|-------|-------|----|----|------|---|
| | MA4-75 | 770 | 1290 | 12 | 6 | 0.8 | 4 fingers Spring-packaged pressure plate Stabilised force Pressurisation Stroke control Page 87 |
| | MA4-95 | 1330 | 3060 | 16 | 8 | 1.5 | |
| | MA4-110 | 2400 | 5330 | 20 | 10 | 2 | |
| | MA4-145 | 4130 | 7700 | 26 | 13 | 4.4 | |
| | MA4-185 | 8000 | 14670 | 32 | 16 | 8.5 | |
| | MA4-230 | 11200 | 25380 | 50 | 25 | 16.8 | |


| | | | | | |
|--|---------|-----|---|------|--|
| | GPS4-30 | 95 | 4 | 0.07 | 4 fingers Small dimensions Stroke control Page 93 |
| | GPS4-36 | 145 | 4 | 0.11 | |
| | GPS4-42 | 230 | 6 | 0.16 | |


| | | | | | |
|---|-----------|------|----|------|---|
|  | MFB/4-85 | 1200 | 12 | 0.75 | 4 fingers Through hole Spring-package Pressurisation Stroke control Page 97 |
| | MFB/4-110 | 1700 | 16 | 1.6 | |
| | MFB/4-140 | 2900 | 20 | 3.7 | |
| | | | | | |


| 2-fingers angular gripper, pneumatic | Type | Gripping force at 6 bars (Ncm) | Overall stroke in mm | Mass (Kg) | Features |
|---|--------|--------------------------------|----------------------|-----------|---|
|  | PLA 10 | 14 | 0°-30° | 0.035 | 2 griffe Small dimensions Stroke control Page 101 |
| | PLA 16 | 55 | 0°-30° | 0.11 | |
| | | | | | |
| | | | | | |


| | | | | | |
|--|----------|------|--------|------|---|
|  | OPLE 30 | 75 | 0°-40° | 0.08 | 2 griffe Spring-package pressure plate Stroke control Page 103 |
| | OPLE 40 | 150 | 0°-40° | 0.11 | |
| | OPLE 50 | 400 | 0°-40° | 0.2 | |
| | OPLE 64 | 900 | 0°-40° | 0.38 | |
| | OPLE 80 | 1820 | 0°-40° | 0.68 | |
| | OPLE 100 | 3900 | 0°-40° | 1.2 | |
| | | | | | |

| | | | | | |
|---|--------|-------|---------|------|--|
|  | PGC 14 | 120 | 0°-180° | 0.10 | 2 griffe Limited stroke Stroke control 90°+90° Page 107 |
| | PGC 16 | 220 | 0°-180° | 0.18 | |
| | PGC 20 | 420 | 0°-180° | 0.26 | |
| | PGC 25 | 700 | 0°-180° | 0.4 | |
| | PGC 32 | 1400 | 0°-180° | 0.6 | |
| | PGC 40 | 2800 | 0°-180° | 1.1 | |
| | PGC 50 | 5400 | 0°-180° | 1.9 | |
| | PGC 63 | 11000 | 0°-180° | 2.8 | |
| | | | | | |


| Pneumatic / hydraulic swivel actuator | Type | Torque at 6 bars (Nm) | Overall stroke in mm | Mass (Kg) | Features |
|--|-----------|-----------------------|----------------------|-----------|--|
|  | PAO-MC 15 | 1 (4) | 0°-180° | 0.55 | 2 position PN or ID (pneumatic or hydraulic) Position adjustment Air distribution Position control 0° - 90° or 0° - 180° Damping shock absorber Page 113 |
| | PAO-MC 20 | 2 (8) | 0°-180° | 0.85 | |
| | PAO-MC 30 | 6.5 (27) | 0°-180° | 2 | |
| | PAO-MC 40 | 11.5 (48) | 0°-180° | 3.3 | |
| | PAO-MC 50 | 23 (95) | 0°-180° | 6 | |
| | PAO-MC 60 | 37 (154) | 0°-180° | 9 | |
| | | | | | |


| | | | | | | |
|---|--------|------|------|---------|------|--|
|  | PAO 15 | 1 | / | 0°-180° | 0.7 | 2 or 3 position 0° - 90° - 180° Air distribution Position control Position adjustment Damping shock absorber Page 117 |
| | PAO 20 | 2 | / | 0°-180° | 1 | |
| | PAO 30 | 6.5 | / | 0°-180° | 2.5 | |
| | PAO 40 | 11.5 | / | 0°-180° | 4.5 | |
| | PAO 50 | 23 | / | 0°-180° | 8.2 | |
| | PAO 60 | 37 | (74) | 0°-180° | 12.7 | |
| | | | | | | |

| | | | | | | |
|---|-----------|------|----|---------|------|--|
|  | TC-PAO 15 | 1 | / | 0°-180° | 1.1 | 2 position Air distribution Position control Position adjustment Damping shock absorber Page 123 |
| | TC-PAO 20 | 2 | 4 | 0°-180° | 2 | |
| | TC-PAO 30 | 6.5 | 13 | 0°-180° | 4.1 | |
| | TC-PAO 40 | 11.5 | 23 | 0°-180° | 7 | |
| | TC-PAO 50 | 23 | 46 | 0°-180° | 14.5 | |
| | TC-PAO 60 | 37 | 74 | 0°-180° | 21.2 | |
| | | | | | | |

| | | | | | | |
|--|----------|----------------|--|-----------|------|--|
|  | ARP 3 | 0.38 | | 0°-180° | 0.25 | 2 position and 2 fingers Compact design 0°-90° or 0°-180° stroke from 4 to 21mm Page 129 |
| | ARP 7 | 0.8 | | 0°-180° | 0.45 | |
| | ARP 20 | 2.25 | | 0°-180° | 0.7 | |
| | ARPEP 10 | 0.3 Nm / 30 N | | 180°-7mm | 0.3 | |
| | ARPEP 16 | 0.7 Nm / 94 N | | 180°-11mm | 0.6 | |
| | ARPEP 20 | 2 Nm / 150 N | | 180°-17mm | 1.1 | |
| | ARPEP 25 | 1.9 Nm / 200 N | | 180°-21mm | 1.6 | |
| | | | | | | |

| Clamping force blocks, pneumatic / hydraulic, centric clamping | Type | Gripping force at 6 bars (N) | | Overall stroke in mm | Mass (Kg) | Features |
|--|------|------------------------------|--|----------------------|-----------|----------|
|--|------|------------------------------|--|----------------------|-----------|----------|

| | | | | | | |
|---|-------------|-------|-------|--------|------|---|
|  | MIA1-G2-20 | 890 | 1480 | 12 6 | 0.8 | 2 jaws Large stroke Serrated jaws Spring-package pressure plate Control stroke Page 135 |
| | MIA1-G2-25 | 1290 | 2150 | 16 8 | 1.2 | |
| | MIA1-G2-32 | 3010 | 5080 | 20 10 | 1.8 | |
| | MIA1-G2-40 | 4360 | 7120 | 26 13 | 2.9 | |
| | MIA1-G2-50 | 8470 | 14280 | 32 16 | 5.4 | |
| | MIA1-G2-54 | 10660 | 17830 | 40 20 | 8.5 | |
| | MIA1-G2-60 | 12540 | 20960 | 50 25 | 11.5 | |
| | MIA1-G2-80 | 25820 | 43140 | 60 30 | 24.5 | |
| | MIA1-G2-100 | 33000 | 53070 | 72 36 | 44.5 | |
| | MIA1-G2-120 | 45600 | 73320 | 100 50 | 97 | |

| | | | | | | |
|---|-----------|-------|-------|--------|------|---|
|  | OPF 100 | 6000 | 13000 | 12 4.6 | 3 | 2 jaws Pneumatic or Hydraulic Strong guide Serrated jaws Pressurization Page 141 |
| | OPF 160 | 15000 | 34000 | 16 6.2 | 8.9 | |
| | OPF 200 | 20000 | 47000 | 18 7 | 15.6 | |
| | OPF 250 | 31000 | 52000 | 20 7.8 | 27 | |
| | OPF 250/2 | 44000 | | 30 | 30 | |
| | | | | | | |

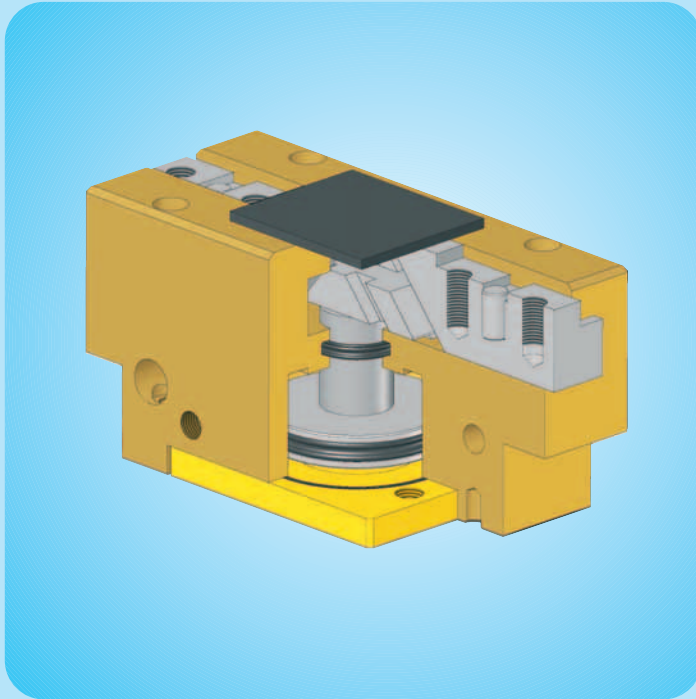
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|--|------------|-------|-------|-----|---------|--|
| | SPF 66/PN | 3900 | 78000 | 4.4 | 1.1/1.7 | 2 jaws Serrated jaws with quick change Pressurization Central Lubrication Page 145 |
| | SPF 100/PN | 7300 | 14000 | 8.4 | 4.5 6.8 | |
| | SPF 160/PN | 22500 | 42000 | 10 | 11 17.5 | |
| | SPF 200/PN | 34000 | 62000 | 12 | 21 33 | |
| | SPF 250/PN | 39000 | 76000 | 20 | 32 45 | |
| | SPF 66/ID | | 11500 | 4.4 | | |
| | SPF 100/ID | | 27000 | 8.4 | 4.5 | |
| | SPF 160/ID | | 50000 | 10 | 12 | |
| | SPF 200/ID | | 66000 | 12 | 20 | |
| | SPF 250/ID | | 80000 | 20 | 30 | |

| Linear actuator | Type | Cylinder diameter thrust in N at 6 bars | Stroke in mm | Features |
|-----------------|--------|---|-----------------|---|
| | MSR 08 | 2x8/59 | 10 - 30 | Cross roller guide Double cylinder Speed 0.5÷0.7 m/s Shock absorbers Adjustable position Page 151 |
| | MSR 12 | 2x12/129 | 20 - 75 | |
| | MSR 16 | 2x16/235 | 30 - 100 | |
| | MSR 20 | 2x20/365 | 30 - 100 | |
| | MSR 25 | 2x25/577 | 30 - 100 | |

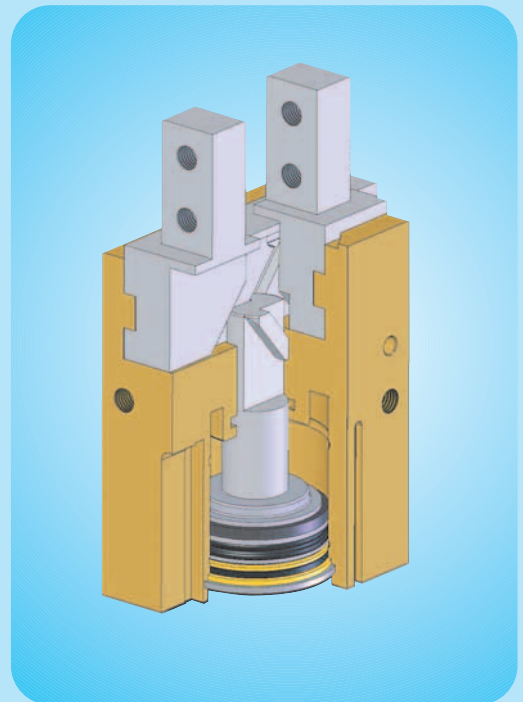
| | | | | |
|--|-------|----------|----------|---|
| | MG 10 | 10 / 38 | 30 - 50 | Slide rail Speed 0.05÷0.2 m/s Shock absorbers Adjustable position Page 157 |
| | MG 16 | 16 / 98 | 30 - 100 | |
| | MG 20 | 20 / 152 | 30 - 100 | |
| | MG 25 | 25 / 240 | 30 - 100 | |
| | MG 32 | 32 / 396 | 30 - 100 | |

| | | | | |
|--|--------|----------|----------|--|
| | MCB 10 | 10 / 38 | 25 - 50 | Bush guide or linear bearing guide Speed 0.1÷0.5 m/s Page 163 |
| | MCB 16 | 16 / 98 | 25 - 50 | |
| | MCB 20 | 20 / 152 | 25 - 75 | |
| | MCB 25 | 25 / 240 | 25 - 125 | |
| | MCB 32 | 32 / 396 | 30 - 125 | |
| | MCB 40 | 40 / 608 | 50 - 200 | |
| | MCB 50 | 50 / 961 | 50 - 150 | |

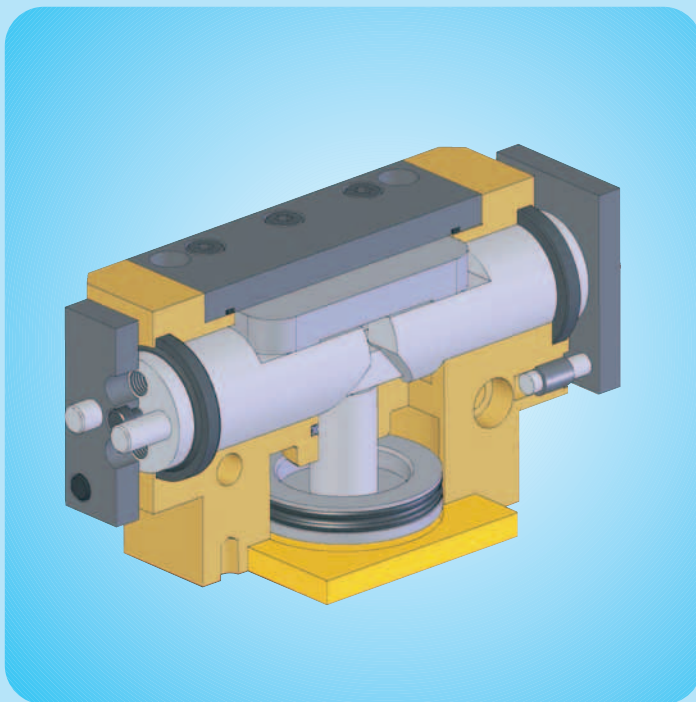
| | | | | |
|--|-------|---------|--------|---|
| | AL 08 | 16/104 | 25-80 | Linear bearing Speed 0.5÷0.7 m/s Cylinder ISO 6431/6432 Shock absorber Adjustable position Page 169 |
| | AL 12 | 20/170 | 25-160 | |
| | AL 20 | 25/267 | 25-200 | |
| | AL 25 | 32/482 | 50-320 | |
| | AL 32 | 40/753 | 50-500 | |
| | | 50/1178 | 80-500 | |



OPP 2

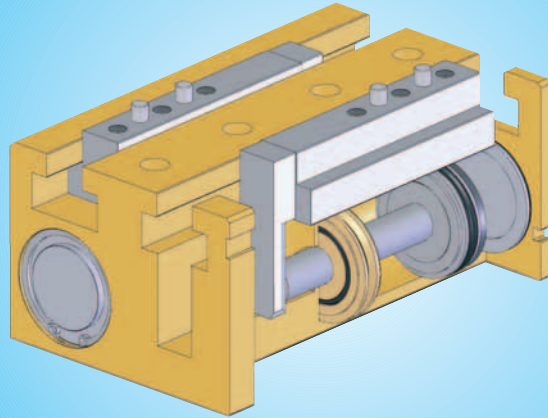


PEP

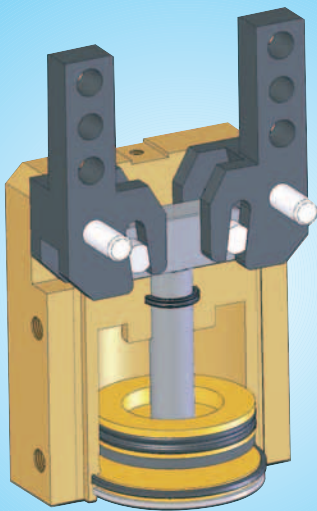


SRO

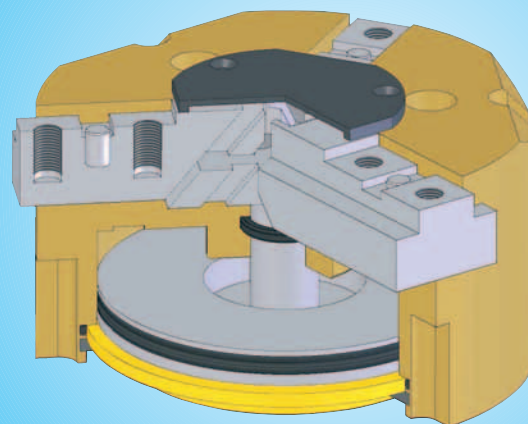
GPL

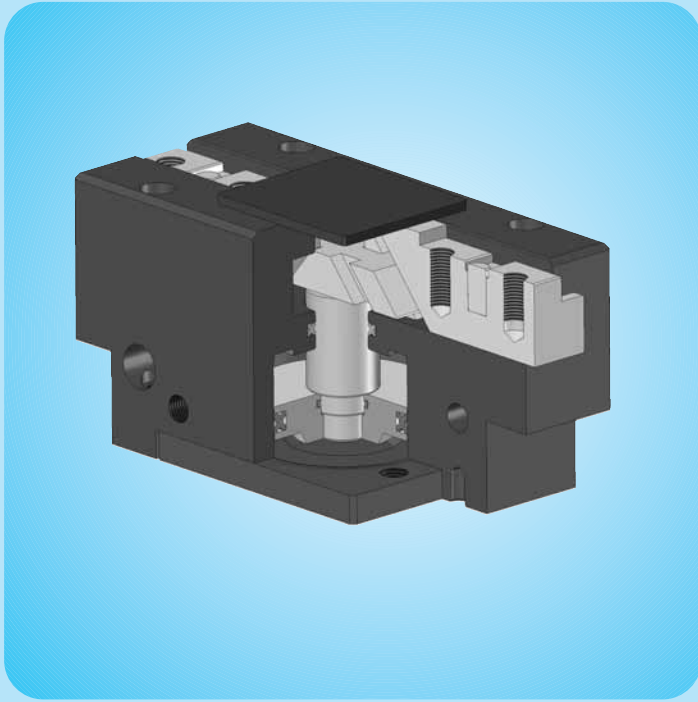


PGC

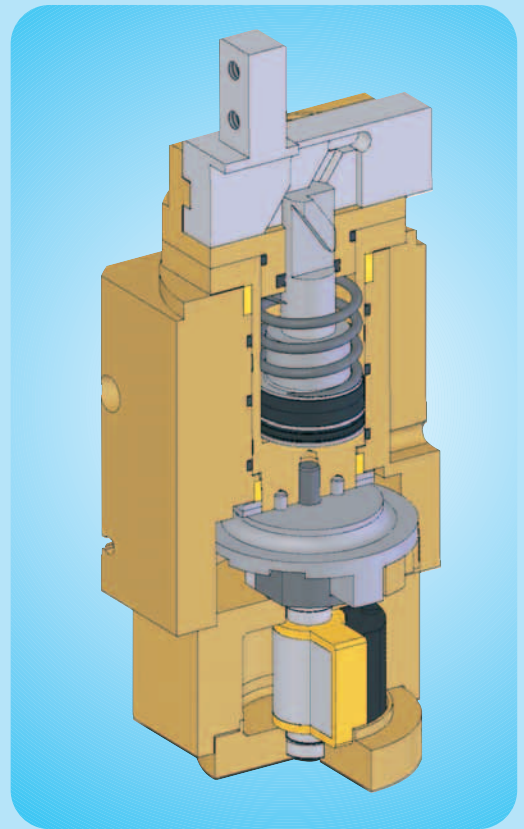


MAC 3

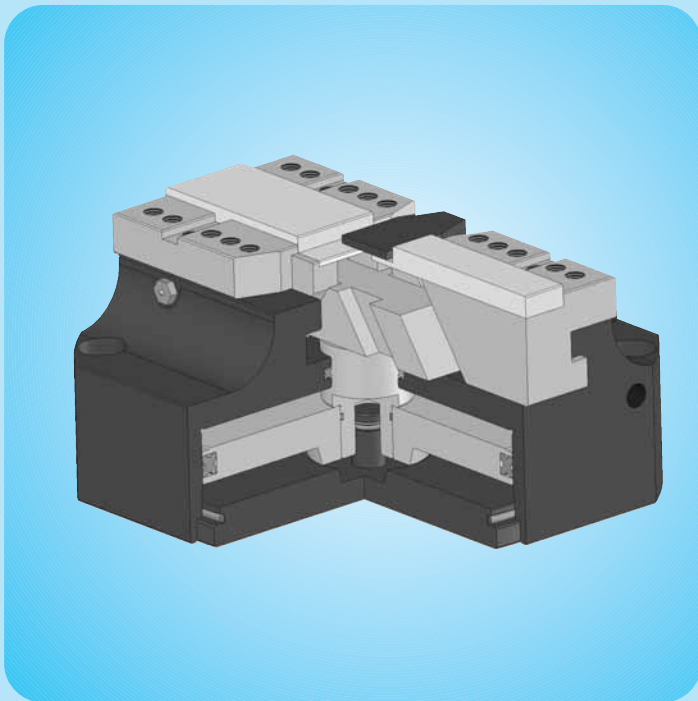




MIA 1



ARPEP



OPF

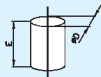
Check List

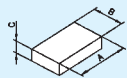
Greifercheckliste

| | | |
|---|-------------------------------------|----------------------------|
| Gripper check-list Greifercheckliste | Customer/Firma _____ | Projekt Nr. _____ |
| | Contact person/Kontakt Person _____ | Department/Abteilung _____ |
| | Tel. Nr. _____ | Fax _____ |
| | Email _____ | Date/Datum _____ |
| OMIL | | |
| Contact person/Mitarbeiter _____ | | Department/Abteilung _____ |

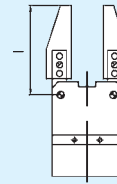
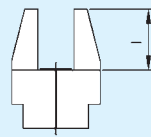
Gripper/Greifer

- Temperature/Temperatur = _____ = °C
- Application/Anwendung
 - grinding/schleifen
 - mechanical machining/ mech. Bearbeitung
 - assembly/Montage
 - other/andere _____

- Part dimensions/Dimension Werkstück  = _____ mm

 = _____ mm

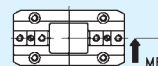
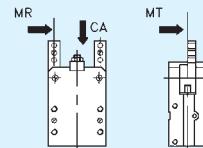
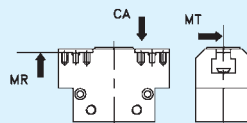
- Operating pressure/Betriebsdruck = _____ MPa
- Finger length/Fingerlänge = _____ mm
- Mass/Eigen Masse = _____ Kg



- Stroke/Hub
 - Winkel _____ = °
 - parallel _____ = mm/Backe

- Gripping by friction/Greifen über Reibschluss _____ = μ
- form-fit/Formschluss

- External loads/Externe Kräfte CA _____ N MR _____ Nm
- MF _____ Nm MT _____ Nm



- Remarks: _____
- Bemerkungen: _____

2-finger parallel gripper - pneumatic - series OPP2 2-Finger - Parallelgreifer pneumatisch - Typ OPP2



Technische Eigenschaften:

- Betriebsdruck: 2 bis 8 bar
- Wiederholgenauigkeit:
OPP2-64...125 0.01mm;
OPP2-160...320 0.02mm über 100
Schaltspiele
- Betriebstemperaturbereich:
von -10°C bis 90°C;
bis 130°C und höher auf Anfrage
- Kinematik: Keilhakenprinzip
zwangsführt über schräge Ebene
- Material : Gehäuse aus hochfester
Aluminiumlegierung hartbeschichtet,
Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte
Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Für Innen-und Außengreifen geeignet
- Diagram der empfohlenen Hebel und
Fingerlängen Seite 17
- Anschlussmaße der Grundbacken Seite 18
- Schutzart IP40
- Druckluftanschlüsse: über die
Seitenflächen-Grundflächen
- M5 Sperrluftanschluss möglich
- 24 Monate Garantie

Technical data:

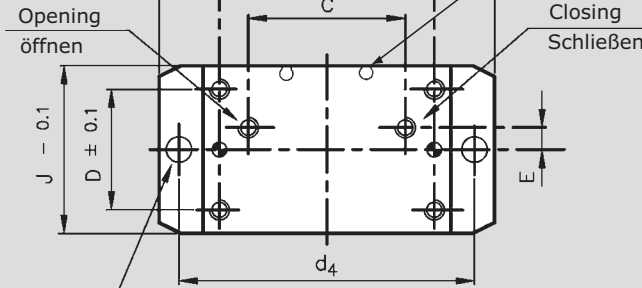
- Range of operating pressure: 2 - 8 bar
- Repeatability accuracy:
OPP2- 64 .. 125 0.01 mm;
OPP2 - 160..320 0.02mm over 100
cycles
- Operating temperature: from -10°C to
90°C; version up to 130°C upon request
- Operating principle: wedge-hook
kinematics
- Housing material: high tensile hard-
coated aluminium alloy, hard-anodized
- Material of functional parts: treated
ground steel
- Actuation : compressed air filtered (10
µm), dry or lubricated
- Maintenance: no maintenance required
for the first 1.5 million cycles
- Suitable for internal/external gripping
- Maximum permitted finger offset page 17
- Layout finger connection page 18
- Rating IP 40
- Air cibbectuibs: sides and base
- M5 pressurisation on both sides
- Warranty 24 months

2-finger parallel gripper - pneumatic - series OPP2

2-Finger - Parallelgreifer pneumatisch - Typ OPP2

Magnetic limit switch seat
type D-M9P (SMC) or R626 (OMIL)

Hubabfrage über
Magnetschalter Typ D-M9P
(SMC) oder R626 (OMIL)

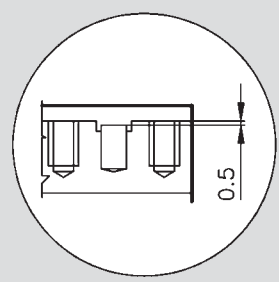
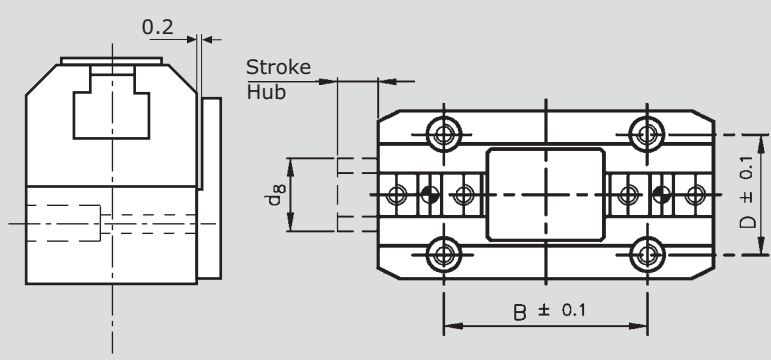
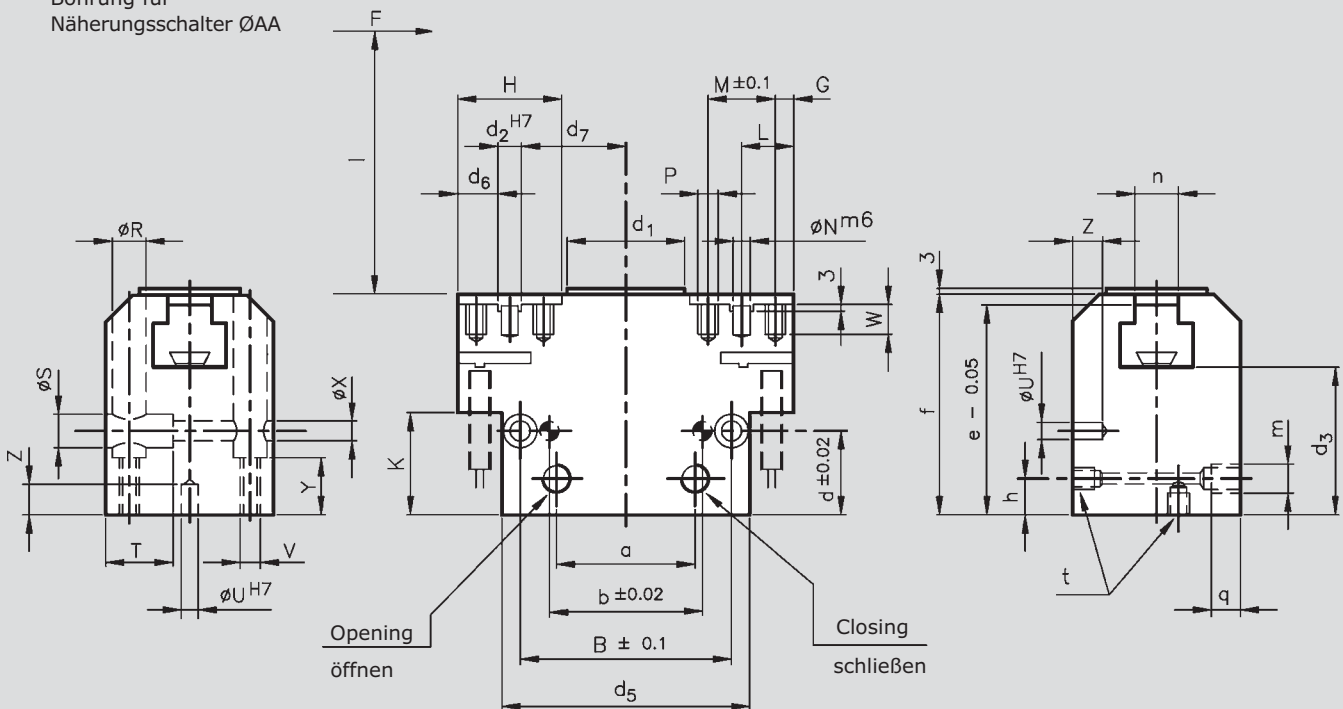


Hose-free direct
connection page 23

Maße für schlauchlosen
Direktanschluss seite 23

Bush for proximity AA

Bohrung für
Näherungsschalter ØAA



2-finger parallel gripper - pneumatic - series OPP2 2-Finger - Parallelgreifer pneumatisch - Typ OPP2

| Type | A | B | C | D | E | G | H | J | L | M | N | P | R | S | T | U | V | Z | Y | X | K | W | a |
|----------|-----|-----|-----|-----|----|-----|------|-----|------|----|----|-----|-----|-----|----|----|-----|----|------|-----|----|-----|-----|
| Typ | | | | | | | | | | | | | | | | | | | | | | | |
| OPP2 64 | 64 | 43 | 28 | 28 | 8 | 4 | 21 | 38 | 10.5 | 13 | 4 | M4 | 7.5 | 7.5 | 12 | 4 | M5 | 5 | 14.5 | 4.5 | 18 | 6.5 | 30 |
| OPP2 80 | 80 | 53 | 36 | 34 | 9 | 5 | 25.5 | 44 | 13 | 16 | 5 | M5 | 7.5 | 9 | 15 | 4 | M5 | 8 | 13 | 5.5 | 23 | 8 | 39 |
| OPP2 100 | 100 | 67 | 44 | 40 | 13 | 6 | 32 | 52 | 16 | 20 | 6 | M6 | 9.5 | 11 | 18 | 5 | M6 | 8 | 21 | 6.5 | 27 | 10 | 48 |
| OPP2 125 | 125 | 81 | 56 | 46 | 14 | 8.5 | 40.5 | 62 | 20.5 | 24 | 6 | M8 | 11 | 14 | 25 | 6 | M8 | 10 | 22 | 9 | 33 | 12 | 60 |
| OPP2 160 | 160 | 102 | 70 | 58 | 12 | 9 | 50 | 74 | 25 | 32 | 8 | M10 | 11 | 14 | 35 | 6 | M8 | 10 | 21 | 9 | 36 | 13 | 76 |
| OPP2 180 | 180 | 120 | 76 | 60 | 14 | 9.5 | 55 | 80 | 27.5 | 36 | 10 | M10 | 14 | 17 | 45 | 8 | M10 | 10 | 27 | 11 | 45 | 16 | 80 |
| OPP2 200 | 200 | 130 | 86 | 68 | 20 | 11 | 62 | 90 | 31 | 40 | 12 | M12 | 17 | 19 | 50 | 10 | M12 | 12 | 33 | 13 | 50 | 20 | 90 |
| OPP2 250 | 250 | 164 | 112 | 90 | 28 | 17 | 80 | 120 | 41 | 48 | 12 | M12 | 19 | 25 | 65 | 12 | M16 | 18 | 45 | 17 | 63 | 22 | 118 |
| OPP2 320 | 320 | 200 | 140 | 112 | 24 | 18 | 100 | 144 | 50 | 64 | 16 | M16 | 19 | 25 | 82 | 12 | M16 | 20 | 36 | 17 | 66 | 26 | 132 |

| Type | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | e | f | h | l | m | n | q | t | AA | | Stroke for finger (mm) code1 code2 | |
|----------|-----|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----|-----|----|----|-----|----|----|----|------|-----|---|------|
| Typ | | | | | | | | | | | | | | | | | | | | | Hub pro Finger (mm) Ver.1 Ver.2 | |
| OPP2 64 | 22 | 19 | 21 | 5 | 24.5 | 55 | 52 | 8 | 19 | 18 | 37 | 39 | 11 | 23 | M5 | 11 | 5 | M3 | Ø5 | M5 | 6 | 3 |
| OPP2 80 | 39 | 21 | 29 | 6 | 32 | 69 | 64 | 10 | 24 | 21 | 46 | 49 | 11 | 28 | M5 | 13 | 6 | M5 | Ø6.5 | M8 | 8 | 4 |
| OPP2 100 | 48 | 26 | 34 | 8 | 34 | 88 | 80 | 12 | 30 | 25 | 52 | 55 | 15 | 34 | 1/8 | 15 | 7 | M5 | Ø6.5 | M8 | 10 | 5 |
| OPP2 125 | 58 | 31 | 43 | 8 | 40 | 111 | 100 | 16.5 | 38 | 32 | 60 | 64 | 16 | 38 | 1/8 | 18 | 7 | M5 | Ø6.5 | M8 | 13 | 6.5 |
| OPP2 160 | 78 | 30 | 56 | 10 | 47 | 144 | 125 | 20 | 50 | 40 | 73 | 77 | 19 | 45 | 1/8 | 22 | 8 | M5 | Ø6.5 | M8 | 16 | 8 |
| OPP2 180 | 80 | 40 | 66 | 12 | 57 | 160 | 140 | 21.5 | 56.5 | 45 | 91 | 95 | 20 | 50 | 1/8 | 26 | 8 | M5 | M8 | M12 | 20 | 10 |
| OPP2 200 | 90 | 50 | 74 | 14 | 67 | 180 | 156 | 24 | 62 | 48 | 108 | 112 | 22 | 55 | 1/8 | 30 | 10 | M5 | M8 | M12 | 25 | 12.5 |
| OPP2 250 | 124 | 60 | 88 | 16 | 83 | 224 | 200 | 33 | 76 | 56 | 131 | 139 | 31 | 60 | 1/8 | 36 | 10 | M5 | M8 | M12 | 30 | 15 |
| OPP2 320 | 152 | 50 | 118 | 20 | 113 | 292 | 250 | 40 | 100 | 68 | 162 | 170 | 36 | 65 | 1/4 | 44 | 10 | M5 | M8 | M12 | 36 | 18 |

| Type | Gripping force at 6 bar (N) code 1 code 2 | | Air consum for double stroke (cm ³) | Moment of inertia (Kgcm ²) | Gripper weight (Kg) | Recommended weight of part for transport (Kg) code 1 code 2 | | Approx. time (s) open close | | Max finger length/weight |
|----------|--|------|---|--|---------------------|--|------|---------------------------------------|------|-----------------------------|
| Typ | Greifkraft bei 6 bar (N) Vers. 1 Vers. 2 | | Luftverbrauch pro Doppelhub (cm ³) | Massenträgheitsmoment (Kgcm ²) | Masse (Kg) | Max. empfohlenes Werkstückgewicht (Kg) Vers. 1 Vers. 2 | | Schließzeit (s) öffnen schließen | | Max. Fingerlänge/Eigenmasse |
| OPP2 64 | 220 | 420 | 9 | 1 | 0.27 | 1.1 | 2.1 | 0.02 | 0.02 | 64/0.32 |
| OPP2 80 | 360 | 540 | 19 | 2.3 | 0.45 | 1.8 | 2.7 | 0.03 | 0.03 | 80/0.55 |
| OPP2 100 | 550 | 900 | 39 | 6.4 | 0.8 | 2.7 | 4.5 | 0.05 | 0.05 | 100/1.05 |
| OPP2 125 | 845 | 1520 | 72 | 17 | 1.4 | 4.3 | 7.7 | 0.08 | 0.08 | 125/2 |
| OPP2 160 | 1490 | 2680 | 138 | 50 | 2.6 | 7.5 | 13.6 | 0.10 | 0.10 | 160/3.3 |
| OPP2 180 | 1560 | 2800 | 250 | 107 | 4.4 | 8 | 14.2 | 0.16 | 0.16 | 180/4.3 |
| OPP2 200 | 2200 | 3950 | 400 | 187 | 6.2 | 11.2 | 20 | 0.30 | 0.30 | 200/6.4 |
| OPP2 250 | 3650 | 6150 | 820 | 596 | 12.4 | 18.6 | 31.3 | 0.60 | 0.60 | 250/8.7 |
| OPP2 320 | 4860 | 8410 | 1200 | 1463 | 19 | 24.7 | 42.8 | 0.85 | 0.85 | 320/11.8 |

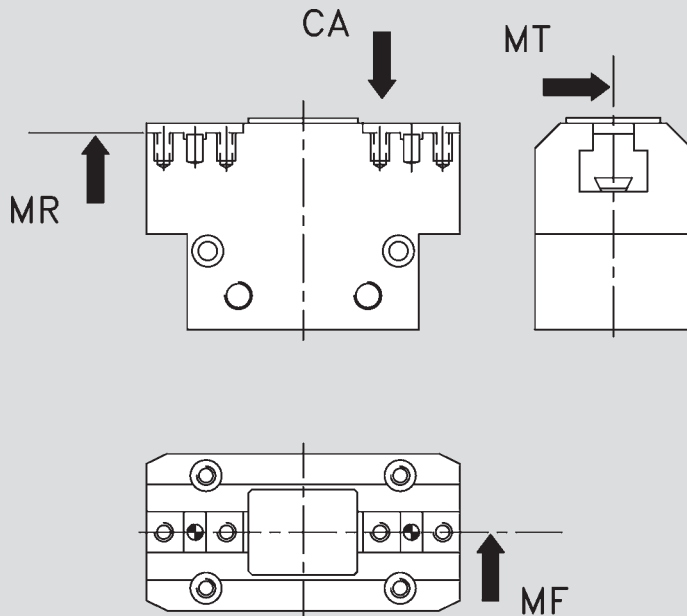
Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual finger forces at the fingers at "l" mm distance at 6 bar finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar. Eigenmasse in Kg.

2-finger parallel gripper - pneumatic - series OPP2 2-Finger - Parallelgreifer pneumatisch - Typ OPP2

Allowed load data

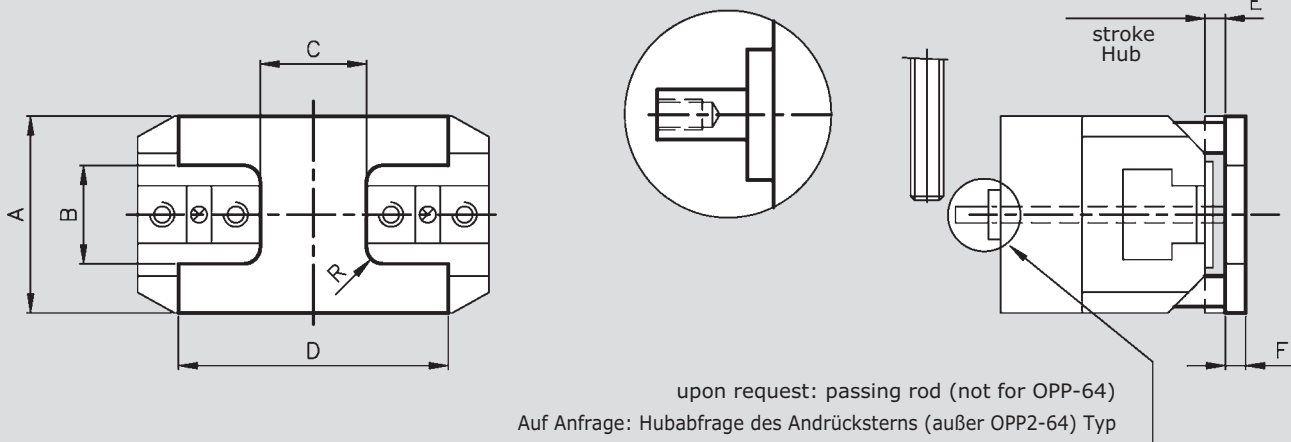
Maximal zul. Kräfte und Momente



| Type Typ | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|-------------|-----------|------------|------------|------------|
| OPP2 64 | 480 | 35 | 30 | 15 |
| OPP2 80 | 620 | 85 | 35 | 35 |
| OPP2 100 | 810 | 95 | 50 | 45 |
| OPP2 125 | 930 | 100 | 70 | 65 |
| OPP2 160 | 1140 | 110 | 85 | 85 |
| OPP2 180 | 2200 | 115 | 90 | 95 |
| OPP2 200 | 3200 | 140 | 100 | 120 |
| OPP2 250 | 4300 | 200 | 135 | 170 |
| OPP2 320 | 6600 | 330 | 250 | 280 |

Spring packaged pressure plate - code P

Federnder Andrückstern P



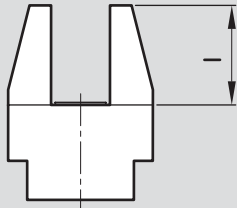
| Type Typ | OPP2 | | | | | | | | |
|-----------------|--------|--------|--------|----------|----------|----------|----------|----------|----------|
| | 64 | 80 | 100 | 125 | 160 | 180 | 200 | 250 | 320 |
| A | 38 | 44 | 52 | 62 | 74 | 80 | 90 | 120 | 144 |
| B | 16 | 22 | 26 | 32 | 42 | 44 | 48 | 60 | 80 |
| C | 20 | 24 | 26 | 38 | 48 | 60 | 66 | 88 | 116 |
| D | 53 | 62 | 80 | 98 | 120 | 140 | 154 | 196 | 240 |
| E | 4 | 4 | 5 | 6 | 6 | 8 | 8 | 10 | 10 |
| F | 5 | 6 | 7 | 8 | 8 | 9 | 9 | 12 | 14 |
| R | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 8 | 10 |
| Thrust Kraft | 11-30N | 38-45N | 50-80N | 100-240N | 165-410N | 210-380N | 250-330N | 380-510N | 420-620N |

NOTE : the grippers with spring packaged pressure plate can be applied through the lower holes only
Anmerkung: Der Greifer mit federnden Andrückstern kann nur über den unteren Kolben abgefragt werden

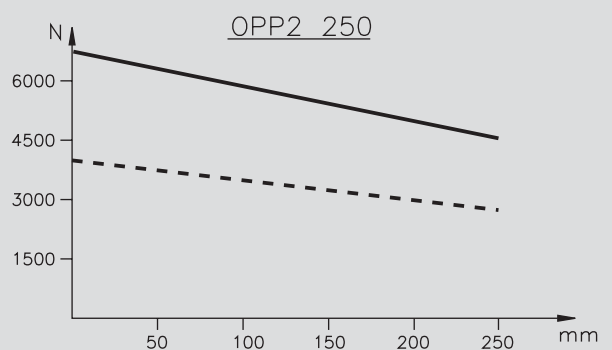
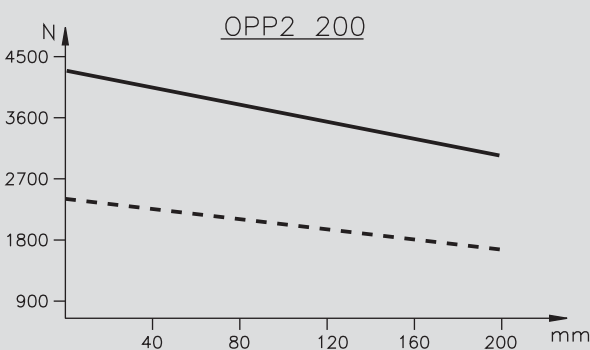
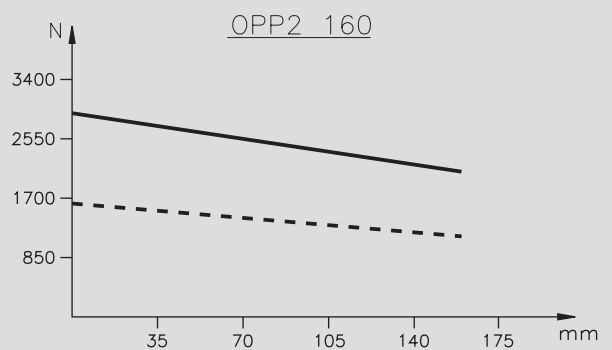
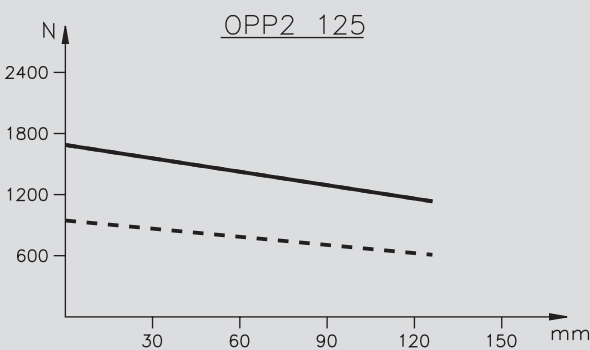
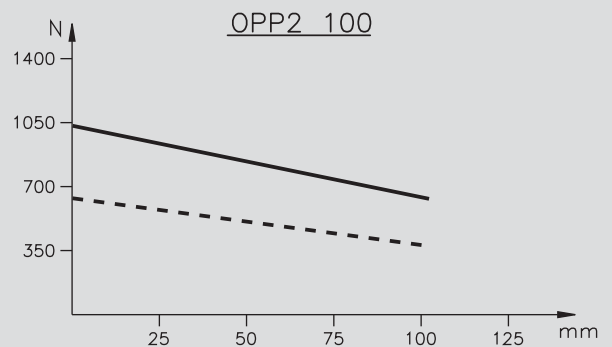
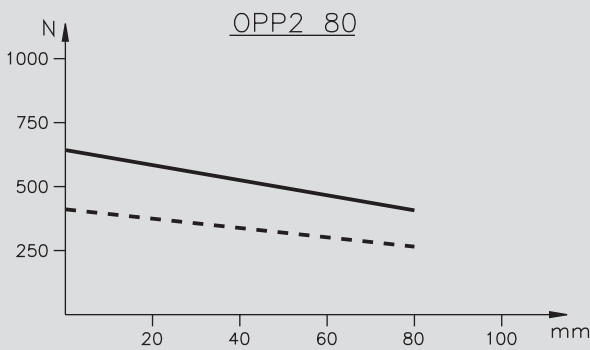
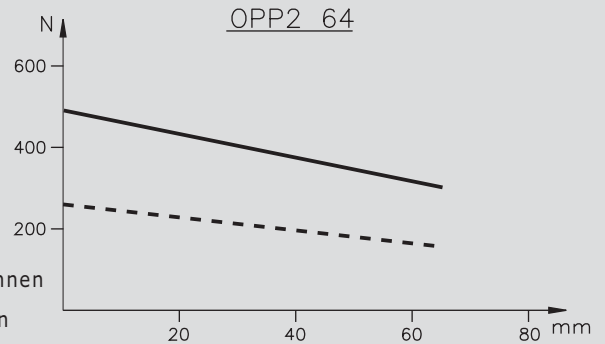
2-finger parallel gripper - pneumatic - series OPP2 2-Finger - Parallelgreifer pneumatisch - Typ OPP2

Force at 6 bar in N at l mm

Greifkraft (N) in Abhängigkeit der Fingerlänge "l" (mm) bei 6 bar



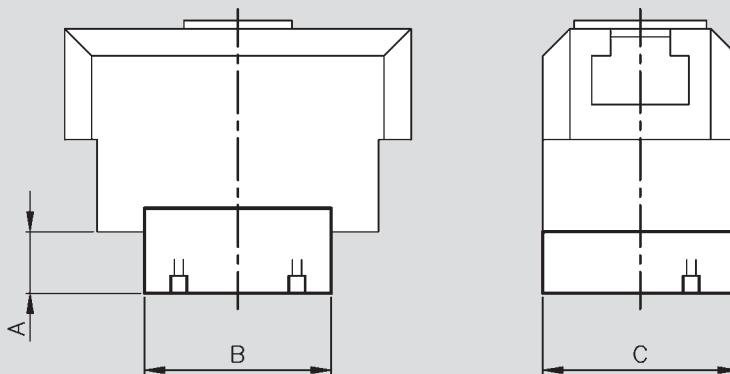
- code 1 closing - - - - - Version 1 Außenspannen
- code 2 closing ————— Version 2 Außenspannen



2-finger parallel gripper - pneumatic - series OPP2 2-Finger - Parallelgreifer pneumatisch - Typ OPP2

Safety device to preserve gripping force
code MC (closing) MA (opening)

Maßangaben für Greifer mit Greifkraftsicherung
Version MC (schließen) MA (öffnen)



| Type | A | B | C | Mass (Kg) | Gripping force (N) only with spring with fixed elasticity | | | | Approx gripping time only with spring (s) |
|----------|----|-----|-----|------------|---|------|---------|------|---|
| | | | | | code 1 | | code 2 | | |
| Typ | A | B | C | Masse (Kg) | Schließkraft über Feder in (N) beim Außenspannen | | | | Schließzeit nur über Feder (s) |
| | | | | | Vers. 1 | | Vers. 2 | | |
| | | | | | min | max | min | max | |
| OPP2 64 | 14 | 35 | 38 | 0.33 | 80 | 180 | 150 | 300 | 0.035 |
| OPP2 80 | 18 | 45 | 44 | 0.6 | 150 | 330 | 260 | 440 | 0.035 |
| OPP2 100 | 21 | 54 | 52 | 1.1 | 200 | 420 | 350 | 660 | 0.06 |
| OPP2 125 | 26 | 68 | 62 | 1.8 | 320 | 700 | 630 | 1300 | 0.18 |
| OPP2 160 | 30 | 84 | 74 | 3.3 | 520 | 1100 | 1050 | 1750 | 0.23 |
| OPP2 180 | 32 | 92 | 80 | 5 | 600 | 1100 | 1100 | 1900 | 0.34 |
| OPP2 200 | 39 | 110 | 90 | 7.5 | 680 | 1300 | 1200 | 2300 | 0.5 |
| OPP2 250 | 45 | 140 | 120 | 14.5 | 1100 | 2000 | 2300 | 4300 | 1.2 |
| OPP2 320 | 60 | 160 | 144 | 21.5 | 1500 | 2500 | 3600 | 6500 | 1.6 |

NOTE: Minimum operating pressure 4.5 bar. Upon request versions with lower operating pressure; in this case the force of the spring will be less.

Gripping force = Pneumatic gripping force + spring gripping force.

Gripping force is the arithmetic sum of the individual forces of the fingers.

BEMERKUNG: Betriebsdruck mindestens 4.5 bar

Die Greifkraft ergibt sich aus der pneumatischen Greifkraft + Federkraft

Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" bei 6 bar

Ordering example

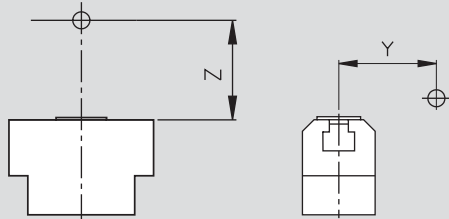
| Type | Code 1 or 2 | For internal bushes indicate B + level | For spring packaged pressure plate | For safety device indicate MC or MA | For passing rod indicate C |
|----------|------------------|---|------------------------------------|---|-----------------------------------|
| Typ | Version 1 oder 2 | Für Ausführung mit Nährungsschalter B+Durchmesser | Für federnden Andrückstern P | Für federgestützte Greifkraftsicherung MC oder MA | Für Hubabfrage des Andrückstern C |
| OPP2 100 | C1 | B8 | P | MC | / |

Bestellbeispiel

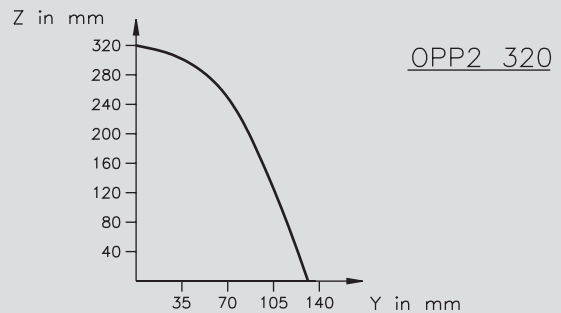
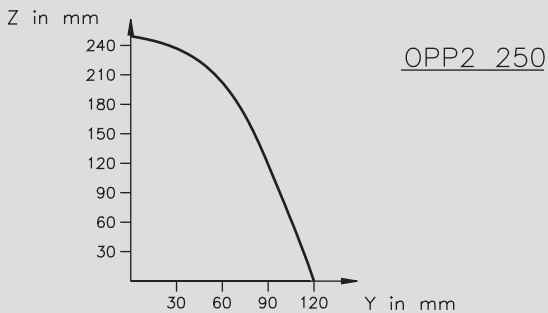
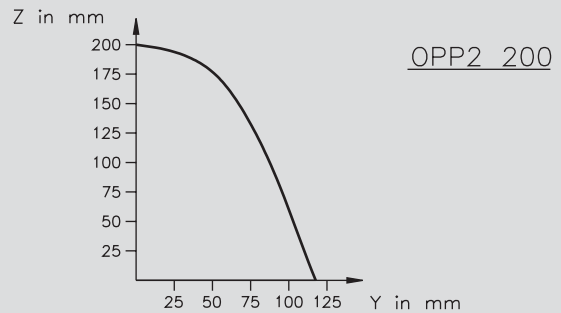
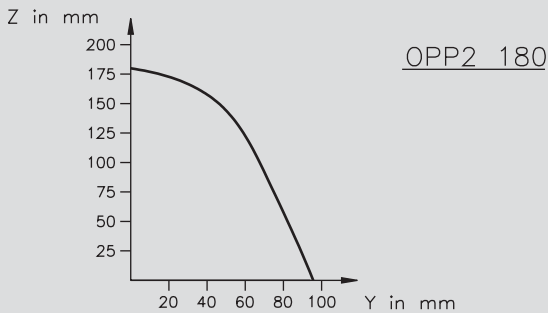
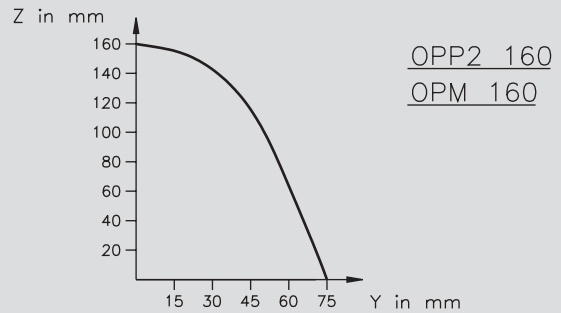
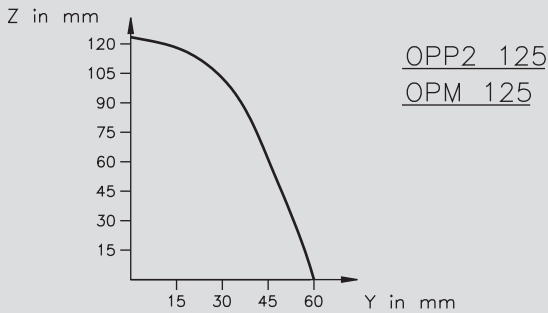
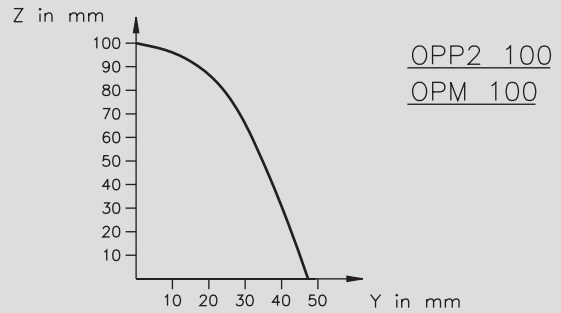
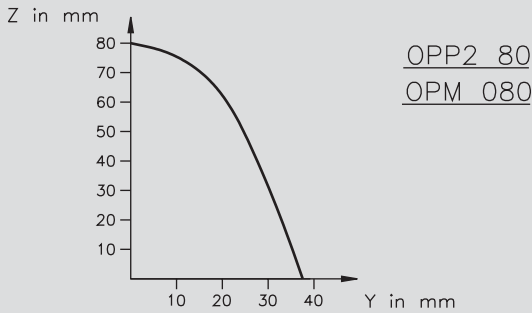
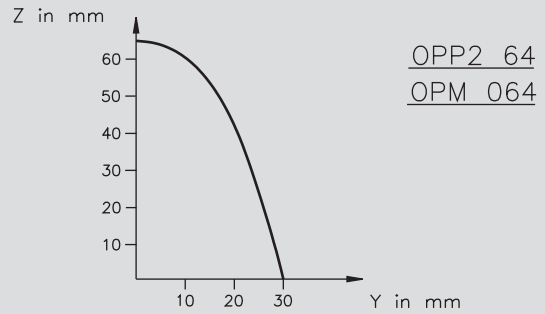
2-finger parallel gripper - pneumatic - series OPP2 2-Finger - Parallelgreifer pneumatisch - Typ OPP2

Maximum permitted finger offset

Diagramm der empfohlenen Hebel und Fingerlängen



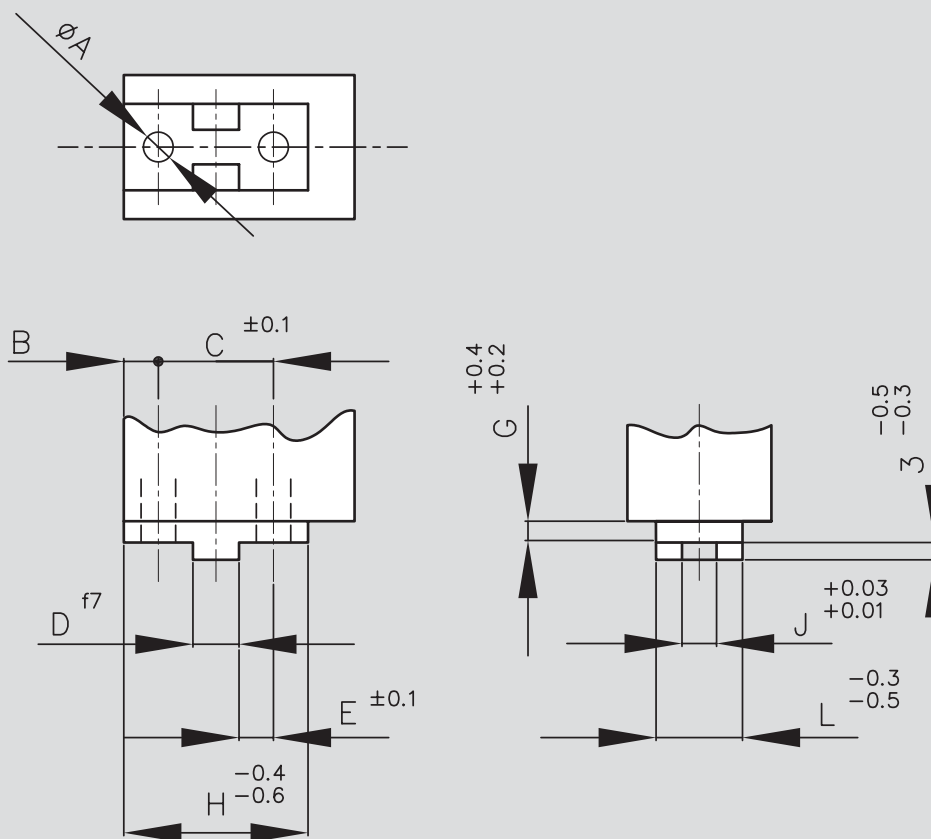
Z max: max length of the fingers with terminals inside the dimensions of the housing
Z max: Maximale Länge der Finger mit klemmen innerhalb der Dimensionen des Gehäuses



2-finger parallel gripper - pneumatic - series OPP2 2-Finger - Parallelgreifer pneumatisch - Typ OPP2

Dimensions of the finger for an appropriate connection

Anschlussmaße der Grundbacken



| Type / Typ | A | B | C | D | E | G | H | J | L |
|---|------|-----|----|----|----|----|------|----|----|
| OPP2-64/OPM- 064/MAC3-64/MFB-85/MA4-75/MIA1- G2-20 | 4.5 | 4 | 13 | 5 | 4 | 5 | 21 | 4 | 11 |
| OPP2-80/OPM - 080/MAC3-80/MFB-110/MA4-95/MIA1- G2-25 | 5.5 | 5 | 16 | 6 | 5 | 7 | 25.5 | 5 | 13 |
| OPP2-100/OPM - 100/MAC3-100/MFB-140/MA4-110/MIA1- G2-32 | 6.5 | 6 | 20 | 8 | 6 | 8 | 32 | 6 | 15 |
| OPP2-125/OPM - 125/MAC3-125/MFB-170/MA4-145/MIA1- G2-40 | 8.5 | 8.5 | 24 | 8 | 8 | 9 | 40.5 | 6 | 18 |
| OPP2-160/OPM - 160/MAC3-160/MFB-220/MA4-185/MIA1- G2-50 | 10.5 | 9 | 32 | 10 | 11 | 10 | 50 | 8 | 22 |
| OPP2-180/MIA1 - G2-54 | 10.5 | 9.5 | 36 | 12 | 12 | 10 | 55 | 10 | 26 |
| OPP2-200/MAC3 -200/MA4-230/MIA1- G2-60 | 12.5 | 11 | 40 | 14 | 13 | 10 | 62 | 12 | 30 |
| OPP2-250/MAC3 -250/MA4-250/MIA1- G2-80 | 12.5 | 17 | 48 | 16 | 16 | 13 | 80 | 12 | 36 |
| OPP2-320/MIA1 - G2-100 | 16.5 | 18 | 64 | 20 | 22 | 13 | 100 | 16 | 44 |

2-finger parallel gripper pneumatic - series OPM 2-Finger-Parallelgreifer pneumatisch – Typ OPM



Technische Eigenschaften:

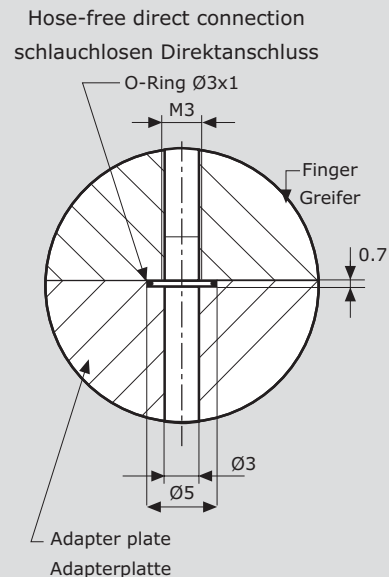
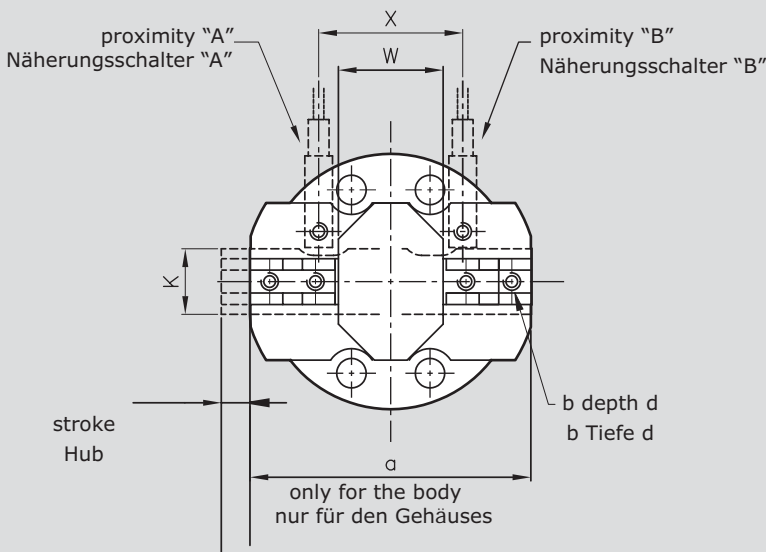
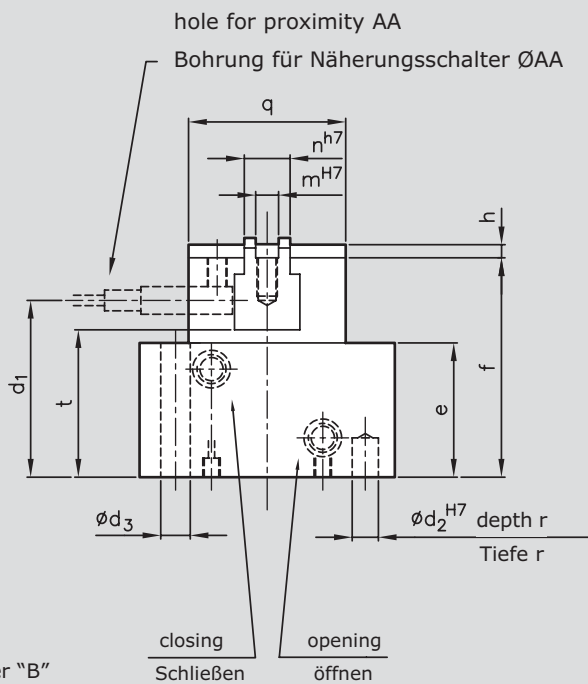
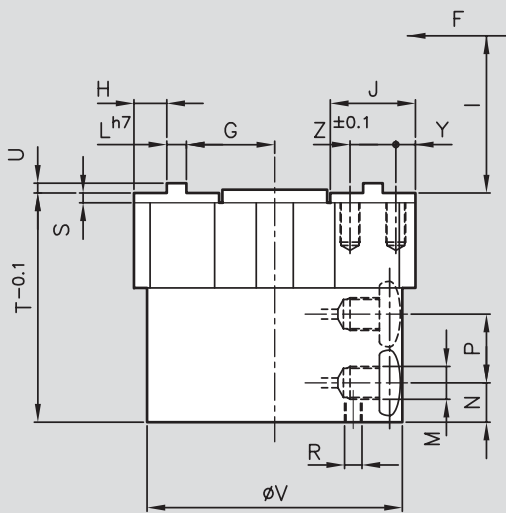
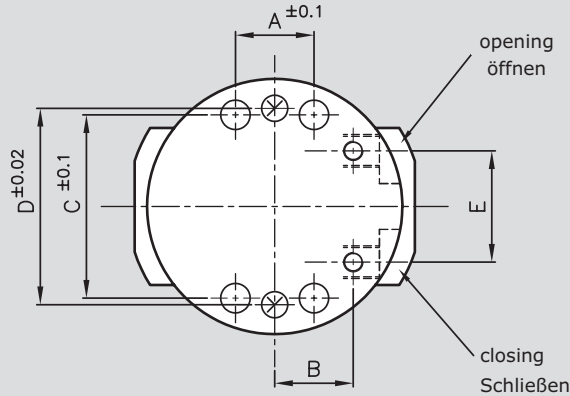
- Betriebsdruck: 2 bis 8 bar
- Wiederholgenauigkeit: OPM 030...125 0.01mm; OPM-160 0.02mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Kinematik: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Für Innen-und Außengreifen geeignet
- Diagramm der empfohlenen Hebel und Fingerlängen Seite 17
- Anschlussmaße der Grundbacken Seite 18
- Schutzart IP40
- Druckluftanschlüsse: über die Seitenflächen-Grundflächen
- M5 Sperrluftanschluss möglich
- 24 Monate Garantie

Technical data:

- Range of operating pressure : 2 - 8 bar
- Repeatability accuracy: OPM 030 .. 125 0.01 mm;
OPM - 160 0.02mm over 100 cycles
- Operating temperature: from -10°C to 90°C; versionn up to 130°C upon request
- Operating principle: wedge-hook kinematics
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Suitable for internal/external gripping
- Maximum permitted finger offset page 17
- Layout finger connection page 18
- Rating IP 40
- Air connections: sides and base
- M5 pressurisation on both sides
- Warranty 24 months

2-finger parallel gripper pneumatic - series OPM

2-Finger-Parallelgreifer pneumatisch - Typ OPM



NOTE:

- The part does not allow adjustment of the proximity that controls opening/closing
- Proximity "A" controls closing from the start to the middle of the stroke
- Proximity "B" controls opening from the middle to the end of the stroke

ANMERKUNG:

- Reine Endlagen abfrage ohne Einstellbarkeit
- Näherungsschalter A von Hubbeginn bis Hubmitte
- Näherungsschalter B von Hubmitte bis Hubende

2-finger parallel gripper pneumatic - series OPM 2-Finger-Parallelgreifer pneumatisch - Typ OPM

| Type | A | B | C | D | E | G | H | J | L | M | N | P | R | S | T | U | V | Z | Y | X | K | W | a | |
|------------|----|----|----|----|----|------|---|----|---|----|---|------|----|-----|----|-----|----|----|---|----|----|----|----|--|
| Typ | | | | | | | | | | | | | | | | | | | | | | | | |
| OPM 030-C1 | 12 | 10 | 26 | 28 | 14 | 13.5 | 5 | 13 | 3 | M5 | 6 | 9.5 | M3 | 1.5 | 33 | 1.5 | 34 | 7 | 3 | 21 | 12 | 16 | 43 | |
| OPM 040-C1 | 12 | 12 | 28 | 30 | 17 | 13.5 | 5 | 13 | 3 | M5 | 6 | 11 | M3 | 1.5 | 35 | 1.5 | 39 | 7 | 3 | 21 | 12 | 16 | 43 | |
| OPM 050-C1 | 18 | 16 | 35 | 40 | 20 | 16.5 | 7 | 18 | 4 | M5 | 7 | 11.5 | M3 | 1.5 | 41 | 1.5 | 49 | 10 | 4 | 31 | 14 | 18 | 49 | |

| Type | b | d | d ₁ | d ₂ | d ₃ | e | f | h | l | m | n | q | r | t | AA |
|------------|----|-----|----------------|----------------|----------------|------|------|---|----|-----|----|----|---|------|----|
| Typ | | | | | | | | | | | | | | | |
| OPM 030-C1 | M3 | 5.5 | 25 | 4 | 3.5 | 18.5 | 31.5 | 2 | 11 | 3.5 | 7 | 24 | 6 | 20.5 | 4 |
| OPM 040-C1 | M3 | 5.5 | 27 | 4 | 4.5 | 20.5 | 33.5 | 2 | 15 | 3.5 | 7 | 24 | 6 | 22.5 | 4 |
| OPM 050-C1 | M4 | 7 | 31 | 4 | 5.5 | 23.5 | 39.5 | 2 | 19 | 5 | 10 | 31 | 7 | 25.5 | 4 |

| Type | Gripping force at 6 (N) | Moment of inertia (Kgcm ²) | Recommended weight of part for transport (kg) | Total air for double stroke consumed (cm ³) | Stroke for finger | Mass (Kg) | Approx. time (s) | | Max finger length / weight |
|---------|-------------------------|--|---|---|-------------------|------------|------------------|-----------|-----------------------------|
| | | | | | | | open | closed | |
| Type | Greifkraft 6 bar (N) | Massenträgheitsmoment (Kgcm ²) | max. empfohlenes Werkstückgewicht (kg) | Luftverbrauch pro Doppelhub (cm ³) | Hub pro Finger | Masse (Kg) | Schließzeit (s) | | Max. Fingerlänge/Eigenmasse |
| | | | | | | | öffnen | schließen | |
| OPM 030 | 60 | 0.11 | 0.3 | 3 | 4 | 0.08 | 0.01 | 0.01 | 35/0.1 |
| OPM 040 | 100 | 0.21 | 0.5 | 6 | 5.5 | 0.11 | 0.015 | 0.015 | 40/0.1 |
| OPM 050 | 190 | 0.6 | 0.9 | 13 | 7 | 0.2 | 0.02 | 0.02 | 50/0.16 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm distance at 0.6 MPa. Finger weight in Kg.

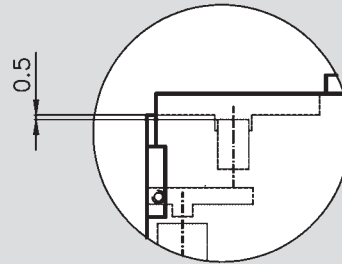
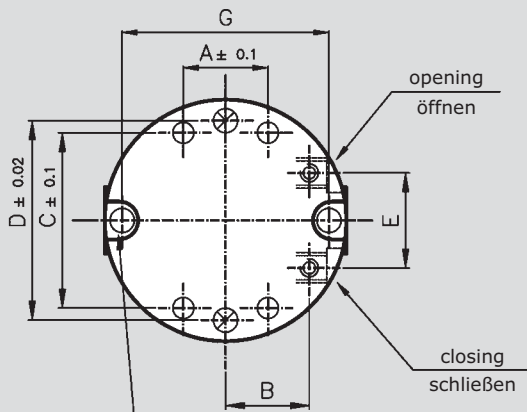
Empfehlung für max. Werkstückgewicht mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar.

Ordering example

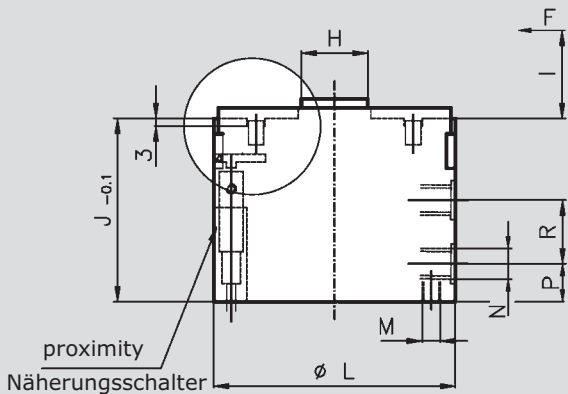
Bestellbeispiel

| Type | Code 1 or 2 | For internal bushes indicate B + level | For spring packaged pressure plate indicate code P | For safety device indicate MC or MA | For passing rod indicate C |
|---------|-----------------|---|--|---|-----------------------------------|
| Typ | Version 1 od. 2 | Für Ausführung mit Nährungsschalter B+Durchmesser | Für Federnden Andrücksten P | Für federgestützte Greifkraftsicherung MC oder MA | Für Hubabfrage des Andrückstern C |
| OPM 100 | C1 | B8 | P | MC | / |

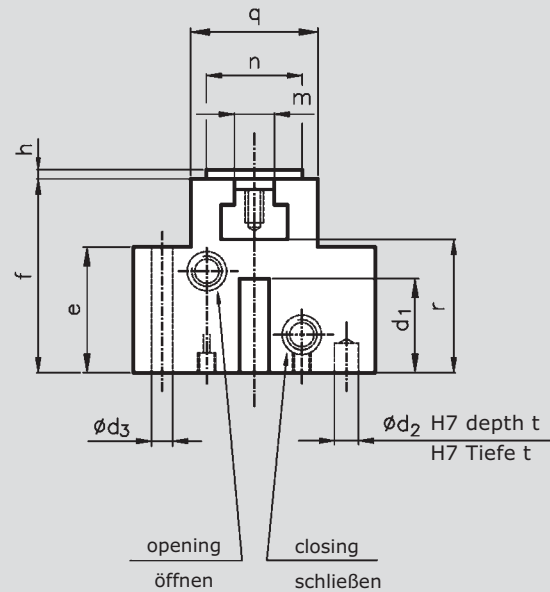
2-finger parallel gripper pneumatic - series OPM
2-Finger-Parallelgreifer pneumatisch - Typ OPM



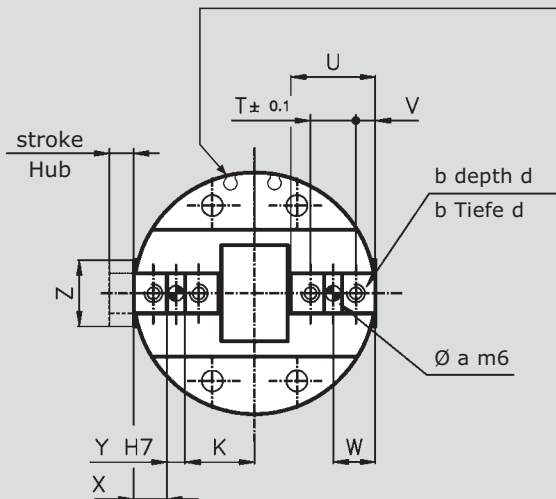
hole for proximity AA
Bohrung für Näherungsschalter AA



magnetic limit switch seat
type D-M9P (SMC) or R626 (OMIL)
Hubabfrage über Magnetschalter Typ
D-M9P (SMC) oder R626 (OMIL)



Hose-free direct
connection page 23
Maße für schlauchlosen
Direktanschluss Seite 23



2-finger parallel gripper pneumatic - series OPM 2-Finger-Parallelgreifer pneumatisch - Typ OPM

| Type Typ | A | B | C | D | E | G | H | J | L | M | N | P | R | T | U | V | Z | Y | X | K | W | a |
|-------------|------|----|------|-----|----|-----|----|----|-----|----|------|----|----|----|------|-----|----|----|------|----|------|---|
| OPM064-C1 | 27.5 | 20 | 47.5 | 55 | 30 | 55 | 21 | 44 | 64 | M3 | M5 | 10 | 16 | 13 | 21 | 4 | 18 | 5 | 8 | 19 | 10.5 | 4 |
| OPM080-C1 | 34.5 | 24 | 60 | 69 | 40 | 68 | 29 | 55 | 79 | M4 | M5 | 11 | 22 | 16 | 25.5 | 5 | 21 | 6 | 10 | 24 | 13 | 5 |
| OPM100-C1 | 44 | 31 | 76 | 88 | 48 | 88 | 34 | 65 | 99 | M5 | 1/8G | 12 | 28 | 20 | 32 | 6 | 25 | 8 | 12 | 30 | 16 | 6 |
| OPM125-C1 | 55 | 42 | 95 | 110 | 60 | 110 | 43 | 74 | 124 | M5 | 1/8G | 13 | 31 | 24 | 40.5 | 8.5 | 32 | 8 | 16.5 | 38 | 20.5 | 6 |
| OPM160-C1 | 72 | 60 | 125 | 144 | 60 | 144 | 56 | 91 | 159 | M5 | 1/8G | 17 | 37 | 32 | 50 | 9 | 40 | 10 | 20 | 50 | 25 | 8 |

| Type Typ | b | d | d ₁ | d ₂ | d ₃ | e | f | h | l | m | n | q | r | t | AA |
|-------------|-----|-----|----------------|----------------|----------------|----|----|---|----|----|----|----|------|----|----|
| OPM064-C1 | M4 | 6.5 | 23 | 4 | 5.5 | 33 | 46 | 2 | 23 | 11 | 24 | 38 | 31.5 | 9 | M5 |
| OPM080-C1 | M5 | 8 | 28 | 5 | 6.5 | 40 | 58 | 3 | 27 | 13 | 30 | 44 | 41 | 12 | M8 |
| OPM100-C1 | M6 | 10 | 33 | 5 | 6.5 | 47 | 68 | 3 | 36 | 15 | 30 | 52 | 47 | 12 | M8 |
| OPM125-C1 | M8 | 12 | 39 | 6 | 9 | 52 | 78 | 3 | 40 | 18 | 35 | 62 | 54 | 15 | M8 |
| OPM160-C1 | M10 | 13 | 50 | 6 | 9 | 62 | 95 | 4 | 45 | 22 | 50 | 74 | 65 | 15 | M8 |

| Type | Gripping force at 6 bar (N) | Moment of inertia (Kgcm ²) | Recommended weight of part for transport (kg) | Total air for double stroke consumed (cm ³) | Stroke for finger | Mass (Kg) | Approx. time (s) | | Max finger length / weight |
|-----------|-----------------------------|--|---|---|-------------------|------------|------------------|-----------|-----------------------------|
| | | | | | | | open | close | |
| Type | Greifkraft bei 6 bar (N) | Massenträgheitsmoment (Kgcm ²) | max. empfohlenes Werkstückgewicht (kg) | Luftverbrauch pro Doppelhub (cm ³) | Hub pro Finger | Masse (Kg) | Schließzeit (s) | | Max. Fingerlänge/Eigenmasse |
| | | | | | | | öffnen | schließen | |
| OPM064-C1 | 410 | 2 | 2 | 22 | 6 | 0.38 | 0.02 | 0.02 | 64/0.32 |
| OPM080-C1 | 650 | 5.3 | 3.2 | 48 | 8 | 0.68 | 0.05 | 0.05 | 80/0.55 |
| OPM100-C1 | 1100 | 15 | 5.3 | 90 | 10 | 1.2 | 0.07 | 0.07 | 100/1.05 |
| OPM125-C1 | 2000 | 42 | 9.7 | 200 | 13 | 2.2 | 0.15 | 0.15 | 125/2 |
| OPM160-C1 | 4040 | 136 | 18 | 460 | 16 | 4.3 | 0.3 | 0.3 | 160/3.3 |

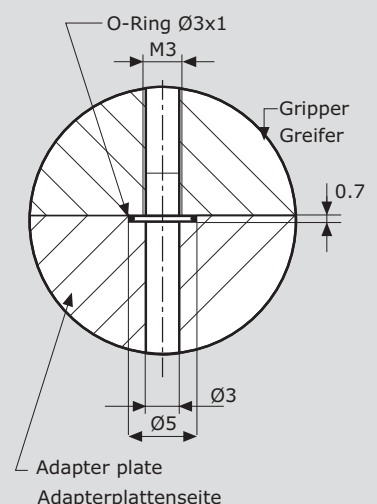
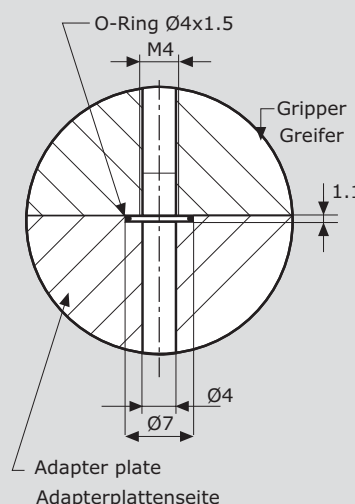
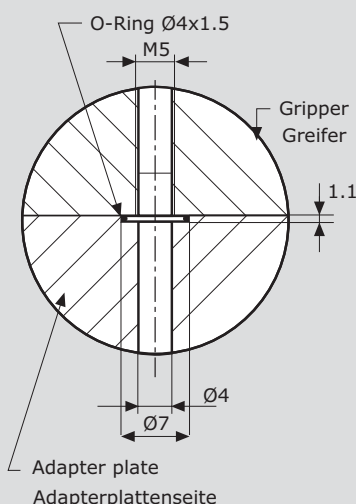
Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater.

The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm distance at 6 bar Finger weight in Kg.

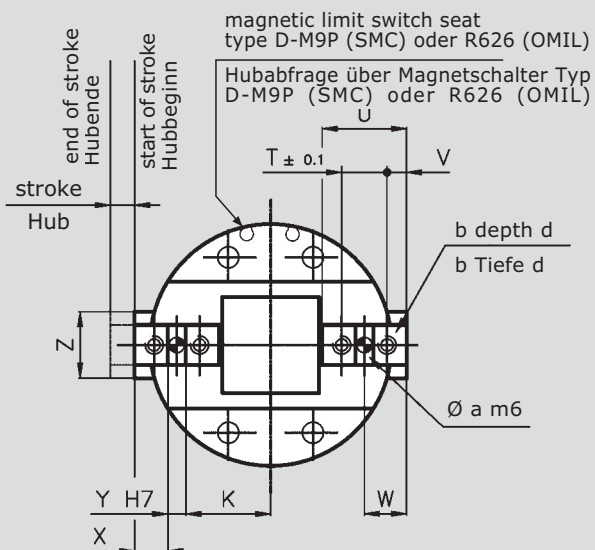
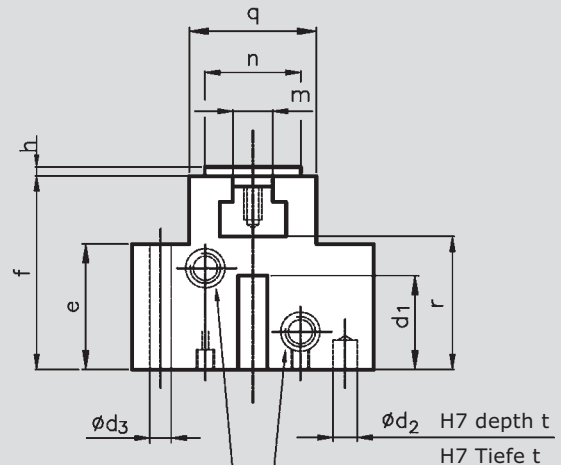
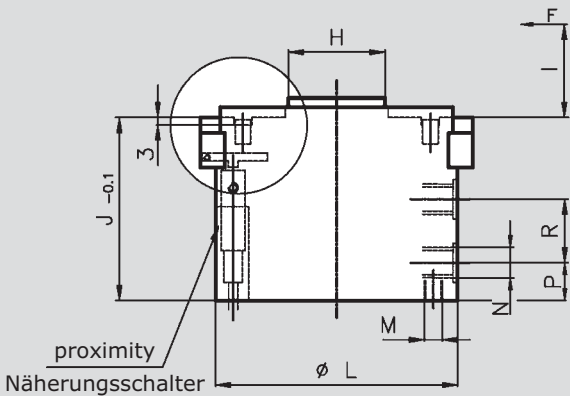
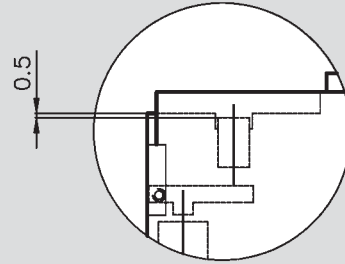
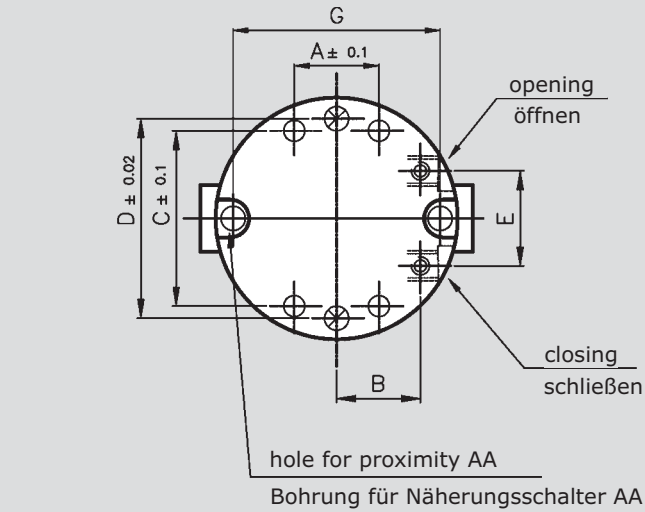
Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar Eigenmasse in Kg.

Hose-free direct connection

Maße für schlauchlosen Direktanschluss



2-finger parallel gripper pneumatic - series OPM 2-Finger-Parallelgreifer pneumatisch - Typ OPM



Hose-free direct connection page 23

Maße für schlauchlosen Direktanschluss Seite 23

2-finger parallel gripper pneumatic - series OPM 2-Finger-Parallelgreifer pneumatisch - Typ OPM

| Type Typ | A | B | C | D | E | G | H | J | L | M | N | P | R | T | U | V | Z | Y | X | K | W | a |
|-------------|------|----|------|-----|----|-----|----|----|-----|----|------|----|----|----|------|-----|----|----|------|------|------|---|
| OPM064-C2 | 27.5 | 20 | 47.5 | 55 | 30 | 55 | 27 | 44 | 64 | M3 | M5 | 10 | 16 | 13 | 21 | 4 | 18 | 5 | 8 | 22 | 10.5 | 4 |
| OPM080-C2 | 34.5 | 24 | 60 | 69 | 40 | 68 | 38 | 55 | 79 | M4 | M5 | 11 | 22 | 16 | 25.5 | 5 | 21 | 6 | 10 | 28.5 | 13 | 5 |
| OPM100-C2 | 44 | 31 | 76 | 88 | 48 | 88 | 46 | 65 | 99 | M5 | 1/8G | 12 | 28 | 20 | 32 | 6 | 25 | 8 | 12 | 36 | 16 | 6 |
| OPM125-C2 | 55 | 42 | 95 | 110 | 60 | 110 | 52 | 74 | 124 | M5 | 1/8G | 13 | 31 | 24 | 40.5 | 8.5 | 32 | 8 | 16.5 | 42.5 | 20.5 | 6 |
| OPM160-C2 | 72 | 60 | 125 | 144 | 60 | 144 | 68 | 91 | 159 | M5 | 1/8G | 17 | 37 | 32 | 50 | 9 | 40 | 10 | 20 | 55 | 25 | 8 |

| Type Typ | b | d | d ₁ | d ₂ | d ₃ | e | f | h | l | m | n | q | r | t | AA |
|-------------|-----|-----|----------------|----------------|----------------|----|----|---|----|----|----|----|------|----|----|
| OPM064-C2 | M4 | 6.5 | 23 | 4 | 5.5 | 33 | 46 | 2 | 23 | 11 | 24 | 38 | 31.5 | 9 | M5 |
| OPM080-C2 | M5 | 8 | 28 | 5 | 6.5 | 40 | 58 | 3 | 27 | 13 | 30 | 44 | 41 | 12 | M8 |
| OPM100-C2 | M6 | 10 | 33 | 5 | 6.5 | 47 | 68 | 3 | 36 | 15 | 30 | 52 | 47 | 12 | M8 |
| OPM125-C2 | M8 | 12 | 39 | 6 | 9 | 52 | 78 | 3 | 40 | 18 | 35 | 62 | 54 | 15 | M8 |
| OPM160-C2 | M10 | 13 | 50 | 6 | 9 | 62 | 95 | 4 | 45 | 22 | 50 | 74 | 65 | 15 | M8 |

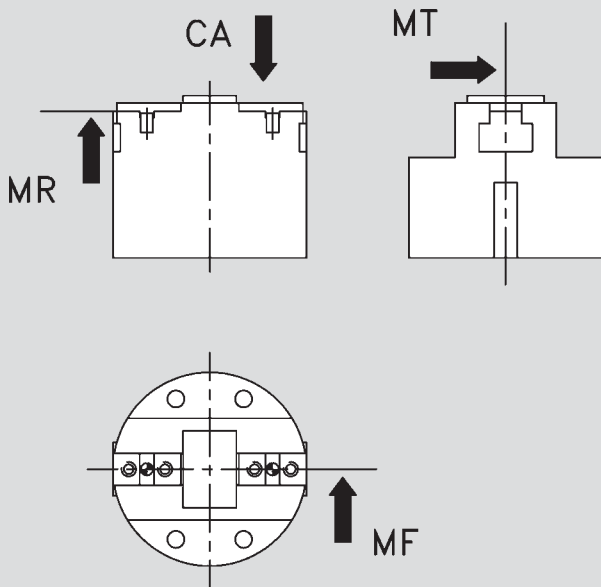
| Type | Gripping force at 6 bar (N) | Moment of inertia (Kgcm ²) | Recommended weight of part for transport (kg) | Total air for double stroke consumed (cm ³) | Stroke for finger | Mass (Kg) | Approx. time (s) | | Max finger length / weight |
|-----------|-----------------------------|--|---|---|-------------------|------------|------------------|-----------|-----------------------------|
| Type | Greifkraft 6 bei bar (N) | Massenträgheitsmoment (Kgcm ²) | Max. empfohlenes Werkstückgewicht (kg) | Luftverbrauch pro Doppelhub (cm ³) | Hub pro Finger | Masse (Kg) | Schließzeit (s) | | Max. Fingerlänge/Eigenmasse |
| | | | | | | | öffnen | schließen | |
| OPM064-C2 | 340 | 2 | 1.7 | 27 | 9 | 0.38 | 0.025 | 0.025 | 50 / 0.32 |
| OPM080-C2 | 540 | 5.3 | 2.7 | 60 | 12 | 0.68 | 0.06 | 0.06 | 64 / 0.55 |
| OPM100-C2 | 920 | 15 | 4.6 | 110 | 15 | 1.2 | 0.09 | 0.09 | 80 / 1.05 |
| OPM125-C2 | 1670 | 42 | 8.3 | 270 | 17.5 | 2.2 | 0.17 | 0.17 | 100 / 2 |
| OPM160-C2 | 3100 | 136 | 15 | 500 | 21 | 4.3 | 0.33 | 0.33 | 125 / 3.3 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm distance at 6 bar. Finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar. Eigenmasse in Kg.

2-finger parallel gripper pneumatic - series OPM 2-Finger-Parallelgreifer pneumatisch - Typ OPM

Allowed load data

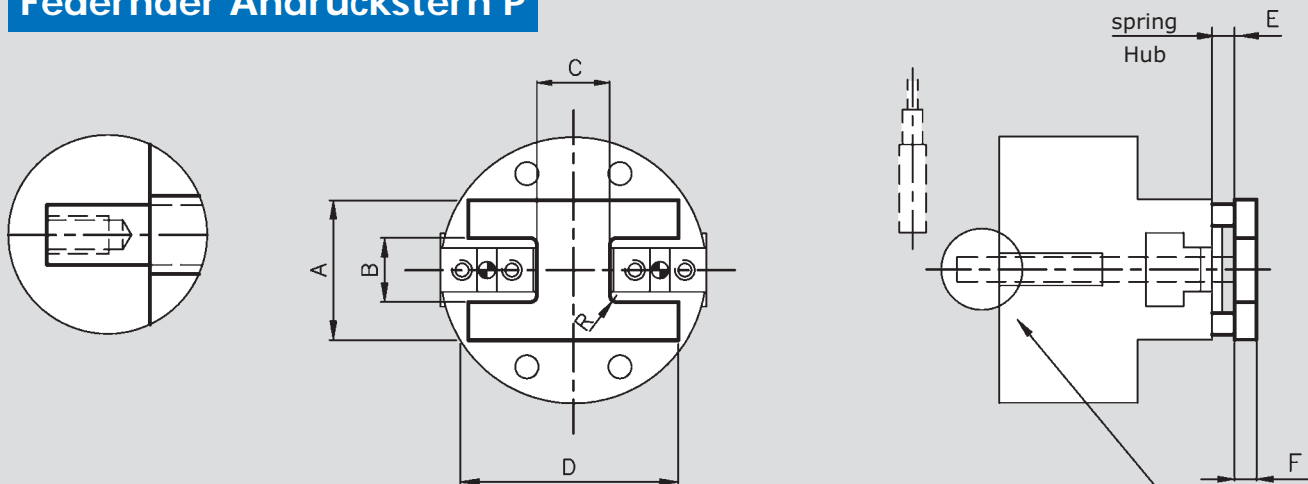


Maximal zul. Kräfte und Momente am Finger

| Type Typ | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|-------------|-----------|------------|------------|------------|
| OPM 030 | 200 | 10 | 8 | 6 |
| OPM 040 | 250 | 15 | 10 | 10 |
| OPM 050 | 350 | 20 | 18 | 13 |
| OPM 064 | 480 | 35 | 30 | 15 |
| OPM 080 | 620 | 85 | 35 | 35 |
| OPM 100 | 810 | 95 | 35 | 35 |
| OPM 125 | 930 | 100 | 70 | 65 |
| OPM 160 | 1140 | 110 | 85 | 85 |

Spring packaged pressure plate - code P

Federnder Andrückstern P



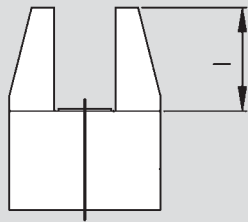
| Type Typ | A | B | C | D | E | F | R | Push Kraft |
|-------------|----|----|----|-----|---|---|---|---------------|
| OPM 064 | 38 | 16 | 20 | 53 | 4 | 5 | 3 | 11-30N |
| OPM 080 | 44 | 22 | 24 | 62 | 4 | 6 | 4 | 38-45N |
| OPM 100 | 52 | 26 | 26 | 80 | 5 | 7 | 4 | 50-80N |
| OPM 125 | 62 | 32 | 38 | 98 | 6 | 8 | 5 | 100-240N |
| OPM 160 | 74 | 42 | 48 | 120 | 6 | 8 | 5 | 165-410N |

upon request: passing rod (except OPM 030...064)
Auf Anfrage: Hubabfrage des Andrücksterns (außer OPM 030...64)

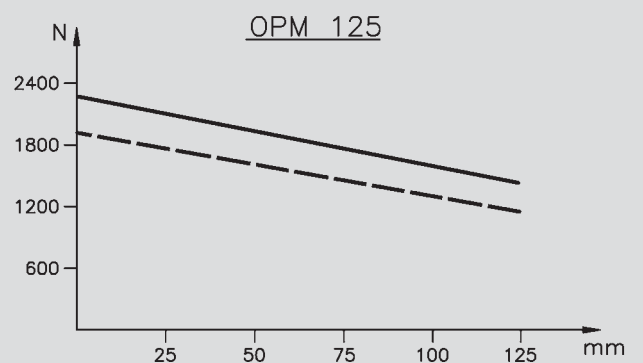
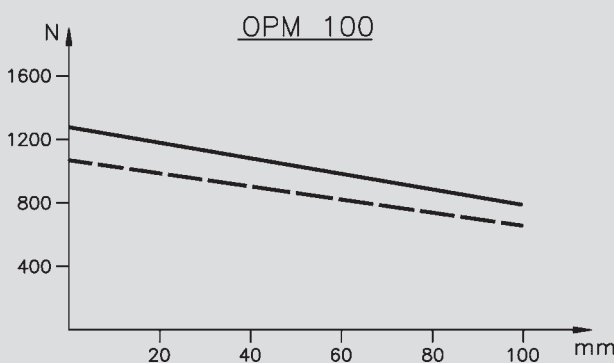
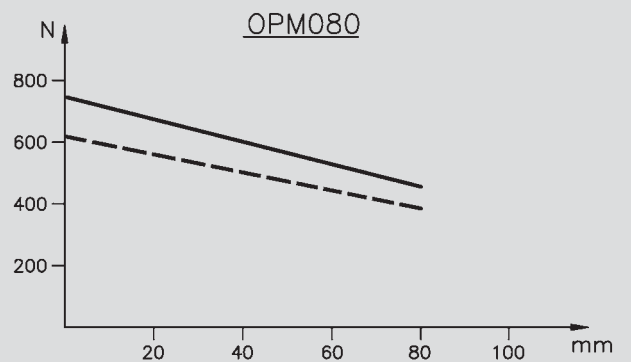
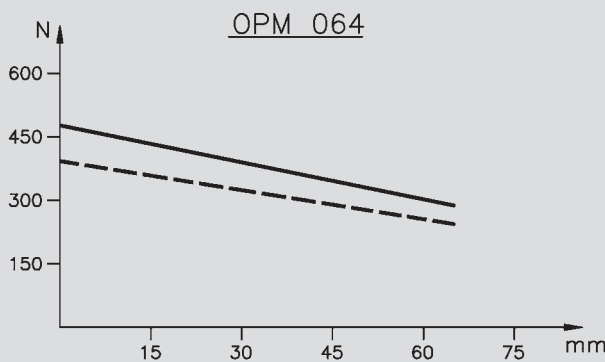
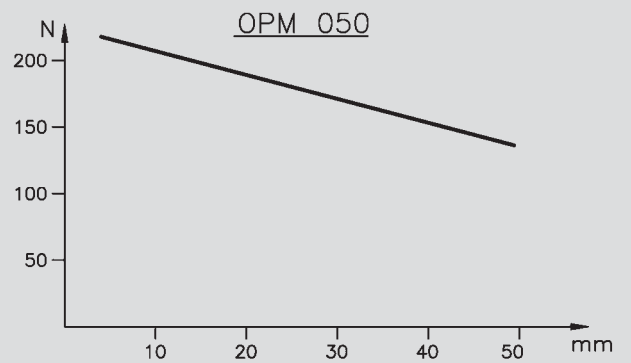
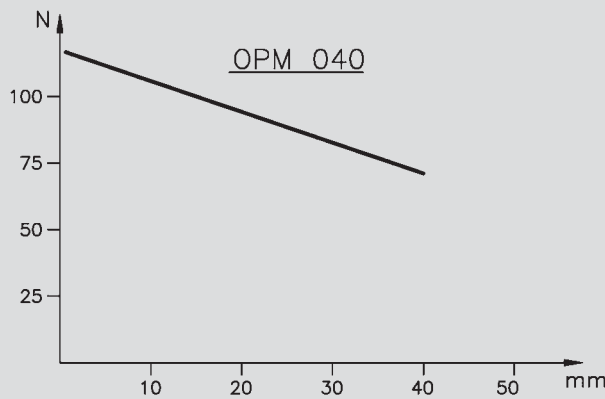
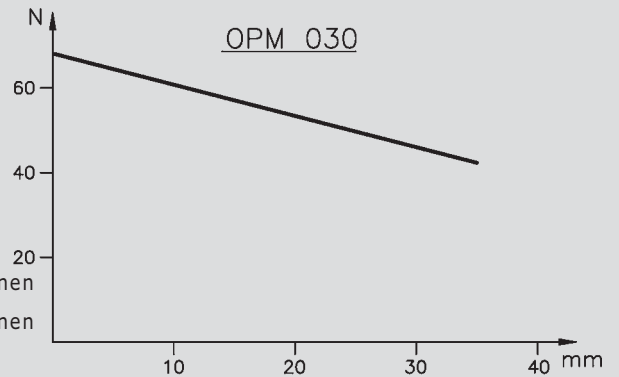
2-finger parallel gripper pneumatic - series OPM 2-Finger-Parallelgreifer pneumatisch - Typ OPM

Force at 6 bar in N at l mm

Greifkraft (N) in Abhängigkeit der Fingerlänge "l" (mm) bei 6 bar



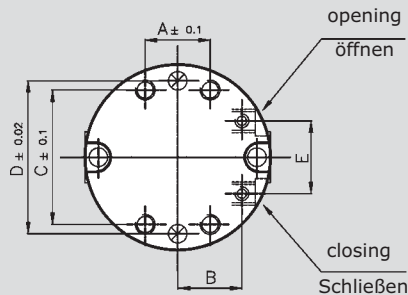
- code 1 closing ——— code1 Außenspannen
- code 2 closing - - - - code2 Außenspannen



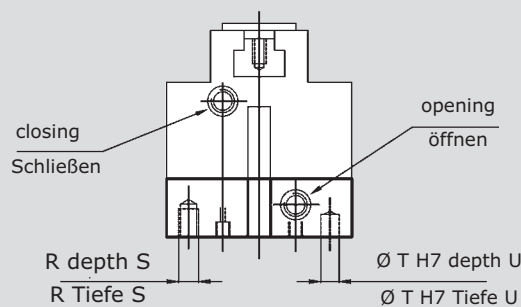
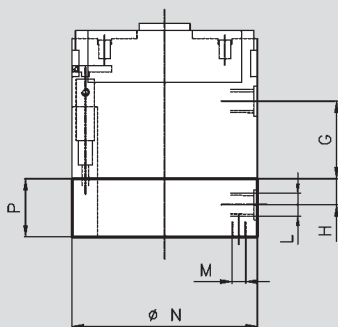
2-finger parallel gripper pneumatic - series OPM 2-Finger-Parallelgreifer pneumatisch – Typ OPM

Safety device to preserve gripping force code MC (closing) MA (opening)

Maßangaben für Greifer mit Greifkraftsicherung Vers. MC (schließen) MA (öffnen)



| Type | Gripping force only with spring (N) with fixed elasticity | | | | Approx. gripping time (s) with spring only | |
|---------|---|------|-----------|------|--|--------|
| | code 1 | | code 2 | | code 1 | code 2 |
| Typ | Schließkraft über Feder in (N) beim Außenspannen | | | | | |
| | Version 1 | | Version 2 | | Vers 1 | Vers 2 |
| | min | max | min | max | | |
| OPM 030 | 25 | 50 | / | / | 0.01 | / |
| OPM 040 | 70 | 100 | / | / | 0.015 | / |
| OPM 050 | 100 | 140 | / | / | 0.02 | / |
| OPM 064 | 160 | 340 | 150 | 250 | 0.05 | 0.06 |
| OPM 080 | 260 | 500 | 230 | 330 | 0.09 | 0.11 |
| OPM 100 | 460 | 850 | 400 | 680 | 0.16 | 0.2 |
| OPM 125 | 800 | 1300 | 670 | 1050 | 0.25 | 0.3 |
| OPM 160 | 1200 | 2600 | 1000 | 2000 | 0.65 | 0.75 |



| Type | A | B | C | D | E | G | H | L | M | N | P | R | S | T | U | Moment of inertia (Kgcm ²) | Gripper weight (Kg) |
|---------|------|----|------|-----|----|------|-----|------|----|-----|------|----|----|---|----|--|---------------------|
| Typ | A | B | C | D | E | G | H | L | M | N | P | R | S | T | U | Massenträgheitsmoment (Kgcm ²) | Masse (Kg) |
| OPM 030 | 12 | 10 | 26 | 28 | 14 | 15.5 | 7 | M5 | M3 | 34 | 14.5 | M3 | 7 | 4 | 7 | 0.14 | 0.1 |
| OPM 040 | 12 | 12 | 28 | 30 | 17 | 17 | 7.5 | M5 | M3 | 39 | 15 | M4 | 7 | 4 | 7 | 0.27 | 0.14 |
| OPM 050 | 18 | 16 | 35 | 40 | 20 | 18.5 | 11 | M5 | M3 | 49 | 18.5 | M5 | 9 | 4 | 8 | 0.84 | 0.25 |
| OPM 064 | 27.5 | 20 | 47.5 | 55 | 30 | 26 | 12 | M5 | M3 | 64 | 19.5 | M5 | 10 | 4 | 8 | 2.6 | 0.5 |
| OPM 080 | 34.5 | 24 | 60 | 69 | 40 | 33 | 16 | M5 | M4 | 79 | 27 | M6 | 12 | 5 | 10 | 7.5 | 0.96 |
| OPM 100 | 44 | 31 | 76 | 88 | 48 | 40 | 24 | 1/8G | M5 | 99 | 36 | M6 | 12 | 5 | 10 | 20.8 | 1.67 |
| OPM 125 | 55 | 42 | 95 | 110 | 60 | 44 | 26 | 1/8G | M5 | 124 | 39 | M8 | 15 | 6 | 15 | 60.5 | 3.1 |
| OPM 160 | 72 | 60 | 125 | 144 | 60 | 54 | 28 | 1/8G | M5 | 159 | 40 | M8 | 16 | 6 | 15 | 182.4 | 5.7 |

NOTE: Minimum operating pressure 4.5 bar. Upon request versions with less pressure; in this case the spring force will be lower.

Gripping force = pneumatic gripping force + spring force.

The gripping force is the arithmetic sum of the individual forces of the fingers.

Bemerkung: Betriebsdruck mindestens 4.5 bar

Die Greifkraft ergibt sich aus der pneumatischen Greifkraft + Federkraft

Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" bei 6 bar

2-finger parallel gripper pneumatic - series GHL *2-Finger-Parallelgreifer pneumatisch – Typ GHL*



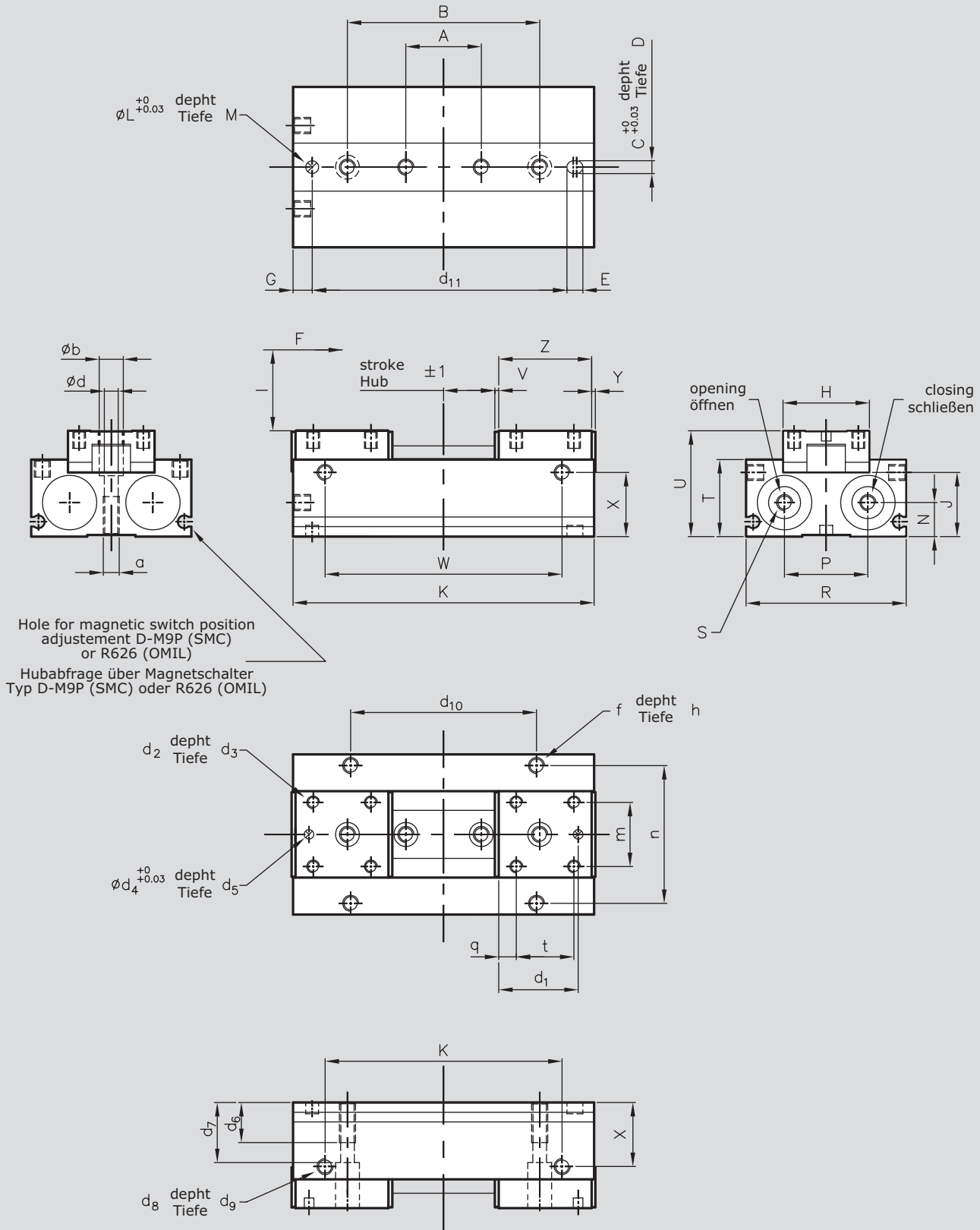
Technische Eigenschaften:

- Betriebsdruck: 2 bis 7 bar
- Wiederholgenauigkeit: 0.1mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C
- Kinematik: Zahnstangen Ritzel Synchronisation, Grundbacken lineargeführt
- Material : Gehäuse aus hochfester Aluminiumlegierung, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Für Innen-und Außengreifen geeignet
- Schutzart IP 20
- 24 Monate Garantie

Technical data:

- Range of operating pressure : 2 - 7 bar
- Repeatability accuracy: 0.1 mm at 100 cycles
- Operating temperature: from -10°C to 90°C
- Operating principle: fingers sliding, guided by rack and pinion for concentric gripping
- Housing material: high tensile hard-coated aluminium alloy
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Suitable for internal/external gripping
- Rating IP 20
- Warranty 24 months

2-finger parallel gripper pneumatic - series GHL 2-Finger-Parallelgreifer pneumatisch - Typ GHL



2-finger parallel gripper pneumatic - series GHL 2-Finger-Parallelgreifer pneumatisch – Typ GHL

| Type Typ | C | D | E | G | H | J | L | M | N | P | R | S | T | U | V | Y | a | b | c | d |
|-------------|---|---|---|---|----|------|---|---|------|------|----|----|----|----|---|---|----|----|-----|-----|
| GHL 12 | 3 | 3 | 4 | 4 | 20 | 14.8 | 3 | 3 | 7.7 | 19.6 | 40 | M5 | 19 | 25 | 1 | 1 | 15 | M4 | 6 | 3.4 |
| GHL 16 | 4 | 3 | 5 | 6 | 27 | 20 | 4 | 3 | 10.6 | 25.5 | 50 | M5 | 24 | 33 | 1 | 1 | 20 | M5 | 7.5 | 4.3 |
| GHL 20 | 5 | 3 | 6 | 6 | 32 | 25 | 5 | 4 | 12 | 33.6 | 62 | M5 | 30 | 41 | 1 | 1 | 25 | M6 | 10 | 5.2 |

| Type | f | h | l | m | n | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | d ₉ | Max finger length / weight | Gripping force 6 bar (N) | Recommended weight of part for transport (kg) |
|--------|----|-----|----|----|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------------------|--------------------------|---|
| Typ | f | h | l | m | n | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | d ₉ | Max. Fingerlänge/ Eigenmasse | Greifkraft 6 bar (N) | max. empfohlenes Werkstückgewicht (kg) |
| GHL 12 | M4 | 5 | 20 | 15 | 33 | M3 | 4 | 2.5 | 2.5 | 10 | 14.8 | M4 | 5 | 45/0.08 | 95 | 0.47 |
| GHL 16 | M5 | 5.5 | 25 | 20 | 43 | M4 | 4 | 3 | 3 | 12 | 20 | M5 | 5.5 | 65/0.16 | 170 | 0.85 |
| GHL 20 | M6 | 6 | 25 | 24 | 52 | M4 | 4 | 3 | 3 | 15 | 25 | M6 | 6 | 82/0.3 | 270 | 1.35 |

| Type | Stroke for finger (mm) | A | B | Z | W | K | q | t | d ₁ | d ₁₀ | d ₁₁ | Mass (kg) | Air consum for double stroke (cm ³) | Approx. time (s) | |
|--------|------------------------|----|-----|------|-----|-----|------|----|----------------|-----------------|-----------------|------------|---|------------------|-----------|
| Typ | Hub pro Finger (mm) | A | B | Z | W | K | q | t | d ₁ | d ₁₀ | d ₁₁ | Masse (kg) | Luftverbrauch pro Doppelhub (cm ³) | Schließzeit (s) | |
| | | | | | | | | | | | | | | öffnen | schließen |
| GHL 12 | 6 | / | 26 | 18 | 38 | 52 | 9 | / | ? | 28 | 42 | 0.15 | 3.5 | 0.05 | 0.05 |
| | 12 | / | 42 | 21 | 54 | 68 | 4.5 | 12 | 16.5 | 44 | 58 | 0.19 | 6.3 | 0.08 | 0.08 |
| | 24 | 26 | 78 | 27 | 90 | 104 | 4.5 | 18 | 22.5 | 80 | 94 | 0.28 | 11.9 | 0.14 | 0.14 |
| GHL 16 | 8 | / | 38 | 25.4 | 52 | 72 | 5.2 | 15 | 20.2 | 36 | 57.5 | 0.35 | 9 | 0.06 | 0.06 |
| | 16 | / | 60 | 29.4 | 74 | 94 | 5.74 | 18 | 23.7 | 58 | 79.5 | 0.45 | 15.6 | 0.09 | 0.09 |
| | 32 | 36 | 108 | 37.4 | 122 | 142 | 5.7 | 26 | 31.7 | 106 | 127.5 | 0.65 | 28.9 | 0.16 | 0.16 |
| GHL 20 | 10 | / | 38 | 31.4 | 56 | 86 | 7.7 | 16 | 23.7 | 40 | 71 | 0.65 | 16 | 0.07 | 0.07 |
| | 20 | / | 66 | 36.4 | 84 | 114 | 8.2 | 20 | 28.2 | 68 | 99 | 0.85 | 28.8 | 0.1 | 0.1 |
| | 40 | 42 | 126 | 46.4 | 144 | 174 | 8.2 | 30 | 38.2 | 128 | 159 | 1.25 | 54.6 | 0.16 | 0.16 |

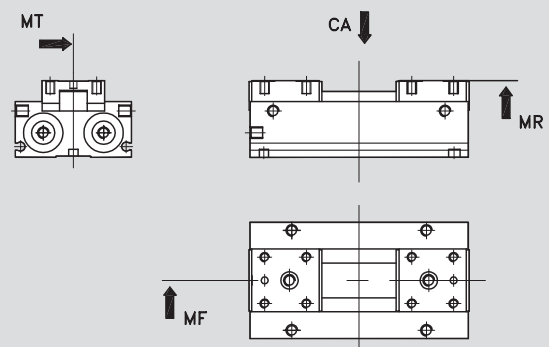
Transportable weight calculated with $\mu=0.1$ and $f_s=2$. With form-fit gripping mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar. Finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar Eigenmasse in Kg.

Allowed load data

| Type Typ | CA (N) | MF (Nm) | MR (Nm) | MT (Nm) |
|-------------|--------|---------|---------|---------|
| GHL 12 | 95 | 0.7 | 0.7 | 1.4 |
| GHL 16 | 175 | 1.35 | 1.35 | 2.8 |
| GHL 20 | 290 | 2 | 2 | 3.9 |

Maximal zul. Kräfte und Momente am Finger



2-finger parallel gripper pneumatic - series GHL 2-Finger-Parallelgreifer pneumatisch - Typ GHL

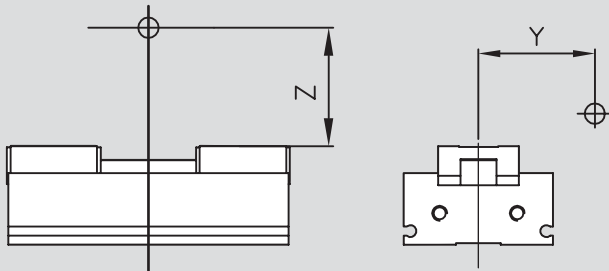
Ordering example

Bestellbeispiel

| Type | Stroke for finger |
|------|-------------------|
| Typ | Hub pro Finger |
| GHL | 8 |

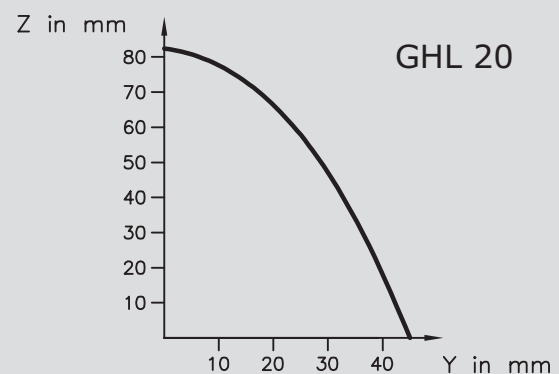
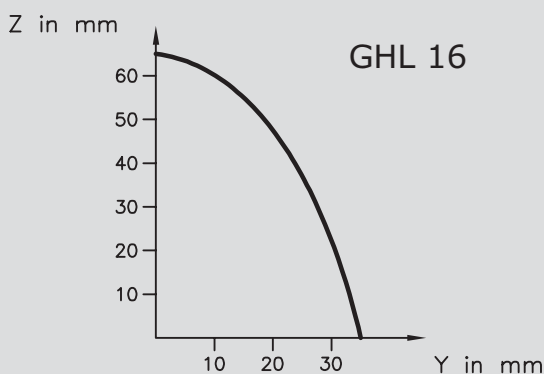
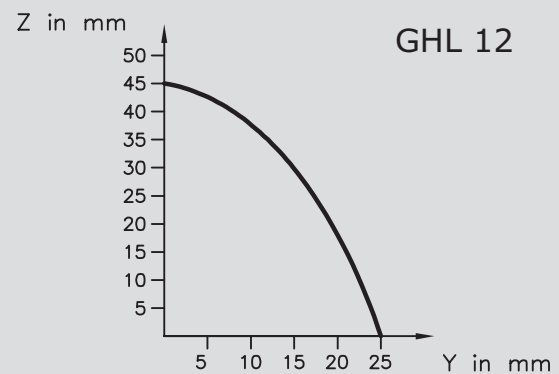
Maximum permitted finger offset

Diagramm der empfohlenen Hebel und Fingerlängen



Z max: max lenght of the fingers with terminals inside dimensions of the housing

Z max: Maximale Länge der Finger mit klemmen innerhalb der Dimensionen des Gehäuses



2-finger parallel gripper pneumatic - series PEP 2-Finger-Parallelgreifer pneumatisch - Typ PEP



Technische Eigenschaften:

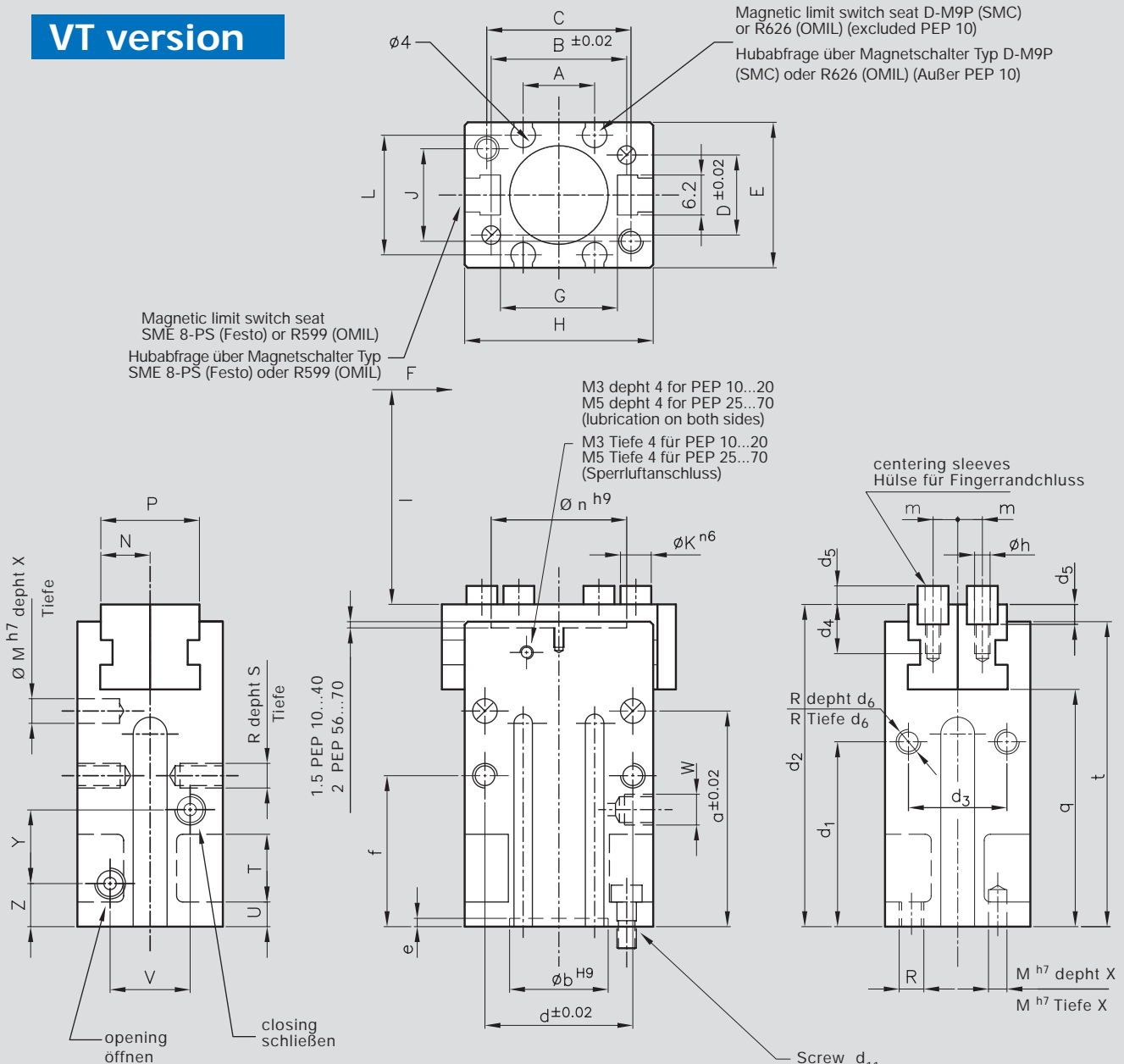
- Betriebsdruck: 3 bis 8 bar
- Wiederholgenauigkeit: PEP 10...40 0.02mm; PEP 56...70 0.03mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Kinematik: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Für Innen-und Außengreifen geeignet
- Schutzart IP40
- 24 Monate Garantie

Technical data:

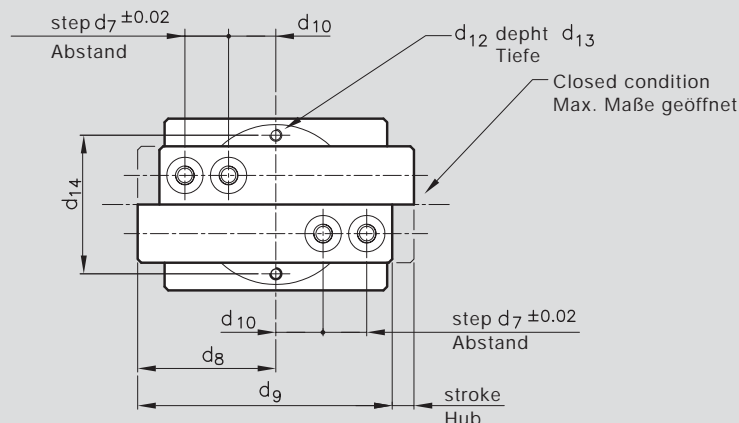
- Range of operating pressure : 3 -8 bar
- Repeatability accuracy: PEP 10...40 0.02mm; PEP 56...70 0.03mm over 100 cycles
- Operating temperature: from -10°C to 90°C; version up to 130° upon request
- Operating principle: wedge-hook kinematics
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Suitable for internal/external gripping
- Rating IP 40
- Warranty 24 months

2-finger parallel gripper pneumatic - series PEP 2-Finger-Parallelgreifer pneumatisch - Typ PEP

VT version



| Type | Code 1 | | Code 2 | |
|--------|----------------|----------------|----------------|----------------|
| | d ₈ | d ₉ | d ₈ | d ₉ |
| Typ | Version 1 | | Version 2 | |
| | d ₈ | d ₉ | d ₈ | d ₉ |
| PEP 10 | 14.5 | 27 | 15 | 27.5 |
| PEP 16 | 19 | 35 | 21 | 37 |
| PEP 20 | 26 | 47 | 29.5 | 50.5 |
| PEP 25 | 33 | 59 | 36.5 | 62.5 |
| PEP 32 | 41 | 71 | / | / |
| PEP 40 | 51 | 87 | / | / |
| PEP 56 | 72.5 | 121.5 | / | / |
| PEP 70 | 94 | 156.5 | / | / |



2-finger parallel gripper pneumatic - series PEP 2-Finger-Parallelgreifer pneumatisch - Typ PEP

| Type Typ | A | B | C | D | E | G | H | J | L | M | N | P | R | S | T | U | V | Z | Y | X | K | W | a |
|-------------|------|------|-----|------|------|------|------|----|------|---|-----|------|-----|----|----|----|----|-----|------|----|----|-----|----|
| PEP 10 | / | 15.2 | 18 | 10.4 | 16.4 | 12.6 | 23 | 12 | / | 2 | 5.8 | 11.6 | M3 | 5 | 11 | 4 | 11 | 6.5 | 12.5 | 3 | 4 | M3 | 18 |
| PEP 16 | 11.6 | 22 | 22 | 13 | 23.6 | 19 | 30.6 | 15 | 19.4 | 3 | 8 | 16 | M4 | 8 | 11 | 4 | 13 | 7 | 12 | 3 | 5 | M5 | 35 |
| PEP 20 | 14 | 33.6 | 32 | 15 | 27.6 | 23.2 | 42 | 18 | 23.4 | 4 | 9.5 | 19 | M5 | 10 | 14 | 5 | 15 | 7.5 | 15.5 | 5 | 6 | M5 | 41 |
| PEP 25 | 19 | 43.6 | 40 | 20 | 33.6 | 28.4 | 52 | 22 | 26.6 | 4 | 11 | 22 | M6 | 14 | 15 | 5 | 20 | 9.3 | 14.7 | 5 | 8 | M5 | 43 |
| PEP 32 | 24 | 46 | 46 | 24 | 40 | 37 | 60 | 26 | 37 | 5 | 13 | 26 | M6 | 16 | 21 | 7 | 24 | 11 | 21 | 5 | 8 | M5 | 54 |
| PEP 40 | 29.4 | 58 | 56 | 28 | 48 | 45.8 | 72 | 32 | 45.8 | 5 | 16 | 32 | M8 | 16 | 26 | 10 | 28 | 11 | 29 | 5 | 12 | M5 | 65 |
| PEP 56 | 30 | 82 | 82 | 48 | 64 | 60 | 98 | 48 | 60 | 6 | 19 | 38 | M10 | 18 | 29 | 10 | 21 | 10 | 37 | 9 | 12 | 1/8 | 44 |
| PEP 70 | 34 | 106 | 106 | 60 | 79 | 75 | 125 | 60 | 75 | 8 | 23 | 46 | M12 | 18 | 40 | 14 | 40 | 12 | 53 | 12 | 15 | 1/8 | 62 |

| Type Typ | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₁₀ | d ₁₁ | d ₁₂ | d ₁₃ | d ₁₄ | e | f | h | l | m | n | q | t |
|-------------|----|-----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----|------|------|----|-----|------|-------|------|
| PEP 10 | 11 | 16 | 27 | 45 | 11.4 | 7 | 3 | 6 | 5 | 4.5 | M2.2 | / | / | / | 2 | 23 | M2 | 10 | 2.8 | / | 32 | 42.5 |
| PEP 16 | 17 | 24 | 30 | 52.3 | 16 | 8 | 3 | 5 | 6 | 6.5 | M3 | M1.8 | 5 | 20 | 2 | 24.5 | M2.5 | 15 | 4 | 22.6 | 38.5 | 49.5 |
| PEP 20 | 21 | 30 | 35 | 64.8 | 18.6 | 10 | 4 | 10 | 8 | 8.5 | M4 | M2 | 6 | 23.6 | 3 | 29 | M3 | 20 | 4.5 | 26.6 | 47.5 | 62 |
| PEP 25 | 26 | 36 | 36.5 | 77.7 | 22 | 12 | 4 | 10 | 10 | 10 | M5 | M2.5 | 7 | 27.6 | 3.5 | 30 | M4 | 20 | 5.5 | 32 | 55.2 | 74.7 |
| PEP 32 | 34 | 46 | 48 | 84 | 26 | 12 | 4 | 10 | 12 | 12 | M5 | M3 | 8 | 33 | 4 | 40 | M4 | 25 | 6.5 | 38 | 58.5 | 80 |
| PEP 40 | 42 | 56 | 58 | 103 | 32 | 18 | 6 | 13 | 16 | 12 | M6 | M4 | 10 | 40 | 4 | 49 | M6 | 25 | 8 | 46 | 70 | 99 |
| PEP 56 | / | 80 | / | 127 | / | 18 | 5 | / | 16X2 | 9 | M8 | M5 | 12 | 51 | / | 58 | M6 | 30 | 10 | 60 | 80 | 125 |
| PEP 70 | / | 106 | / | 170 | / | 21 | 6 | / | 20X2 | 12.5 | M10 | M6 | 13 | 62 | / | 80 | M8 | 40 | 11 | 75 | 108.5 | 167 |

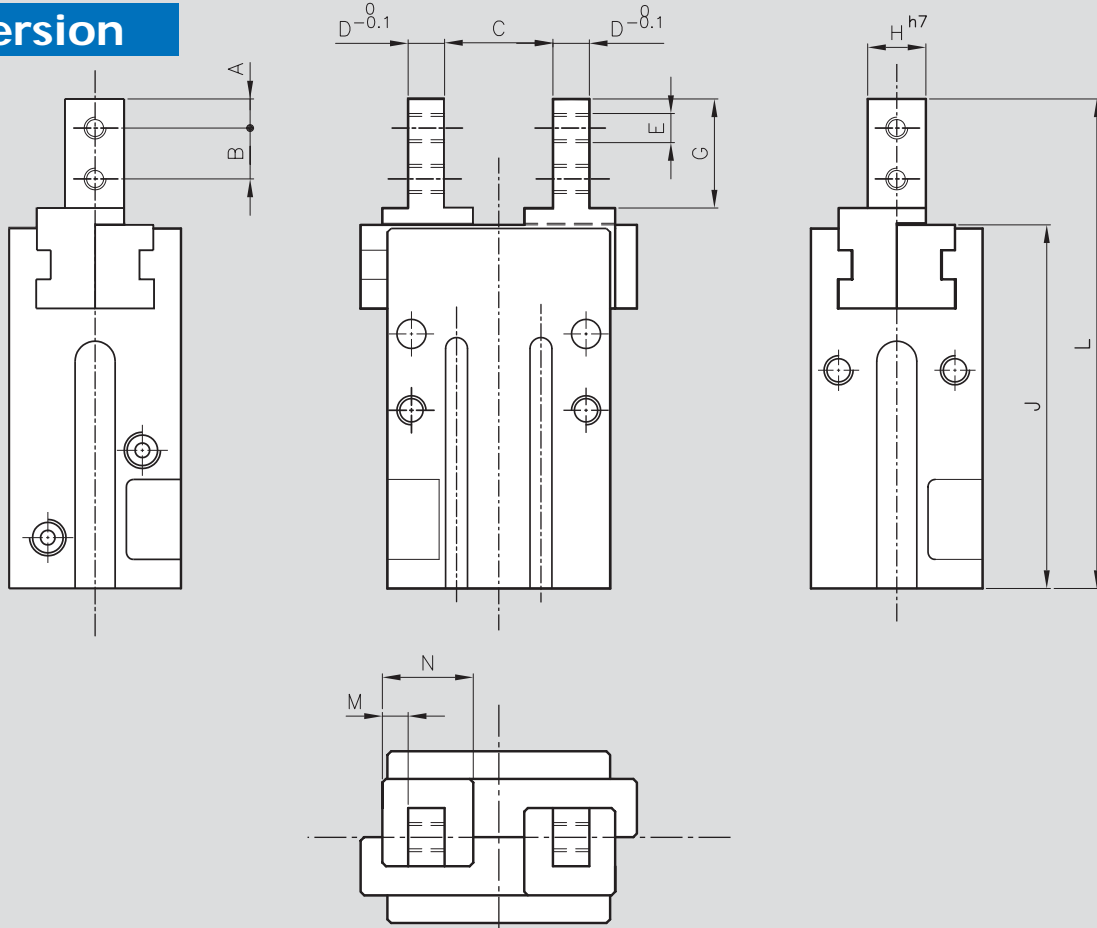
| Type Typ | Stroke for finger (mm) | | Gripping force at 6 bar (N) | | Total air for double stroke consumed (cm ³) Luftverbrauch pro Doppelhub (cm ³) | Moment of inertia (Kgcm ²) Massenträgheitsmoment (Kgcm ²) | Mass (kg) Masse (kg) | Recommended weight of part for transport (kg) Max. empfohlenes Werkstückgewicht (kg) | | Approx. time (s) Schließzeit (s) | | Max finger length / weight Max. Fingerlänge/Eigenmasse |
|-------------|------------------------|--------|-----------------------------|--------|---|--|-------------------------|---|--------|-------------------------------------|---------|---|
| | code 1 | code 2 | code 1 | code 2 | | | | code 1 | code 2 | opening | closing | |
| PEP 10 | 2 | 3.5 | 30 | 16 | 0.45 | 0.027 | 0.055 | 0.15 | 0.08 | 0.03 | 0.03 | 25/0.015 |
| PEP 16 | 3 | 5.5 | 94 | 54 | 1.85 | 0.12 | 0.13 | 0.45 | 0.27 | 0.04 | 0.04 | 32/0.04 |
| PEP 20 | 5 | 8.5 | 150 | 86 | 4.8 | 0.36 | 0.23 | 0.75 | 0.43 | 0.05 | 0.05 | 42/0.08 |
| PEP 25 | 7 | 10.5 | 200 | 140 | 8.7 | 1.08 | 0.45 | 1 | 0.7 | 0.05 | 0.05 | 52/0.18 |
| PEP 32 | 11 | / | 290 | / | 19 | 2.44 | 0.75 | 1.5 | / | 0.06 | 0.06 | 60/0.38 |
| PEP 40 | 15 | / | 445 | / | 40.5 | 6 | 1.28 | 2.3 | / | 0.1 | 0.1 | 75/0.68 |
| PEP 56 | 23.5 | / | 950 | / | 130 | 22.3 | 2.6 | 4.8 | / | 0.15 | 0.15 | 100/1.42 |
| PEP 70 | 31.5 | / | 1440 | / | 266 | 71 | 5.2 | 7.3 | / | 0.25 | 0.25 | 125/2.35 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm distance at 6 bar finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar Eigenmasse in Kg.

2-finger parallel gripper pneumatic - series PEP 2-Finger-Parallelgreifer pneumatisch - Typ PEP

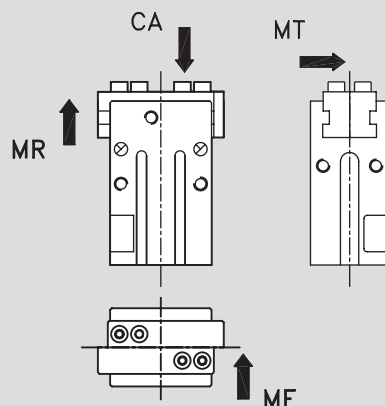
VS version



| Type Typ | A | B | C | D | E | G | H | J | L | M | N |
|-------------|---|-----|------|----|------|----|----|------|-------|-----|------|
| PEP 10 | 3 | 5.7 | 11.2 | 4 | M2.5 | 12 | 5 | 43.2 | 57 | 2.9 | 9.8 |
| PEP 16 | 4 | 7 | 14.9 | 5 | M3 | 15 | 8 | 50 | 67.3 | 3.5 | 12.5 |
| PEP 20 | 5 | 9 | 16.3 | 8 | M4 | 20 | 10 | 63 | 84.8 | 4.8 | 18 |
| PEP 25 | 6 | 12 | 19.3 | 10 | M5 | 25 | 12 | 75 | 102.7 | 6.3 | 22.5 |
| PEP 32 | 7 | 14 | 26 | 12 | M6 | 29 | 15 | 81 | 113 | 5 | 25 |
| PEP 40 | 9 | 17 | 30 | 14 | M8 | 36 | 18 | 100 | 139 | 7 | 30 |

Allowed load data

Maximal zul.
Kräfte und
Momente am
Finger

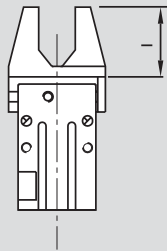


| Type Typ | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|-------------|-----------|------------|------------|------------|
| PEP 10 | 100 | 1 | 2 | 0.7 |
| PEP 16 | 180 | 2.5 | 4 | 2 |
| PEP 20 | 300 | 5 | 6.5 | 2.5 |
| PEP 25 | 350 | 10 | 8 | 4 |
| PEP 32 | 500 | 16 | 14 | 6 |
| PEP 40 | 600 | 18 | 16 | 10 |
| PEP 56 | 800 | 20 | 20 | 15 |
| PEP 70 | 1000 | 40 | 40 | 25 |

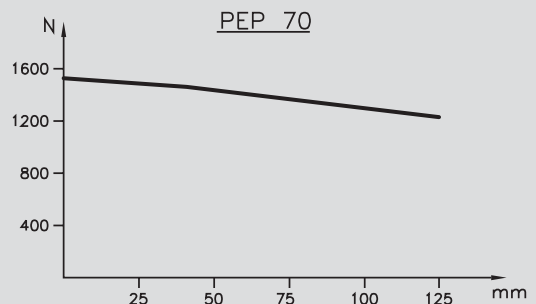
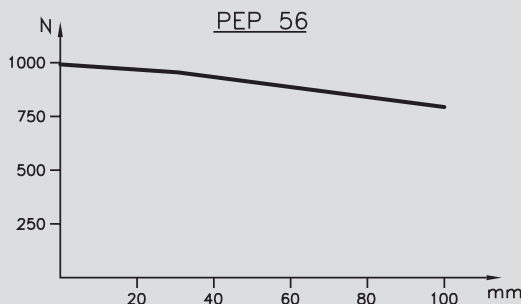
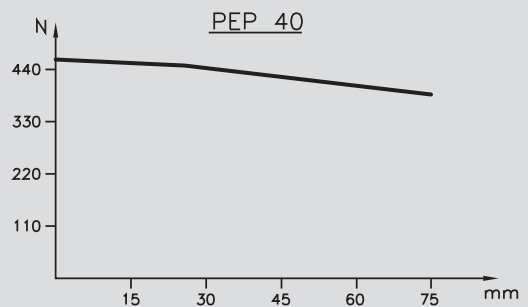
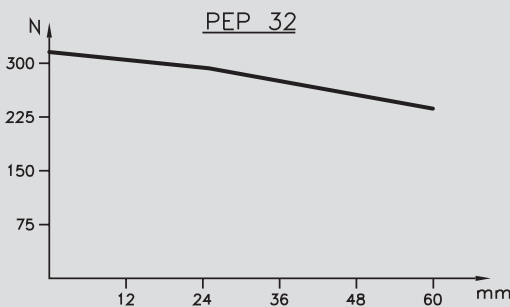
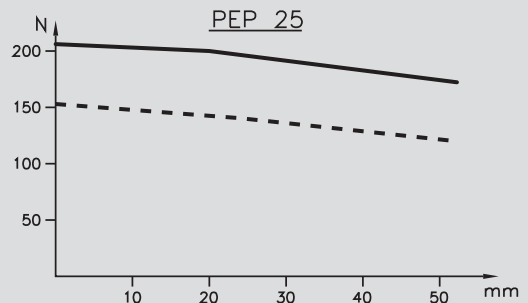
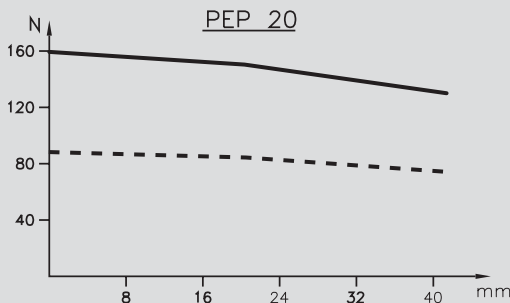
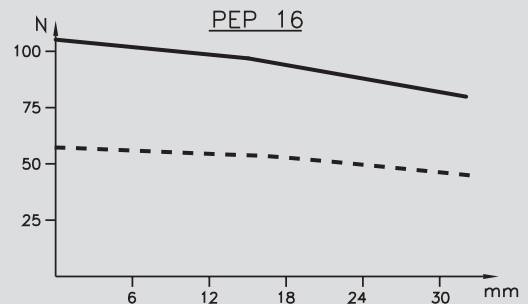
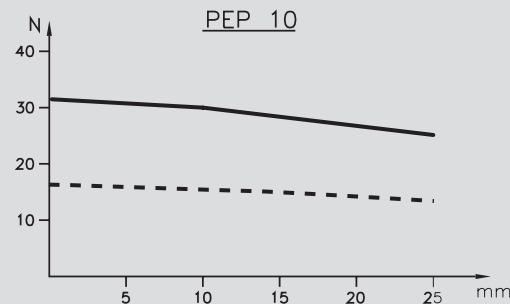
2-finger parallel gripper pneumatic - series PEP 2-Finger-Parallelgreifer pneumatisch - Typ PEP

Force at 6 bar in N at l mm

Greifkraft (N) in Abhängigkeit der Fingerlänge "l" (mm) bei 6 bar



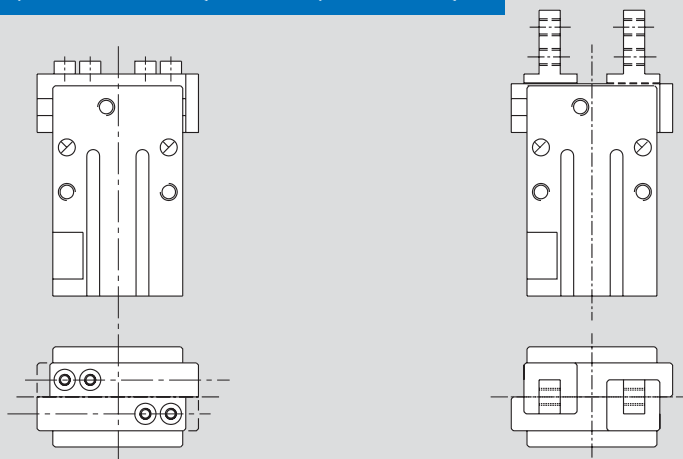
Code 1 Version 1 (solid line)
Code 2 Version 2 (dashed line)



2-finger parallel gripper pneumatic - series PEP 2-Finger-Parallelgreifer pneumatisch - Typ PEP

Safety device to preserve gripping force
code MC (closing) MA (opening)

Ausführung mit Greifkraftsicherung
Version MC (schließen) MA (öffnen)



| Type | Gripping force only with spring in N with fixed elasticity | | | | Gripping force only with spring in N with fixed elasticity | | | | Approx. gripping time (s) with spring only | |
|--------|--|-----|--------|-----|--|-----|--------|-----|--|------|
| | code 1 closing | | code 2 | | code 1 opening | | code 2 | | min | max |
| | min | max | min | max | min | max | min | max | min | max |
| Typ | Greifkraft über Feder abgesichert außen Spannen | | | | Greifkraft über Feder abgesichert Innen spannen | | | | Schließzeit nur über Feder (s) | |
| | Vers 1 | | Vers 2 | | Vers 1 | | Vers 2 | | min | max |
| | min | max | min | max | min | max | min | max | min | max |
| PEP 10 | 8.5 | 15 | 5 | 9 | 4 | 8.5 | 2.3 | 5 | 0.03 | 0.03 |
| PEP 16 | 27 | 39 | 15 | 22 | 4 | 23 | 2.3 | 13 | 0.03 | 0.04 |
| PEP 20 | 25 | 53 | 14 | 31 | 15 | 55 | 8.7 | 32 | 0.03 | 0.06 |
| PEP 25 | 47 | 74 | 33 | 52 | 30 | 50 | 21 | 35 | 0.03 | 0.07 |
| PEP 32 | 45 | 108 | / | / | 46 | 82 | / | / | 0.05 | 0.10 |
| PEP 40 | 60 | 140 | / | / | 61 | 125 | / | / | 0.08 | 0.14 |
| PEP 56 | 135 | 280 | / | / | / | / | / | / | 0.15 | 0.25 |
| PEP 70 | 200 | 370 | / | / | / | / | / | / | 0.22 | 0.40 |

NOTE: Minimum operating pressure 0.45 MPa. Upon request versions with lower operating pressure; in this case the force of the spring will be less.

Gripping force = Pneumatic gripping force + spring gripping force.

Gripping force is the arithmetic sum of the individual forces of the fingers.

Bemerkung: Betriebsdruck mindestens 4.5 bar

Die Greifkraft ergibt sich aus der pneumatischen Greifkraft + Federkraft

Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" bei 6 bar

Ordering example

Bestellbeispiel

| Type | Code 1 or 2 | For finger version indicate VS or VT | For safety device indicate MC or MA |
|--------|-------------|--------------------------------------|---|
| Typ | Vers 1 or 2 | Für Version Grundbacke VS oder VT | Greifkraftsicherung Ausführung MC oder MA |
| PEP 16 | C1 | VT | MC |

2-finger parallel gripperpneumatic - series SRO 2-Finger Parallelgreifer Pneumatisch - Typ SRO



Technische Eigenschaften:

- Betriebsdruck: 3 bis 8 bar
- Wiederholgenauigkeit: SRO-64...125 0.01mm; SRO-160...250 0.02mm über 100 Schaltspiele
- Betriebstemperaturbereich: von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Kinematik: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Für Innen-und Außengreifen geeignet
- Schutzart IP 67
- Druckluftanschlüsse: über die Seitenflächen-Grundflächen
- 24 Monate Garantie

Technical data:

- Range of operating pressure : 3 -8 bar
- Repeatability accuracy: SRO-64...125 0.01mm; SRO-160...250 0.02mm over 100 cycles
- Operating temperature: from -10°C to 90°C; version up to 130° upon request
- Operating principle: wedge-hook kinematics
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Suitable for internal/external gripping
- Rating IP 67
- Air connections: sides and base
- Warranty 24 months

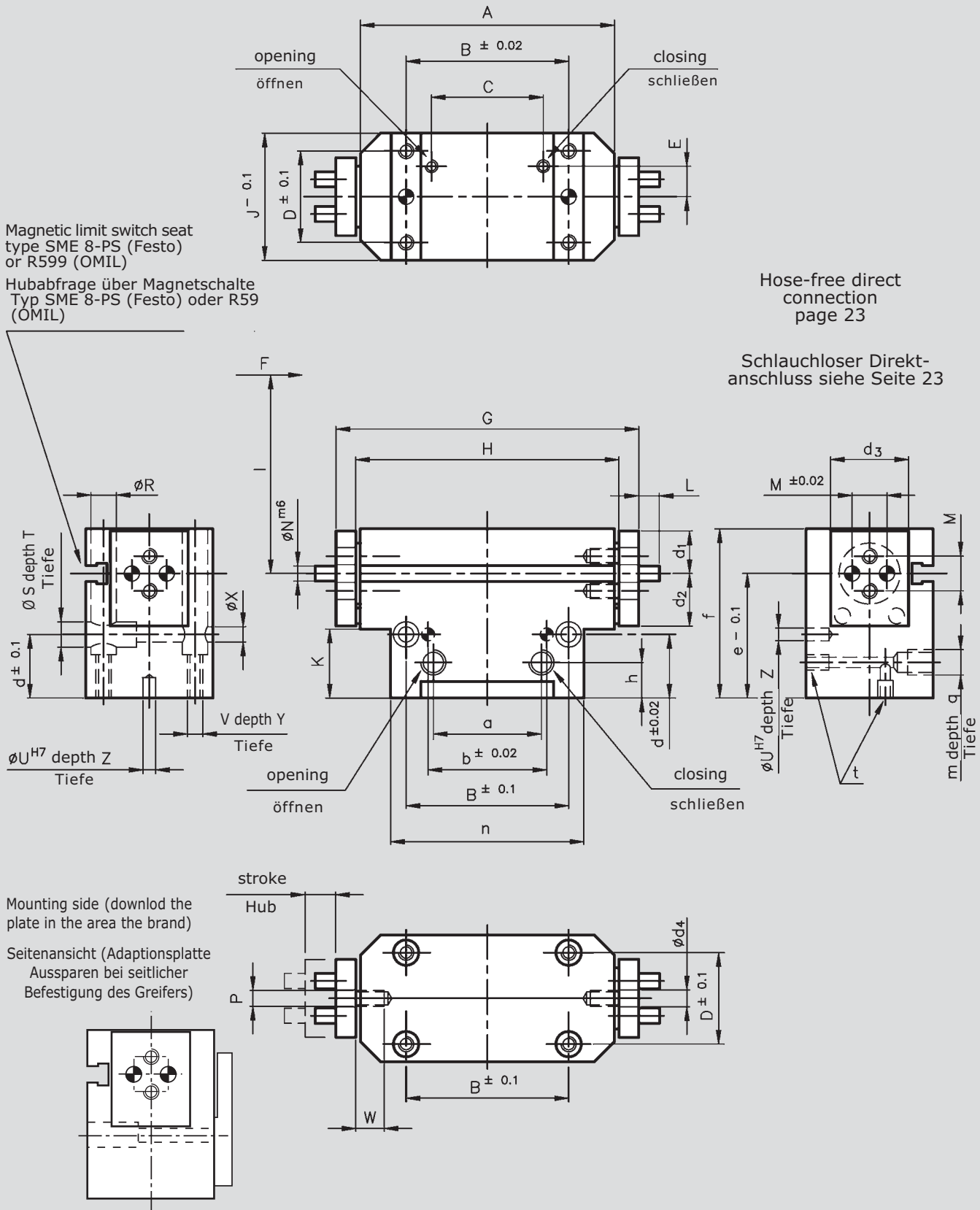
2-finger parallel gripperpneumatic - series SRO 2-Finger Parallelgreifer Pneumatisch - Typ SRO

Magnetic limit switch seat
type SME 8-PS (Festo)
or R599 (OMIL)

Hubabfrage über Magnetschalter
Typ SME 8-PS (Festo) oder R59
(OMIL)

Hose-free direct
connection
page 23

Schlauchloser Direkt-
anschluss siehe Seite 23



Mounting side (download the
plate in the area the brand)

Seitenansicht (Adaptionsplatte
Ausparen bei seitlicher
Befestigung des Greifers)

2-finger parallel gripperpneumatic - series SRO 2-Finger Parallelgreifer Pneumatisch - Typ SRO

| Type Typ | A | B | C | D | E | G | H | J | L | M | N | P | R | S | T | U | V | Z | Y | X | K | W | a |
|-------------|-----|-----|-----|----|----|-----|-----|-----|----|----|----|-----|-----|-----|----|----|-----|----|------|-----|----|----|-----|
| SRO 64 | 74 | 43 | 28 | 28 | 8 | 88 | 77 | 38 | 4 | 10 | 4 | M5 | 7.5 | 7.5 | 12 | 4 | M5 | 5 | 14.5 | 4.5 | 13 | 9 | 30 |
| SRO 80 | 89 | 53 | 36 | 34 | 9 | 105 | 92 | 44 | 5 | 14 | 5 | M5 | 7.5 | 9 | 15 | 4 | M5 | 8 | 13 | 5.5 | 23 | 11 | 39 |
| SRO 100 | 108 | 67 | 44 | 40 | 13 | 126 | 111 | 52 | 6 | 16 | 6 | M6 | 9.5 | 11 | 18 | 5 | M6 | 8 | 21 | 6.5 | 23 | 11 | 48 |
| SRO 125 | 135 | 81 | 56 | 46 | 14 | 154 | 138 | 62 | 7 | 18 | 8 | M8 | 11 | 14 | 25 | 6 | M8 | 10 | 22 | 9 | 26 | 15 | 60 |
| SRO 160 | 168 | 102 | 70 | 58 | 12 | 190 | 172 | 74 | 8 | 22 | 8 | M8 | 11 | 14 | 35 | 6 | M8 | 10 | 21 | 9 | 32 | 15 | 76 |
| SRO 180 | 190 | 120 | 76 | 60 | 14 | 216 | 194 | 80 | 10 | 26 | 8 | M10 | 14 | 17 | 45 | 8 | M10 | 10 | 27 | 11 | 50 | 18 | 80 |
| SRO 200 | 210 | 130 | 86 | 68 | 20 | 240 | 214 | 90 | 12 | 28 | 10 | M10 | 17 | 19 | 50 | 10 | M12 | 12 | 33 | 13 | 60 | 24 | 90 |
| SRO 250 | 260 | 164 | 112 | 90 | 28 | 292 | 264 | 120 | 12 | 48 | 10 | M12 | 19 | 25 | 65 | 12 | M16 | 18 | 45 | 17 | 63 | 24 | 118 |

| Type Typ | b | d | d ₁ | d ₂ | d ₃ | d ₄ | e | f | h | l | m | n | q | t | Stroke for finger (mm) Hub pro Finger (mm) |
|-------------|-----|----|----------------|----------------|----------------|----------------|------|-----|----|----|-----|-----|----|----|---|
| SRO 64 | 22 | 19 | 14 | 21 | 25 | 4.2 | 34 | 49 | 11 | 23 | M5 | 52 | 5 | M3 | 6 |
| SRO 80 | 39 | 21 | 18 | 19 | 30 | 6 | 43.5 | 62 | 11 | 28 | M5 | 64 | 6 | M5 | 8 |
| SRO 100 | 48 | 26 | 20 | 22 | 34 | 7 | 47 | 68 | 15 | 34 | 1/8 | 80 | 7 | M5 | 10 |
| SRO 125 | 58 | 31 | 27 | 30 | 40 | 9 | 56 | 84 | 16 | 38 | 1/8 | 100 | 7 | M5 | 13 |
| SRO 160 | 78 | 30 | 31 | 34 | 45 | 9 | 66 | 98 | 19 | 45 | 1/8 | 125 | 8 | M5 | 16 |
| SRO 180 | 80 | 40 | 34 | 35 | 50 | 13 | 85 | 120 | 20 | 50 | 1/8 | 140 | 8 | M5 | 20 |
| SRO 200 | 90 | 50 | 37 | 40 | 55 | 13 | 100 | 140 | 22 | 55 | 1/8 | 156 | 10 | M5 | 2 |
| SRO 250 | 124 | 60 | 49 | 57 | 74 | 13 | 120 | 170 | 31 | 60 | 1/8 | 200 | 10 | M5 | 30 |

| Type | Gripping force at 6 bar (N) | Air consum for double stroke (cm ³) | Moment of inertia (Kgcm ²) | Gripper weight (Kg) | Recommended weight of part for transport (kg) | Approx. time (s) | | Max finger length / weight |
|---------|-----------------------------|---|--|---------------------|---|------------------|-----------|-------------------------------|
| Typ | Greifkraft bei 6 bar (N) | Luftverbrauch pro Doppelhub (cm ³) | Massenträgheitsmoment (Kgcm ²) | Masse (Kg) | Max. empfohlenes Werkstückgewicht (kg) | öffnen | schließen | Max. Fingerlänge / Eigenmasse |
| SRO 64 | 200 | 9 | 1.95 | 0.45 | 1 | 0.03 | 0.03 | 64/0.3 |
| SRO 80 | 330 | 19 | 5 | 0.8 | 1.6 | 0.04 | 0.04 | 80/0.5 |
| SRO 100 | 510 | 39 | 11.7 | 1.3 | 2.5 | 0.06 | 0.06 | 100/0.95 |
| SRO 125 | 760 | 72 | 31.7 | 2.3 | 3.7 | 0.08 | 0.08 | 125/1.75 |
| SRO 160 | 1200 | 138 | 84,2 | 4 | 6 | 0.1 | 0.1 | 160/3 |
| SRO 180 | 1380 | 250 | 154 | 5.8 | 7 | 0.16 | 0.16 | 180/3.7 |
| SRO 200 | 1780 | 400 | 270.8 | 8.3 | 9 | 0.3 | 0.3 | 200/5.5 |
| SRO 250 | 3200 | 820 | 845.6 | 16.5 | 16 | 0.55 | 0.55 | 250/6.9 |

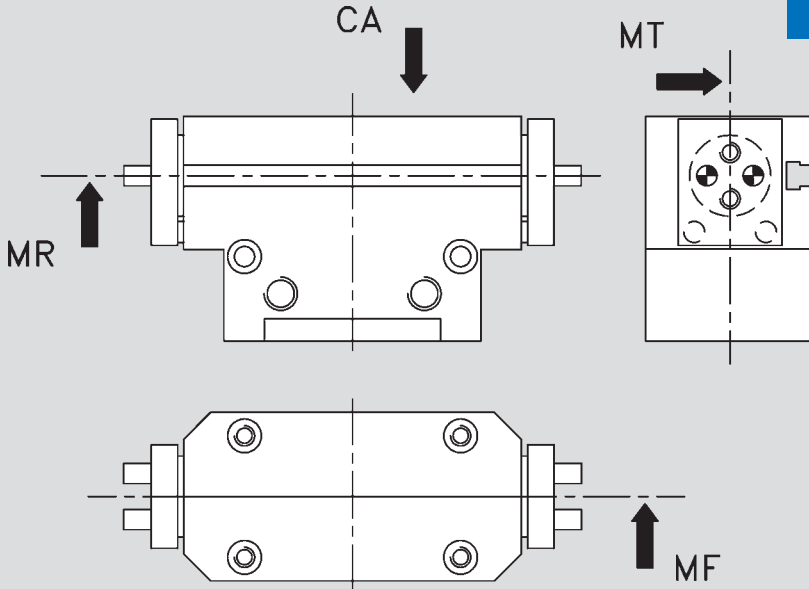
Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar Finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar Eigenmasse in Kg.

2-finger parallel gripper pneumatic - series SRO 2-Finger Parallelgreifer Pneumatisch - Typ SRO

Allowed load data

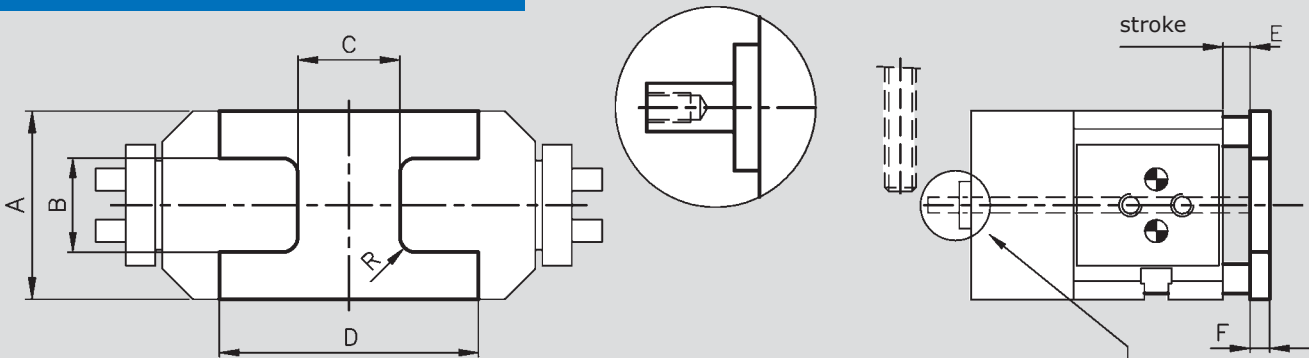
Maximal zul. Kräfte und Momente am Finger



| Type Typ | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|-------------|-----------|------------|------------|------------|
| SRO 64 | 200 | 8 | 15 | 5 |
| SRO 80 | 260 | 23 | 21 | 10 |
| SRO 100 | 330 | 25 | 26 | 15.5 |
| SRO 125 | 405 | 26 | 27 | 17 |
| SRO 160 | 475 | 28 | 33 | 24 |
| SRO 180 | 960 | 31 | 35 | 27 |
| SRO 200 | 1390 | 37 | 40 | 35 |
| SRO 250 | 1870 | 54 | 54 | 48 |

Spring packaged pressure plate - code P

Federnder Andrückstern P



upon request: passing rod (except SRO-64)
Auf Anfrage: Hubabfrage des Andrücksterns (außer SRO-64)

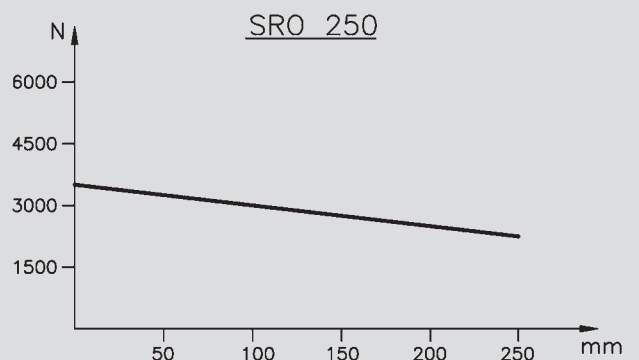
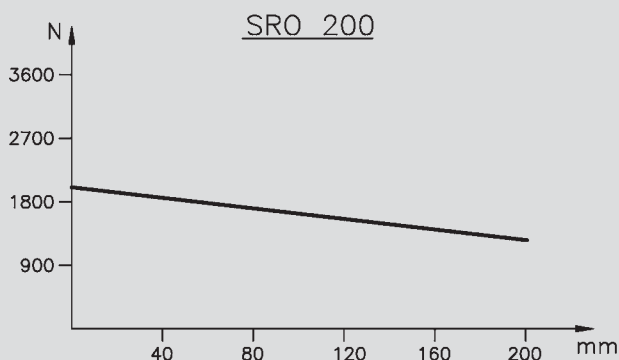
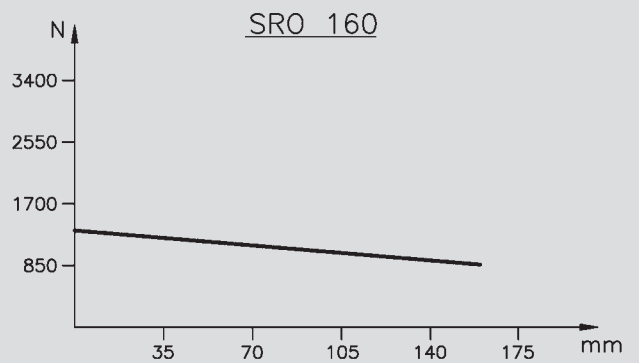
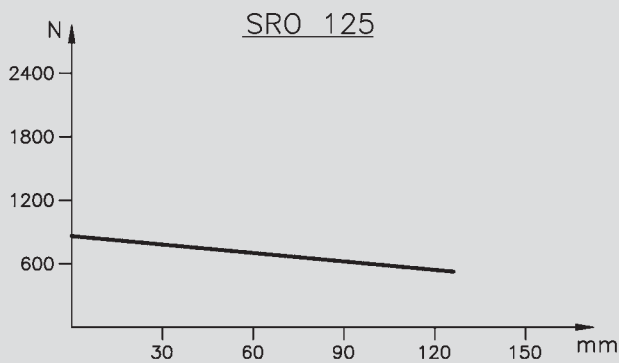
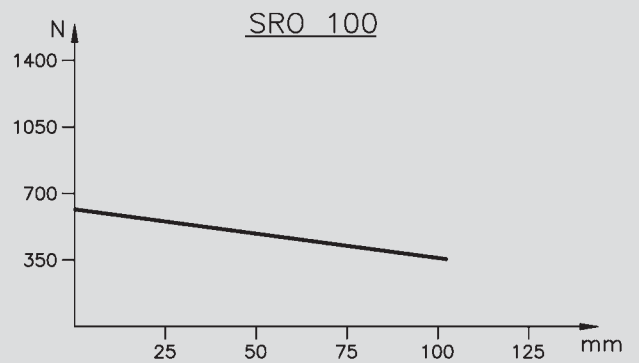
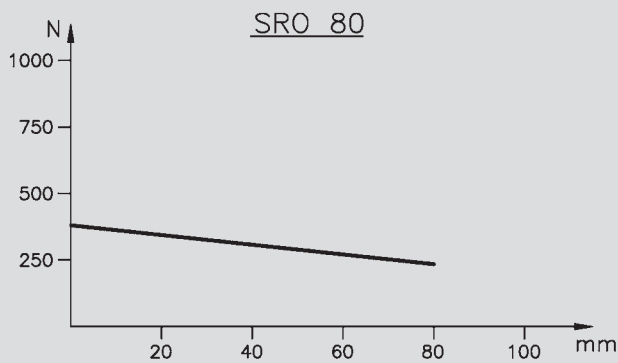
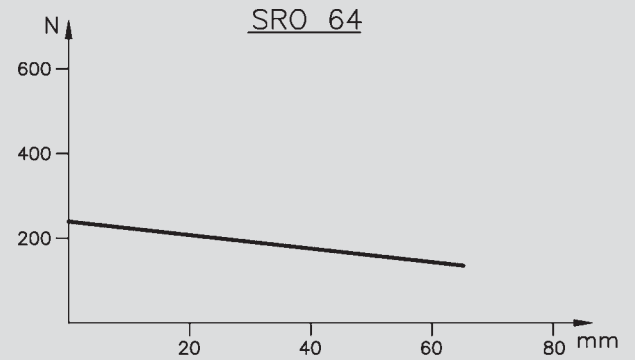
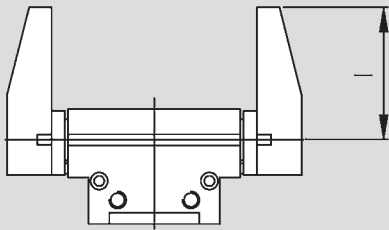
| Type | SRO | | | | | | | |
|-----------------|--------|--------|--------|----------|----------|----------|----------|----------|
| Typ | 64 | 80 | 100 | 125 | 160 | 180 | 200 | 250 |
| A | 38 | 44 | 52 | 62 | 74 | 80 | 90 | 120 |
| B | 16 | 22 | 26 | 32 | 42 | 44 | 48 | 60 |
| C | 20 | 24 | 26 | 38 | 48 | 60 | 66 | 88 |
| D | 53 | 62 | 80 | 98 | 120 | 140 | 154 | 196 |
| E | 4 | 4 | 5 | 6 | 6 | 8 | 8 | 10 |
| F | 5 | 6 | 7 | 8 | 8 | 9 | 9 | 12 |
| R | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 8 |
| Thrust Kraft | 11-30N | 38-45N | 50-80N | 100-240N | 165-410N | 210-380N | 250-330N | 380-510N |

NOTE: grippers with spring packaged pressure plate can be applied through lower holes only
Anmerkung: Der Greifer mit federnden Andrückstern kann nur über den unteren Kolben abgefragt werden

2-finger parallel gripperpneumatic - series SRO 2-Finger Parallelgreifer Pneumatisch - Typ SRO

Force at 6 bar in N at l mm

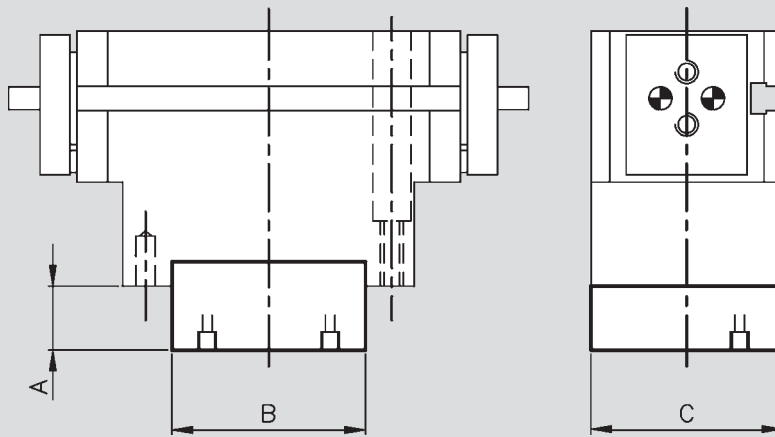
Greifkraft (N) in Abhängigkeit der Fingerlänge "l" (mm) bei 6 bar



2-finger parallel gripperpneumatic - series SRO 2-Finger Parallelgreifer Pneumatisch - Typ SRO

Gripping force safety device code MC (closing) MA (opening)

Maßangaben für Greifer mit Greifkraftsicherung Version
MC (schließen) MA (öffnen)



| Type | A | B | C | Mass (Kg) | Gripping force of spring only in (N) with fixed elasticity | | Approx. gripping time (s) with spring only |
|---------|----|-----|-----|------------|--|------|--|
| | | | | | min | max | |
| Typ | A | B | C | Masse (Kg) | Schließkraft über Feder in (N) beim Außenspannen | | Schließzeit nur über Feder (s) |
| | | | | | min | max | |
| SRO 64 | 14 | 35 | 38 | 0.5 | 80 | 180 | 0.035 |
| SRO 80 | 18 | 45 | 44 | 0.95 | 150 | 330 | 0.035 |
| SRO 100 | 21 | 54 | 52 | 1.6 | 200 | 420 | 0.06 |
| SRO 125 | 26 | 68 | 62 | 2.7 | 320 | 700 | 0.18 |
| SRO 160 | 30 | 84 | 74 | 4.7 | 520 | 1100 | 0.23 |
| SRO 180 | 32 | 92 | 80 | 6.4 | 600 | 1100 | 0.34 |
| SRO 200 | 39 | 110 | 90 | 9.5 | 680 | 1300 | 0.5 |
| SRO 250 | 45 | 140 | 120 | 18.5 | 1100 | 2000 | 1.2 |

NOTE: Minimum operating pressure 4,5 bar. Upon request versions with less operating pressure; in this case the spring force will be lower.

Gripping force = pneumatic gripping force + spring force.

The gripping force is the arithmetic sum of the individual forces of the fingers.

Bemerkung: Betriebsdruck mindestens 4.5 bar

Die Greifkraft ergibt sich aus der pneumatischen Greifkraft + Federkraft

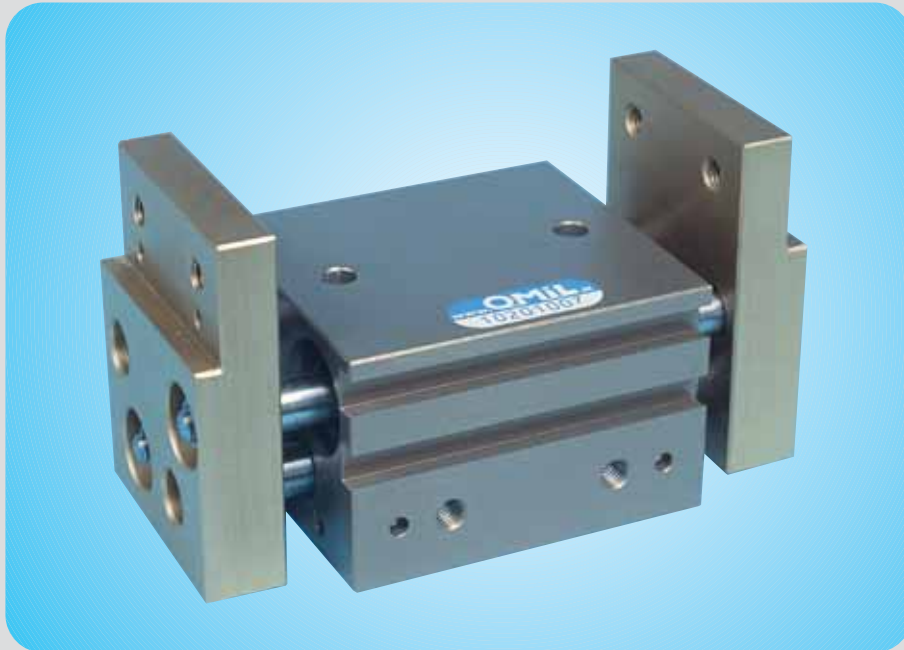
Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" bei 6 bar

Ordering example

Bestellbeispiel

| Type | For spring packaged pressure plate indicate code P | For safety device indicate MC or MA | For passing rod indicate C |
|---------|--|---|-----------------------------------|
| Typ | Für federnden Andrückstern P | Für federgestützte Greifkraftsicherung MC oder MA | Für Hubabfrage des Andrückstern C |
| SRO 100 | P | MC | / |

2-finger parallel gripper pneumatic - series PLE 2-finger Parallelgreifer pneumatisch - Typ PLE



Technische Eigenschaften:

- Betriebsdruck: 2 bis 8 bar
- Wiederholgenauigkeit: 0,1mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Kinematik: Zahnstangen Ritzel Synchronisation
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Sehr geeignet für unter intern/extern
- Schutzart IP54
- Druckluftanschlüsse: über die Seitenflächen-Grundflächen
- 24 Monate Garantie

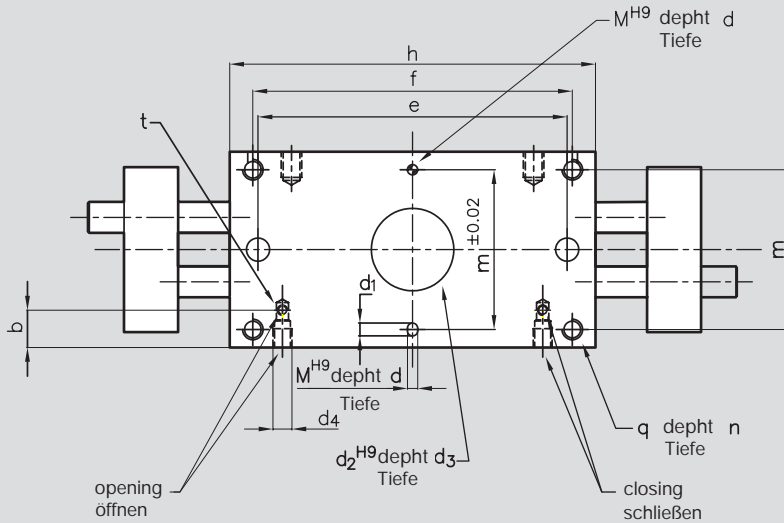
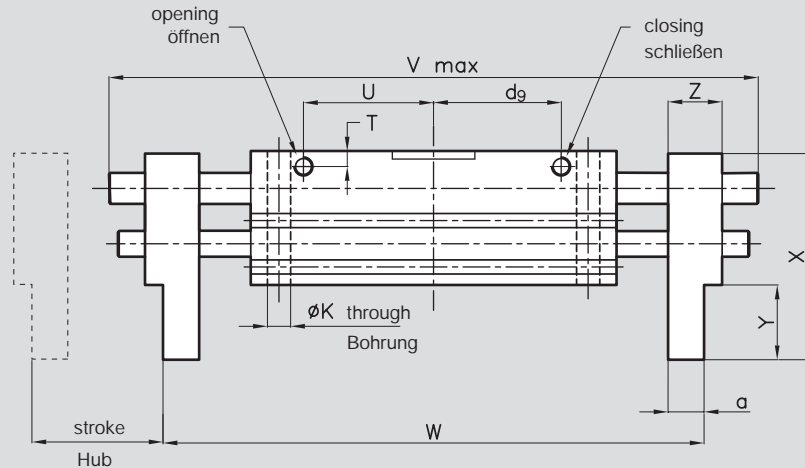
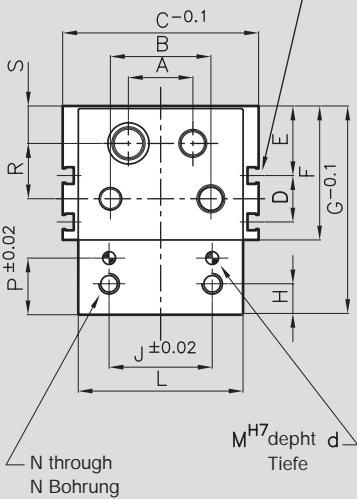
Technical data:

- Range of operating pressure : 2 - 8 bar
- Repeatability accuracy : 0.1 mm; over 100 cycles
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- Operating principle: fingers sliding, guided by rack and pinion for concentric gripping
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation: using compressed air filtered (10 µm), dry or lubricated
- Maintenance: maintenance-free up to 1.5 million cycles
- Suitable for internal/external gripping
- Rating IP 54
- Air connections: sides by sides
- Warranty 24 months

2-finger parallel gripper pneumatic - series PLE 2-finger Parallelgreifer pneumatisch - Typ PLE

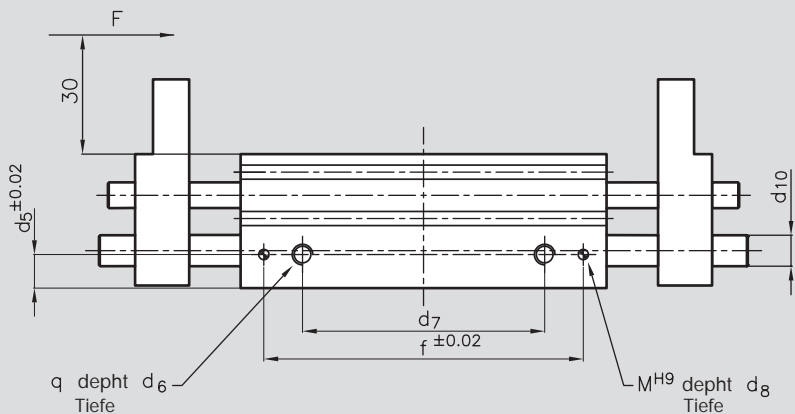
Magnetic limit switch seat
SME8-PS type of Festo R599 (OMIL)

Hubfrage über Magnetschalter Typ
SME 8-PS (Festo) oder R599 (OMIL)



Hose-free direct
connection page 23

Maße für schlauchlosen
Direktanschluss Seite 23



2-finger parallel gripper pneumatic - series PLE 2-finger Parallelgreifer pneumatisch - Typ PLE

| Type Typ | A | B | C | D | E | F | G | H | J | L | M | N | P | R | S | T | Z | Y | X | K | a |
|-------------|----|----|----|----|------|----|-----|----|----|----|---|-----|----|------|------|-----|----|----|------|-----|------|
| PLE 16 | 16 | 28 | 55 | 14 | 19 | 39 | 58 | 8 | 25 | 43 | 3 | M5 | 15 | 15 | 12 | 5.5 | 13 | 19 | 57.5 | 5.5 | 9 |
| PLE 20 | 22 | 34 | 65 | 12 | 26.5 | 46 | 70 | 10 | 30 | 54 | 4 | M6 | 18 | 18 | 14.5 | 6.5 | 17 | 24 | 69 | 6.6 | 12.5 |
| PLE 25 | 25 | 39 | 76 | 18 | 27 | 52 | 81 | 12 | 40 | 64 | 4 | M8 | 22 | 21.5 | 14.5 | 6 | 21 | 29 | 80 | 9 | 14 |
| PLE 32 | 27 | 42 | 82 | 29 | 31 | 68 | 100 | 15 | 50 | 70 | 6 | M10 | 24 | 29 | 16.5 | 6.5 | 24 | 32 | 99 | / | 15 |
| PLE 40 | 35 | 49 | 98 | 31 | 39 | 79 | 117 | 18 | 60 | 86 | 6 | M12 | 29 | 34.3 | 20.5 | 8.5 | 28 | 38 | 116 | / | 18 |

| Type | b | d | m | n | q | t | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₈ | d ₁₀ | Gripping force at 6 bar (N) | Recommended weight of part for transport (kg) |
|--------|------|---|----|----|-----|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------------------|---|
| Typ | b | d | m | n | q | t | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₈ | d ₁₀ | Greifkraft bei 6 bar (N) | Max. empfohlenes Werkstückgewicht (kg) |
| PLE 16 | 11.5 | 3 | 42 | 9 | M5 | M3 | 4 | 23 | 1.5 | M5 | 10 | 7 | 3 | 8 | 170 | 0.85 |
| PLE 20 | 12.5 | 4 | 52 | 11 | M6 | M3 | 5 | 27 | 1.5 | M5 | 11 | 7 | 3.5 | 10 | 270 | 1.3 |
| PLE 25 | 14.5 | 6 | 62 | 16 | M8 | M4 | 5 | 32 | 1.5 | M5 | 13 | 10 | 3 | 12 | 420 | 2.1 |
| PLE 32 | 15 | 8 | 64 | 16 | M8 | M5 | 7 | 35 | 2.5 | 1/8G | 14 | 10 | 5 | 16 | 700 | 3.4 |
| PLE 40 | 17 | 8 | 76 | 18 | M10 | M5 | 7 | 40 | 2.5 | 1/8G | 17 | 12 | 6 | 20 | 1100 | 4.1 |

| Type | Stroke for fingers | U | V | W | e | f | h | d ₇ | d ₉ | Mass (Kg) | Moment of inertia (Kgcm ²) | Approx. time (s) | | Max finger length / weight |
|--------|---------------------|------|-----|-----|-----|-----|-----|----------------|----------------|------------|--|------------------|--------------------|-----------------------------|
| Typ | Hub pro Finger (mm) | U | V | W | e | f | h | d ₇ | d ₉ | Masse (Kg) | Massenträgheitsmoment (Kgcm ²) | Schließzeit (s) | öffnen schließen | Max. Fingerlänge Eigenmasse |
| PLE 16 | 15 | 14 | 94 | 86 | 40 | 45 | 60 | 28 | 14 | 0.59 | 3.84 | 0.09 | 0.09 | 90/0.3 |
| | 30 | 29 | 153 | 128 | 70 | 75 | 90 | 58 | 29 | 0.8 | 9.7 | 0.15 | 0.15 | 90/0.3 |
| PLE 20 | 20 | 16.5 | 115 | 107 | 54 | 58 | 71 | 38 | 21 | 1.03 | 10.1 | 0.1 | 0.1 | 120/0.55 |
| | 40 | 37.5 | 196 | 147 | 96 | 100 | 113 | 80 | 42 | 1.5 | 24.2 | 0.15 | 0.15 | 120/0.55 |
| PLE 25 | 25 | 23.5 | 140 | 128 | 66 | 70 | 88 | 40 | 22.5 | 1.7 | 23.5 | 0.1 | 0.1 | 145/0.9 |
| | 50 | 50.5 | 245 | 210 | 120 | 124 | 142 | 94 | 49.5 | 2.6 | 81 | 0.15 | 0.15 | 145/0.9 |
| PLE 32 | 35 | 30 | 196 | 180 | / | 86 | 110 | 50 | 30 | 2.9 | 71 | 0.2 | 0.2 | 170/1.5 |
| | 60 | 54 | 295 | 228 | / | 134 | 158 | 98 | 54 | 3.8 | 139.4 | 0.3 | 0.3 | 170/1.5 |
| PLE 40 | 50 | 47 | 258 | 224 | / | 116 | 148 | 70 | 47 | 5.3 | 198 | 0.25 | 0.25 | 230/2.45 |
| | 80 | 76 | 376 | 282 | / | 174 | 206 | 128 | 76 | 6.85 | 381.6 | 0.4 | 0.4 | 230/2.45 |

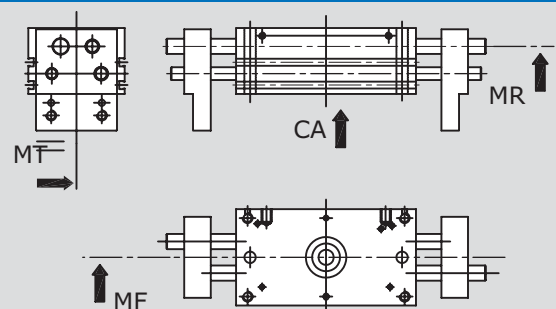
Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "I" mm distance at 6 bar Finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "I" in mm bei 6 bar Eigenmasse in Kg

Allowed load data

| Type Typ | CA (N) | MF (Nm) | MR (Nm) | MT (Nm) |
|-------------|--------|---------|---------|---------|
| PLE 16 | 100 | 5 | 5 | 15 |
| PLE 20 | 200 | 10 | 10 | 20 |
| PLE 25 | 260 | 10 | 10 | 20 |
| PLE 32 | 350 | 10 | 15 | 20 |
| PLE 40 | 500 | 20 | 25 | 25 |

Maximal zul. Kräfte und Momente am Finger



2-finger parallel gripper pneumatic - series PLE 2-finger Parallelgreifer pneumatisch - Typ PLE

Ordering example

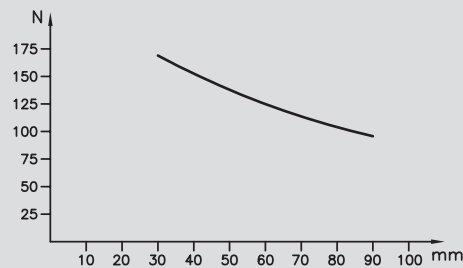
Bestellbeispiel

| Type | Stroke of finger |
|--------|------------------|
| Typ | Hub pro Finger |
| PLE 20 | 40 |

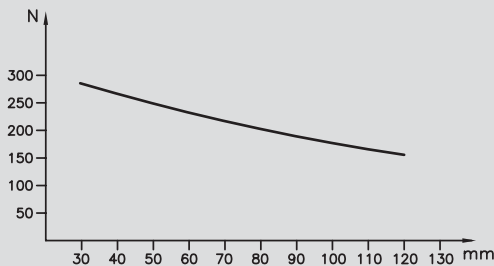
Force at 6 bar in N at l mm

Greifkraft (N) in Abhängigkeit der Fingerlänge "l" (mm) bei 6 bar

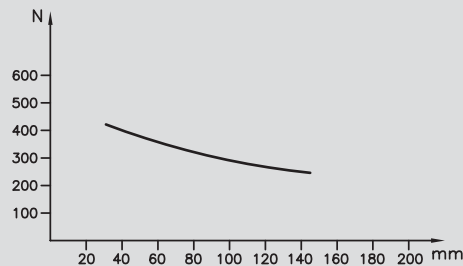
PLE 16



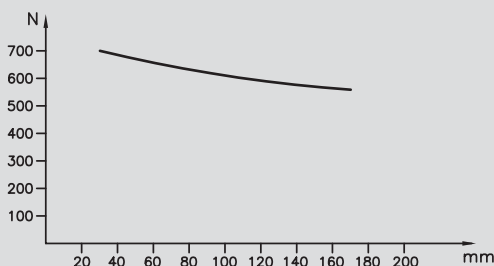
PLE 20



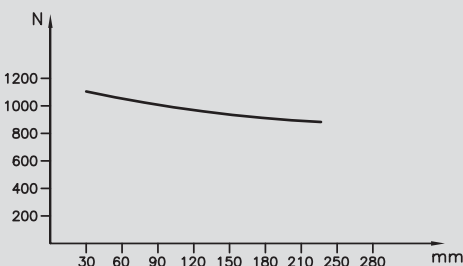
PLE 30



PLE 32



PLE 40



2-finger parallel gripper pneumatic - series GPL 2-Finger Parallelgreifer pneumatisch - Typ GPL



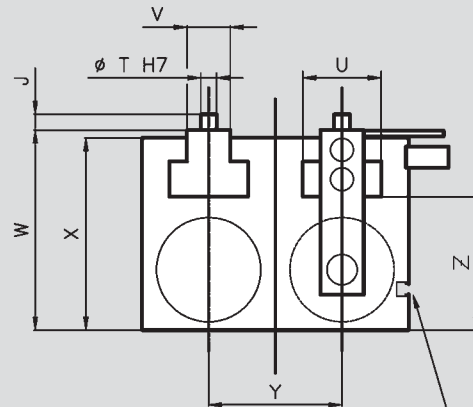
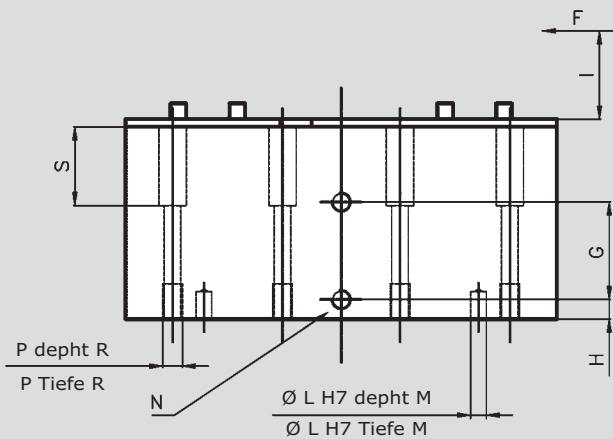
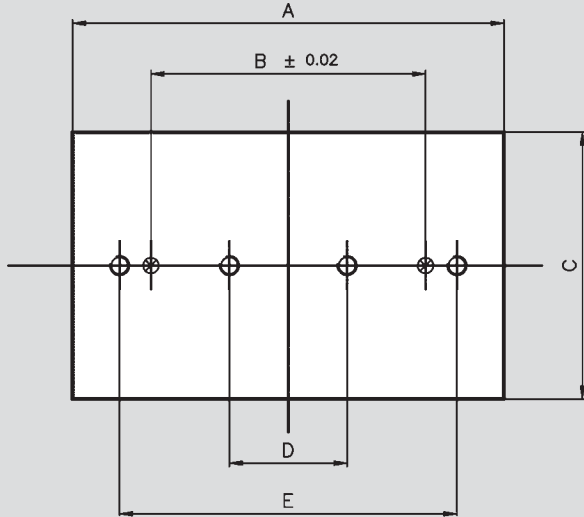
Technische Eigenschaften:

- Betriebsdruck: 2 bis 8 bar
- Wiederholgenauigkeit: 0,05mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Kinematik: Zahnstangen Ritzel Synchronisation, Grundbacken mit Flachführung
- Material: Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung: pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Sehr geeignet für unter intern/extern
- Schutzart IP40
- 24 Monate Garantie

Technical data:

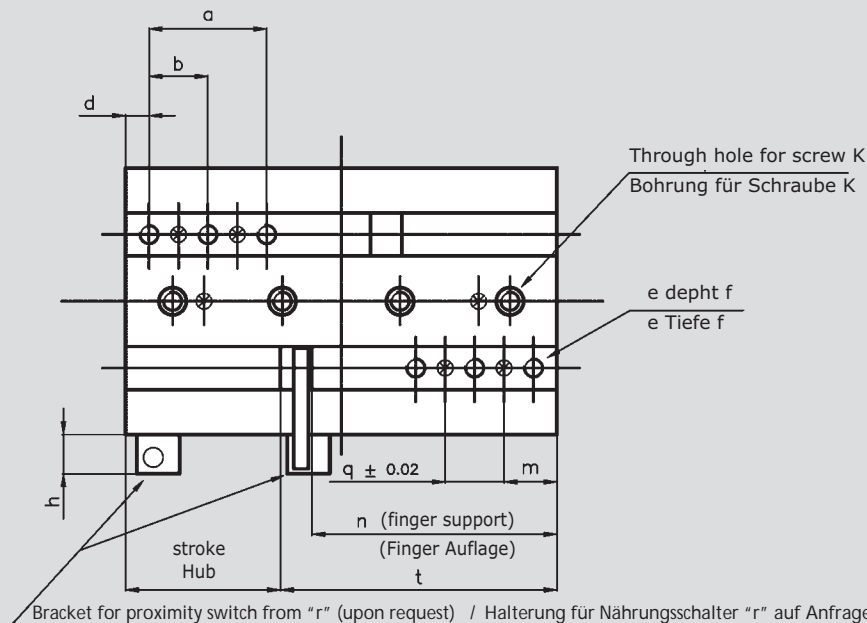
- Range of operating pressure: 2 - 8 bar
- Repeatability accuracy: 0.05 mm; over 100 cycles
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- Operating principle: fingers sliding, guided by rack and pinion for concentric gripping
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation: compressed air filtered (10µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Suitable for internal/external gripping
- Rating IP 40
- Warranty 24 months

2-finger parallel gripper pneumatic - series GPL 2-Finger Parallelgreifer pneumatisch - Typ GPL



Magnetic limit switch seat type SME 8-PS (Festo)
oder R599 (OMIL)

Hubafrage über Magnetschalter Typ SME 8-PS (Festo)
oder R599 (OMIL)



2-finger parallel gripper pneumatic - series GPL 2-Finger Parallelgreifer pneumatisch - Typ GPL

| Type Typ | C | D | G | H | L | M | N | P | R | S | T | U | V | Z | Y | X | W | J | K | a | b | d |
|-------------|-----|----|----|-----|---|----|-----|-----|----|----|---|----|----|----|----|----|-----|---|----|----|----|----|
| GPL 16 | 54 | 26 | 13 | 4.5 | 5 | 8 | M5 | M6 | 12 | 5 | 4 | 16 | 8 | 24 | 24 | 39 | 41 | 4 | M5 | 32 | 16 | 5 |
| GPL 25 | 79 | 34 | 22 | 6 | 6 | 10 | M5 | M8 | 14 | 6 | 5 | 22 | 13 | 36 | 38 | 54 | 57 | 5 | M6 | 36 | 18 | 6 |
| GPL 40 | 99 | 48 | 36 | 8 | 8 | 14 | 1/8 | M10 | 18 | 8 | 6 | 28 | 16 | 52 | 50 | 76 | 79 | 5 | M8 | 54 | 27 | 7 |
| GPL 60 | 136 | 60 | 48 | 10 | 8 | 14 | 1/8 | M10 | 18 | 40 | 8 | 40 | 22 | 68 | 68 | 98 | 102 | 8 | M8 | 60 | 30 | 12 |

| Type | e | f | h | l | m | q | r | Gripping force at 6 bar (N) | Recommended weight of part for transport (kg) | Max finger length/weight |
|--------|-----|----|----|----|------|----|---|-----------------------------|---|-----------------------------|
| Typ | e | f | h | l | m | q | r | Greikraft 6 bar (N) | Max. empfohlenes Werkstückgewicht (kg) | Max. Fingerlänge Eigenmasse |
| GPL 16 | M4 | 10 | 10 | 30 | 13 | 16 | 5 | 170 | 0.85 | 130/1 |
| GPL 25 | M5 | 11 | 15 | 40 | 15 | 18 | 8 | 460 | 2.3 | 160/2 |
| GPL 40 | M6 | 14 | 15 | 48 | 20.5 | 27 | 8 | 1050 | 5.3 | 210/2.8 |
| GPL 60 | M10 | 18 | 15 | 55 | 27 | 30 | 8 | 2400 | 12 | 270/3.9 |

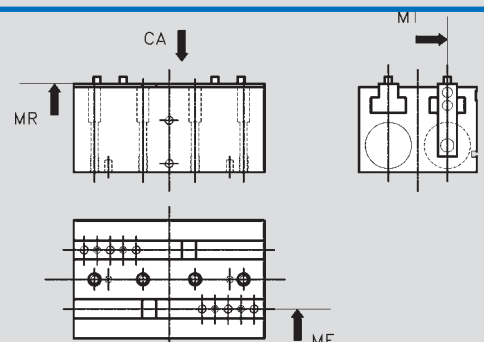
| Type | Cylinder and rod bore diameter | Stroke for finger (mm) | A | B | E | n | t | Gripper weight (Kg) | Moment of inertia (Kgcm ²) | Approx. time (s) open close |
|--------|--------------------------------|------------------------|-----|-----|-----|-----|-----|---------------------|--|---------------------------------------|
| Typ | Bohrung | Hub pro Finger (mm) | A | B | E | n | t | Masse (Kg) | Massenträgheitsmoment (Kgcm ²) | Schließzeit (s) öffnen schließen |
| GPL 16 | 16 x 8 | 20 | 76 | 46 | / | 47 | 56 | 0.6 | 3.2 | 0.25 0.25 |
| | | 40 | 116 | 46 | 78 | 67 | 76 | 0.8 | 8.2 | 0.3 0.3 |
| | | 60 | 156 | 86 | 118 | 87 | 96 | 0.95 | 16.2 | 0.35 0.35 |
| | | 80 | 196 | 126 | 158 | 107 | 116 | 1.2 | 31 | 0.4 0.4 |
| GPL 25 | 25 x 10 | 40 | 128 | 54 | 86 | 76 | 88 | 1.7 | 24 | 0.35 0.35 |
| | | 60 | 168 | 94 | 126 | 96 | 108 | 2 | 43 | 0.45 0.45 |
| | | 80 | 208 | 134 | 166 | 116 | 128 | 2.5 | 77.3 | 0.5 0.5 |
| GPL 40 | 38 x 14 | 40 | 132 | 90 | / | 79 | 92 | 3 | 51 | 0.4 0.4 |
| | | 60 | 172 | 90 | 128 | 99 | 112 | 3.6 | 89 | 0.5 0.5 |
| | | 80 | 212 | 130 | 168 | 119 | 132 | 4.3 | 147 | 0.55 0.55 |
| | | 100 | 252 | 170 | 208 | 139 | 152 | 5 | 229 | 0.65 0.65 |
| | | 150 | 352 | 170 | 208 | 189 | 202 | 7 | 585 | 0.85 0.85 |
| GPL 60 | 54 x 18 | 60 | 180 | 100 | 132 | 105 | 120 | 5.6 | 178.1 | 0.45 0.45 |
| | | 80 | 220 | 140 | 172 | 125 | 140 | 8 | 334.5 | 0.55 0.55 |
| | | 100 | 260 | 180 | 212 | 145 | 160 | 10.3 | 554.2 | 0.6 0.6 |
| | | 150 | 360 | 280 | 312 | 195 | 210 | 13 | 700 | 0.75 0.75 |
| | | 200 | 460 | 380 | 412 | 245 | 260 | 15.2 | 817.8 | 0.9 0.9 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar Finger weight in Kg. Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar Eigenmasse in Kg

Allowed load data

Maximal zul. Kräfte und Momente am Finger

| Type Typ | CA (N) | MF (Nm) | MR (Nm) | MT (Nm) |
|-------------|--------|---------|---------|---------|
| GPL 16 | 500 | 35 | 25 | 25 |
| GPL 25 | 950 | 95 | 45 | 35 |
| GPL 40 | 1100 | 105 | 65 | 55 |
| GPL 60 | 1400 | 110 | 85 | 70 |



2-finger parallel gripper pneumatic - series GPL 2-Finger Parallelgreifer pneumatisch - Typ GPL

Ordering example

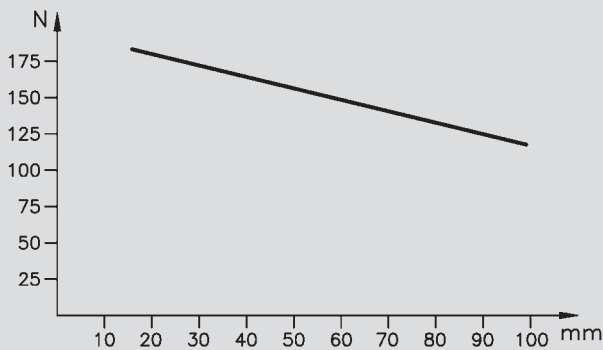
Bestellbeispiel

| Type | Stroke for finger (mm) | For proximity and camme buckets indicate B |
|--------|------------------------|--|
| Typ | Hub pro Finger (mm) | Halterung für währungschalter B |
| GPL 40 | 40 | / |

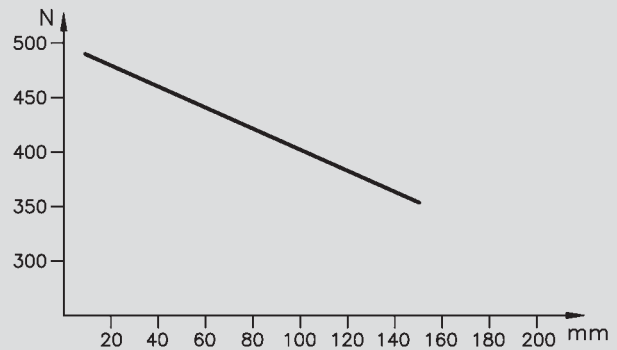
Force at 6 bar in N at l mm

Greifkraft (N) in Abhängigkeit der Fingerlänge "l" (mm) bei 6 bar

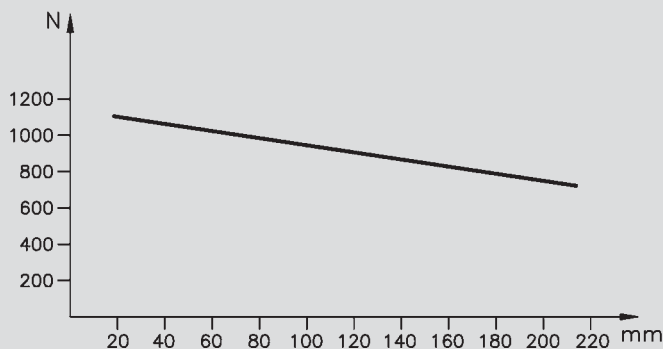
GPL 16



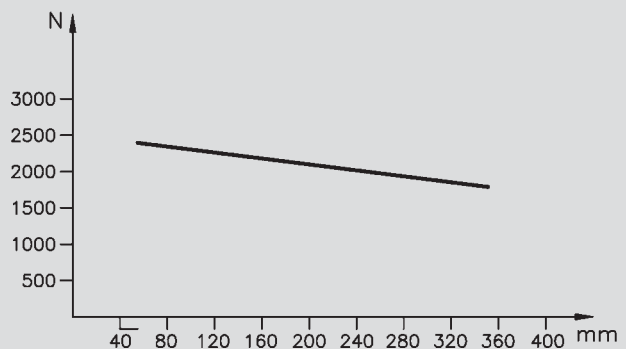
GPL 25



GPL 40



GPL 60



2-finger parallel gripper pneumatic - series GPRS 2-Finger Parallelgrefer pneumatisch - Typ GPRS



Technische Eigenschaften:

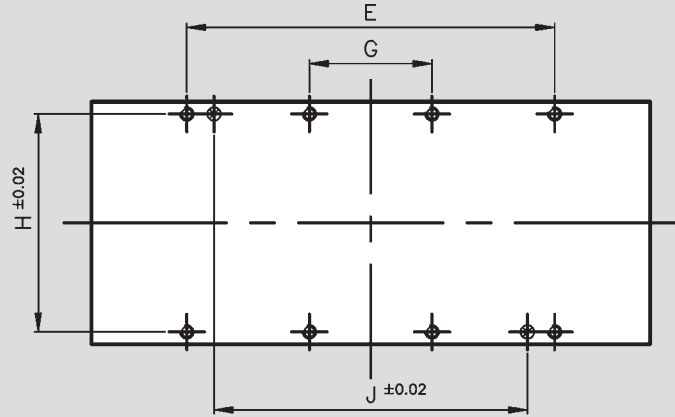
- Betriebsdruck: 2 bis 8 bar
- Wiederholgenauigkeit: 0,05mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Kinematik: Zahnstangen Ritzel Synchronisation, Grundbacken mit lineargeführt
- Material: Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung: pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Sehr geeignet für unter intern/extern
- Zubehör: Faltenbalg Abdeckung IP 24 (für Emulsion oder Wasser)
- Schutzart IP20
- 24 Monate Garantie

Technical data:

- Range of operating pressure : 2 - 8 bar
- Repeatability accuracy: 0.05 mm; over 100 cycles
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- Operating principle: fingers sliding, guided by rack and pinion for concentric gripping
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Suitable for internal/external gripping
- Accessories: with protection IP 24 (necessary with emulsion water)
- Rating IP 20
- Warranty 24 months

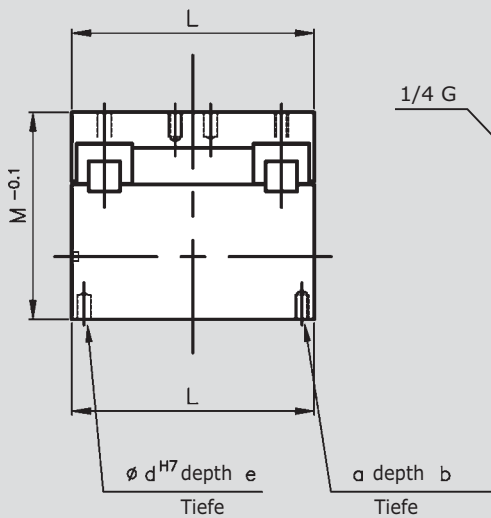
2-finger parallel gripper pneumatic - series GPRS 2-Finger Parallelgrefer pneumatisch - Typ GPRS

- 1) For correct operation connect air mountings in parallel
- 1) Für die korrekte Funktion beide Luftanschlüsse für Öffne bzw. Schließen parallel montieren

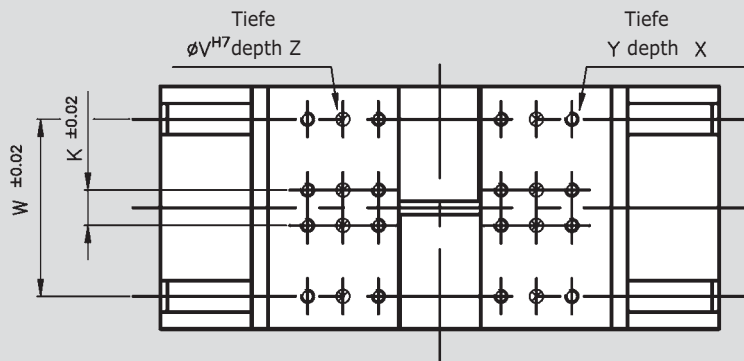
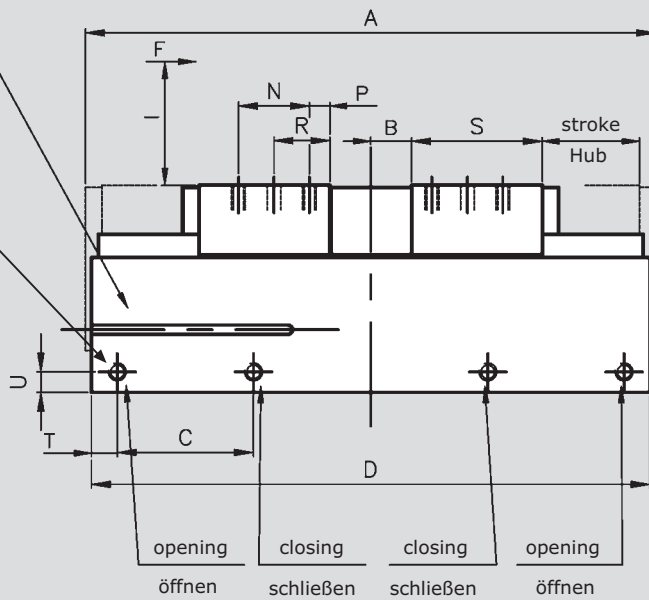


Magnetic limit switch seat type SME 8-PS (Festo) oder R599 (OMIL)

Hubfrage über Magnetschalter Typ SME 8-PS (Festo) oder R599 (OMIL)



1/4 G



Ordering example

Bestellbeispiel

| Type | Stroke for finger | For version with protection indicate code S |
|---------|-------------------|---|
| Typ | Hub pro Finger | Für Version mit faltenbalg Bezeichnung S |
| GPRS 80 | 60 | S |

2-finger parallel gripper pneumatic - series GPRS 2-Finger Parallelgreifer pneumatisch - Typ GPRS

| Type | E | G | H | J | L | M | N | P | R | S | T | U | V | Z | Y | X | W | K | a | b | d |
|---------|-----|----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|-----|----|-----|----|-----|----|----|
| Typ | | | | | | | | | | | | | | | | | | | | | |
| GPRS 60 | 270 | 90 | 130 | 220 | 148 | 114 | 50 | 9 | 34 | 86 | 17 | 13 | 8 | 15 | M8 | 15 | 104 | 24 | M8 | 14 | 8 |
| GPRS 80 | 270 | 90 | 160 | 220 | 178 | 152 | 52 | 15 | 41 | 96 | 18 | 15 | 10 | 18 | M10 | 18 | 130 | 26 | M10 | 18 | 10 |

| Type | e | l | Gripping force at 6 bar (N) | Recommended weight of part for transport (kg) |
|---------|----|----|-----------------------------|---|
| Typ | e | l | Greifkraft bei 6 bar (N) | Max. empfohlenes Werkstückgewicht (kg) |
| GPRS 60 | 14 | 50 | 2300 | 15 |
| GPRS 80 | 15 | 70 | 5100 | 34 |

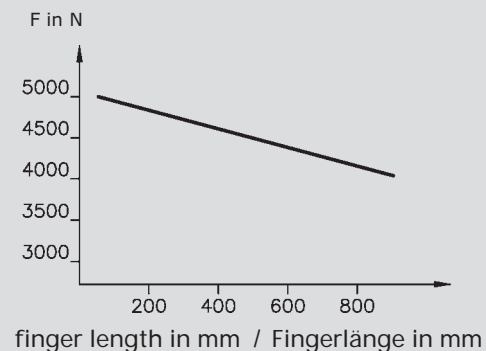
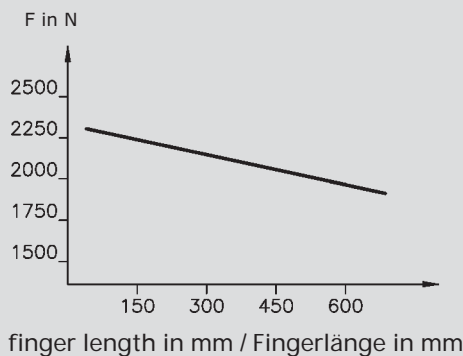
| Type | Stroke for finger (mm) | A | B | C | | Gripper weight (Kg) | Approx. time (s) | | Air consumption for double stroke (cm ³) | Max finger length / weight |
|---------|------------------------|-----|----|-----|-----|---------------------|------------------------|---------------------------|--|-----------------------------|
| Typ | Hub pro Finger (mm) | A | B | C | D | Masse (Kg) | Schließzeit (s) öffnen | Schließzeit (s) schließen | Luftverbrauch pro Doppelhub (cm ³) | Max. Fingerlänge Eigenmasse |
| GPRS 60 | 50 | 368 | 30 | 90 | 370 | 17 | 0.55 | 0.55 | 470 | 600/7.5 |
| | 100 | 468 | 30 | 140 | 470 | 19 | 0.7 | 0.7 | 940 | |
| | 150 | 668 | 40 | 190 | 600 | 21 | 0.9 | 0.9 | 1410 | |
| GPRS 80 | 60 | 404 | 30 | 105 | 420 | 31 | 0.6 | 0.6 | 1180 | 900/12 |
| | 100 | 484 | 30 | 145 | 520 | 34 | 0.8 | 0.8 | 1940 | |
| | 150 | 680 | 40 | 195 | 650 | 37 | 1 | 1 | 2900 | |
| | 200 | 890 | 50 | 245 | 790 | 40 | 1.3 | 1.3 | 3880 | |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar. Finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar. Eigenmasse in Kg

Force at 6 bar in N at l mm

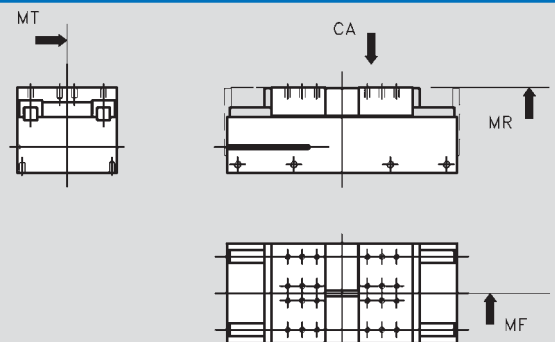
Greifkraft (N) in Abhängigkeit der Fingerlänge "l" (mm) bei 6 bar



Allowed load data

Maximal zul. Kräfte und Momente am Finger

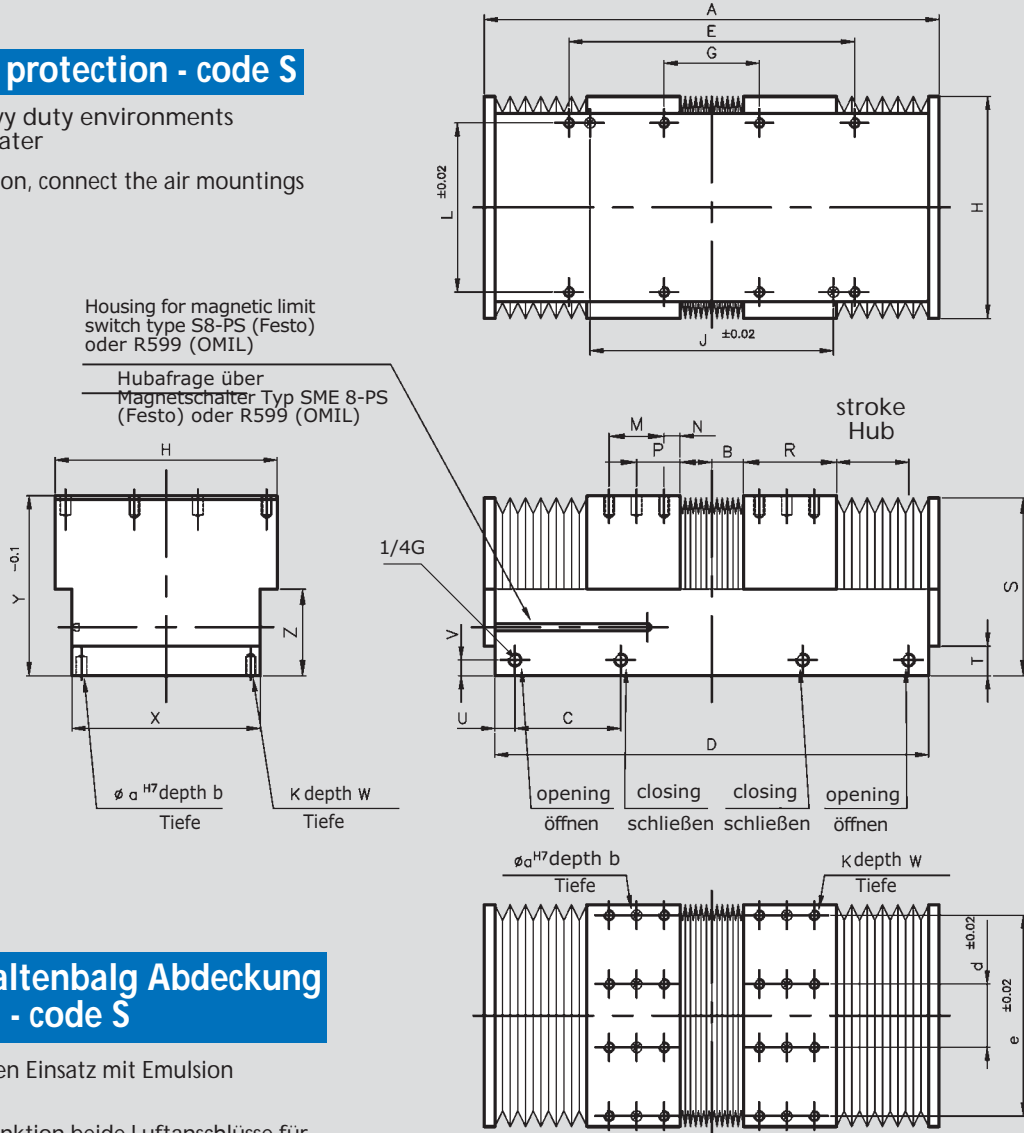
| Type | CA (N) | MF (Nm) | MR (Nm) | MT (Nm) |
|---------|--------|---------|---------|---------|
| Typ | | | | |
| GPRS 60 | 4100 | 300 | 280 | 500 |
| GPRS 80 | 6100 | 480 | 480 | 1030 |



2-finger parallel gripper pneumatic - series GPRS 2-Finger Parallelgreifer pneumatisch - Typ GPRS

Version with protection - code S

- 1) Suitable for heavy duty environments with emulsion water
- 2) For correct operation, connect the air mountings in parallel



Version mit Faltenbalg Abdeckung - Bezeichnung - code S

- 1) Geeignet für rauhen Einsatz mit Emulsion oder Wasser
- 2) Für die korrekte Funktion beide Luftanschlüsse für Öffne bzw. Schließen parallel montieren.

| Type Typ | E | G | H | J | L | M | N | P | R | S | T | U | V | Z | Y | X | W | K | a | b | d | e |
|-------------|-----|----|-----|-----|-----|----|----|----|----|-----|----|----|----|----|-----|-----|----|-----|----|----|----|-----|
| GPRS 60 | 270 | 90 | 180 | 220 | 130 | 50 | 9 | 34 | 68 | 130 | 18 | 17 | 13 | 55 | 132 | 148 | 15 | M8 | 8 | 14 | 50 | 158 |
| GPRS 80 | 270 | 90 | 210 | 220 | 160 | 52 | 15 | 41 | 88 | 168 | 28 | 18 | 15 | 82 | 170 | 178 | 18 | M10 | 10 | 15 | 60 | 190 |

| Type | Finger stroke | A | B | C | D | Gripper weight (kg) |
|---------|----------------|-----|----|-----|-----|---------------------|
| Typ | Hub pro Finger | A | B | C | D | Masse (kg) |
| GPRS 60 | 50 | 390 | 30 | 90 | 370 | 20 |
| | 100 | 490 | 30 | 140 | 470 | 22 |
| | 150 | 620 | 40 | 190 | 600 | 24 |
| | 200 | 810 | 50 | 245 | 790 | 44 |

| Type | Finger stroke | A | B | C | D | Gripper weight (kg) |
|---------|----------------|-----|----|-----|-----|---------------------|
| Typ | Hub pro Finger | A | B | C | D | Masse (kg) |
| GPRS 80 | 60 | 440 | 30 | 105 | 420 | 35 |
| | 100 | 540 | 30 | 145 | 520 | 38 |
| | 150 | 670 | 40 | 195 | 650 | 41 |
| | 200 | 810 | 50 | 245 | 790 | 44 |

3-finger self centering gripper pneumatic-series MAC3 3-Finger Zentrischgreifer pneumatisch-Typ MAC3



Technische Eigenschaften:

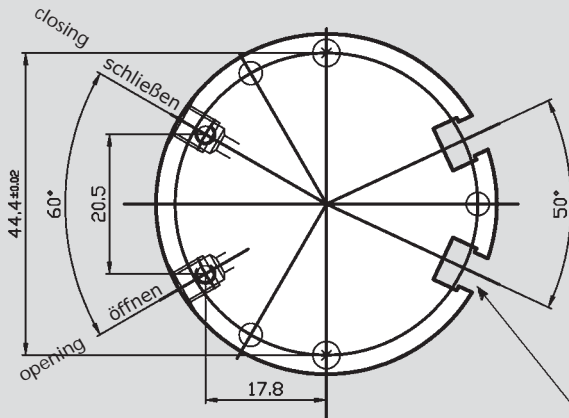
- Betriebsdruck: 2 bis 8 bar
- Wiederholgenauigkeit: MAC3-50...125 0.02mm; MAC3-160...250 0.05mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Kinematik: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Sehr geeignet für unter intern/extern
- Anschlussmaße der Grundbacken Seite 18
- Schutzart IP40
- Druckluftanschlüsse: über die Seitenflächen-Grundflächen
- M5 Sperrluftanschluss möglich
- 24 Monate Garantie

Technical data:

- Range of operating pressure : 2 - 8 bar
- Repeatability accuracy: MAC3 -50...125 0.02 mm; MAC3 - 160...250 0.05 mm over 100 cycles
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- operating principle: wedge-hook kinematics
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Suitable for internal/external gripping
- Layout finger connection page 18
- M5 pressurization
- Air connections: sides and base
- Rating IP 40
- Warranty 24 months

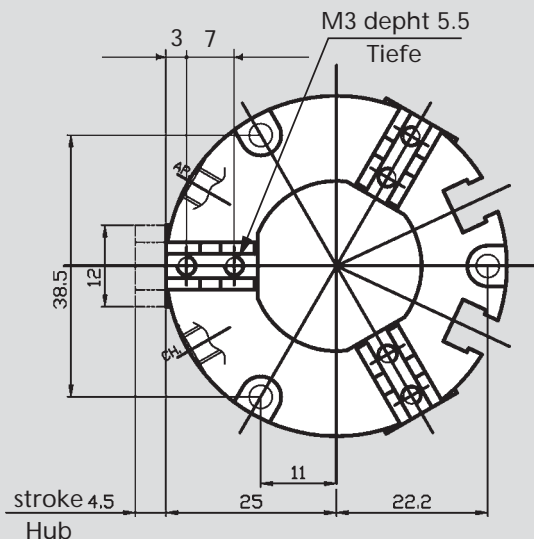
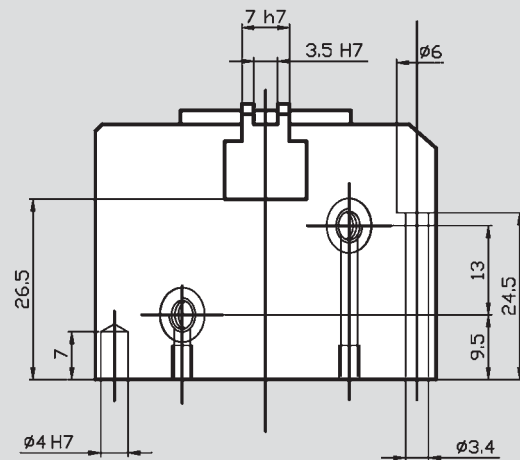
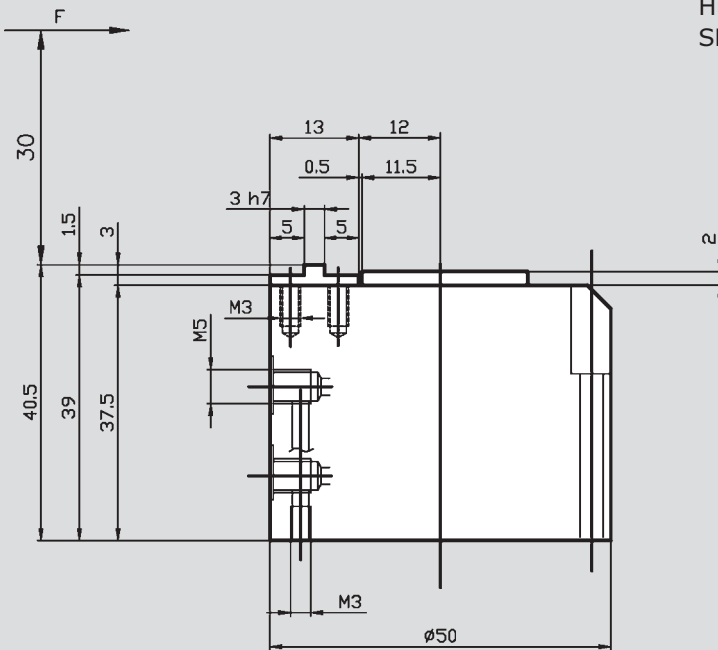
3-finger self centering gripper pneumatic-series MAC3

3-Finger Zentrischgreifer pneumatisch-Typ MAC3



Magnetic limit switch seat
SME8-PS (Festo) or R599 (OMIL)

Hubfrage über Magnetschalter Typ
SME 8-PS (Festo) oder R599 (OMIL)



Hose free direct
connection
page 23

Maße für schlauchlosen
Direktanschluss Seite 23

3-finger self centering gripper pneumatic-series MAC3 3-Finger Zentrischgreifer pneumatisch-Typ MAC3

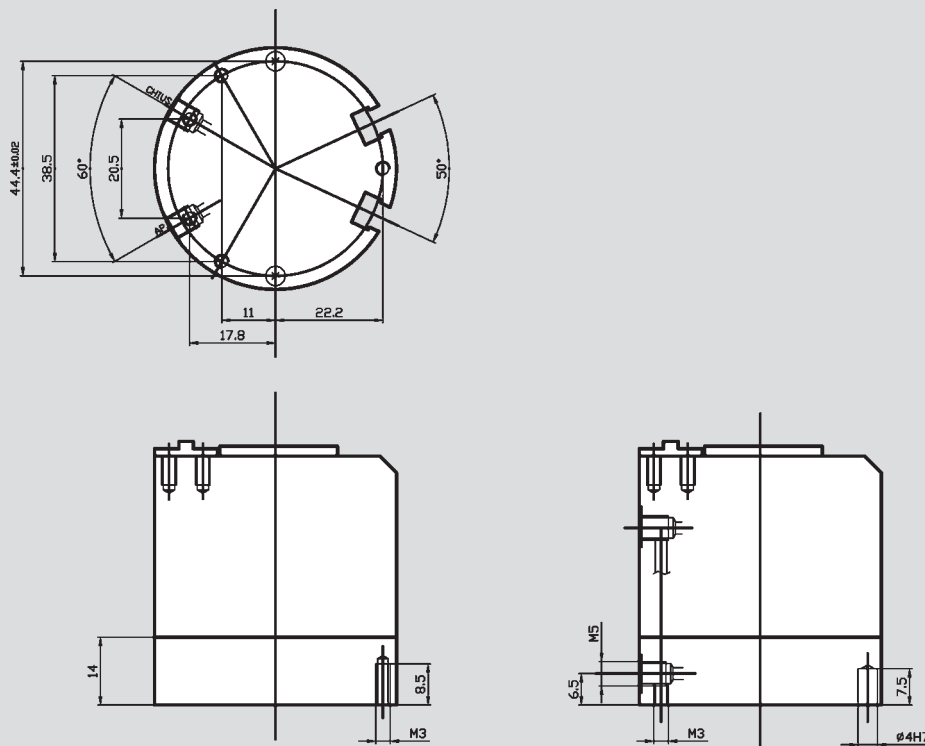
| Type | Gripping force at 6 bar (N) | Moment of inertia (Kgcm ²) | Recommended weight of part for transport (kg) | Total air for double stroke consumed (cm ³) | Strike for finger (mm) | Mass (Kg) | Approx. time (s) | | Max finger length / weight |
|---------|-----------------------------|--|---|---|------------------------|-----------|------------------|-----------|-----------------------------|
| Typ | Greifkraft bei 6 bar (N) | Massenträgheitsmoment (Kgcm ²) | Max. empfohlenes Werkstückgewicht (kg) | Luftverbrauch pro Doppelhub (cm ³) | Hub pro Finger (mm) | Mass (Kg) | Schließzeit (s) | | Max. Fingerlänge/Eigenmasse |
| | | | | | | | öffnen | schließen | |
| MAC3-50 | 270 | 0.7 | 1.35 | 12 | 4.5 | 0.22 | 0.03 | 0.03 | 50/0.15 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar. Finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar. Eigenmasse in Kg.

Gripping force safety device Code MC (closing) MA (opening)

Maßangaben für Greifer mit Greifkraftsicherung Version MC (schließen) MA (öffnen)



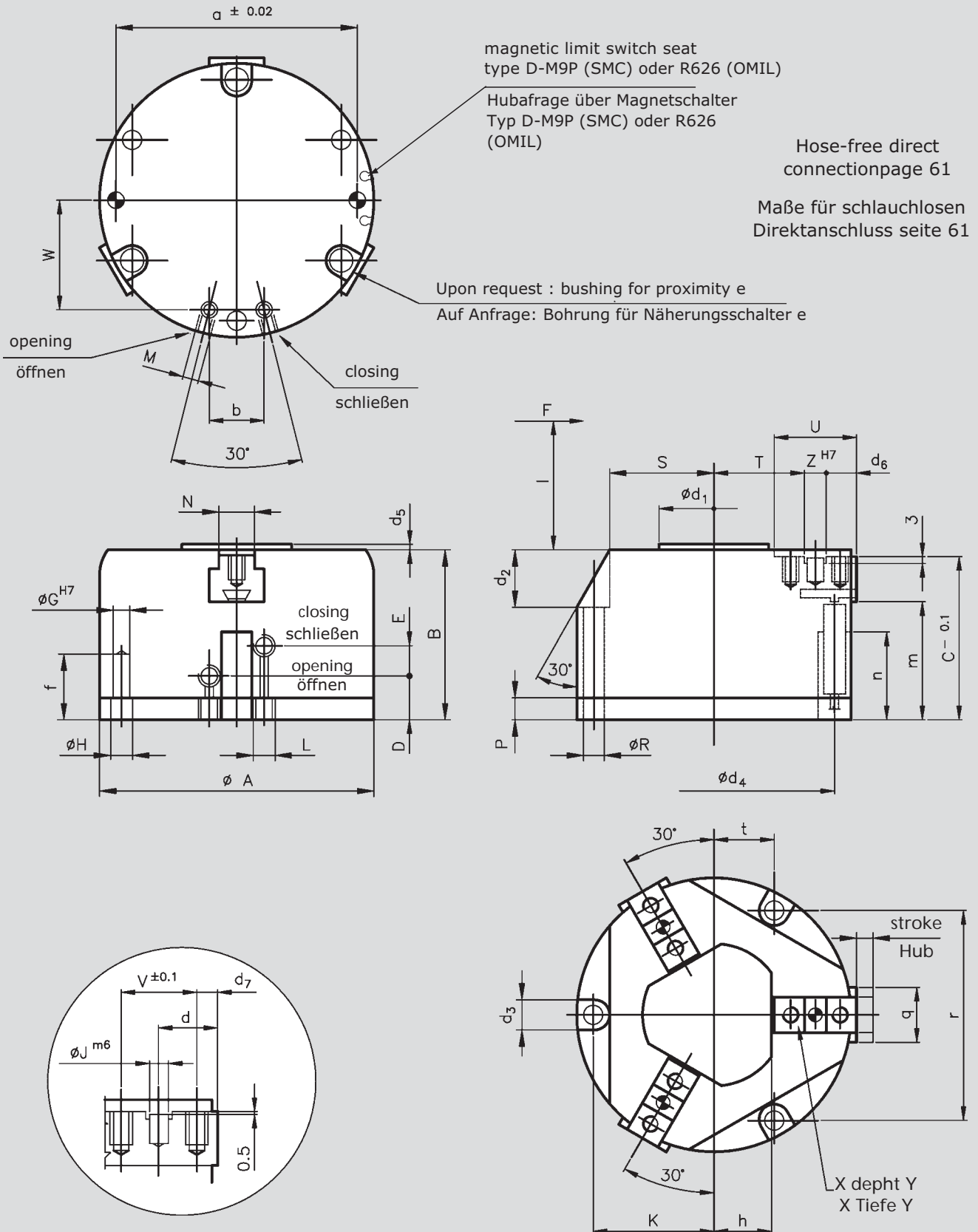
| Type | Gripping force of spring only (N) with fixed elasticity | | Gripping time (s) with spring only (pneumatic) |
|---------|---|-----|--|
| Typ | min | max | |
| | Schließkraft über Feder in (N) beim Außenspannen | | Schließzeit nur über Feder (s) |
| | min | max | |
| MAC3-50 | 110 | 160 | 0.05 |

NOTE: Minimum operating pressure 4.5 bar. Upon request versions with less pressure; in this case the spring force will be lower. Gripping force = pneumatic gripping force + spring force. The gripping force is the arithmetic sum of the individual forces of the fingers.

Bemerkung: Betriebsdruck mindestens 4.5 bar. Die Greifkraft ergibt sich aus der pneumatischen Greifkraft + Federkraft. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" bei 6 bar

3-finger self centering gripper pneumatic-series MAC3

3-Finger Zentrischgreifer pneumatisch-Typ MAC3



3-finger self centering gripper pneumatic-series MAC3 3-Finger Zentrischgreifer pneumatisch-Typ MAC3

| Type Typ | A | B | C | D | E | G | H | L | M | N | P | R | S | T | U | V | Z | Y | X | W | J | K |
|-------------|-----|-----|-----|------|------|----|------|-----|-----|----|----|-----|----|------|------|----|----|----|-----|------|----|------|
| MAC3 64 | 64 | 43 | 41 | 11 | 11 | 4 | 4.5 | M4 | M5 | 11 | 5 | 5.5 | 24 | 19.5 | 21 | 13 | 5 | 7 | M4 | 24.5 | 4 | 27.5 |
| MAC3 80 | 80 | 49 | 46 | 11.5 | 13.5 | 5 | 5.5 | M5 | M5 | 13 | 5 | 6.5 | 30 | 26.5 | 25.5 | 16 | 6 | 9 | M5 | 33 | 5 | 34.5 |
| MAC3 100 | 100 | 59 | 56 | 15 | 13.5 | 5 | 5.5 | M5 | 1/8 | 15 | 6 | 6.5 | 40 | 32 | 32 | 20 | 8 | 10 | M6 | 41 | 6 | 44 |
| MAC3 125 | 125 | 71 | 67 | 16 | 20 | 6 | 6.5 | M5 | 1/8 | 18 | 9 | 9 | 50 | 41.5 | 40.5 | 24 | 8 | 12 | M8 | 52 | 6 | 55 |
| MAC3 160 | 160 | 85 | 81 | 18 | 25 | 6 | 6.5 | M5 | 1/8 | 22 | 8 | 9 | 65 | 55 | 50 | 32 | 10 | 15 | M10 | 66 | 8 | 72 |
| MAC3 200 | 200 | 125 | 121 | 23 | 46 | 10 | 10.5 | 1/8 | 1/4 | 30 | 12 | 13 | 85 | 67 | 62 | 40 | 14 | 20 | M12 | 80 | 12 | 90 |
| MAC3 250 | 249 | 150 | 142 | 22.5 | 56.5 | 12 | 13 | 1/8 | 1/4 | 36 | 12 | 17 | 95 | 84 | 80 | 48 | 16 | 22 | M12 | 100 | 12 | 112 |

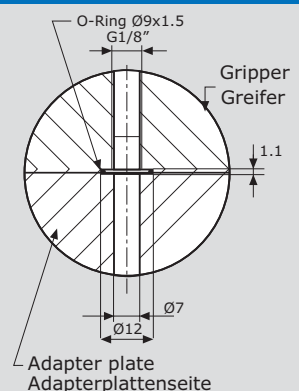
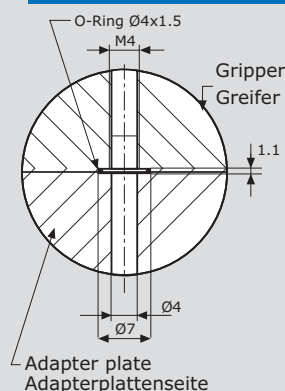
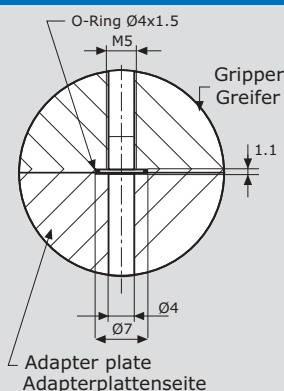
| Type Typ | a | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | e | f | h | l | m | n | q | r | t | |
|-------------|-----|----|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------|-----|----|------|----|------|----|----|------|------|
| MAC3 64 | 55 | 17 | 10.5 | 26 | 18 | 10 | 54 | 2 | 8 | 4 | ∅4 | M5 | 15 | 11 | 23 | 27.5 | 19 | 18 | 47.5 | 14 |
| MAC3 80 | 69 | 18 | 13 | 40 | 19 | 11 | 69 | 3 | 10 | 5 | ∅4 | M8 | 18 | 17 | 28 | 31.5 | 22 | 21 | 60 | 17 |
| MAC3 100 | 88 | 25 | 16 | 50 | 24 | 11 | 88 | 3 | 12 | 6 | ∅6.5 | M8 | 19 | 19 | 34 | 38 | 28 | 25 | 76 | 22 |
| MAC3 125 | 110 | 30 | 20.5 | 55 | 25 | 14 | 112 | 3 | 16.5 | 8.5 | ∅6.5 | M8 | 23 | 25 | 38 | 45 | 33 | 32 | 95 | 27.5 |
| MAC3 160 | 144 | 38 | 25 | 80 | 37 | 14 | 144 | 3 | 20 | 9 | ∅6.5 | M8 | 23 | 34 | 45 | 55 | 36 | 40 | 125 | 36 |
| MAC3 200 | 180 | 42 | 31 | 90 | 38 | 19 | 180 | 4 | 24 | 11 | M8 | M12 | 27 | 42.5 | 55 | 80.5 | 56 | 48 | 156 | 45 |
| MAC3 250 | 224 | 56 | 41 | 115 | 46 | 25 | 230 | 5 | 33 | 17 | M8 | M12 | 30 | 52 | 60 | 94 | 72 | 56 | 194 | 56 |

| Type | Stroke for finger (mm) code 1 code 2 | | Gripping force at 6 bar (N) code 1 code 2 | | Air consum for double stroke (cm ³) | Gripper weight (Kg) | Recommended weight of part for transport (kg) code 1 code 2 | | Approx. time (s) opening closing | | Moment of inertia (Kgcm ²) | Max finger length / weight |
|----------|---|------|--|-------|---|---------------------|--|------|---------------------------------------|------|--|-----------------------------|
| Typ | Hub pro Finger (mm) Vers1 Vers 2 | | Greifkraft bei 6 bar (N) Vers 1 Vers 2 | | Luftverbrauch pro Doppelhub (cm ³) | Mass (Kg) | Max. empfohlenes Werkstückgewicht Vers 1 Vers 2 | | Schließzeit (s) öffnen schließen | | Massenträgheitsmoment (Kgcm ²) | Max. Fingerlänge Eigenmasse |
| MAC3 64 | 6 | 3 | 580 | 970 | 20 | 0.4 | 3 | 5 | 0.02 | 0.02 | 2 | 64/0.32 |
| MAC3 80 | 8 | 4 | 1000 | 2300 | 39 | 0.75 | 5 | 11.5 | 0.05 | 0.05 | 6 | 80/0.55 |
| MAC3 100 | 10 | 5 | 1800 | 4050 | 90 | 1.4 | 9 | 20 | 0.08 | 0.08 | 18 | 100/1.05 |
| MAC3 125 | 13 | 6.5 | 3000 | 5800 | 175 | 2.4 | 15.5 | 29 | 0.16 | 0.16 | 47 | 125/2 |
| MAC3 160 | 16 | 8 | 6000 | 11000 | 423 | 4.9 | 25 | 50 | 0.4 | 0.4 | 157 | 160/3.3 |
| MAC3 200 | 25 | 12.5 | 7100 | 16000 | 910 | 11.5 | 35 | 80 | 1 | 1 | 575 | 200/6.4 |
| MAC3 250 | 30 | 15 | 10300 | 18600 | 1810 | 21.5 | 51 | 93 | 1.4 | 1.4 | 1680 | 250/8.7 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater.
The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar. Finger weight in Kg.
Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar. Eigenmasse in Kg

Hose-free direct connection

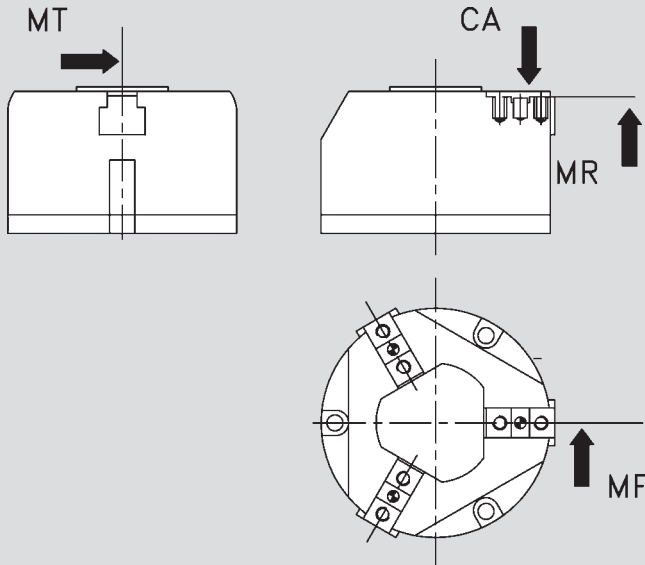
Maße für schlauchlosen Direktanschluss



3-finger self centering gripper pneumatic-series MAC3 3-Finger Zentrischgreifer pneumatisch-Typ MAC3

Allowed load data

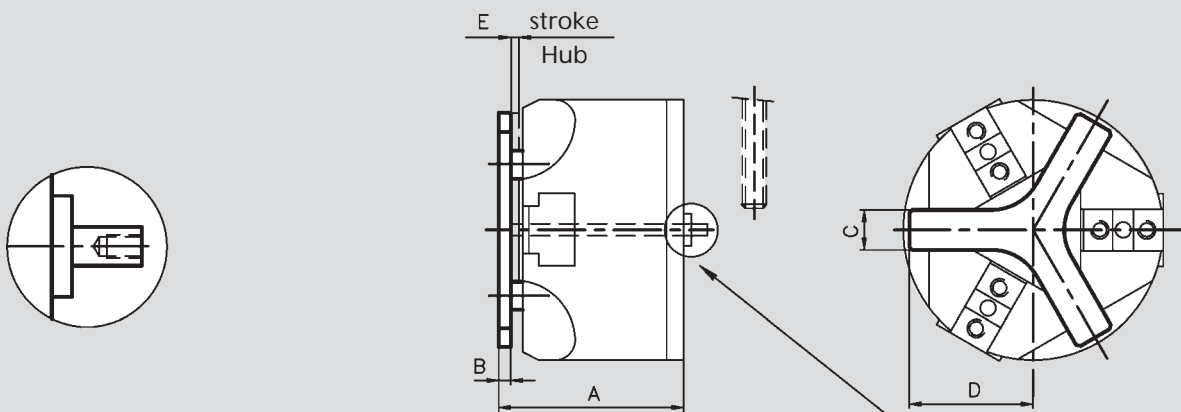
Maximal zul. Kräfte und Momente am Finger



| Type Typ | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|-------------|-----------|------------|------------|------------|
| MAC3 50 | 480 | 15 | 12 | 12 |
| MAC3 64 | 1350 | 35 | 30 | 15 |
| MAC3 80 | 1820 | 85 | 35 | 35 |
| MAC3 100 | 2250 | 95 | 50 | 45 |
| MAC3 125 | 2500 | 100 | 70 | 65 |
| MAC3 160 | 2800 | 110 | 85 | 85 |
| MAC3 200 | 3500 | 135 | 100 | 120 |
| MAC3 250 | 4450 | 205 | 155 | 170 |

Spring packaged pressure plate - code P

Federnder Andrückstern P



| Type Typ | A | B | C | D | E | Thrust Kraft |
|-------------|------|----|----|-----|---|-----------------|
| MAC3 50 | 45.5 | 3 | 10 | 23 | 3 | 8-20N |
| MAC3 64 | 54 | 7 | 11 | 30 | 4 | 13-55N |
| MAC3 80 | 60 | 7 | 12 | 37 | 4 | 15-72N |
| MAC3 100 | 72 | 8 | 16 | 48 | 5 | 15-100N |
| MAC3 125 | 85 | 8 | 20 | 60 | 6 | 125-250N |
| MAC3 160 | 100 | 9 | 24 | 75 | 6 | 170-280N |
| MAC3 200 | 143 | 11 | 32 | 95 | 7 | 310-480N |
| MAC3 250 | 171 | 14 | 40 | 115 | 7 | 390-710N |

upon request : passing rod (except MAC3-64)

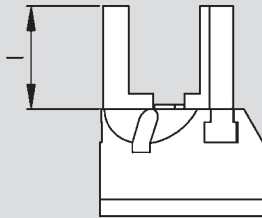
Auf Anfrage: Hubabfrage des Andrücksterns (außer MAC3-64)

3-finger self centering gripper pneumatic-series MAC3

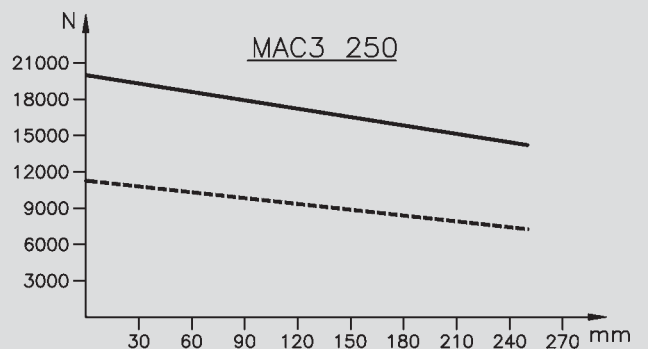
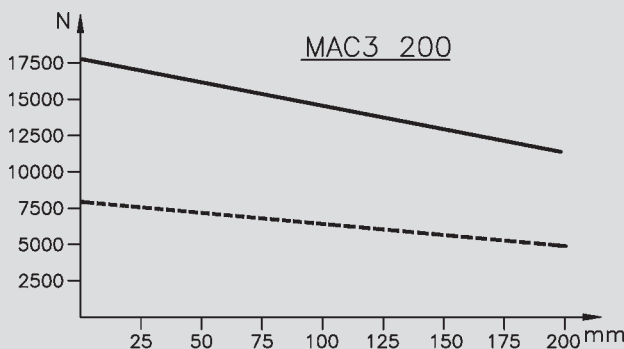
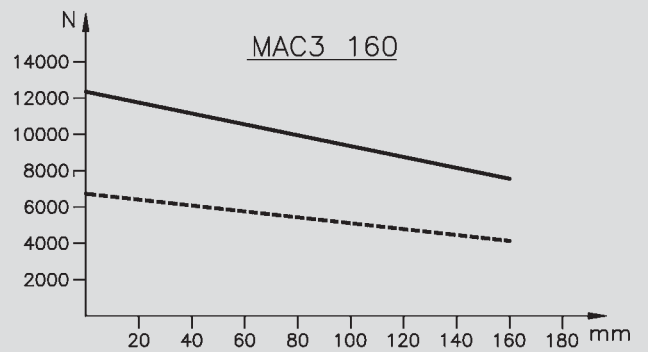
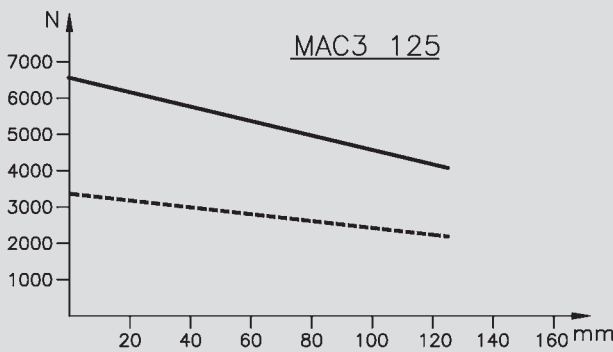
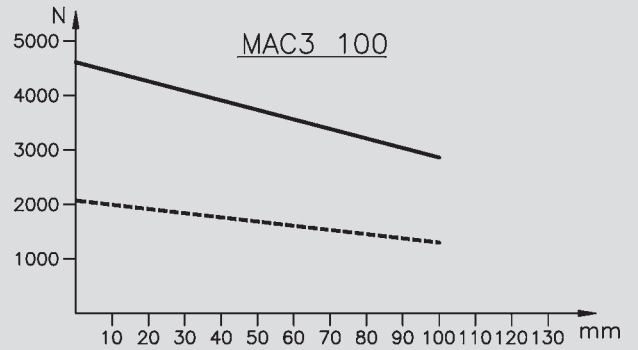
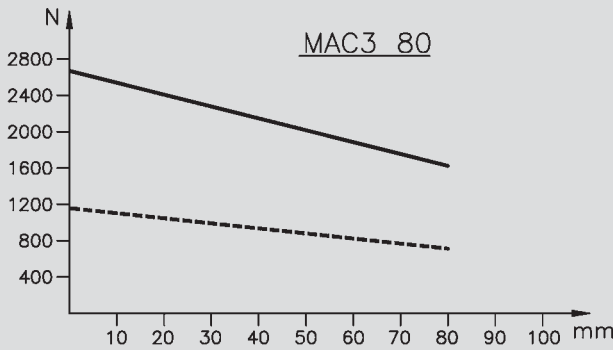
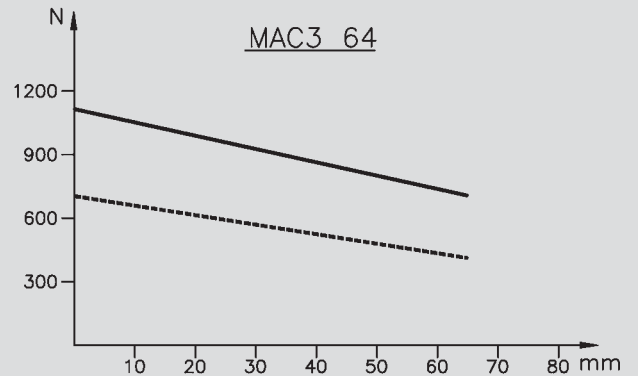
3-Finger Zentrischgreifer pneumatisch-Typ MAC3

Force at 6 bar in N at l mm

Greifkraft (N) in Abhängigkeit der Fingerlänge "l" (mm) bei 6 bar



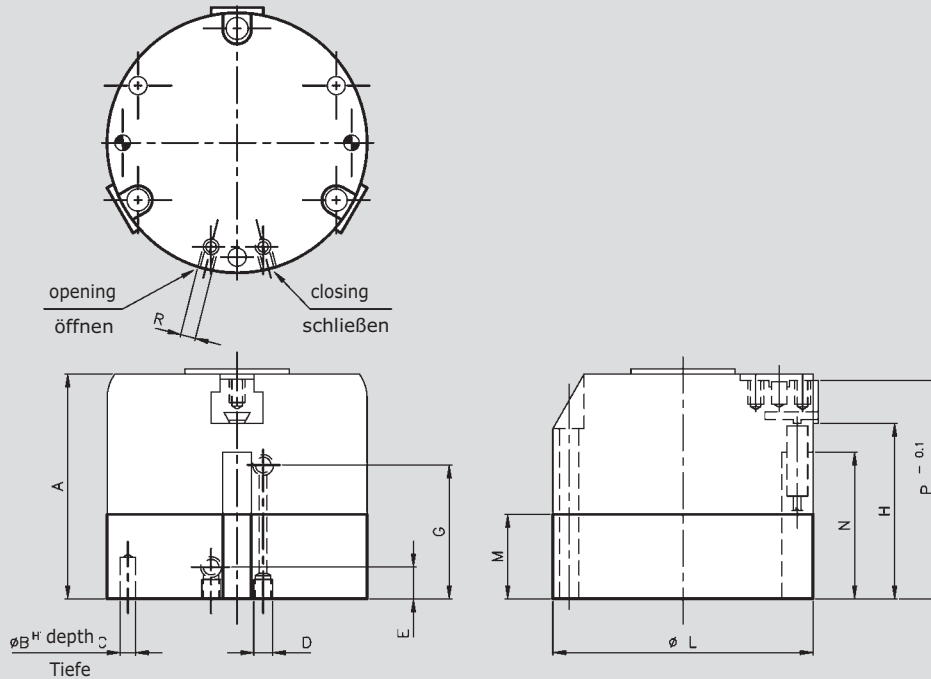
- code 1 closing (dotted line)
- code 2 closing _____ (solid line)
- Vers 1 Außenspannen
- Vers 2 Außenspannen



3-finger self centering gripper pneumatic-series MAC3 3-Finger Zentrischgreifer pneumatisch-Typ MAC3

Gripping force safety device
code MC (closing) MA (opening)

Maßangaben für Greifer mit
Greifkraftsicherung Version MC
(schließen) MA (öffnen)



| Type | A | B | C | D | E | G | H | L | M | N | P | R | Gripping force of spring only (N) with fixed elasticity | | | | Gripping time (s) with spring | Mass (Kg) |
|----------|-----|----|----|-----|----|------|-------|-----|----|-----|-----|-----|---|------|--------|-------|--------------------------------|------------|
| | | | | | | | | | | | | | code 1 | | code 2 | | | |
| Type | A | B | C | D | E | G | H | L | M | N | P | R | Schließkraft über Feder in (N) beim Außenspanne | | | | Schließzeit nur über Feder (s) | Masse (Kg) |
| | | | | | | | | | | | | | Vers 1 | | Vers 2 | | | |
| | | | | | | | | | | | | | min | max | min | max | | |
| MAC3 64 | 57 | 4 | 10 | M4 | 7 | 36 | 41.5 | 64 | 19 | 33 | 55 | M5 | 160 | 230 | 380 | 610 | 0.06 | 0.5 |
| MAC3 80 | 68 | 5 | 13 | M5 | 8 | 44 | 50.5 | 80 | 24 | 41 | 65 | M5 | 290 | 660 | 780 | 1350 | 0.09 | 0.9 |
| MAC3 100 | 82 | 5 | 13 | M5 | 11 | 51.5 | 61 | 100 | 29 | 51 | 79 | 1/8 | 700 | 1300 | 1400 | 2800 | 0.16 | 1.65 |
| MAC3 125 | 94 | 6 | 15 | M5 | 13 | 59 | 68 | 125 | 32 | 56 | 90 | 1/8 | 950 | 1830 | 2000 | 3600 | 0.25 | 2.85 |
| MAC3 160 | 115 | 6 | 18 | M5 | 14 | 73 | 85 | 160 | 38 | 66 | 111 | 1/8 | 1480 | 2900 | 2970 | 5750 | 0.7 | 5.6 |
| MAC3 200 | 170 | 10 | 16 | 1/8 | 14 | 114 | 125.5 | 200 | 57 | 101 | 166 | 1/4 | 1850 | 3870 | 3500 | 7100 | 1.4 | 13.5 |
| MAC3 250 | 205 | 12 | 20 | 1/8 | 14 | 134 | 149 | 249 | 67 | 127 | 197 | 1/4 | 3000 | 6800 | 5400 | 12200 | 2 | 24.5 |

NOTE: Minimum operating pressure 0.45 MPa. Upon request versions with less pressure; in this case the spring force will be lower. Gripping force = pneumatic gripping force + spring force. The gripping force is the arithmetic sum of the individual forces of the fingers.

Bemerkung: Betriebsdruck mindestens 4.5 bar. Die Greifkraft ergibt sich aus der pneumatischen Greifkraft + Federkraft. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "I" bei 6 bar

Ordering example

Bestellbeispiel

| Type | Code 1 or 2 | For internal bushes indicate B + level | For spring packaged pressure plate | For safety device indicate MC or MA | For passing rod indicate C |
|----------|--------------|---|------------------------------------|---|-----------------------------------|
| Typ | Vers 1 od. 2 | Für Ausführung mit Nahrungsschalter B+Durchmesser | Für federnden Andrückstern P | Für federgestützte Greifkraftsicherung MC oder MA | Für Hubabfrage des Andrückstern C |
| MAC3 100 | C1 | B8 | P | MC | / |

3-finger self centering gripperpneumatic - series GPS3 3-Finger-Zentrirschgreifer pneumatisch – Typ GPS3



Technische Eigenschaften:

- Betriebsdruck: 2 bis 8 bar
- Wiederholgenauigkeit: 0.02mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Kinematik: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Sehr geeignet für unter intern/extern
- Schutzart IP40
- 24 Monate Garantie

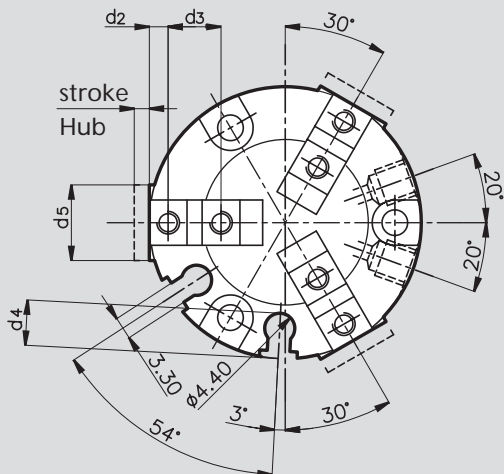
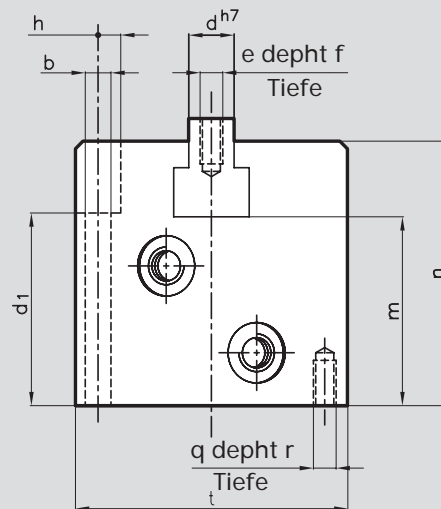
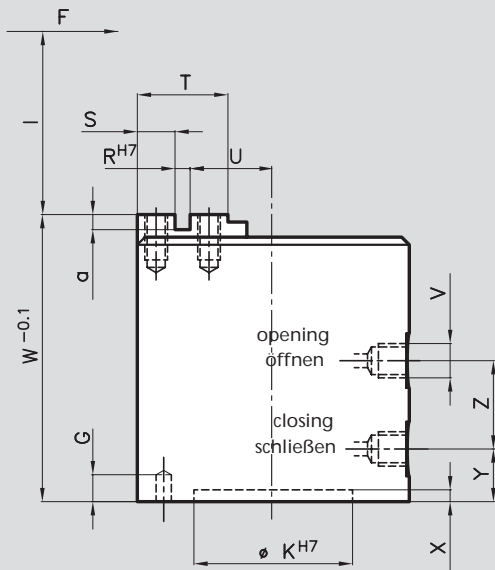
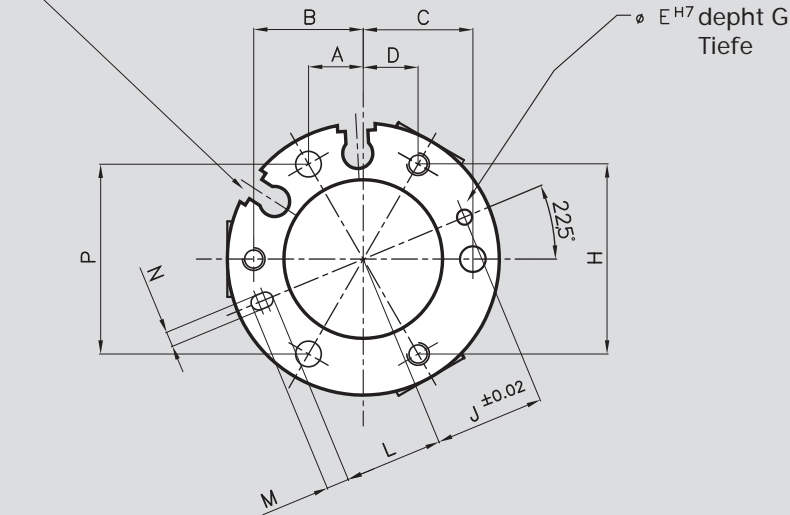
Technical data:

- Range of operating pressure : 2 - 8 bar
- Repeatability accuracy : 0.02 mm; over 100 cycles;
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- Principle of operation: wedge-hook kinematics
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10 µm), dry or lubricated
- Maintenance: maintenance-free for the first 1.5 million cycles
- Suitable for internal/external gripping
- Rating IP 40
- Warranty 24 months

3-finger self centering gripper pneumatic - series GPS3

3-Finger-Zentrischgreifer pneumatisch - Typ GPS3

Magnetic limit switch seat type D-M9P (SMC) oder R626 (OMIL)
Hubfrage über Magnetschalter Typ D-M9P (SMC) oder R626 (OMIL)



3-finger self centering gripperpneumatic - series GPS3 3-Finger-Zentrischgreifer pneumatisch - Typ GPS3

| Type | A | B | C | D | E | G | H | J | L | M | N | P | R | S | T | U | V | Z | Y | X | K | W | a | |
|----------|-----|------|------|-----|---|---|------|------|------|---|---|------|---|---|----|----|----|------|---|-----|----|----|---|--|
| Typ | | | | | | | | | | | | | | | | | | | | | | | | |
| GPS 3-30 | 6.3 | 12.5 | 12.5 | 6.3 | 2 | 2 | 21.7 | 12.5 | 11 | 3 | 2 | 21.7 | 2 | 4 | 10 | 9 | M3 | 11 | 7 | 1.5 | 17 | 35 | 2 | |
| GPS 3-36 | 7.3 | 14.5 | 14.5 | 7.3 | 2 | 2 | 25.1 | 14.5 | 13 | 3 | 2 | 25.1 | 2 | 5 | 12 | 11 | M5 | 11.5 | 7 | 1.5 | 21 | 38 | 2 | |
| GPS 3-42 | 8.5 | 17 | 17 | 8.5 | 3 | 3 | 29.4 | 17 | 14.5 | 5 | 3 | 29.4 | 2 | 6 | 14 | 13 | M5 | 13 | 7 | 1.5 | 26 | 40 | 2 | |

| Type | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | e | f | h | l | m | n | q | r | t |
|----------|-----|---|----------------|----------------|----------------|----------------|----------------|----|---|---|----|----|----|----|-----|----|
| Typ | | | | | | | | | | | | | | | | |
| GPS 3-30 | 3.4 | 5 | 24 | 2 | 6 | 4.5 | 8 | M3 | 5 | 6 | 10 | 24 | 32 | M3 | 4.5 | 30 |
| GPS 3-36 | 3.4 | 6 | 25.5 | 2.5 | 7 | 6 | 10 | M3 | 6 | 6 | 12 | 25 | 35 | M3 | 6 | 36 |
| GPS 3-42 | 4.5 | 6 | 27 | 3 | 8 | 6.5 | 12 | M3 | 6 | 8 | 16 | 25 | 37 | M4 | 6 | 42 |

| Type | Gripping force at 6 bar (N) | Moment of inertia (Kgcm ²) | Recommended weight of part for transport (kg) | Air consumed for double stroke (cm ³) | Stroke for finger (mm) | Finger mass (Kg) | Approx. time (s) | | Max finger length / weight |
|----------|-----------------------------|--|---|---|------------------------|------------------|------------------|-----------|-----------------------------|
| Typ | Greifkraft bei 6 bar (N) | Massenträgheitsmoment (Kgcm ²) | Max. empfohlenes Werkstückgewicht | Luftverbrauch pro Doppelhub (cm ³) | Hub pro Finger (mm) | Masse (Kg) | Schließzeit (s) | | Max. Fingerlänge Eigenmasse |
| | | | | | | | öffnen | schließen | |
| GPS 3-30 | 55 | 0.08 | 0.3 | 0.9 | 2 | 0.07 | 0.02 | 0.02 | 30/0.03 |
| PS 3-36 | 114 | 0.18 | 0.6 | 1.5 | 2 | 0.11 | 0.02 | 0.02 | 38/0.05 |
| GPS 3-42 | 200 | 0.35 | 1 | 3.3 | 3 | 0.16 | 0.04 | 0.04 | 45/0.08 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar. Finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Fomschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar Eigenmasse in Kg

Ordering example

Bestellbeispiel

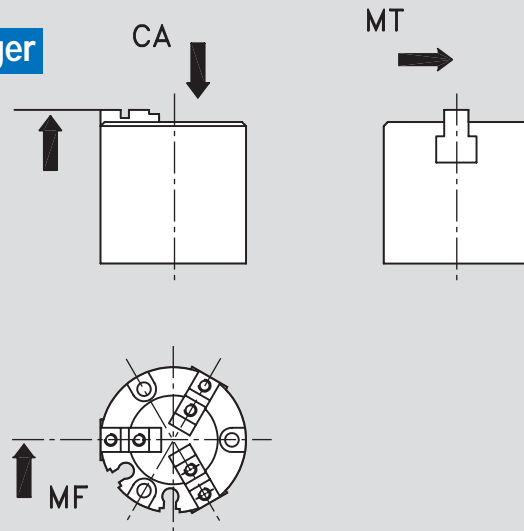
| Type |
|----------|
| Typ |
| GPS 3-42 |

3-finger self centering gripper pneumatic - series GPS3 3-Finger-Zentrischgreifer pneumatisch - Typ GPS3

Allowed load data

Maximal zul. Kräfte und Momente am Finger

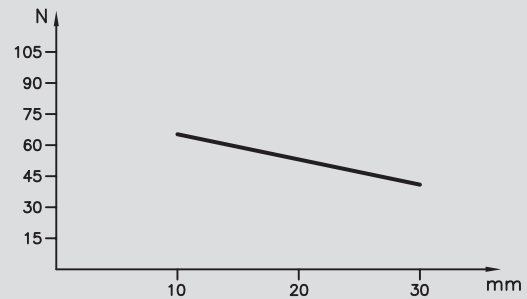
| Type | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|----------|--------|---------|---------|---------|
| Typ | | | | |
| GPS 3-30 | 140 | 3 | 4.5 | 4 |
| GPS 3-36 | 200 | 4 | 6 | 6 |
| GPS 3-42 | 250 | 8 | 9 | 10 |



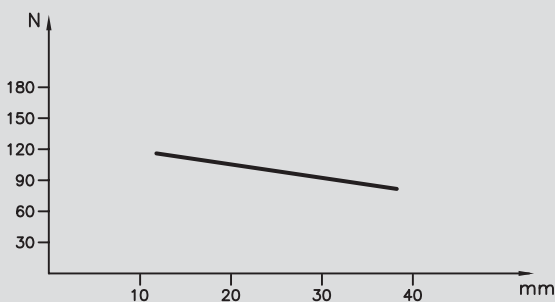
Force at 6 bar in N at I mm

Greifkraft (N) in Abhängigkeit der Fingerlänge "I" (mm) bei 6 bar

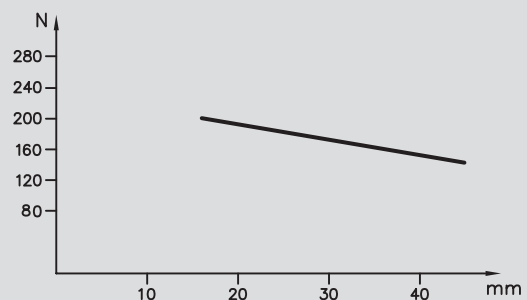
GPS 3-30



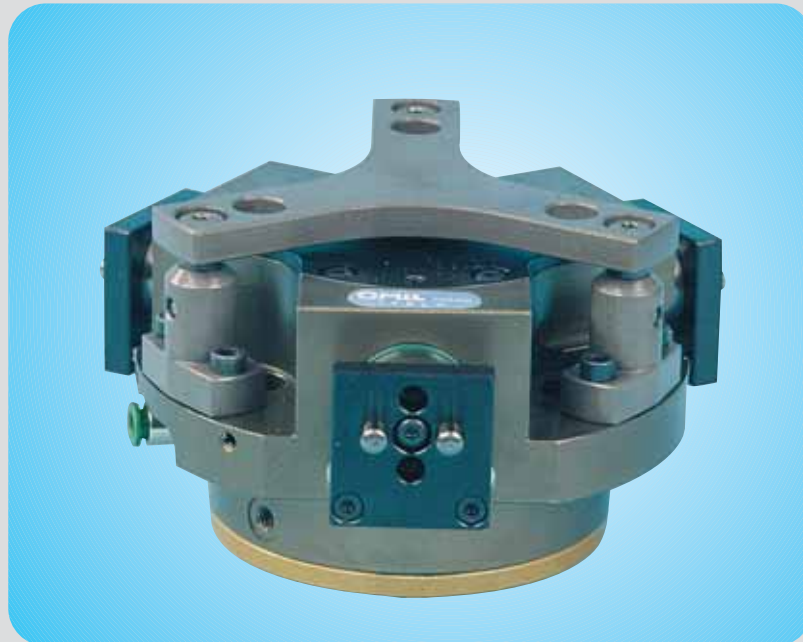
GPS 3-36



GPS 3-42



3-finger self centering gripper pneumatic - series SRP 3-Finger-Zentrischgreifer pneumatisch – Typ SRP



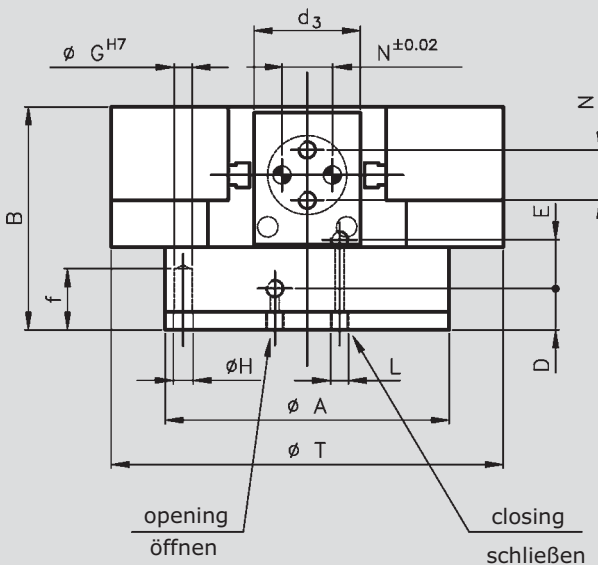
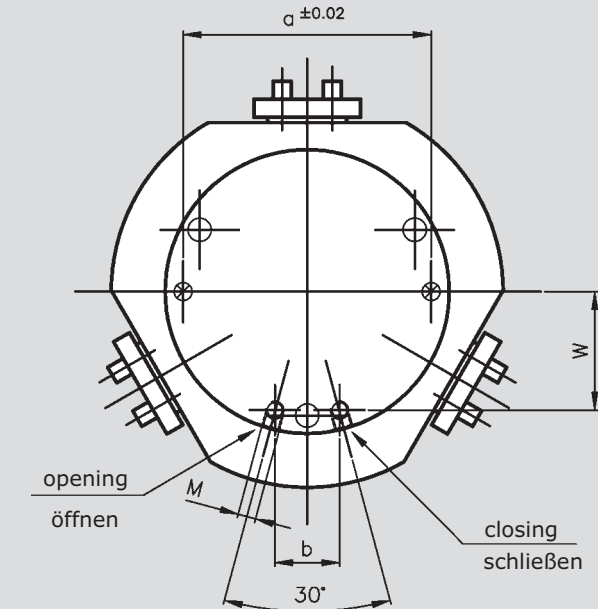
Technische Eigenschaften:

- Betriebsdruck: 3 bis 8 bar
- Wiederholgenauigkeit: SRP 64...125 0.02mm; SRP-160...250 0.05mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Kinematik: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Sehr geeignet für unter intern/extern
- Schutzart IP67
- Druckluftanschlüsse: über die Seitenflächen-Grundflächen
- 24 Monate Garantie

Technical data:

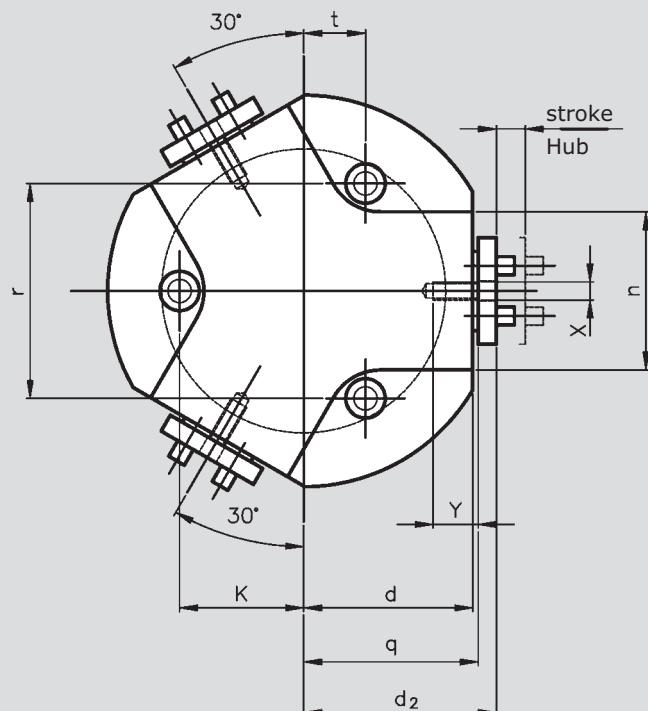
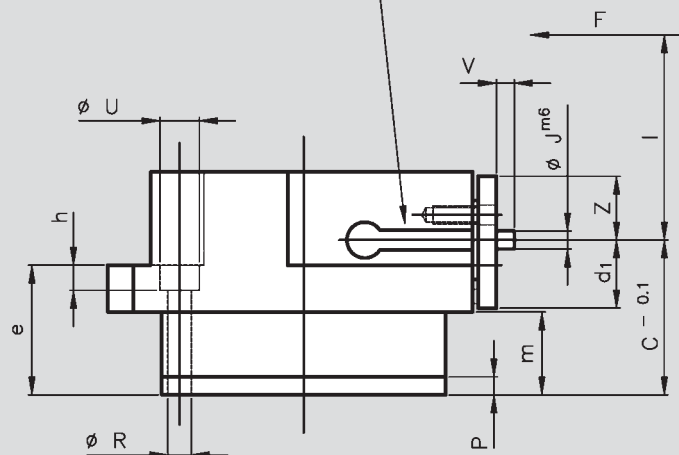
- Range of operating pressure : 3 - 8 bar
- Repeatability accuracy: SRP-64..125 0.02 mm; SRP-160..200 0.05 mm over 100 cycles;
- Operating temperature: from -10°C to 90°C; version up 130°C upon request
- Operating principle: wedge-hook kinematics
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Suitable for internal/external gripping
- Air connection: sides and bases
- Rating IP 67
- Warranty 24 months

3-finger self centering gripper pneumatic - series SRP 3-Finger-Zentrischgreifer pneumatisch - Typ SRP



Magnetic limit switch seat type SMe 8-PS (Festo) or R599 (OMIL)

Hubfrage über Magnetschalter Typ SMe 8-PS (Festo) oder R599 (OMIL)



Hose-free direct connection page 71

Maße für schlauchlosen Direktanschluss
Direktanschluss seite 71

3-finger self centering gripper pneumatic - series SRP 3-Finger-Zentrischgreifer pneumatisch – Typ SRP

| Type | A | B | C | D | E | G | H | L | M | N | P | R | T | U | V | Z | Y | X | W | J | K | |
|---------|-----|-----|-----|------|------|----|------|-----|-----|----|----|-----|-----|------|----|----|----|-----|------|----|------|--|
| Typ | | | | | | | | | | | | | | | | | | | | | | |
| SRP 64 | 64 | 53 | 38 | 11 | 9 | 4 | 4.5 | M4 | M5 | 10 | 5 | 5.5 | 94 | 10 | 4 | 14 | 9 | M5 | 24.5 | 4 | 27.5 | |
| SRP 80 | 80 | 62 | 43 | 11.5 | 13.5 | 5 | 5.5 | M5 | M5 | 14 | 5 | 6.5 | 109 | 11 | 5 | 18 | 11 | M5 | 33 | 5 | 34.5 | |
| SRP 100 | 100 | 73 | 51 | 15 | 14 | 5 | 5.5 | M5 | 1/8 | 16 | 6 | 6.5 | 138 | 11 | 6 | 20 | 11 | M6 | 41 | 6 | 44 | |
| SRP 125 | 125 | 92 | 64 | 17 | 16 | 6 | 6.5 | M5 | 1/8 | 18 | 9 | 9 | 169 | 13.5 | 7 | 27 | 15 | M8 | 52 | 8 | 55 | |
| SRP 160 | 160 | 106 | 74 | 18 | 22 | 6 | 6.5 | M5 | 1/8 | 22 | 8 | 9 | 184 | 13.5 | 8 | 31 | 15 | M8 | 66 | 8 | 72 | |
| SRP 200 | 199 | 150 | 112 | 16 | 66 | 10 | 10.5 | 1/8 | 1/4 | 28 | 12 | 13 | 238 | 19 | 12 | 37 | 24 | M10 | 80 | 10 | 90 | |
| SRP 250 | 249 | 180 | 130 | 23 | 71 | 12 | 13 | 1/8 | 1/4 | 48 | 12 | 17 | 298 | 25 | 12 | 49 | 24 | M12 | 100 | 10 | 112 | |

| Type | a | b | d | d ₁ | d ₂ | d ₃ | e | f | h | l | m | n | q | r | t | Stroke for finger (mm) |
|---------|-----|----|-----|----------------|----------------|----------------|-----|----|----|----|----|----|------|------|------|------------------------|
| Typ | | | | | | | | | | | | | | | | Hub pro Finger (mm) |
| SRP 64 | 55 | 17 | 38 | 21 | 45 | 25 | 32 | 15 | 5 | 23 | 17 | 37 | 39.5 | 47.5 | 14 | 6 |
| SRP 80 | 69 | 18 | 47 | 19 | 55 | 30 | 36 | 18 | 7 | 28 | 23 | 44 | 48.5 | 60 | 17 | 8 |
| SRP 100 | 88 | 25 | 56 | 22 | 65 | 34 | 45 | 19 | 7 | 34 | 29 | 40 | 57.5 | 76 | 22 | 10 |
| SRP 125 | 110 | 30 | 71 | 30 | 80.5 | 40 | 54 | 23 | 8 | 38 | 33 | 48 | 72.5 | 95 | 27.5 | 13 |
| SRP 160 | 144 | 38 | 89 | 34 | 100 | 45 | 62 | 23 | 8 | 45 | 39 | 48 | 91 | 125 | 36 | 16 |
| SRP 200 | 180 | 42 | 113 | 40 | 128 | 55 | 97 | 27 | 12 | 55 | 70 | 67 | 115 | 156 | 45 | 25 |
| SRP 250 | 224 | 56 | 139 | 57 | 155 | 74 | 112 | 30 | 16 | 60 | 72 | 85 | 141 | 194 | 56 | 30 |

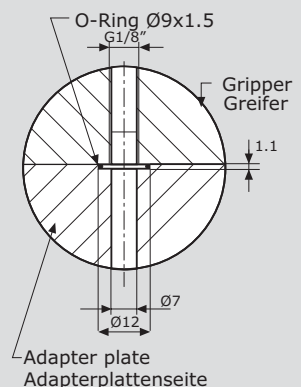
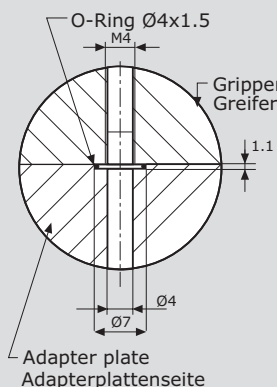
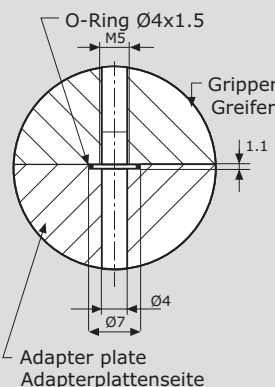
| Type | Gripping force at 6 bar (N) | Air consum for double stroke (cm ³) | Moment of inertia (Kgcm ²) | Gripper weight (kg) | Recommended weight of part for transport (kg) | Approx. time (s) | | Max finger length / weight |
|---------|-----------------------------|---|--|---------------------|---|------------------|-----------|-----------------------------|
| Typ | Greifkraft bei 6 bar (N) | Luftverbrauch pro Doppelhub (cm ³) | Massenträgheitsmoment (Kgcm ²) | Masse (Kg) | Max. empfohlenes Werkstückgewicht | Schließzeit (s) | | Max. Fingerlänge Eigenmasse |
| | | | | | | öffnen | schließen | |
| SRP 64 | 580 | 20 | 8.8 | 0.8 | 3 | 0.03 | 0.03 | 64/0.3 |
| SRP 80 | 1000 | 39 | 17.8 | 1.2 | 5 | 0.07 | 0.07 | 80/0.5 |
| SRP 100 | 1800 | 90 | 50 | 2.4 | 9 | 0.11 | 0.11 | 100/0.95 |
| SRP 125 | 3000 | 175 | 137.5 | 3.85 | 15.5 | 0.16 | 0.16 | 125/1.75 |
| SRP 160 | 6000 | 423 | 309 | 7.3 | 25 | 0.4 | 0.4 | 160/3 |
| SRP 200 | 7100 | 910 | 1274.5 | 18 | 35 | 1 | 1 | 200/5.5 |
| SRP 250 | 10300 | 1810 | 3663 | 33 | 51 | 1.4 | 1.4 | 250/6.9 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar. Finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Fomschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar. Eigenmasse in Kg.

Hose-free direct connection

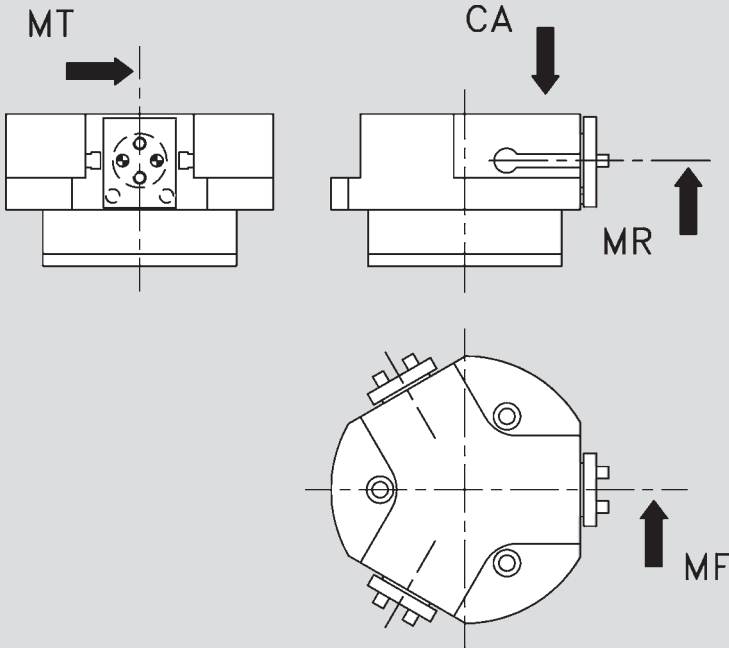
Maße für schlauchlosen Direktanschluss



3-finger self centering gripper pneumatic - series SRP 3-Finger-Zentrischgreifer pneumatisch - Typ SRP

Allowed load data

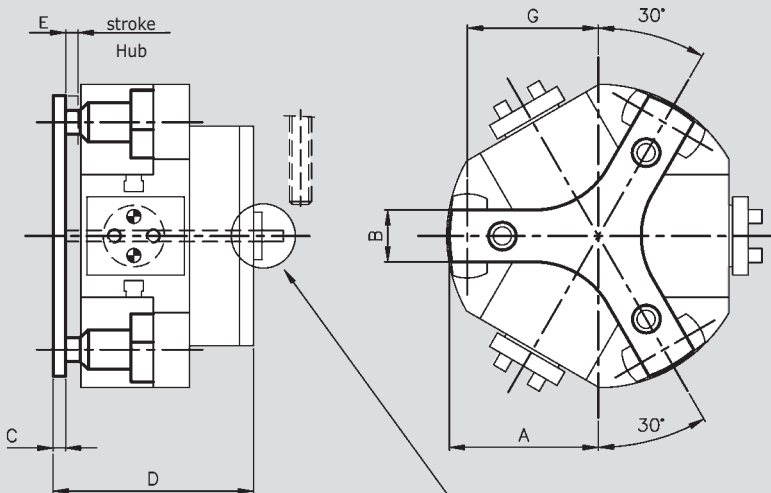
Maximal zul. Kräfte und Momente am Finger



| Type | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|---------|--------|---------|---------|---------|
| Typ | | | | |
| SRP 64 | 200 | 8 | 15 | 5 |
| SRP 80 | 260 | 23 | 21 | 10 |
| SRP 100 | 330 | 25 | 26 | 15 |
| SRP 125 | 370 | 26 | 41 | 19 |
| SRP 160 | 415 | 27 | 47 | 26 |
| SRP 200 | 445 | 33 | 60 | 32 |
| SRP 250 | 885 | 79 | 147 | 80 |

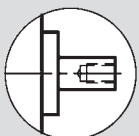
Spring packaged pressure plate - cod. P

Federnder Andrückstern P



upon request: passing rod (except SRP-64)

Auf Anfrage: Hubabfrage des Andrücksterns (außer SRP-64)

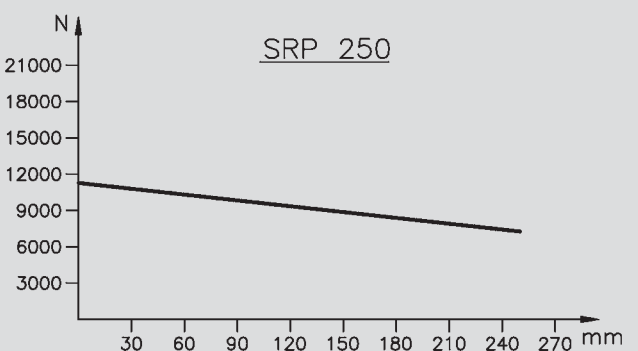
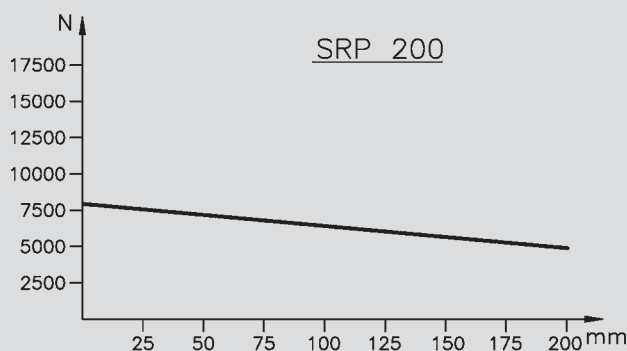
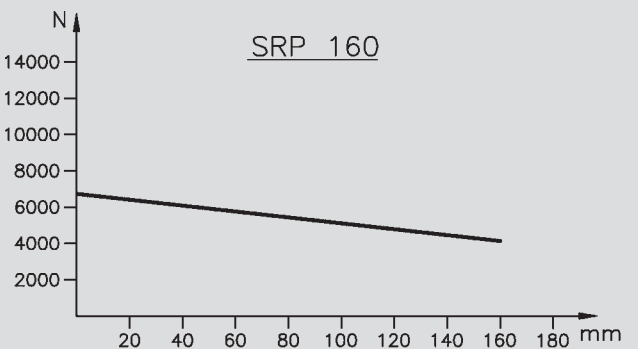
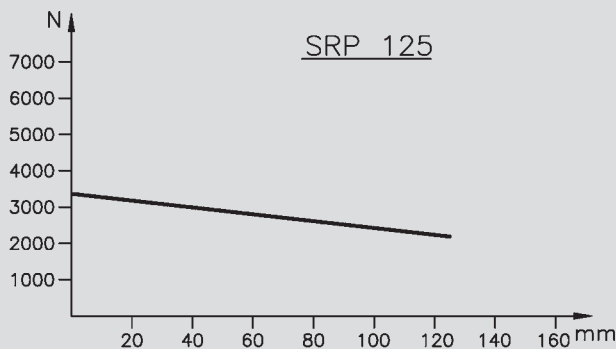
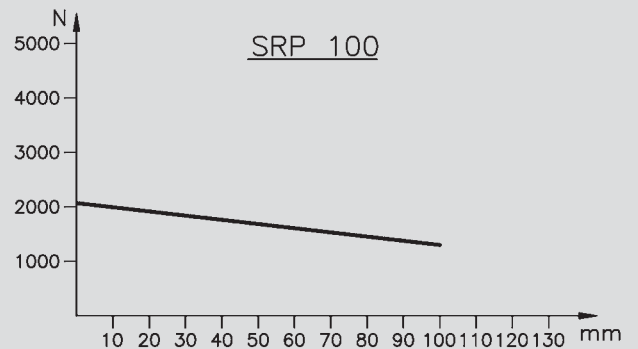
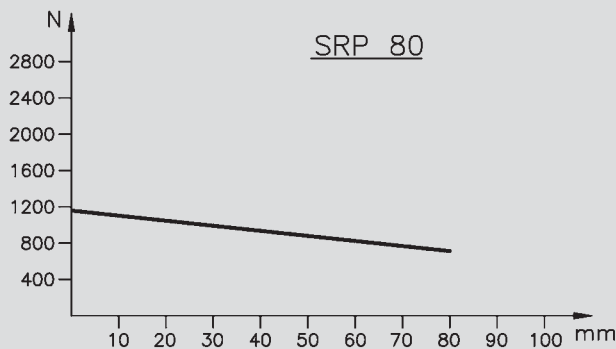
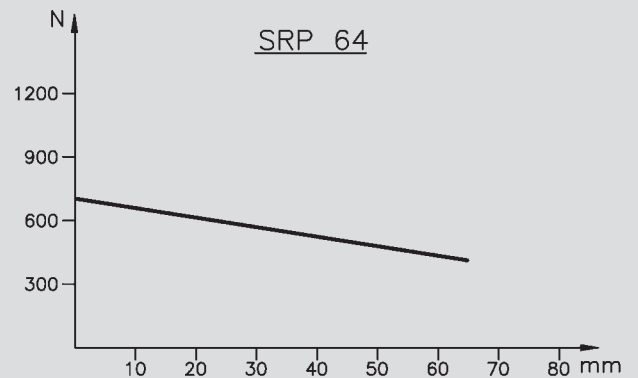
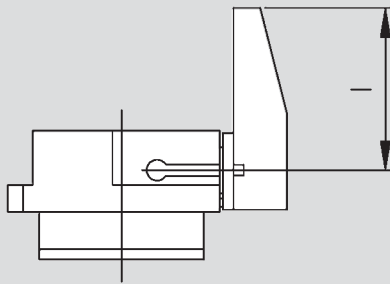


| Type | A | B | C | D | E | G | Thrust |
|---------|-----|----|----|-----|---|------|----------|
| Typ | | | | | | | Kraft |
| SRP 64 | 47 | 17 | 7 | 63 | 3 | 39.5 | 13-55N |
| SRP 80 | 54 | 18 | 7 | 72 | 3 | 47 | 15-72N |
| SRP 100 | 69 | 20 | 8 | 86 | 5 | 59 | 15-100N |
| SRP 125 | 84 | 24 | 8 | 106 | 6 | 73 | 125-250N |
| SRP 160 | 84 | 24 | 8 | 120 | 6 | 54 | 170-280N |
| SRP 200 | 105 | 32 | 11 | 168 | 7 | 58 | 310-480N |

3-finger self centering gripper pneumatic - series SRP 3-Finger-Zentrischgreifer pneumatisch - Typ SRP

Force at 6 bar in N at l mm

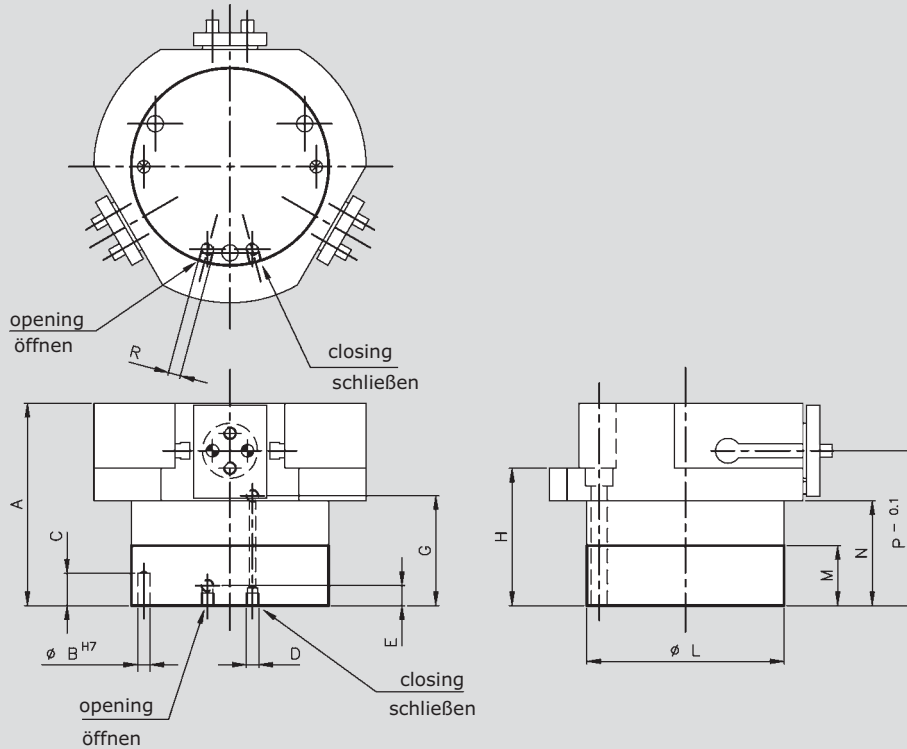
Greifkraft (N) in Abhängigkeit der Fingerlänge "l" (mm) bei 6 bar



3-finger self centering gripper pneumatic - series SRP 3-Finger-Zentrischgreifer pneumatisch - Typ SRP

Gripping force safety device
code MC (closing) MA (opening)

Maßangaben für Greifer mit
Greifkraftsicherung Version MC
(schließen) MA (öffnen)



| Type | A | B | C | D | E | G | H | L | M | N | P | R | Gripping force of spring only in N with fixed elasticity | | Gripping time in sec with spring | Mass (Kg) |
|---------|-----|----|----|-----|----|-----|-----|-----|----|-----|-----|-----|--|------|----------------------------------|------------|
| | | | | | | | | | | | | | min | max | | |
| Typ | A | B | C | D | E | G | H | L | M | N | P | R | Schließkraft über Feder in (N) beim Außenspannen | | Schließzeit nur über Feder (s) | Masse (Kg) |
| | | | | | | | | | | | | | min | max | | |
| SRP 64 | 67 | 4 | 10 | M4 | 7 | 34 | 46 | 64 | 19 | 37 | 52 | M5 | 160 | 230 | 0.06 | 0.9 |
| SRP 80 | 81 | 5 | 13 | M5 | 8 | 44 | 55 | 80 | 24 | 42 | 62 | M5 | 290 | 660 | 0.09 | 1.35 |
| SRP 100 | 96 | 5 | 13 | M5 | 11 | 52 | 68 | 100 | 29 | 56 | 74 | 1/8 | 700 | 1300 | 0.16 | 2.35 |
| SRP 125 | 115 | 6 | 15 | M5 | 13 | 56 | 77 | 125 | 32 | 64 | 87 | 1/8 | 950 | 1830 | 0.25 | 4.3 |
| SRP 160 | 136 | 6 | 18 | M5 | 14 | 70 | 92 | 160 | 38 | 76 | 104 | 1/8 | 1480 | 2900 | 0.7 | 8 |
| SRP 200 | 195 | 10 | 20 | 1/8 | 17 | 127 | 142 | 199 | 45 | 115 | 157 | 1/4 | 1850 | 3870 | 1.4 | 20 |

NOTE: Minimum operating pressure 4.5 bar. Upon request versions with less operating pressure; in this case the spring force will be lower. Gripping force = pneumatic gripping force + spring force.

The gripping force is the arithmetic sum of the individual forces of the fingers.

Bemerkung: Betriebsdruck mindestens 4.5 bar. Die Greifkraft ergibt sich aus der pneumatischen Greifkraft + Federkraft. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" bei 6 bar.

Ordering example

Bestellbeispiel

| Type | For spring packaged pressure plate indicate code P | For safety device indicate MC or MA | For passing rod indicate C |
|---------|--|---|-----------------------------------|
| Typ | Für federnden Andrückstern P | Für federgestützte Greifkraftsicherung MC oder MA | Für Hubabfrage des Andrückstern C |
| SRP 100 | P | MC | / |

3-finger self centering gripper pneumatic - series MFB 3-Finger-Zentrischgreifer pneumatisch – Typ MFB



Technische Eigenschaften:

- Betriebsdruck: 2 bis 8 bar
- Wiederholgenauigkeit: MFB-70...140 0.02mm; MFB-170...220 0.05mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Kinematik: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Sehr geeignet für unter intern/extern
- Anschlussmaße der Grundbacken siehe 18
- Schutzart IP40
- Druckluftanschlüsse: über die Seitenflächen-Grundflächen
- Zentraler Durhlass
- 24 Monate Garantie

Technical data:

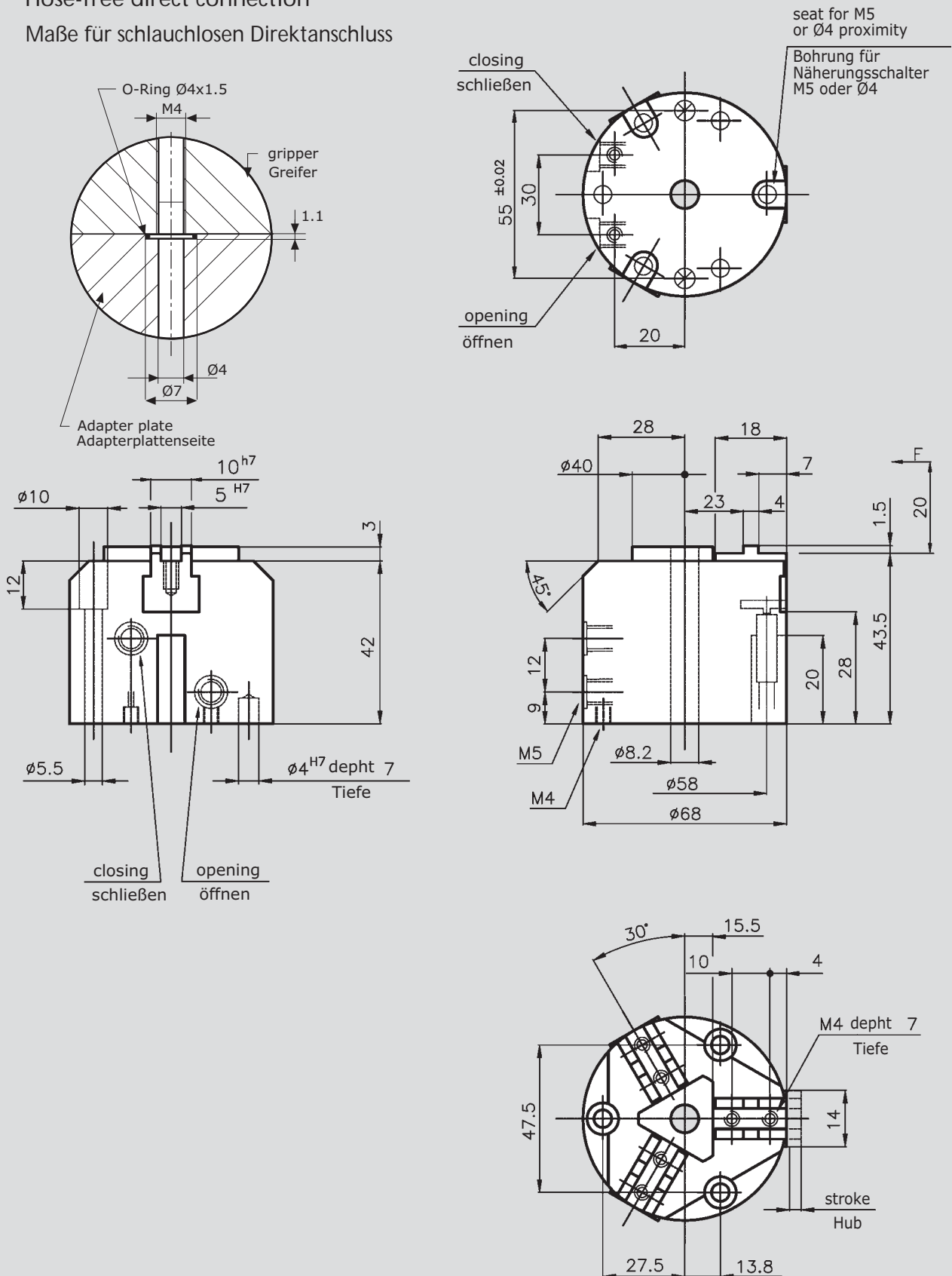
- Range of operating pressure : 2 - 8 bar
- Repeatability accuracy: MFB-70..140 0.02 mm; MFB-170..220 0.05 mm over 100 cycles;
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- Operating principle: wedge-hook kinematics
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Suitable for internal/external gripping
- Layout finger connection page 18
- Air connections: sides and base
- Through central hole
- Rating IP 40
- Warranty 24 months

3-finger self centering gripper pneumatic - series MFB

3-Finger-Zentrischgreifer pneumatisch - Typ MFB

Hose-free direct connection

Maße für schlauchlosen Direktanschluss



3-finger self centering gripper pneumatic - series MFB 3-Finger-Zentrischgreifer pneumatisch - Typ MFB

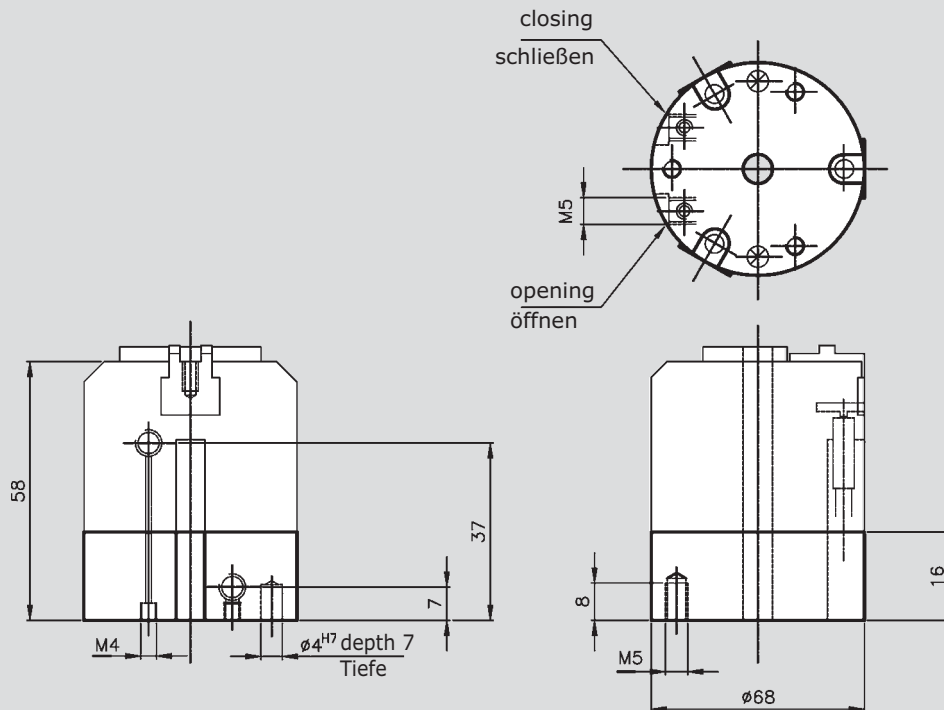
| Type | Gripping force at 6 bar (N) | Moment of inertia (Kgcm ²) | Recommended weight of part for transport (kg) | Total air for double stroke consumed (cm ³) | Stroke x finger (mm) | Mass (Kg) | Approx. time in seconds | | Max finger length / weight |
|--------|-----------------------------|--|---|---|----------------------|------------|-------------------------|-----------|-----------------------------|
| Typ | Greifkraft bei 6 bar (N) | Massenträgheitsmoment (Kgcm ²) | Max. empfohlenes Werkstückgewicht (kg) | Luftverbrauch pro Doppelhub (cm ³) | Hub pro Finger (mm) | Masse (Kg) | Schließzeit (s) | | Max. Fingerlänge Eigenmasse |
| | | | | | | | öffnen | schließen | |
| MFB 70 | 420 | 2 | 2 | 10 | 4 | 0.35 | 0.03 | 0.03 | 50/0.16 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar. Finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Fomschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar. Eigenmasse in Kg

Gripping force safety device code MC (closing) MA (opening)

Maßangaben für Greifer mit Greifkraftsicherung Version MC (schließen) MA (öffnen)



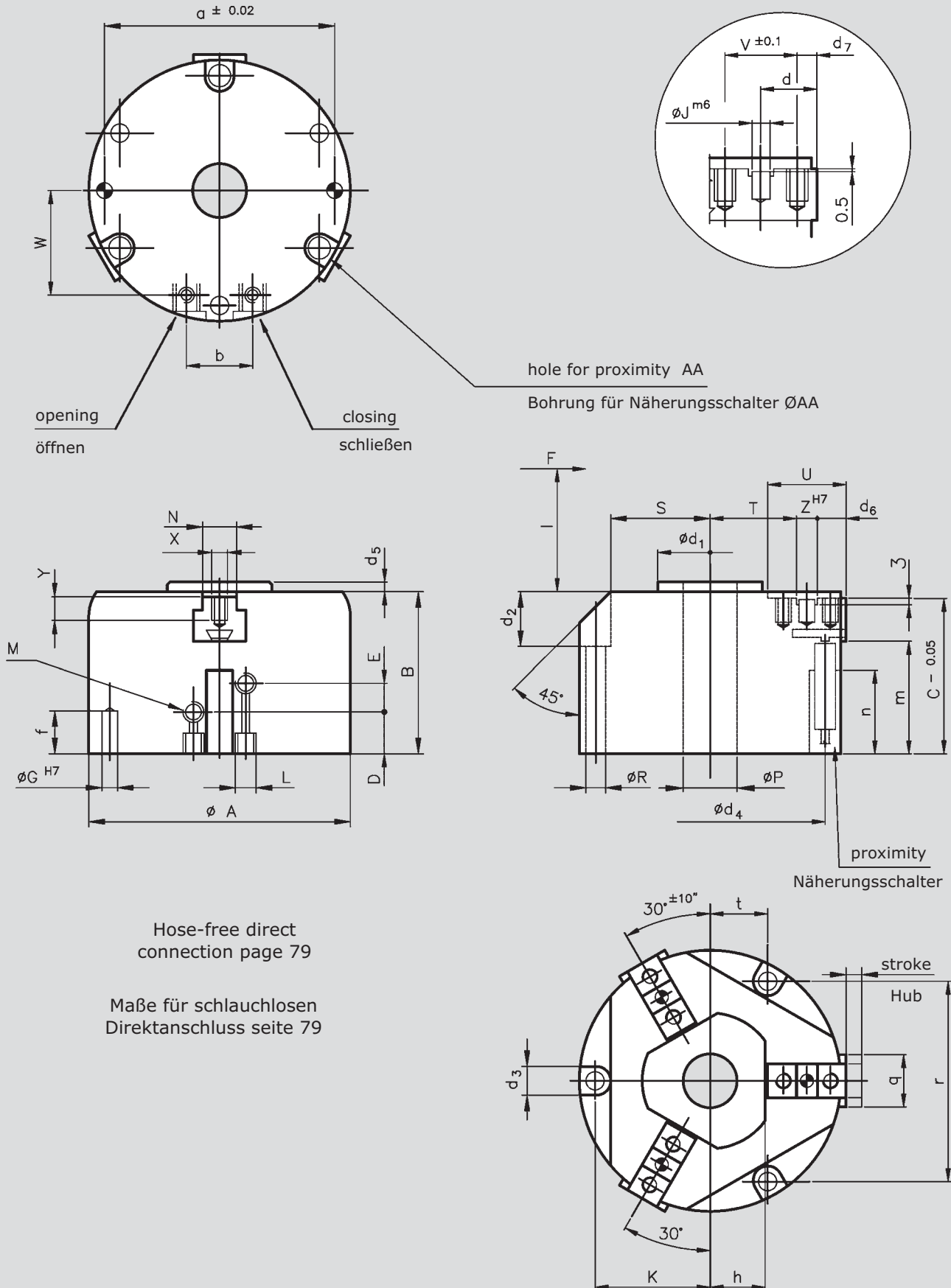
| Type | Gripping force of spring only in N with fixed elasticity | | Gripping time (s) with spring only (pneumatic) |
|--------|--|-----|--|
| | min | max | |
| Typ | Schließkraft über Feder in (N) beim Außenspannen | | Schließzeit nur über Feder (s) |
| | min | max | |
| MFB 70 | 180 | 240 | 0.05 |

NOTE: Minimum operating pressure 4.5 bar. Upon request versions with less pressure; in this case the spring force will be lower. Gripping force = pneumatic gripping force + spring force. The gripping force is the arithmetic sum of the individual forces of the fingers.

Bemerkung: Betriebsdruck mindestens 4.5 bar. Die Greifkraft ergibt sich aus der pneumatischen Greifkraft + Federkraft. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" bei 6 bar

3-finger self centering gripper pneumatic - series MFB

3-Finger-Zentrischgreifer pneumatisch - Typ MFB



3-finger self centering gripper pneumatic - series MFB 3-Finger-Zentrischgreifer pneumatisch - Typ MFB

| Type Typ | A | B | C | D | E | G | L | M | N | P | R | S | T | U | V | Z | Y | X | W | J | K |
|-------------|-----|-----|----|----|----|----|-----|-----|----|------|-----|----|------|------|----|----|-----|-----|----|---|----|
| MFB 85 | 84 | 51 | 49 | 11 | 19 | 6 | M4 | M5 | 11 | 15.5 | 6.5 | 36 | 29 | 21 | 13 | 5 | 7.5 | M4 | 34 | 4 | 37 |
| MFB 110 | 108 | 58 | 55 | 12 | 21 | 6 | M5 | 1/8 | 13 | 20.5 | 6.5 | 47 | 38 | 25.5 | 16 | 6 | 9 | M5 | 43 | 5 | 48 |
| MFB 140 | 138 | 73 | 70 | 16 | 28 | 6 | M5 | 1/8 | 15 | 30.5 | 9 | 59 | 50 | 32 | 20 | 8 | 10 | M6 | 57 | 6 | 62 |
| MFB 170 | 168 | 81 | 77 | 15 | 29 | 8 | M5 | 1/8 | 18 | 40.5 | 9 | 74 | 62.5 | 40.5 | 24 | 8 | 12 | M8 | 68 | 6 | 77 |
| MFB 220 | 218 | 100 | 96 | 19 | 35 | 10 | 1/8 | 1/4 | 22 | 60.5 | 13 | 92 | 85 | 50 | 32 | 10 | 13 | M10 | 88 | 8 | 99 |

| Type Typ | a | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | AA | f | h | l | m | n | q | r | t | |
|-------------|-----|----|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------|----|----|------|----|------|----|----|-------|------|
| MFB 85 | 74 | 22 | 10.5 | 44 | 20 | 10.5 | 76 | 3 | 8 | 4 | ∅5 | M5 | 10 | 20.5 | 23 | 36.5 | 26 | 18 | 64 | 18.5 |
| MFB 110 | 96 | 28 | 13 | 60 | 28 | 11 | 96 | 4 | 10 | 5 | ∅6.5 | M8 | 10 | 28 | 28 | 41 | 30 | 21 | 83 | 24 |
| MFB 140 | 124 | 34 | 16 | 78 | 34 | 14 | 124 | 5 | 12 | 6 | ∅6.5 | M8 | 11 | 37.5 | 34 | 52 | 40 | 25 | 107.5 | 31 |
| MFB 170 | 154 | 46 | 20.5 | 96 | 37 | 14 | 152 | 5 | 16.5 | 8.5 | ∅6.5 | M8 | 14 | 46 | 38 | 57 | 45 | 32 | 133.5 | 38.5 |
| MFB 220 | 198 | 60 | 25 | 129 | 44 | 20 | 204 | 6 | 20 | 9 | ∅6.5 | M8 | 16 | 64.5 | 45 | 70 | 55 | 40 | 171.5 | 49.5 |

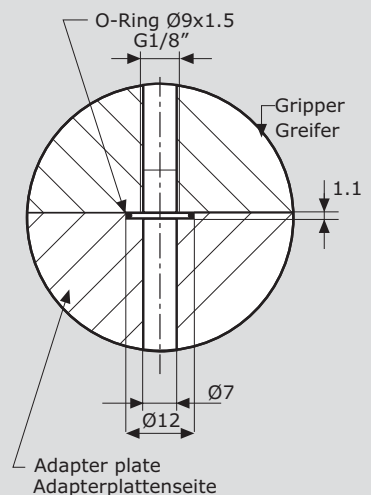
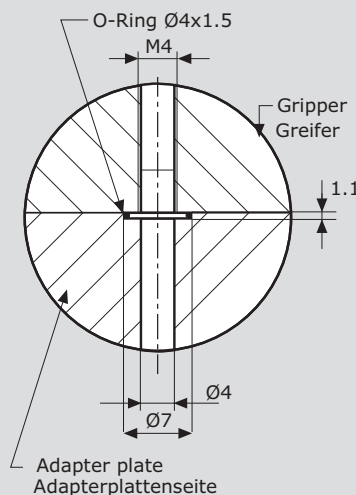
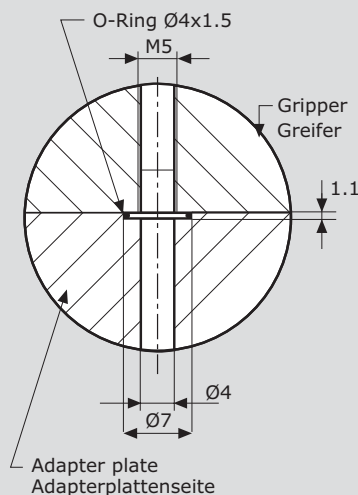
| Type | Stroke x finger (mm) | Gripping force at 6 bar (N) | Air consum for double stroke (cm ³) | Gripper weight (kg) | Recommended weight of part for transport (kg) | Approx. time in seconds | | Moment of inertia (Kgcm ²) | Max finger length / weight |
|---------|----------------------|-----------------------------|---|---------------------|---|-------------------------|-----------|---|-----------------------------|
| Typ | Hub pro Finger (mm) | Greifkraft bei 6 bar (N) | Luftverbrauch pro Doppelhub (cm ³) | Masse (Kg) | Max. empfohlenes Werkstückgewicht (kg) | Schließzeit (s) | | Massen trägheitsmoment (Kgcm ²) | Max. Fingerlänge Eigenmasse |
| | | | | | | öffnen | schließen | | |
| MFB 85 | 6 | 1000 | 31 | 0.7 | 4.8 | 0.08 | 0.06 | 6.2 | 64/0.32 |
| MFB 110 | 8 | 1380 | 57 | 1.5 | 7 | 0.12 | 0.10 | 22 | 80/0.55 |
| MFB 140 | 10 | 2180 | 120 | 3.5 | 10.5 | 0.25 | 0.20 | 85.7 | 100/1.05 |
| MFB 170 | 13 | 3400 | 215 | 6 | 16.5 | 0.40 | 0.30 | 214.7 | 125/2 |
| MFB 220 | 16 | 5500 | 435 | 9.5 | 27 | 0.5 | 0.4 | 564.4 | 160/3.3 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar. Finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Fomschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar. Eigenmasse in Kg

Hose-free direct connection

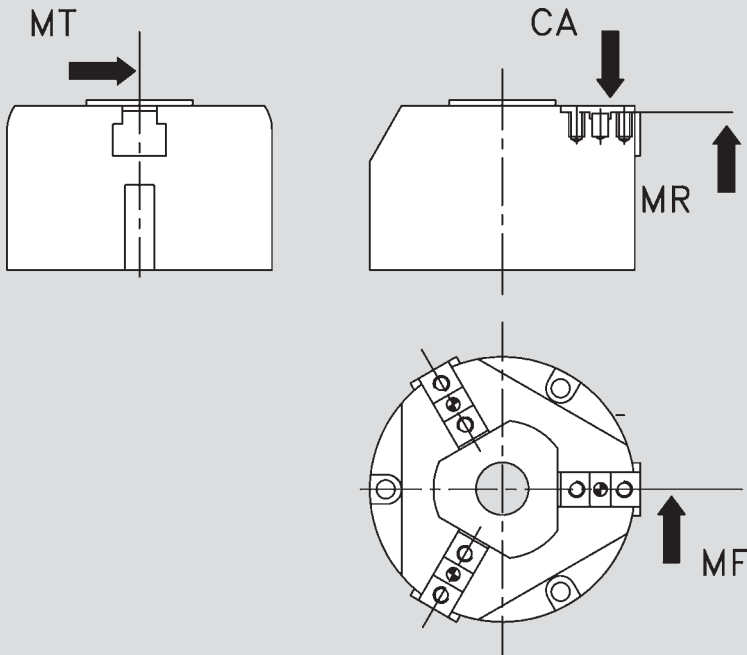
Maße für schlauchlosen Direktanschluss



3-finger self centering gripper pneumatic - series MFB 3-Finger-Zentrischgreifer pneumatisch - Typ MFB

Allowed load data

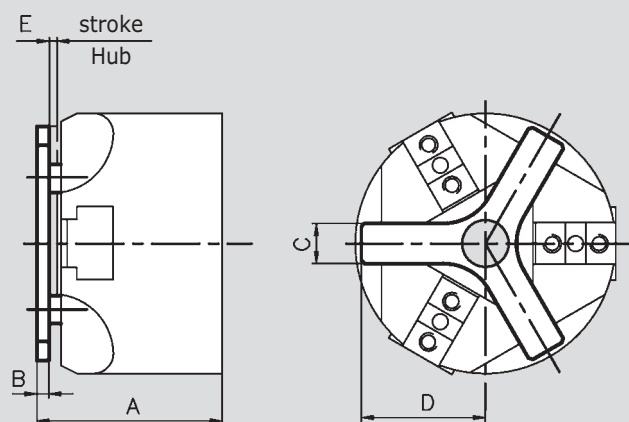
Maximal zul. Kräfte und Momente am Finger



| Type | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|---------|--------|---------|---------|---------|
| Typ | | | | |
| MFB 70 | 850 | 20 | 18 | 13 |
| MFB 85 | 1350 | 35 | 30 | 15 |
| MFB 110 | 1820 | 85 | 35 | 35 |
| MFB 140 | 2250 | 95 | 50 | 45 |
| MFB 170 | 2500 | 100 | 70 | 65 |
| MFB 220 | 2800 | 110 | 85 | 85 |

Spring packaged pressure plate - cod. P

Federnder Andrückstern P

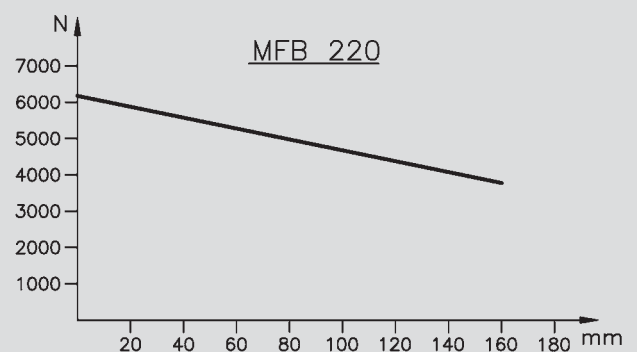
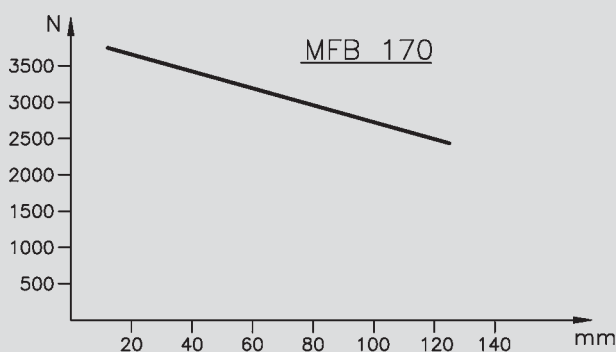
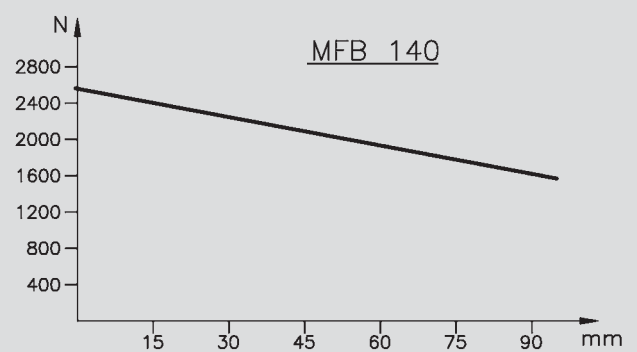
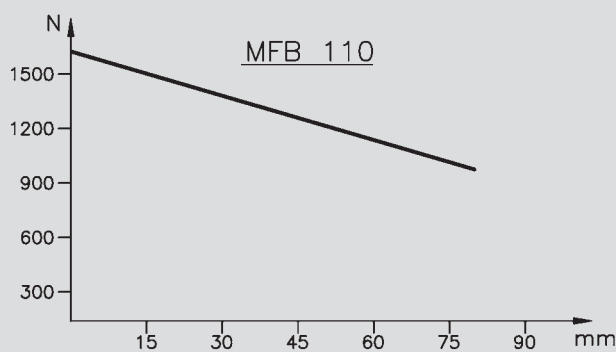
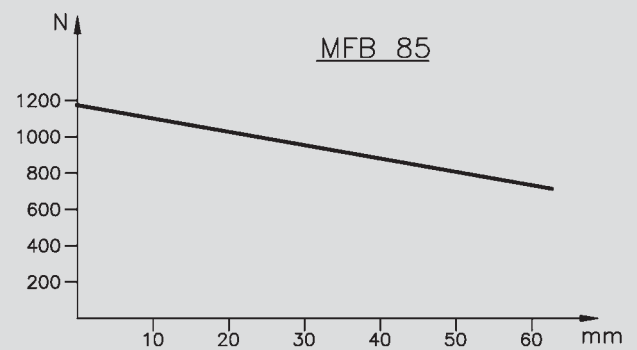
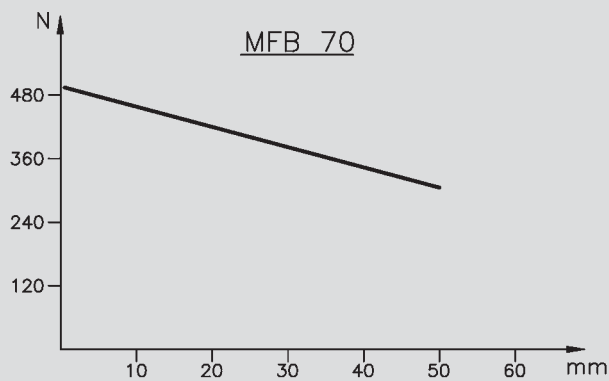
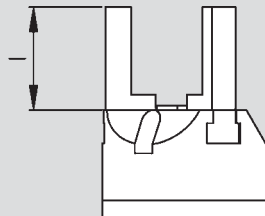


| Type | A | B | C | D | E | Thrust |
|---------|-----|---|----|-----|---|----------|
| Typ | A | B | C | D | E | Kraft |
| MFB 85 | 62 | 7 | 13 | 40 | 4 | 13-55N |
| MFB 110 | 69 | 7 | 16 | 52 | 4 | 15-72N |
| MFB 140 | 86 | 8 | 20 | 68 | 5 | 15-100N |
| MFB 170 | 95 | 8 | 24 | 82 | 6 | 125-250N |
| MFB 220 | 115 | 9 | 30 | 108 | 6 | 170-280N |

3-finger self centering gripper pneumatic - series MFB 3-Finger-Zentrischgreifer pneumatisch - Typ MFB

Force at 6 bar in N at l mm

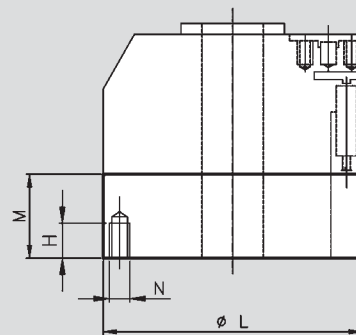
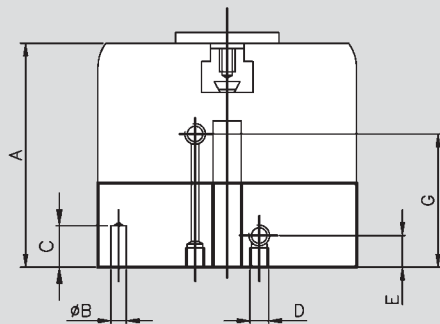
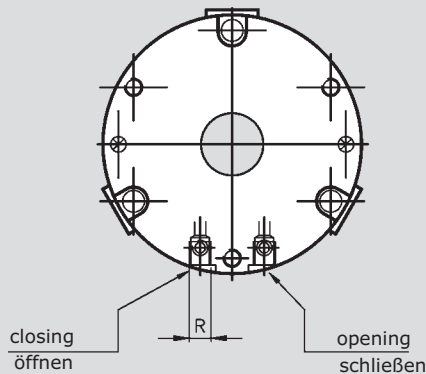
Greifkraft (N) in Abhängigkeit der Fingerlänge "l" (mm) bei 6 bar



3-finger self centering gripper pneumatic - series MFB 3-Finger-Zentrischgreifer pneumatisch – Typ MFB

Gripping force safety device
code MC (closing) MA (opening)

Maßangaben für Greifer mit
Greifkraftsicherung Version MC
(schließen) MA (öffnen)



| Type | Gripping force of spring only in N with fixed elasticity | | Gripping time with spring only (s) | Mass (Kg) | A | B | C | D | E | G | H | L | M | N | R |
|---------|--|------|------------------------------------|-----------|-----|----|----|-----|----|----|----|-----|----|-----|-----|
| Typ | min | max | | | | | | | | | | | | | |
| MFB 85 | 280 | 600 | 0.1 | 0.9 | 70 | 6 | 9 | M4 | 7 | 49 | 10 | 84 | 19 | M6 | M5 |
| MFB 110 | 600 | 1000 | 0.12 | 1.75 | 84 | 6 | 14 | M5 | 12 | 58 | 14 | 108 | 25 | M6 | 1/8 |
| MFB 140 | 1000 | 2000 | 0.25 | 4 | 99 | 6 | 15 | M5 | 12 | 70 | 15 | 138 | 26 | M8 | 1/8 |
| MFB 170 | 1200 | 2400 | 0.4 | 6.75 | 109 | 8 | 15 | M5 | 12 | 72 | 15 | 168 | 28 | M8 | 1/8 |
| MFB 220 | 1500 | 3000 | 0.9 | 11.5 | 138 | 10 | 18 | 1/8 | 15 | 92 | 20 | 218 | 38 | M12 | 1/4 |

NOTE: Minimum operating pressure 4.5 MPa. Upon request versions with less pressure; in this case the spring force will be lower. Gripping force = pneumatic gripping force + spring force. The gripping force is the arithmetic sum of the individual forces of the fingers.

Bemerkung: Betriebsdruck mindestens 4.5 bar. Die Greifkraft ergibt sich aus der pneumatischen Greifkraft + Federkraft. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "I" bei 6 bar

Ordering example

Bestellbeispiel

| Type | For internal bushes indicate B + level | For spring packaged pressure plate | For safety device indicate MC or MA |
|---------|---|------------------------------------|---|
| Typ | Für Ausführung mit Nährungsschalter B+Durchmesser | Für federnden Andrückstern P | Für federgestützte Greifkraftsicherung MC oder MA |
| MFB 110 | B8 | P | MC |

3-finger self centering gripper pneumatic - series MCL 3-Finger-Zentrischgreifer pneumatisch - Typ MCL



Technische Eigenschaften:

- Betriebsdruck: pneumatisch 3 bis 8 bar; hydraulische version max. 25 bar
- Wiederholgenauigkeit: 0.1mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Kinematik: Zahnstangen-Ritzel synchronisiert, Grundbacken in Flachführung
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch (PN) über gefilterte Druckluft (10µm), trocken oder geölt; hydraulisch (ID) über gefiltertes Öl (10µm) Viskosität 45 mm²/s bei 40° ISO VG, maximal 60°
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Sehr geeignet für unter intern/extern
- Schutzart IP40
- 24 Monate Garantie

Technical data:

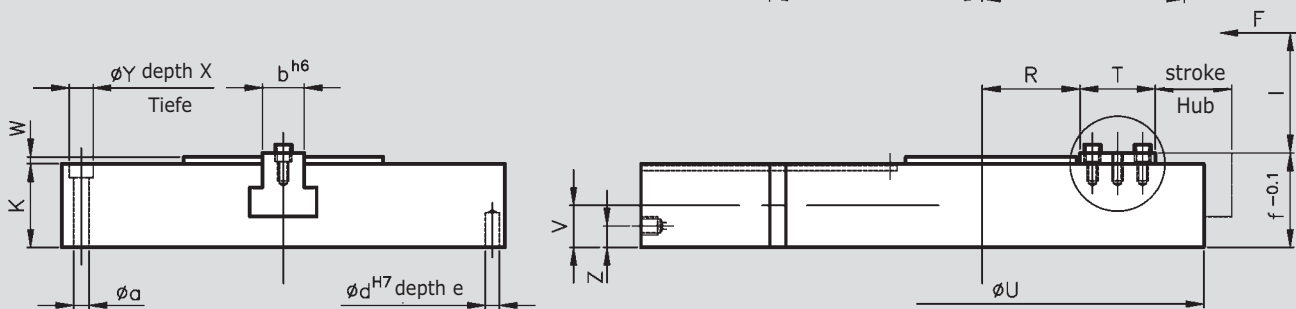
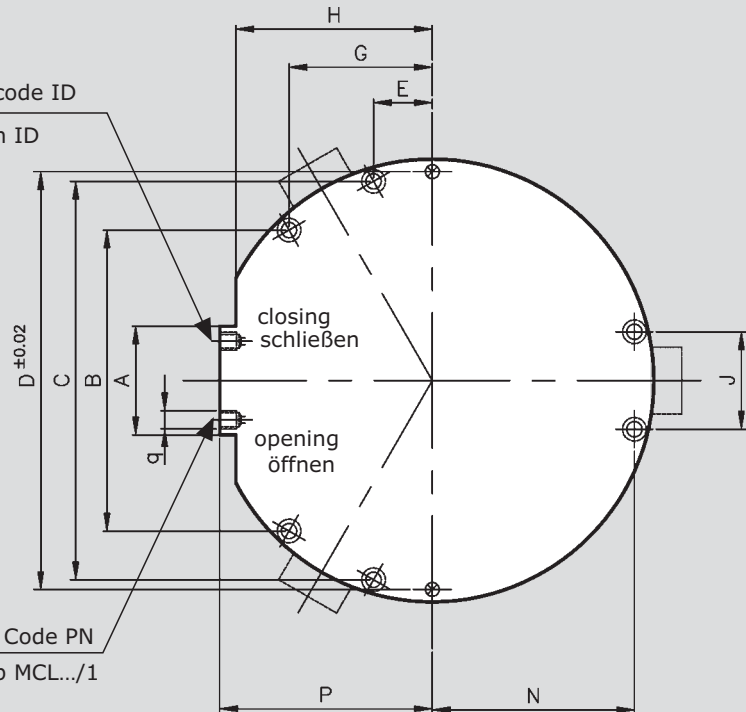
- Range of operating pressure : 3 - 8 bar, pneumatic max. 2.5 MPa hydraulic
- Repeatability accuracy: 0.1 mm; over 100 cycles
- Operating temperature: from -10°C to 90°C; version up to 130°C open request
- Operating principle: piston and synchronised opening/closing by toothed wheel
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : pneumatic (PN) by compressed air filtered (10 µm), dry or lubricated -hydraulic (ID) filtered oil (10 µm), viscosity 46 mm² / s at 40° ISO VG; max. 60°C
- Maintenance: no maintenance required for the first 1.5 million cycles
- Suitable for internal/external gripping
- Rating IP 40
- Warranty 24 months

3-finger self centering gripperpneumatic - series MCL

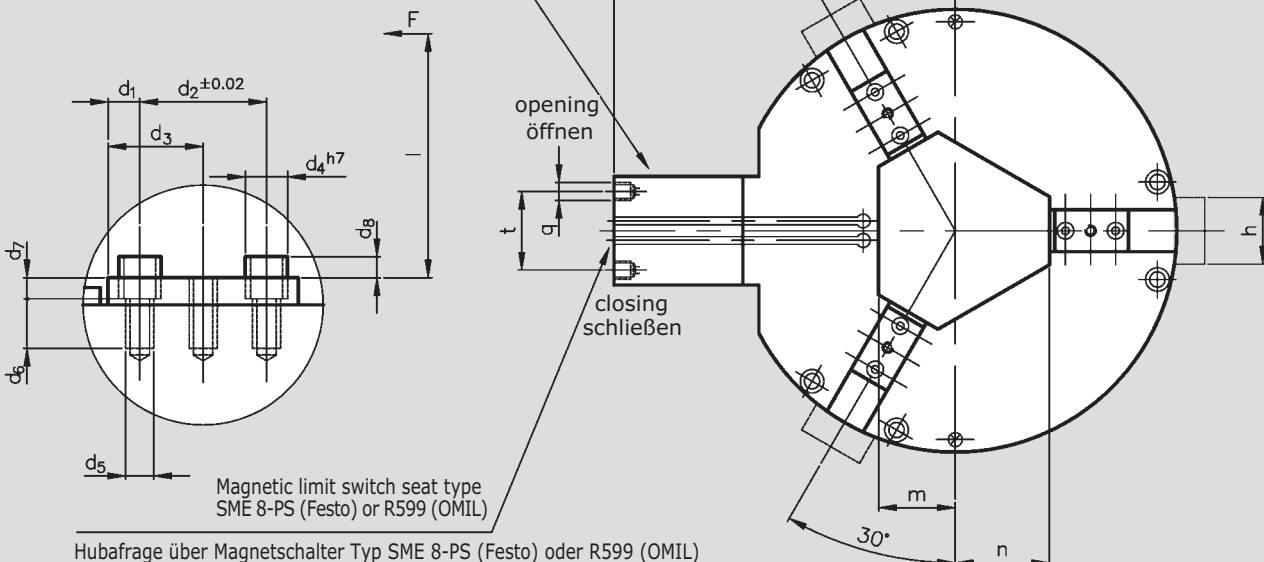
3-Finger-Zentrischgreifer pneumatisch - Typ MCL

Hydraulic version - code ID
Hydraulische version ID

Pneumatic version MCL.../1 - Code PN
Pneumatische version PN Typ MCL.../1



Pneumatic version MCL.../2 - code PN
Pneumatische version PN Typ MCL.../2



3-finger self centering gripperpneumatic - series MCL 3-Finger-Zentrischgreifer pneumatisch - Typ MCL

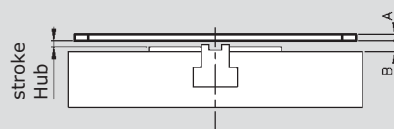
| Type Typ | A | B | C | D | E | G | H | J | N | P | R | T | U | V | Z | Y | X | K | W | a | b |
|-------------|-----|-------|-------|-----|-------|-------|-----|-----|-----|-----|-----|----|-----|------|----|----|----|----|---|------|----|
| MCL 40 | 79 | 128.5 | 176.5 | 186 | 23 | 65 | 90 | 48 | 88 | 90 | 46 | 38 | 199 | 26 | 9 | 14 | 14 | 52 | 4 | 9 | 18 |
| MCL 50 | 94 | 216 | 286 | 300 | 42.2 | 102.8 | 126 | 70 | 145 | 142 | 70 | 54 | 318 | 33 | 14 | 17 | 22 | 66 | 4 | 11 | 30 |
| MCL 63 | 112 | 336 | 426 | 480 | 71 | 149 | 160 | 90 | 220 | 201 | 119 | 72 | 498 | 36 | 14 | 19 | 12 | 72 | 5 | 13 | 40 |
| MCL80 | 120 | 464.6 | 574.6 | 696 | 102.4 | 197.6 | 220 | 110 | 300 | 271 | 178 | 80 | 720 | 43.5 | 16 | 25 | 16 | 87 | 5 | 16,5 | 40 |

| Type Typ | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | e | f | h | l | m | n | r | t | Stroke x finger (mm) Hub pro finger (mm) |
|-------------|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|----|----|----|-----|-----|-----|----|---|
| MCL 40 | 8 | 7 | 24 | 19 | 12 | M6 | 11 | 5 | 5 | 16 | 57 | 32 | 23 | 34 | 45 | 154 | 53 | 32 |
| MCL 50 | 10 | 9 | 36 | 27 | 13 | M8 | 15 | 6 | 6 | 19 | 73 | 48 | 40 | 50 | 69 | 242 | 67 | 55 |
| MCL 63 | 12 | 12 | 48 | 36 | 16 | M10 | 20 | 8 | 8 | 30 | 81 | 60 | 50 | 85 | 118 | 349 | 72 | 100 |
| MCL 80 | 16 | 12 | 56 | 40 | 16 | M10 | 20 | 8 | 8 | 35 | 96 | 60 | 55 | 119 | 177 | - | 79 | 160 |

| Type Typ | Version | q | Gripping force | | Recommended weight of part for transport (kg) Max. empfohlenes Werkstückgewicht (kg) | Gripper weight (kg) Masse (Kg) | Approx. time (s) | | Moment of inertia (Kgcm ²) Massen trägheitsmoment (Kgcm ²) | Max finger length / weight Max. Fingerlänge Eigenmasse |
|-------------|-----------|--------|----------------|------|---|-----------------------------------|-------------------|----------------------|---|---|
| | | | bar | N | | | opening öffnen | closing schließen | | |
| MCL 40/1 | Pneumatic | 1/8" G | 6 | 825 | 4.2 | 5.5 | 100 | 0.3 | 0.3 | 100/1.7 |
| MCL 40/2 | Pneumatic | 1/8" G | 6 | 1650 | 8.4 | 5.9 | 200 | 0.4 | 0.4 | 100/1.7 |
| MCL 40 | Hydraulic | 1/4" G | 25 | 2790 | 14.2 | 5.5 | 100 | 1.4 | 1.4 | 55/1.7 |
| MCL 50/1 | Pneumatic | 1/8" G | 6 | 1220 | 6.2 | 12 | 250 | 0.5 | 0.5 | 135/3.9 |
| MCL 50/2 | Pneumatic | 1/8" G | 6 | 2440 | 12.4 | 13 | 500 | 0.5 | 0.5 | 135/3.9 |
| MCL 50 | Hydraulic | 1/4" G | 25 | 4100 | 20.8 | 12 | 250 | 2.1 | 2.1 | 70/3.9 |
| MCL 63/1 | Pneumatic | 1/4" G | 6 | 1530 | 7.8 | 28 | 600 | 0.6 | 0.6 | 300/7 |
| MCL 63/2 | Pneumatic | 1/4" G | 6 | 3060 | 15.5 | 30 | 1200 | 0.6 | 0.6 | 300/7 |
| MCL 63 | Hydraulic | 3/8" G | 25 | 5160 | 26.3 | 28 | 600 | 2.4 | 2.4 | 150/7 |
| MCL 80/1 | Pneumatic | 1/4" G | 6 | 2600 | 13.2 | 75 | 1550 | 1 | 1 | 300/8 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar. Finger weight in Kg.

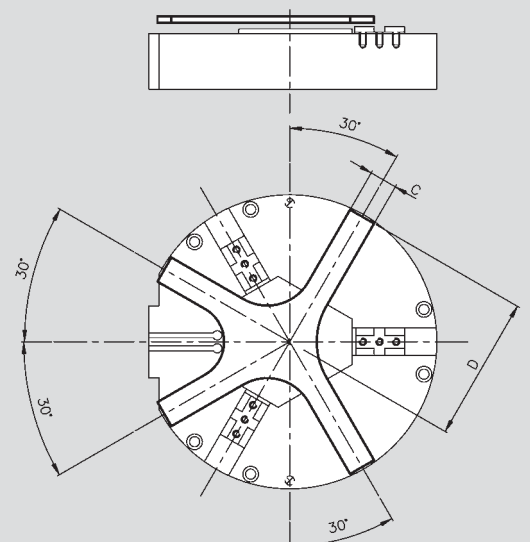
Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar. Eigenmasse in Kg



Spring packaged pressure plate - code P

Federnder Andrückstern P

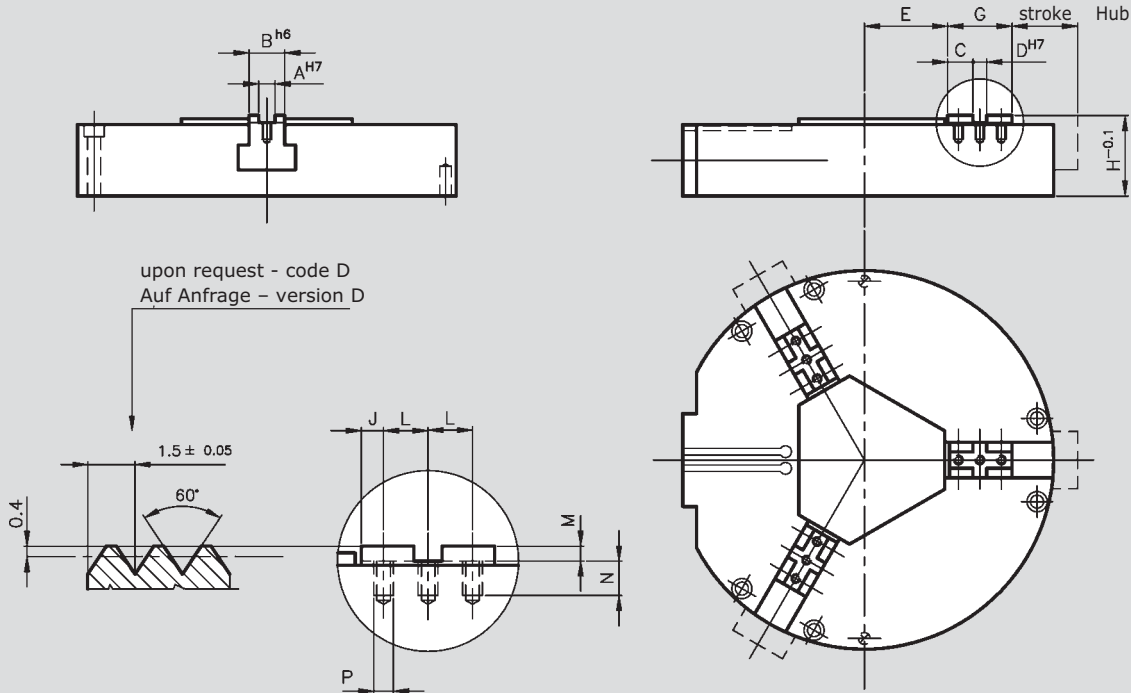
| Type Typ | A | B | C | D | Corsa Hub | Thrust Kraft |
|-------------|----|----|----|-----|--------------|-----------------|
| MCL 40 | 8 | 10 | 20 | 99 | 5 | 160-330N |
| MCL 50 | 9 | 13 | 24 | 142 | 6 | 220-370N |
| MCL 63 | 11 | 16 | 32 | 224 | 7 | 410-640N |



3-finger self centering gripperpneumatic - series MCL 3-Finger-Zentrischgreifer pneumatisch - Typ MCL

Fingers with key - code CH

Version mit Kreuzversatz oder Spitzverzahnung - Version CH

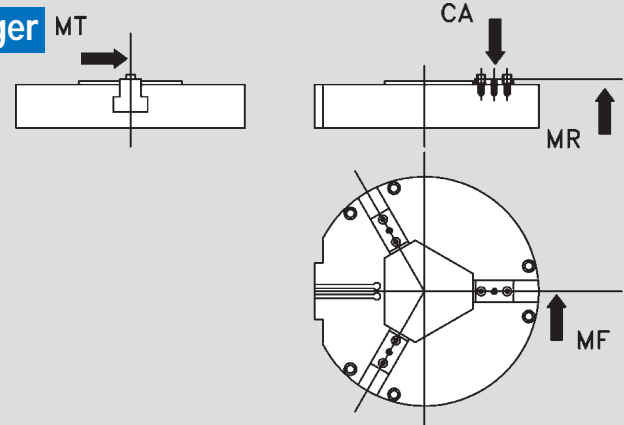


| Type | A | B | C | D | E | G | H | J | L | M | N | P |
|--------|----|----|----|----|-----|----|----|----|----|---|----|-----|
| Typ | | | | | | | | | | | | |
| MCL 40 | 12 | 18 | 13 | 12 | 46 | 38 | 57 | 7 | 12 | 5 | 11 | M6 |
| MCL 50 | 14 | 30 | 20 | 14 | 70 | 54 | 73 | 9 | 18 | 6 | 15 | M8 |
| MCL 63 | 16 | 40 | 28 | 16 | 119 | 72 | 81 | 12 | 24 | 8 | 20 | M10 |

Maximal zul. Kräfte und Momente am Finger

Allowed load data

| Type | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|--------|--------|---------|---------|---------|
| Typ | | | | |
| MCL 40 | 1300 | 65 | 85 | 85 |
| MCL 50 | 2900 | 105 | 155 | 290 |
| MCL 63 | 4600 | 155 | 230 | 450 |
| MCL 80 | 5000 | 180 | 260 | 500 |



Ordering example

Bestellbeispiel

| Type | PN (pneumatic) or ID (hydraulic) | For plate indicate code P | For finger with key indicate code CH | For serrated version indicate code D |
|--------|----------------------------------|---------------------------|--------------------------------------|--|
| Typ | PN (pneumatic) or ID (hydraulic) | Ausführung mit feder P | Ausführung mit Kreuzversatz CH | Ausführung mit spitzverzahnten Fingern - D |
| MCL 50 | PN | / | / | / |

4-finger self centering gripper pneumatic - series MA4 4-Finger-Zentrischgreifer pneumatisch - Typ MA 4



Technische Eigenschaften:

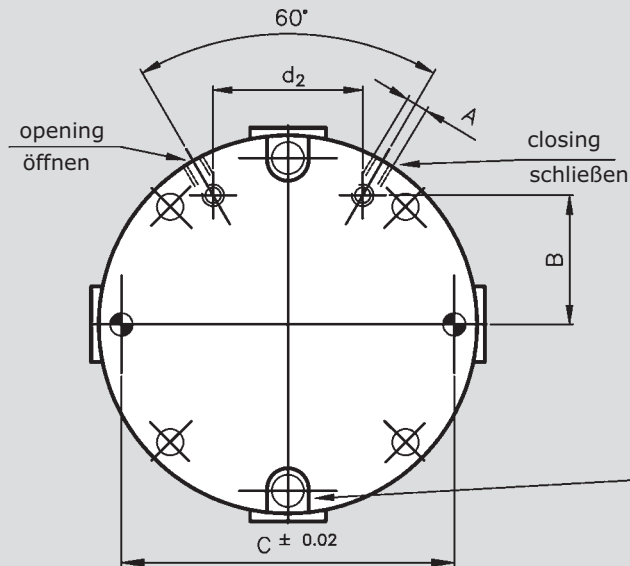
- Betriebsdruck: 2 bis 8 bar
- Wiederholgenauigkeit: MA4-75...110 0.02mm; MA4-175...230 0.05mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Wirkprinzip: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Sehr geeignet für unter intern/extern
- Anschlussmaße der Grundbacken seite 18
- Schutzart IP40
- Druckluftanschlüsse: über die Seitenflächen-Grundflächen
- 24 Monate Garantie

Technical data:

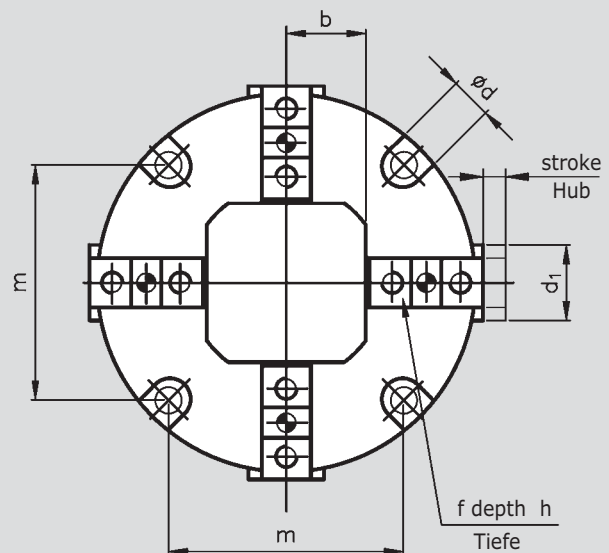
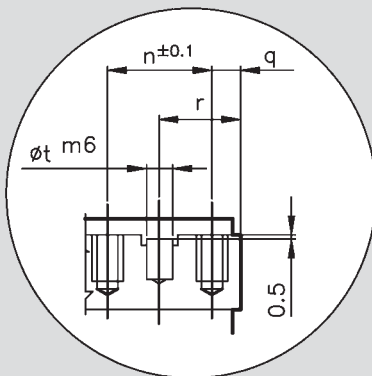
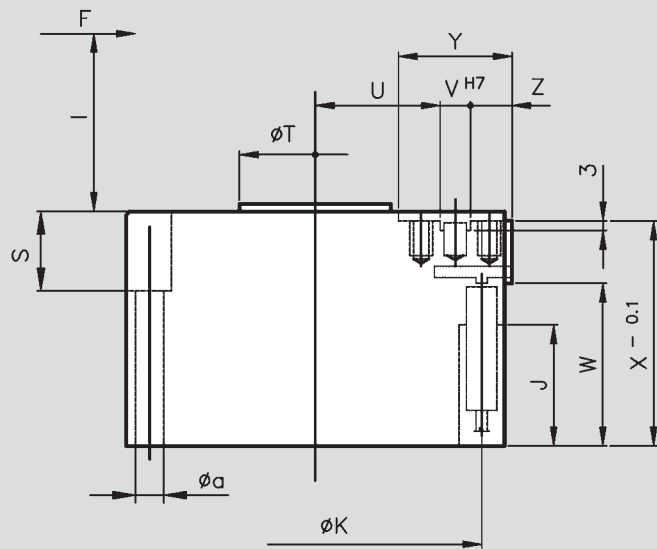
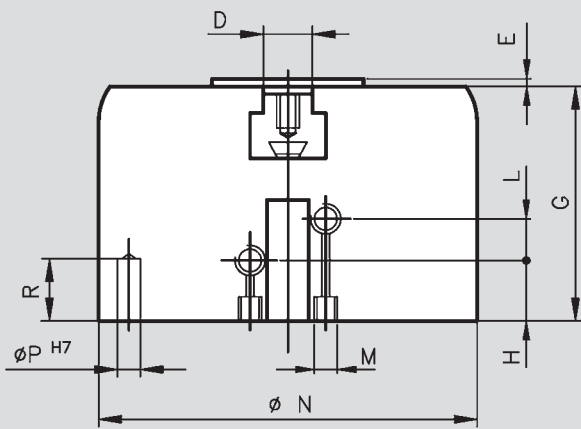
- Range of operating pressure : 2 - 8 bar
- Repeatability accuracy: MA4-75..110 0.02 mm; MA4-145..230 0.05 mm over 100 cycles;
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- Operating principle: wedge-hook kinematics
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Suitable for internal/external gripping
- Layout finger connection page 18
- Air connections: sides and base
- Rating IP 40
- Warranty 24 months

4-finger self centering gripper pneumatic - series MA4

4-Finger-Zentrischgreifer pneumatisch - Typ MA 4



Upon request: bush for proximity e
Auf Anfrage: Bohrung für Näherungsschalter e



4-finger self centering gripper pneumatic - series MA4 4-Finger-Zentrischgreifer pneumatisch - Typ MA 4

| Type | A | B | C | D | E | G | H | L | M | N | P | R | S | T | U | V | Z | Y | X | W | J | K | |
|---------|-----|----|-----|----|---|-----|----|----|-----|-----|----|----|----|-----|------|----|------|------|-----|------|----|-----|--|
| Typ | | | | | | | | | | | | | | | | | | | | | | | |
| MA4 75 | M5 | 28 | 64 | 11 | 3 | 50 | 11 | 18 | M4 | 74 | 5 | 9 | 16 | 44 | 25 | 5 | 8 | 21 | 48 | 35.5 | 24 | 63 | |
| MA4 95 | 1/8 | 35 | 84 | 13 | 3 | 59 | 12 | 22 | M5 | 94 | 6 | 10 | 25 | 54 | 32 | 6 | 10 | 25.5 | 56 | 42 | 31 | 82 | |
| MA4 110 | 1/8 | 40 | 100 | 15 | 3 | 71 | 17 | 24 | M5 | 110 | 6 | 10 | 30 | 58 | 38 | 8 | 12 | 32 | 68 | 50 | 38 | 98 | |
| MA4 145 | 1/8 | 54 | 130 | 18 | 3 | 90 | 17 | 34 | M5 | 144 | 8 | 12 | 38 | 72 | 48.5 | 8 | 16.5 | 40.5 | 86 | 66 | 50 | 130 | |
| MA4 185 | 1/8 | 72 | 166 | 22 | 3 | 106 | 20 | 38 | M5 | 186 | 10 | 16 | 40 | 90 | 64 | 10 | 20 | 50 | 102 | 76 | 54 | 166 | |
| MA4 230 | 1/4 | 90 | 208 | 30 | 4 | 136 | 21 | 51 | 1/8 | 228 | 12 | 20 | 58 | 110 | 77 | 14 | 24 | 62 | 132 | 92 | 68 | 210 | |

| Type | a | b | d | d ₁ | d ₂ | e | f | h | l | m | n | q | r | t | Max finger length/weight (kg) | |
|---------|-----|------|----|----------------|----------------|------|----|-----|----|----|-------|----|-----|------|--------------------------------|------------|
| Typ | | | | | | | | | | | | | | | Max.Fingerlänge Eigenmasse(kg) | |
| MA4 75 | 5.5 | 16.5 | 10 | 18 | 27 | ∅4 | M5 | M4 | 7 | 23 | 46 | 13 | 4 | 10.5 | 4 | 64 / 0.3 |
| MA4 95 | 6.5 | 22 | 11 | 21 | 34 | ∅4 | M8 | M5 | 9 | 28 | 59 | 16 | 5 | 13 | 5 | 80 / 0.5 |
| MA4 110 | 6.5 | 25.5 | 11 | 25 | 46 | ∅6.5 | M8 | M6 | 10 | 34 | 71 | 20 | 6 | 16 | 6 | 100 / 0.95 |
| MA4 145 | 9 | 32 | 14 | 32 | 64 | ∅6.5 | M8 | M8 | 12 | 38 | 92 | 24 | 8.5 | 20.5 | 6 | 125 / 1.75 |
| MA4 185 | 11 | 43.5 | 17 | 40 | 82 | ∅6.5 | M8 | M10 | 15 | 45 | 117.5 | 32 | 9 | 25 | 8 | 160 / 3 |
| MA4 230 | 13 | 52.5 | 20 | 48 | 104 | ∅6.5 | M8 | M12 | 20 | 55 | 147 | 40 | 11 | 31 | 12 | 200 / 5.5 |

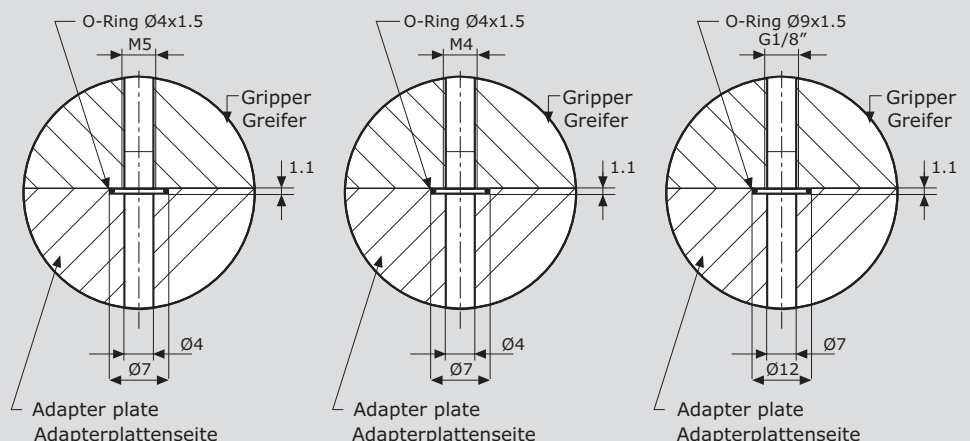
| Type | Gripper stroke | | Gripping force at 6 bar (N) | | Air consum for double stroke (cm ³) | Gripper weight (kg) | Recommended weight of part for transport (kg) | | Approx. time (s) | | Moment of inertia (Kgcm ²) |
|---------|--------------------|--------|-----------------------------|--------|---|---------------------|---|--------|------------------|-----------|--|
| | code 1 | code 2 | code 1 | code 2 | | | code 1 | code 2 | opening | closing | |
| Typ | Hub pro Finger(mm) | | Greikraft bei 6 bar (N) | | Luftverbrauch pro Doppelhub (cm ³) | Masse (Kg) | Max. empfohlenes Werkstückgewicht (kg) | | Schließzeit (s) | | Massen trägheits moment (Kgcm ²) |
| | Vers 1 | Vers 2 | Vers 1 | Vers 2 | | | Vers 1 | Vers 2 | öffnen | schließen | |
| MA4 75 | 6 | 3 | 770 | 1290 | 21 | 0.8 | 3 | 5 | 0.03 | 0.03 | 5.5 |
| MA4 95 | 8 | 4 | 1330 | 3060 | 50 | 1.5 | 5.5 | 12 | 0.07 | 0.07 | 16.6 |
| MA4 110 | 10 | 5 | 2400 | 5330 | 111 | 2 | 9.5 | 21 | 0.1 | 0.1 | 30.2 |
| MA4 145 | 13 | 6.5 | 4130 | 7700 | 217 | 4.4 | 16 | 30 | 0.18 | 0.18 | 114 |
| MA4 185 | 16 | 8 | 8000 | 14670 | 477 | 8.5 | 30 | 56 | 0.45 | 0.45 | 367.6 |
| MA4 230 | 25 | 12.5 | 11200 | 25380 | 1246 | 16.8 | 42 | 90 | 1.2 | 1.2 | 1091.7 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2.5$ With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Fomschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar. Eigenmasse in Kg.

Hose free direct connection

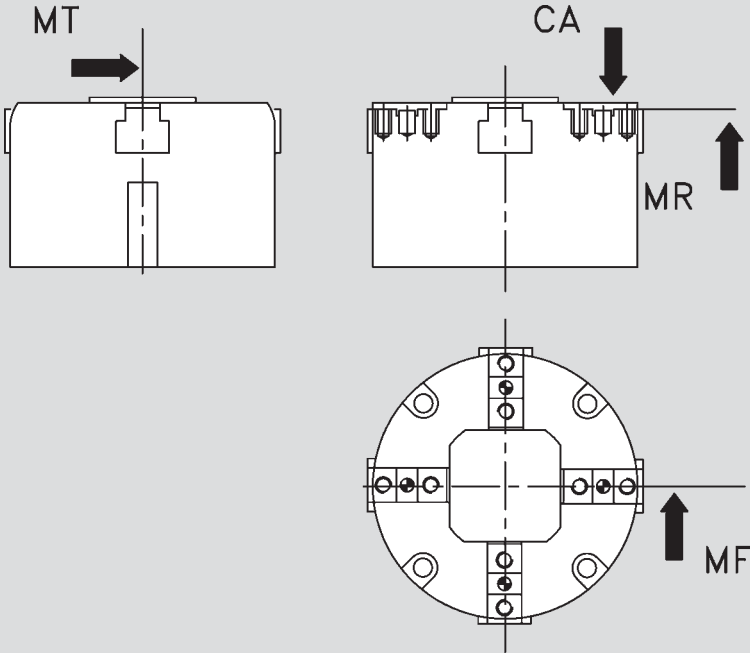
Maße für schlauchlosen Direktanschluss



4-finger self centering gripper pneumatic - series MA4 4-Finger-Zentrischgreifer pneumatisch - Typ MA 4

Allowed load data

Maximal zul. Kräfte und Momente am Finger



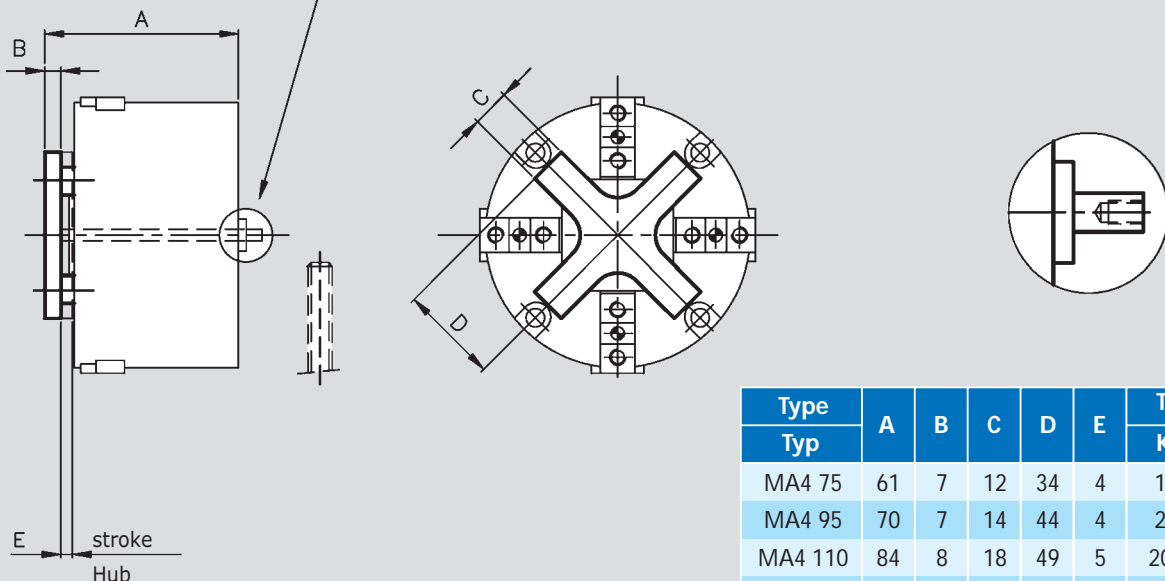
| Type Typ | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|-------------|-----------|------------|------------|------------|
| MA4 75 | 1350 | 35 | 30 | 15 |
| MA4 95 | 1820 | 85 | 35 | 35 |
| MA4 110 | 2250 | 95 | 50 | 45 |
| MA4 145 | 2500 | 100 | 70 | 65 |
| MA4 185 | 2800 | 110 | 85 | 85 |
| MA4 230 | 3500 | 140 | 100 | 120 |

Spring packaged pressure plate - cod. P

Federnder Andrückstern P

Upon request: passing rod (except MA4-75)

Auf Anfrage: Hubabfrage des Andrücksterns (außer MA 4-75)

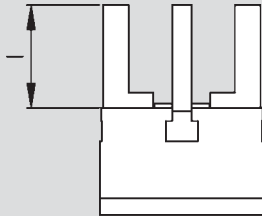


| Type Typ | A | B | C | D | E | Thrust Kraft |
|-------------|-----|----|----|----|---|-----------------|
| MA4 75 | 61 | 7 | 12 | 34 | 4 | 17-75N |
| MA4 95 | 70 | 7 | 14 | 44 | 4 | 20-95N |
| MA4 110 | 84 | 8 | 18 | 49 | 5 | 20-130N |
| MA4 145 | 104 | 8 | 22 | 63 | 6 | 160-330N |
| MA4 185 | 121 | 9 | 28 | 79 | 6 | 220-370N |
| MA4 230 | 154 | 11 | 36 | 99 | 7 | 410-640N |

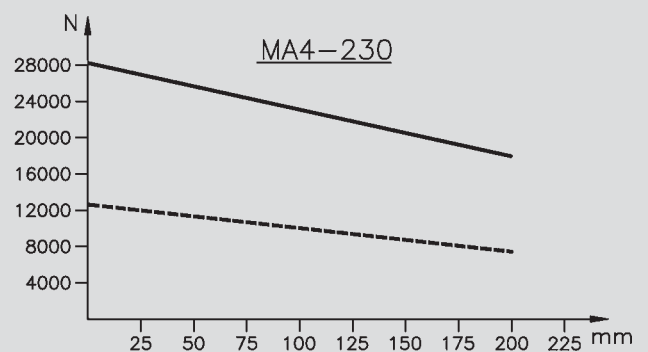
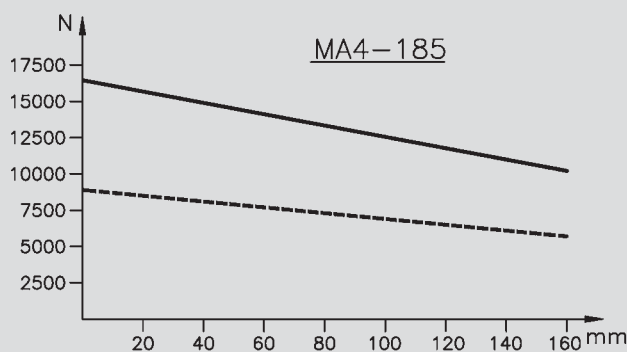
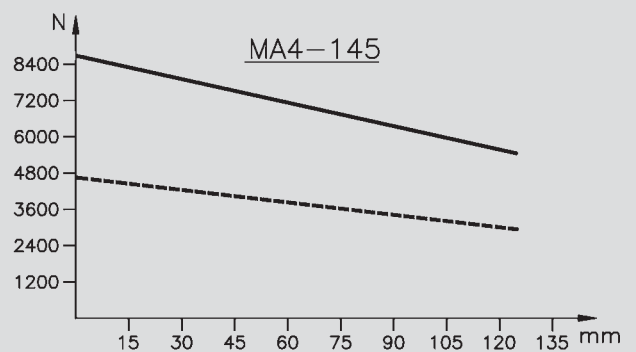
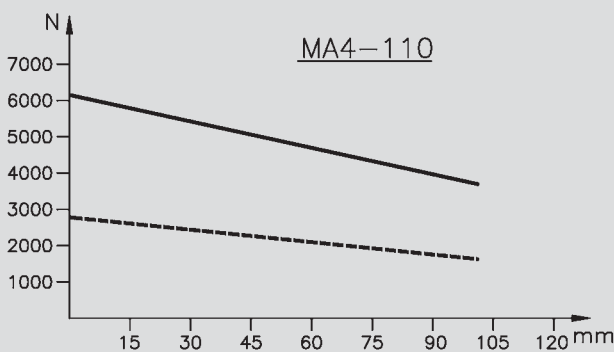
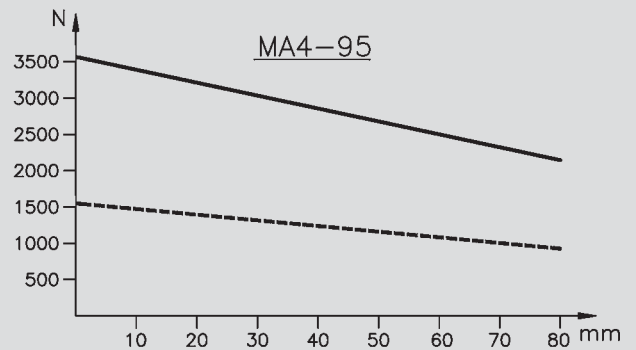
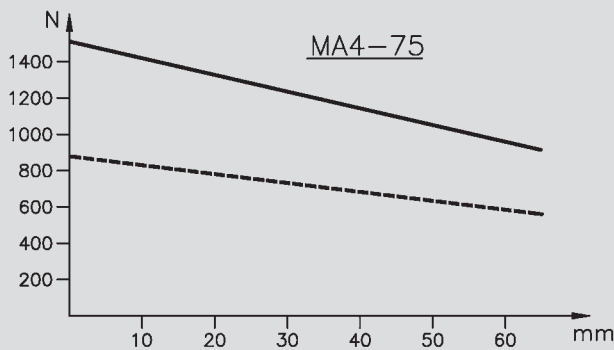
4-finger self centering gripper pneumatic - series MA4 4-Finger-Zentrischgreifer pneumatisch - Typ MA 4

Force at 6 bar in N at l mm

Greifkraft (N) in Abhängigkeit der Fingerlänge "l" (mm) bei 6 bar

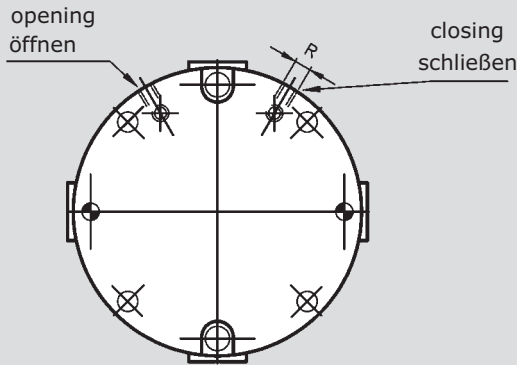


- code 1 closing - Version 1 Außenspannen
- code 2 closing - Versione 2 Außenspannen

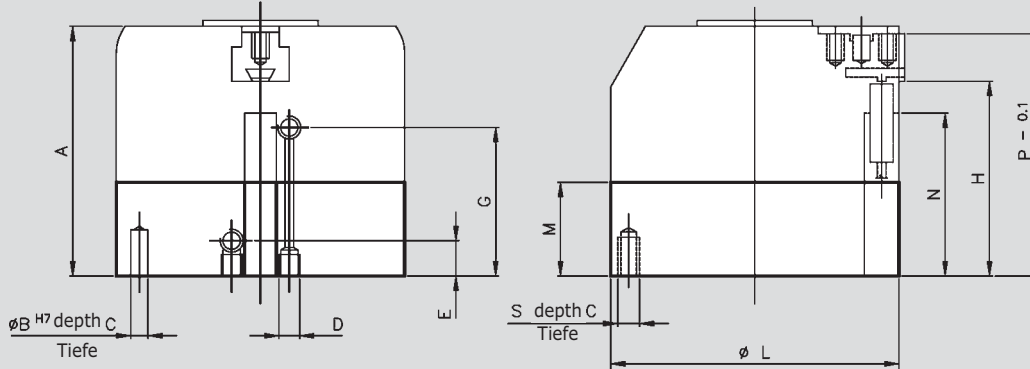


4-finger self centering gripper pneumatic - series MA4 4-Finger-Zentrischgreifer pneumatisch - Typ MA 4

Gripping force safety device code MC (closing) MA (opening)



Maßangaben für Greifer mit Greifkraftsicherung Version MC (schließen) MA (öffnen)



| Type | Gripping force of spring only in N with fixed elasticity | | | | Gripping time (s) with spring only | Mass (Kg) | A | B | C | D | E | G | H | L | M | N | P | R | S |
|---------|--|------------|------------|------------|------------------------------------|-----------|-----|----|----|-----|----|-----|------|-----|----|-----|-----|-----|-----|
| | code 1 min | code 1 max | code 2 min | code 2 max | | | | | | | | | | | | | | | |
| MA4 75 | 200 | 290 | 530 | 820 | 0.06 | 1 | 66 | 5 | 8 | M4 | 8 | 46 | 51.5 | 74 | 16 | 40 | 64 | M5 | M5 |
| MA4 95 | 400 | 860 | 1100 | 1730 | 0.1 | 1.7 | 81 | 6 | 10 | M5 | 11 | 56 | 64 | 94 | 22 | 53 | 78 | 1/8 | M6 |
| MA4 110 | 1000 | 1800 | 1900 | 3700 | 0.18 | 2.3 | 94 | 6 | 12 | M5 | 11 | 64 | 73 | 110 | 23 | 61 | 91 | 1/8 | M6 |
| MA4 145 | 1300 | 2500 | 2620 | 4600 | 0.29 | 4.8 | 120 | 8 | 15 | M5 | 13 | 81 | 96 | 144 | 30 | 80 | 116 | 1/8 | M8 |
| MA4 185 | 1900 | 3870 | 3900 | 7400 | 0.75 | 9.1 | 141 | 10 | 20 | M5 | 13 | 93 | 111 | 186 | 35 | 89 | 137 | 1/8 | M10 |
| MA4 230 | 3100 | 5800 | 5900 | 10000 | 1.6 | 17.8 | 181 | 12 | 24 | 1/8 | 14 | 117 | 137 | 228 | 45 | 113 | 177 | 1/4 | M12 |

NOTE: Minimum operating pressure 4.5 bar. Upon request versions with less pressure; in this case the spring force will be lower. Gripping force = pneumatic gripping force + spring force. The gripping force is the arithmetic sum of the individual forces of the fingers.

Bemerkung: Betriebsdruck mindestens 4.5 bar. Die Greifkraft ergibt sich aus der pneumatischen Greifkraft + Federkraft. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "I" bei 6 bar

Ordering example

Bestellbeispiel

| Type | Code 1 or 2 | For internal bushes indicate B + level | For spring packaged pressure plate | For safety device indicate MC or MA | For passing rod indicate C |
|---------|-----------------|---|------------------------------------|---|-----------------------------------|
| Typ | Version 1 od. 2 | Für Ausführung mit Nährungsschalter B+Durchmesser | Für federnden Andrückstern P | Für federgestützte Greifkraftsicherung MC oder MA | Für Hubabfrage des Andrückstern C |
| MA4 110 | C1 | B8 | P | MC | / |

4-finger self centering gripperpneumatic - series GPS4 4-Finger-Zentrischgreifer pneumatisch - Typ GPS 4



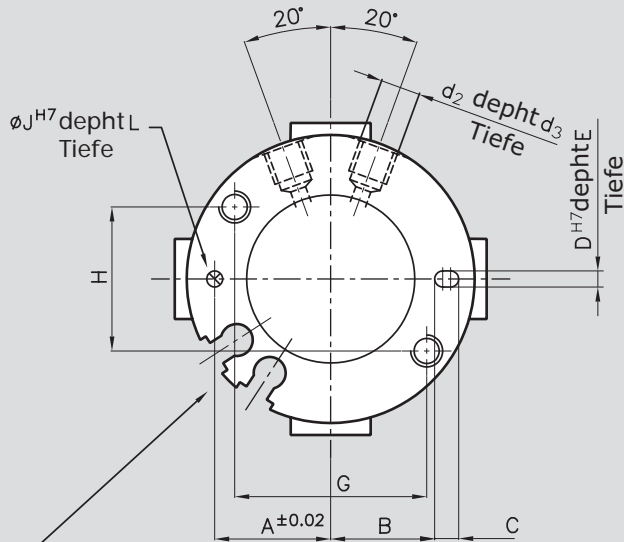
Technische Eigenschaften:

- Betriebsdruck: 2 bis 8 bar
- Wiederholgenauigkeit: 0.02mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Wirkprinzip: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Sehr geeignet für unter intern/extern
- Schutzart IP40
- 24 Monate Garantie

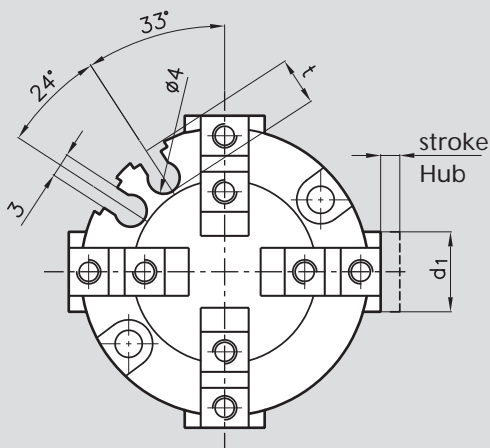
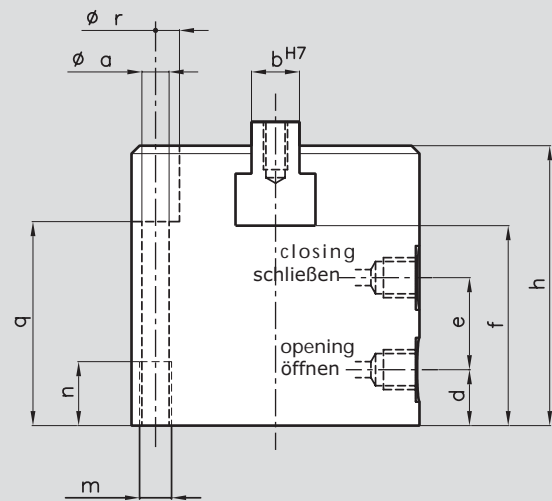
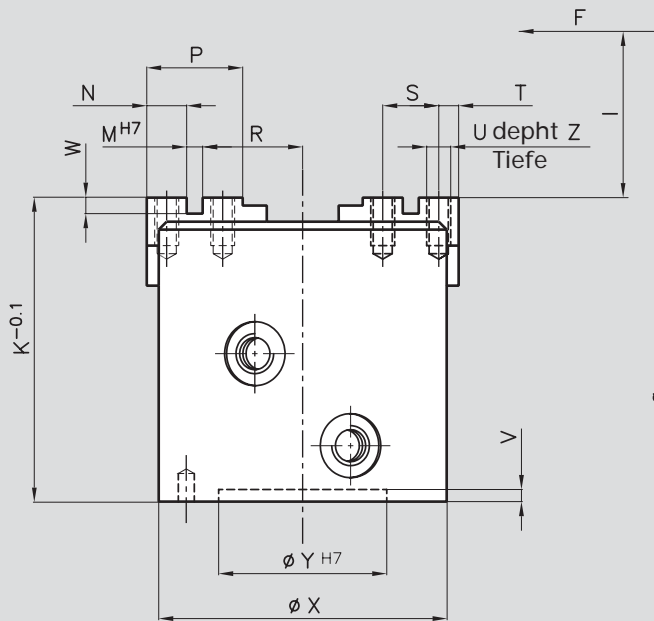
Technical data:

- Range of operating pressure : 0.2 - 0.8 MPa
- Repeatability accuracy: 0.02 mm; over 100 cycles;
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- Operating principle: wedge-hook kinematics
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Suitable internal/external gripping
- Rating IP 40
- Warranty 24 months

4-finger self centering gripper pneumatic - series GPS4 4-Finger-Zentrischgreifer pneumatisch - Typ GPS 4



Magnetic limit switch seat type D-M9P (SMC) or R626 (OMIL)
Hubfrage über Magnetschalter Typ D-M9P (SMC) oder R626 (OMIL)



4-finger self centering gripperpneumatic - series GPS4 4-Finger-Zentrischgreifer pneumatisch - Typ GPS 4

| Type | A | B | C | D | E | G | H | J | L | M | N | P | R | S | T | U | V | Z | Y | X | K | W | a | |
|----------|------|------|---|---|---|----|----|---|---|---|---|----|------|---|-----|----|-----|---|----|----|----|---|-----|--|
| Typ | | | | | | | | | | | | | | | | | | | | | | | | |
| GPS 4-30 | 12.5 | 11 | 3 | 2 | 2 | 18 | 16 | 2 | 2 | 2 | 4 | 10 | 10.5 | 6 | 2 | M3 | 1.5 | 5 | 17 | 30 | 35 | 2 | 3.4 | |
| GPS 4-36 | 14.5 | 13 | 3 | 2 | 2 | 24 | 18 | 2 | 2 | 2 | 5 | 12 | 12.5 | 7 | 2.5 | M3 | 1.5 | 6 | 21 | 36 | 38 | 2 | 3.4 | |
| GPS 4-42 | 17 | 14.5 | 5 | 3 | 3 | 26 | 22 | 3 | 3 | 2 | 6 | 14 | 16 | 8 | 3 | M3 | 1.5 | 6 | 26 | 42 | 40 | 2 | 3.4 | |

| Type | b | d | d ₁ | d ₂ | d ₃ | e | f | h | l | m | n | q | r | t |
|----------|---|---|----------------|----------------|----------------|------|----|----|----|----|---|------|---|-----|
| Typ | | | | | | | | | | | | | | |
| GPS 4-30 | 5 | 7 | 8 | M3 | 4 | 11 | 24 | 32 | 10 | M4 | 8 | 24 | 6 | 4.5 |
| GPS 4-36 | 6 | 7 | 10 | M5 | 5 | 11.5 | 25 | 35 | 12 | M4 | 8 | 25.5 | 6 | 6 |
| GPS 4-42 | 6 | 7 | 12 | M5 | 5 | 13 | 25 | 37 | 16 | M4 | 8 | 27 | 6 | 6.5 |

| Type | Gripping force at 6 bar (N) | Moment of inertia (Kgcm ²) | Recommended weight of part for transport (kg) | Air consumed for double stroke (cm ³) | Stroke for finger (mm) | Finger mass (Kg) | Approx. time in seconds | | Max finger length / weight (mm) |
|----------|-----------------------------|---|---|---|------------------------|------------------|-------------------------|-----------|----------------------------------|
| | | | | | | | opening | closing | |
| Typ | Greikraft bei 6 bar (N) | Massen tr agheits moment (Kgcm ²) | Max. empfohlenes Werkst uckgewicht (kg) | Luftverbrauch pro Doppelhub (cm ³) | Hub pro Finger (mm) | Masse (Kg) | Schliezeit (s) | | Max. Fingerl nge Eigenmasse (mm) |
| | | | | | | |  ffnen | schlieen | |
| GPS 4-30 | 70 | 0.08 | 0.35 | 0.9 | 2 | 0.08 | 0.02 | 0.02 | 30 / 0.02 |
| GPS 4-36 | 145 | 0.19 | 0.7 | 1.5 | 3 | 0.12 | 0.02 | 0.02 | 38 / 0.04 |
| GPS 4-42 | 230 | 0.39 | 1.1 | 3.3 | 3 | 0.18 | 0.04 | 0.04 | 45 / 0.07 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm distance at 6 bar Finger weight in Kg.

Empfehlung f r max. Werkst uckgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Fomschluss sind gr oere Massen m glich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkr fte im Abstand "l" in mm bei 6 bar. Eigenmasse in Kg

Ordering example

Bestellbeispiel

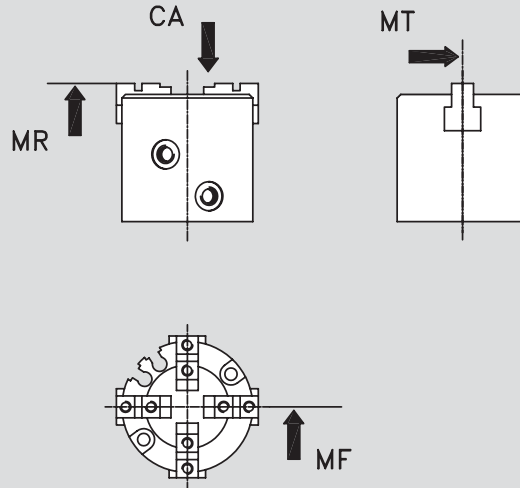
| |
|----------|
| Type |
| Typ |
| GPS 4-42 |

4-finger self centering gripper pneumatic - series GPS4 4-Finger-Zentrischgreifer pneumatisch - Typ GPS 4

Allowed load data

Maximal zul. Kräfte und Momente am Finger

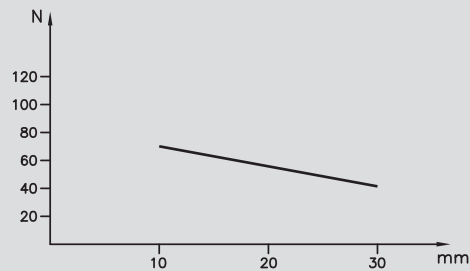
| Type Typ | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|-------------|-----------|------------|------------|------------|
| GSP 4-30 | 140 | 3 | 4.5 | 4 |
| GSP 4-36 | 200 | 4 | 6 | 6 |
| GSP 4-42 | 250 | 8 | 9 | 10 |



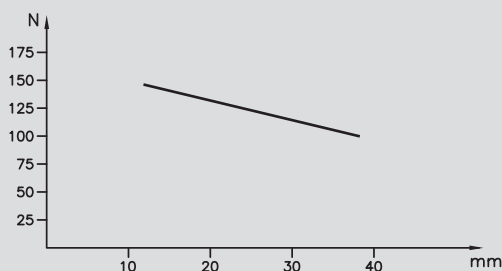
Force at 6 bar in N at l mm

Greifkraft (N) in Abhängigkeit der Fingerlänge "l" (mm) bei 6 bar

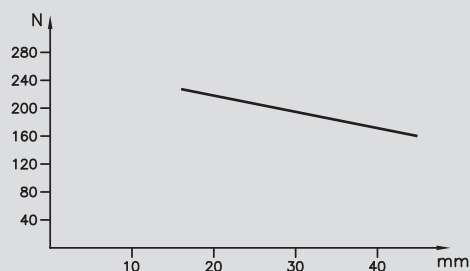
GPS 4-30



GPS 4-36



GPS 4-42



4-finger self centering gripperpneumatic-series MFB/4 4-Finger-Zentrischgreifer pneumatisch - Typ MFB/4



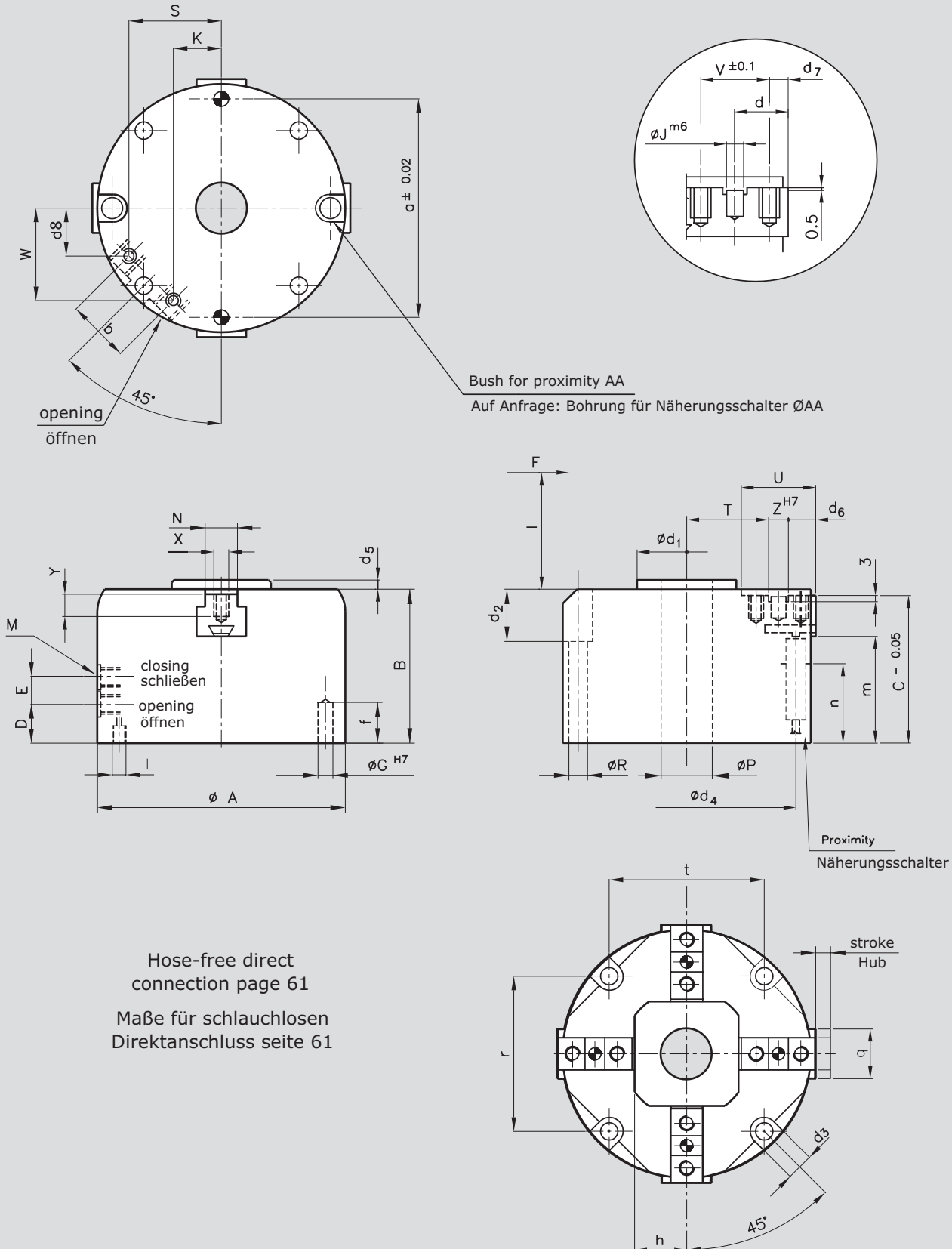
Technische Eigenschaften:

- Betriebsdruck: 2 bis 8 bar
- Wiederholgenauigkeit: 0.02mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Wirkprinzip: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Sehr geeignet für unter intern/extern
- Anschlussmaße der Grundbacken siehe 18
- Schutzart IP40
- Druckluftanschlüsse: über die Seitenflächen-Grundflächen
- Zentraler Durchlass
- 24 Monate Garantie

Technical data:

- Range of operating pressure : 2 - 8 bar
- Repeatability accuracy: 0.02 mm; over 100 cycles;
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- Operating principle: wedge-hook kinematics
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Suitable for internal/external gripping
- Layout finger connection page 18
- Air connections: sides and base
- Rating IP 40
- Through central hole
- Warranty 24 months

4-finger self centering gripperpneumatic-series MFB/4 4-Finger-Zentrischgreifer pneumatisch - Typ MFB/4



4-finger self centering gripperpneumatic-series MFB/4 4-Finger-Zentrischgreifer pneumatisch - Typ MFB/4

| Type Typ | A | B | C | D | E | G | L | M | N | P | R | S | T | U | V | Z | Y | X | W | J | K |
|-------------|-----|----|----|----|----|---|----|------|----|------|-----|------|----|------|----|---|-----|----|------|---|------|
| MFB/4-85 | 84 | 51 | 49 | 11 | 19 | 6 | M4 | M5 | 11 | 15.5 | 6.5 | 31.8 | 29 | 21 | 13 | 5 | 7.5 | M4 | 31.8 | 4 | 16.3 |
| MFB/4-110 | 108 | 58 | 55 | 12 | 21 | 6 | M5 | 1/8" | 13 | 20.5 | 6.5 | 40.3 | 38 | 25.5 | 16 | 6 | 9 | M5 | 40.3 | 5 | 20.5 |
| MFB/4-140 | 138 | 73 | 70 | 16 | 28 | 6 | M5 | 1/8" | 15 | 30.5 | 9 | 52.3 | 50 | 32 | 20 | 8 | 10 | M6 | 52.3 | 6 | 28.3 |

| Type Typ | a | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | AA | f | h | l | m | n | q | r | t |
|-------------|-----|----|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----|----|------|----|------|----|----|------|------|
| MFB/4-85 | 74 | 22 | 10.5 | 44 | 20 | 10.5 | 76 | 3 | 8 | 4 | 16.3 | M5 | 10 | 20.5 | 23 | 36.5 | 26 | 18 | 52.3 | 52.3 |
| MFB/4-110 | 96 | 28 | 13 | 60 | 28 | 11 | 96 | 4 | 10 | 5 | 20.5 | M8 | 10 | 28 | 28 | 41 | 30 | 21 | 68 | 68 |
| MFB/4-140 | 124 | 34 | 16 | 78 | 34 | 14 | 124 | 5 | 12 | 6 | 28.3 | M8 | 11 | 37.5 | 34 | 52 | 40 | 25 | 87.7 | 87.7 |

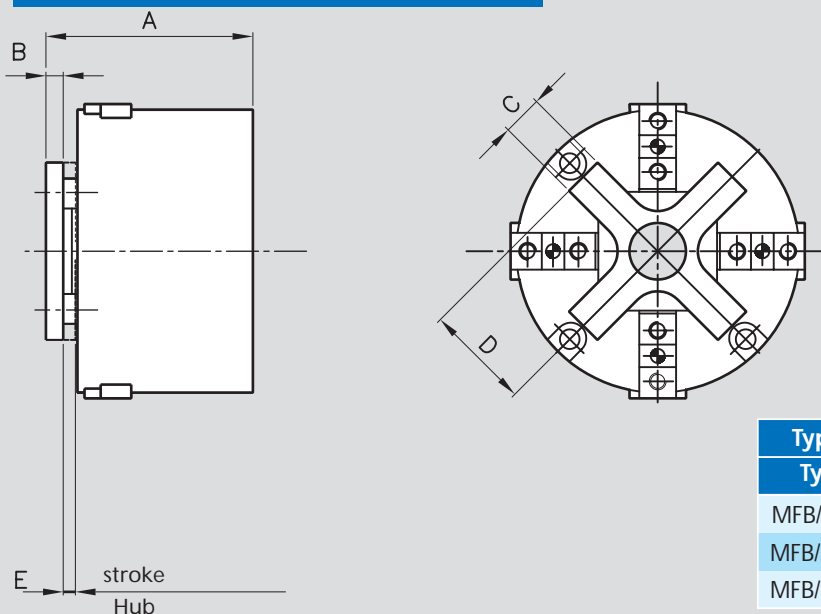
| Type | Stroke for finger | Gripping force at 6 bar (N) | Air consumed for double stroke (cm ³) | Finger mass (Kg) | Recommended weight of part for transport (kg) | Approx. time (s) opening closing | | Moment of inertia (Kgcm ²) | Max finger length / weight (mm) |
|-----------|---------------------|-----------------------------|---|------------------|---|---------------------------------------|------|---|----------------------------------|
| Typ | Hub pro Finger (mm) | Greifkraft bei 6 bar (N) | Luftverbrauch pro Doppelhub (cm ³) | Masse (Kg) | Max. empfohlenes Werkstückgewicht (kg) | Schließzeit (s) öffnen schließen | | Massen trägheitsmoment (Kgcm ²) | Max. Fingerlänge Eigenmasse (mm) |
| MFB/4-85 | 6 | 1200 | 31 | 0.75 | 6 | 0.08 | 0.06 | 6.6 | 64 / 0.3 |
| MFB/4-110 | 8 | 1700 | 57 | 1.6 | 8.5 | 0.12 | 0.10 | 23.3 | 80 / 0.5 |
| MFB/4-140 | 10 | 2900 | 120 | 3.7 | 14.5 | 0.18 | 0.20 | 88 | 100 / 0.95 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm distance at 6 bar
Finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Fomschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar. Eigenmasse in Kg.

Spring packaged pressure plate - cod. P

Federnder Andrückstern P

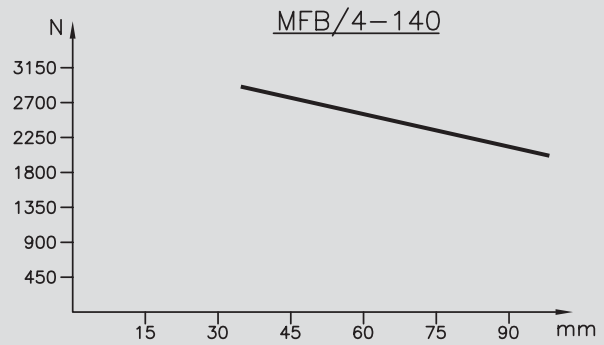
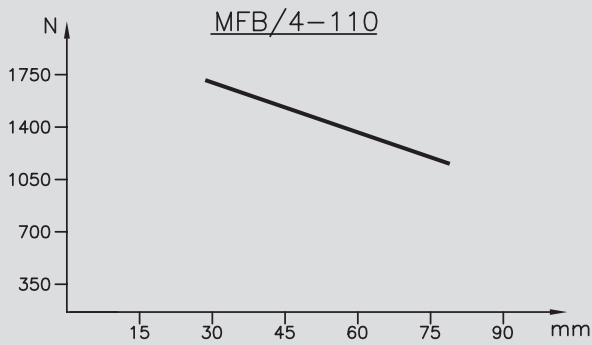
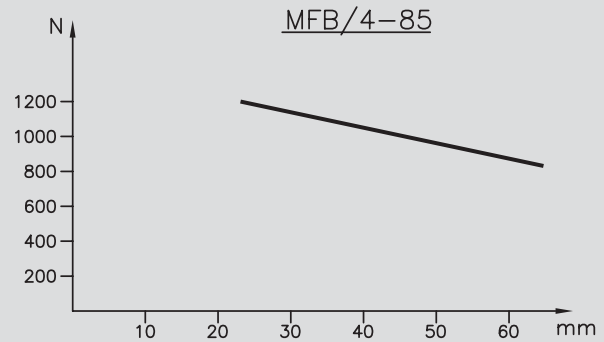
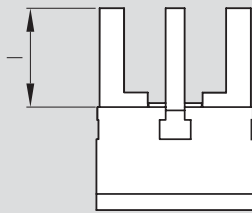


| Type Typ | A | B | C | D | E | Thrust Kraft |
|-------------|----|---|----|----|---|-----------------|
| MFB/4-85 | 62 | 7 | 12 | 30 | 4 | 16-70N |
| MFB/4-110 | 69 | 7 | 14 | 42 | 4 | 20-95N |
| MFB/4-140 | 86 | 8 | 18 | 54 | 5 | 20-130N |

4-finger self centering gripperpneumatic-series MFB/4 4-Finger-Zentrischgreifer pneumatisch - Typ MFB/4

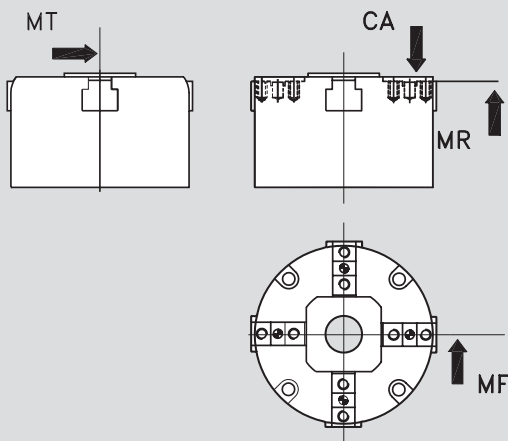
Force at 6 bar in N at l mm

Greifkraft (N) in Abhängigkeit der Fingerlänge "l" (mm) bei 6 bar



Allowed load data

Maximal zul. Kräfte und Momente am Finger



| Type | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|-----------|--------|---------|---------|---------|
| Typ | | | | |
| MFB/4-85 | 1350 | 35 | 30 | 15 |
| MFB/4-110 | 1820 | 85 | 35 | 35 |
| MFB/4-140 | 2250 | 95 | 50 | 45 |

Ordering example

Bestellbeispiel

| Type | For internal bushes indicate B + level | For spring packaged pressure plate |
|-----------|---|------------------------------------|
| Typ | Für Ausführung mit Nährungsschalter B+Durchmesser | Für federnden Andrückstern P |
| MFB/4-110 | B8 | P |

2-finger angular gripper, pneumatic - series PLA 2-Finger-Winkelgreifer pneumatisch - Typ PLA



Technische Eigenschaften:

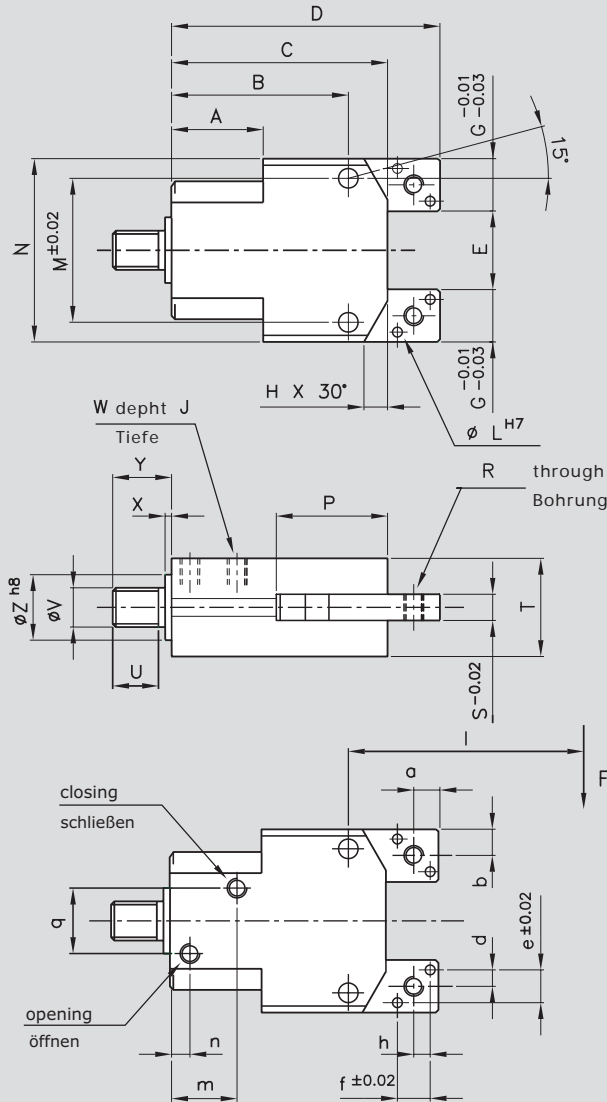
- Betriebsdruck: 3 bis 8 bar
- Wiederholgenauigkeit: 0.05mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Wirkprinzip: doppelbeaufschlagter Kolben Hebelsynchronisation
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Überspannungswinkel pro Backe 1,5°
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Schutzart IP20
- 24 Monate Garantie

Technical data:

- Range of operating pressure : 3 - 8 bar
- Repeatability accuracy: 0.05 mm; over 100 cycles;
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- Operating principle: pistons and levers
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Over travel 1.5°
- Rating IP 20
- Warranty

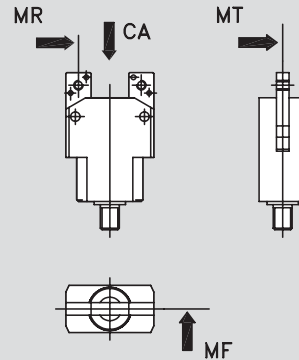
2-finger angular gripper, pneumatic - series PLA

2-Finger-Winkelgreifer pneumatisch - Typ PLA



Allowed load data

Maximal zul. Kräfte und Momente am Finger



| Type | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|--------|--------|---------|---------|---------|
| Typ | | | | |
| PLA 10 | 10 | 18 | 15 | 36 |
| PLA 16 | 20 | 40 | 30 | 75 |

| Type | A | B | C | D | E | G | H | L | M | N | P | R | S | T | U | V | Z | X | Y | W | J | a | b | |
|--------|----|----|----|------|----|----|-----|-----|----|----|----|----|---|----|----|----|----|---|------|----|---|-----|---|--|
| Typ | | | | | | | | | | | | | | | | | | | | | | | | |
| PLA-10 | 14 | 27 | 33 | 40.2 | 12 | 8 | 3.5 | 1.5 | 22 | 28 | 17 | M3 | 4 | 15 | 7 | M6 | 10 | 1 | 9 | M3 | 3 | 4 | 4 | |
| PLA-16 | 17 | 36 | 46 | 58 | 20 | 12 | 5 | 2 | 35 | 44 | 26 | M4 | 6 | 22 | 10 | M8 | 10 | 1 | 12.5 | M5 | 4 | 5.5 | 6 | |

| Type | d | e | f | h | l | m | n | q | r | t | d ₁ | Max finger length/weight (mm) |
|--------|-----|---|---|-----|----|----|-----|----|----|----|----------------|----------------------------------|
| Typ | | | | | | | | | | | | Max. Fingerlänge Eigenmasse (mm) |
| PLA-10 | 2.5 | 5 | 5 | 2.5 | 14 | 10 | 2.8 | 10 | 21 | 30 | 17.8 | 38 / 0.03 |
| PLA-16 | 4 | 8 | 7 | 3.5 | 22 | 14 | 4 | 16 | 32 | 45 | 22.6 | 55 / 0.05 |

| Type | Max gripping torque at 6 bar (Ncm) | Max gripping force at 6 bar (N) | Recommended weight of part for transport (kg) | Air consumed for double stroke (cm ³) | Approx. time (s) opening closing | Moment of inertia (Kgcm ²) | Mass (Kg) |
|--------|------------------------------------|---------------------------------|---|---|------------------------------------|---|------------|
| Typ | Max. Greifkraft bei 6 bar (Ncm) | Max. Greifkraft bei 6 bar (N) | Max. empfohlenes Werkstückgewicht (kg) | Luftverbrauch pro Doppelhub (cm ³) | Schließzeit (s) öffnen schließen | Massen trägheitsmoment (Kgcm ²) | Masse (Kg) |
| PLA-10 | 14 | 10 | 0.065 | 0.2 | 0.02 0.02 | 0.02 | 0.035 |
| PLA-16 | 55 | 25 | 0.16 | 0.8 | 0.03 0.03 | 0.17 | 0.11 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "I" mm distance at 6 bar. Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "I" in mm bei 6 bar Eigenmasse in Kg

2-finger angular gripper, pneumatic - series OPLE 2-Finger-Winkelgreifer pneumatisch – Typ OPLE



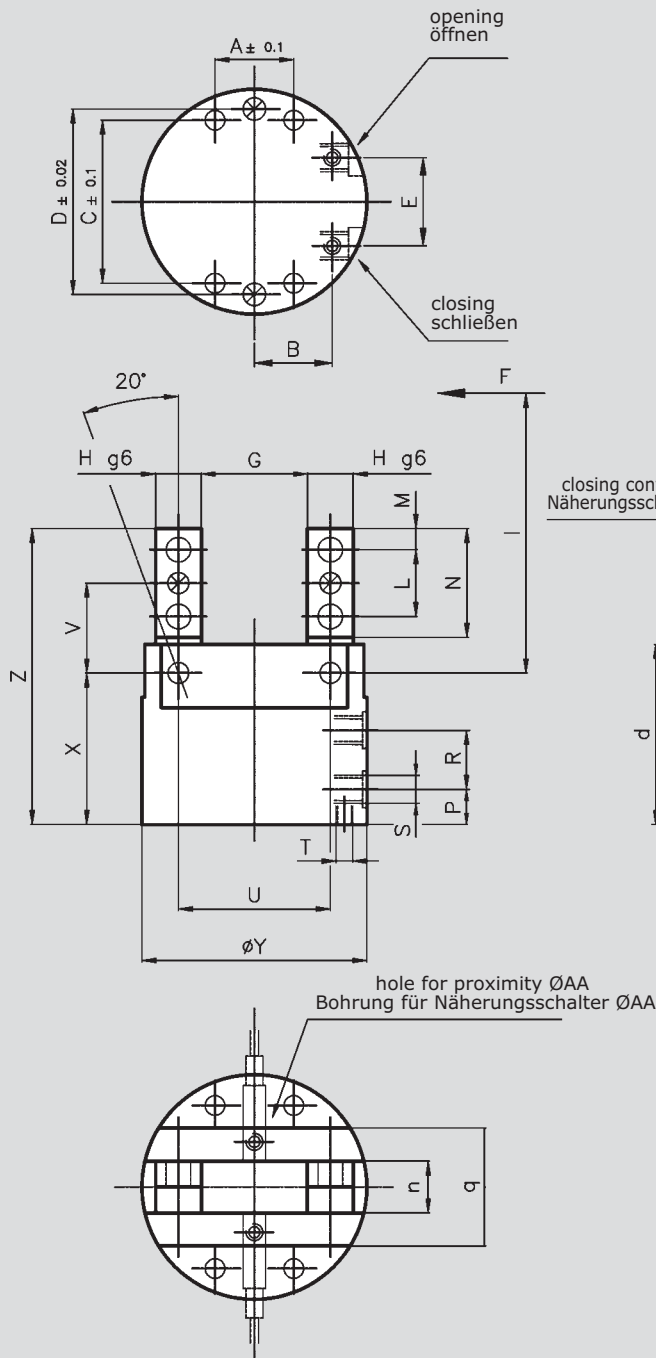
Technische Eigenschaften:

- Betriebsdruck: 3 bis 8 bar
- Wiederholgenauigkeit: 0.05mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Wirkprinzip: doppelwirkender Zylinder Fingersynchronisation über Hebel
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Überspannungswinkel pro Backe 1,5°
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Schutzart IP20
- 24 Monate Garantie

Technical data:

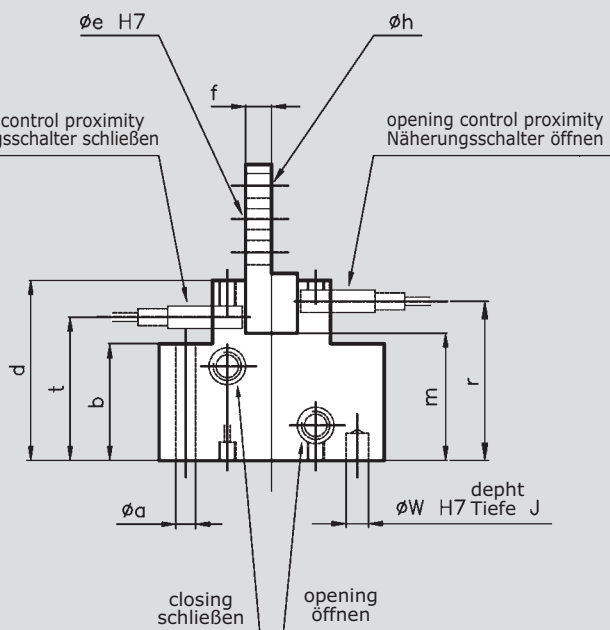
- Range of operating pressure : 3 - 8 bar
- Repeatability accuracy: 0.05 mm; over 100 cycles
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- Operating principle: pistons and levers
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Rating IP 20
- Overtravel 1.5°
- Warranty 24 months

2-finger angular gripper, pneumatic - series OPLE 2-Finger-Winkelgreifer pneumatisch - Typ OPLE



Hose-free direct connection page 61

Maße für schlauchlosen Direktanschluss
Direktanschluss seite 61

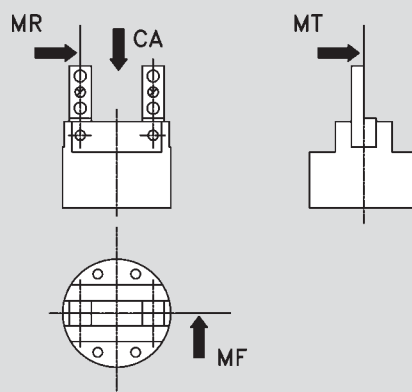


NOTE: - The part does not allow adjustment of the opening/closing proximity switches.
Opening/closing control is only on final positions

Bemerkung: Näherungsschalter kann nicht variable eingestellt werden. Abfrage nur in den Endlagen möglich

Allowed load data

Maximal zul. Kräfte und Momente am Finger



| Type | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|---------|--------|---------|---------|---------|
| Typ | | | | |
| OPL 30 | 15 | 0.5 | 0.2 | 0.8 |
| OPL 40 | 25 | 1 | 0.3 | 1.4 |
| OPL 50 | 50 | 2 | 0.4 | 2 |
| OPL 64 | 70 | 3.9 | 0.5 | 5 |
| OPL 80 | 180 | 17 | 0.8 | 11 |
| OPL 100 | 300 | 38 | 1.1 | 15 |

| Type/Typ | A | B | C | D | E | G | H | L | M | N | P | R | S | T | U | V | Z | X | Y | W | J | a | b |
|----------|------|----|------|----|----|----|----|----|-----|----|----|------|------|----|----|------|------|------|----|---|----|-----|------|
| OPLE 30 | 12 | 10 | 26 | 28 | 14 | 16 | 7 | 9 | 3.5 | 16 | 6 | 9.5 | M5 | M3 | 23 | 15.5 | 48.5 | 25 | 34 | 4 | 6 | 3.5 | 18 |
| OPLE 40 | 12 | 12 | 28 | 30 | 17 | 18 | 8 | 12 | 4 | 20 | 6 | 11 | M5 | M3 | 26 | 17 | 54.5 | 27.5 | 39 | 4 | 6 | 4.5 | 18.5 |
| OPLE 50 | 18 | 16 | 35 | 40 | 20 | 24 | 10 | 16 | 5 | 26 | 7 | 11.5 | M5 | M3 | 34 | 23 | 67.5 | 31.5 | 49 | 4 | 7 | 5.5 | 23.5 |
| OPLE 64 | 27.5 | 20 | 47.5 | 55 | 30 | 32 | 12 | 20 | 6 | 32 | 10 | 16 | M5 | M3 | 44 | 27 | 81 | 38 | 64 | 4 | 9 | 5.5 | 33 |
| OPLE 80 | 34.5 | 24 | 60 | 69 | 40 | 40 | 14 | 24 | 6.5 | 37 | 11 | 22 | M5 | M4 | 54 | 31 | 98 | 48.5 | 79 | 5 | 12 | 6.5 | 40 |
| OPLE 100 | 44 | 31 | 76 | 88 | 48 | 52 | 18 | 28 | 7 | 42 | 12 | 28 | 1/8G | M5 | 70 | 37 | 115 | 57 | 99 | 5 | 12 | 6.5 | 47 |

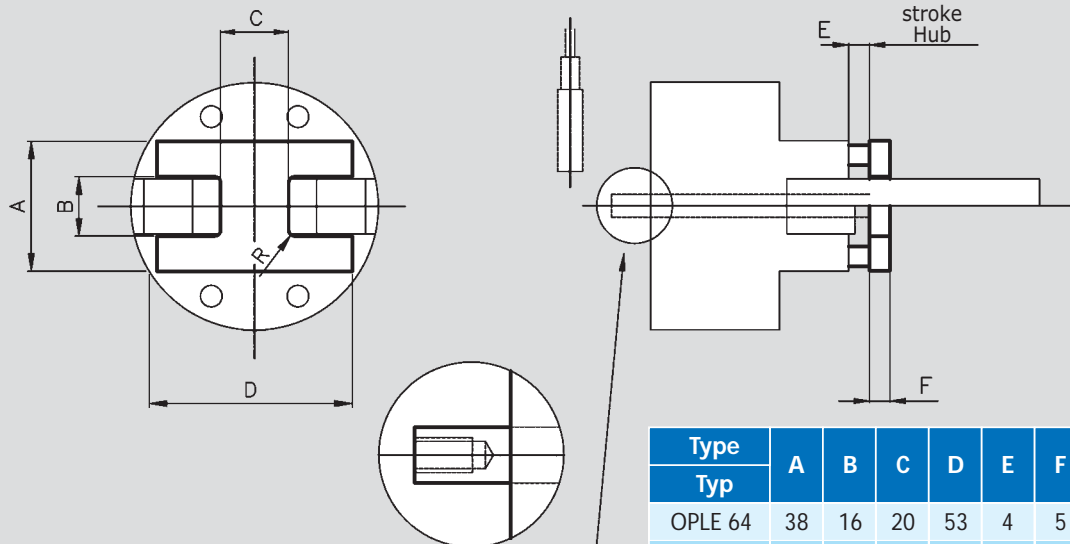
| Type | d | e | f | h | l | m | n | q | r | t | AA | Max finger length/weight in kg | |
|----------|------|---|---|-----|----|------|----|----|------|------|----|--------------------------------|--|
| Typ | d | e | f | h | l | m | n | q | r | t | AA | Max. Finger-länge / Eigenmasse | |
| OPLE 30 | 31.5 | 3 | 3 | 3.2 | 22 | 22 | 8 | 20 | 25 | 21.5 | 4 | 38 / 0.04 | |
| OPLE 40 | 33.5 | 4 | 4 | 4.2 | 25 | 22.5 | 8 | 20 | 27.5 | 23.5 | 4 | 45 / 0.08 | |
| OPLE 50 | 39.5 | 5 | 5 | 5.2 | 30 | 25.5 | 10 | 26 | 31.5 | 27.5 | 4 | 50 / 0.12 | |
| OPLE 64 | 46 | 6 | 6 | 6.2 | 35 | 31.5 | 12 | 38 | 42 | 38 | M5 | 68 / 0.3 | |
| OPLE 80 | 58 | 6 | 7 | 6.2 | 40 | 41 | 14 | 44 | 53.5 | 48.5 | M5 | 80 / 0.45 | |
| OPLE 100 | 68 | 8 | 9 | 8.5 | 45 | 47 | 18 | 52 | 64 | 57 | M5 | 95 / 0.75 | |

| Type | Max gripping torque at 6 bar (Ncm) | Max gripping force at 6 bar (N) | Recommended weight of part for transport (kg) | Air consum for double stroke (cm³) | Approx. time in seconds | | Moment of inertia (Kgcm²) | Gripper weight (kg) |
|----------|------------------------------------|---------------------------------|---|------------------------------------|-------------------------|-----------|--------------------------------|---------------------|
| | | | | | opening | closing | | |
| Typ | Max Greifmoment bei 6 bar (Ncm) | Max Greifkraft bei 6 bar (N) | max. empfohlenes Werkstückgewicht (kg) | Luftverbrauch pro Doppelhub (cm³) | Schließzeit (s) | | Massen-trägheitsmoment (Kgcm²) | Masse (kg) |
| | | | | | öffnen | schließen | | |
| OPLE 30 | 75 | 34 | 0.17 | 2 | 0.01 | 0.01 | 0.11 | 0.08 |
| OPLE 40 | 150 | 60 | 0.3 | 3.6 | 0.015 | 0.015 | 0.21 | 0.11 |
| OPLE 50 | 400 | 130 | 0.6 | 7.5 | 0.02 | 0.02 | 0.6 | 0.2 |
| OPLE 64 | 900 | 260 | 1.2 | 14.7 | 0.02 | 0.02 | 2 | 0.38 |
| OPLE 80 | 1820 | 450 | 2.2 | 31 | 0.03 | 0.03 | 5.3 | 0.68 |
| OPLE 100 | 3900 | 860 | 4.2 | 60 | 0.05 | 0.05 | 18.4 | 1.2 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater.
 The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar.
 Empfehlung max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Fomschluss sind größere Massen möglich.
 Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar

Spring packaged pressure plate - code P

Federnder Andrückstern P



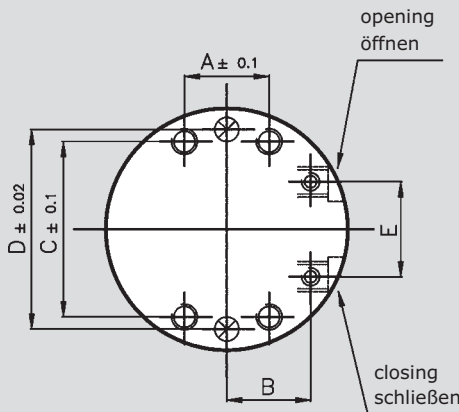
upon request: passing rod (only for OPLE 80 and 100)

Auf Anfrage: Hubabfrage des Andrücksterns (nur für OPLE 80 und 100)

| Type | A | B | C | D | E | F | R | Thrust Kraft |
|----------|----|----|----|----|---|---|---|--------------|
| Typ | | | | | | | | |
| OPLE 64 | 38 | 16 | 20 | 53 | 4 | 5 | 3 | 11-30N |
| OPLE 80 | 44 | 22 | 24 | 62 | 4 | 6 | 4 | 38-45N |
| OPLE 100 | 52 | 26 | 26 | 80 | 5 | 7 | 4 | 50-80N |

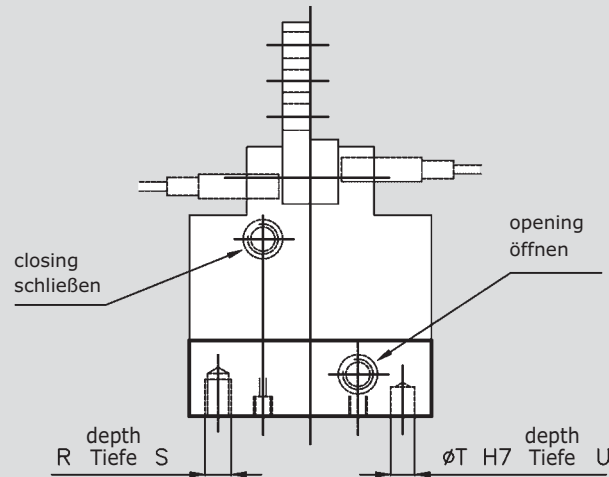
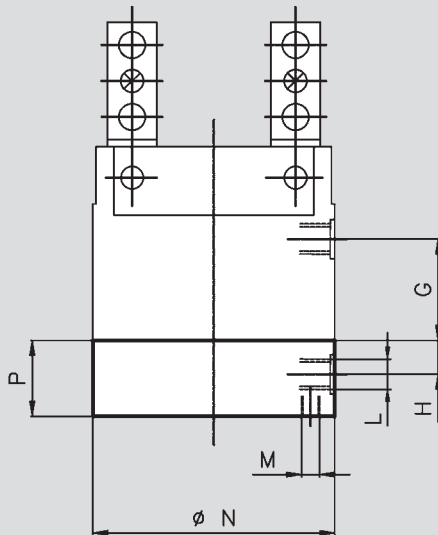
2-finger angular gripper, pneumatic - series OPLE 2-Finger-Winkelgreifer pneumatisch - Typ OPLE

Gripping force safety device - code MC



Maßangaben für Greifer mit Greifkraftsicherung Version MC (schließen) MA (öffnen)

| Type | Gripping force of spring only in N with fixed elasticity | | Approx. gripping time in sec with spring only |
|----------|--|------|---|
| Typ | Schließkraft über Feder in (N) beim Außenspannen min | max | |
| OPLE 30 | 30 | 40 | 0.01 |
| OPLE 40 | 58 | 62 | 0.015 |
| OPLE 50 | 140 | 180 | 0.02 |
| OPLE 64 | 280 | 320 | 0.02 |
| OPLE 80 | 400 | 580 | 0.03 |
| OPLE 100 | 1060 | 1300 | 0.06 |



| Type | A | B | C | D | E | G | H | L | M | N | P | R | S | T | U | Moment of inertia Massenträgheitsmoment (Kgcm ²) | Gripper weight Masse (kg) |
|----------|------|----|------|----|----|------|-----|------|----|----|------|----|----|---|----|--|---------------------------------|
| OPLE 30 | 12 | 10 | 26 | 28 | 14 | 15.5 | 7 | M5 | M3 | 34 | 14.5 | M3 | 7 | 4 | 7 | 0.14 | 0.1 |
| OPLE 40 | 12 | 12 | 28 | 30 | 17 | 17 | 7.5 | M5 | M3 | 39 | 15 | M4 | 7 | 4 | 7 | 0.27 | 0.14 |
| OPLE 50 | 18 | 16 | 35 | 40 | 20 | 18.5 | 11 | M5 | M3 | 49 | 18.5 | M5 | 9 | 4 | 8 | 0.84 | 0.25 |
| OPLE 64 | 27.5 | 20 | 47.5 | 55 | 30 | 26 | 12 | M5 | M3 | 64 | 19.5 | M5 | 10 | 4 | 8 | 2.6 | 0.5 |
| OPLE 80 | 34.5 | 24 | 60 | 69 | 40 | 33 | 16 | M5 | M4 | 79 | 27 | M6 | 12 | 5 | 10 | 7.5 | 0.96 |
| OPLE 100 | 44 | 31 | 76 | 88 | 48 | 40 | 24 | 1/8G | M5 | 99 | 36 | M6 | 12 | 5 | 10 | 20.8 | 1.67 |

NOTE: Minimum operating pressure 0.45 MPa. Upon request versions with less pressure; in this case the spring force will be lower.
Gripping force = pneumatic gripping torque + spring torque.
The gripping force is the arithmetic sum of the individual forces of the fingers.

Bemerkung: Betriebsdruck mindestens 4.5 bar
Die Greifkraft ergibt sich aus der pneumatischen Greifkraft + Federkraft
Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" bei 6 bar.

Ordering example

Bestellbeispiel

| Type | For spring packaged pressure plate indicate code P | For safety device indicate MC or MA | For passing rod indicate C |
|---------|--|-------------------------------------|----------------------------|
| OPLE-64 | P | MC | / |

2-finger angular gripper, pneumatic - series PGC 2-Finger-Winkelgreifer pneumatisch – Typ PGC



Technische Eigenschaften:

- Betriebsdruck: 3 bis 7 bar
- Wiederholgenauigkeit: 0.1mm über 100 Schaltspiele
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Wirkprinzip: synchronisation über Kulisse
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft 10µm, trocken oder geölt
- Überspannungswinkel pro Backe 1°
- Wartungsfrei: bis 1.5 Mio. Schaltspiele
- Schutzart IP20
- Verwenden Sie immer mit Schwenkverschraubung mit one-way Stromregelventil
- 24 Monate Garantie

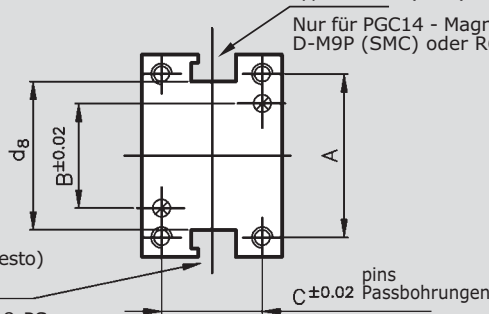
Technical data:

- Range of operating pressure: 3 - 7 bar
- Repeatability accuracy: 0.1 mm; 100 cycles
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- Operating principle: pistons and mechanical articulation for concentric closing
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated ground steel
- Actuation : compressed air filtered (10µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- Overtravel 1°
- Important use always with banjo fitting with one way flow control valve
- Rating IP 20
- Warranty 24 months

2-finger angular gripper, pneumatic - series PGC 2-Finger-Winkelgreifer pneumatisch - Typ PGC

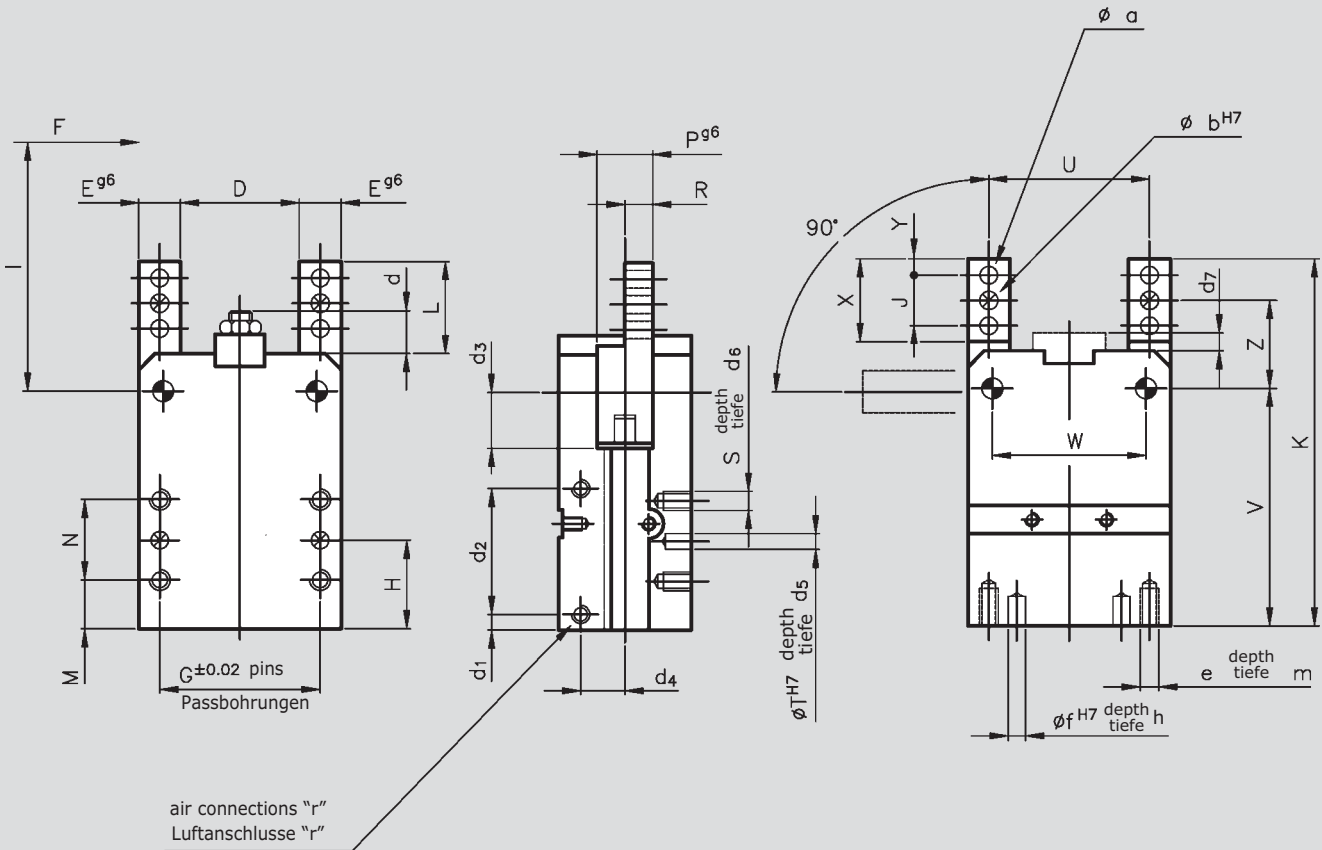
Only for PGC14 - Magnetic limit switch seat type D-M9P (SMC) or R626 (OMIL)

Nur für PGC14 - Magnetic limit switch seat type D-M9P (SMC) oder R626 (OMIL)

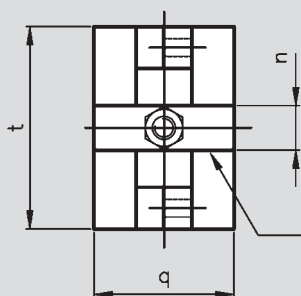


Magnetic limit switch seat type SME 8-PS(festo) or R599 (OMIL)

Hubfrage über Magnetschalter Typ SME 8-PS (festo) oder R599 (OMIL)



Version with adjustable finger-angle
Ausführung mit einstellbarem Finger-Winkel



Upon request block with screw to limit and adjust opening from 0° to 45° - code Z

Auf Anfrage: einstellbare Winkelverstellung des Hubes Zwischen 0° und 45° - Version Z

2-finger angular gripper, pneumatic - series PGC 2-Finger-Winkelgreifer pneumatisch – Typ PGC

| Type / Typ | A | B | C | D | E | G | H | L | M | N | P | R | S | T | U | V | Z | J | Y | X | W |
|------------|----|------|------|----|-----|----|------|------|-----|----|----|------|-----|----|------|------|------|----|-----|----|----|
| PGC 14 | 24 | 14.6 | 14.5 | 16 | 7 | 24 | 21.5 | 11.5 | 9.5 | 24 | 8 | 4 | M3 | 3 | 23 | 40.5 | 10.5 | 6 | 2.5 | 11 | 22 |
| PGC 16 | 31 | 18 | 19 | 21 | 8.5 | 31 | 26 | 18 | 12 | 28 | 10 | 5 | M4 | 4 | 29.5 | 51.5 | 16 | 11 | 3 | 17 | 28 |
| PGC 20 | 36 | 22 | 22 | 24 | 10 | 36 | 27 | 22 | 12 | 30 | 12 | 6 | M4 | 4 | 34 | 55 | 18.5 | 13 | 4 | 21 | 32 |
| PGC 25 | 44 | 28 | 24 | 30 | 11 | 44 | 29 | 27 | 12 | 34 | 14 | 7 | M5 | 5 | 41 | 62 | 22 | 16 | 5 | 26 | 38 |
| PGC 32 | 49 | 31 | 29 | 34 | 12 | 49 | 30 | 32 | 12 | 36 | 16 | 8 | M6 | 6 | 46 | 68 | 24.5 | 20 | 5.5 | 31 | 44 |
| PGC 40 | 60 | 38 | 38 | 40 | 15 | 60 | 38 | 35 | 15 | 46 | 20 | 10 | M6 | 6 | 55 | 82 | 29 | 22 | 6 | 34 | 52 |
| PGC 50 | 74 | 48 | 46 | 50 | 18 | 74 | 44 | 43 | 18 | 52 | 24 | 12 | M8 | 8 | 68 | 96 | 34 | 28 | 7 | 42 | 64 |
| PGC 63 | 84 | 55 | 55 | 58 | 20 | 84 | 52 | 54 | 22 | 60 | 29 | 14.5 | M10 | 10 | 78 | 109 | 41 | 34 | 9 | 53 | 76 |

| Type / Typ | K | a | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | e | f | h | l | m | n | q | r | t |
|------------|------|------|----|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----|----|----|-----|----|----|----|-----|----|
| PGC 14 | 56.5 | 2.6 | 2 | 9 | 8.1 | 16.9 | 8.5 | 6.2 | 6 | 6 | 4 | 17.8 | M3 | 3 | 6 | 25 | 6 | 8 | 20 | M5 | 30 |
| PGC 16 | 76 | 3.2 | 3 | 10 | 12 | 21 | 11 | 7 | 8 | 8 | 3.5 | 21 | M4 | 4 | 8 | 32 | 8 | 10 | 26 | M5 | 38 |
| PGC 20 | 84 | 4.2 | 4 | 11 | 12 | 22 | 12 | 9 | 8 | 8 | 3.7 | 25 | M4 | 4 | 8 | 40 | 8 | 10 | 29 | M5 | 44 |
| PGC 25 | 97 | 5.3 | 5 | 12 | 14 | 25 | 14 | 9 | 9 | 9 | 6.5 | 31 | M5 | 5 | 9 | 45 | 9 | 10 | 32 | M5 | 52 |
| PGC 32 | 108 | 6.4 | 6 | 13 | 14 | 28 | 16 | 9 | 9 | 9 | 7.8 | 40 | M6 | 6 | 9 | 55 | 9 | 12 | 38 | M5 | 58 |
| PGC 40 | 128 | 6.5 | 6 | 13 | 15 | 35 | 19.5 | 11 | 11 | 11 | 7 | 47 | M6 | 6 | 11 | 65 | 11 | 12 | 48 | 1/8 | 70 |
| PGC 50 | 151 | 8.5 | 8 | 15 | 16 | 42 | 23.5 | 11 | 13 | 13 | 11.5 | 57 | M8 | 8 | 13 | 90 | 13 | 15 | 58 | 1/8 | 86 |
| PGC 63 | 176 | 10.5 | 10 | 16 | 17 | 51 | 27 | 11 | 17 | 17 | 16 | 70 | M10 | 10 | 17 | 110 | 17 | 16 | 69 | 1/8 | 98 |

| Type | Gripper torque at 6 bar (Ncm) | Gripping force at 6 bar (N) | Air consum for double stroke (cm ³) | Gripper weight (kg) | Recommended weight of part for transport (kg) | Approx. time (s) | | Moment of inertia (Kgcm ²) | Max finger length / weight (mm) |
|--------|-------------------------------|-----------------------------|---|---------------------|---|------------------|-----------|--|----------------------------------|
| | | | | | | opening | closing | | |
| Typ | Greikmoment bei 6 bar (Ncm) | Greikraft bei 6 bar (N) | Luftverbrauch pro Doppelhub (cm ³) | Masse (kg) | max. empfohlenes Werkstückgewicht (kg) | Schließzeit (s) | | Massenträgheitsmoment (Kgcm ²) | Max. Fingerlänge/Eigenmasse (mm) |
| | | | | | | öffnen | schließen | | |
| PGC 14 | 120 | 48 | 2.5 | 0.10 | 0.24 | 0.32 | 0.32 | 0.1 | 42/0.05 |
| PGC 16 | 220 | 68 | 5.4 | 0.18 | 0.35 | 0.4 | 0.4 | 0.24 | 50/0.07 |
| PGC 20 | 420 | 105 | 11 | 0.26 | 0.55 | 0.5 | 0.5 | 0.9 | 58/0.10 |
| PGC 25 | 700 | 155 | 20 | 0.4 | 0.80 | 0.7 | 0.7 | 2 | 67/0.13 |
| PGC 32 | 1400 | 255 | 36 | 0.6 | 1.3 | 0.7 | 0.7 | 4 | 80/0.25 |
| PGC 40 | 2800 | 430 | 64 | 1.1 | 2.2 | 0.8 | 0.8 | 10 | 100/0.35 |
| PGC 50 | 5400 | 600 | 120 | 1.9 | 3.1 | 0.8 | 0.8 | 18 | 125/0.7 |
| PGC 63 | 11000 | 1040 | 200 | 2.8 | 5.3 | 0.75 | 0.75 | 41 | 145/1.2 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm at 6 bar. Finger weight in Kg.

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Fomschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar

Ordering example

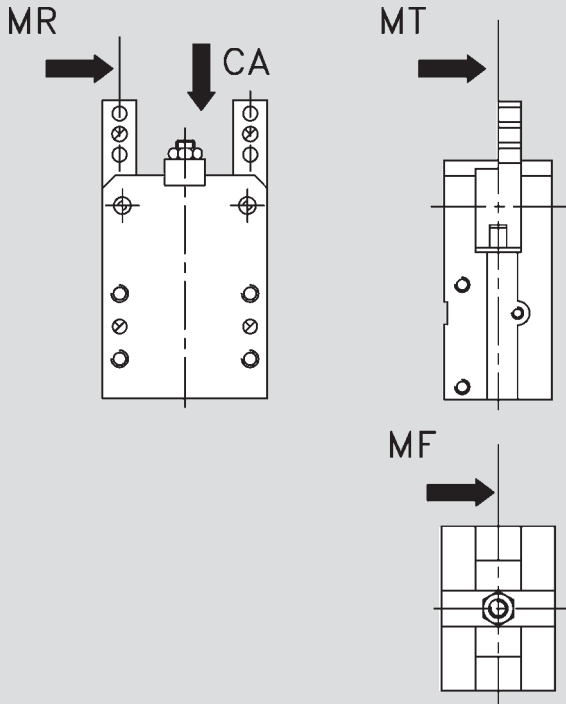
Bestellbeispiel

| Type | For brackets and cams indicate code A + proximity diam. | For block indicate Z |
|--------|---|--------------------------------------|
| Typ | Für Ausführung mit Näherungsschalter Version A + Ø | Mit einstellbare Winkelverstellung Z |
| PGC 50 | A8 | / |

2-finger angular gripper, pneumatic - series PGC 2-Finger-Winkelgreifer pneumatisch - Typ PGC

Allowed load data

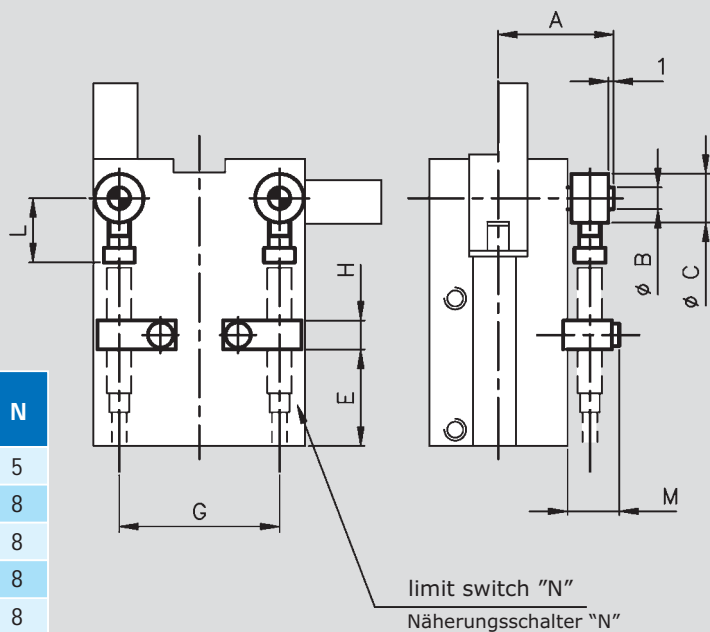
Maximal zul. Kräfte und Momente am Finger



| Type Typ | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|-------------|-----------|------------|------------|------------|
| PGC 14 | 38 | 0.35 | 0.25 | 1 |
| PGC 16 | 45 | 0.6 | 0.3 | 4 |
| PGC 20 | 105 | 2.9 | 0.6 | 6.5 |
| PGC 25 | 185 | 5 | 1,1 | 10 |
| PGC 32 | 260 | 10 | 1.2 | 13 |
| PGC 40 | 350 | 17 | 1.5 | 16 |
| PGC 50 | 750 | 40 | 6 | 25 |
| PGC 63 | 1140 | 50 | 9 | 33 |

Control system with inductive proximity switches - code A

Abfrage über induktive Näherungsschalter Version A



| Type Typ | A | B | C | E | G | H | L | M | N |
|-------------|----|----|----|----|----|----|-----|----|---|
| PGC 14 | 18 | 3 | 8 | 13 | 23 | 8 | 9,5 | 8 | 5 |
| PGC 16 | 23 | 4 | 10 | 16 | 28 | 10 | 11 | 13 | 8 |
| PGC 20 | 25 | 4 | 10 | 18 | 32 | 10 | 11 | 13 | 8 |
| PGC 25 | 28 | 5 | 12 | 19 | 38 | 10 | 15 | 13 | 8 |
| PGC 32 | 30 | 5 | 12 | 24 | 44 | 10 | 15 | 13 | 8 |
| PGC 40 | 36 | 6 | 15 | 40 | 52 | 10 | 17 | 19 | 8 |
| PGC 50 | 41 | 8 | 20 | 53 | 64 | 10 | 17 | 19 | 8 |
| PGC 63 | 48 | 10 | 20 | 63 | 76 | 10 | 17 | 19 | 8 |

Check List *Schwenkeinheiten Checkliste*

System check-list

Schwenkeinheiten
Checkliste

Customer Firma _____ Project Nr. Projekt-Nr. _____

Contact person Kontakt-person _____ Department Abteilung _____

Tel. Nr. _____ Fax _____

E-mail _____ Date/Datum _____

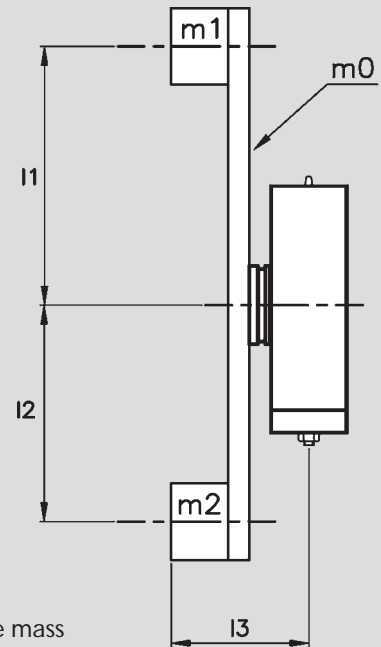
OMIL

Contact person Mitarbeiter _____ Department Abteilung _____

Swivel actuator / Schwenkeinheiten

Type/Typ _____

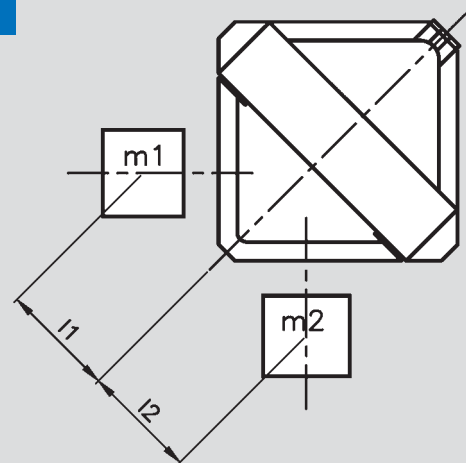
- m1 = _____ Kg
- l1 = _____ mm
- m2 = _____ Kg
- l2 = _____ mm
- m0 = _____ Kg
- Swivel angle Schwenkwinkel β° = _____
- Cycles/hour (Ch) Zyklen/Stunde = _____
- Operating pressure Betriebsdruck = _____ bar
- Swivel axis position Lager der Schwenkeinheit = _____ horizontal Horizontal
= _____ vertical Vertical
- Structure height Höhe des Aufbaus (l3) = _____ mm



* d0 = when lever arm $l < 30$ mm, indicate the distance from the centre of the mass
* d0 = Wenn der Hebelarm $l < 30$ mm, geben Sie die Distanz vom Zentrum der Masse an.

Compact swivel head / Schwenkkopf

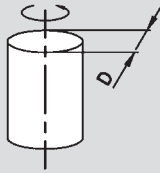
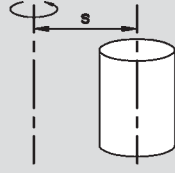
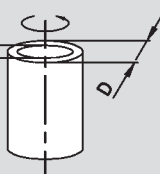
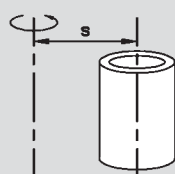
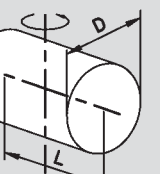
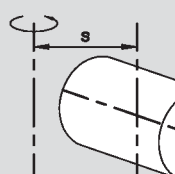
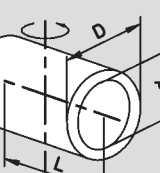
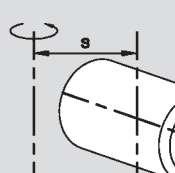
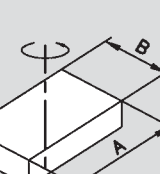
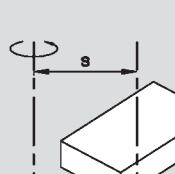
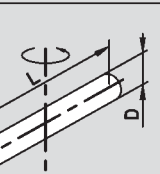
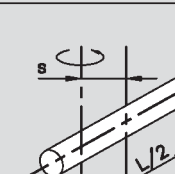
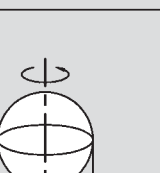
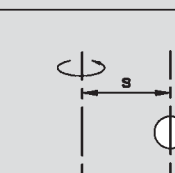
- m1 = _____ Kg
- l1 = _____ mm
- m2 = _____ Kg
- l2 = _____ mm
- m0 = _____ Kg
- Swivel angle Schwenkwinkel β° = _____
- Cycles/hour (Ch) Zyklen/Stunde = _____
- Operating pressure Betriebsdruck = _____ bar



Attach a project diagram to the check-list

Legen Sie eine schematische Darstellung Ihres Projektes der Checkliste bei

Check List Moment of inertia - J (Kg m²) Checkliste Berechnung Massenträgheiten - J (Kg m²)

| | |
|--|--|
|  $J = \frac{D^2}{8} \cdot m$ <p>Solid cylinder rotating around its own axis Zylinder Rotation um die eigene Achse</p> |  $J = \left(\frac{D^2}{8} + s^2 \right) \cdot m$ <p>Solid cylinder rotating around an external axis parallel to its own Vollzylinder, Rotation um eine Achse, die senkrecht zur Symmetrieachse liegt</p> |
|  $J = \frac{D^2 + d^2}{8} \cdot m$ <p>Perforated cylinder rotating around its own axis Hohlzylinder, Rotation um die eigene Achse</p> |  $J = \left(\frac{D^2 + d^2}{8} + s^2 \right) \cdot m$ <p>Perforated cylinder rotating around an external axis parallel to its own Hohlzylinder, Rotation um eine Achse, die parallel zur Symmetrieachse liegt</p> |
|  $J = \left(\frac{L^2}{12} + \frac{D^2}{16} \right) \cdot m$ <p>Solid cylinder rotating around an axis that coincides with the diameter and passes midway along its length Vollzylinder, Rotation um eine Achse, die senkrecht zur Symmetrieachse liegt</p> |  $J = \left(\frac{L^2}{12} + \frac{D^2}{16} + s^2 \right) \cdot m$ <p>solid cylinder rotating around an external axis parallel to the diameter of the cylinder Vollzylinder, Rotation um eine externe Achse, die senkrecht zur Symmetrieachse liegt</p> |
|  $J = \left(\frac{L^2}{12} + \frac{D^2 + d^2}{16} \right) \cdot m$ <p>Perforated cylinder rotating around an axis that coincides with the diameter and passes midway along its length Hohlzylinder, Rotation um eine Achse, die senkrecht zur Symmetrieachse liegt</p> |  $J = \left(\frac{L^2}{12} + \frac{D^2 + d^2}{16} + s^2 \right) \cdot m$ <p>Perforated cylinder rotating around an external axis parallel to the diameter of the cylinder Hohlzylinder, Rotation um eine externe Achse, die senkrecht zur Symmetrieachse liegt</p> |
|  $J = \frac{A^2 + B^2}{16} \cdot m$ <p>Parallelepiped rotating around its own central axis Ein Quader, Rotation um eine Achse</p> |  $J = \left(\frac{A^2 + B^2}{16} + s^2 \right) \cdot m$ <p>Parallelepiped rotating around an external axis parallel to its own Quader, Rotation um eine externe Achse, die parallel zu einer seiner Flächen liegt</p> |
|  $J = \frac{3r^2 + L^2}{12} \cdot m$ <p>long thin rod rotating around its own perpendicular axis Dünner Stab, Rotation senkrecht zur seiner Symmetrieachse</p> |  $J = \left(\frac{3r^2 + L^2}{12} + s^2 \right) \cdot m$ <p>Long thin rod rotating around an external axis parallel to its own perpendicular axis Dünner Stab, Rotation um eine externe Achse und senkrecht zur Symmetrieachse</p> |
|  $J = \frac{2}{5} \cdot m \cdot r^2$ <p>Sphere rotating around its own axis Massive Kugel rotiert um dem Mittelpunkt</p> |  $J = m \cdot r^2$ <p>Mass considered as concentrated in one point Punktmasse rotiert im Abstand r um eine Drehachse</p> |

NOTE: the masses are to be indicated in "kg" and the distances in "m"
Bemerkung: Die Massen sind in "kg", die Längen in "m" aufzurufen!

Pneumatic / hydraulic swivel actuator series - PAO-MC *Pneumatische/hydraulische Schwenkeinheit Typ PAO-MC*



Technische Eigenschaften:

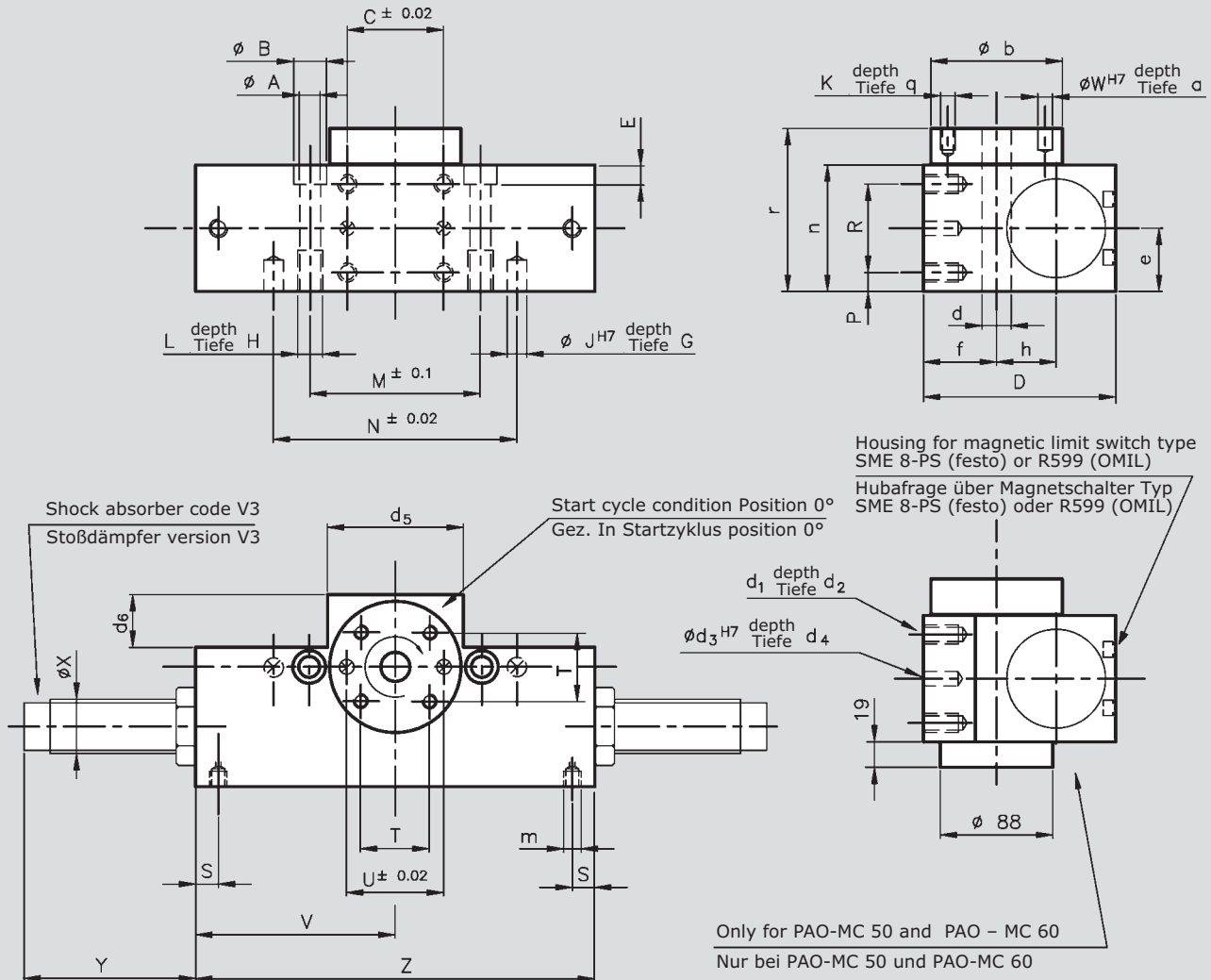
- Betriebsdruck: 3 bis 8 bar
- Wiederholgenauigkeit: 0.07°
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Endlagendämpfung hydraulische Stoßdämpfer
- Endlagen feinjustierbar 2°
- Wirkprinzip: Zahnstangen Ritzel Synchronisation
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch (PN) über gefilterte Druckluft (10µm), trocken oder geölt; hydraulisch (ID) über gefiltertes Öl (10µm) Viskosität 45 mm²/s bei 40° ISO VG, maximal 60°
- Wartungsfrei: bis 1.5 Mio. Zyklen
- Spielfreie Endlageneinstellung
- Schutzart IP55
- 24 Monate Garanti

Technical data:

- Range of operating pressure: 3 - 8 bar pneumatic version, max 30 bar for hydraulic
- Repeatability accuracy: 0.07° through external push rod on plate;
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- Damping by shock absorber, pneumatic as optional, by means of adjusting screw on hydraulic version
- Operating principle: rack and pinion
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated and/or ground steel
- Actuation: PN version: compressed air filtered (10 µm), dry or lubricated; ID version: filtered oil (10 µm), viscosity 46 mm²/s at 40° ISO VG; max 60°C
- Maintenance: no maintenance required for the first 1.5 million cycles
- Adjustable limit switch positions 2° in plate-push rod version
- End positions without clearance
- Rating IP 55
- Warranty 24 months

Pneumatic / hydraulic swivel actuator series - PAO-MC

Pneumatische/hydraulische Schwenkeinheit Typ PAO-MC



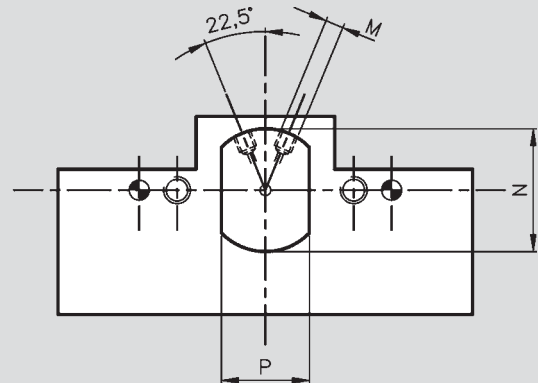
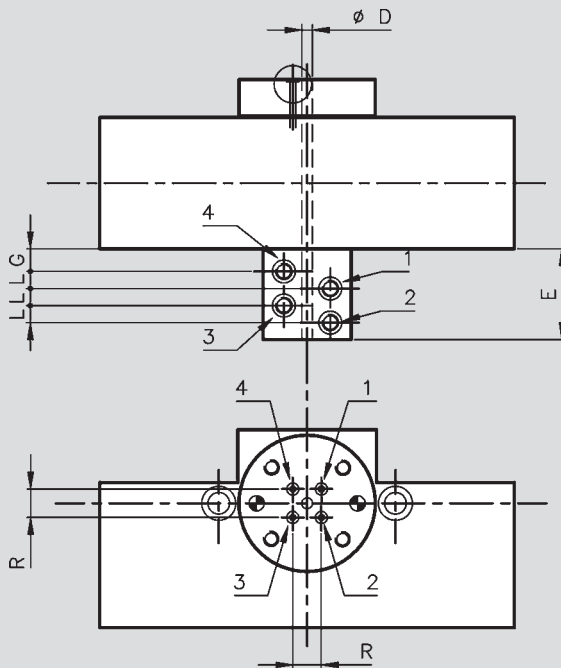
Note: the swivel actuator can be supplied with swivel angle 0° - 180° code A or 0° - 90° code B
Anmerkung: Lieferung der Schwenkeinheit mit Schwenkeinheit 180° (Version A) oder 90° (Version B)

| Type Typ | A | B | C | D | E | G | H | J | L | M | N | P | R | S | T | U | V | Z | Y |
|-------------|------|------|----|-----|------|----|----|----|-----|-----|-----|------|----|----|------|----|-----|-----|----|
| PAO-MC 15 | 5.1 | 9.5 | 22 | 51 | 5.5 | 9 | 9 | 5 | M6 | 46 | 62 | 5 | 22 | 12 | 15.5 | 22 | 58 | 116 | 45 |
| PAO-MC 20 | 6.7 | 10.5 | 28 | 61 | 6.5 | 12 | 12 | 6 | M8 | 56 | 80 | 5.5 | 28 | 12 | 22.5 | 32 | 62 | 124 | 58 |
| PAO-MC 30 | 8.5 | 14 | 31 | 79 | 8.5 | 13 | 17 | 8 | M10 | 70 | 100 | 10.5 | 31 | 16 | 28 | 40 | 88 | 176 | 65 |
| PAO-MC 40 | 10.4 | 17 | 31 | 95 | 10 | 16 | 20 | 10 | M12 | 80 | 120 | 12.5 | 31 | 17 | 31 | 44 | 107 | 214 | 96 |
| PAO-MC 50 | 12.2 | 19 | 44 | 125 | 12.5 | 20 | 22 | 12 | M14 | 120 | 160 | 8 | 44 | 21 | 56.5 | 80 | 147 | 294 | 90 |
| PAO-MC 60 | 12.2 | 19 | 44 | 139 | 12.5 | 20 | 22 | 12 | M14 | 120 | 160 | 16 | 44 | 25 | 56.5 | 80 | 152 | 304 | 85 |

| Type Typ | X | K | W | a | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | e | f | h | m | n | q | r |
|-------------|----|----|---|----|----|----|----------------|----------------|----------------|----------------|----------------|----------------|----|----|----|------|----|----|-----|
| PAO-MC 15 | 10 | M4 | 4 | 7 | 34 | 6 | M5 | 9 | 5 | 9 | 36 | 10 | 16 | 20 | 14 | M5 | 32 | 7 | 42 |
| PAO-MC 20 | 14 | M5 | 5 | 9 | 44 | 10 | M6 | 9 | 6 | 9 | 46 | 14 | 19 | 26 | 18 | M5 | 38 | 8 | 50 |
| PAO-MC 30 | 20 | M6 | 6 | 10 | 54 | 13 | M8 | 9 | 8 | 9 | 60 | 21 | 26 | 30 | 26 | 1/8G | 52 | 10 | 67 |
| PAO-MC 40 | 25 | M8 | 8 | 10 | 60 | 18 | M8 | 12 | 8 | 12 | 70 | 25 | 28 | 35 | 32 | 1/8G | 56 | 10 | 72 |
| PAO-MC 50 | 25 | M8 | 8 | 16 | 96 | 22 | M8 | 14 | 8 | 12 | 100 | 33 | 30 | 53 | 41 | 1/8G | 60 | 16 | 88 |
| PAO-MC 60 | 33 | M8 | 8 | 16 | 96 | 22 | M8 | 17 | 8 | 12 | 100 | 30 | 38 | 52 | 47 | 1/4G | 76 | 16 | 104 |

Pneumatic / hydraulic swivel actuator series - PAO-MC

Pneumatische/hydraulische Schwenkeinheit Typ PAO-MC

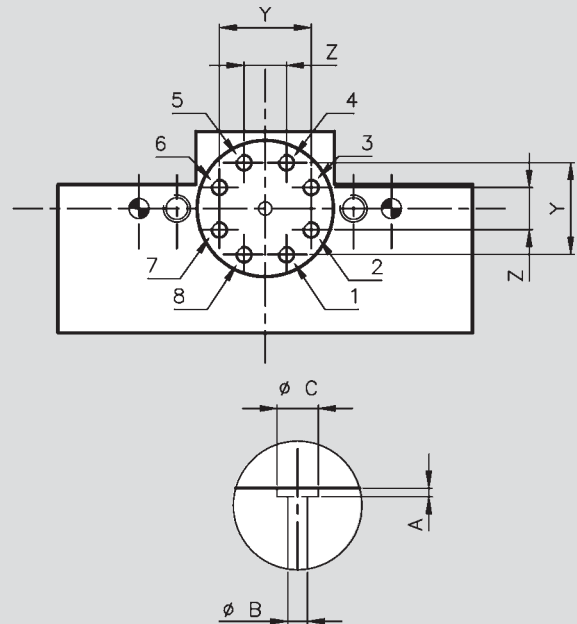
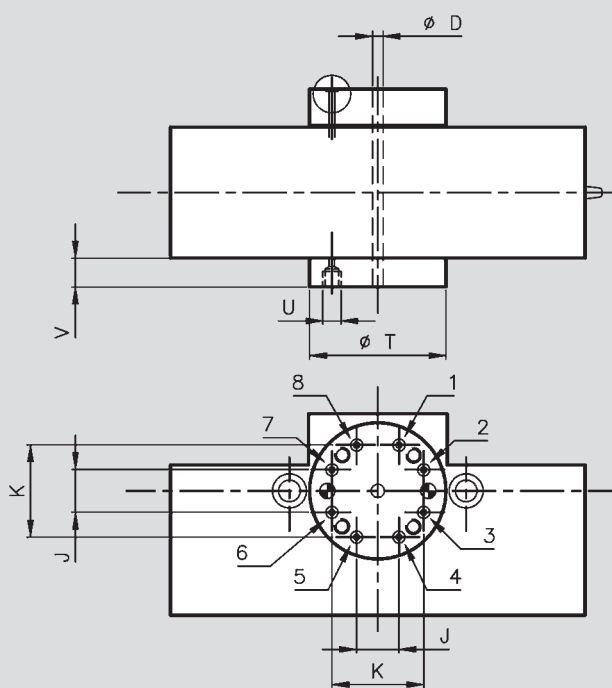


Code - P

Version - P

Code P : internal air distributor for swivel actuator series PAO-MC 15/20/ 30/40

Version P: Interne Luftdurchführung für Schwenkeinheiten Typ PAO-MC 15/20/30/40



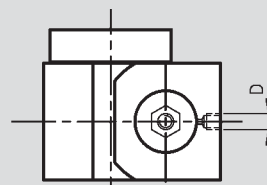
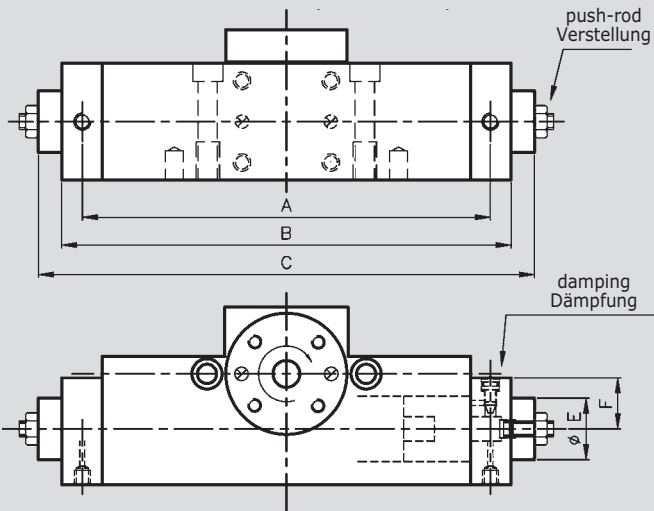
Code P : internal air distributor for swivel actuator series PAO-MC 50/60

Version P: Interne Luftdurchführung für Schwenkeinheiten Typ PAO-MC 50/60

| Type | A | B | C | D | E | G | L | M | N | P | R | T | U | V | Z | Y | J | K | Mass Masse (Kg) |
|-----------|-----|-----|-----|----|----|---|---|------|----|----|-----|----|------|----|------|------|------|------|-----------------|
| PAO-MC 15 | 0.7 | 2.4 | 4 | - | 32 | 8 | 6 | M5 | 35 | 20 | 5 | - | - | - | - | - | - | - | 0.1 |
| PAO-MC 20 | 0.7 | 2.4 | 4.5 | 4 | 32 | 8 | 6 | M5 | 42 | 27 | 6.4 | - | - | - | - | - | - | - | 0.2 |
| PAO-MC 30 | 0.7 | 2.4 | 5 | 7 | 32 | 8 | 6 | M5 | 50 | 30 | 10 | - | - | - | - | - | - | - | 0.4 |
| PAO-MC 40 | 1.3 | 3.2 | 6 | 10 | 40 | 8 | 8 | 1/8G | 59 | 36 | 14 | - | - | - | - | - | - | - | 0.6 |
| PAO-MC 50 | 1.3 | 3.2 | 8 | 11 | - | - | - | - | - | - | - | 88 | 1/8G | 19 | 24.5 | 59.1 | 22.2 | 53.6 | - |
| PAO-MC 60 | 1.3 | 3.2 | 8 | 11 | - | - | - | - | - | - | - | 88 | 1/8G | 19 | 24.5 | 59.1 | 22.2 | 53.6 | - |

Hydraulic version - Code ID

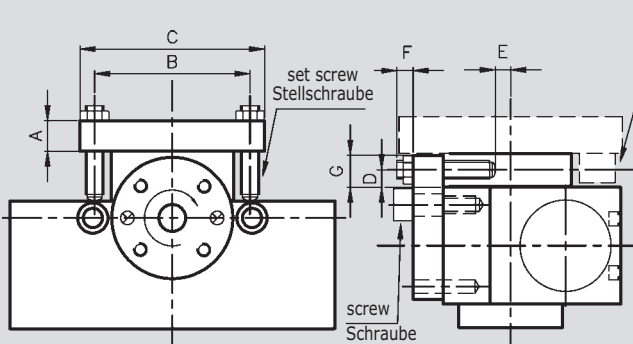
Hydraulisch - Version ID



| Type | A | B | C | D | E | F |
|-----------|-----|-----|-----|------|----|----|
| PAO 15-MC | 132 | 148 | 162 | 1/8G | 16 | 23 |
| PAO 20-MC | 140 | 156 | 172 | 1/8G | 16 | 29 |
| PAO 30-MC | 192 | 208 | 238 | 1/8G | 30 | 33 |
| PAO 40-MC | 236 | 258 | 282 | 1/4G | 30 | 34 |
| PAO 50-MC | 316 | 338 | 362 | 1/4G | 30 | 35 |
| PAO 60-MC | 326 | 348 | 372 | 3/8G | 30 | 40 |

Plate in aluminium with push-rod code PP

Aluminium Anschlussplatte mit Anschlagstange - Version PP



| Type / Typ | A | B | C | D | E | F | G | H |
|------------|----|-----|-----|-----|----|----|------|-----|
| PAO 15-MC | 7 | 44 | 58 | 4 | 4 | 5 | 9.5 | M6 |
| PAO 20-MC | 8 | 54 | 68 | 5.5 | 4 | 8 | 11.5 | M6 |
| PAO 30-MC | 10 | 65 | 80 | 7 | 7 | 8 | 14.5 | M8 |
| PAO 40-MC | 12 | 76 | 96 | 6 | 8 | 11 | 15.5 | M10 |
| PAO 50-MC | 14 | 112 | 132 | 13 | 10 | 13 | 27.5 | M12 |
| PAO 60-MC | 16 | 113 | 133 | 12 | 11 | 13 | 27.5 | M12 |

Technical data

Technische Daten

| Type | Feed torque at 6 bar (Nm) | Feed torque at 25 bar (Nm) | Max cumulative energy from shock absorber Wm Ws | | Moment of inertia Jamm in (Kgcm ²) | Axial load A in N | Radial load CR in Nm | Rotation 0°-180° without load in sec. | Air cons in cm ³ at 0.6 MPa for a cycles | Mass (Kg) |
|-----------|---------------------------|----------------------------|---|--------|--|-----------------------------|--------------------------------|---------------------------------------|---|------------|
| Type | Drehmoment bei 6 bar (Nm) | Drehmoment bei 25 bar (Nm) | Max Energieaufn. Des Dämpfers (Nm) | | Massen Trägheitsmoment (Kgcm ²) | Max. axiale Belastung A (N) | Max. Radiale Belastung CR (Nm) | Schwenkzeit 0°-180° pro zyklus (s) | Luftverbrauch in cm ³ bei 6 bar pro zyklus | Masse (Kg) |
| PAO-MC 15 | 1 | 4 | 6 | 25000 | 0.001 | 280 | 3 | 0.35 | 11 | 0.55 |
| PAO-MC 20 | 2 | 8 | 17 | 34000 | 0.005 | 730 | 9 | 0.3 | 22 | 0.85 |
| PAO-MC 30 | 6.5 | 27 | 40 | 46000 | 0.028 | 1400 | 28 | 0.35 | 68 | 2 |
| PAO-MC 40 | 11.5 | 48 | 68 | 68000 | 0.33 | 2800 | 64 | 0.75 | 126 | 3.3 |
| PAO-MC 50 | 23 | 95 | 170 | 99000 | 0.75 | 8800 | 260 | 0.6 | 248 | 6 |
| PAO-MC 60 | 37 | 154 | 310 | 110000 | 1.2 | 8800 | 320 | 0.85 | 396 | 9 |

NOTE: for correct application of the swivel actuator compare the data of the previous table and execute the checking procedure indicated
Bemerkung: Für die genaue Auslegung senden Sie uns bitte unsere Checkliste von Seite 111 ausgefüllt zu.

Ordering example

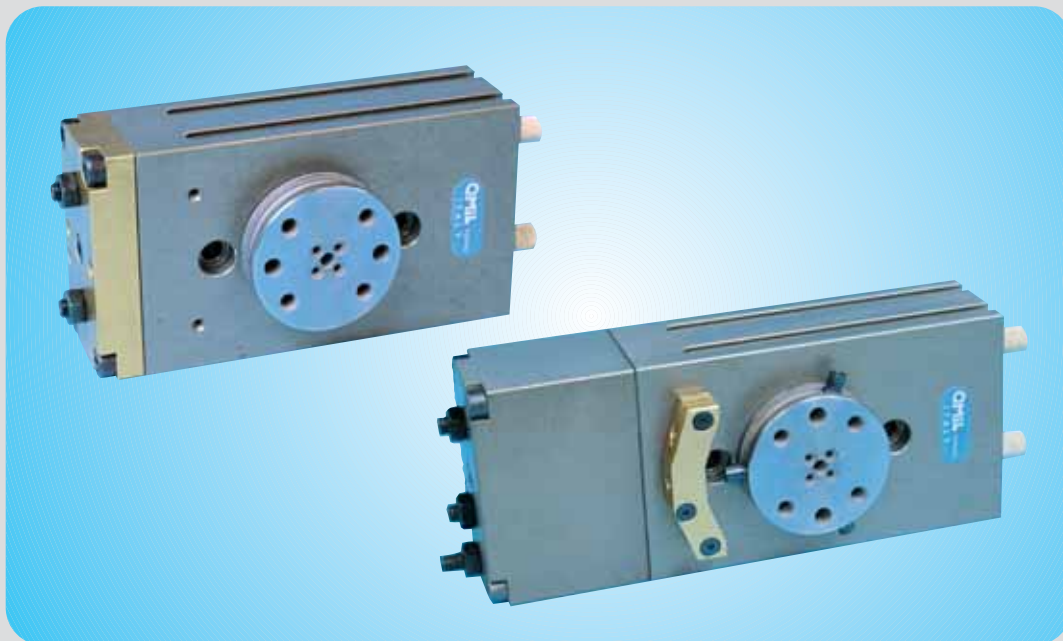
Bestellbeispiel

| Type | Version | Plate with push-rod code PP | Indicate PN for pneumatic version and ID for hydraulic | With distributor indicate code P without distrib. indicate code N | For decelerator version indicate code V + type | Indicate direction of rotation |
|-----------|---------|--|--|---|--|--------------------------------|
| Typ | Version | Mit Aluminium Anschlussplatte Vers. PP | Kennung PN für pneum. Version ID für Hydraulik | Mit Luftdurchführung Vers. P ohne Luftdurchführung Vers. N | Für Stoßdämpfer Ausführung Vers. V + Typ | Schwenk Richtung Ausführung |
| PAO-MC 15 | A | PP | PN | P | V3 | RO |

NOTE: To determine the type of shock absorber to be applied on the swivel actuator, sign the check-list and send to us.
Direction of rotation : clockwise code RO - anticlockwise code RA

Bemerkung: Um den richtigen Hydraulik Stoßdämpfer zu wählen geben Sie uns Ihre genauen technischen Daten bekannt Verwenden Sie dazu bitte unsere Checkliste auf Seite 111
Schwenkrichtung: im Uhrzeigersinn code RO - gegen de Uhrzeigersinn code RA

Pneumatic swivel actuator series - PAO Pneumatische Schwenkeinheit Typ PAO



Technische Eigenschaften:

- Betriebsdruck: 4 bis 8 bar
- Wiederholgenauigkeit: 0.07°
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Endlagendämpfung hydraulische Stoßdämpfer
- Endlagen feinjustierbar 2°
- Wirkprinzip: Zahnstangen Ritzel Synchronisation
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft (10µm), trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Zyklen
- Einstellbare Zwischenposition
- In 3 Versionen lieferbar 0°-180°, 0°-90°, 0°-90°-180°.
- Spielfreie Endlageneinstellung
- Schutzart IP54
- 24 Monate Garantie

Technical data:

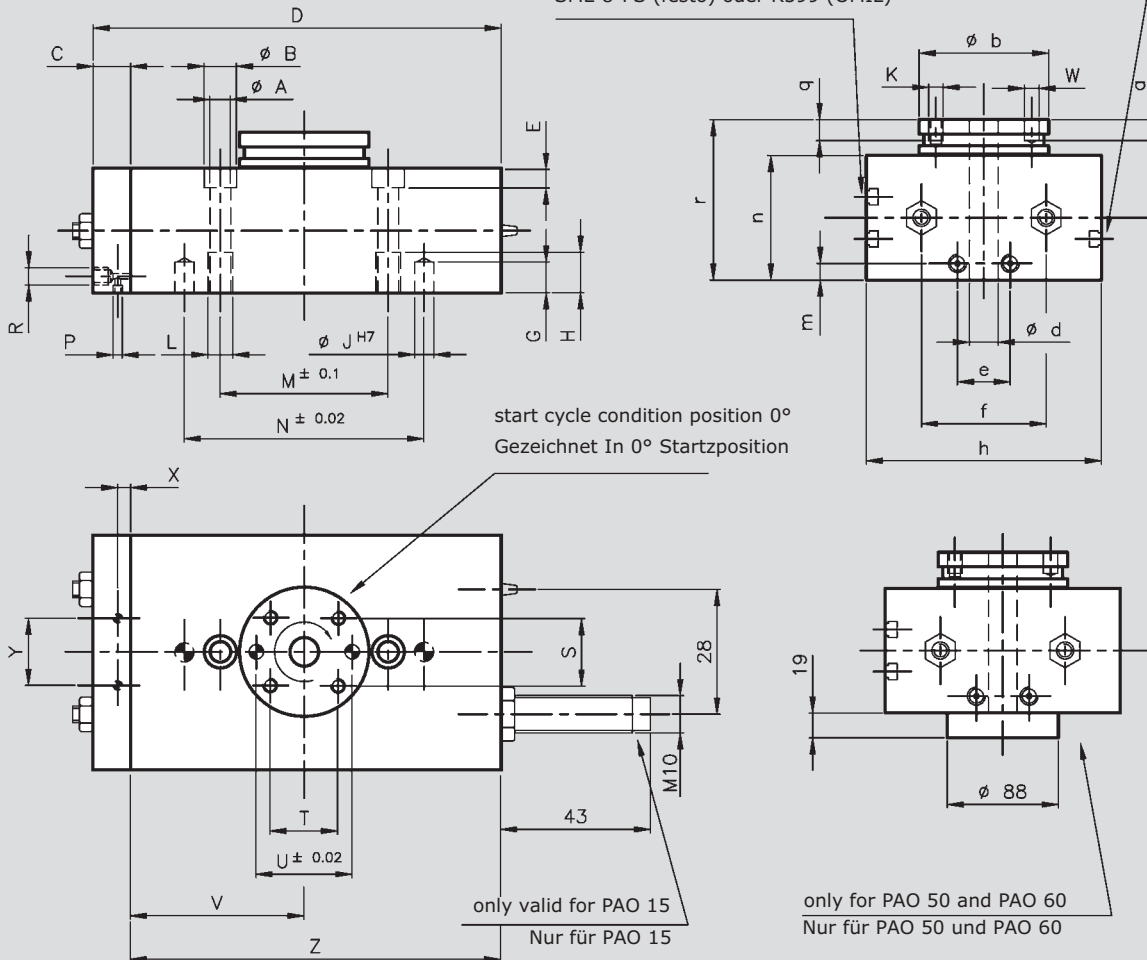
- Range of operating pressure : 4 to 8 bar
- Repeatability accuracy: 0.07° ;
- Operating temperature: from -10°C to 90°C; Version up to 130°C upon request
- Damping by shock absorber
- Limit switch positions adjustment 2°
- Operating principle: 2 racks synchronised by pinion
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated and ground steel
- Adjustable intermediate position
- Version with continual adjustment of angle from 0° to 90° and fro, 90°to 180°
- End positions without clearance
- Rating IP 54
- Warranty 24 months

Pneumatic swivel actuator series - PAO Pneumatische Schwenkeinheit Typ PAO

Version A: 0°-180°
Version B: 0°-90°

Magnetic limit switch seat type SME
8-PS (festo) or R599 (OMIL)
Hubfrage über Magnetschalter Typ
SME 8-PS (festo) oder R599 (OMIL)

only for PAO 20
Nur für PAO 20 erhältlich

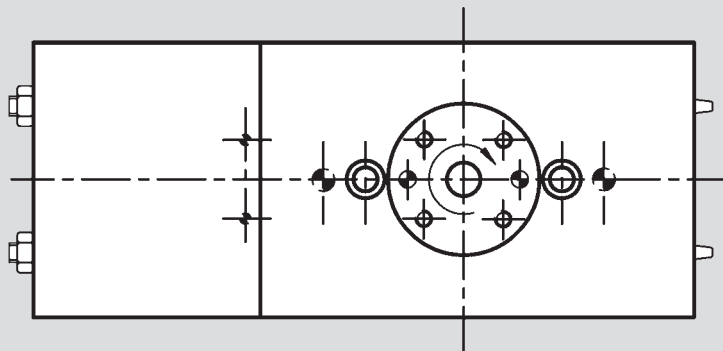
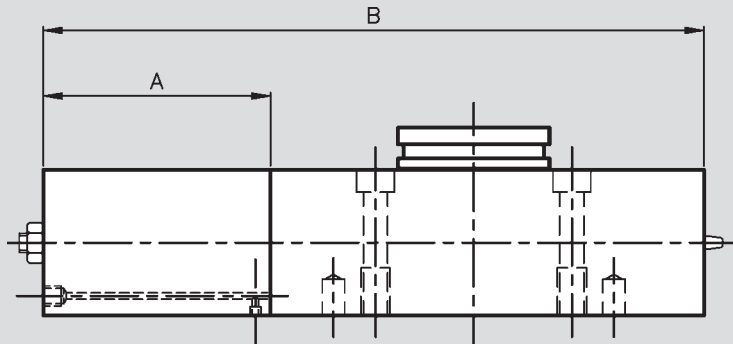


NOTE: The swivel actuator can be supplied with swivel angle 0°-180° code A, or 0° - 90° code B
Anmerkung: Lieferung der Schwenkeinheit mit Schwenkeinheit 180° (Version A) oder 90° (Version B)

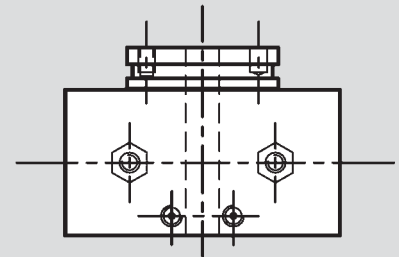
| Type Typ | A | B | C | D | E | G | H | J | L | M | N | P | R | S | T | U |
|-------------|------|------|----|-----|------|----|----|----|-----|-----|-----|----|------|------|------|----|
| PAO 15 | 5.1 | 9.5 | 11 | 101 | 5.5 | 9 | 10 | 5 | M6 | 46 | 62 | M5 | M5 | 15.5 | 15.5 | 22 |
| PAO 20 | 6.7 | 10.5 | 13 | 127 | 6.5 | 12 | 14 | 6 | M8 | 56 | 80 | M5 | M5 | 22.5 | 22.5 | 32 |
| PAO 30 | 8.5 | 14 | 15 | 159 | 8.5 | 13 | 17 | 8 | M10 | 70 | 100 | M5 | M5 | 28 | 28 | 40 |
| PAO 40 | 10.4 | 17 | 18 | 200 | 10.5 | 16 | 20 | 10 | M12 | 80 | 120 | M5 | 1/8G | 31 | 31 | 44 |
| PAO 50 | 12.2 | 19 | 19 | 273 | 12.5 | 20 | 22 | 12 | M14 | 120 | 160 | M5 | 1/8G | 56.5 | 56.5 | 80 |
| PAO 60 | 12.2 | 19 | 23 | 284 | 12.5 | 20 | 22 | 12 | M14 | 120 | 160 | M8 | 1/4G | 56.5 | 56.5 | 80 |

| Type Typ | V | Z | Y | X | K | W | a | b | d | e | f | h | m | n | q | r |
|-------------|-----|-----|----|-----|----|---|----|----|----|----|----|-----|-----|----|----|-----|
| PAO 15 | 45 | 90 | 18 | 4.5 | M4 | 4 | 7 | 34 | 6 | 12 | 28 | 52 | 4.5 | 32 | 7 | 42 |
| PAO 20 | 50 | 114 | 24 | 4.5 | M5 | 5 | 9 | 44 | 10 | 18 | 36 | 68 | 4.5 | 38 | 8 | 50 |
| PAO 30 | 66 | 144 | 28 | 6 | M6 | 6 | 10 | 54 | 13 | 22 | 52 | 98 | 5.5 | 52 | 10 | 67 |
| PAO 40 | 86 | 182 | 28 | 6 | M8 | 8 | 12 | 60 | 18 | 18 | 64 | 118 | 7.5 | 56 | 12 | 72 |
| PAO 50 | 127 | 254 | 44 | 7 | M8 | 8 | 16 | 96 | 22 | 34 | 82 | 138 | 8 | 60 | 16 | 88 |
| PAO60 | 127 | 261 | 40 | 9 | M8 | 8 | 16 | 96 | 22 | 40 | 94 | 164 | 10 | 76 | 16 | 104 |

Pneumatic swivel actuator series - PAO Pneumatische Schwenkeinheit Typ PAO



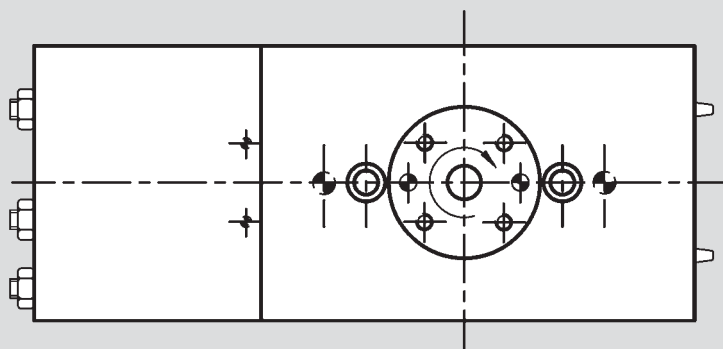
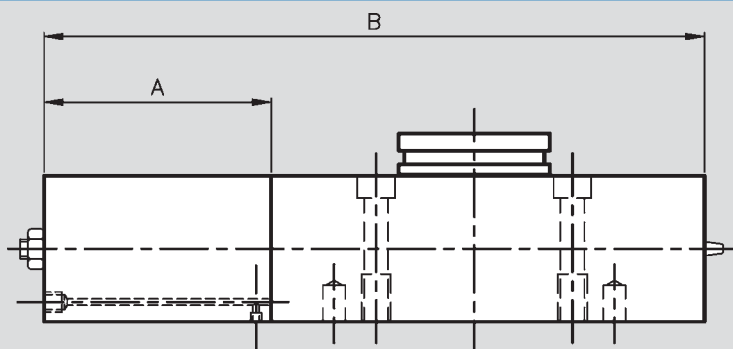
Version C



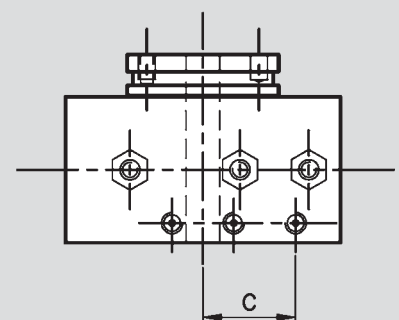
| Type | A | B |
|--------|----|-----|
| Typ | | |
| PAO 15 | 44 | 134 |
| PAO 20 | 48 | 162 |
| PAO 30 | 61 | 199 |
| PAO 40 | 73 | 255 |
| PAO 50 | 92 | 346 |
| PAO 60 | 99 | 360 |

Version C: swivel angle can be continually adjusted ; first position with adjustment from 0° to 90°, second position from 90° to 180°

Version C : Schwenkeinheit mit stufenloser Endlageneinstellbarkeit, Schwenkwinkel 1. Position 0°-90° pneumatische Mittelstellung bei 90°, 2. Position 90°-180°



Version D

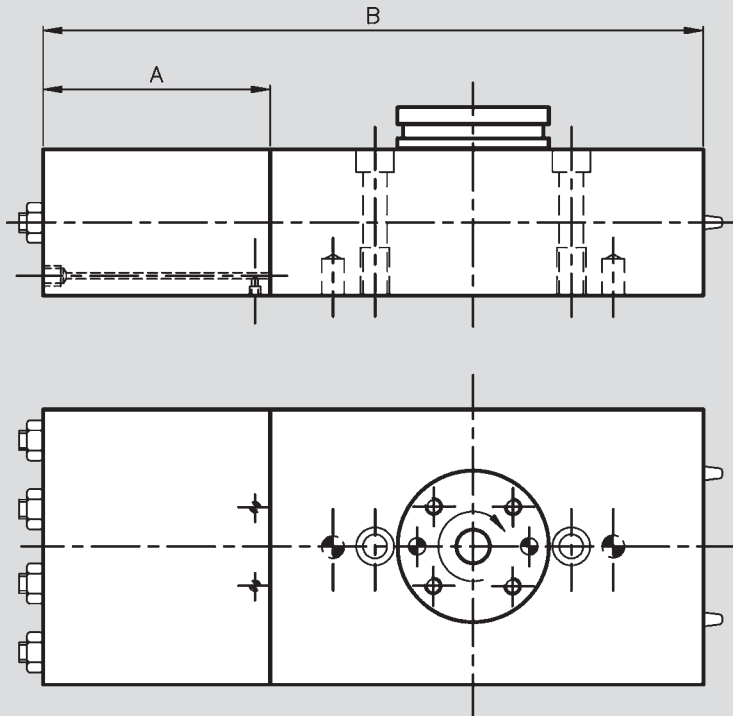


| Type | A | B | C |
|--------|----|-----|----|
| Typ | | | |
| PAO 15 | 44 | 134 | 15 |
| PAO 20 | 48 | 162 | 20 |
| PAO 30 | 61 | 199 | 30 |
| PAO 40 | 73 | 255 | 40 |
| PAO 50 | 92 | 346 | 46 |
| PAO 60 | 99 | 360 | 55 |

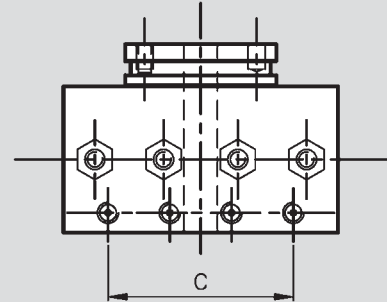
Version D: three-position swivel actuator with intermediate position of 90° that can be reached from 0°. The three positions can be adjusted by push-rod

Version D : Schwenkeinheit mit drei frei wählbaren Schwenkwinkeln, mit pneumatischer Mittelstellung bei 90°. Alle drei Schwenkwinkelpositionen können mittels Feinjustierung eingestellt werden.

Pneumatic swivel actuator series - PAO Pneumatische Schwenkeinheit Typ PAO



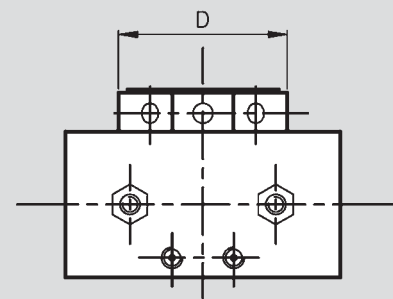
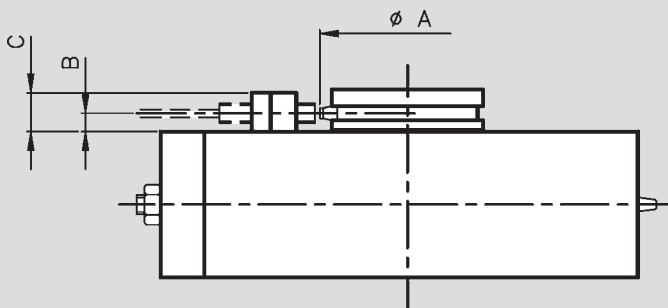
Version E



| Type Typ | A | B | C |
|-------------|----|-----|-----|
| PAO 15 | 44 | 134 | 30 |
| PAO 20 | 48 | 162 | 40 |
| PAO 30 | 61 | 199 | 60 |
| PAO 40 | 73 | 255 | 80 |
| PAO 50 | 92 | 346 | 92 |
| PAO 60 | 99 | 360 | 110 |

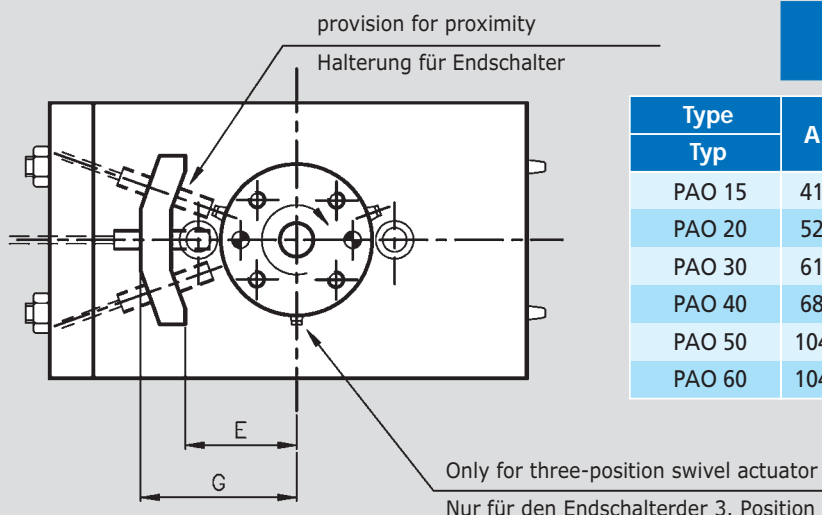
Version E: three-position swivel actuator with intermediate position that can be reached from 0° and from 180°. The three positions can be adjusted by push-rod

Version E : Schwenkeinheit mit 3 Stellungen. Die Zwischenstellung kann von 0° und 180° angefahren werden.



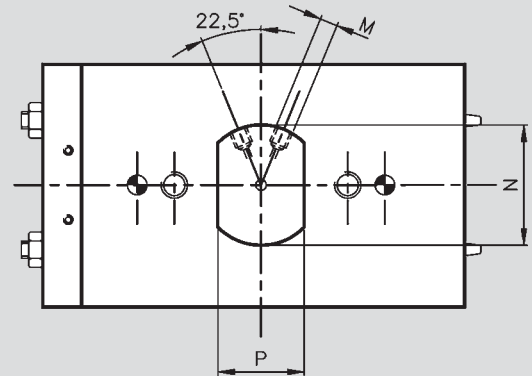
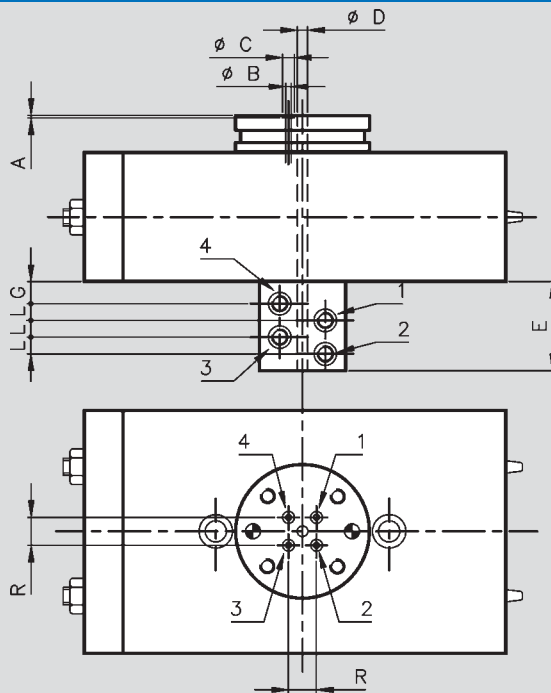
Code F8 Version F8

| Type Typ | A | B | C | D | E | G | H |
|-------------|-----|-----|------|----|----|----|---|
| PAO 15 | 41 | 5.5 | 9.5 | 40 | 26 | 37 | 5 |
| PAO 20 | 52 | 6 | 11.5 | 48 | 29 | 44 | 5 |
| PAO 30 | 61 | 7 | 14 | 58 | 40 | 55 | 8 |
| PAO 40 | 68 | 7.5 | 14.5 | 60 | 43 | 59 | 8 |
| PAO 50 | 104 | 9 | 18 | 70 | 65 | 85 | 8 |
| PAO 60 | 104 | 9 | 18 | 70 | 65 | 85 | 8 |



Code F8 sensors bracket for swivel control
Version F8 Näherungsschalter Halterung

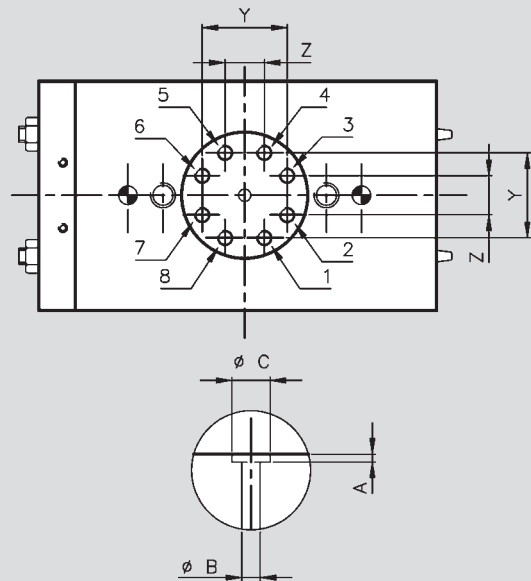
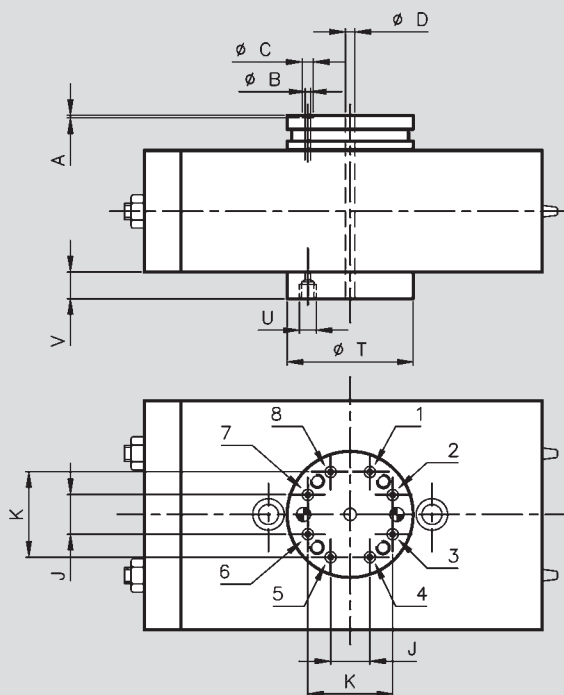
Pneumatic swivel actuator series - PAO Pneumatische Schwenkeinheit Typ PAO



**Code P
Version P**

Code P: internal air distributor for swivel actuator series PAO 15/20/30/40

Version P: Interne Luftdurchführung für Schwenkeinheiten Typ PAO 15/20/30/40



Code P: internal air distributor for swivel actuator series PAO 50/60

Version P: Interne Luftdurchführung für Schwenkeinheiten Typ PAO 50/60

| Type Typ | A | B | C | D | E | G | L | M | N | P | R | T | U | V | Z | Y | J | K |
|-------------|-----|-----|-----|----|----|---|---|------|----|----|-----|----|------|----|------|------|------|------|
| PAO 15 | 0.7 | 2.4 | 4 | - | 32 | 8 | 6 | M5 | 35 | 20 | 5 | - | - | - | - | - | - | - |
| PAO 20 | 0.7 | 2.4 | 4.5 | 4 | 32 | 8 | 6 | M5 | 42 | 27 | 6.4 | - | - | - | - | - | - | - |
| PAO 30 | 0.7 | 2.4 | 5 | 7 | 32 | 8 | 6 | M5 | 50 | 30 | 10 | - | - | - | - | - | - | - |
| PAO 40 | 1.3 | 3.2 | 6 | 10 | 40 | 8 | 8 | 1/8G | 59 | 36 | 14 | - | - | - | - | - | - | - |
| PAO 50 | 1.3 | 3.2 | 8 | 11 | - | - | - | - | - | - | - | 88 | 1/8G | 19 | 24.5 | 59.1 | 22.2 | 53.6 |
| PAO 60 | 1.3 | 3.2 | 8 | 11 | - | - | - | - | - | - | - | 88 | 1/8G | 19 | 24.5 | 59.1 | 22.2 | 53.6 |

Pneumatic swivel actuator series - PAO Pneumatische Schwenkeinheit Typ PAO

Mass of swivel actuators according to version Masse je nach Ausführung und Typ

| Type | Mass (Kg) | Type | Mass (Kg) | Type | Mass (Kg) | Type | Mass (Kg) |
|---------------|------------|------------|------------|------------|------------|------------|------------|
| Typ | Masse (Kg) | Typ | Masse (Kg) | Typ | Masse (Kg) | Typ | Masse (Kg) |
| PAO 15-A(B)-O | 0.7 | PAO 15-C-O | 0.85 | PAO 15-D-O | 1 | PAO 15-E-O | 1.1 |
| PAO 20-A(B)-O | 1 | PAO 20-C-O | 1.25 | PAO 20-D-O | 1.4 | PAO 20-E-O | 1.5 |
| PAO 30-A(B)-O | 2.5 | PAO 30-C-O | 3.1 | PAO 30-D-O | 3.25 | PAO 30-E-O | 3.4 |
| PAO 40-A(B)-O | 4.5 | PAO 40-C-O | 5.5 | PAO 40-D-O | 5.65 | PAO 40-E-O | 5.8 |
| PAO 50-A(B)-O | 8.2 | PAO 50-C-O | 9.8 | PAO 50-D-O | 10 | PAO 50-E-O | 10.2 |
| PAO 60-A(B)-O | 12.7 | PAO 60-A-O | 15.4 | PAO 60-D-O | 15.6 | PAO 60-E-O | 15.8 |

| Type | Mass (Kg) | Type | Mass (Kg) | Type | Mass (Kg) | Type | Mass (Kg) |
|---------------|------------|------------|------------|------------|------------|------------|------------|
| Typ | Masse (Kg) | Typ | Masse (Kg) | Typ | Masse (Kg) | Typ | Masse (Kg) |
| PAO 15-A(B)-P | 0.9 | PAO 15-C-P | 1.1 | PAO 15-D-P | 1.2 | PAO 15-E-P | 1.3 |
| PAO 20-A(B)-P | 1.2 | PAO 20-C-P | 1.45 | PAO 20-D-P | 1.6 | PAO 20-E-P | 1.7 |
| PAO 30-A(B)-P | 2.9 | PAO 30-C-P | 3.5 | PAO 30-D-P | 3.65 | PAO 30-E-P | 3.8 |
| PAO 40-A(B)-P | 5 | PAO 40-C-P | 6 | PAO 40-D-P | 6.2 | PAO 40-E-P | 6.3 |
| PAO 50-A(B)-P | 8.5 | PAO 50-C-P | 10.1 | PAO 50-D-P | 10.3 | PAO 50-E-P | 10.5 |
| PAO 60-A(B)-P | 13 | PAO 60-A-P | 15.7 | PAO 60-D-P | 16 | PAO 60-E-P | 16.2 |

Technical data

Technische Daten

| Type | Feed torque at 6 bar (Nm) | Max cumulative energy from shock absorber (Nm) Wm Ws | | Moment of inertia (Kg m ²) | Axial load A in N | Radial load CR in Nm | Rotation 0°-180° without load in sec. | Air consumed in cm ³ at 6 bar for one cycle |
|----------|---------------------------|--|--------|---|-----------------------------|--------------------------------|---------------------------------------|--|
| Typ | Drehmoment bei 6 bar (Nm) | Max Energieaufnahme Des Dämpfers (Nm) Wm Ws | | Massen Trägheits moment (Kgm ²) | Max. axiale Belastung A (N) | Max. Radiale Belastung CR (Nm) | Schwenkzeit 0°-180° pro Zyklus (s) | Luftverbrauch (cm ³) bei 6 bar pro Zyklus |
| PAO 15 | 1 | 6 | 25000 | 0.001 | 280 | 3 | 0.35 | 11 |
| PAO 20 | 2 | 17 | 34000 | 0.005 | 730 | 9 | 0.3 | 22 |
| PAO 30 | 6.5 | 40 | 46000 | 0.028 | 1400 | 28 | 0.35 | 68 |
| PAO 40 | 11.5 | 68 | 68000 | 0.33 | 2800 | 64 | 0.75 | 126 |
| PAO 50 | 23 | 170 | 99000 | 0.75 | 8800 | 260 | 0.6 | 248 |
| PAO 60/1 | 37 | 310 | 110000 | 1.2 | 8800 | 320 | 0.85 | 396 |
| PAO 60/2 | 74 | 680 | 130000 | 1.2 | 8800 | 320 | 0.8 | 796 |

NOTE: for correct application of the swivel actuator compare the data of the previous table and execute the checking procedure indicated

Bemerkung: Für die genaue Auslegung senden Sie uns bitte unsere Checkliste von Seite 111 ausgefüllt zu.

Ordering example

Bestellbeispiel

| Type | Version | For sensor bracket indicate code F + Ø | With distributor indicate code P without distributor indicate code N | For shock absorber indicate code V + type | Indicate direction of rotation |
|--------|---------|--|--|--|--------------------------------|
| Typ | Version | Induktive Abfrage Version F + Ø | Mit Luftdurchführung Vers. P ohne Luftdurchführung Vers. N | Für Stoßdämpfer Ausführung Version V + Typ | Schwenk Richtung Ausführung |
| PAO 15 | A | F8 | P | V3 | RO |

NOTE: - To determine the type of shock absorber to be applied on the swivel actuator, sign the check-list and send to us.
- Direction of rotation : clockwise code RO
- Anticlockwise code RA

Bemerkung: - Um den richtigen Hydraulik Stoßdämpfer zu wählen geben Sie uns Ihre genauen technischen Daten bekannt
- Verwenden Sie dazu bitte unsere Checkliste auf Seite 111
- Schwenkrichtung: im Uhrzeigersinn code RO – gegen de Uhrzeigersinn code RA

Compact swivel head pneumatic series TC-PAO Pneumatischer Schwenkkopf Typ TC-PAO



Technische Eigenschaften:

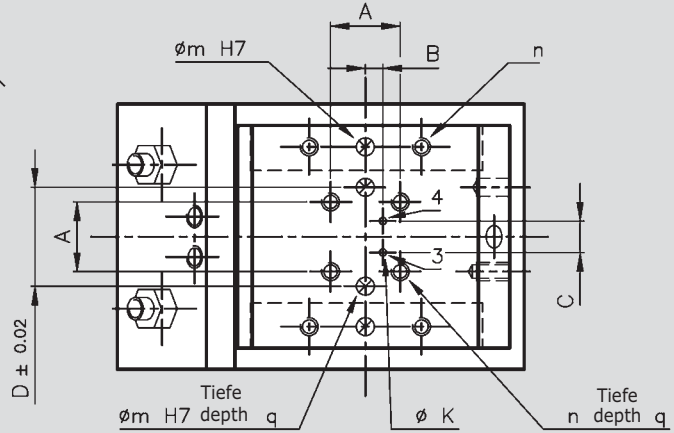
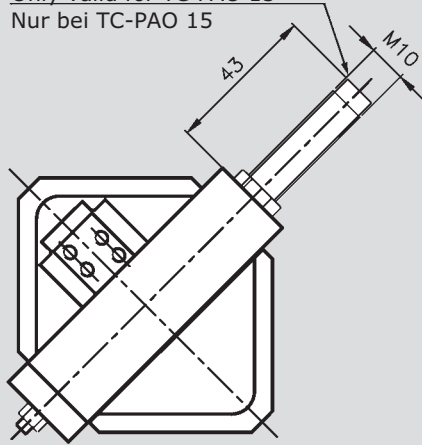
- Betriebsdruck: 4 bis 8 bar
- Wiederholgenauigkeit: 0.07°
- Betriebstemperaturbereich von -10°C bis 90°C; bis 130°C und höher auf Anfrage
- Endlagendämpfung hydraulische Stoßdämpfer
- Endlagen feinjustierbar 2°
- Wirkprinzip: Zahnstangen Ritzel Synchronisation
- Material : Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft (10µm), trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Zyklen
- Einstellbare Zwischenposition
- Elektrische Ansteuerung über Lumberg SBS 4/LED 3 RKT 8-6-268/5M möglich auf Anfrage
- Schutzart IP54
- 24 Monate Garantie

Technical data:

- Range of operating pressure: 4 - 8 bar
max 3 MPa for hydraulic
- Repeatability accuracy: 0.07°
- Operating temperature: from -10°C to 90°C; version up to 130°C upon request
- Damping by shock absorber
- Limit switch position adjustment 2°
- Operating principle: 2 rack synchronised by pinion
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated and ground steel
- Actuation: compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- End positions without clearance
- Through central hole to pass cables for proximity switch (upon request Lumberg box SB4 4/LED 3 with cable RKT 8-6-268/5M)
- Rating IP 54
- Warranty 24 months

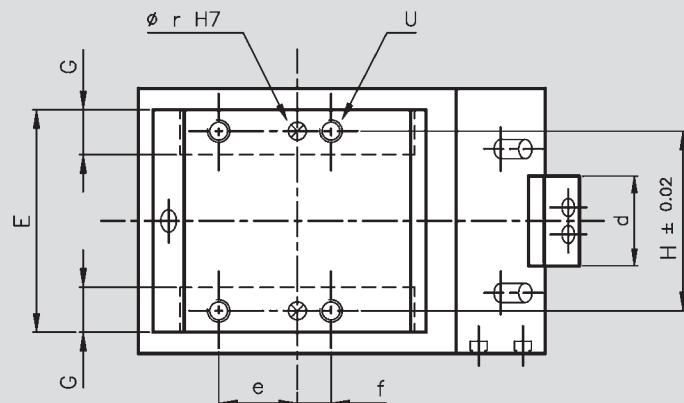
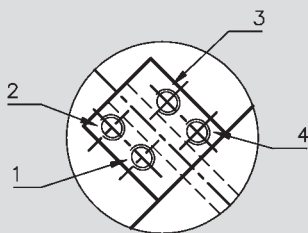
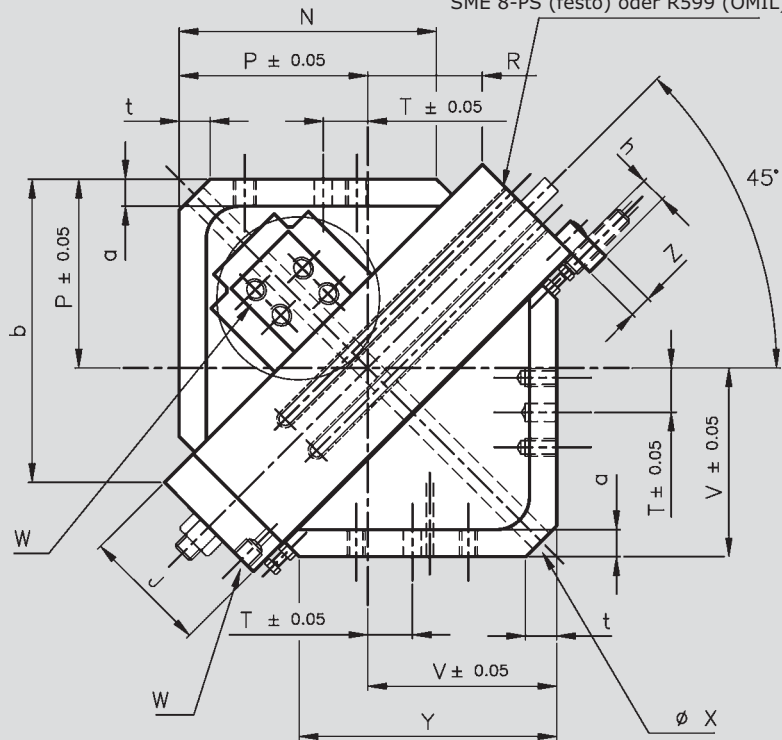
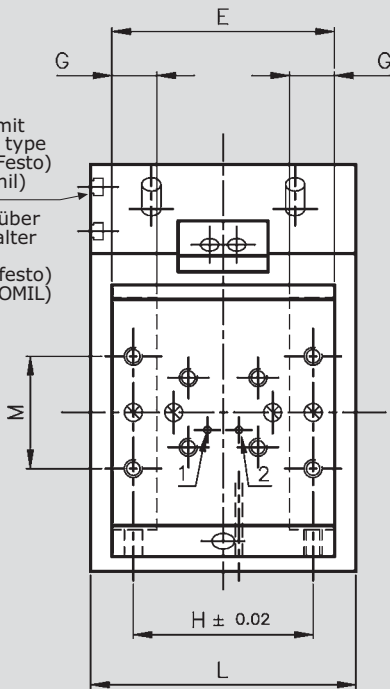
Compact swivel head pneumatic series TC-PAO Pneumatischer Schwenkkopf Typ TC-PAO

Only valid for TC PAO 15
Nur bei TC-PAO 15



Magnetic limit switch seat type
SME 8-PS (Festo) o R599 (Omil)
Hubafrage über Magnetschalter Typ
SME 8-PS (festo) oder R599 (OMIL)

Magnetic limit switch seat type
SME 8-PS (Festo)
o R599 (Omil)
Hubafrage über Magnetschalter
Typ
SME 8-PS (festo)
oder R599 (OMIL)



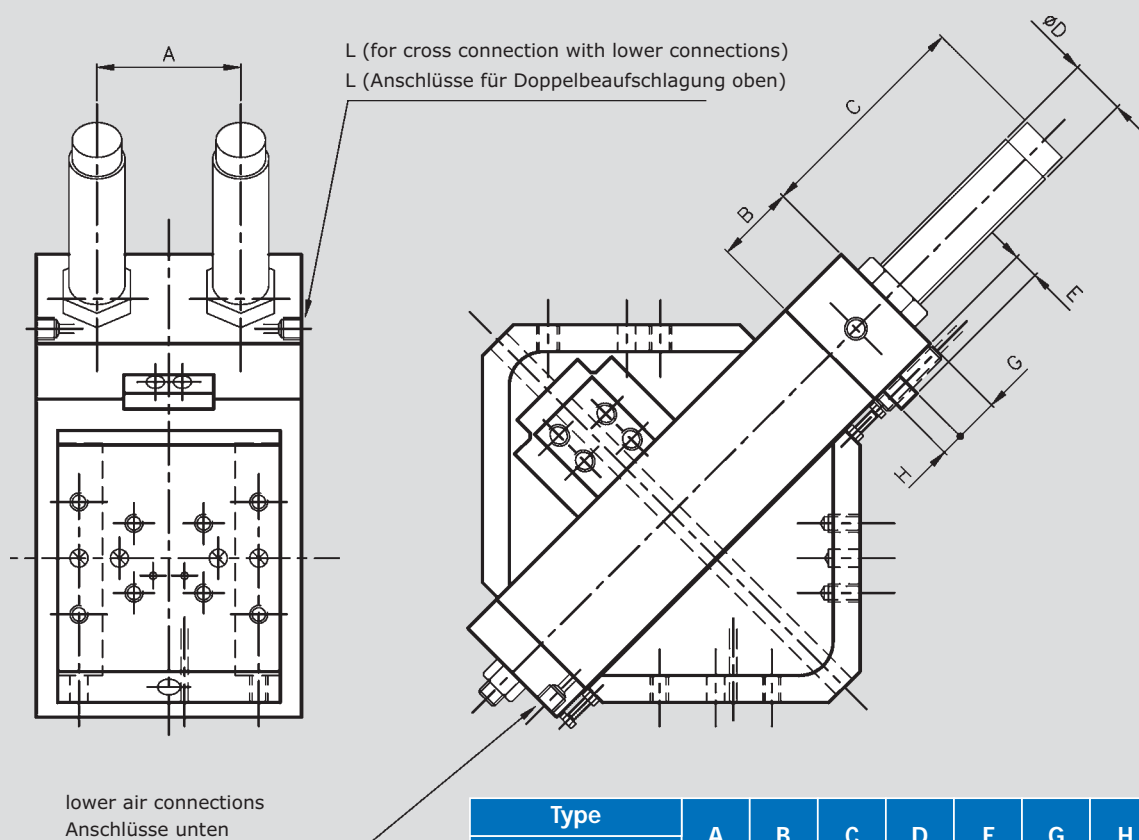
Compact swivel head pneumatic series TC-PAO Pneumatischer Schwenkkopf Typ TC-PAO

| Type Typ | A | B | C | D | E | G | H | L | M | N | P | R | T | U | V | Z | Y | X | W | J | K |
|-------------|------|-----|-----|----|----|----|----|-----|----|-----|----|----|------|-----|----|----|-----|----|------|----|-----|
| TC-PAO 15 | 15.5 | 3.8 | 5 | 22 | 48 | 10 | 38 | 52 | 28 | 63 | 50 | 21 | 11.3 | M6 | 43 | 8 | 53 | - | M5 | 32 | 1.5 |
| TC-PAO 20 | 22.6 | 6.2 | 6.4 | 32 | 64 | 12 | 50 | 68 | 35 | 78 | 58 | 32 | 13.4 | M8 | 58 | 8 | 78 | 4 | M5 | 38 | 2 |
| TC-PAO 30 | 28.2 | 7 | 10 | 40 | 79 | 15 | 64 | 98 | 42 | 88 | 67 | 33 | 18.4 | M8 | 67 | 8 | 88 | 7 | M5 | 52 | 2 |
| TC-PAO 40 | 31.1 | 7.8 | 14 | 44 | 99 | 20 | 80 | 118 | 50 | 114 | 84 | 48 | 19.8 | M10 | 84 | 10 | 112 | 10 | 1/8G | 56 | 3.2 |

| Type Typ | a | b | d | e | f | h | m | n | q | r | t |
|-------------|----|-----|----|----|----|-----|---|----|----|---|----|
| TC-PAO 15 | 7 | 79 | 26 | 18 | 10 | 9.5 | 4 | M4 | 8 | 5 | 10 |
| TC-PAO 20 | 8 | 90 | 26 | 23 | 12 | 9.5 | 5 | M5 | 9 | 6 | 12 |
| TC-PAO 30 | 9 | 106 | 26 | 27 | 15 | 9.5 | 6 | M6 | 11 | 8 | 9 |
| TC-PAO 40 | 12 | 136 | 40 | 35 | 15 | 12 | 8 | M8 | 14 | 8 | 14 |

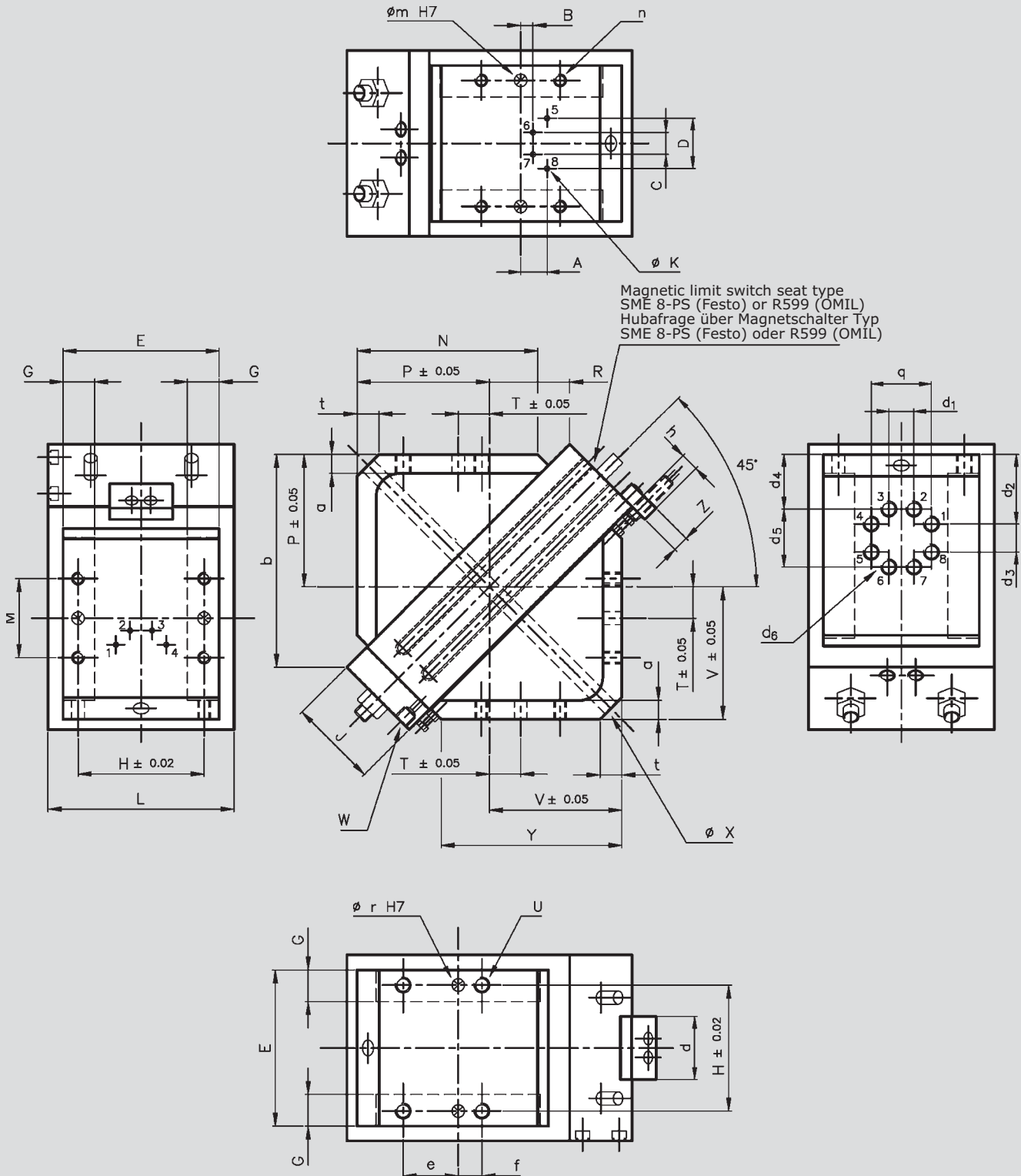
COMPACT HEAD WITH THRUSTING DOUBLE CHAMBER - Series TC-PAO .. /2

SCHWENKKOPF MIT DOPPELBEAUFSCHLAGUNG - Typ TC-PAO.... /2



| Type Typ | A | B | C | D | E | G | H | L |
|-------------|----|----|----|----|----|----|----|------|
| TC-PAO 20/2 | 36 | 29 | 50 | 20 | 10 | 15 | 8 | M5 |
| TC-PAO 30/2 | 52 | 34 | 75 | 25 | 10 | 20 | 8 | M5 |
| TC-PAO 40/2 | 64 | 39 | 90 | 25 | 12 | 20 | 10 | 1/8G |

Compact swivel head pneumatic series TC-PAO Pneumatischer Schwenkkopf Typ TC-PAO



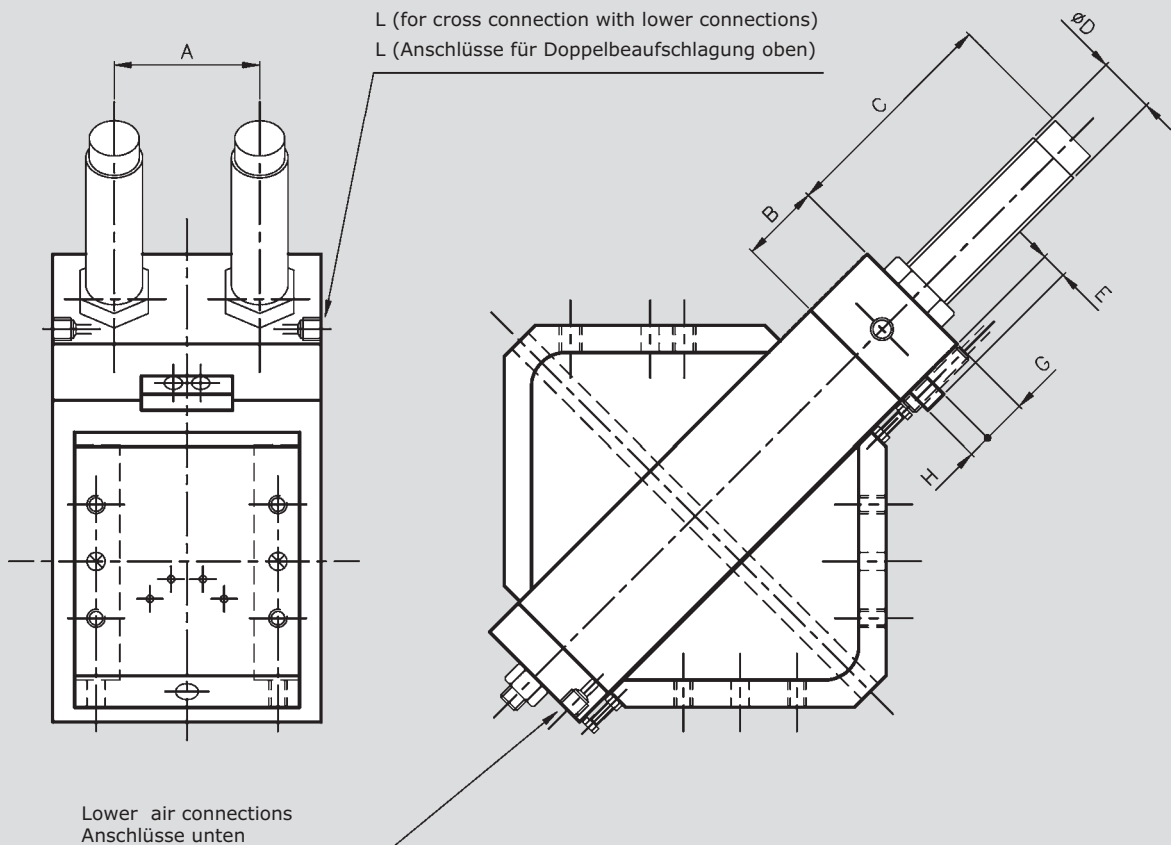
Compact swivel head pneumatic series TC-PAO Pneumatischer Schwenkkopf Typ TC-PAO

| Type | A | B | C | D | E | G | H | L | M | N | P | R | T | U | V | Z | Y | X | W | J | K |
|-----------|----|----|------|----|-----|----|-----|-----|-----|-----|-----|----|------|-----|-----|----|-----|----|------|----|---|
| TC-PAO 50 | 20 | 10 | 22.2 | 40 | 126 | 20 | 106 | 138 | 100 | 149 | 105 | 68 | 21.2 | M12 | 105 | 10 | 151 | 11 | 1/8G | 60 | 4 |
| TC-PAO 60 | 20 | 10 | 22.2 | 40 | 159 | 34 | 136 | 164 | 120 | 173 | 120 | 68 | 26.9 | M12 | 120 | 20 | 172 | 11 | 1/4G | 76 | 4 |

| Type | a | b | d | e | f | h | m | n | q | r | t | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ |
|-----------|----|-----|----|----|----|----|----|-----|------|----|----|----------------|----------------|----------------|----------------|----------------|----------------|
| TC-PAO 50 | 13 | 188 | 40 | 50 | 25 | 12 | 10 | M10 | 59.2 | 10 | 18 | 24.6 | 61.5 | 18 | 49.5 | 42 | 1/8G |
| TC-PAO 60 | 14 | 200 | 40 | 55 | 35 | 12 | 10 | M10 | 59.2 | 10 | 14 | 24.6 | 71 | 18 | 59 | 42 | 1/8G |

COMPACT HEAD WITH THRUSTING DOUBLE CHAMBER - Series TC-PAO ..1/2

SCHWENKKOPF MIT DOPPELBEAUFSCHLAGUNG - Typ TC-PAO.....1/2



| Type | A | B | C | D | E | G | H | L |
|-------------|----|----|-----|----|----|----|----|------|
| TC-PAO 50/2 | 82 | 49 | 66 | 33 | 12 | 32 | 10 | 1/8G |
| TC-PAO 60/2 | 94 | 40 | 124 | 57 | 12 | 10 | 10 | 1/4G |

Compact swivel head pneumatic series TC-PAO

Pneumatischer Schwenkkopf Typ TC-PAO

Mass of compact swivel heads according to version
Masse der verschiedenen Typen

| Type | Mass (Kg) | Type | Mass (Kg) | Type | Mass (Kg) | Type | Mass (Kg) |
|-------------|------------|-------------|------------|---------------|------------|---------------|------------|
| Typ | Masse (Kg) | Typ | Masse (Kg) | Typ | Masse (Kg) | Typ | Masse (Kg) |
| TC-PAO 15-0 | 1.1 | TC-PAO 15-P | 1.2 | TC-PAO 15/2-0 | - | TC-PAO 15/2-P | - |
| TC-PAO 20-0 | 2 | TC-PAO 20-P | 2.2 | TC-PAO 20/2-0 | 2.4 | TC-PAO 20/2-P | 2.6 |
| TC-PAO 30-0 | 4.1 | TC-PAO 40-P | 4.5 | TC-PAO 30/2-0 | 4.6 | TC-PAO 40/2-P | 5 |
| TC-PAO 40-0 | 7 | TC-PAO 40-P | 7.6 | TC-PAO 40/2-0 | 7.9 | TC-PAO 40/2-P | 8.5 |
| TC-PAO 50-0 | 14.5 | TC-PAO 50-P | 14.5 | TC-PAO 50/2-0 | 15.8 | TC-PAO 50/2-P | 15.8 |
| TC-PAO 60-0 | 21.2 | TC-PAO 60-P | 21.2 | TC-PAO 60/2-0 | 24.6 | TC-PAO 60/2-P | 24.6 |

Technical data
Technische Daten

| Type | Feed torque at 6 bar (Nm) | Max cumulative energy from shock absorber (Nm) Wm Ws | | Moment of inertia Jamm in (Kg m ²) | Axial load A in N | Radial load CR in Nm | Rotation 0°-180° without load in sec. | Air consumed in cm ³ at 6 bar for one cycle |
|-------------|---------------------------|--|--------|--|-----------------------------|--------------------------------|---------------------------------------|--|
| Typ | Drehmoment bei 6 bar (Nm) | Max Energieaufnahme Des Dämpfers (Nm) Wm Ws | | Massen-trägheitsmoment (Kg m ²) | Max. axiale Belastung A (N) | Max. Radiale Belastung CR (Nm) | Schwenkzeit 0°-180° pro Zyklus (s) | Luftverbrauch (cm ³) bei 6 bar pro Zyklus |
| TC-PAO 15 | 1 | 6 | 25000 | 0.001 | 280 | 3 | 0.35 | 11 |
| TC-PAO 20 | 2 | 17 | 34000 | 0.005 | 730 | 9 | 0.3 | 22 |
| TC-PAO 20/2 | 4 | 40 | 46000 | 0.005 | 730 | 9 | 0.25 | 44 |
| TC-PAO 30 | 6.5 | 40 | 46000 | 0.028 | 1400 | 28 | 0.35 | 68 |
| TC-PAO 30/2 | 13 | 68 | 68000 | 0.028 | 1400 | 28 | 0.32 | 136 |
| TC-PAO 40 | 11.5 | 68 | 68000 | 0.33 | 2800 | 64 | 0.75 | 126 |
| TC-PAO 40/2 | 23 | 170 | 99000 | 0.33 | 2800 | 64 | 0.68 | 252 |
| TC-PAO 50 | 23 | 170 | 99000 | 0.75 | 8800 | 260 | 0.6 | 248 |
| TC-PAO 50/2 | 46 | 310 | 110000 | 0.75 | 8800 | 260 | 0.55 | 496 |
| TC-PAO 60 | 37 | 310 | 110000 | 1.2 | 8800 | 320 | 0.85 | 396 |
| TC-PAO 60/2 | 74 | 680 | 150000 | 1.2 | 8800 | 320 | 0.85 | 796 |

NOTE: for correct application of the swivel actuator compare the data of the previous table and execute the checking procedure indicated

Bemerkung: Für die genaue Auslegung senden Sie uns bitte unsere Checkliste von Seite 111 ausgefüllt zu.

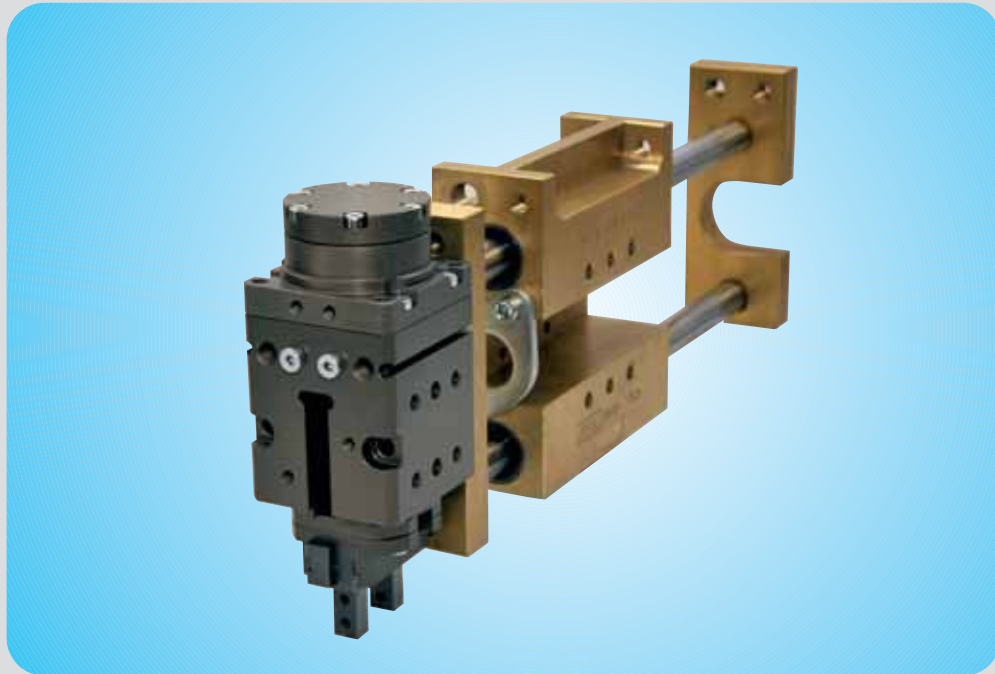
Ordering example
Bestellbeispiel

| Type | Without proximity bracket indicate code S With proximity bracke indicate code F8 | With distributor indicate code P without distributor indicate code N | For shock absorber indicate code V + type |
|-----------|--|--|---|
| Typ | Version Hubabfrage über induktive Näherungsschalter Vers. F + 8 | Mit Luftdurchführung Vers. P ohne Luftdurchführung Vers. N | Für Stoßdämpfer Ausführung Vers. V + Typ |
| TC-PAO 20 | F8 | P | V3 |

NOTE: to determine the type of shock absorber to be applied on the compact head, sigh the check-list and send to us.

Bemerkung: Um den richtigen Hydraulik Stoßdämpfer zu wählen geben Sie uns lbre genauen technischen Daten bekannt Verwenden Sie dazu bitte unsere Checkliste auf Seite 111

Rotary actuators - Gripper swivel models Pneumatic ARP... ARPEP Schwenkeinheiten/Greif-Schwenk-Module Pneumatic ARP...ARPEP



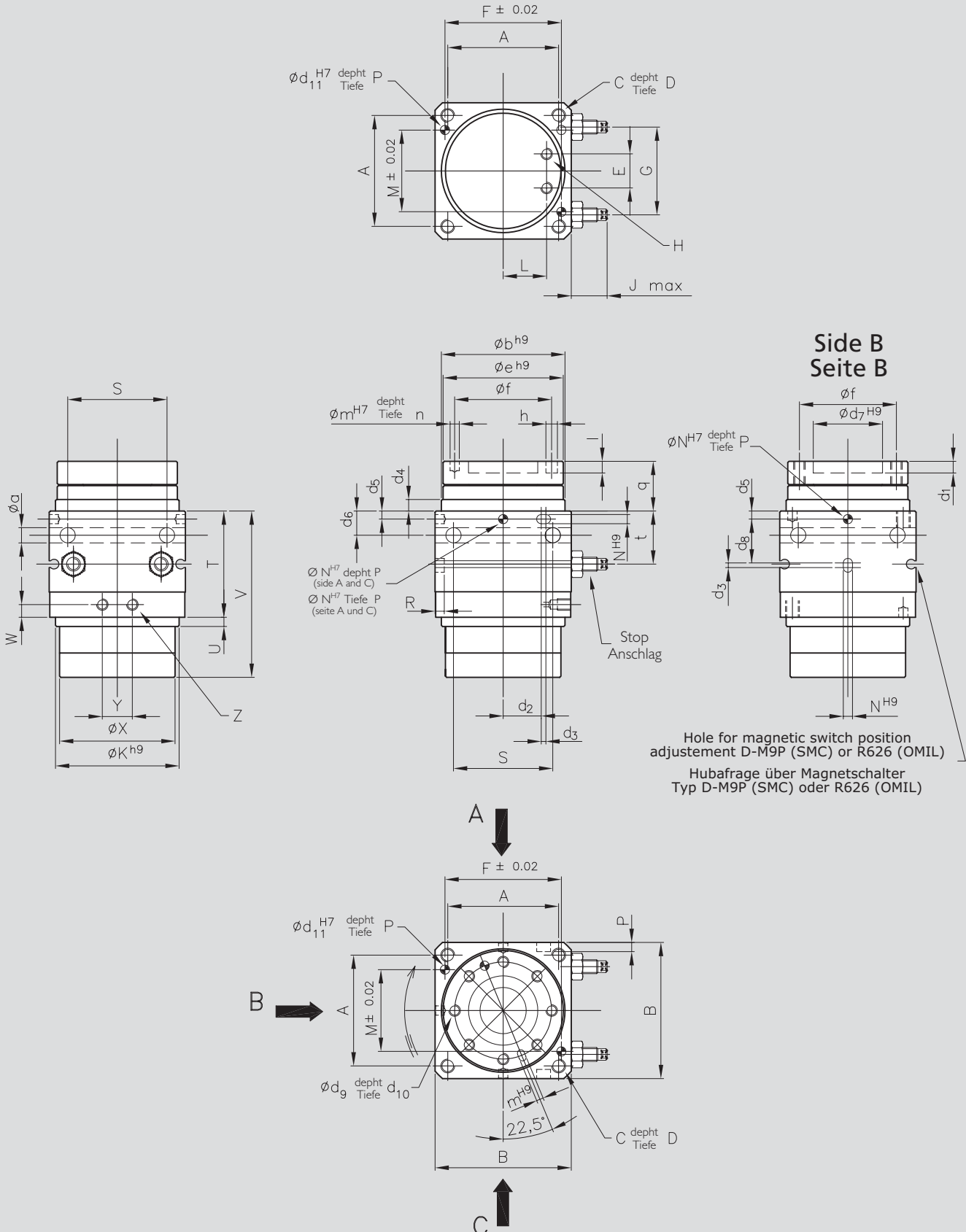
Technische Eigenschaften:

- Betriebsdruck: 3.5 bis 6.5 bar greifer; 3 bis 8 bar Schwenkeinheiten
- Wiederholgenauigkeit: 0.09° Schwenkeinheiten/ 0.02 greifer über 100 Schaltspiele
- Betriebstemperaturbereich von 5°C bis 60°C
- Endlagendämpfung hydraulische Stoßdämpfer auf Anfrage
- Endlagen feinjustierbar 2°
- Wirkprinzip:
Schwenkeinheiten: Schwenflügel
- Greifer: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material: Gehäuse aus hochfester Aluminiumlegierung hartbeschichtet, Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch über gefilterte Druckluft (10µm), trocken oder geölt
- Wartungsfrei: bis 1.5 Mio. Zyklen
- Einstellbare Zwischenposition
- Greifkraftsicherung auf Anfrage
- Schutzart: IP40 Greifer / IP 52 Schwenkeinheiten
- 24 Monate Garantie

Technical data:

- Range of operating pressure: 3.5 - 6.5 bar swivel 3 - 8 bar gripper
- Repeatability accuracy: 0.09° swivel / 0.02mm gripper over 100 cycles
- Operating temperature: from -5°C to 60°C;
- Damping upon request by shock absorber
- Operating principle:
swivel: rotor and piston drive
gripper: wedge-hook kinematic
- Housing material: high tensile hard-coated aluminium alloy, hard-anodized
- Material of functional parts: treated and /or ground steel
- Actuation: compressed air filtered (10 µm), dry or lubricated
- Maintenance: no maintenance required for the first 1.5 million cycles
- End positions without clearance
- Safety device on request
- Rating IP 40 gripper - IP 52 swivel
- Warranty 24 month

Rotary actuators - Gripper swivel models Pneumatic ARP... ARPEP Schwenkeinheiten/Greif-Schwenk-Module Pneumatic ARP...ARPEP



Rotary actuators - Gripper swivel models Pneumatic ARP... ARPEP Schwenkeinheiten/Greif-Schwenk-Module Pneumatic ARP...ARPEP

| Type Typ | A | B | C | D | E | F | G | H | J | L | M | N | P | R | S | T | U | V | Z | Y | X | K |
|-------------|----|----|----|-----|----|----|----|----|------|------|----|---|-----|-----|----|----|---|------|----|----|----|------|
| ARP 3 | 36 | 44 | M4 | 5.5 | 13 | 36 | 24 | M3 | 8.5 | 9 | 26 | 3 | 2.5 | 3 | 29 | 36 | 2 | 45 | M5 | 11 | 35 | 42 |
| ARP 7 | 41 | 50 | M5 | 7 | 16 | 43 | 30 | M5 | 10.5 | 11 | 31 | 4 | 3.5 | 3.5 | 36 | 44 | 3 | 58.5 | M5 | 12 | 45 | 48 |
| ARP 20 | 48 | 59 | M6 | 7 | 16 | 48 | 38 | M5 | 10.5 | 14.5 | 35 | 4 | 5 | 4 | 43 | 46 | 4 | 72 | M5 | 13 | 50 | 53.5 |

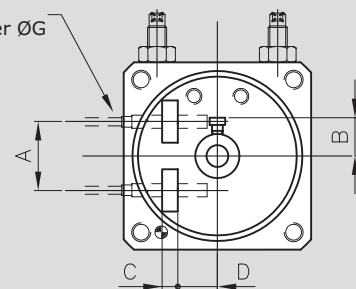
| Type Typ | a | b | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | d ₉ | d ₁₀ | d ₁₁ | e | f | h | l | m | n | q | t | W |
|-------------|-----|------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|----|----|---|---|---|---|------|------|-----|
| ARP 3 | 4.5 | 42 | 3 | 11 | 2 | 3 | 3 | 8 | 21 | 12.5 | M4 | 7 | 3 | 41 | 30 | 5 | 5 | 3 | 3 | 15.5 | 17.1 | 6 |
| ARP 7 | 5.5 | 48 | 4 | 13 | 2 | 4.5 | 3.5 | 10.5 | 26 | 16 | M4 | 8 | 3 | 47 | 37 | 5 | 5 | 3 | 5 | 19 | 20.5 | 6 |
| ARP 20 | 6.6 | 53.5 | 5 | 16 | 2 | 5 | 3.5 | 10.5 | 30 | 19 | M5 | 10 | 4 | 52 | 42 | 5 | 5 | 3 | 5 | 21.5 | 23 | 5.5 |

| Type | Feed torque at 6 bar (Nm) | Rotation 0°-180° without load in sec. | Air consumed in cm ³ at 6 bar for one cycle | Axial load A in N | Radial load CR in Nm | Mass Kg | Allowable kinetic energy J kgm ² |
|--------|---------------------------|---------------------------------------|--|-----------------------------|--------------------------------|----------|---|
| Typ | Drehmoment bei 6 bar (Nm) | Schwenkzeit 0°-180° pro zyklus (s) | Luftverbrauch (cm ³) bei 6 bar pro zyklus | Max. axiale Belastung A (N) | Max. Radiale Belastung CR (Nm) | Masse Kg | Massen Trägheitsmoment (Kgm ²) |
| ARP 1 | 0.38 | 0.15 | 22 | 30 | 0.7 | 0.25 | 0.014 |
| ARP 7 | 0.8 | 0.16 | 46 | 60 | 0.9 | 0.45 | 0.034 |
| ARP 20 | 2.25 | 0.18 | 75 | 80 | 2.7 | 0.70 | 0.074 |

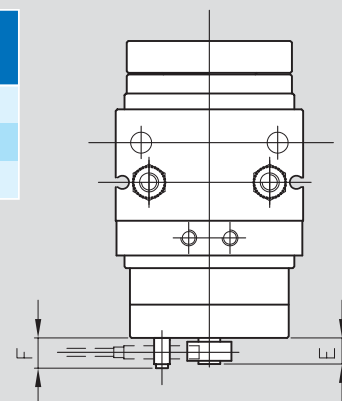
Sensor bracket code F8

Halterung für Näherungsschalter Version F8

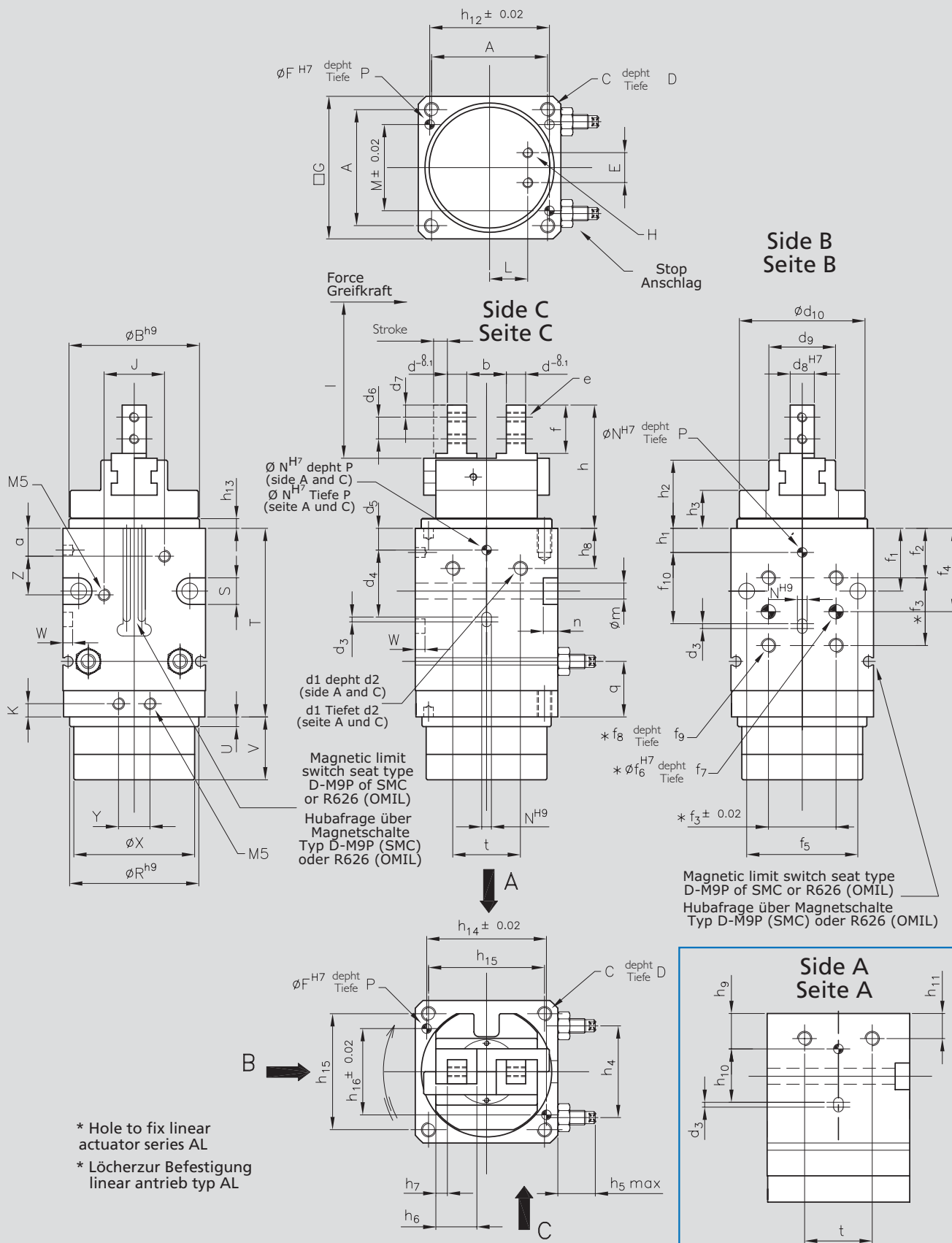
Magnetic limit switch seat ØG
Bohrung für Näherungsschalter ØG



| Type Typ | Type Typ | A | B | C | D | E | F | G |
|-------------|-------------|----|----|---|------|----|-----|---|
| ARP 3 | ARPEP 10 | 19 | 11 | 6 | 5.4 | 9 | 9.5 | 4 |
| ARP7 | ARPEP 16 | 24 | 14 | 8 | 6.75 | 10 | 9 | 5 |
| ARP 20 | ARPEP 20/25 | 24 | 14 | 8 | 8.75 | 13 | 9 | 5 |



Rotary actuators - Gripper swivel models Pneumatic ARP... ARPEP Schwenkeinheiten/Greif-Schwenk-Module Pneumatic ARP...ARPEP



Rotary actuators - Gripper swivel models Pneumatic ARP... ARPEP Schwenkeinheiten/Greif-Schwenk-Module Pneumatic ARP...ARPEP

| Type | A | B | C | D | E | F | G | H | J | L | M | N | P | R | S | T | U | V | Z | Y | X | K | W |
|----------|----|----|----|----|----|---|----|----|------|------|----|---|---|----|-----|-----|-----|-----|-----|----|----|------|---|
| ARPEP 10 | 34 | 37 | M4 | 8 | 13 | 3 | 41 | M3 | 19.6 | 9 | 25 | 3 | 4 | 37 | 8 | 63 | 2 | 10 | 6.5 | 10 | 35 | 5 | 4 |
| ARPEP 16 | 41 | 47 | M5 | 8 | 16 | 3 | 50 | M5 | 20 | 11 | 31 | 4 | 5 | 47 | 9,5 | 78 | 2 | 8.5 | 8 | 12 | 45 | 13 | 4 |
| ARPEP 20 | 48 | 54 | M6 | 10 | 16 | 4 | 59 | M5 | 25 | 14.5 | 35 | 5 | 6 | 50 | 11 | 101 | 3.1 | 3.1 | 16 | 13 | 50 | 28.4 | 4 |
| ARPEP 25 | 48 | 66 | M6 | 10 | 16 | 5 | 70 | M5 | 25 | 14.5 | 35 | 6 | 8 | 50 | 14 | 107 | 6.3 | 6.3 | 20 | 25 | 50 | 25.3 | 4 |

| Type | a | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | d ₉ | d ₁₀ | e | f | h | i | m | n | q | t | f ₁ | f ₂ | f ₃ |
|----------|------|------|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|------|----|----|----|-----|-----|------|----|----------------|----------------|----------------|
| ARPEP 10 | 7 | 11.2 | 4 | M4 | 6 | 2 | 19.5 | 4 | 5.7 | 3 | 5 | 16.4 | 35.5 | M2.5 | 12 | 34 | 10 | 4.5 | 4 | 17.9 | 23 | 18 | 5 | 22 |
| ARPEP 16 | 8 | 14.9 | 5 | M5 | 8 | 2 | 13 | 16 | 7 | 4 | 8 | 23.6 | 46.5 | M3 | 15 | 42 | 15 | 5.5 | 2.5 | 30 | 29 | 22 | 12 | 28 |
| ARPEP 20 | 11.5 | 16.3 | 8 | M6 | 9 | 3 | 28 | 10 | 9 | 5 | 10 | 27.6 | 53 | M4 | 20 | 51 | 20 | 6.5 | 6 | 45.9 | 36 | 26 | 6 | 28 |
| ARPEP 25 | 15 | 19.3 | 10 | M8 | 12 | 2 | 34 | 10 | 12 | 6 | 12 | 33.6 | 65 | M5 | 25 | 63 | 20 | 8.5 | 4 | 42.8 | 42 | 27.5 | 8 | 31 |

| Type | f ₄ | f ₅ | f ₆ | f ₇ | f ₈ | f ₉ | f ₁₀ | h ₁ | h ₂ | h ₃ | h ₄ | h ₅ | h ₆ | h ₇ | h ₈ | h ₉ | h ₁₀ | h ₁₁ | h ₁₂ | h ₁₃ | h ₁₄ | h ₁₅ | h ₁₆ |
|----------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| ARPEP 10 | 16 | 33 | 5 | 7 | M5 | 7 | 11.5 | 12 | 19.5 | 12 | 24 | 8.5 | 9.8 | 2.9 | 6 | 13.5 | 10 | 11.5 | 34 | 2.5 | 34 | 34 | 25 |
| ARPEP 16 | 26 | 40 | 6 | 6.5 | M6 | 6.5 | 19 | 10 | 24.2 | 15.2 | 30 | 10.5 | 12.5 | 3.5 | 8 | 5 | 24 | 15 | 43 | 3 | 43 | 41 | 31 |
| ARPEP 20 | 46 | 6 | 10 | M6 | 10 | 28 | 10 | 28.2 | 15.7 | 38 | 10.5 | 18 | 4.8 | 16.5 | 10 | 28 | 16.5 | 48 | 4 | 48 | 48 | 35 | |
| ARPEP 25 | 22.5 | 54 | 8 | 12 | M8 | 12 | 34 | 10 | 35 | 19.5 | 38 | 10.5 | 22.5 | 6.3 | 17 | 10 | 34 | 17 | 48 | 4 | 62 | 58 | 43 |

| Type | Stroke for finger | | Gripping force at 6 bar (N) | | Air consumed for double stroke gripper (cm ³) | Recommended weight of part for transport (kg) | | Approx time (s) | | Max finger length / weight (Kg) |
|----------|-------------------|--------|-----------------------------|--------|---|---|--------|-----------------|---------|---------------------------------|
| | code 1 | code 2 | code 1 | code 2 | | code 1 | code 2 | open | closing | |
| ARPEP 10 | 2 | 3.5 | 30 | 16 | 0.45 | 0.15 | 0.08 | 0.03 | 0.03 | 25 / 0.015 |
| ARPEP 16 | 3 | 5.5 | 94 | 54 | 1.85 | 0.45 | 0.27 | 0.04 | 0.04 | 32 / 0.04 |
| ARPEP 20 | 5 | 8.5 | 150 | 86 | 4.8 | 0.75 | 0.43 | 0.05 | 0.05 | 42 / 0.08 |
| ARPEP 25 | 7 | 10.5 | 200 | 140 | 8.7 | 1 | 0.7 | 0.05 | 0.05 | 52 / 0.18 |

| Type | Feed torque at 6 bar (Nm) | Rotation 0°-180° without load (s) | Air consumed in cm ³ at 6 bar for one cycle | Allovable kinetic energy Jamm in (Kgcm ²) | CA (N) | MR (Nm) | MT (Nm) | Mass (Kg) |
|----------|---------------------------|-----------------------------------|--|---|--------|---------|---------|-----------|
| ARPEP 10 | 0.3 | 0.2 | 22 | 0.004 | 100 | 1 | 0.7 | 0.3 |
| ARPEP 16 | 0.7 | 0.22 | 46 | 0.013 | 180 | 2.5 | 2 | 0.6 |
| ARPEP 20 | 2 | 0.24 | 75 | 0.033 | 300 | 5 | 2.5 | 1.1 |
| ARPEP 25 | 1.9 | 0.25 | 75 | 0.072 | 350 | 10 | 4 | 1.6 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater. The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm distance at 6 bar Allowable load data CA, MR, MF see the following page (134)

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Fomschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar - Eigenmasse in Kg - Maximal zul. Kräfte und Momente am Finger seite 134

Rotary actuators - Gripper swivel models Pneumatic ARP... ARPEP Schwenkeinheiten/Greif-Schwenk-Module Pneumatic ARP...ARPEP

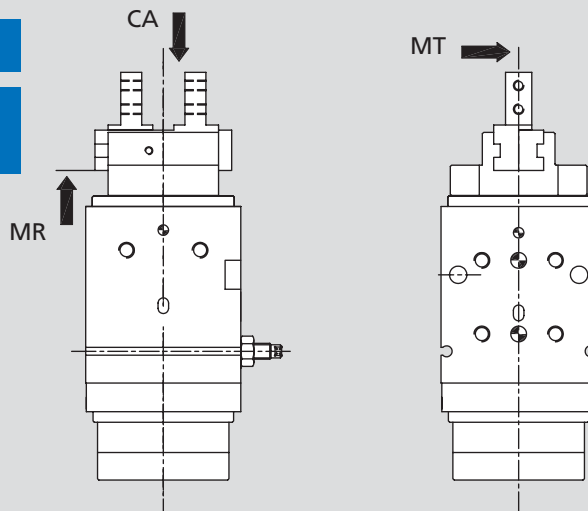
| Type | Version | For sensor bracket indicate code F8 | For shock absorbers indicate code V3 | Indicate direction of rotation | Indicate gripper code 1 or 2 | For safety device indicate MC or MA |
|----------|---------|-------------------------------------|--|--------------------------------|------------------------------|---|
| Typ | Version | Induktive Abfrage Vers. F + Ø | Für Stoßdämpfer Ausführung Vers. V+Typ | Schwenk Richtung Ausführung | Version 1 oder 2 | Für federgestützte Greifkraftsicherung MC oder MA |
| ARPEP 16 | CA | F8 | V3 | RO | C1 | MC |

- Version CA 180° code CA - 90° Code CB
- Direction of rotation: "clockwise" code RO
"anticlockwise" code RA
- Technical data safety device to preserve gripping force see gripper PEP
- Version: CA Schwenkwinkel 180° - CB Schwenkwinkel 90°
- Schwenkrichtung: im Uhrzeigersinn code RO – gegen de Uhrzeigersinn code RA
- Technische Eigenschaften Maßangaben für Greifer mit Greifkraftsicherung siehe greifer PEP

Allowed load data ARPEP

Maximal zul. Kräfte und Momente am Finger ARPEP

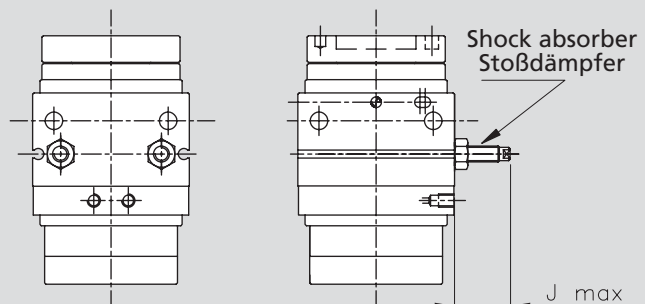
| Type | CA (N) | MR (Nm) | MT (Nm) |
|----------|--------|---------|---------|
| Typ | | | |
| ARPEP 10 | 100 | 1 | 0.7 |
| ARPEP 16 | 180 | 2.5 | 2 |
| ARPEP 20 | 300 | 5 | 2.5 |
| ARPEP 25 | 350 | 10 | 4 |



Shock absorber code V3

Stoßdämpfer Version 3

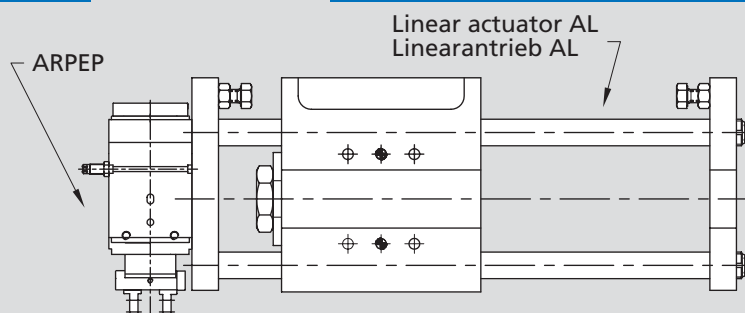
| Type | Type | J |
|--------|----------|----|
| Typ | Typ | |
| ARP 3 | ARPEP 10 | 16 |
| ARP 7 | ARPEP 16 | 16 |
| ARP 20 | ARPEP 20 | 18 |
| / | ARPEP 25 | 18 |



Combination ARPEP - AL

kombination ARPEP - AL

| Type | Type |
|----------|---------------|
| Typ | Typ |
| ARPEP 10 | AL 08 |
| ARPEP 16 | AL 12 / AL 16 |
| ARPEP 20 | AL 16 |
| ARPEP 25 | AL 20 |



Clamping force blocks, hydraulic, centric clamping MIA1-G2 Kraftspannblock, hydraulisch, zentrisch spannend - MIA1-G2



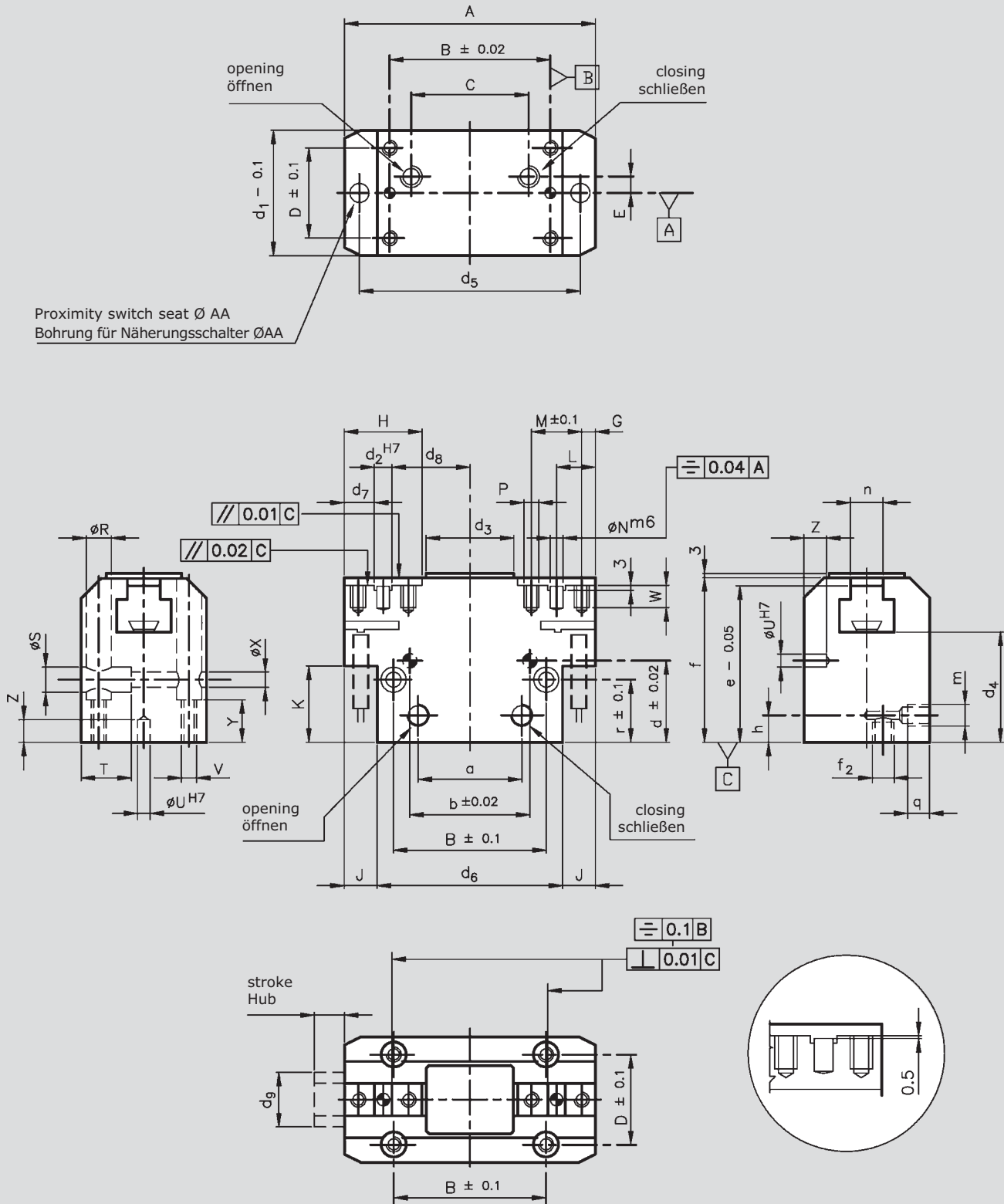
Technische Eigenschaften:

- Betriebsdruck: max 45 bar
- Wiederholgenauigkeit: MIA1-G2-20....40 0.01mm; MIA1-G2-50....120 0.02mm über 100 Schaltspiele
- Betriebstemperaturbereich von 5°C bis 60°C ; bis 130°C und höher auf Anfrage
- Wirkprinzip: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material : Gehäuse und Funktionsteile aus gehärtetem Stahl
- Betätigung : hydraulisch über gefiltertes Öl (10µm) Viskosität 46 mm²/s bei 40° ISO VG, maximal 60°
- Schmierintervall bei Einsatz auf Zerspanungsmaschine alle 5000 Schaltspiele bei Handhabungsprozessen alle 100000 Schaltspiele
- Anschlussmaße der Grundbacken siehe Seite 18
- Schutzart IP40
- Druckluftanschlüsse: über die Seitenflächen-Grundflächen
- M5 Sperrluftanschluss möglich
- 24 Monate Garantie

Technical data:

- Range of operating pressure: max 45 bar
- Repeatability accuracy: MIA1 G2...50 0.02 mm; MIA1 G2 54...80 0.03 mm; MIA1 G2 100...120 0.05 100 cycles
- Operating temperature: from 5°C to 60°C; version up to 130°C upon request
- Operating principle: wedge and piston designed with mechanically restricted guidance
- Housing material: hardened steel
- Material of functional parts: hardened steel
- Actuation : hydraulic filtered through oil (10 µm), viscosity 46 mm²/s at 40° ISO VG; max 60°C
- Maintenance: lubricate every 100,000 cycles for applications with gripping when handling, every 5000 cycles for tool clamping
- M5 pressurisation on both sides
- Scheme of fixing fingers on page 18
- Oil connections: base and sides
- Rating IP 40
- Warranty 24 months

Clamping force blocks, hydraulic, centric clamping MIA1-G2 Kraftspannblock, hydraulisch, zentrisch spannend - MIA1-G2



Clamping force blocks, hydraulic, centric clamping MIA1-G2 Kraftspannblock, hydraulisch, zentrisch spannend - MIA1-G2

| Type | A | B | C | D | E | G | H | L | M | N | P | R | S | T | U | V | Z | Y | X | W | J | |
|-------------|-----|-----|-----|-----|----|-----|-----|------|----|----|-----|-----|-----|-----|----|-----|----|----|-----|----|------|--|
| Typ | | | | | | | | | | | | | | | | | | | | | | |
| MIA1 G2 20 | 68 | 42 | 28 | 27 | 8 | 4 | 21 | 10.5 | 13 | 4 | M4 | 7.5 | 7.5 | 13 | 4 | M5 | 4 | 16 | 4.5 | 7 | 8 | |
| MIA1 G2 25 | 80 | 52 | 36 | 32 | 9 | 5 | 25 | 13 | 16 | 5 | M5 | 7.5 | 9 | 16 | 4 | M5 | 6 | 15 | 5.5 | 9 | 8 | |
| MIA1 G2 32 | 100 | 66 | 44 | 38 | 13 | 6 | 32 | 16 | 20 | 6 | M6 | 9.5 | 11 | 19 | 5 | M6 | 6 | 15 | 6.5 | 10 | 10 | |
| MIA1 G2 40 | 125 | 82 | 56 | 45 | 14 | 8.5 | 40 | 20.5 | 24 | 6 | M8 | 11 | 14 | 25 | 6 | M8 | 8 | 15 | 9 | 12 | 12.5 | |
| MIA1 G2 50 | 160 | 100 | 70 | 56 | 12 | 9 | 50 | 25 | 32 | 8 | M10 | 11 | 14 | 31 | 6 | M8 | 10 | 19 | 9 | 15 | 17.5 | |
| MIA1 G2 54 | 180 | 120 | 76 | 60 | 14 | 9.5 | 55 | 27.5 | 36 | 10 | M10 | 14 | 17 | 45 | 8 | M10 | 10 | 20 | 11 | 16 | 20 | |
| MIA1 G2 60 | 200 | 130 | 80 | 68 | 18 | 11 | 62 | 31 | 40 | 12 | M12 | 17 | 19 | 50 | 10 | M12 | 12 | 24 | 13 | 20 | 22.5 | |
| MIA1 G2 80 | 250 | 164 | 112 | 90 | 28 | 17 | 80 | 41 | 48 | 12 | M12 | 19 | 25 | 56 | 12 | M16 | 16 | 30 | 17 | 22 | 25 | |
| MIA1 G2 100 | 320 | 200 | 140 | 112 | 24 | 18 | 100 | 50 | 64 | 16 | M16 | 19 | 25 | 82 | 12 | M16 | 20 | 40 | 17 | 26 | 35 | |
| MIA1 G2 120 | 400 | 260 | 160 | 136 | 36 | 22 | 124 | 62 | 80 | 20 | M20 | 32 | 38 | 100 | 20 | M24 | 24 | 48 | 25 | 38 | 45 | |

| Type | K | a | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | d ₉ | e | f | f ₁ | f ₂ | h | m | n | Max long.fingers | |
|-------------|----|-----|-----|----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----|-----|----------------|----------------|----|-----|----|------------------|-----------------|
| Typ | | | | | | | | | | | | | | | | | | | | | | Max Fingerlänge |
| MIA1 G2 20 | 17 | 26 | 24 | 20 | 36 | 5 | 21 | 35.5 | 59 | 52 | 8 | 19 | 18 | 48 | 50 | M3 | M3 | 12 | 1/8 | 11 | 38 | |
| MIA1 G2 25 | 20 | 32 | 40 | 24 | 42 | 6 | 29 | 39 | 69 | 64 | 10 | 24 | 22 | 53 | 56 | M3 | M5 | 12 | 1/8 | 13 | 45 | |
| MIA1 G2 32 | 21 | 40 | 48 | 24 | 50 | 8 | 34 | 39 | 89 | 80 | 12 | 30 | 25 | 57 | 60 | M3 | 1/8 | 15 | 1/8 | 15 | 60 | |
| MIA1 G2 40 | 24 | 52 | 62 | 27 | 60 | 8 | 43 | 44 | 112 | 100 | 16.5 | 38 | 30 | 64 | 68 | M3 | 1/8 | 15 | 1/8 | 18 | 75 | |
| MIA1 G2 50 | 29 | 66 | 76 | 32 | 72 | 10 | 56 | 51 | 144 | 125 | 20 | 50 | 38 | 77 | 81 | M3 | 1/8 | 18 | 1/8 | 22 | 80 | |
| MIA1 G2 54 | 32 | 72 | 94 | 38 | 80 | 12 | 66 | 62 | 162 | 140 | 21.5 | 56.5 | 40 | 94 | 98 | M4 | 1/8 | 20 | 1/8 | 26 | 80 | |
| MIA1 G2 60 | 34 | 76 | 100 | 42 | 90 | 14 | 74 | 70 | 180 | 155 | 24 | 62 | 46 | 108 | 112 | M5 | 1/8 | 22 | 1/8 | 30 | 90 | |
| MIA1 G2 80 | 50 | 104 | 124 | 56 | 120 | 16 | 88 | 88 | 224 | 200 | 33 | 76 | 55 | 128 | 136 | M6 | 1/4 | 30 | 1/4 | 36 | 90 | |
| MIA1 G2 100 | 58 | 132 | 152 | 60 | 144 | 20 | 116 | 98 | 292 | 250 | 40 | 100 | 68 | 154 | 162 | M6 | 1/4 | 36 | 1/4 | 44 | 100 | |
| MIA1 G2 120 | 70 | 170 | 200 | 85 | 180 | 26 | 148 | 140 | 372 | 310 | 49 | 125 | 89 | 216 | 224 | M8 | 3/8 | 44 | 3/8 | 60 | 110 | |

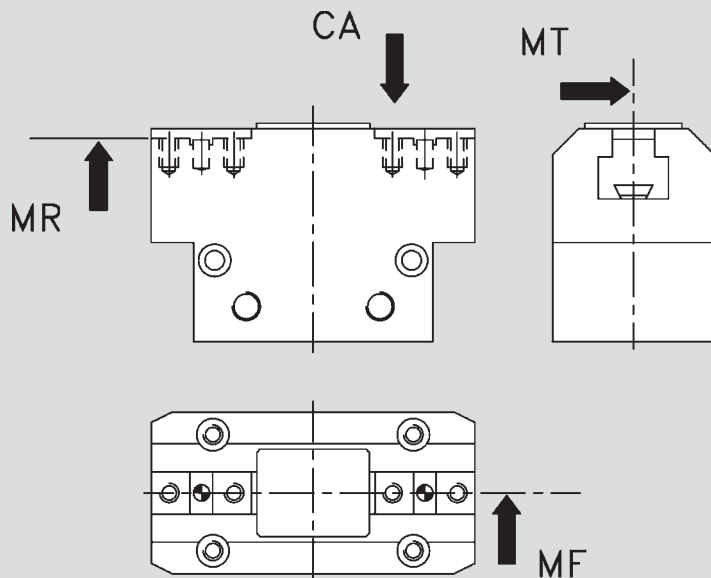
| Type | r | q | AA | | Stroke for finger (mm) | | Gripping force at 45 bar (N) | | Oil consumed for double stroke (cm ³) | Mass parallel vice (Kg) | Approx time (s) | |
|-------------|----|------|------|-----|------------------------|---------|------------------------------|---------|---|-------------------------|-----------------|-----------|
| Typ | r | q | AA | | Hub pro Finger (mm) | | Greikraft bei 45 bar (N) | | Ölverbrauch pro Doppelhub (cm ³) | Masse (Kg) | Schließzeit (s) | |
| | | | | | Vers. 1 | Vers. 2 | Vers. 1 | Vers. 2 | | | öffnen | schließen |
| MIA1 G2 20 | 19 | 8.5 | Ø4 | M5 | 6 | 3 | 890 | 1480 | 8 | 0.8 | 0.25 | 0.3 |
| MIA1 G2 25 | 20 | 8.5 | Ø4 | M8 | 8 | 4 | 1290 | 2150 | 16 | 1.2 | 0.25 | 0.3 |
| MIA1 G2 32 | 20 | 8.5 | Ø6.5 | M8 | 10 | 5 | 3010 | 5080 | 26 | 1.8 | 0.30 | 0.35 |
| MIA1 G2 40 | 25 | 8.5 | Ø6.5 | M8 | 13 | 6.5 | 4360 | 7120 | 57 | 2.9 | 0.35 | 0.4 |
| MIA1 G2 50 | 27 | 8.5 | Ø6.5 | M8 | 16 | 8 | 8470 | 14280 | 101 | 5.4 | 0.4 | 0.45 |
| MIA1 G2 54 | 28 | 8.5 | M8 | M12 | 20 | 10 | 10660 | 17830 | 146 | 8.5 | 0.5 | 0.55 |
| MIA1 G2 60 | 32 | 8.5 | M8 | M12 | 25 | 12.5 | 12540 | 20960 | 237 | 11.5 | 0.65 | 0.75 |
| MIA1 G2 80 | 48 | 12.5 | M8 | M12 | 30 | 15 | 25820 | 43140 | 411 | 24.5 | 1.1 | 1.35 |
| MIA1 G2 100 | 50 | 12.5 | M8 | M12 | 36 | 18 | 33000 | 53070 | 752 | 44.5 | 1.25 | 1.4 |
| MIA1 G2 120 | 65 | 14 | M8 | M12 | 50 | 25 | 45600 | 73320 | 1549 | 97 | 1.35 | 1.5 |

The gripping force is the arithmetic sum of the individual forces created at the fingers at 15 mm distance at 45 bar
Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand 15 in mm bei 45 bar

Clamping force blocks, hydraulic, centric clamping MIA1-G2 Kraftspannblock, hydraulisch, zentrisch spannend - MIA1-G2

Allowed load data

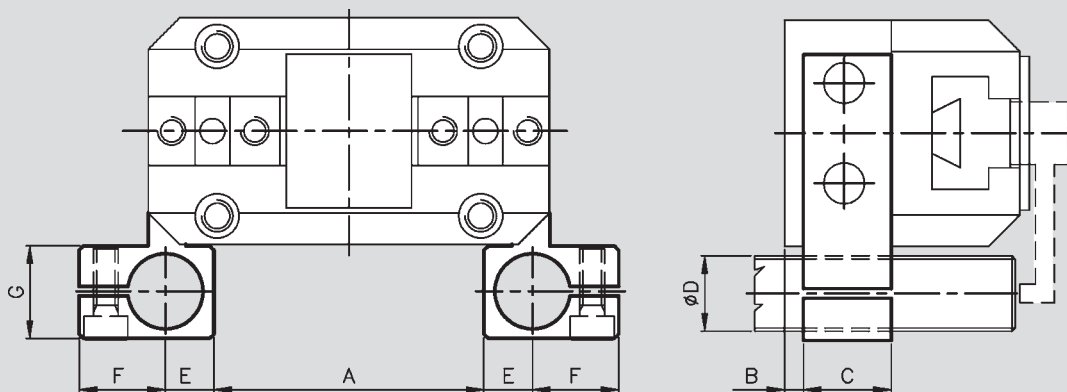
Maximal zul. Kräfte und Momente am Finger



| Type | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|-------------|--------|---------|---------|---------|
| Typ | | | | |
| MIA1 G2 20 | 500 | 35 | 30 | 20 |
| MIA1 G2 25 | 1200 | 90 | 40 | 35 |
| MIA1 G2 32 | 2200 | 100 | 55 | 55 |
| MIA1 G2 40 | 6000 | 105 | 80 | 70 |
| MIA1 G2 50 | 10000 | 110 | 90 | 90 |
| MIA1 G2 54 | 12000 | 125 | 110 | 110 |
| MIA1 G2 60 | 15000 | 160 | 150 | 150 |
| MIA1 G2 80 | 20000 | 300 | 220 | 220 |
| MIA1 G2 100 | 30000 | 500 | 360 | 360 |
| MIA1 G2 120 | 45000 | 700 | 470 | 470 |

Outside mounting brackets code SB

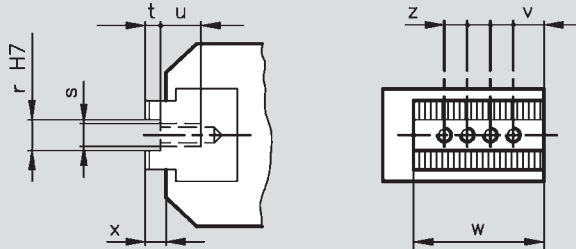
Halterung Näherungsschalter für Version SB



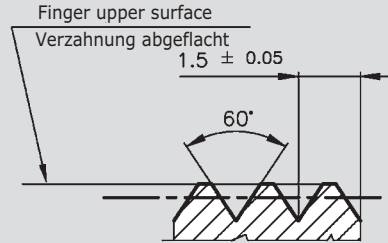
| Type | MIA1 G2 20 | MIA1 G2 25 | MIA1 G2 32 | MIA1 G2 40 | MIA1 G2 50 | MIA1 G2 54 | MIA1 G2 60 | MIA1 G2 80 | MIA1 G2 100 | MIA1 G2 120 |
|------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|-------------|
| Typ | | | | | | | | | | |
| A | 46 | 54 | 68 | 92 | 114 | 158 | 178 | 176 | 220 | 348 |
| B | 2 | 5 | 1 | 4 | 4 | 7 | 9 | 20 | 28 | 40 |
| C | 15 | 15 | 20 | 20 | 25 | 25 | 25 | 30 | 30 | 30 |
| D | M8/M12 | M8/M12 | M8/M12 | M8/M12 | M12 | M12 | M12 | M18 | M18 | M18 |
| E | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 12 | 12 | 12 |
| F | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 18 | 18 | 18 |
| G | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 24 | 24 | 24 |

Clamping force blocks, hydraulic, centric clamping MIA1-G2 Kraftspannblock, hydraulisch, zentrisch spannend - MIA1-G2

Version with serrated fingers - code D

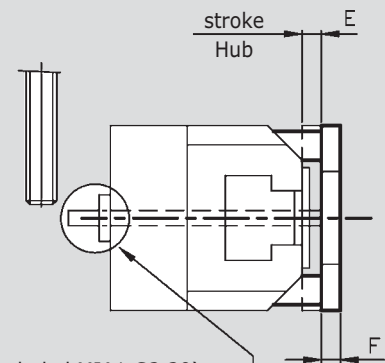
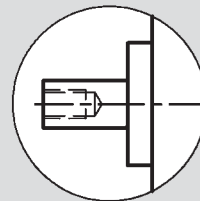
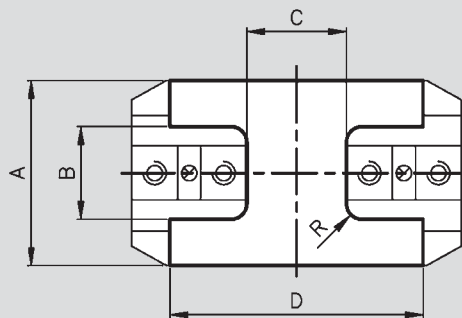


Mit Spitzverzahnung - Version D



| Type | MIA1 G2 | | | | | | | | | |
|------|---------|-----|------|------|------|------|------|------|------|------|
| Typ | 20 | 25 | 32 | 40 | 50 | 54 | 60 | 80 | 100 | 120 |
| r | 5 | 6 | 7 | 9 | 11 | 11 | 13 | 16 | 18 | 24 |
| s | M4 | M5 | M6 | M8 | M10 | M10 | M12 | M12 | M16 | M20 |
| t | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 6 |
| u | 8 | 10 | 12 | 14 | 18 | 18 | 22 | 22 | 26 | 36 |
| v | 3.5 | 4 | 5 | 6.5 | 8 | 8 | 9 | 9 | 12 | 15 |
| z | 8x2 | 9x2 | 11x2 | 14x2 | 17x2 | 19x2 | 21x2 | 21x3 | 25x3 | 31x3 |
| w | 23 | 25 | 32 | 40 | 50 | 55 | 62 | 80 | 100 | 124 |
| x | 6 | 7 | 7 | 7 | 8 | 8 | 8 | 9 | 9 | 9 |

Spring package pressure plate - code P



Upon request passing rod (excluded MIA1 G2 20)

Auf Anfrage: Hubabfrage des Andrücksterns (außer MIA1-G2-20)

| Type | MIA1 G2 | | | | | | | | | |
|----------------------|---------|--------|--------|----------|----------|----------|----------|----------|----------|-----------|
| Typ | 20 | 25 | 32 | 40 | 50 | 54 | 60 | 80 | 100 | 120 |
| A | 38 | 44 | 52 | 62 | 74 | 80 | 90 | 120 | 144 | 180 |
| B | 16 | 22 | 26 | 32 | 42 | 44 | 48 | 60 | 80 | 90 |
| C | 20 | 24 | 26 | 38 | 48 | 60 | 66 | 88 | 116 | 150 |
| D | 53 | 62 | 80 | 98 | 120 | 140 | 154 | 196 | 240 | 310 |
| E | 4 | 4 | 5 | 6 | 6 | 8 | 8 | 10 | 10 | 12 |
| F | 5 | 6 | 7 | 8 | 8 | 9 | 9 | 12 | 14 | 16 |
| R | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 8 | 10 | 10 |
| Thrust Federkraft | 11-30N | 38-45N | 50-80N | 100-240N | 165-410N | 210-380N | 250-330N | 380-510N | 420-620N | 640-1080N |

Note: with spring package pressure plate can be applied through the lower holes only

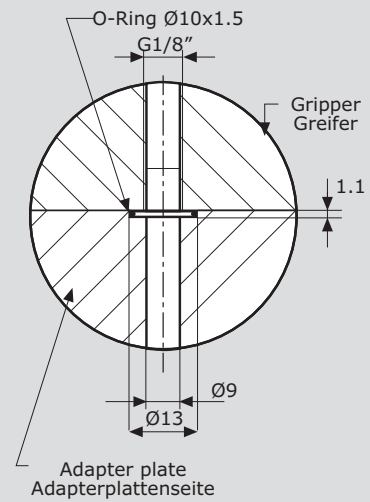
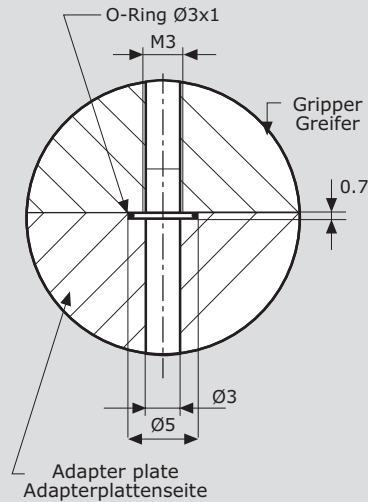
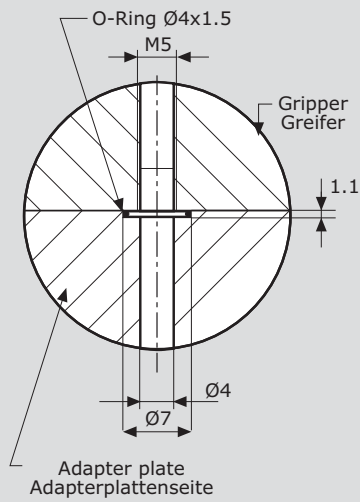
Anmerkung: Der Greifer mit federnder Andrückstern kann nur über den unteren kolben abgefragt werden

Clamping force blocks, hydraulic, centric clamping MIA1-G2 Kraftspannblock, hydraulisch, zentrisch spannend - MIA1-G2

Ordering example

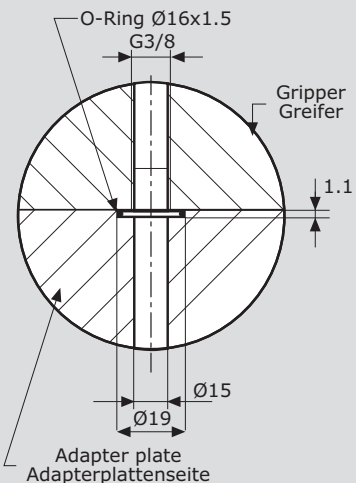
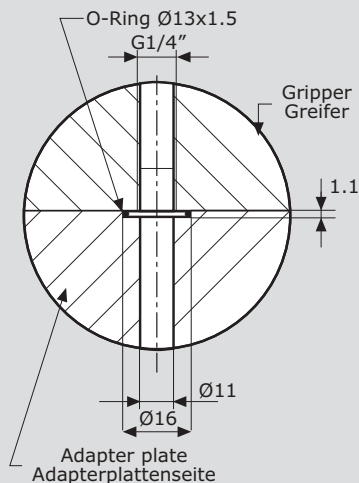
Bestellbeispiel

| Type | Code 1 o 2 | For internal bushes indicate B + Ø proximity | For passing rod indicate C | Outside mounting brackets indicate SB + Ø sensor | For spring packaged pressure plate indicate P | Serrated fingers indicate D |
|------------|------------------|---|-----------------------------------|---|---|------------------------------|
| Typ | Version 1 oder 2 | Nährungsschalter Halterung Standard B + Ø Initiator | Für Hubabfrage des Audrückstern C | Externe Halterung Nährungsschalter SB + Ø Initiator | Für federnden Andrückstern P | Spitzverzahnte Grundbacken D |
| MIA1 G2 32 | C1 | B8 | C | SB8 | P | D |



Direct connection without hose

Maße für schlauchlosen Direktanschluss



Clamping force blocks, pneumatic / hydraulic, centric clamping OPF Kraftspannblock, hydraulisch, zentrisch spannend - OPF



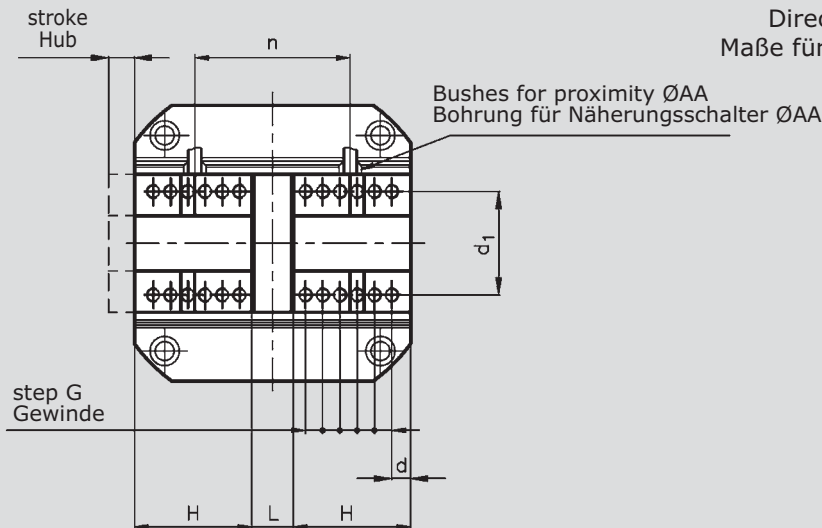
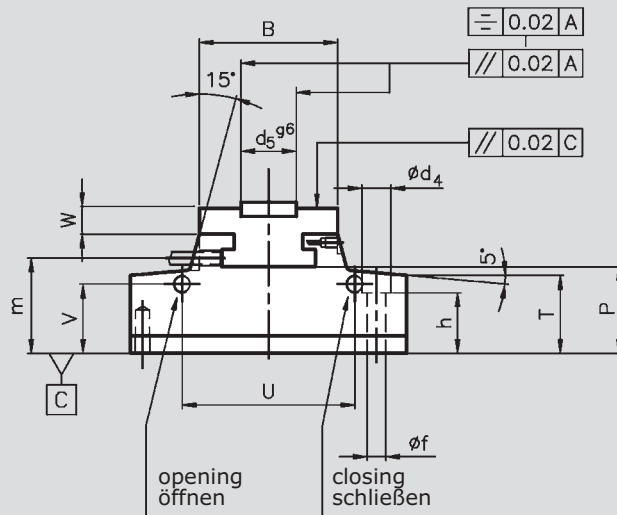
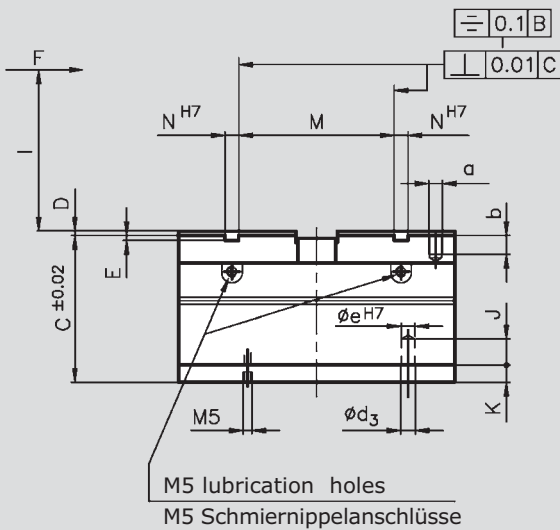
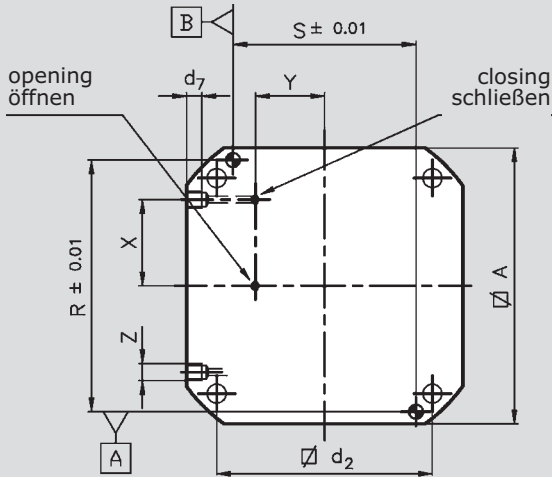
Technische Eigenschaften:

- Betriebsdruck:
max 9 bar (6 bar bei OPF 250) in der pneumatischen version
max 60 bar in der hydraulischen version
- Wiederholgenauigkeit: OPF 100 0.02mm; OPF 160 bis 250 0.03mm über 100 Schaltspiele
- Betriebstemperaturbereich von 5°C bis 60°C; bis 130°C und höher auf Anfrage
- Wirkprinzip: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material : Gehäuse und Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch (PN) über gefilterte Druckluft (10µm), trocken oder geölt; hydraulisch (ID) über gefiltertes Öl (10µm) Viskosität 46 mm²/s bei 40° ISO VG, maximal 60°
- Schmierintervall bei Einsatz auf Zerspanungsmaschine alle 5000 Schaltspiele bei Handhabungsprozessen alle 100000 Schaltspiele
- Schutzart IP40
- Druckluftanschlüsse: über die Seitenflächen-Grundflächen
- M5 Sperrluftanschluss möglich
- 24 Monate Garantie

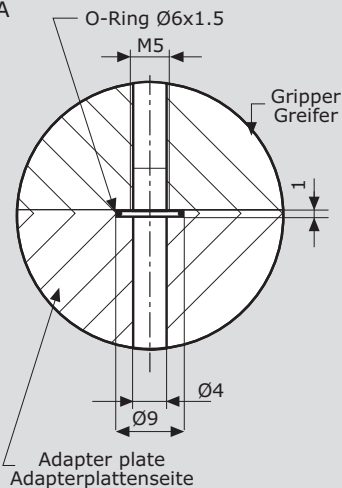
Technical data:

- Operating pressure: max 0.9 MPa (6 bar for OPF 250) PNEUMATIC version; max. 6 bar for HYDRAULIC version
- Repeatability accuracy: OPF 100 0.02 mm; OPF 160...250 0.03 mm over 100 cycles
- Operating temperature: from 5°C to 60°C; version up to 130° upon request
- Operating principle: wedge and piston design with mechanically restricted guidance
- Housing material: hardened steel
- Material of functional parts: hardened steel
- Actuation : PNEUMATIC version : compressed air filtered (10 µm), dry or lubricated; HYDRAULIC version filtered oil (10 µm), viscosity 46 mm²/s at 40° ISO VG; max 60°C
- Maintenance: lubricate every 100,000 cycles for applications with gripping when handling, every 5000 cycles for tool clamping
- M5 pressurisation
- Connections : base and sides
- Rating IP 40
- Warranty 24 months

Clamping force blocks, pneumatic / hydraulic, centric clamping OPF Kraftspannblock, hydraulisch, zentrisch spannend - OPF



Direct connection without hoses
Maße für schlauchlosen Direktanschluss



Clamping force blocks, pneumatic / hydraulic, centric clamping OPF Kraftspannblock, hydraulisch, zentrisch spannend - OPF

| Type | A | B | C | D | E | G | H | L | M | N | P | R | S | T | U | V | Z | X | Y | W | J | |
|-----------|-----|-----|-----|-----|-----|------|-----|----|-----|----|------|-----|-----|------|-----|----|-----|----|----|----|----|--|
| Typ | | | | | | | | | | | | | | | | | | | | | | |
| OPF 100 | 102 | 52 | 68 | 2.5 | 2.5 | 7x4 | 41 | 20 | 52 | 6 | 41.5 | 92 | 66 | 40.5 | 60 | 34 | M5 | 30 | 33 | 11 | 12 | |
| OPF 160 | 162 | 82 | 88 | 3 | 3 | 10x5 | 69 | 24 | 94 | 8 | 53 | 148 | 108 | 51 | 102 | 44 | 1/8 | 51 | 42 | 16 | 15 | |
| OPF 200 | 200 | 100 | 91 | 3 | 3.5 | 10x7 | 88 | 24 | 92 | 8 | 54.5 | 186 | 130 | 52 | 124 | 45 | 1/8 | 62 | 55 | 16 | 14 | |
| OPF 250 | 254 | 128 | 100 | 3 | 4 | 12x7 | 112 | 30 | 116 | 10 | 61 | 232 | 156 | 58 | 154 | 51 | 1/8 | 77 | 66 | 18 | 16 | |
| OPF 250/2 | 254 | 128 | 110 | 3 | 4 | 12x6 | 109 | 36 | 116 | 10 | 66 | 232 | 156 | 63 | 154 | 54 | 1/8 | 77 | 66 | 18 | 16 | |

| Type | K | a | b | d | d1 | d2 | d3 | d4 | d5 | d6 | d7 | e | f | h | l | m | n | Stroke for jaws | |
|-----------|----|-----|----|----|----|-----|-----|------|----|----|----|----|-----|----|----|------|-----|---------------------|-----|
| Typ | | | | | | | | | | | | | | | | | | C1 | C2 |
| | | | | | | | | | | | | | | | | | | Hub pro Finger (mm) | |
| | | | | | | | | | | | | | | | | | | C1 | C2 |
| OPF 100 | 8 | M6 | 8 | 8 | 36 | 82 | 6.5 | 13.5 | 22 | M5 | 5 | 6 | 8.5 | 33 | 19 | 45.5 | 56 | 6 | 2.3 |
| OPF 160 | 10 | M8 | 11 | 10 | 62 | 128 | 8.5 | 17 | 34 | M8 | 9 | 8 | 11 | 41 | 30 | 58 | 90 | 8 | 3.1 |
| OPF 200 | 11 | M8 | 11 | 10 | 74 | 160 | 8.5 | 19 | 40 | M8 | 9 | 8 | 13 | 42 | 38 | 60 | 110 | 9 | 3.5 |
| OPF 250 | 12 | M10 | 14 | 16 | 92 | 202 | 11 | 19 | 48 | M8 | 9 | 10 | 13 | 47 | 45 | 66.5 | 140 | 10 | 3.9 |
| OPF 250/2 | 12 | M10 | 14 | 16 | 92 | 202 | 11 | 19 | 48 | M8 | 9 | 10 | 13 | 52 | 45 | 72.5 | 140 | 15 | / |

Pneumatic

Pneumatisch

| Type | Gripping force at 6 bar (N) | | Approx. time (s) | | Air consumed for double stroke (cm ³) | Recommended weight of part for transport (kg) | | Gripper weight (kg) | Max finger length |
|-----------|-----------------------------|---------|------------------|-----------|---|---|-----------|---------------------|-------------------|
| Typ | code 1 | code 2 | opening | closing | | code 1 | code 2 | | |
| | Spannkraft bei 6 bar (N) | | Schließzeit (s) | | Luftverbrauch pro Doppelhub (cm ³) | Max. empfohlenes Werkstückgewicht (kg) | | Masse (kg) | Max. Fingerlänge |
| | Vers. 1 | Vers. 2 | öffnen | schließen | | Vers. 1 | Vers. 2 | | |
| OPF 100 | 6100* | 13000* | 0.2 | 0.2 | 120 | 19 (28) | 44 (66) | 3 | 75/60 |
| OPF 160 | 15000* | 34000* | 0.4 | 0.4 | 405 | 45 (67) | 105 (160) | 8.9 | 70/50 |
| OPF 200 | 19000* | 46000* | 0.85 | 0.85 | 700 | 65 (97) | 160 (240) | 15.6 | 80/70 |
| OPF 250 | 19000 | 51000 | 1.2 | 1.2 | 1300 | 95 | 255 | 27 | 140/120 |
| OPF 250/2 | 16000 | / | 1.3 | 1.3 | 1560 | 80 | / | 30 | 150 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater.

The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm distance at 6 bar

Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Fomschluss sind größere Massen möglich.

Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 6 bar

* Gripping at 9 bar Spannkraft bei 9 bar

Hydraulic

Hydraulisch

| Type | Gripping force a 60 bar (N) | | Approx. time (s) | | Oil consumed for double stroke (cm ³) | Recommended weight of part for transport (kg) | | Gripper weight (kg) | Max finger length |
|-----------|-----------------------------|---------|------------------|-----------|---|---|---------|---------------------|-------------------|
| Typ | code 1 | code 2 | opening | closing | | code 1 | code 2 | | |
| | Spannkraft bei 60 bar (N) | | Schließzeit (s) | | Ölverbrauch pro Doppelhub (cm ³) | Max. empfohlenes Werkstückgewicht (kg) | | Masse (kg) | Max. Fingerlänge |
| | Vers. 1 | Vers. 2 | öffnen | schließen | | Vers. 1 | Vers. 2 | | |
| OPF 100 | 6000 | 13000 | 0.8 | 0.8 | 20 | 28 | 65 | 3 | 60 |
| OPF 160 | 15000 | 34000 | 1.3 | 1.3 | 60 | 65 | 170 | 8.9 | 55 |
| OPF 200 | 20000 | 47000 | 1.8 | 1.8 | 115 | 100 | 235 | 15.6 | 70 |
| OPF 250 | 31000 | 52000 | 2.1 | 2.1 | 135 | 150 | 260 | 27 | 120 |
| OPF 250/2 | 44000 | / | 2.3 | 2.3 | 150 | 220 | / | 30 | 130 |

Transportable weight calculated with $\mu = 0.1$ and $f_s = 2$. With form-fit gripping the mass may be greater.

The gripping force is the arithmetic sum of the individual forces created at the fingers at "l" mm distance at 60 bar

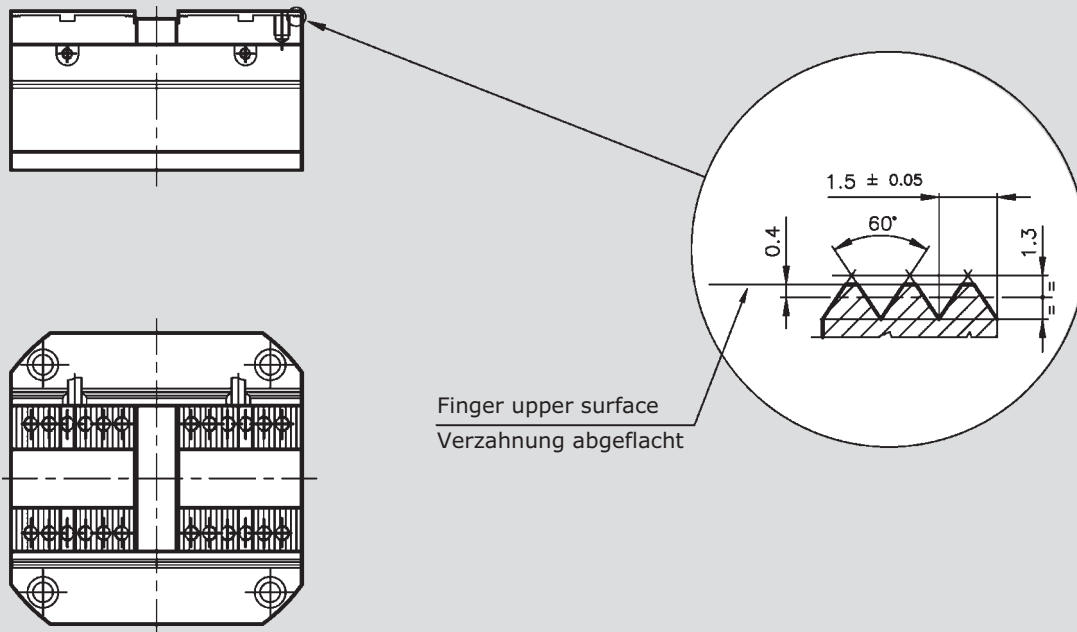
Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Fomschluss sind größere Massen möglich.

Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte im Abstand "l" in mm bei 60 bar

Clamping force blocks, pneumatic / hydraulic, centric clamping OPF Kraftspannblock, hydraulisch, zentrisch spannend - OPF

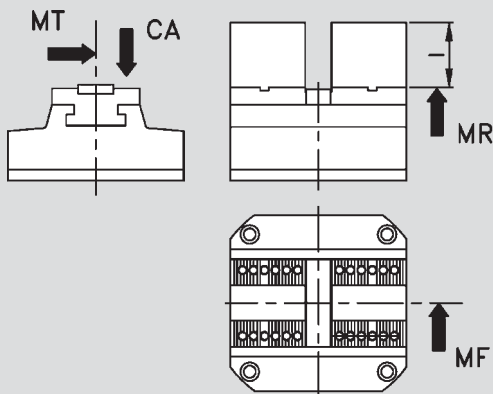
Version with serrated fingers - code D

Mit Spitzverzahnung - Version D



Allowed load data

Maximal zul. Kräfte und Momente am Finger



| Type | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|---------|--------|---------|---------|---------|
| Typ | | | | |
| OPF 100 | 2500 | 70 | 120 | 140 |
| OPF 160 | 18000 | 100 | 250 | 200 |
| OPF 200 | 22000 | 120 | 250 | 240 |
| OPF 250 | 24500 | 140 | 250 | 270 |

Ordering example

Bestellbeispiel

| Type | Code indicate stroke C1 o C2 | For pneumatic version indicate PN for hydraulic version indicate ID | Bush for proximity indicate code S | Serrated fingers indicate code D |
|---------|------------------------------|--|------------------------------------|----------------------------------|
| Typ | Version C1 oder C2 | pneumatische Ausführung Kennung PN, hydraulische Ausführung Kennung ID | Mit Hubabfrage Ausführung S | Mit Spitzverzahnung Ausführung D |
| OPF 160 | C2 | PN | S | D |

Clamping force blocks, pneumatic-hydraulic, centric clamping - SPF Kraftspannblock, pneumatisch-hydraulisch, zentrisch spannend - SPF



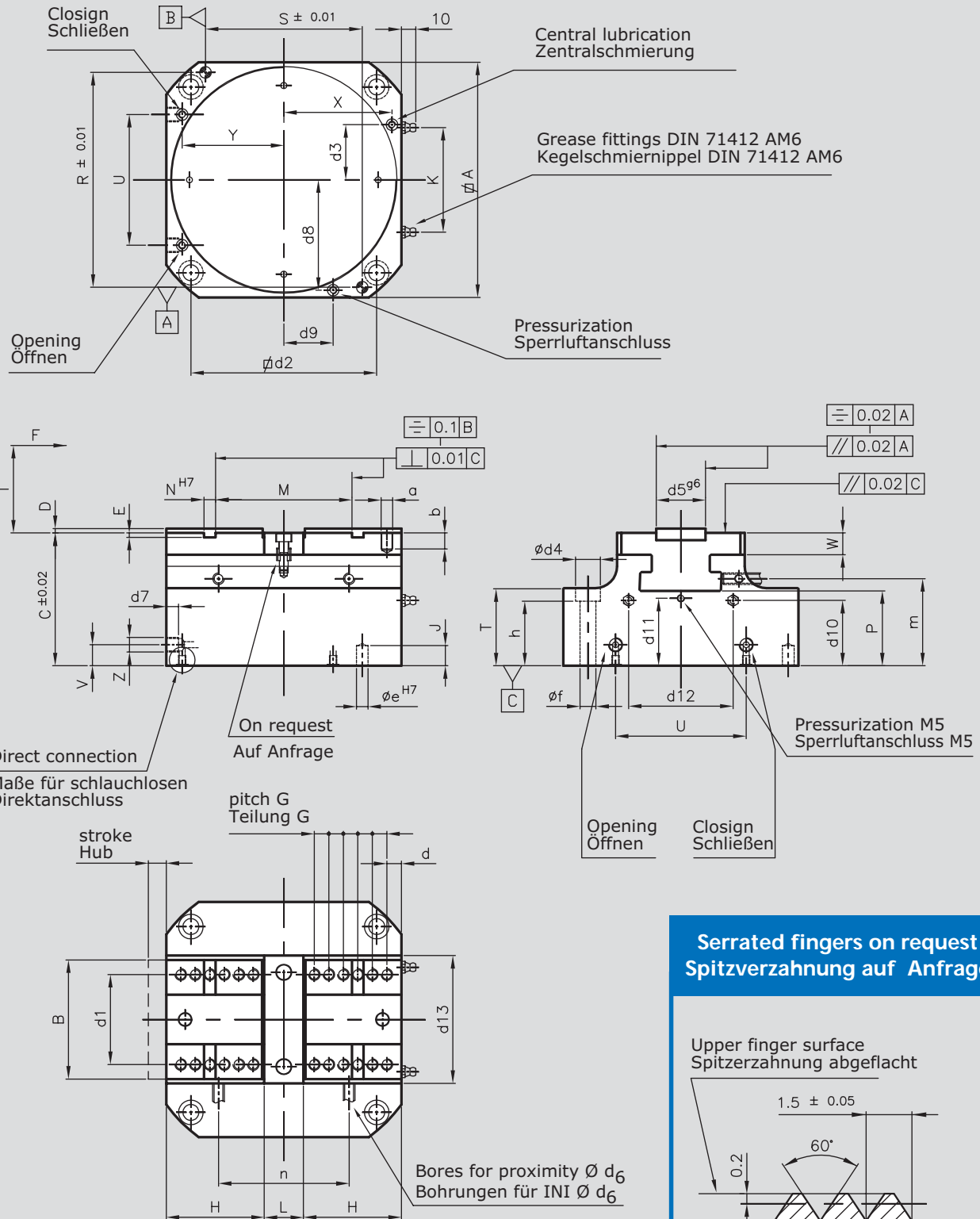
Technische Eigenschaften:

- Betriebsdruck:
max 9 bar in der pneumatischen version
max 120 bar in der hydraulischen version
- Wiederholgenauigkeit: SPF 66 bis 100 0.02mm; OPF 160 bis 250 0.03mm über 100 Schaltspiele
- Betriebstemperaturbereich von 5°C bis 60°C ; bis 130°C und höher auf Anfrage
- Wirkprinzip: Keilhakenprinzip zwangsgeführt über schräge Ebene
- Material : Gehäuse und Funktionsteile aus gehärtetem Stahl
- Betätigung : pneumatisch (PN) über gefilterte Druckluft (10µm), trocken oder geölt; hydraulisch (ID) über gefiltertes Öl (10µm) Viskosität 46 mm²/s bei 40° ISO VG, maximal 60°
- Schmierintervall bei Einsatz auf Zerspanungsmaschine alle 5000 Schaltspiele bei Handhabungsprozessen alle 100000 Schaltspiele
- Schutzart IP40
- Druckluftanschlüsse: über die Seitenflächen-Grundflächen
- M5 Sperrluftanschluss möglich
- 24 Monate Garantie

Technical data:

- Operating pressure: max 9 bar PNEUMATIC version;
max.120 bar for HYDRAULIC version
- Repeatability accuracy:
SPF 66...100 0,01 mm;
SPF 160...250 0.03 mm over 100 cycles
- Operating temperature: from 5°C to 60°C; version up to 130° upon request
- Operating principle: wedge and piston design with mechanically restricted guidance
- Housing material: hardened steel
- Material of functional parts: hardened steel
- Actuation : PNEUMATIC version : compressed air filtered (10 µm), dry or lubricated; HYDRAULIC version filtered oil (10 µm), viscosity 46 mm²/s at 40° ISO VG; max 60°C
- Maintenance: lubricate every 100,000 cycles for applications with gripping when handling, every 5000 cycles for tool clamping
- M5 pressurisation
- Connections : base and sides
- Rating IP 40
- Warranty 24 months

Clamping force blocks, pneumatic-hydraulic, centric clamping - SPF Kraftspannblock, pneumatisch-hydraulisch, zentrisch spannend - SPF



Serrated fingers on request
Spitzerzahnung auf Anfrage

CODE D
VERSION D

NORMAL Version

| Type / Typ | A | B | C | D | E | G | H | L | M | N | P | R | S | T | U | V | Z | X | Y | W | J |
|------------|-----|-----|------|-----|-----|------|-------|----|-----|----|------|-----|-----|------|-----|------|-----|-------|-----|------|----|
| SPF 66-PN | 66 | 34 | 52 | 2 | 2.7 | 5x3 | 27 | 12 | 26 | 4 | 30 | 42 | 59 | 30.5 | 31 | 23 | M5 | 29.5 | 29 | 8 | 5 |
| SPF 100-PN | 105 | 52 | 81 | 2.5 | 2.5 | 7x3 | 38.5 | 28 | 52 | 6 | 47.5 | 92 | 66 | 48 | 65 | 12.5 | M5 | 46 | 44 | 12 | 10 |
| SPF 160-PN | 162 | 82 | 91.5 | 3 | 3 | 10x5 | 67 | 28 | 94 | 8 | 52.5 | 148 | 108 | 53 | 90 | 14.5 | 1/8 | 74.5 | 70 | 15 | 14 |
| SPF 200-PN | 200 | 100 | 101 | 3 | 3.5 | 10x6 | 82 | 36 | 92 | 8 | 59.5 | 186 | 130 | 60 | 120 | 16 | 1/8 | 93.5 | 85 | 15.5 | 14 |
| SPF 250-PN | 254 | 128 | 107 | 3 | 4 | 12x7 | 106.5 | 41 | 116 | 10 | 62 | 232 | 156 | 63 | 154 | 18 | 1/8 | 120.5 | 110 | 17 | 16 |

| Type / Typ | K | a | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | d ₉ | d ₁₀ | d ₁₁ | d ₁₂ | d ₁₃ | e | f | h | l | m | n |
|------------|-----|-----|----|-----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|----|-----|----|----|------|-----|
| 66 | 30 | M4 | 6 | 8 | 24 | 54 | 15 | 11 | 14 | / | 6 | 30.2 | 12 | 20 | 26 | 30 | 37 | 4 | 6.5 | 25 | 10 | / | / |
| 100 | 51 | M6 | 8 | 9.5 | 36 | 82 | 28 | 13.5 | 22 | M5 | 5 | 47.5 | 25 | 42 | 39.5 | 51 | 56 | 6 | 8.5 | 40 | 19 | 53.5 | 56 |
| 160 | 72 | M8 | 11 | 10 | 62 | 128 | 38 | 17 | 34 | M8 | 9 | 76 | 34 | 45 | 46.5 | 72 | 88 | 8 | 11 | 43 | 30 | 60 | 90 |
| 200 | 83 | M8 | 11 | 10 | 74 | 160 | 43.5 | 19 | 40 | M8 | 9 | 94 | 42 | 55 | 51.5 | 83 | 106 | 8 | 13 | 50 | 38 | 67 | 110 |
| 250 | 104 | M10 | 14 | 16 | 92 | 202 | 52 | 19 | 48 | M8 | 9 | 120.5 | 52 | 52 | 55 | 104 | 134 | 10 | 13 | 52 | 45 | 70 | 140 |

TANDEM Version

| Type / Typ | A | B | C | D | E | G | H | L | M | N | P | R | S | T | U | V | Z | X | Y | W | J |
|--------------|-----|-----|------|-----|-----|------|-------|----|-----|----|-------|-----|-----|------|-----|------|-----|-------|-----|------|----|
| SPF 66/2-PN | 66 | 34 | 73.5 | 2 | 2.7 | 5x3 | 27 | 12 | 26 | 4 | 51.5 | 42 | 59 | 52 | 31 | 44.5 | M5 | 29.5 | 29 | 8 | 5 |
| SPF 100/2-PN | 105 | 52 | 114 | 2.5 | 2.5 | 7x3 | 38.5 | 28 | 52 | 6 | 80.5 | 92 | 66 | 81 | 65 | 45.5 | M5 | 46 | 44 | 12 | 10 |
| SPF 160/2-PN | 162 | 82 | 132 | 3 | 3 | 10x5 | 67 | 28 | 94 | 8 | 93 | 148 | 108 | 93.5 | 90 | 55 | 1/8 | 74.5 | 70 | 15 | 14 |
| SPF 200/2-PN | 200 | 100 | 148 | 3 | 3.5 | 10x6 | 82 | 36 | 92 | 8 | 106.5 | 186 | 130 | 107 | 120 | 63 | 1/8 | 93.5 | 85 | 15.5 | 14 |
| SPF 250/2-PN | 254 | 128 | 157 | 3 | 4 | 12x7 | 106.5 | 41 | 116 | 10 | 112 | 232 | 156 | 113 | 154 | 68 | 1/8 | 120.5 | 110 | 17 | 16 |

| Type / Typ | K | a | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | d ₉ | d ₁₀ | d ₁₁ | d ₁₂ | d ₁₃ | e | f | h | l | m | n |
|------------|-----|-----|----|-----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|----|-----|------|----|-------|-----|
| 66/2 | 30 | M4 | 6 | 8 | 21 | 54 | 15 | 11 | 14 | / | 6 | 30.2 | 12 | 41.5 | 47.5 | 30 | 37 | 4 | 6.5 | 46.5 | 10 | / | / |
| 100/2 | 51 | M6 | 8 | 9.5 | 36 | 82 | 28 | 13.5 | 22 | M5 | 5 | 47.5 | 25 | 75 | 72.5 | 51 | 56 | 6 | 8.5 | 73 | 19 | 86.5 | 56 |
| 160/2 | 72 | M8 | 11 | 10 | 62 | 128 | 38 | 17 | 34 | M8 | 9 | 76 | 34 | 85.5 | 87 | 72 | 88 | 8 | 11 | 83.5 | 30 | 100.5 | 90 |
| 200/2 | 83 | M8 | 11 | 10 | 74 | 160 | 43.5 | 19 | 40 | M8 | 9 | 94 | 42 | 102 | 98.5 | 83 | 106 | 8 | 13 | 97 | 38 | 114 | 110 |
| 250/2 | 104 | M10 | 14 | 16 | 92 | 202 | 52 | 19 | 48 | M8 | 9 | 120.5 | 52 | 102 | 105 | 104 | 134 | 10 | 13 | 102 | 45 | 120 | 140 |

Technical data

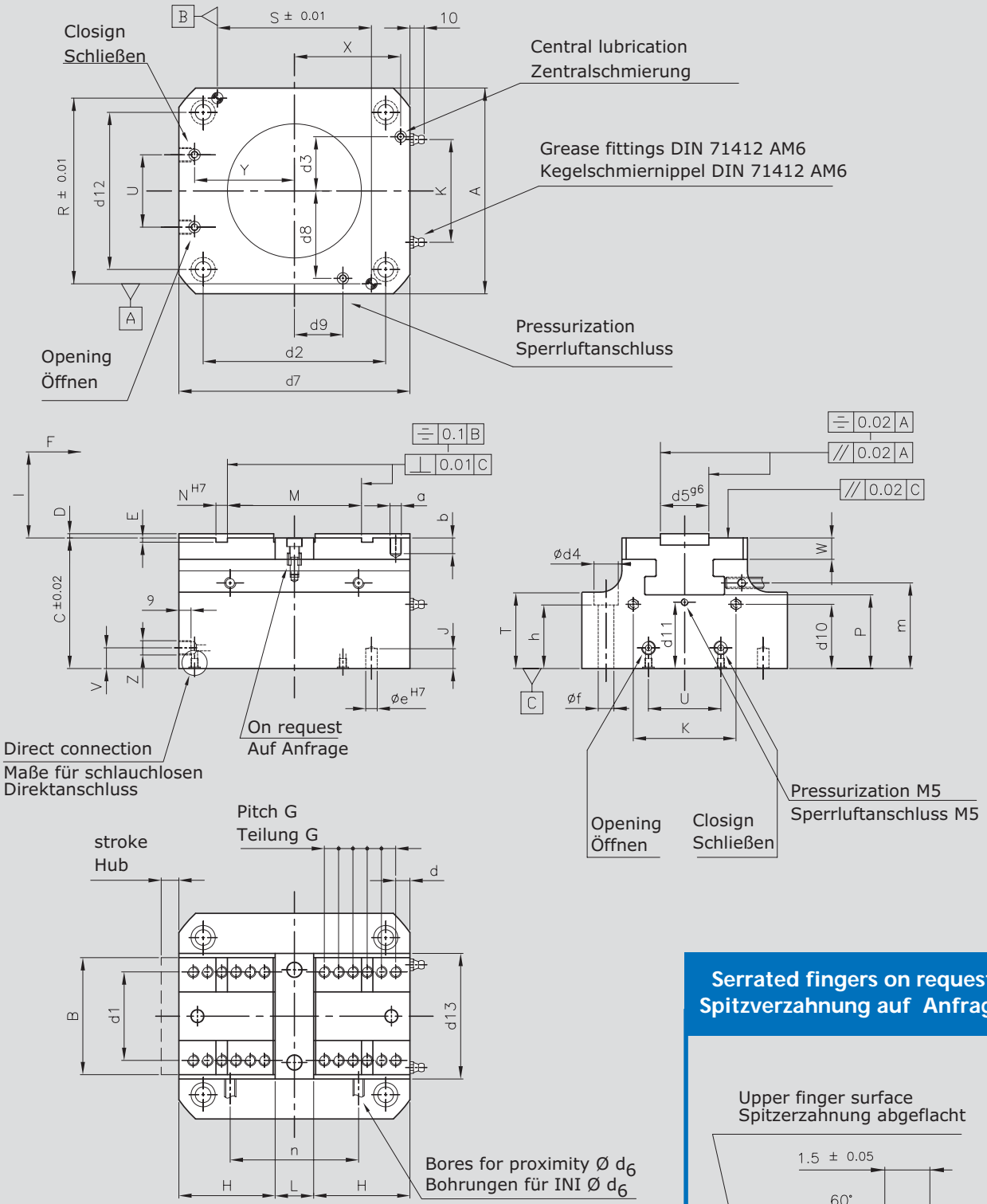
Technische Eigenschaften

| Type | Gripping force at 9 bar (N) | | Approx. time (sec.) opening closing | | Air consumption for double stroke (cm ³) | Stroke for jaw | Mass vice (kg) | Max finger length |
|---------|-----------------------------|-------|-------------------------------------|-----------|--|----------------|----------------|-------------------|
| Typ | Spannkraft bei 9 Bar (N) | | Schließzeit (sec.) Öffnen Schließen | | Luftverbrauch pro Doppelhub (cm ³) | Hub Backe | Masse (kg) | Max Finger Länge |
| SPF 66 | 3900 | 7800 | 0.08/0.1 | 0.08/0.1 | 32/60 | 2.2 | 1.1/1.7 | 40/30 |
| SPF 100 | 7300 | 14000 | 0.1 / 0.1 | 0.1 / 0.1 | 145 / 280 | 4.2 | 4.5 / 6.8 | 60/50 |
| SPF 160 | 22500 | 42000 | 0.3 / 0.4 | 0.3 / 0.4 | 450 / 880 | 5 | 11 / 17.5 | 70/50 |
| SPF 200 | 34000 | 62000 | 0.5 / 0.7 | 0.5 / 0.9 | 880 / 1720 | 6 | 21 / 33 | 85/65 |
| SPF 250 | 39000 | 76000 | 0.6 / 0.8 | 0.6 / 1 | 1530 / 3000 | 10 | 32 / 45 | 100/80 |

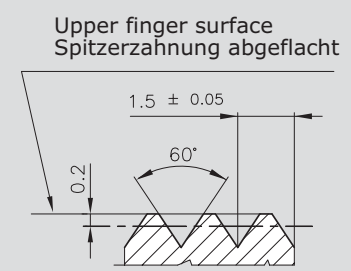
- Workpiece weight value at $\mu = 0.1$ e $f_s = 2$. In case of form fit clamping these values may be higher. Gripping force is the arithmetic sum of the individual forces occurring at fingers, distance "l" at 9 bar.

- Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte in Abstand "l" bei 9 Bar.

Clamping force blocks, pneumatic-hydraulic, centric clamping - SPF Kraftspannblock, pneumatisch-hydraulisch, zentrisch spannend - SPF



**Serrated fingers on request
Spitzverzahnung auf Anfrage**



**CODE D
VERSION D**

Clamping force blocks, pneumatic-hydraulic, centric clamping - SPF Kraftspannblock, pneumatisch-hydraulisch, zentrisch spannend - SPF

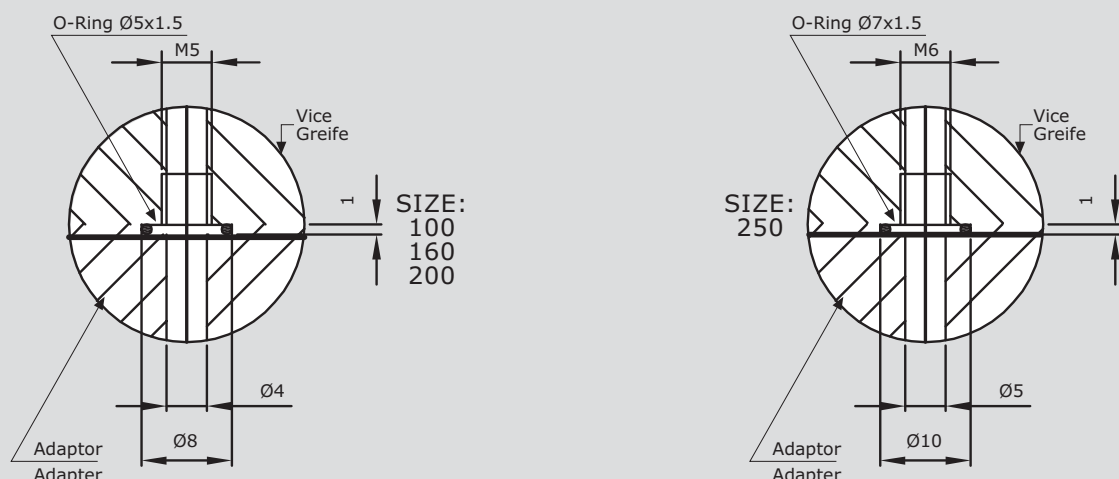
| Type / Typ | A | B | C | D | E | G | H | L | M | N | P | R | S | T | U | V | Z | X | Y | W | J |
|------------|-----|-----|------|-----|-----|------|-------|----|-----|----|------|-----|-----|------|----|------|-------|-------|------|------|----|
| SPF 66-ID | 66 | 34 | 52 | 2 | 2.7 | 5x3 | 27 | 12 | 26 | 4 | 30 | 42 | 59 | 30.5 | 22 | 20.4 | 1/8"G | 29.5 | 18.5 | 8 | 6 |
| SPF 100-ID | 105 | 52 | 81 | 2.5 | 2.5 | 7x3 | 38.5 | 28 | 52 | 6 | 47.5 | 92 | 66 | 48 | 46 | 11.5 | 1/8"G | 46 | 39 | 12 | 10 |
| SPF 160-ID | 134 | 82 | 91.5 | 3 | 3 | 10x5 | 67 | 28 | 94 | 8 | 52.5 | 112 | 100 | 53 | 50 | 14.5 | 1/8"G | 74.5 | 70 | 15 | 14 |
| SPF 200-ID | 155 | 100 | 101 | 3 | 3.5 | 10x6 | 82 | 36 | 92 | 8 | 59.5 | 130 | 130 | 60 | 70 | 16 | 1/8"G | 93.5 | 85 | 15.5 | 14 |
| SPF 250-ID | 196 | 128 | 107 | 3 | 4 | 12x7 | 106.5 | 41 | 116 | 10 | 62 | 166 | 156 | 63 | 80 | 18 | 1/8"G | 120.5 | 110 | 17 | 16 |

| Type / Typ | K | a | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | d ₉ | d ₁₀ | d ₁₁ | d ₁₂ | d ₁₃ | e | f | h | l | m | n |
|------------|-----|-----|----|-----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|----|-----|----|----|------|-----|
| 66 | 30 | M4 | 6 | 8 | 24 | 54 | 15 | 11 | 14 | / | 66 | 30.4 | 12 | 20 | 26 | 54 | 37 | 4 | 6.5 | 25 | 10 | / | / |
| 100 | 51 | M6 | 8 | 9.5 | 36 | 82 | 28 | 13.5 | 22 | M5 | 105 | 47.5 | 25 | 42 | 39.5 | 82 | 56 | 6 | 8.5 | 40 | 19 | 53.5 | 56 |
| 160 | 72 | M8 | 11 | 10 | 62 | 128 | 38 | 17 | 34 | M8 | 162 | 62 | 34 | 45 | 46.5 | 112 | 88 | 8 | 11 | 43 | 30 | 60 | 90 |
| 200 | 83 | M8 | 11 | 10 | 74 | 160 | 43.5 | 19 | 40 | M8 | 200 | 71.5 | 42 | 55 | 51.5 | 130 | 106 | 8 | 13 | 50 | 38 | 67 | 110 |
| 250 | 104 | M10 | 14 | 16 | 92 | 202 | 52 | 19 | 48 | M8 | 254 | 90 | 52 | 55 | 166 | 134 | 10 | 13 | 52 | 45 | 70 | 140 | |

| Type | Gripping force at 120 bar (N) | Approx. time (sec.) opening closing | | Oil consumption for double stroke (cm ³) | Stroke for jaw | Mass vice (kg) | Max finger length |
|---------|-------------------------------|-------------------------------------|------|--|----------------|----------------|-------------------|
| Typ | Spannkraft bei 120 Bar (N) | Schließzeit (sec.) Öffnen Schließen | | Ölverbrauch pro Doppelhub (cm ³) | Hub Backe | Masse (kg) | Max Finger Länge |
| SPF 66 | 11500 | 0.2 | 0.2 | 10 | 2.2 | 1.2 | 22 |
| SPF 100 | 27000 | 0.2 | 0.2 | 45 | 4.2 | 4.5 | 40 |
| SPF 160 | 50000 | 0.3 | 0.3 | 85 | 5 | 12 | 50 |
| SPF 200 | 66000 | 0.45 | 0.45 | 130 | 6 | 20 | 65 |
| SPF 250 | 80000 | 0.6 | 0.6 | 205 | 10 | 30 | 80 |

- Workpiece weight value at $\mu = 0.1$ e $f_s = 2$. In case of form fit clamping these values may be higher. Gripping force is the arithmetic sum of the individual forces occurring at fingers, distance 15mm at 120 bar.
- Empfehlung für max. Werkstückgewicht gerechnet mit $\mu = 0.1$ $f_s = 2$. Bei Formschluss sind größere Massen möglich. Die Greifkraft ist die arithmetische Summe der an den Greifbacken auftretenden Einzelkräfte in Abstand 15mm bei 120 Bar.

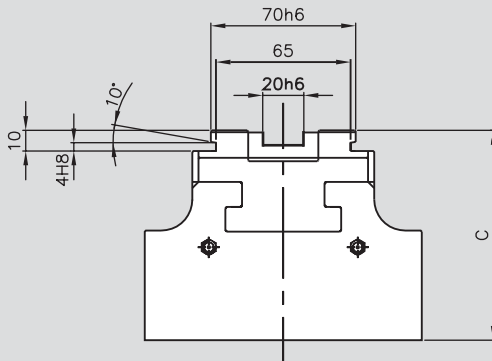
Direct connection without hoses Maße für schlauchlosen Direktanschluss



Clamping force blocks, pneumatic-hydraulic, centric clamping - SPF Kraftspannblock, pneumatisch-hydraulisch, zentrisch spannend - SPF

Serrated fingers with quickly change - cod. R

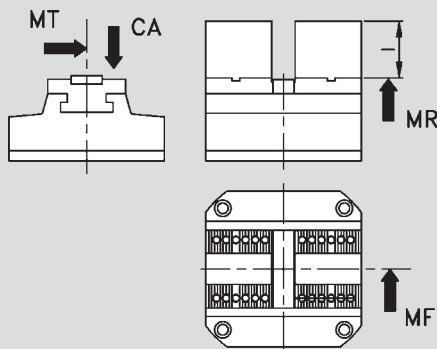
Spitzverzahnung mit Schnellwechselanschluß - Code R



| Type | C |
|-----------|-------|
| Typ | |
| SPF 100 | 83 |
| SPF 160 | 101.5 |
| SPF 200 | 157.5 |
| SPF100/2 | 116 |
| SPF 160/2 | 142 |
| SPF 200/2 | 204.5 |

Max adm. forces and moments at the fingers

Max. Kräfte und Momente am Grundbacken



| Type | CA (N) | MR (Nm) | MF (Nm) | MT (Nm) |
|---------|--------|---------|---------|---------|
| Typ | | | | |
| SPF 66 | 500 | 25 | 25 | 60 |
| SPF 100 | 2500 | 70 | 120 | 140 |
| SPF 160 | 18000 | 100 | 250 | 200 |
| SPF 200 | 22000 | 120 | 250 | 240 |
| SPF 250 | 24500 | 140 | 250 | 270 |

Ordering data

Bestellbeispiel

| Type | Indicate for pneumatic PN and for hydraulic ID | For proximity adaptor indicate code S | Indicate for serrated fingers code D or R |
|---------|--|---------------------------------------|---|
| Typ | Pneumatische Ausf. Kennung PN hydraulische Ausf. Kennung ID | Mit Hubabfrage Ausführung S | Mit Spitzverzahnung Ausführung D oder R |
| SPF 160 | PN | S | R |

Pneumatic linear actuator - series MSR with cylinder *Pneumatischer Linearantrieb - Serie MSR mit zylinder*



Technische Eigenschaften:

- Betriebsdruck: 2 - 8 bar
- Wiederholgenauigkeit: 0.05 mm mit einstellbarem Hub
- Betriebstemperatur: 5°C bis 60°C
- Antrieb: durch integrierten Zylinder
- Gehäus: hartbeschichtete Aluminium-Legierung
- Material der Funktionsteile: einatzgehärteter Stahl
- Steuerstangechrom
- Schiebetüren: Längsführungen
- Betätigung durch gefilterte Luft (10µm), trocken oder geölt
- Instandhaltung: Wartungsfrei bis zu 2 Millionen Schalspielen
- Geschwindigkeit ohne Belastung: 0.5 bis 0.7 m/s
- Zubehör: Stossdämpfer
- Verstellbare und Position
- Schutzklasse IP20
- 24 Monate Garantie

Technical data:

- Range of operating pressure: 2 - 8 bar
- Accuracy repeability: 0.05mm with adjustable stroke
- Operating temperature: 5°C to 60°C
- Operating system: through internal cylinder
- Housing material: high tensile hard-coated aluminium alloy
- Material of functional parts: treated and ground steel
- Chrome push-rod
- Sliding: cross roller guide
- Actuation: compressed air filtered (10µm), dry or lubricated
- Maintenance: no maintenance required for the first 2 million cycles
- Speed no load: 0,5 at 0,7 m/s
- Accessories: shock absorber
- Adjustable end position
- Rating IP20
- Warranty 24 month

Pneumatic linear actuator - series MSR with cylinder Pneumatischer Linearantrieb - Serie MSR mit zylinder

Push / Traction

Values in Kgf

Werte in Kgf

Zug-/Druckkraft

| Type | Piston rod diameter | Action | Piston bore size area cm ² | Air pressure (bar) / Druckluft (bar) | | | | | | |
|--------|---------------------|--------------|---------------------------------------|--------------------------------------|------|------|------|------|------|------|
| Typ | Kolben-durchmesser | Bewegung | Zylinder fläche cm ² | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| MSR 08 | 5 | Push Druck | 1.0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | Traction Zug | 0.7 | 0.7 | 1.4 | 2.1 | 2.8 | 3.5 | 4.2 | 4.9 |
| MSR 12 | 6 | Push Druck | 2.2 | 2.2 | 4.4 | 6.6 | 8.8 | 11 | 13.2 | 15.4 |
| | | Traction Zug | 1.7 | 1.7 | 3.4 | 5.1 | 6.8 | 8.5 | 10.2 | 11.9 |
| MSR 16 | 8 | Push Druck | 4.0 | 4.0 | 8.0 | 12.0 | 16.0 | 20.0 | 24.0 | 28.0 |
| | | Traction Zug | 3.0 | 3.0 | 6.0 | 9.0 | 12.0 | 15.0 | 18.0 | 21.0 |
| MSR 20 | 10 | Push Druck | 6.2 | 6.2 | 12.4 | 18.6 | 24.8 | 31 | 37.2 | 43.4 |
| | | Traction Zug | 4.7 | 4.7 | 9.4 | 14.1 | 18.8 | 23.5 | 28.2 | 32.9 |
| MSR 25 | 12 | Push Druck | 9.8 | 9.8 | 19.6 | 29.4 | 39.2 | 49 | 58.8 | 68.6 |
| | | Traction Zug | 7.5 | 7.5 | 15 | 22.5 | 30 | 37.5 | 45 | 52.5 |

Note: The above data are for reference only. When come to actual practice, frictional force and the mechanical efficiency have (about 70% - 80%).

Hinweis: Oben stehende Daten sind nur Richtwerte. Bei normalem Einsatz betragen die Reibungskraft und die mechanische Leistung 70%-80%.

Mass

Masse

| Type | Weight in Kg / Gewicht in Kg | | | | | | |
|--------|------------------------------|-----|-----|----|-----|-----|-----|
| | Stroke in mm / Hub in mm | | | | | | |
| Typ | 10 | 20 | 30 | 40 | 50 | 75 | 100 |
| MSR 8 | 0.1 | / | 0.2 | / | / | / | / |
| MSR 12 | / | 0.3 | / | / | 0.5 | 0.7 | / |
| MSR 16 | / | / | 0.6 | / | 0.8 | 1.1 | 1.4 |
| MSR 20 | / | / | 1 | / | 1.3 | 1.7 | 2.2 |
| MSR 25 | / | / | 1.7 | / | 2.1 | 2.7 | 3.4 |

Ordering example

Bestellbeispiel

| Type | Size | Stroke | Adjustable stroke | Shock absorber | Proximity switch |
|------|-------|--------|-------------------|----------------|-------------------|
| Typ | Größe | Hub | Einstellbarer Hub | Stoßdämpfer | Näherungsschalter |
| MSR | 16 | 75 | L | D | F |

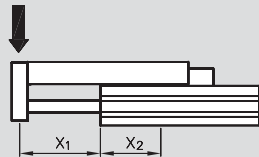
Standard strokes

| Type | Stroke standard |
|--------|--------------------|
| Typ | Hub |
| MSR 8 | 10 - 30 |
| MSR 12 | 20 - 50 - 75 |
| MSR 16 | 30 - 50 - 75 - 100 |
| MSR 20 | 30 - 50 - 75 - 100 |
| MSR 25 | 30 - 50 - 75 - 100 |

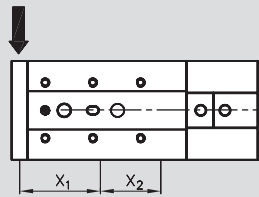
Standard Hub

Pneumatic linear actuator - series MSR with cylinder Pneumatischer Linearantrieb - Serie MSR mit zylinder

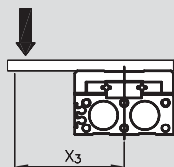
Allowed load data



$$F_P = \frac{M_p \times 1000}{(X_1 + X_2)}$$



$$F_Y = \frac{M_y \times 1000}{(X_1 + X_2)}$$



$$F_r = \frac{M_r \times 1000}{X_3}$$

Max. zugelassene Belastungswerte

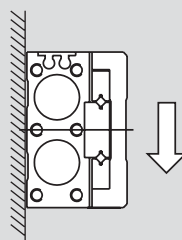
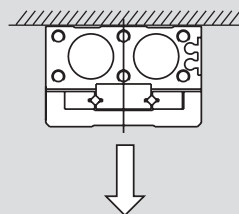
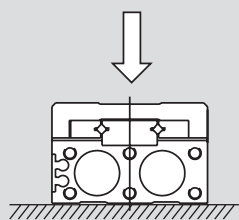
Allowable moment (Nm)

Zugelassene Momente (Nm)

| Type | Stroke mm / Hub | | | | | | |
|--------|-----------------|-----|------|----|------|------|------|
| | 10 | 20 | 30 | 40 | 50 | 75 | 100 |
| MSR 8 | 2 | / | 2.8 | / | / | / | / |
| MSR 12 | / | 4.2 | / | / | 7 | 10.0 | / |
| MSR 16 | / | / | 11.3 | / | 15.9 | 25.0 | 34.1 |
| MSR 20 | / | / | 19.4 | / | 27.2 | 35 | 50 |
| MSR 25 | / | / | 30.6 | / | 42.8 | 55.1 | 67 |

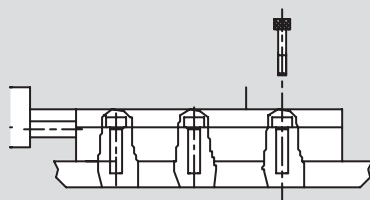
- N.B. : - Do not exceed the limit load. It will effect the precision on the precise slide rail, if it exceeds the limit
- Avoid hitting with great force
 - Inertial load must be with in 1/10 of the allowable motionless load
 - X1 is the distance from the the body to the point of loading
 - X2 is the distance from the center of the body to his side
 - X3 is the distance from the point of loading to center of the guide

- Hinweise: - Überschreiten Sie die Belastungsgrenze nicht, da dies Auswirkungen auf die Genauigkeit der Führungsschiene hat.
- Vermeiden Sie Überbelastung.
 - Die Trägheitsbelastbarkeit muss zwischen 1/10 der erlaubten bewegungslosen Belastbarkeit sein.
 - X1 ist die Entfernung des Gehäuses zum Beladepunkt
 - X2 ist die Entfernung vom Zentrum zum Gehäuseanfang
 - X3 ist die Entfernung vom Beladepunkt zum Zentrum der Führung

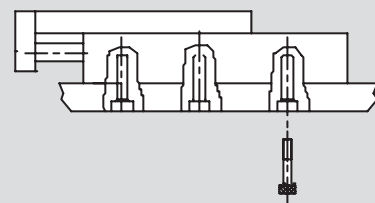


| Type | Allowable weight in kg |
|--------|----------------------------|
| Typ | Zugelassenes Gewicht in Kg |
| MSR 8 | 1 |
| MSR 12 | 2 |
| MSR 16 | 4 |
| MSR 20 | 6 |
| MSR 25 | 9 |

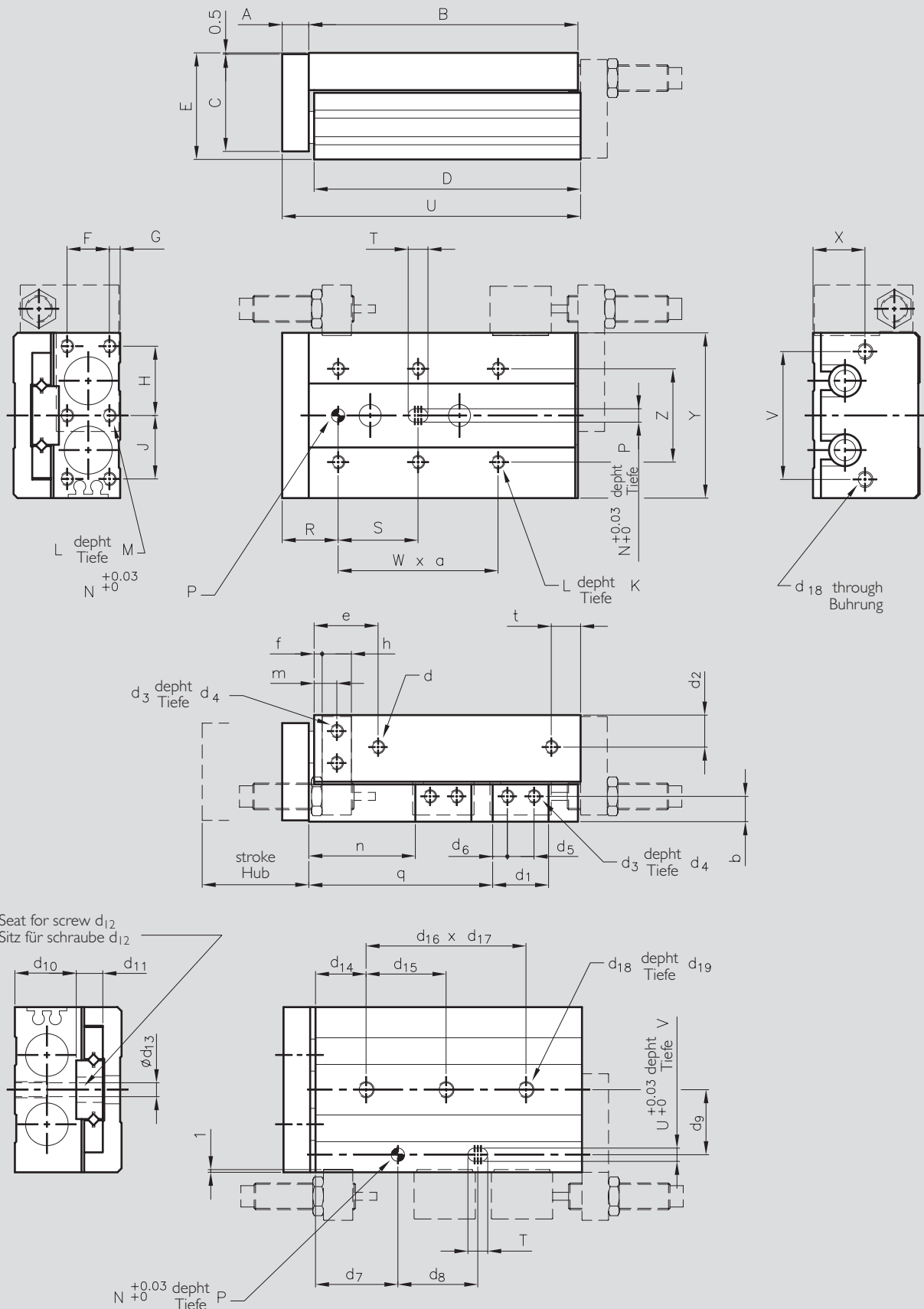
Types of assembly



Befestigungsmöglichkeit



Pneumatic linear actuator - series MSR with cylinder Pneumatischer Linearantrieb - Serie MSR mit zylinder



Pneumatic linear actuator - series MSR with cylinder Pneumatischer Linearantrieb – Serie MSR mit zylinder

| Type Typ | A | C | E | F | G | H | J | L | M | N | P | R | T | V | Z | Y | X | K | b | d | d ₁ |
|-------------|----|------|----|-----|-----|----|----|----|----|---|-----|----|---|----|----|----|----|-----|-----|-----|----------------|
| MSR 8 | 6 | 22 | 24 | 6.5 | 3.5 | 15 | / | M3 | 4 | 3 | 3 | 12 | 4 | 30 | 23 | 40 | 12 | 5 | 7 | M5 | 14.6 |
| MSR 12 | 8 | 28.5 | 32 | 9 | 5 | 20 | / | M4 | 6 | 4 | 3.5 | 16 | 5 | 38 | 28 | 50 | 16 | 6.5 | 8 | M5 | 18.5 |
| MSR 16 | 10 | 36.5 | 40 | 12 | 6 | 26 | / | M5 | 7 | 5 | 4 | 21 | 6 | 48 | 35 | 62 | 20 | 5.5 | 9.5 | M5 | 21 |
| MSR 20 | 13 | 45.5 | 50 | 18 | 6 | 30 | 30 | M5 | 8 | 5 | 5 | 27 | 6 | 58 | 46 | 76 | 25 | 10 | 14 | 1/8 | 25 |
| MSR 25 | 15 | 55 | 62 | 22 | 7 | 38 | 38 | M6 | 10 | 6 | 6 | 30 | 7 | 70 | 56 | 92 | 31 | 13 | 19 | 1/8 | 31 |

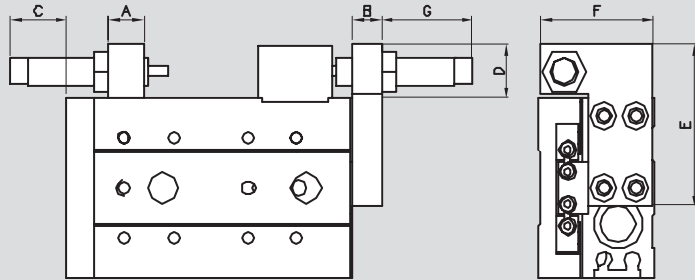
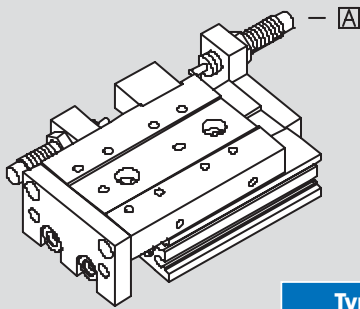
| Type Typ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₉ | d ₁₀ | d ₁₁ | d ₁₂ | d ₁₃ | d ₁₄ | d ₁₈ | d ₁₉ | e | f | h | m | t |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------|---|-----|------|-----|
| MSR 8 | 7 | M3 | 4 | 7 | 3.8 | 11.5 | 15 | 12.5 | 6 | M3 | 3.2 | 11.5 | M4 | 8 | 15 | 2 | 7 | 5.5 | 8.5 |
| MSR 12 | 10 | M4 | 5 | 8.5 | 5 | 15 | 20 | 18.5 | 8 | M4 | 4.3 | 15 | M5 | 10 | 19 | 2 | 9.5 | 6.75 | 11 |
| MSR 16 | 12 | M5 | 5.5 | 10 | 5.5 | 19 | 26 | 23 | 10 | M5 | 5.2 | 19 | M6 | 12 | 24 | 3 | 11 | 8.5 | 11 |
| MSR 20 | 15 | M6 | 6.5 | 12 | 6.5 | 21.5 | 30 | 28 | 11 | M5 | 5.2 | 21.5 | M6 | 12 | 27.5 | 3 | 13 | 9.5 | 10 |
| MSR 25 | 18 | M8 | 8.5 | 15 | 8 | 23.5 | 38 | 34 | 15 | M6 | 6.6 | 23.5 | M8 | 16 | 30 | 4 | 16 | 12 | 12 |

| Type Typ | Stro Hub | B | D | S | U | W | a | n | q | d ₈ | d ₁₅ | d ₁₆ | d ₁₇ |
|-------------|-------------|-----|-------|----|-----|---|----|------|-------|----------------|-----------------|-----------------|-----------------|
| MSR 8 | 10 | 49 | 48.5 | 25 | 56 | 1 | 25 | 23.5 | / | 20 | 28 | 1 | 28 |
| | 30 | 65 | 64.5 | 40 | 72 | 1 | 40 | 43.5 | / | 20 | 20 | 2 | 20 |
| MSR 12 | 20 | 71 | 70 | 35 | 80 | 1 | 35 | 36.5 | / | 40 | 40 | 1 | 40 |
| | 50 | 103 | 102 | 35 | 112 | 2 | 35 | 66.5 | / | 36 | 36 | 2 | 36 |
| MSR 16 | 75 | 149 | 148 | 55 | 158 | 2 | 55 | 91.5 | 125.5 | 72 | 36 | 3 | 36 |
| | 30 | 76 | 75 | 35 | 87 | 1 | 35 | 49 | / | 40 | 40 | 1 | 40 |
| MSR 16 | 50 | 101 | 100 | 30 | 112 | 2 | 30 | 69 | / | 30 | 30 | 2 | 30 |
| | 75 | 151 | 150 | 55 | 162 | 2 | 55 | 94 | 125 | 70 | 35 | 3 | 35 |
| | 100 | 199 | 198 | 65 | 210 | 2 | 65 | 119 | 173 | 70 | 35 | 4 | 35 |
| MSR 20 | 30 | 83 | 81.5 | 50 | 97 | 1 | 50 | 51 | / | 35 | 45 | 1 | 45 |
| | 50 | 108 | 106.5 | 35 | 122 | 2 | 35 | 71 | / | 35 | 35 | 2 | 35 |
| | 75 | 147 | 145.5 | 60 | 161 | 2 | 60 | 96 | / | 70 | 35 | 3 | 35 |
| | 100 | 200 | 198.5 | 70 | 214 | 2 | 70 | 121 | 169 | 70 | 35 | 4 | 35 |
| MSR 25 | 30 | 92 | 90.5 | 50 | 108 | 1 | 50 | 55 | / | 45 | 45 | 1 | 45 |
| | 50 | 115 | 113.5 | 35 | 131 | 2 | 35 | 75 | / | 35 | 35 | 2 | 35 |
| | 75 | 156 | 154.5 | 60 | 172 | 2 | 60 | 100 | / | 70 | 35 | 3 | 35 |
| | 100 | 197 | 195.5 | 70 | 213 | 2 | 70 | 125 | 162 | 70 | 35 | 4 | 35 |

Pneumatic linear actuator - series MSR with cylinder Pneumatischer Linearantrieb - Serie MSR mit zylinder

Brackets for shock absorber

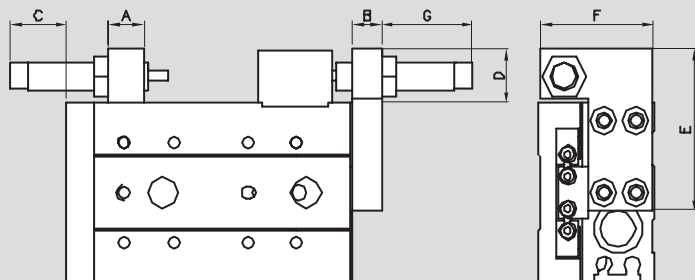
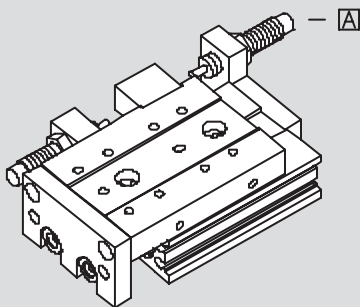
Montagewinkel für Stoßdämpfer



| Type Typ | A | B | C | D | E | F | G | | | | | | | | |
|-------------|-----|----|------|------|----|------|------|------|------|------|------|------|-------|-------|-------|
| | | | | | | | 10ST | 20ST | 30ST | 40ST | 50ST | 75ST | 100ST | 125ST | 150ST |
| MSR 8 | 7 | 8 | 20.5 | 14.5 | 38 | 23.5 | 20.1 | - | 24.1 | - | 27.1 | - | - | - | - |
| MSR 12 | 9.5 | 8 | 15.5 | 15 | 45 | 31.5 | - | 15 | - | - | 13 | 26 | - | - | - |
| MSR 16 | 11 | 10 | 16 | 18 | 55 | 37.5 | - | - | 28 | - | 23 | 29 | 29 | - | - |
| MSR 20 | 13 | 12 | 44 | 24.5 | 70 | 47.5 | - | - | 58 | - | 53 | 39 | 59 | - | - |
| MSR 25 | 16 | 15 | 38 | 24.5 | 80 | 54.5 | - | - | 56 | - | 53 | 37 | - | 56 | - |

Brackets for adjustable stroke

Montagewinkel für Verstellbare Anschlag



| Type Typ | A | B | C | D | E | F | G | Stroke range |
|-------------|-----|----|-----|------|----|------|----|--------------|
| | | | | | | | | Hub-Bereich |
| MSR 8 | 7 | 8 | 9.5 | 14.5 | 38 | 23.5 | 19 | 0-15 mm |
| MSR 12 | 9.5 | 8 | 4.5 | 15 | 45 | 31.5 | 19 | 0-15 mm |
| MSR 16 | 11 | 10 | 5 | 18 | 55 | 37.5 | 22 | 0-20 mm |
| MSR 20 | 13 | 12 | 17 | 24.5 | 70 | 47.5 | 37 | 0-30 mm |
| MSR 25 | 16 | 15 | 11 | 24.5 | 80 | 54.5 | 34 | 0-30 mm |

Pneumatic linear actuator - series MG with cylinder *Pneumatischer Linearantrieb - Serie MG mit zylinder*



Technische Eigenschaften:

- Betriebsdruck: 2...8 bar
- Wiederholgenauigkeit: 0.05mm mit einstellbarem Hub
- Betriebstemperaturbereich von 5°C bis 60°C
- Antrieb: durch integrierten Zylinder
- Gehäuse: hartbeschichtete AluminiumLegierung
- Material der Funktionsteile: einsatzgehärteter Stahl
- Steuerstange chrom
- Schiebetüren Linearführung
- Betätigung : pneumatisch durch gefilterte Luft (10µm), trocken oder geölt
- Instandhaltung: Wartungsfrei bis zu 2 Millionen Schaltspielen
- Geschwindigkeit ohne Belastung: 0,5 bis 0,7 m/s
- Zubehör: Stoßdämpfer
- Verstellbare End position
- Schutzart IP20
- 24 Monate Garantie

Technical data:

- Range of operating pressure : 2 - 8 bar
- Accuracy repeability: 0.05mm with adjustable stroke
- Operating temperature: 5°C to 60°C
- Operating system: through internal cylinder
- Housing material: high tensile hard-coated aluminium alloy
- Material of functional parts: treated and ground steel
- Chrome push-rod
- Sliding: precise slide rail
- Actuation: compressed air filtered (10µm), dry or lubricated
- Maintenance: no maintenance required for the first 2 million cycles
- Speed no load: 0,5 at 0,7 m/s
- Accessories: Shock absorber
- Adjustable end position
- Rating IP20.
- Warranty 24 month

Pneumatic linear actuator - series MG with cylinder Pneumatischer Linearantrieb - Serie MG mit zylinder

Push / Traction

Values in Kgf

Werte in Kgf

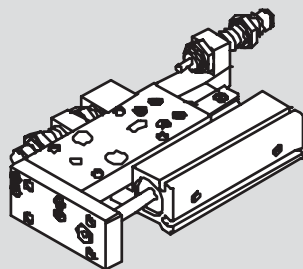
Zug-/Druckkraft

| Type | Piston rod diameter | Action | Piston bore size area cm ² | Air pressure (bar) / Druckluft (bar) | | | | | | |
|-------|---------------------|--------------|---------------------------------------|--------------------------------------|------|------|------|------|------|------|
| Typ | Kolben-durchmesser | Bewegung | Zylinder fläche cm ² | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| MG 10 | 6 | Push Druck | 0.79 | / | 1.6 | 2.4 | 3.2 | 4.0 | 4.7 | 5.5 |
| | | Traction Zug | 0.32 | / | 0.6 | 1 | 1.3 | 1.6 | 1.9 | 2.2 |
| MG 16 | 8 | Push Druck | 2.01 | / | 4 | 6 | 8 | 10.1 | 12.1 | 14 |
| | | Traction Zug | 1.51 | / | 3 | 4.5 | 6 | 7.6 | 9.1 | 10.6 |
| MG 20 | 10 | Push Druck | 3.14 | / | 6 | 9 | 12 | 15 | 18 | 21 |
| | | Traction Zug | 2.35 | / | 4.7 | 7.1 | 9.4 | 11.8 | 14.1 | 16.5 |
| MG 25 | 12 | Push Druck | 4.90 | / | 9 | 14 | 19 | 24 | 29 | 34 |
| | | Traction Zug | 3.77 | / | 7.5 | 11.3 | 15.1 | 18.9 | 22.6 | 26.3 |
| MG 32 | 16 | Push Druck | 8.04 | / | 16 | 24 | 32 | 40 | 48 | 55 |
| | | Traction Zug | 6.03 | / | 12.1 | 18.1 | 24.2 | 36.2 | 36.2 | 42.2 |

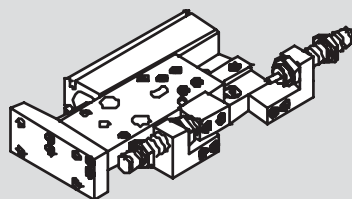
Note: The above data are for reference only. When come to actual practice, frictional force and the mechanical efficiency have (about 70% - 80%).

Hinweis: Oben stehende Daten sind nur Richtwerte. Bei normalem Einsatz betragen die Reibungskraft und die mechanische Leistung 70%-80%.

Version



Version **MGR**



Version **MGL**

Standard stroke

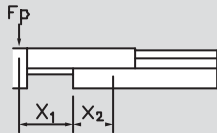
| Size | Strokes |
|------|--------------------|
| 10 | 30 - 50 |
| 16 | 30 - 50 - 75 - 100 |
| 20 | 30 - 50 - 75 - 100 |
| 25 | 30 - 50 - 75 - 100 |
| 32 | 30 - 50 - 75 - 100 |

Standard Hub

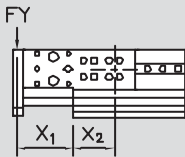
Pneumatic linear actuator - series MG with cylinder Pneumatischer Linearantrieb - Serie MG mit zylinder

Calculated allowed load data

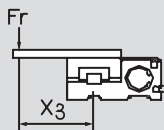
Max. zugelassene Belastungswerte



$$Fp = \frac{Mp \times 1000}{(X1 + X2)}$$



$$FY = \frac{My \times 1000}{(X1 + X2)}$$



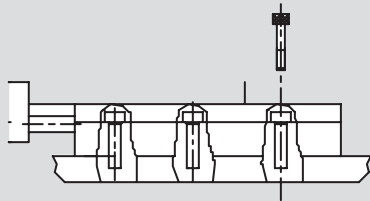
$$Fr = \frac{Mr \times 1000}{X3}$$

| Type | Values in Nm / Werte in Nm | | |
|-------|----------------------------|------|------|
| Typ | Mp | My | Mr |
| MG 10 | 9.40 | 7.90 | 13.7 |
| MG 16 | 9.40 | 7.90 | 13.7 |
| MG 20 | 9.40 | 7.90 | 13.7 |
| MG 25 | 13.7 | 15.8 | 27.4 |
| MG 32 | 29.7 | 29.7 | 51.9 |

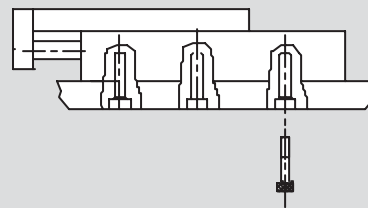
- N.B. : - Do not exceed the limit load. It will effect the precision on the precise slide rail, if it exceeds the limit
 - Avoid hitting with great force
 - Inertial load must be with in 1/10 of the allowable motionless load
 - X1 is the distance from the the body to the point of loading
 - X2 is the distance from the center of the body to his side
 - X3 is the distance from the point of loading to center of the guide

- Hinweise: - Überschreiten Sie die Belastungsgrenze nicht, da dies Auswirkungen auf die Genauigkeit der Führungsschiene hat.
 - Vermeiden Sie Überbelastung.
 - Die Trägheitsbelastbarkeit muss zwischen 1/10 der erlaubten bewegungslosen Belastbarkeit sein.
 - X1 ist die Entfernung des Gehäuses zum Beladepunkt
 - X2 ist die Entfernung vom Zentrum zum Gehäuseanfang
 - X3 ist die Entfernung vom Beladepunkt zum Zentrum der Führung

Types of assembly

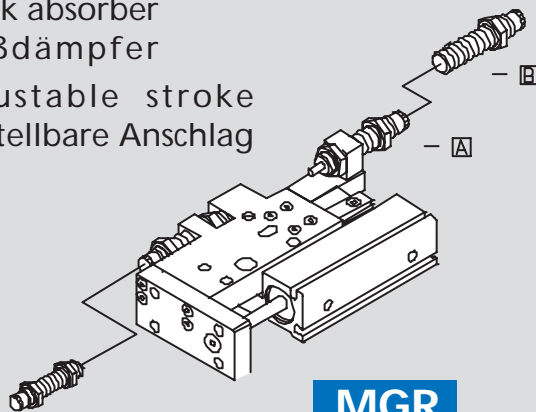


Befestigungsmöglichkeit

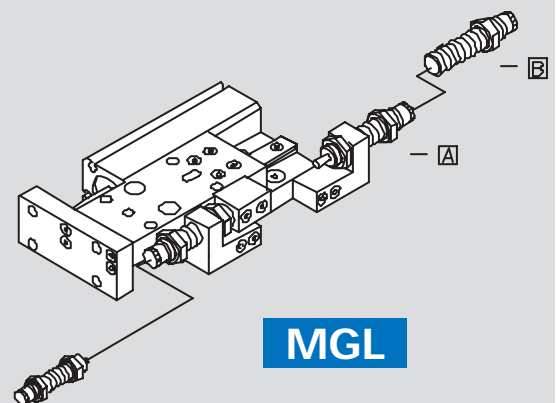


A Shock absorber
Stoßdämpfer

B Adjustable stroke
Verstellbare Anschlag

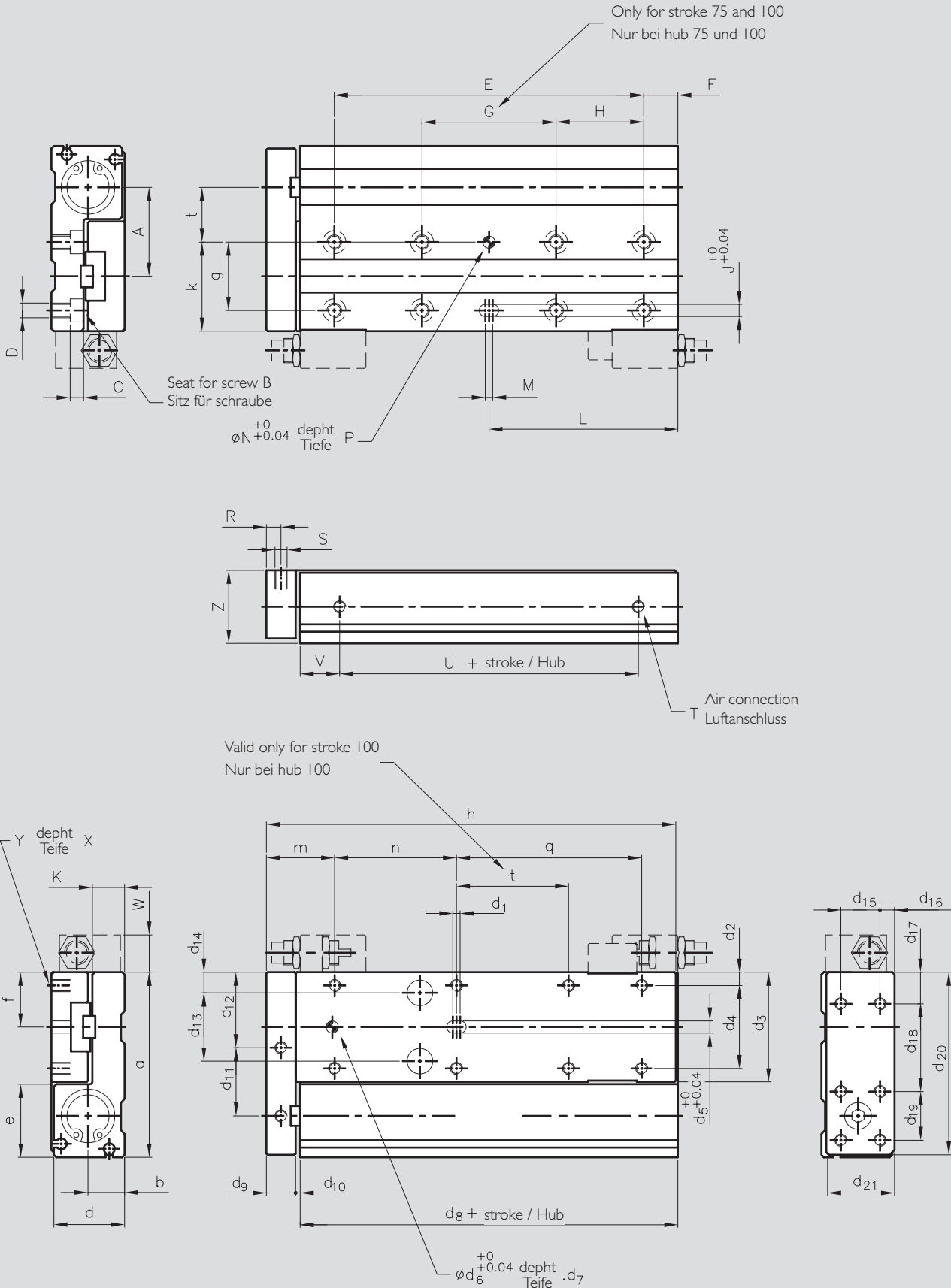


MGR



MGL

Pneumatic linear actuator - series MG with cylinder Pneumatischer Linearantrieb - Serie MG mit zylinder



Pneumatic linear actuator - series MG with cylinder Pneumatischer Linearantrieb - Serie MG mit zylinder

| Type Typ | A | B | C | D | F | J | M | N | P | R | S | T | U | V | Z | Y | X | K | W | a | b | d | d ₁ |
|-------------|------|----|-----|-----|----|---|---|---|-----|---|----|-----|------|------|----|----|----|------|------|------|------|----|----------------|
| MG 10 | 24.5 | M4 | 4.5 | M5 | 14 | 5 | 3 | 5 | 4 | 5 | M4 | M5 | 24 | 11 | 22 | M4 | 12 | 8.5 | 12 | 52 | 10.5 | 21 | 3 |
| MG 16 | 30 | M4 | 4.5 | M5 | 14 | 5 | 3 | 5 | 4.5 | 5 | M4 | M5 | 22 | 15.5 | 27 | M5 | 15 | 11.5 | 15.5 | 63 | 14 | 26 | 3 |
| MG 20 | 36.5 | M5 | 5.5 | M6 | 14 | 5 | 3 | 5 | 4.5 | 6 | M5 | M5 | 23 | 16 | 30 | M5 | 15 | 13.2 | 15.5 | 76 | 15 | 29 | 3 |
| MG 25 | 47 | M6 | 6.5 | M8 | 14 | 5 | 3 | 5 | 4.5 | 7 | M6 | M5 | 23 | 19.5 | 36 | M5 | 15 | 16 | 19.5 | 97 | 18 | 35 | 3 |
| MG 32 | 49 | M8 | 8.5 | M10 | 15 | 5 | 3 | 5 | 4.5 | 8 | M8 | 1/8 | 24.5 | 20.5 | 44 | M6 | 15 | 20 | 102 | 21.5 | 43 | 3 | |

| Type Typ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | d ₉ | d ₁₀ | d ₁₁ | d ₁₂ | d ₁₃ | d ₁₄ | d ₁₅ | d ₁₆ | d ₁₇ | d ₁₈ | d ₁₉ | d ₂₀ | d ₂₁ | e | f | m | t |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----|------|----|----|
| MG 10 | 3 | 32 | 26 | 5 | 5 | 3 | 46 | 10 | 1,8 | 20 | 20,5 | 26 | 3 | 10 | 6 | 10,5 | 36 | / | 51 | 21 | 19 | 16 | 23 | / |
| MG 16 | 4 | 36 | 28 | 5 | 5 | 4.5 | 53 | 10 | 1.8 | 24 | 26 | 22 | 7 | 13 | 6 | 10 | 30 | 16 | 62 | 25 | 26 | 18 | 23 | 50 |
| MG 20 | 5.5 | 45 | 34 | 5 | 5 | 5 | 55 | 12 | 1.8 | 28 | 31 | 28 | 8.5 | 16 | 6 | 13 | 36 | 20 | 75 | 28 | 30 | 22.5 | 28 | 46 |
| MG 25 | 8.5 | 37 | 42 | 5 | 5 | 5 | 62 | 14 | 1.8 | 40 | 36.5 | 40 | 9.5 | 18 | 8 | 18.5 | 48 | 20 | 96 | 34 | 37 | 29.5 | 30 | 50 |
| MG 32 | 6 | 58 | 46 | 5 | 5 | 4.5 | 66 | 16 | 1.8 | 40 | 38 | 40 | 9 | 22 | 10 | 20 | 45 | 26 | 101 | 42 | 43 | 29 | 31 | 52 |

| Type Typ | stroke Hub | E | G | H | L | h | n | q |
|-------------|---------------|-----|----|----|------|-----|----|----|
| MG 10 | 30 | 48 | / | / | 38 | 87 | 22 | 32 |
| | 50 | 68 | / | / | 48 | 107 | 32 | 42 |
| MG 16 | 30 | 55 | / | / | 41.5 | 94 | 30 | 30 |
| | 50 | 75 | / | / | 51.5 | 114 | 50 | 30 |
| | 75 | 100 | 38 | 32 | 64 | 139 | 50 | 55 |
| MG 20 | 100 | 125 | 45 | 40 | 76.5 | 164 | 50 | 80 |
| | 30 | 57 | / | / | 42.5 | 98 | 26 | 30 |
| | 50 | 77 | / | / | 52.5 | 118 | 50 | 26 |
| MG 25 | 75 | 102 | 38 | 32 | 65 | 143 | 50 | 51 |
| | 100 | 127 | 55 | 36 | 77.5 | 168 | 50 | 76 |
| | 30 | 64 | / | / | 46 | 107 | 32 | 31 |
| MG 32 | 50 | 84 | / | / | 56 | 127 | 50 | 33 |
| | 75 | 109 | 45 | 32 | 68.5 | 152 | 50 | 58 |
| | 100 | 134 | 70 | 32 | 81 | 177 | 50 | 83 |
| MG 32 | 30 | 66 | / | / | 48 | 113 | 32 | 32 |
| | 50 | 86 | / | / | 58 | 133 | 52 | 32 |
| | 75 | 111 | 59 | 26 | 70,5 | 158 | 52 | 57 |
| MG 32 | 100 | 136 | 64 | 36 | 83 | 183 | 52 | 82 |

Pneumatic linear actuator - series MG with cylinder *Pneumatischer Linearantrieb - Serie MG mit zylinder*

Ordering example

Bestellbeispiel

| Type | Version | Size | Stroke | Adjustable stroke | Shock absorber | Proximity switch |
|------|---------|-------|--------|-------------------|----------------|-------------------|
| Typ | Version | Größe | Hub | Einstellbarer Hub | Stoßdämpfer | Näherungsschalter |
| MG | R | 16 | 50 | L | D | F |

Pneumatic linear actuator - series MCB with cylinder Pneumatischer Linearantrieb - Serie MCB mit Zylinder



Technische Eigenschaften:

- Betriebsdruck: 2...7 bar
- Wiederholgenauigkeit: 0.1
- Betriebstemperaturbereich von 5°C bis 60°C
- Antrieb: durch integrierten Zylinder
- Gehäuse: hartbeschichtete Aluminiumlegierung
- Material der Funktionsteile: einsatzgehärteter Stahl
- Schiebetüren : Kugelbuchsen version VT, Kompass Leitfadene version BS
- Betätigung : pneumatisch durch gefilterte Luft (10µm), trocken oder geölt
- Instandhaltung: Wartungsfrei bis zu 2 Millionen Schaltspielen
- Geschwindigkeit ohne Belastung: 0,1 bis 0,5 m/s
- Schutzart IP20
- 24 Monate Garantie

Technical data:

- Range of operating pressure : 2 - 7 bar
- Accuracy repeatability: 0.1mm
- Operating temperature: 5°C to 60°C
- Operating system: through internal cylinder
- Housing material: high tensile hard-coated aluminium alloy
- Material of functional parts: treated and ground steel
- Sliding: linear bearing code ST, bush code BS
- Actuation: compressed air filtered (10µm), dry or lubricated
- Maintenance: no maintenance required to the first 2 million cycles
- Speed no load: 0,1 at 0,5 m/s
- Rating IP20.
- Warranty 24 month

Pneumatic linear actuator - series MCB with cylinder Pneumatischer Linearantrieb - Serie MCB mit zylinder

Push / Traction

Zug-/Druckkraft

Values in Kgf

Werte in Kgf

| Type | Piston rod diameter | Action | Piston bore size area cm ² | Air pressure (bar) / Druckluft (bar) | | | | | | |
|--------|---------------------|--------------|---------------------------------------|--------------------------------------|------|------|------|------|------|------|
| Typ | Kolben-durchmesser | Bewegung | Zylinder fläche cm ² | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| MCB 10 | 6 | Push Druck | 0.79 | / | 1.6 | 2.4 | 3.2 | 4.0 | 4.7 | 5.5 |
| | | Traction Zug | 0.32 | / | 0.6 | 1 | 1.3 | 1.6 | 1.9 | 2.2 |
| MCB 16 | 8 | Push Druck | 2.01 | / | 4 | 6 | 8 | 10.1 | 12.1 | 14 |
| | | Traction Zug | 1.51 | / | 3 | 4.5 | 6 | 7.6 | 9.1 | 10.6 |
| MCB 20 | 10 | Push Druck | 3.14 | / | 6 | 9 | 12 | 15 | 18 | 21 |
| | | Traction Zug | 2.35 | / | 4.7 | 7.1 | 9.4 | 11.8 | 14.1 | 16.5 |
| MCB 25 | 12 | Push Druck | 4.90 | / | 9 | 14 | 19 | 24 | 29 | 34 |
| | | Traction Zug | 3.77 | / | 7.5 | 11.3 | 15.1 | 18.9 | 22.6 | 26.3 |
| MCB 32 | 16 | Push Druck | 8.04 | / | 16 | 24 | 32 | 40 | 48 | 55 |
| | | Traction Zug | 6.03 | / | 12.1 | 18.1 | 24.2 | 30.2 | 36.2 | 42.2 |
| MCB 40 | 16 | Push Druck | 12.56 | 12 | 25 | 37 | 50 | 62 | 75 | 87 |
| | | Traction Zug | 10.55 | 10 | 21 | 31 | 42 | 52 | 63 | 73 |
| MCB 50 | 20 | Push Druck | 19.63 | 19 | 39 | 58 | 78 | 98 | 117 | 137 |
| | | Traction Zug | 16.49 | 16 | 32 | 49 | 65 | 82 | 98 | 115 |

Note: The above data are for reference only. When come to actual practice, frictional force and the mechanical efficiency have (about 70% - 80%)

Hinweis: Oben stehende Daten sind nur Richtwerte. Bei normalem Einsatz betragen die Reibungskraft und die mechanische Leistung 70%-80%

Ordering example

Bestellbeispiel

| Type | Size | Stroke | Scroll bush BS linear bearing ST | Proximity switch |
|------|-------|--------|---------------------------------------|-------------------|
| Typ | Größe | Hub | Kugelbuchsen VT, Kompass Leitfaden BS | Näherungsschalter |
| MCB | 16 | 50 | BS | F |

Standard stroke

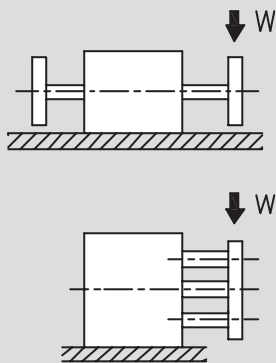
Standard Hub

| Size | stroke |
|-------|----------------|
| Größe | Hub |
| 10 | 25 - 50 |
| 16 | 25 - 50 |
| 20 | 25 - 50 - 75 |
| 25 | 25 - 75 - 125 |
| 32 | 30 - 75 - 125 |
| 40 | 50 - 100 - 200 |
| 50 | 50 - 150 |

Pneumatic linear actuator - series MCB with cylinder Pneumatischer Linearantrieb - Serie MCB mit Zylinder

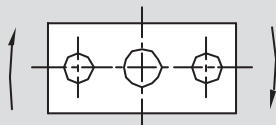
Allowable transverse load in Kgf

Max. zugelassene Belastungswerte in Kgf

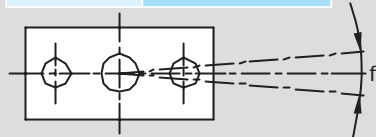


Max rotative in Kgf

Max. rotative in Kgf



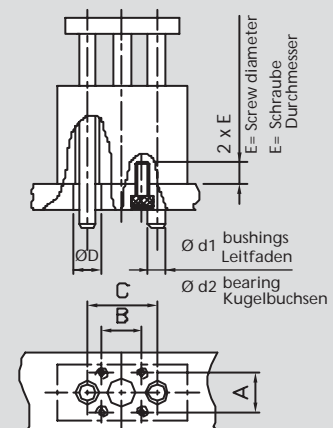
| Guide type | Accuracy of rotation / f |
|------------|-----------------------------|
| Größe typ | Genauigkeit dr Rotation / f |
| Ø10 | ±0.18 |
| Ø16 | |
| Ø20 | ±0.17 |
| Ø25 | |
| Ø32 | ±0.16 |
| Ø40 | |
| Ø50 | ±0.15 |



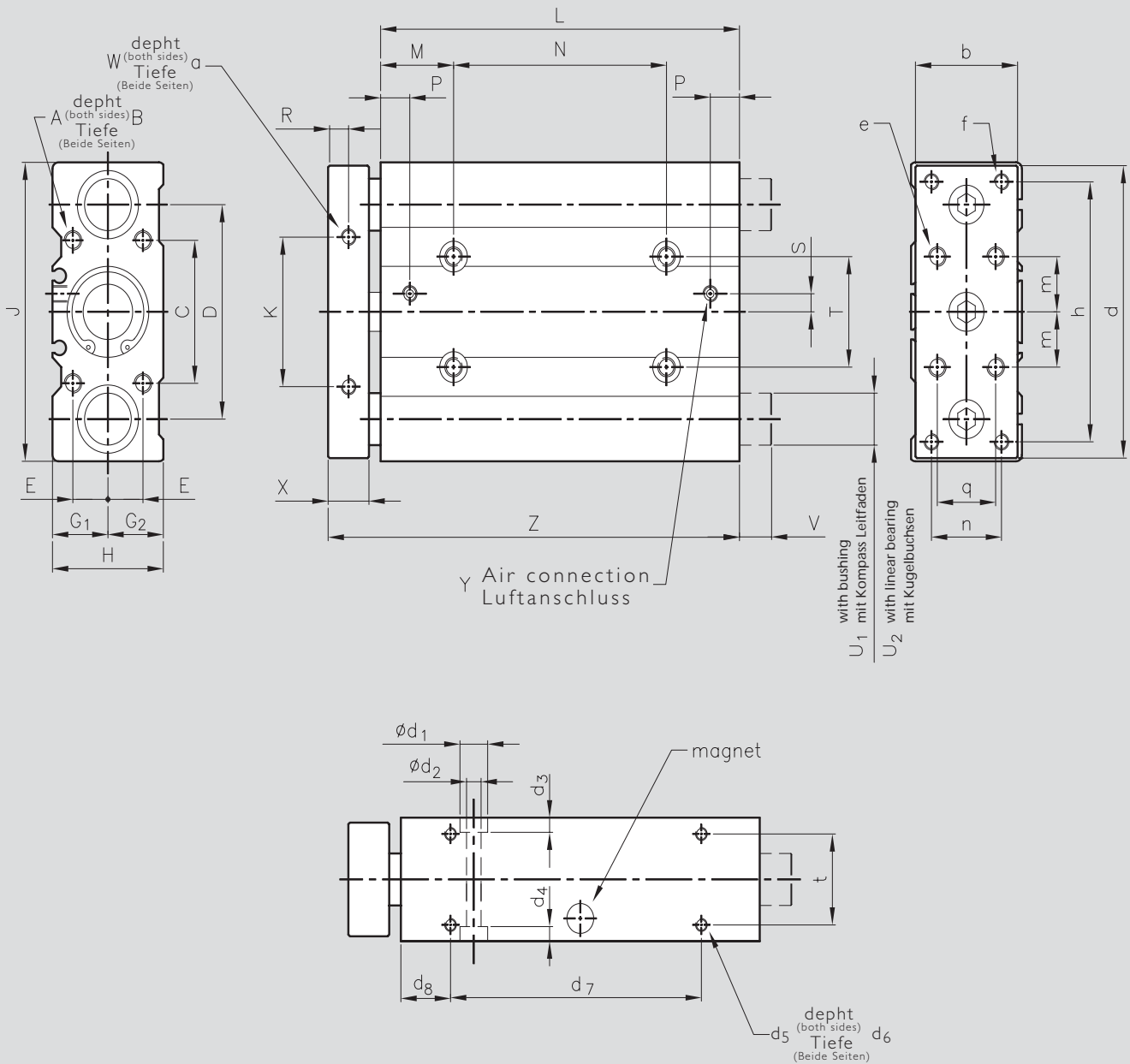
| Type Typ | Guide type Schiebetüren | | Stroke mm / Hub in mm | | | | | | | |
|-------------|----------------------------|--------------|-----------------------|----|-----|----|-----|-----|-----|-----|
| | | | 25 | 30 | 50 | 75 | 100 | 125 | 150 | 200 |
| MCB 10 | Bush | Leitfaden | 8 | - | 4 | - | - | - | - | - |
| | Bearing | Kugelbuchsen | 1.5 | - | 1 | - | - | - | - | - |
| MCB 16 | Bush | Leitfaden | 8 | - | 4 | - | - | - | - | - |
| | Bearing | Kugelbuchsen | 1.5 | - | 1 | - | - | - | - | - |
| MCB 20 | Bush | Leitfaden | 14 | - | 10 | 12 | - | - | - | - |
| | Bearing | Kugelbuchsen | 2.5 | - | 2 | 8 | - | - | - | - |
| MCB 25 | Bush | Leitfaden | 20 | - | - | 20 | - | 15 | - | - |
| | Bearing | Kugelbuchsen | 7 | - | - | 20 | - | 13 | - | - |
| MCB 32 | Bush | Leitfaden | - | 24 | - | 24 | - | 20 | - | - |
| | Bearing | Kugelbuchsen | - | 8 | - | 25 | - | 27 | - | - |
| MCB 40 | Bush | Leitfaden | - | - | 22 | - | 22 | - | - | 14 |
| | Bearing | Kugelbuchsen | - | - | 9 | - | 22 | - | - | 14 |
| MCB 50 | Bush | Leitfaden | - | - | 40 | - | - | - | 30 | - |
| | Bearing | Kugelbuchsen | - | - | 9.5 | - | - | - | 25 | - |

| Type Typ | Guide type Schiebetüren | | Stroke mm / Hub in mm | | | | | | | |
|-------------|----------------------------|--------------|-----------------------|----|-----|----|-----|-----|-----|-----|
| | | | 25 | 30 | 50 | 75 | 100 | 125 | 150 | 200 |
| MCB 10 | Bush | Leitfaden | 25 | - | 15 | - | - | - | - | - |
| | Bearing | Kugelbuchsen | 3 | - | 2 | - | - | - | - | - |
| MCB 16 | Bush | Leitfaden | 25 | - | 15 | - | - | - | - | - |
| | Bearing | Kugelbuchsen | 3 | - | 2 | - | - | - | - | - |
| MCB 20 | Bush | Leitfaden | 40 | - | 30 | 40 | - | - | - | - |
| | Bearing | Kugelbuchsen | 4 | - | 2 | 15 | - | - | - | - |
| MCB 25 | Bush | Leitfaden | 65 | - | - | 65 | - | 50 | - | - |
| | Bearing | Kugelbuchsen | 12 | - | - | 30 | - | 20 | - | - |
| MCB 32 | Bush | Leitfaden | - | 80 | - | 90 | - | 60 | - | - |
| | Bearing | Kugelbuchsen | - | 16 | - | 50 | - | 40 | - | - |
| MCB 40 | Bush | Leitfaden | - | - | 70 | - | 75 | - | - | 30 |
| | Bearing | Kugelbuchsen | - | - | 14 | - | 45 | - | - | 25 |
| MCB 50 | Bush | Leitfaden | - | - | 110 | - | - | - | 80 | - |
| | Bearing | Kugelbuchsen | - | - | 25 | - | - | - | 55 | - |

| Guide type Größe | A | B | C | D | d1 | d2 | Screw connection Schraube Verbindung |
|---------------------|----|----|-----|----|----|----|---|
| Ø10 | 14 | 25 | 42 | 14 | 10 | 8 | M4 X 12L |
| Ø16 | 16 | 30 | 46 | 14 | 10 | 8 | M5 X 15L |
| Ø20 | 20 | 40 | 60 | 16 | 12 | 10 | M5 X 15L |
| Ø25 | 24 | 44 | 66 | 20 | 16 | 12 | M6 X 20L |
| Ø32 | 32 | 52 | 80 | 24 | 20 | 16 | M6 X 20L |
| Ø40 | 36 | 68 | 90 | 24 | 20 | 16 | M8 X 20L |
| Ø50 | 40 | 84 | 110 | 29 | 25 | 20 | M10 X 20L |



Pneumatic linear actuator - series MCB with cylinder Pneumatischer Linearantrieb - Serie MCB mit zylinder



Pneumatic linear actuator - series MCB with cylinder Pneumatischer Linearantrieb - Serie MCB mit zylinder

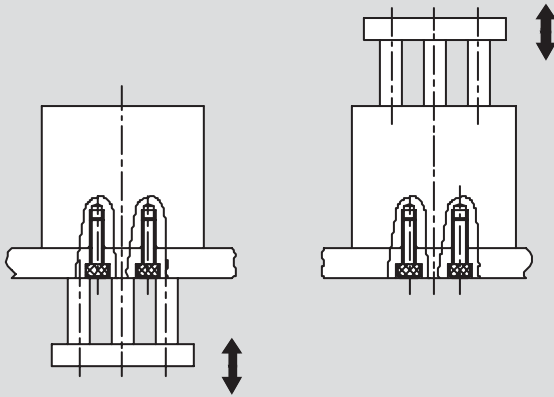
| Type Typ | A | B | C | D | E | G ₁ | G ₂ | H | J | M | P | R | S | T | U ₁ | U ₂ | Y | X | K | W |
|-------------|-----|----|-----|-----|----|----------------|----------------|----|-----|----|----|-----|----|----|----------------|----------------|-----|----|----|-----|
| MCB 10 | M4 | 12 | 25 | 42 | 7 | 11 | 11 | 22 | 62 | 20 | 11 | 5 | / | 20 | 8 | 8 | M5 | 10 | 32 | M3 |
| MCB 16 | M5 | 15 | 30 | 46 | 8 | 13.5 | 13.5 | 27 | 66 | 20 | 9 | 6 | / | 25 | 8 | 8 | M5 | 12 | 34 | M4 |
| MCB 20 | M5 | 15 | 40 | 60 | 10 | 16 | 16 | 32 | 82 | 25 | 10 | 6 | / | 30 | 12 | 10 | M5 | 12 | 42 | M4 |
| MCB 25 | M6 | 15 | 44 | 66 | 12 | 19 | 19 | 38 | 92 | 25 | 10 | 7 | / | 34 | 16 | 12 | M5 | 14 | 46 | M5 |
| MCB 32 | M6 | 20 | 52 | 80 | 16 | 22 | 22 | 44 | 112 | 30 | 12 | 8.5 | 13 | 42 | 20 | 16 | 1/8 | 17 | 56 | M6 |
| MCB 40 | M6 | 20 | 68 | 90 | 18 | 26 | 26 | 52 | 124 | 30 | 12 | 8.5 | 17 | 52 | 20 | 16 | 1/8 | 17 | 64 | M8 |
| MCB 50 | M10 | 20 | 100 | 110 | 22 | 31 | 29 | 60 | 148 | 30 | 15 | 8.5 | 23 | 66 | 25 | 20 | 1/4 | 17 | 80 | M10 |

| Type Typ | b | d | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₈ | e | f | h | m | n | q | t |
|-------------|------|-----|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----|-----|-----|------|----|----|----|
| MCB 10 | 20 | 60 | 6 | 3.4 | 3.5 | 3.5 | M3 | 7 | 17 | M4 | M3 | 52 | 12 | 14 | 12 | 14 |
| MCB 16 | 25 | 64 | 8 | 4.4 | 4.5 | 4.5 | M3 | 7 | 17 | M4 | M4 | 56 | 12 | 18 | 14 | 19 |
| MCB 20 | 29 | 80 | 8 | 4.3 | 4.5 | 4.5 | M4 | 8 | 20 | M5 | M4 | 72 | 15 | 21 | 18 | 22 |
| MCB 25 | 35 | 90 | 9 | 5.5 | 5.5 | 5.5 | M4 | 8 | 25 | M6 | M5 | 80 | 17 | 24 | 20 | 28 |
| MCB 32 | 40.5 | 110 | 9.5 | 5.5 | 6 | 6 | M5 | 10 | 27 | M8 | M6 | 100 | 20 | 30 | 22 | 32 |
| MCB 40 | 49 | 120 | 11 | 6.5 | 6.5 | 6.5 | M5 | 10 | 27 | M8 | M8 | 104 | 20 | 32 | 32 | 40 |
| MCB 50 | 54 | 144 | 14 | 8.5 | 8.5 | 8.5 | M8 | 12 | 19 | M10 | M10 | 120 | 27.5 | 40 | 30 | 40 |

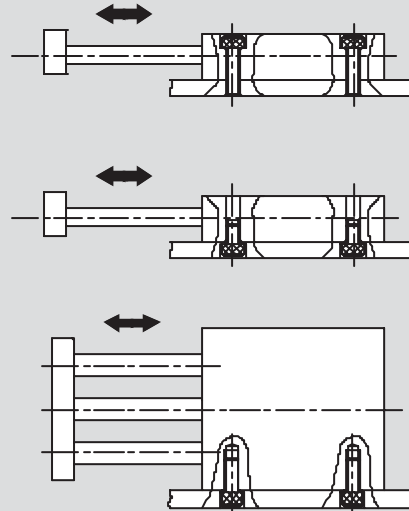
| Type Typ | Stroke Hub | L | N | V | Z | d ₇ |
|-------------|---------------|-----|-----|----|-----|----------------|
| MCB 10 | 25 | 70 | 30 | / | 82 | 36 |
| | 50 | 95 | 55 | / | 107 | 61 |
| MCB 16 | 25 | 70 | 30 | / | 84 | 36 |
| | 50 | 95 | 55 | / | 109 | 61 |
| MCB 20 | 25 | 72 | 22 | / | 86 | 32 |
| | 50 | 95 | 47 | / | 111 | 57 |
| | 75 | 122 | 72 | 11 | 136 | 82 |
| MCB 25 | 25 | 73 | 23 | / | 91 | 33 |
| | 75 | 123 | 73 | / | 141 | 83 |
| | 125 | 173 | 123 | 11 | 191 | 133 |
| MCB32 | 30 | 83 | 23 | / | 105 | 29 |
| | 75 | 128 | 68 | 34 | 150 | 74 |
| | 125 | 178 | 118 | 34 | 200 | 124 |
| MCB 40 | 50 | 103 | 43 | / | 125 | 43 |
| | 100 | 153 | 93 | 33 | 175 | 93 |
| | 200 | 253 | 193 | 33 | 275 | 193 |
| MCB 50 | 50 | 98 | 38 | / | 119 | 60 |
| | 150 | 198 | 138 | 49 | 219 | 160 |

Pneumatic linear actuator - series MCB with cylinder Pneumatischer Linearantrieb - Serie MCB mit zylinder

Type of assembly

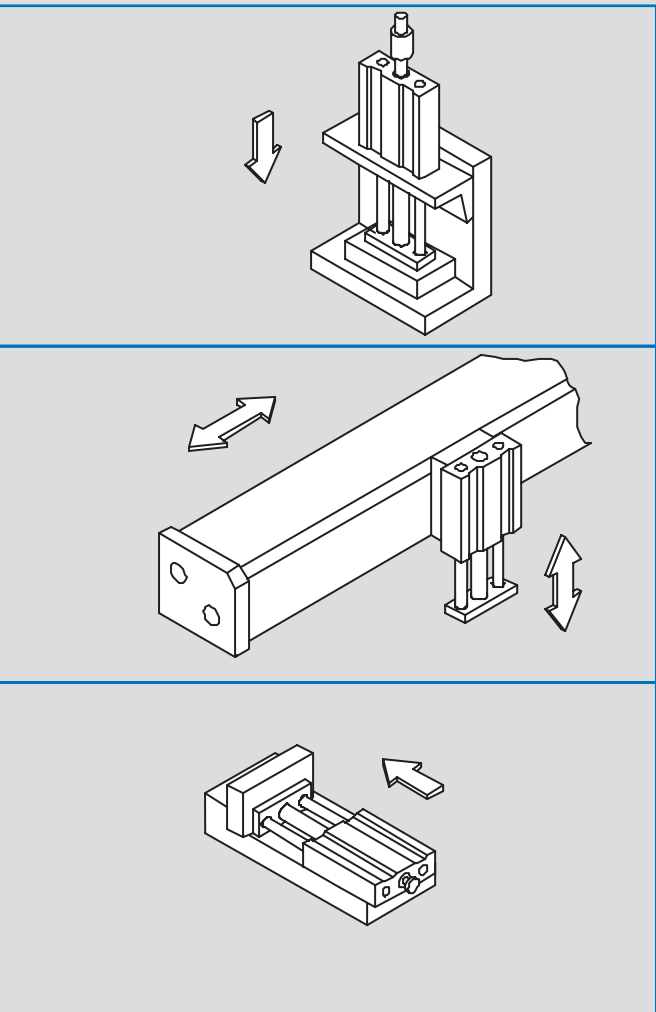
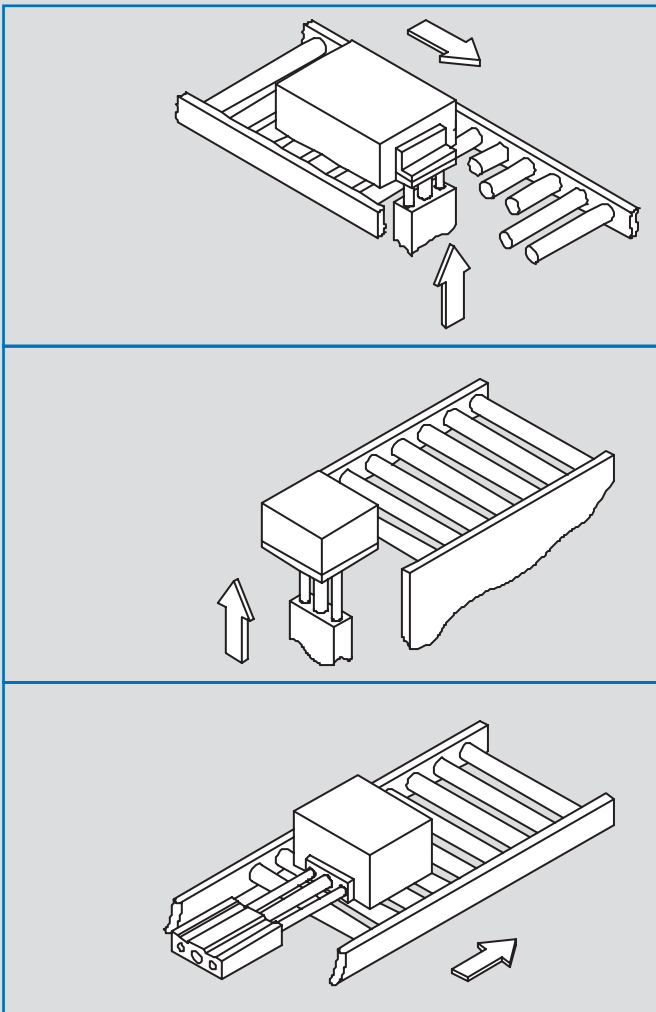


Befestigungsmöglichkeit



Example of application

Beispiel für die Anwendung



Pneumatic linear actuator - series AL with cylinder ISO *Pneumatischer Linearantrieb - Serie AL mit zylinder ISO*



Technische Eigenschaften:

- Betriebsdruck: 2...8 bar
- Wiederholgenauigkeit: 0.05 mm mit einstellbarem Hub
- Betriebstemperaturbereich von 5°C bis 60°C
- Antrieb: durch Zylinder ISO 6431-6432
- Gehäuse: hartbeschichtete Aluminiumlegierung
- Material der Funktionsteile: einsatzgehärteter Stahl
- Schiebetüren : Kugelbuchsen
- Betätigung : pneumatisch durch gefilterte Luft (10µm), trocken oder geölt
- Instandhaltung: Wartungsfrei bis zu 2 Millionen Schaltspielen
- Geschwindigkeit ohne Belastung: 0,1 bis 0,5 m/s für AL 08-20...0,5 bis 0,7 m/s für AL 25-30
- Zubehör: Zylinder ISO, Stoßdämpfer
- Schutzart IP54
- 24 Monate Garantie

Technical data:

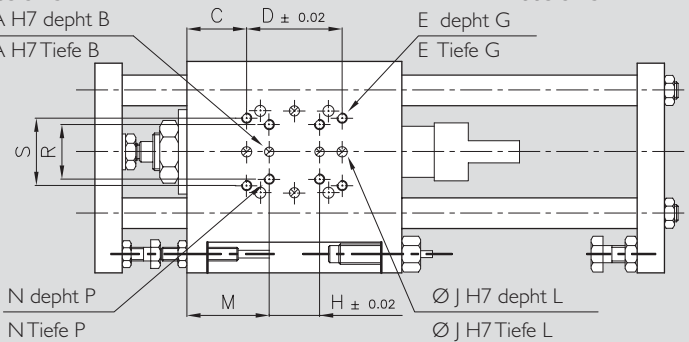
- Range of operating pressure: 2 ...8 bar
- Accuracy repeability: 0.05 mm (with adjustable stroke)
- Operating temperature: 5°C to 60°C
- Operating system: through cylinder ISO 6431-6432
- Housing material: high tensile hard-coated aluminium alloy
- Material of functional parts: treated and ground steels
- Sliding: linear bearing
- Actuation: compressed air filtered (10µm), dry or lubricated
- Maintenance: no maintenance required for the first 2 million cycles
- Speed no load:
AL 08-20 0,6 at 0,8 m/s
AL 25-30 0,5 at 0,7 m/s
- Accessories: cylinder ISO, shock absorbers
- Rating IP54
- Warranty 24 months

Pneumatic linear actuator - series AL with cylinder ISO Pneumatischer Linearantrieb - Serie AL mit zylinder ISO

Attacks "A"

Ø A H7 dept B

Ø A H7 Tiefe B



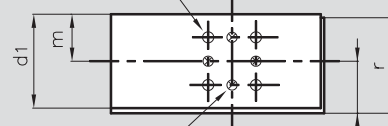
Attacks "B"

Version AA

Attacks "E"

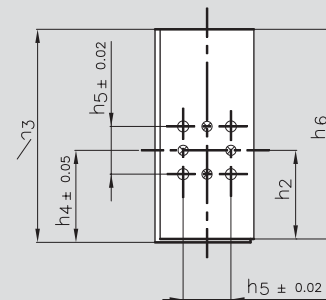
Through hole Ø n

Bohrung Ø n

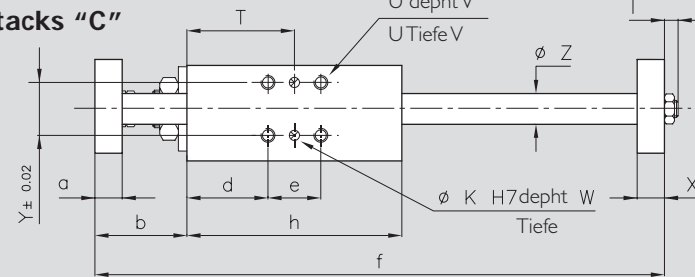


Through hole Ø t H7

Bohrung Ø t H7



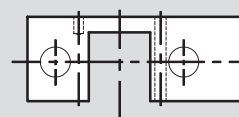
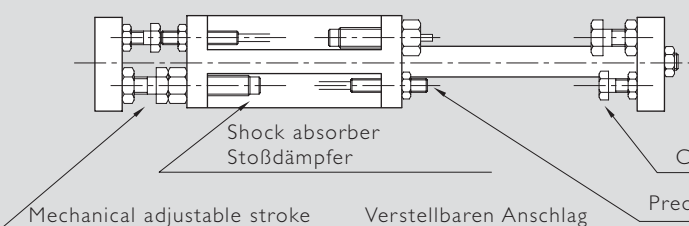
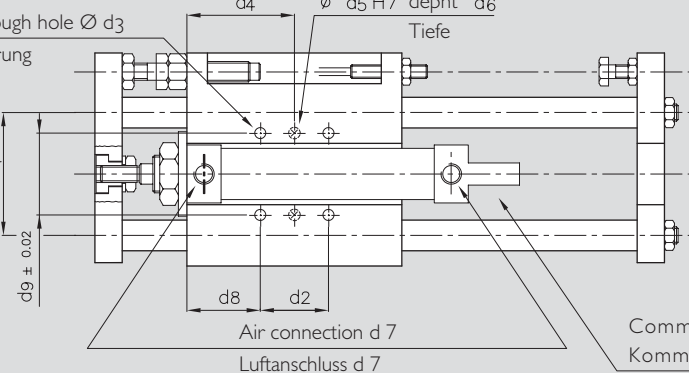
Attacks "C"



Attacks "D"

Through hole Ø d3

Bohrung

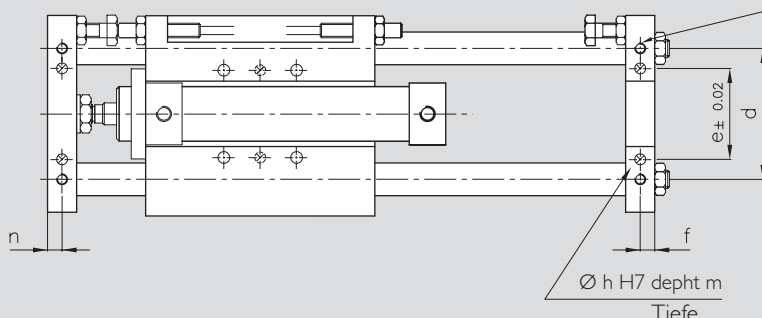


Cam warning

Cam Warnung

Attacks on lower base - cod. CA

Angriffe auf die niedrigeren Basis - vers. CA



| Type | a | b | d | e | f | h | m | n |
|-------|----|----|----|----|-----|---|----|-----|
| Typ | a | b | d | e | f | h | m | n |
| AL 08 | M5 | 10 | 50 | 32 | 5.5 | 5 | 8 | 5.5 |
| AL 12 | M6 | 12 | 60 | 40 | 7 | 6 | 10 | 7 |
| AL 16 | M8 | 16 | 80 | 56 | 8 | 8 | 14 | 8 |

Pneumatic linear actuator - series AL with cylinder ISO Pneumatischer Linearantrieb - Serie AL mit zylinder ISO

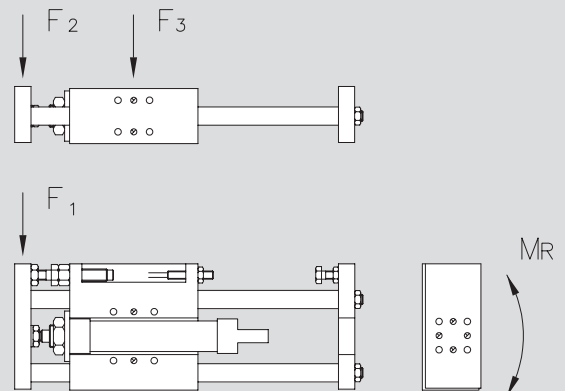
| Type | A | B | C | D | E | G | H | J | L | M | N | P | R | S | T | U | V | Z | Y | X | K | W | a |
|-------|---|---|----|----|----|---|----|---|---|----|----|---|----|----|----|----|----|----|----|----|---|----|----|
| AL 08 | / | / | / | / | / | / | / | / | / | / | / | / | / | / | 40 | M6 | 12 | 8 | 28 | 11 | 6 | 12 | 11 |
| AL 12 | 5 | 7 | / | / | / | / | 34 | / | / | 33 | M5 | 7 | 22 | / | 50 | M6 | 14 | 12 | 28 | 14 | 6 | 12 | 14 |
| AL 16 | 6 | 9 | 33 | 54 | M6 | 9 | 40 | 6 | 9 | 40 | M6 | 9 | 26 | 40 | 60 | M8 | 16 | 16 | 31 | 16 | 8 | 16 | 16 |

| Type | b | d | e | h | l | m | n | q | r | t | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | d ₉ | h ₁ | h ₂ | h ₃ | h ₄ |
|-------|----|------|----|-----|---|----|-----|----|----|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| AL 08 | 41 | 26 | 28 | 80 | 6 | 21 | 5.5 | 19 | 38 | 5 | 39 | 22 | 5.5 | 40 | 5 | 8 | M5 | 29 | 34 | 50 | 34 | 86 | 35 |
| AL 12 | 48 | 36 | 28 | 100 | 9 | 23 | 6.5 | 23 | 44 | 6 | 45 | 26 | 6.5 | 50 | 6 | 10 | 1/8G | 37 | 40 | 60 | 42 | 102 | 43 |
| AL 16 | 54 | 44.5 | 31 | 120 | 9 | 24 | 7 | 27 | 49 | 6 | 50 | 40 | 6.5 | 60 | 6 | 10 | 1/8G | 40 | 54 | 80 | 55 | 129 | 56 |

| Type | h ₅ | h ₆ | Shock absorber | Max energy (Nm) | | Effective mass |
|-------|----------------|----------------|----------------|-----------------|----------------|----------------|
| AL 08 | 22 | 85 | M10 stroke 6 | for cycle 2.8 | for hour 13500 | 1.8 - 5.5 |
| AL 12 | 28 | 101 | M10 stroke 6 | for cycle 2.8 | for hour 13500 | 3.6 - 13.6 |
| AL 16 | 28 | 128 | M12 stroke 10 | for cycle 8 | for hour 26000 | 10 - 38 |

| Type | Diameter cylinder bore | Push force at 6 bar | Pull force a 6 bar |
|-------|------------------------|---------------------|--------------------|
| AL 8 | 16 | 104 | 87 |
| AL 12 | 20 | 170 | 140 |
| AL 16 | 25 | 267 | 220 |

| Type | stroke | 25 | 50 | 80 | 100 | 125 | 160 | 200 | MR |
|-------|--------------------|-----|-----|-----|-----|-----|-----|-----|----|
| AL 08 | f | 187 | 212 | 242 | / | / | / | / | 2 |
| | F _i (N) | 20 | 9 | 2 | / | / | / | / | |
| | mass | 1 | 1 | 1.1 | / | / | / | / | |
| AL 12 | f | 221 | 246 | 276 | 296 | 321 | 356 | / | 4 |
| | F _i (N) | 160 | 80 | 50 | 40 | 30 | 20 | / | |
| | mass | 1.9 | 2 | 2 | 2.1 | 2.1 | 2.3 | / | |
| AL 16 | f | 253 | 278 | 308 | 328 | 353 | 388 | 428 | 6 |
| | F _i (N) | 430 | 220 | 140 | 110 | 80 | 70 | 50 | |
| | mass | 3.2 | 3.3 | 3.4 | 3.5 | 3.6 | 3.7 | 3.9 | |

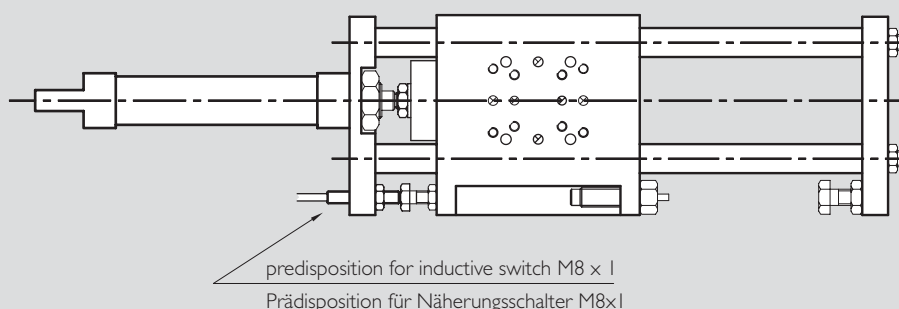


Note:
- mass in Kg including shock absorber and cylinder
- standard strokes
AL 08 : 50 - 80
AL 16 : 50 - 80 - 100
AL 20 : 50 - 80 - 100 -160
- Load in N:
F₃ = F₁ x 1.35
F₂ = F₁ x 0.8

Note:
- Masse in Kg einschließlich Stoßdämpfer und Zylinder
- Hub
AL 08 : 50 - 80
AL 16 : 50 - 80 - 100
AL 20 : 50 - 80 - 100 -160
- Belastung in N:
F₃ = F₁ x 1.35
F₂ = F₁ x 0.8

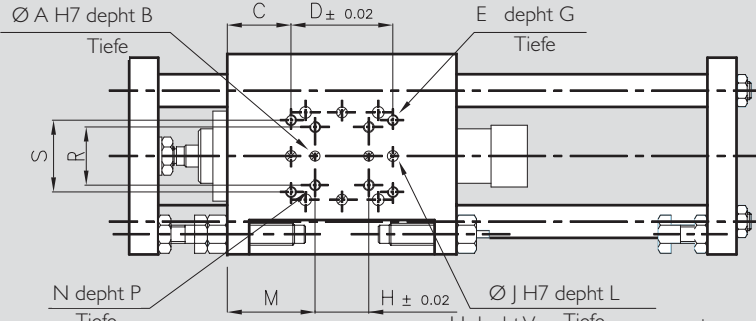
Version with external cylinder - cod. CE

Version mit Außenzylinder - Version CE



Pneumatic linear actuator - series AL with cylinder ISO Pneumatischer Linearantrieb - Serie AL mit zylinder ISO

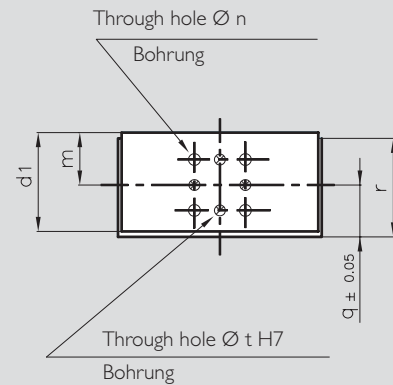
Attacks "A"



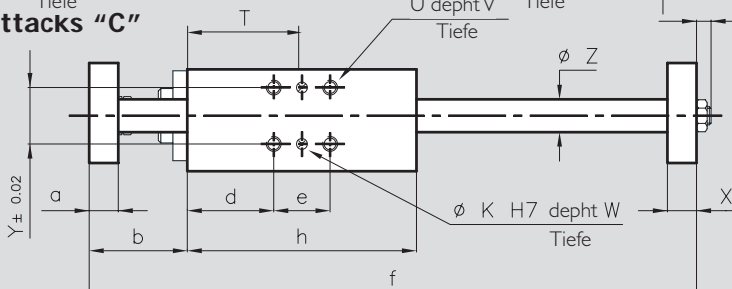
Attacks "B"

Version AA

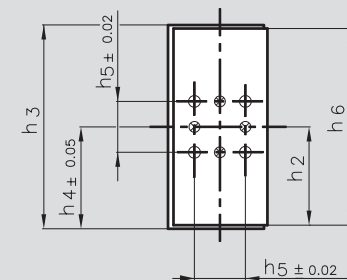
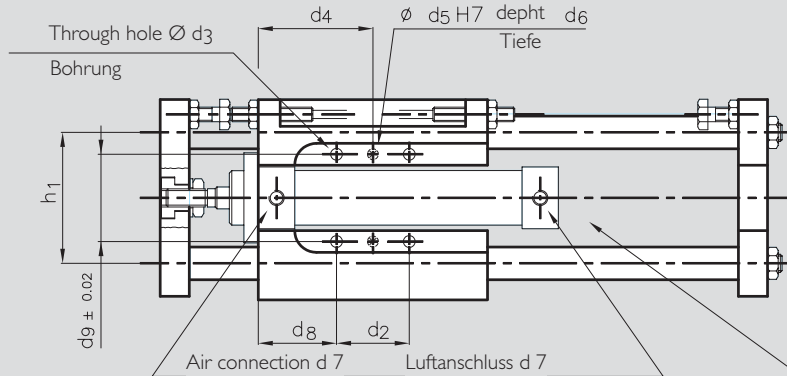
Attacks "E"



Attacks "C"



Attacks "D"



Commercial cylinder ISO 6431 upon request - code C
Kommerzielle Zylinder ISO 6431 auf Anfrage - Version C

Mechanical adjustable stroke Mechanical adjustable stroke

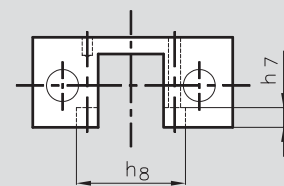
Shock absorber Stoßdämpfer

Predisposition for inductive switch M8x1

Prädisposition für Näherungsschalter M8x1

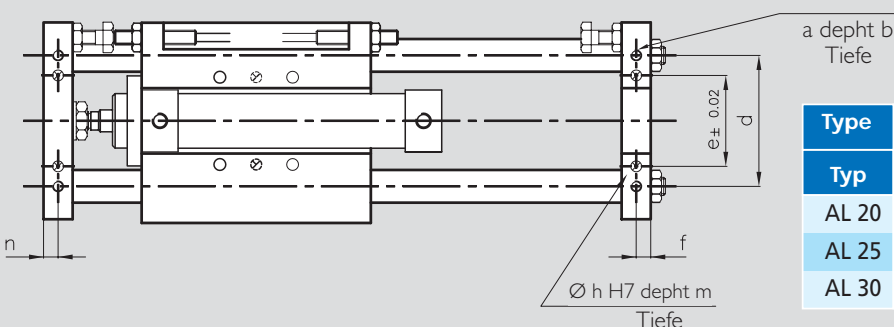
Cam warning

Cam Warnung



Attacks on lower base - cod. CA

Angriffe auf die niedrigeren Basis - version CA



| Type | a | b | d | e | f | h | m | n |
|-------|-----|----|-----|-----|---|----|----|----|
| Typ | a | b | d | e | f | h | m | n |
| AL 20 | M8 | 16 | 100 | 76 | 7 | 8 | 16 | 9 |
| AL 25 | M10 | 18 | 110 | 80 | 7 | 10 | 18 | 9 |
| AL 30 | M12 | 20 | 130 | 100 | 9 | 12 | 20 | 11 |

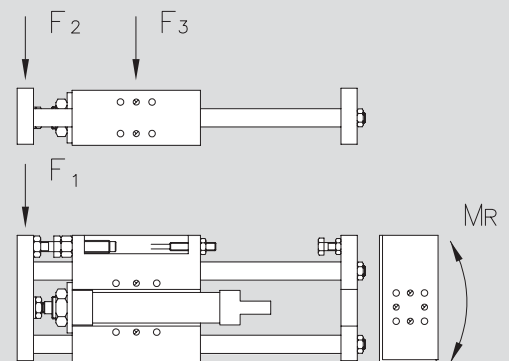
Pneumatic linear actuator - series AL with cylinder ISO Pneumatischer Linearantrieb - Serie AL mit zylinder ISO

| Type | A | B | C | D | E | G | H | J | L | M | N | P | R | S | T | U | V | Z | Y | X | K | W | a | |
|-------|----|----|----|----|----|----|----|---|----|----|----|----|----|----|----|-----|----|----|----|----|----|----|----|--|
| Typ | | | | | | | | | | | | | | | | | | | | | | | | |
| AL 20 | 6 | 12 | 37 | 70 | M8 | 12 | 54 | 8 | 12 | 45 | M6 | 12 | 40 | 42 | 72 | M8 | 16 | 20 | 44 | 14 | 8 | 16 | 18 | |
| AL 25 | 8 | 15 | / | / | / | / | 70 | / | / | 50 | M8 | 15 | 42 | / | 85 | M8 | 18 | 25 | 44 | 14 | 8 | 18 | 18 | |
| AL 30 | 15 | 15 | / | / | / | / | 70 | / | / | 64 | M8 | 15 | 42 | / | 99 | M10 | 20 | 30 | 60 | 18 | 10 | 20 | 22 | |

| Type | b | d | e | h | l | m | n | q | r | t | d ₁ | d ₂ | d ₃ | d ₄ | d ₅ | d ₆ | d ₇ | d ₈ | d ₉ | h ₁ | h ₂ | h ₃ | h ₄ | |
|-------|----|----|----|-----|----|----|-----|----|----|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--|
| Typ | | | | | | | | | | | | | | | | | | | | | | | | |
| AL 20 | 54 | 50 | 44 | 144 | 10 | 30 | 8.5 | 40 | 68 | 8 | 69 | 42 | 9 | 72 | 8 | 16 | 1/8G | 51 | 70 | 100 | 68 | 138 | 69 | |
| AL 25 | 60 | 63 | 44 | 170 | 12 | 35 | 9 | 45 | 78 | 8 | 79 | 42 | 9 | 85 | 8 | 16 | 1/4G | 64 | 70 | 110 | 78 | 158 | 79 | |
| AL 30 | 74 | 69 | 60 | 198 | 14 | 41 | 9 | 55 | 94 | 8 | 95 | 48 | 11 | 99 | 10 | 20 | 1/4G | 75 | 86 | 130 | 93 | 188 | 94 | |

| Type | h ₅ | h ₆ | h ₇ | h ₈ | Shock absorber | Max energy (Nm) | Effective mass |
|-------|----------------|----------------|----------------|----------------|----------------|--------------------------------|-----------------|
| Typ | h ₅ | h ₆ | h ₇ | h ₈ | Stoßdämpfer | Max Energieaufnahme (Nm) | Effektive Masse |
| AL 20 | 31 | 136 | 13 | 84 | M14 stroke 16 | for cycle 21 for hour 34000 | 23 - 102 |
| AL 25 | 44 | 156 | 14 | 88 | M20 stroke 19 | for cycle 33 for hour 45000 | 32 - 204 |
| AL 30 | 44 | 186 | 17 | 104 | M25 stroke 25 | for cycle 73 for hour 68000 | 68 - 408 |

| Type | Diameter cylinder bore | Push force at 6 bar (N) | Pull force at 6 bar (N) | MR (Nm) |
|-------|------------------------|-------------------------|-------------------------|---------|
| Typ | Kolben-durchmesser | Druck bei 6 bar | Zug bei 6 bar | MR (Nm) |
| AL 20 | 32 | 482 | 415 | 9 |
| AL 25 | 40 | 753 | 633 | 18 |
| AL 30 | 50 | 1178 | 990 | 30 |



| Type | stroke | 50 | 80 | 100 | 160 | 200 | 250 | 320 | 400 | 500 |
|-------|--------------------|-----|------|------|------|------|------|------|------|------|
| Typ | Hub | | | | | | | | | |
| AL 20 | f | 298 | 328 | 348 | 408 | 448 | 498 | 568 | / | / |
| | F ₁ (N) | 400 | 260 | 200 | 160 | 100 | 85 | 70 | / | / |
| | mass | 5.6 | 5.8 | 6 | 6.4 | 6.7 | 7 | 7.6 | / | / |
| AL 25 | f | 336 | 366 | 386 | 446 | 486 | 536 | 606 | 686 | 786 |
| | F ₁ (N) | 700 | 440 | 340 | 230 | 180 | 140 | 120 | 85 | 80 |
| | mass | 9.2 | 9.6 | 9.8 | 10.4 | 10.9 | 11.4 | 12.1 | 13.1 | 14.2 |
| AL 30 | f | / | 422 | 442 | 502 | 542 | 592 | 662 | 742 | 842 |
| | F ₁ (N) | / | 700 | 500 | 360 | 290 | 230 | 200 | 150 | 135 |
| | mass | / | 15.2 | 15.5 | 16.5 | 17.2 | 18 | 19.2 | 20.5 | 22.2 |

Note:

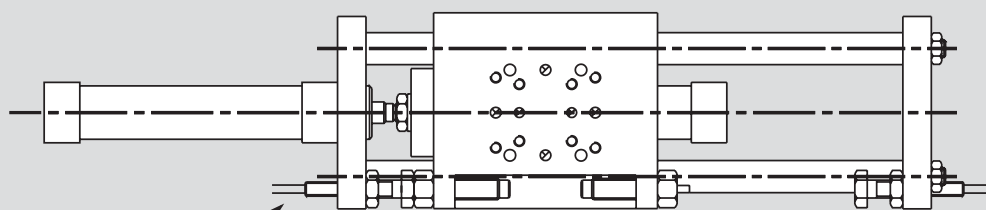
- mass in Kg including shock absorber and cylinder
- standard strokes
- Load in N:
F₃ = F₁ x 1.35
F₂ = F₁ x 0.8

Note:

- Masse in Kg einschließlich Stoßdämpfer und Zylinder
- Hub
- Belastung in N:
F₃ = F₁ x 1.35
F₂ = F₁ x 0.8

Version with external cylinder - cod. CE

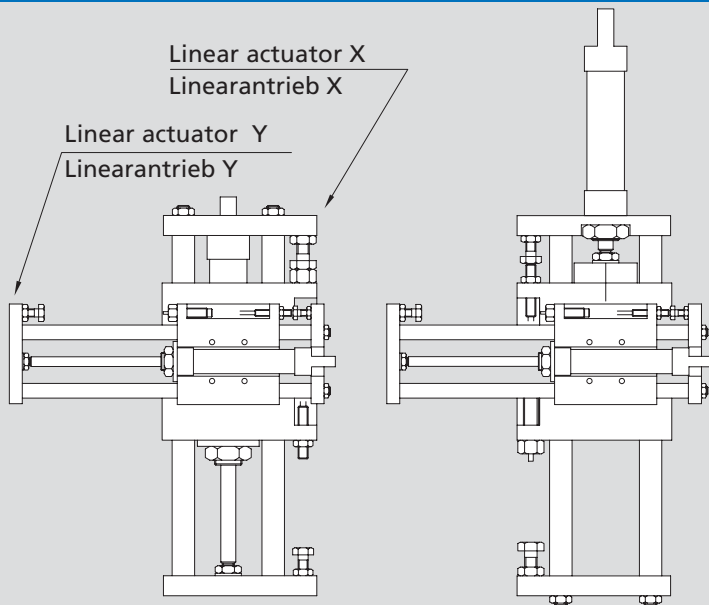
Version mit Außenzylinder - Version CE



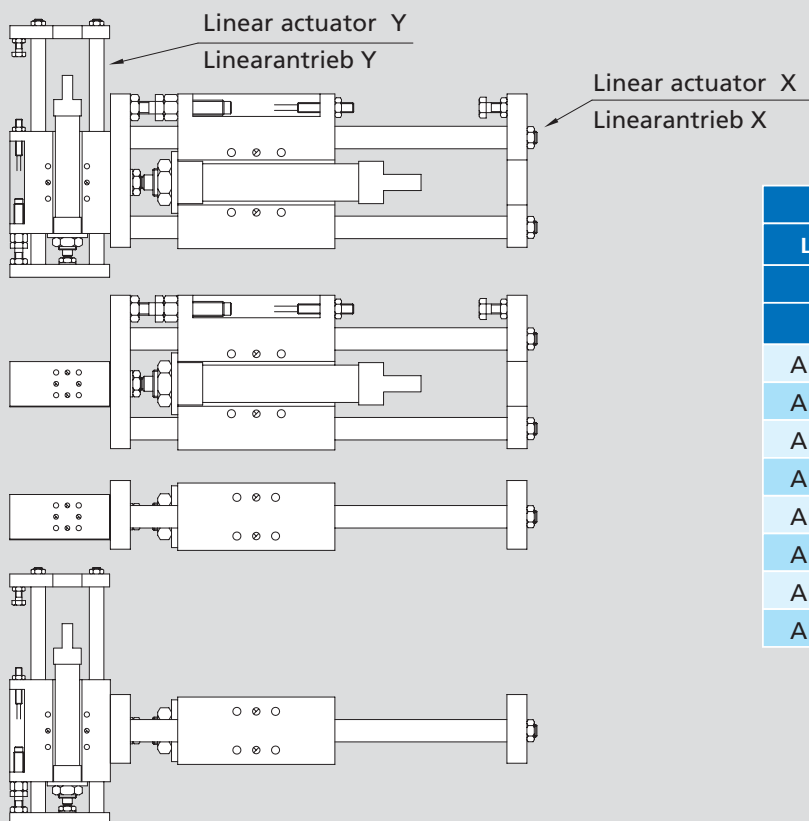
Predisposition for inductive switch M8 x 1

Prädisposition für Näherungsschalter M8x1

Pneumatic linear actuator - series AL with cylinder ISO Pneumatischer Linearantrieb - Serie AL mit zylinder ISO



| COMBINATIONS ACHIEVABLE | |
|----------------------------|-------------------|
| Linear actuator X | Linear actuator Y |
| Kombinationen realisierbar | |
| Linearantrieb X | Linearantrieb Y |
| AL 12 (attack A) | AL 08 (attack D) |
| AL 16 (attack A) | AL 12 (attack D) |
| AL 16 (attack B) | AL 16 (attack D) |
| AL 20 (attack A) | AL 16 (attack D) |
| AL 20 (attack B) | AL 20 (attack D) |
| AL 25 (attack A) | AL 20 (attack D) |
| AL 25 (attack B) | AL 25 (attack D) |
| AL 30 (attack A) | AL 20 (attack D) |
| AL 30 (attack A) | AL 25 (attack D) |



| COMBINATIONS ACHIEVABLE | |
|----------------------------|-------------------|
| Linear actuator X | Linear actuator Y |
| Kombinationen realisierbar | |
| Linearantrieb X | Linearantrieb Y |
| AL 12 (attack E) | AL 08 (attack C) |
| AL 16 (attack E) | AL 08 (attack C) |
| AL 16 (attack E) | AL 12 (attack C) |
| AL 20 (attack E) | AL 16 (attack C) |
| AL 25 (attack E) | AL 20 (attack C) |
| AL 25 (attack E) | AL 25 (attack C) |
| AL 30 (attack E) | AL 20 (attack C) |
| AL 30 (attack E) | AL 25 (attack C) |

Ordering example

Bestellbeispiel

| Type | Diameter cylinder bore | Version AA / CE | Stroke | Attacks on lower base code CA | Shock absorber hydraulic indicate code D | For cylinder indicate code C | Proximity switch M8 x 1 code F |
|-------|------------------------|-----------------|--------|---|--|---------------------------------------|--|
| Typ | Kolpenn-durch-messer | Version AA / CE | Hub | Angriffe auf die niedrigeren Basis - ausdrückstern CA | Stoßdämpfer ausdrückstern D | Kommerzielle Zylinder ausdrückstern C | Näherungsschalter M8x1 ausdrückstern F |
| AL 16 | 25 | AA | 100 | / | D | C | / |