

2-jaw parallel self-centering pneumatic gripper (series HS)

- Specially suited for high speed machines.
- Very short closing/opening time.
- Low weight.
- Trouble free long life without maintenance.
- Long stroke.
- Reduced stroke (upon request).
- Optional magnetic sensors.
- FDA-H1 food-grade grease.



HS-2012

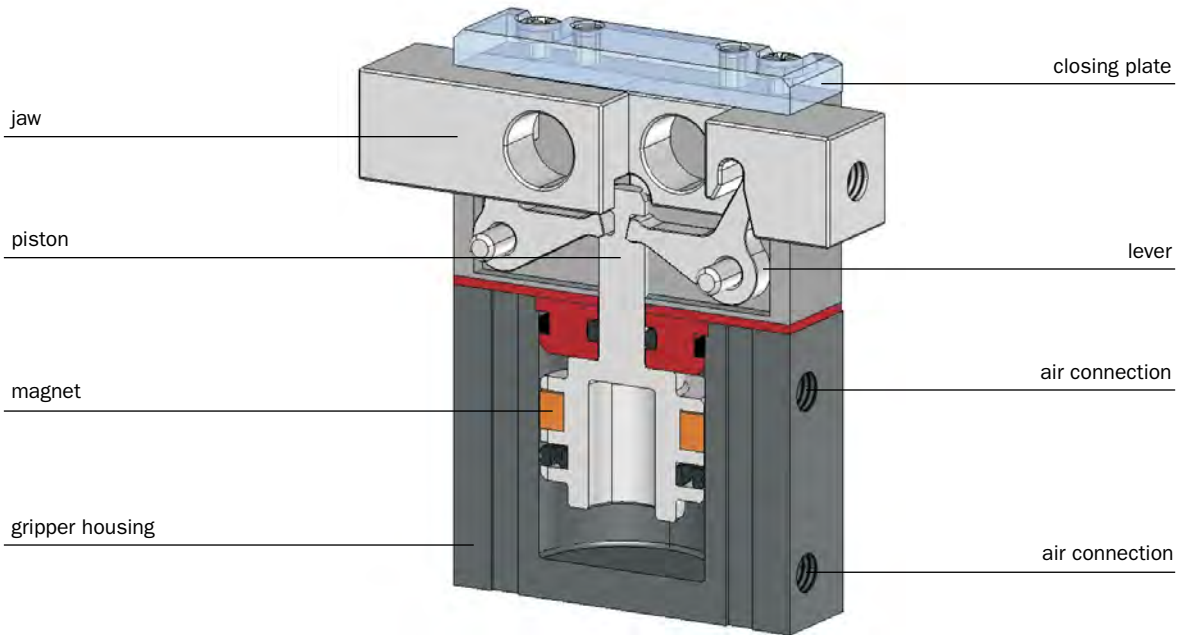


HS-2518

| | HS-2012 | HS-2518 |
|---|---|------------------------|
| Price | \$273.00 | \$368.00 |
| Medium | Filtered compressed air, lubricated or non-lubricated | |
| Pressure range | 36-116 psi | |
| Temperature range | 41-140 °F | |
| Gripping force on each jaw on opening at 87 psi | 13.5 lbf | 20.2 lbf |
| Total gripping force on opening at 87 psi | 27 lbf | 40.4 lbf |
| Gripping force on each jaw on closing at 87 psi | 12.4 lbf | 18.6 lbf |
| Total gripping force on closing at 87 psi | 24.8 lbf | 37.2 lbf |
| Total stroke ±0.012" (±0.3 mm) | 0.456" (11.6 mm) | 0.692" (17.6 mm) |
| Maximum operating frequency | 6 Hz | 5 Hz |
| Air consumption per cycle | 0.3 in ³ | 0.7 in ³ |
| Closing / opening minimum time | 0.007 s | 0.018 s |
| Repetition accuracy | 0.000787" (0.02 mm) | 0.000787" (0.02 mm) |
| Weight | 144g | 270g |

Lay-out

The gripper is driven by the piston rod, that operates the jaws by levers.

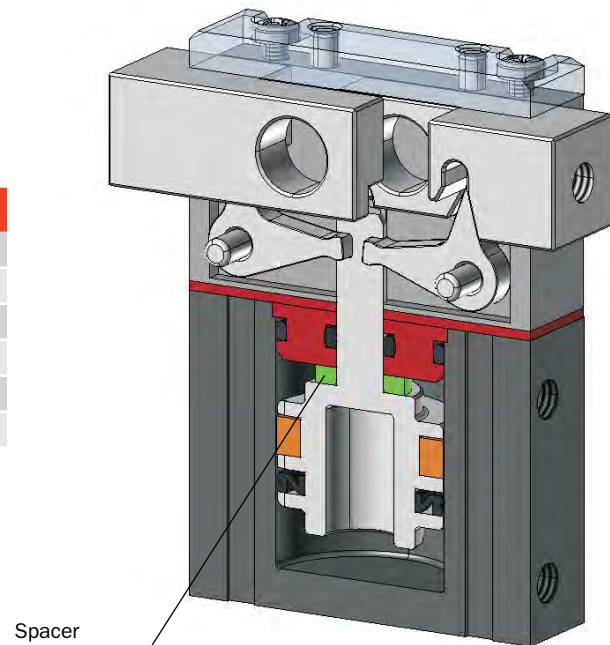


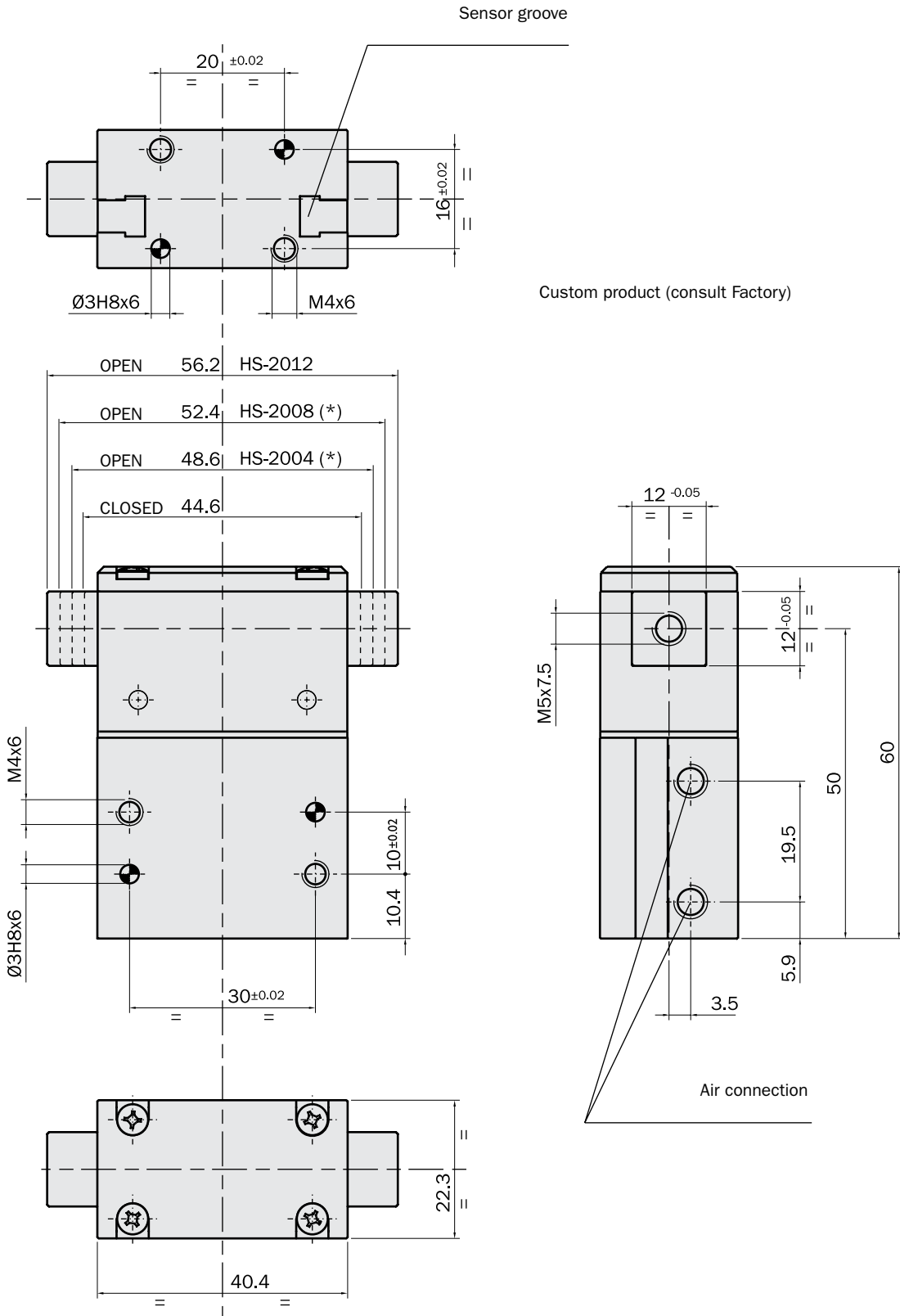
Stroke reduction

The stroke can be reduced by spacers which limit the jaw opening. In this way the opening and closing time can be further decreased.

| | Spacer | Stroke |
|-------------|-------------|-------------|
| HS-2012 | / | 2 x 5.8 mm |
| HS-2008 (*) | 1 x XP-16-3 | 2 x 3.9 mm |
| HS-2004 (*) | 2 x XP-16-3 | 2 x 2 mm |
| HS-2518 | / | 2 x 8.9 mm |
| HS-2512 (*) | 1 x XA-26-3 | 2 x 6.1 mm |
| HS-2506 (*) | 2 x XA-26-3 | 2 x 3.25 mm |

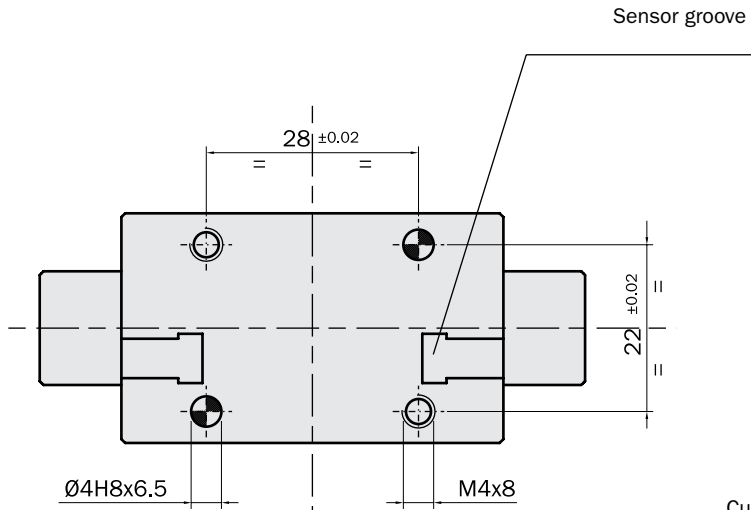
Custom product (consult Factory)



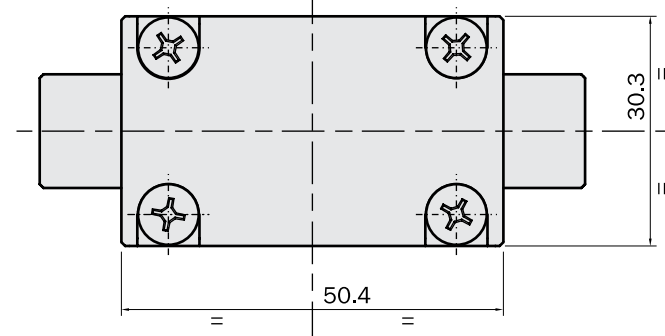
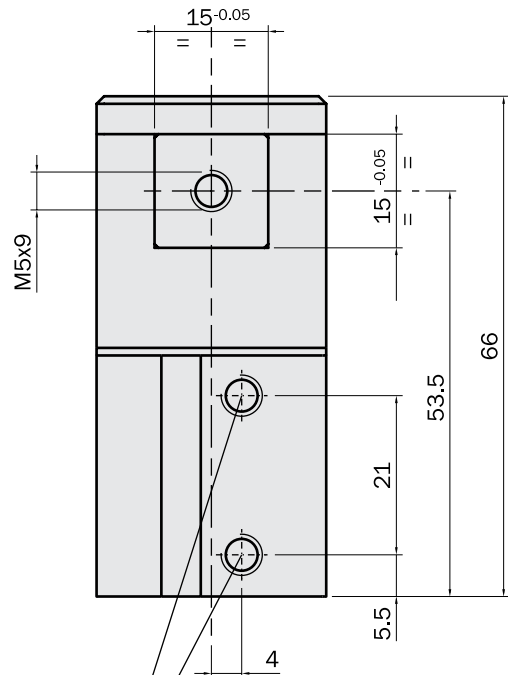
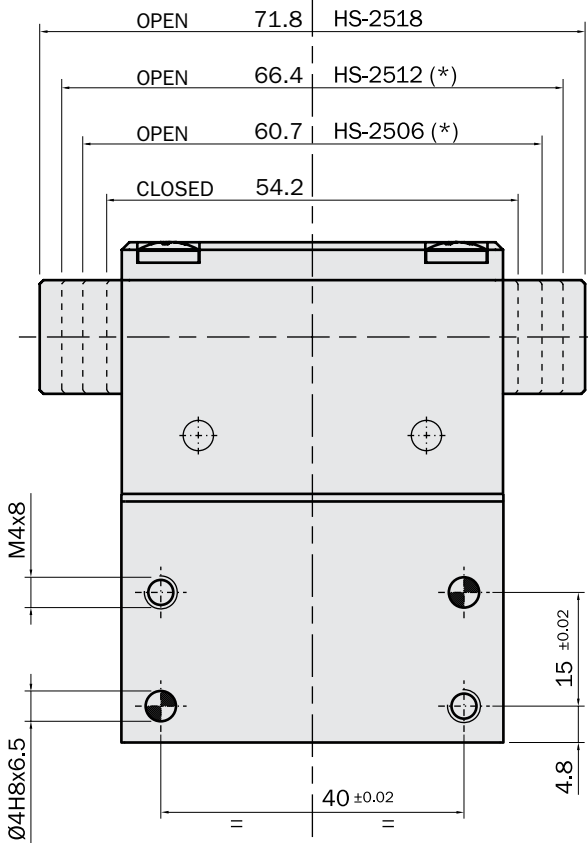


Dimensions (mm)

HS-2518



Custom product (consult Factory)



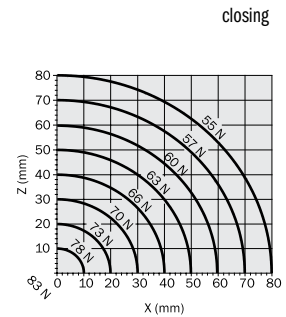
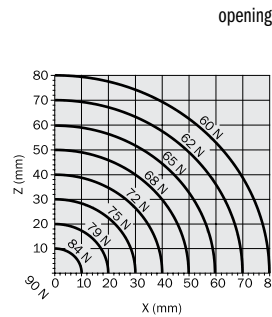
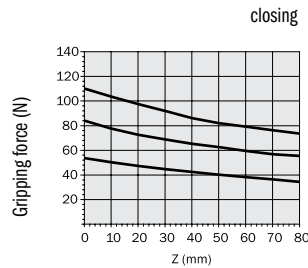
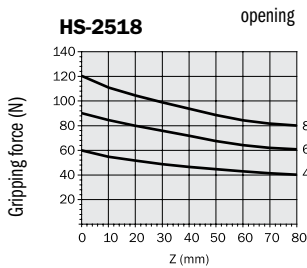
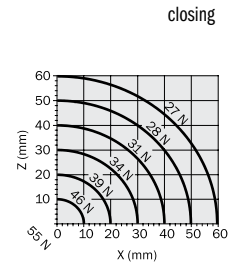
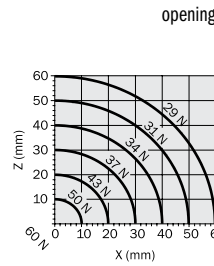
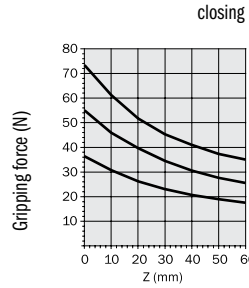
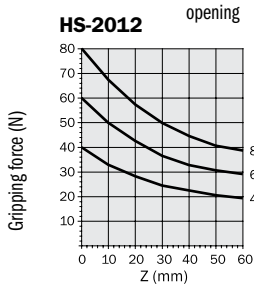
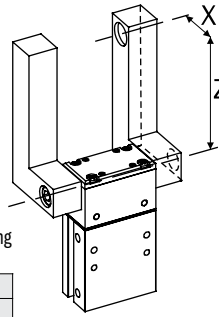
Air connection

FIRST ANGLE PROJECTION

Gripping force

The graphs show the gripping force on each jaw, as a function of the operating pressure, the gripping tool length Z and the overhanging X.

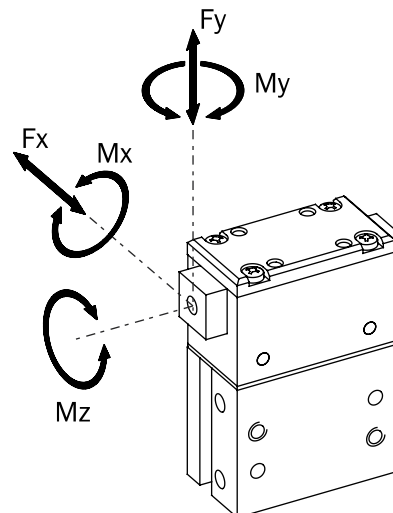
**The force shown in these graphs refers to one jaw.
The total force is double.**



Safety loads

Check the table for maximum permitted loads.
Excessive forces or torques can damage the gripper, cause functioning troubles and endanger the safety of the operator.
F_{x s}, F_{y s}, M_{x s}, M_{y s}, M_{z s}, are maximum permitted static loads. Static means with motionless jaws.
F_{x d}, F_{y d}, M_{x d}, M_{y d}, M_{z d}, are maximum permitted dynamic loads. Dynamic means with running jaws.
m, is the maximum permitted weight of each gripping tool, when the gripper works without speed adjustment.
If the weight is over the permitted value, it is necessary to decrease the speed of the jaw by using flow controllers (not supplied).

| | HS-2012 | HS-2518 |
|------------------|---------|---------|
| F _{x s} | 80 N | 150 N |
| F _{y s} | 60 N | 100 N |
| M _{x s} | 4 Nm | 8 Nm |
| M _{y s} | 4 Nm | 8 Nm |
| M _{z s} | 4 Nm | 8 Nm |
| F _{x d} | 1 N | 2 N |
| F _{y d} | 1 N | 2 N |
| M _{x d} | 4 Ncm | 8 Ncm |
| M _{y d} | 4 Ncm | 8 Ncm |
| M _{z d} | 4 Ncm | 8 Ncm |
| m | 50 g | 100 g |



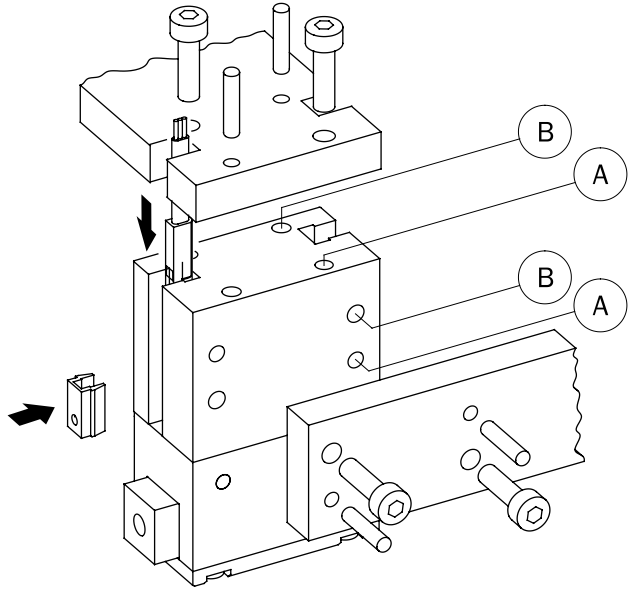
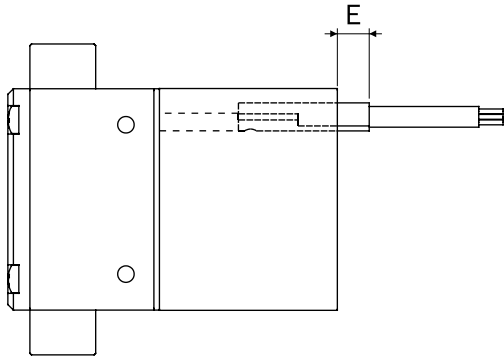
Gripper fastening

The gripper can be fastened to a static or moving part. When on a moving part, you must pay attention to the forces created by inertia over the gripper and its load.

To fasten the gripper use:

- the threaded holes (A) and the dowel pin holes (B) on the side of the gripper;
- or the threaded holes (A) and the dowel pin holes (B) on the base of the gripper.

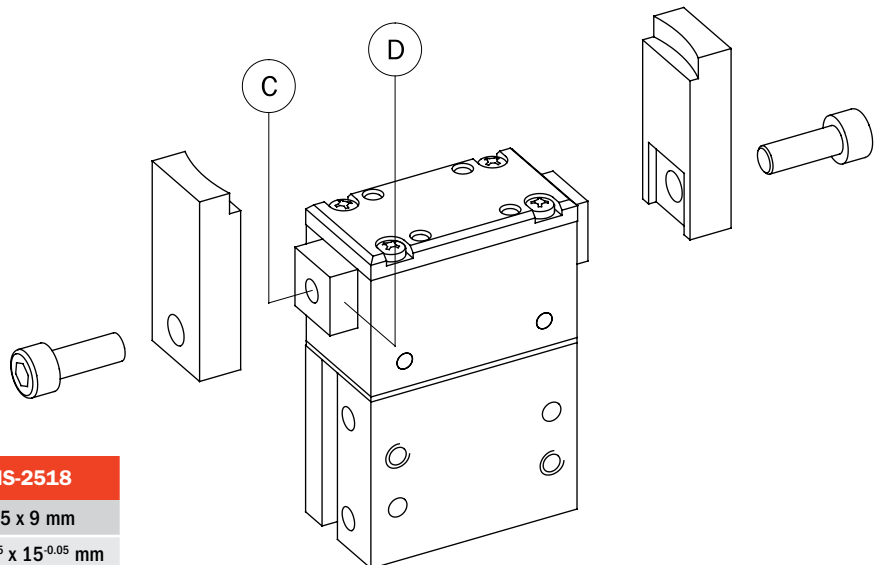
Space for the sensors (E) must be allowed, in the second case.



| | HS-2012 | HS-2518 |
|---|-------------|---------------|
| A | M4 x 6 mm | M4 x 8 mm |
| B | Ø3H8 x 6 mm | Ø4H8 x 6.5 mm |
| E | 4 mm | 5 mm |

Gripping tool fastening

The gripping tools must be as short and light as possible. Fit them to the jaws by centering the square calibrated profile (D) and locking with a screw through the threaded middle hole (C).



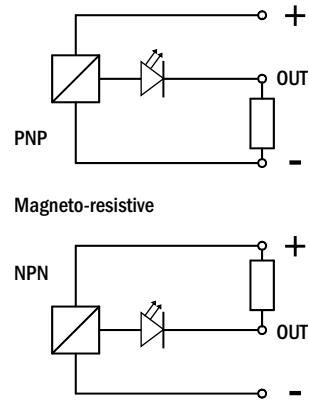
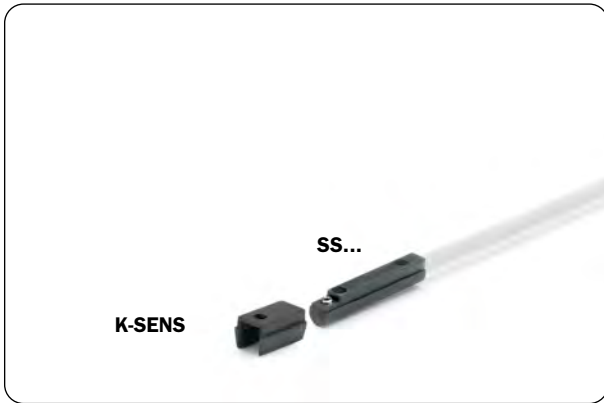
| | HS-2012 | HS-2518 |
|---|--|--|
| C | M5 x 7.5 mm | M5 x 9 mm |
| D | 12 ^{-0.05} x 12 ^{-0.05} mm | 15 ^{-0.05} x 15 ^{-0.05} mm |

Sensors

The operating position can be checked by magnetic sensors (optional), that detect the magnet on the piston inside.

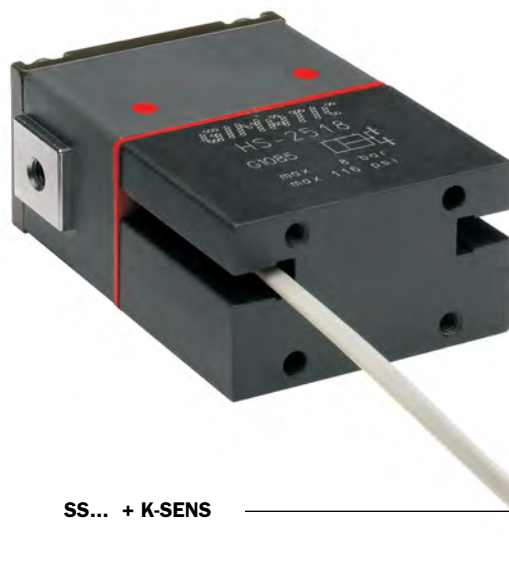
Therefore a near big mass of ferromagnetic material or intense magnetic fields may cause sensing troubles.

The optional sensors are:



| | | | | HS-2012 | HS-2518 |
|----------|-----|------------------------|---------|---------------------------------------|---------------------------------------|
| SS4N225G | PNP | 2.5m cable | \$26.14 | <input checked="" type="checkbox"/> * | <input checked="" type="checkbox"/> * |
| SS4M225G | NPN | 2.5m cable | \$26.14 | <input checked="" type="checkbox"/> * | <input checked="" type="checkbox"/> * |
| SS3N203G | PNP | M8 snap plug connector | \$29.96 | <input checked="" type="checkbox"/> * | <input checked="" type="checkbox"/> * |
| SS3M203G | NPN | M8 snap plug connector | \$29.96 | <input checked="" type="checkbox"/> * | <input checked="" type="checkbox"/> * |

*Must buy K-SENS adapter separately



SS... + K-SENS

Compressed air feeding

The compressed air feeding can be accomplished on the lateral air ports (P and R) with fittings and hoses (not supplied).

Compressed air in P: gripper opening.
 Compressed air in R: gripper closing.

The compressed air, must be filtered from 5 to 40 µm.
 Maintain the medium selected at the start, lubricated or not, for the complete service life of the gripper.

The pneumatic circuit must be pressurized progressively, to avoid uncontrolled movements.



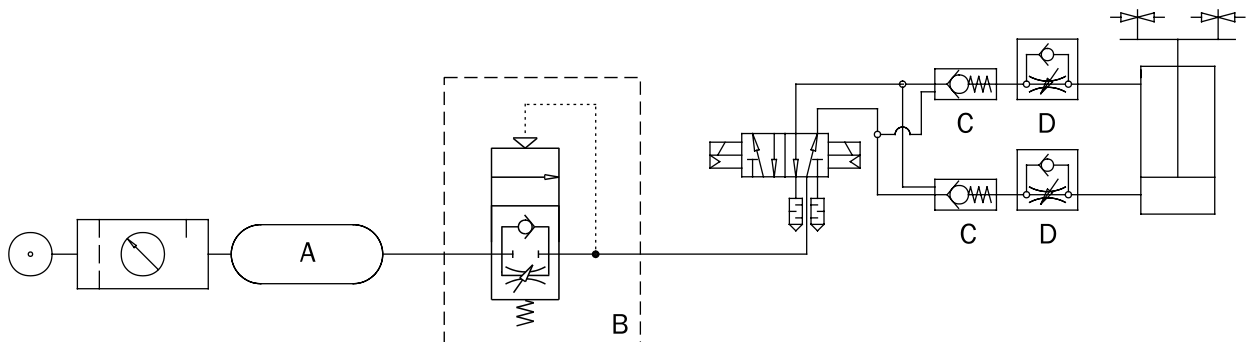
Pneumatic circuit

Possible problems on a compressed air circuit:

- 1- Pressure variation.
- 2- Pressurizing with empty cylinder.
- 3- Sudden pressure black-out.
- 4- Excessive speed of the jaws.

Possible solutions:

- 1- Compressed air storage (A).
- 2- Start-up valve (B).
- 3- Safety valve (C).
- 4- Flow controller (D).

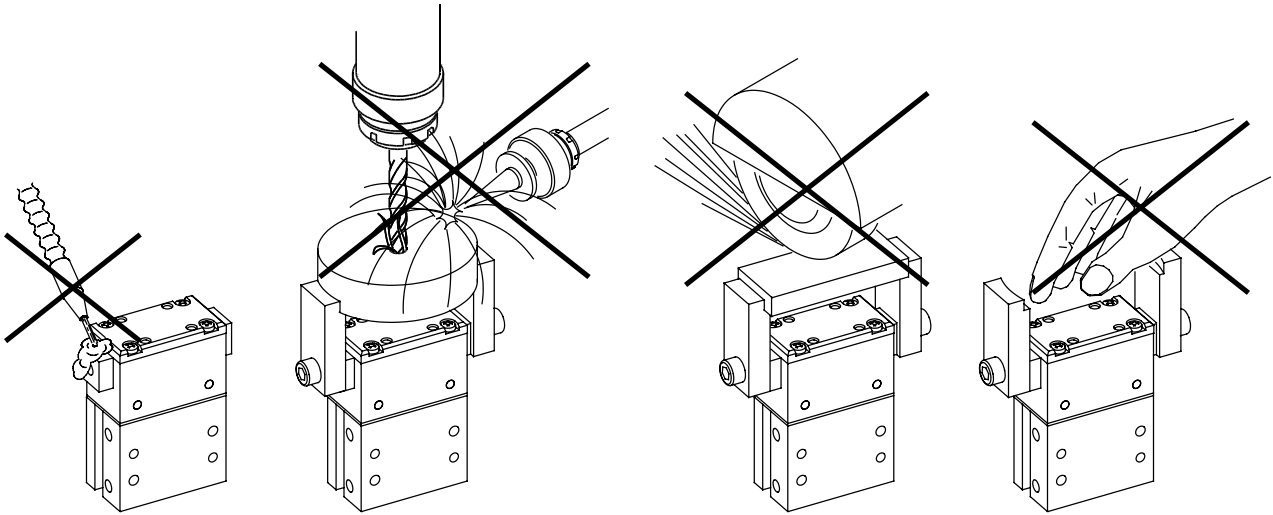


Caution

Avoid the gripper coming into contact with the following media: coolants which cause corrosion, grinding dust or glowing sparks.

Make sure that nobody can place his/her hand between the gripping tools and there are no objects in the path of the gripper.

The gripper must not run before the whole machine, on which it is mounted, complies with the laws or safety norms of your country.

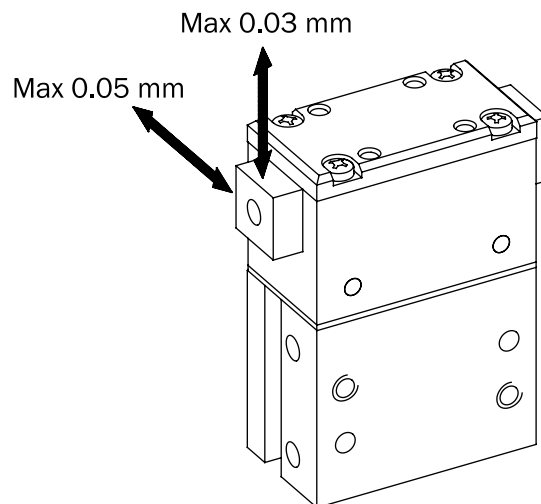


Maintenance

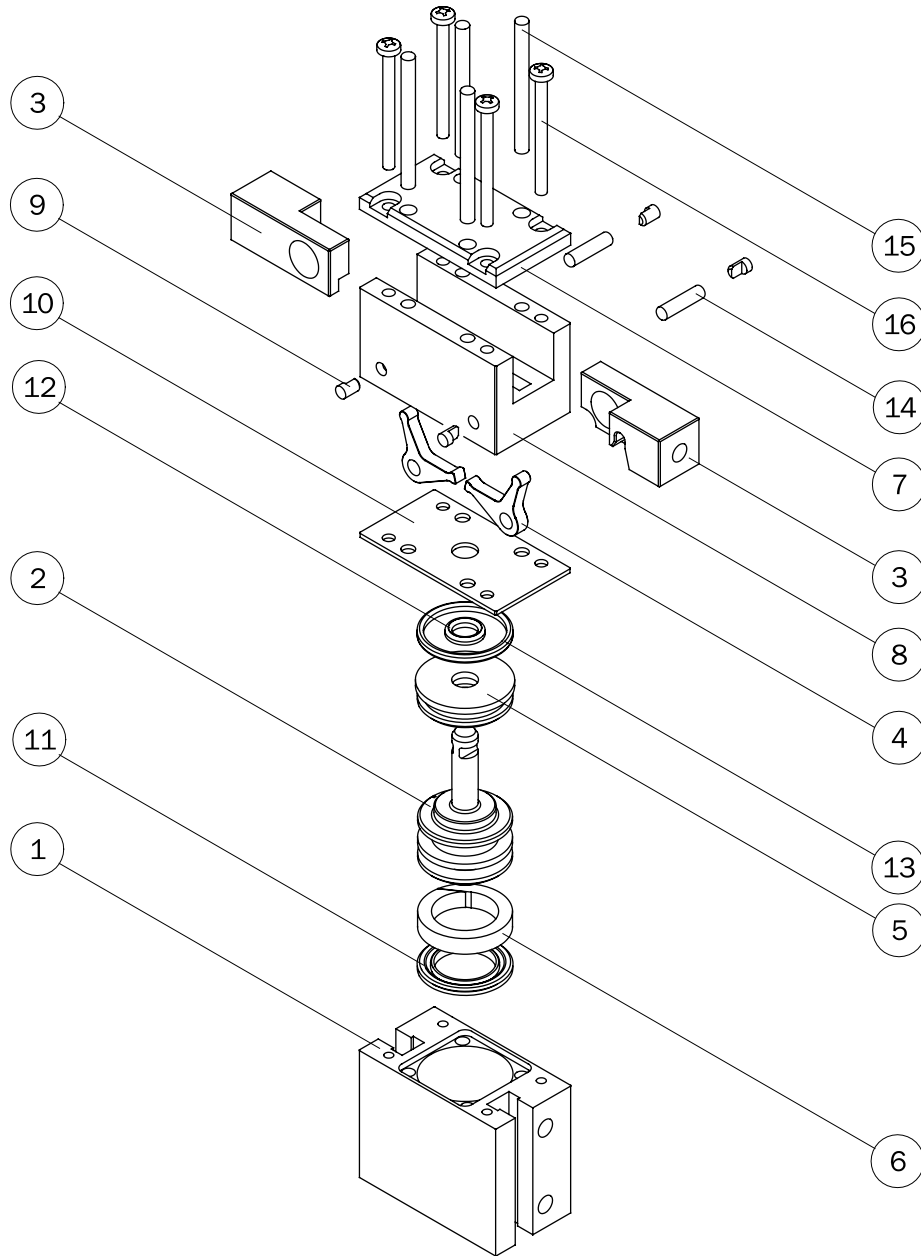
Grease the gripper after 30 million cycles with:

- BERULUB FG-H 2 SL
(Lubricant NSF H1 Registration No. 135919).

The figure below shows the jaw backlash.



Part list



| | | HS-2012 | HS-2518 | |
|----|-----------------|--------------------------------|---------------------------------|----|
| 1 | Gripper housing | HS-2012-1 | HS-2518-1 | 1 |
| 2 | Piston | HS-2012-2 | HS-2518-2 | 2 |
| 3 | Jaw | HS-2012-3 | XPM-26-3 | 3 |
| 4 | Lever | HS-2012-4 | XPM-26-6 | 4 |
| 5 | Flange | XP-20-3 | XP-25-12 | 5 |
| 6 | Magnet | XP-20-5 | PS-0025-P07 | 6 |
| 7 | Closing plate | XP-16-5 | XP-25-5 | 7 |
| 8 | Jaw holder | XP-16-8 | XP-25-8 | 8 |
| 9 | Plug | XP-16-11 | XP-25-11 | 9 |
| 10 | Spacer | XP-16-10 | XP-25-10 | 10 |
| 11 | Dynamic gasket | GUAR-040P (20x13x2.5) | GUAR-003M (25x18x2.4) | 11 |
| 12 | O-RING gasket | GUAR-011 (Ø1.78x5.28) | GUAR-012 (Ø1.78x6.75) | 12 |
| 13 | O-RING gasket | GUAR-076 (Ø1.78x17.17) | GUAR-008 (Ø1.78x23.52) | 13 |
| 14 | Dowel pin | SPINA-022 (Ø3x12 mm DIN6325) | SPINA-014 (Ø4x16 mm DIN6325) | 14 |
| 15 | Dowel pin | SPINA-003 (Ø3x33.5 mm DIN5402) | SPINA-004N (Ø4x39.8 mm DIN5402) | 15 |
| 16 | Screw | VITE-099 (M2.5x30 mm DIN7985A) | VITE-072 (M4x40 mm DIN7985A) | 16 |