

Mechanical Feedthroughs

Rotary Feedthroughs with
Magnetofluid Sealing



Rotary Feedthroughs with
Magnetically Linked Drive



Rotary-Linear Feedthroughs
and Transfer Systems



Linear Translators
and Aligners



Y, XY and XYZ Translators



Rotary Feedthroughs with Magnetofluid Sealing

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Rotary Feedthroughs with Magnetically Linked Drive

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Y, XY, XYZ Translators

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Introduction

VACOM's rotary feedthroughs with magnetofluid sealing are delivered by RIGAKU, a leading manufacturer of these products. They stand out especially due to the following properties:

- Large transmission torque
- No backlash
- Appropriate for rough, fine and high vacuum
- High pressure capacity
- High reliability due to leak-free operation
- Very low magnetic leakage
- Maintenance-free construction
- Long-term maintenance
- Up to 15,000 revolutions / minute
- Manufacturing of customised solutions

Functional principle

Unlike the conventional rotary feedthroughs with elastomer or bellow seal, a magnetic fluid is used as the dynamic seal that fills the gap between the moving shaft and its stationary housing. This liquid o-ring seal is held in place by powerful ring magnets without causing friction. This will result in no wearing or minimal heat generation so that long service life and high reliability are assured. The feedthroughs withstand differential pressures of above 2.5 bar. They have very low leak rates of up to 10^{-11} mbar l / s (He) or less and are absolutely vacuum suitable. They reach a rotational speed up to several thousand revolutions per minute. RIGAKU's rotary feedthroughs have already proven long life and reliability by its use as components of high power x-ray generators and semiconductor process equipment. Besides standard examples customised solutions are available.

Magnet configuration RMS series

The standard feedthroughs of the RMS Series include 4 antipole ring magnets with the pole position: NS-SN-NS-SN. This alignment creates an especially strong field strength at the pole shoes which generate low external stray fields. Milled circular grooves are located at the pole shoes' inside, facing the shaft. The shaft itself is not weakened by grooves or the like. A strong magnetic field is concentrated in the gap between the magnet and the shaft, forming the magnetofluid into liquid o-rings between the grooves (see figure below) due to this construction. A pressure stage is created between every two of these o-rings (see figure 1). Besides the very good leakage properties this construction has another advantage, to withstand high differential pressures with few stages. Furthermore there evolves only minimal frictional heat due to the relatively big gap between magnet and shaft, as well as the low persistent forces of the magnetofluid. This also results in minimal maintenance requirements.

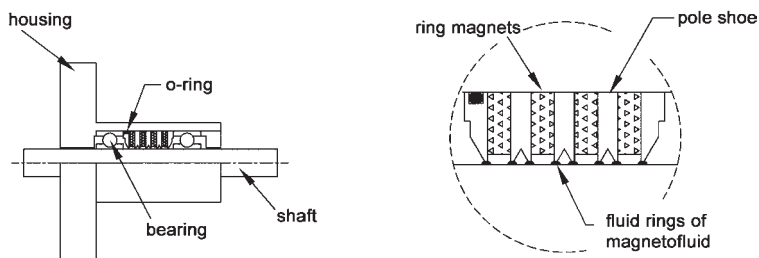


Figure 1

All dimensions in mm, when nothing else is indicated.

Introduction

Magnet alignment SUPERSEAL series

The SUPERSEAL series has also an antipole alignment of the ring magnets. But there are only two ring magnets applied. The shaft itself serves as a pole shoe to support the ring magnets and the grooves for the sealing magnetofluid. The shaft's diameter is enlarged at the sealing area and designed to serve this purpose (see figure 2). This construction is simpler and cheaper. However, it still has the same advantages concerning pressure capacity, leakage and service life as the RMS series. Furthermore, it is possible to do set static O-ring seals aside.

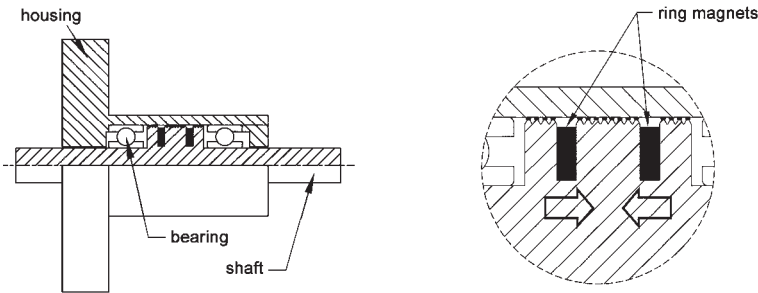


Figure 2

Temperature dependency

Because the magnetofluid is a liquid, the operating temperature is an important parameter for the usage of rotary feedthroughs.

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A non-stop operation is possible up to a temperature of 60 °C. The use of water-cooled feedthroughs is recommended at higher temperatures. Furthermore the usage of temperature resistant carrier oils for the magnetofluid, such as PFPE, becomes necessary. Figure 3 allows a rough estimation of the point, when water cooling is recommended. Please contact your customer adviser for further information.

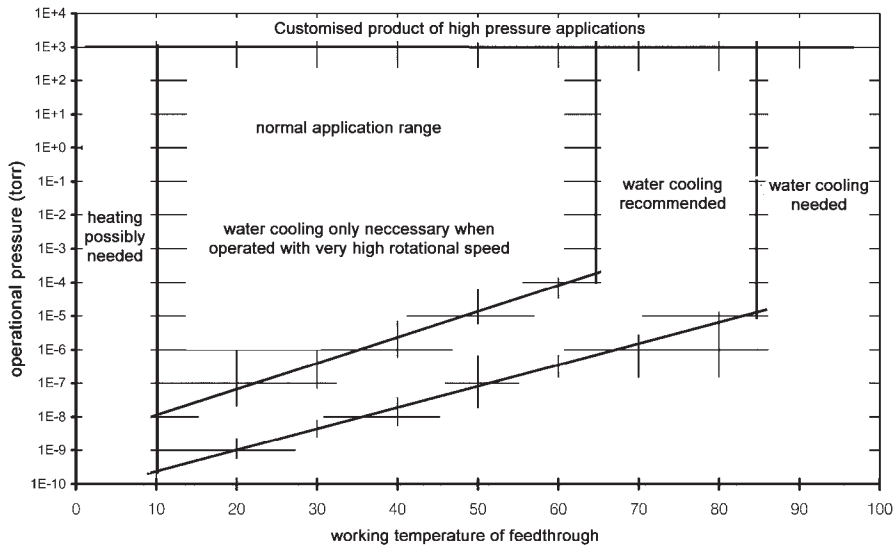


Figure 3

Rotary Feedthroughs with Magnetofluid Sealing

SUPERSEAL Series

Simple rotary feedthrough with bulkhead fitting for wall fastening, with KF or CF flange.



- No internal o-ring seals
- Very low magnetic stray fields
- No magnets inside vacuum
- Rugged stainless steel shafts Ø 6 mm or Ø 8 mm
- Revolution 5000 RPM without load
- Pressure-resistant up to 2.5 bar differential pressure
- Insensitive to external magnetic fields (> 500 Gauss)
- Magnetofluid: synthetic oil or PFPE

Technical Data

- Transmittable torque
 - shaft Ø 6 mm 5.65 Nm
 - shaft Ø 8 mm 18 Nm
- Max. revolution (loadfree)
 - synthetic oil 5000 RPM
 - PFPE 2500 RPM
- Static friction resistance
 - synthetic oil 7.8 Ncm
 - PFPE 14.2 Ncm
- Rotary friction resistance (100 RPM)
 - synthetic oil 4.3 Ncm
 - PFPE 15.6 Ncm
- Vacuum area
 - synthetic oil up to 10⁻⁸ mbar
 - PFPE up to 10⁻⁹ mbar
- Max. operating temperature
 - synthetic oil 60 °C
 - PFPE 100 °C
- Vapour pressure magnetofluid
 - synthetic oil 10⁻¹⁰ mbar
 - PFPE 10⁻¹² mbar
- Max. pressure difference 2.5 bar
- Helium leakage rate < 5 x 10⁻⁹ mbar l / s
- Material
 - housing/shaft stainless steel 17-4 PH
 - bearing grease Fomblin / Krytox blend
- Vapour pressure grease lubricant 10⁻¹³ mbar
- Max. bearing load (static) 138 kg
- Vacuum side arbitrarily

| Order code | Vacuum connection | Shaft diameter (mm) | Magnetofluid bearing oil |
|--------------|-------------------|---------------------|--------------------------|
| 10C-26100900 | DN40CF | 8 | synthetic oil |
| 10C-26101100 | DN25KF | 8 | synthetic oil |
| 10C-26101400 | DN40CF | 6 | synthetic oil |
| 10C-26101300 | DN25KF | 6 | synthetic oil |
| 10C-26101000 | M26 | 8 | synthetic oil |
| 10C-26101200 | M26 | 6 | synthetic oil |
| 10C-26100902 | DN40CF | 8 | PFPE |
| 10C-26101102 | DN25KF | 8 | PFPE |
| 10C-26101402 | DN40CF | 6 | PFPE |
| 10C-26101302 | DN25KF | 6 | PFPE |
| 10C-26101002 | M26 | 8 | PFPE |
| 10C-26101202 | M26 | 6 | PFPE |

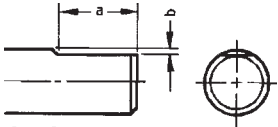
Rotary Feedthroughs with Magnetofluid Sealing

RMS Series

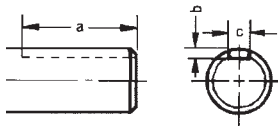
Standard feedthroughs for a large range of applications in production, as well as in research and development.



Shaft type K



Shaft type L



Shaft type M

- Shaft ball bearings on both sides of the magnetofluid sealing
- Transmission of large torques
- Very high revolutions
- Various vacuum connections
- Robust and long-lasting
- Construction with water cooling (optional)
- Construction with a hollow shaft (optional)

Technical data

- | | |
|----------------------------|--|
| ■ Vacuum range | < 10 ⁻⁸ mbar |
| ■ Operating temperature | 0 to 100 °C (without cooling max. 60 °C) |
| ■ Differential pressure | > 2.5 bar |
| ■ He-leakage rate | < 10 ⁻¹¹ mbar l / s |
| ■ Material housing | stainless steel type 303 |
| ■ Material shaft | stainless steel type 630 |
| ■ Material pole shoes | stainless steel type 630 |
| ■ Ball bearing greasing | |
| exposed to vacuum | high vacuum grease |
| exposed to atmosphere | grease with added anticorrosive |
| ■ Magnetofluid bearing oil | |
| standard | synthetic oil |
| reactive gases | PFPE |
| high temperature | PFPE |
| ■ Material o-rings | FPM (included in shipment) |
| ■ Water cooling | |
| flow | 1 to 4 l / min |
| pressure | 3 bar |
| water temperature | 25 °C |
| connection | thread Rc 1/8" (2x or 4x) |

Option hollow shaft (HS)

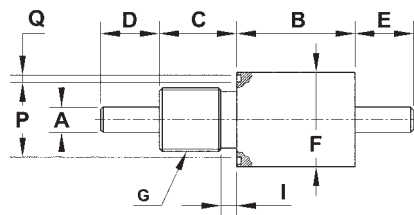
The models of the RMS series with a hollow shaft (HS) can be assembled with shafts of non-magnetic materials and special shafts (tubes, drive shafts or the like). The magnetofluid sealed area of the RMS-HS series is situated between a cylindrical hull (called hollow shaft) and the external housing. The hollow shaft and the housing can be turned in the opposite direction. The shaft that is actually going to be turned, is inserted accurately through the hollow shaft. Two static O-ring seals inside of the hollow shaft connect it with the shaft and seal the gap vacuum tight. If the shaft is turned, the hollow shaft turns as well. You can protect the shaft and the hollow shaft from distortions or displacements by means of a clamp (optional).

Rotary Feedthroughs with Magnetofluid Sealing

RMS-BS / RMS-LS Series

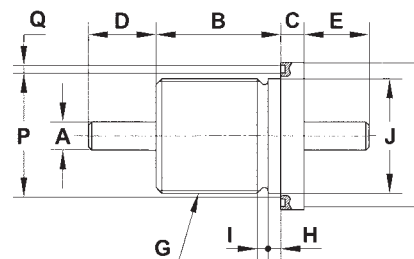
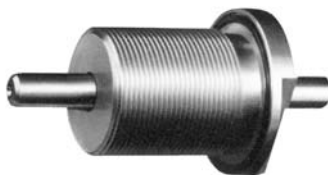
- RMS-BS series with housing exposed to atmosphere
- RMS-LS series with housing exposed to vacuum
- O-ring groove on the front of the housing
- Including O-ring seal, screw nut and washer

Rotary feedthroughs for wall fastening



| Model no. | Order code | A | Tolerance to A | B | C | D | E | F | G | I | P | Q | Shaft shape* | a | b | c | Tolerance to C | Max. revolution (RPM) |
|-----------|---------------|----|------------------|----|----|------|----|----|------------|-----|----|-----|--------------|----|-----|---|----------------|-----------------------|
| BS-5 | 10C-9020-G010 | 5 | -0.010 -0.022 | 32 | 6 | 12.5 | 15 | 16 | M8 x 1 | 1.5 | 10 | 2.1 | K | - | - | - | - | 15,000 |
| BS-6 | 10C-9020-G020 | 6 | -0.010 -0.022 | 42 | 10 | 15 | 15 | 28 | M12 x 1.75 | 2 | 18 | 2.1 | L | 10 | 0.5 | - | - | 15,000 |
| BS-10 | 10C-9020-G030 | 10 | -0.013 -0.028 | 52 | 30 | 23 | 23 | 38 | M25 x 1.5 | 3 | 30 | 2.7 | M | 20 | 1.8 | 3 | +0.025 0 | 12,000 |
| BS-20 | 10C-9020-G040 | 20 | -0.020 -0.041 | 60 | 34 | 36 | 36 | 54 | M40 x 1.5 | 3 | 42 | 2.7 | M | 32 | 3.5 | 6 | +0.030 0 | 7,000 |

* For further information for each individual shaft shape please see page 8-7.



| Model no. | Order code | A | Tolerance to A | B | C | D | E | F | G | H | I | J | Tolerance to J | P | Q | Shaft shape* | a | b | c | Tolerance to C | Max. revolution (RPM) |
|-----------|---------------|----|------------------|----|----|----|----|----|-----------|---|---|---|----------------|----|-----|--------------|----|-----|---|----------------|-----------------------|
| LS-5 | 10C-9020-M010 | 5 | -0.010 -0.022 | 26 | 6 | 15 | 15 | 28 | M18 x 1.5 | 4 | 1 | 8 | 0 -0.2 | 20 | 2.1 | K | - | - | - | - | 15,000 |
| LS-6 | 10C-9020-M020 | 6 | -0.010 -0.022 | 40 | 8 | 15 | 15 | 42 | M28 x 2 | 6 | 3 | 8 | 0 -0.2 | 32 | 2.7 | L | 10 | 0.5 | - | - | 15,000 |
| LS-10 | 10C-9020-M030 | 10 | -0.013 -0.028 | 44 | 8 | 23 | 23 | 48 | M36 x 1.5 | 6 | 3 | 6 | 0 -0.2 | 40 | 2.7 | M | 20 | 1.8 | 3 | +0.025 0 | 12,000 |
| LS-20 | 10C-9020-M040 | 12 | -0.016 -0.034 | 54 | 10 | 30 | 30 | 58 | M45 x 1.5 | 6 | 3 | 5 | 0 -0.2 | 50 | 2.7 | M | 20 | 2.5 | 4 | +0.030 0 | 7,000 |

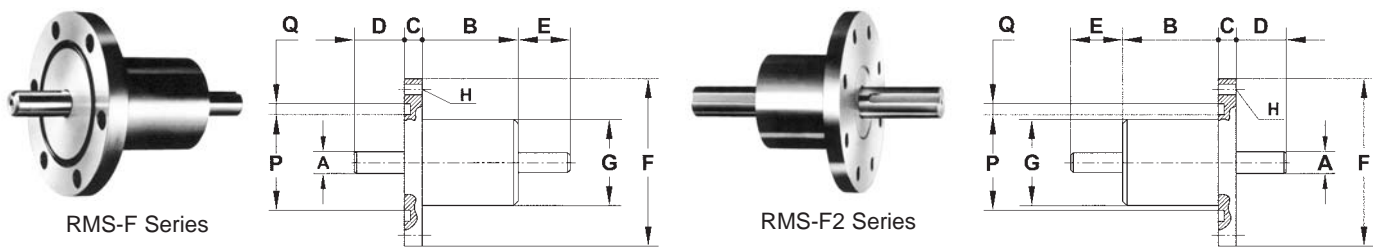
*For further information for each individual shaft shape please see page 8-7.

Rotary Feedthroughs with Magnetofluid Sealing

RMS-F1 / RMS-F2 Series

- RMS-F1 series with housing exposed to atmosphere
- RMS-F2 series with housing exposed to vacuum
- Flange with through holes and O-ring groove
- Including O-ring seal

Rotary feedthroughs with flange



| Model no. | Order code | A | Tolerance to A | B | C | D | E | F | G | H | P | Q | Max. torque (Nm) | Shaft shape* | a | b | c | Tolerance to C | Max. revolution (RPM) |
|-----------|---------------|----|------------------|----|----|----|----|-----|----|--------------------|----|-----|------------------|--------------|----|-----|----|----------------|-----------------------|
| F1-5 | 10C-9020-N020 | 5 | -0.010 -0.022 | 26 | 6 | 15 | 15 | 36 | 16 | 6 - Ø4.3 PD28 | 18 | 2.1 | 1 | K | - | - | - | - | 15,000 |
| F1-6 | 10C-9020-J020 | 6 | -0.010 -0.022 | 40 | 8 | 15 | 15 | 52 | 28 | 6 - Ø4.5 PD40 | 24 | 2.7 | 1.6 | L | 10 | 0.5 | - | - | 15,000 |
| F1-10 | 10C-9020-J030 | 10 | -0.013 -0.028 | 44 | 8 | 23 | 23 | 70 | 36 | 6 - Ø6.7 PD58.7 | 42 | 2.7 | 8 | M | 20 | 1.8 | 3 | +0.025 | 12,000 |
| F1-12 | 10C-9020-J040 | 12 | -0.016 -0.034 | 54 | 10 | 40 | 30 | 80 | 40 | 6 - Ø7.0 PD65 | 45 | 2.7 | 13 | M | 25 | 2.5 | 4 | +0.030 | 10,000 |
| F1-20 | 10C-9020-J050 | 20 | -0.020 -0.041 | 52 | 10 | 36 | 36 | 114 | 60 | 8 - Ø8.5 PD92.2 | 70 | 2.7 | 60 | M | 32 | 3.5 | 6 | +0.030 | 7,000 |
| F1-30 | 10C-9020-J060 | 30 | -0.020 -0.041 | 68 | 12 | 50 | 50 | 114 | 68 | 8 - Ø8.5 PD92.2 | 70 | 2.7 | 210 | M | 35 | 4 | 8 | +0.036 | 6,000 |
| F1-40 | 10C-9020-J070 | 40 | -0.025 -0.050 | 75 | 15 | 60 | 60 | 140 | 84 | 8 - Ø11 PD115 | 90 | 2.7 | 500 | M | 40 | 5 | 12 | +0.043 | 4,000 |

* For further information about individual shaft forms please see page 8-7

| Model no. | Order code | A | Tolerance to A | B | C | D | E | F | G* | H | P | Q | Max. torque (Nm) | Shaft shape* | a | b | c | Tolerance to C | Max. revolution (RPM) |
|-----------|---------------|----|------------------|----|----|----|----|-----|----|--------------------|----|-----|------------------|--------------|----|-----|----|----------------|-----------------------|
| F2-5 | 10C-9020-K010 | 5 | -0.010 -0.022 | 26 | 6 | 15 | 15 | 36 | 16 | 6 - Ø4.3 PD28 | 18 | 2.1 | 1 | K | - | - | - | - | 15,000 |
| F2-6 | 10C-9020-K020 | 6 | -0.010 -0.022 | 40 | 8 | 15 | 15 | 52 | 28 | 6 - Ø4.5 PD43 | 30 | 2.7 | 1.6 | L | 10 | 0.5 | - | - | 15,000 |
| F2-10 | 10C-9020-K030 | 10 | -0.013 -0.028 | 44 | 8 | 23 | 23 | 70 | 36 | 6 - Ø6.7 PD58.7 | 42 | 2.7 | 8 | M | 20 | 1.8 | 3 | +0.025 | 12,000 |
| F2-12 | 10C-9020-K040 | 12 | -0.016 -0.034 | 54 | 40 | 30 | 30 | 80 | 40 | 6 - Ø7.0 PD65 | 45 | 2.7 | 13 | M | 25 | 2.5 | 4 | +0.030 | 10,000 |
| F2-20 | 10C-9020-K050 | 20 | -0.020 -0.041 | 52 | 10 | 36 | 36 | 114 | 60 | 8 - Ø8.5 PD92.2 | 70 | 2.7 | 60 | M | 32 | 3.5 | 6 | +0.030 | 7,000 |
| F2-30 | 10C-9020-K060 | 30 | -0.020 -0.041 | 68 | 12 | 50 | 50 | 114 | 68 | 8 - Ø8.5 PD92.2 | 70 | 2.7 | 210 | M | 35 | 4 | 8 | +0.036 | 6,000 |
| F2-40 | 10C-9020-K070 | 40 | -0.025 -0.050 | 75 | 15 | 60 | 60 | 140 | 84 | 8 - Ø11 PD115 | 90 | 2.7 | 500 | M | 40 | 5 | 12 | +0.043 | 4,000 |

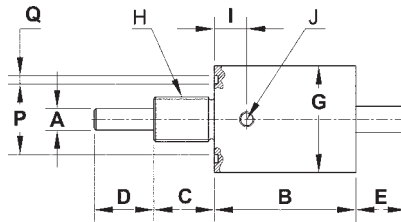
*For further information for each individual shaft shape please see page 8-7.

Rotary Feedthroughs with Magnetofluid Sealing

RMS-F1-W / RMS-BS-W Series

- Housing exposed to atmosphere
- RMS-F1-W series with flange and through boring and O-ring grooves
- RMS-BS-W series with thread for wall fastening and O-ring grooves at the front, including screw nut and washer
- Including O-ring seal

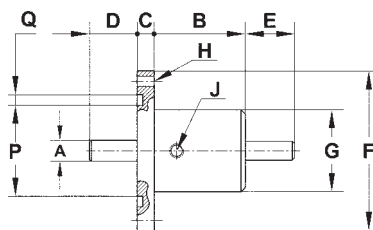
Rotary feedthroughs with water cooling and connection for wall fastening or with flange



| Model no. | Order code | A | Tolerance to A | B | C | D | E | G | H | I | J | P | Q | Max. torque (Nm) | Shaft shape* | a | b | c | max. revolution (RPM) |
|-----------|---------------|----|------------------|----|----|----|----|----|-------------|----|----------|----|-----|------------------|--------------|----|-----|---|-----------------------|
| BS-12-W | 10C-9020-H010 | 12 | -0.016 -0.034 | 90 | 38 | 33 | 38 | 60 | M25 P1.5 | 29 | 2 -Rc1/8 | 40 | 5.0 | 13 | M | 30 | 2.5 | 4 | 10,000 |
| Bs-20-W | 10C-9020-H020 | 20 | -0.020 -0.040 | 90 | 38 | 36 | 36 | 62 | M40 P1.5 | 32 | 2 -Rc1/8 | 50 | 4.1 | 60 | M | 32 | 3.5 | 6 | 7,000 |

Tolerance to C: +0.03/0

*For further information for each individual shaft shape please see page 8-7.



| Model no. | Order code | A | Tolerance to A | B | C | D | E | F | G | H | I | J | P | Q | Max. torque (Nm) | Shaft shape* | a | b | c | Max. revolution (RPM) |
|-----------|---------------|----|------------------|----|----|----|----|-----|----|--------------------|----|----------|----|-----|------------------|--------------|----|-----|---|-----------------------|
| F1-6-W | 10C-9020-L020 | 6 | -0.010 -0.022 | 48 | 6 | 30 | 20 | 60 | 36 | 4 - Ø5.4 PD50 | 15 | 2 -Rc1/8 | 30 | 2.7 | 1.6 | L | 10 | 0.5 | - | 15,000 |
| F1-10-W | 10C-9020-L030 | 10 | -0.013 -0.028 | 62 | 8 | 50 | 50 | 70 | 46 | 6 - Ø6.7 PD58.7 | 18 | 2 -Rc1/8 | 40 | 5.0 | 8 | M | 20 | 1.8 | 3 | 12,000 |
| F1-12-W | 10C-9020-L040 | 12 | -0.016 -0.034 | 82 | 8 | 71 | 37 | 88 | 60 | 4 - Ø6.5 PD74 | 21 | 2 -Rc1/8 | 40 | 5.0 | 13 | M | 30 | 2.5 | 4 | 10,000 |
| F1-20-W | 10C-9020-L050 | 20 | -0.020 -0.041 | 78 | 10 | 59 | 36 | 114 | 62 | 8 - Ø8.5 PD92.2 | 24 | 2 -Rc1/8 | 70 | 5.0 | 60 | M | 32 | 3.5 | 6 | 7,000 |

Tolerance to C: +0.03/0

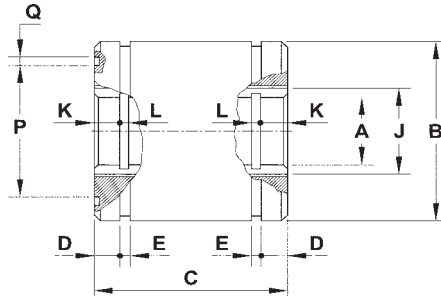
*For further information for each individual shaft shape please see page 8-7.

Rotary Feedthroughs with Magnetofluid Sealing

RMS-HS / RMS-HS-C Series

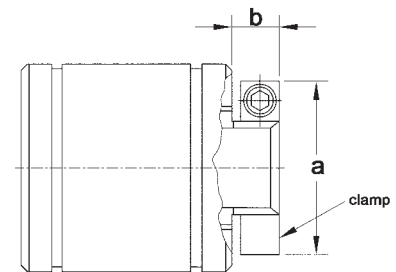
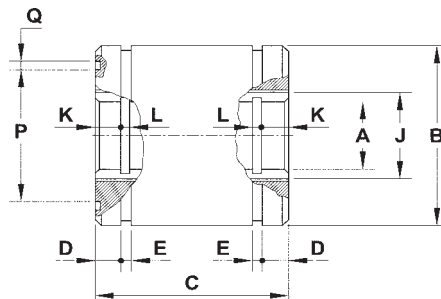
- Housing exposed to atmosphere
- O-ring groove on the front, exposed to vacuum
- Construction with or without safety clamp
- Including O-ring seal

Rotary feedthroughs with hollow shaft



| Model no. | Order code | A | Tolerance to A | B | Tolerance to B | C | D | E | J | K | L | P | Q | Max. revolution (RPM) |
|-----------|---------------|----|----------------|-----|-----------------|----|-----|-----|----|-----|-----|-----|-----|-----------------------|
| HS-10 | 10C-9020-A010 | 10 | +0.015 | 40 | -0.009 / -0.025 | 50 | 7.5 | 2.7 | 17 | 7.5 | 2.1 | 24 | 2.7 | 6,000 |
| HS-12 | 10C-9020-A020 | 12 | +0.018 | 40 | -0.009 / -0.025 | 50 | 7.5 | 2.7 | 17 | 7.5 | 2.1 | 24 | 2.7 | 6,000 |
| HS-20 | 10C-9020-A030 | 20 | +0.021 | 60 | -0.010 / -0.029 | 64 | 9 | 2.7 | 28 | 10 | 2.1 | 44 | 2.7 | 4,500 |
| HS-24 | 10C-9020-A040 | 24 | +0.021 | 63 | -0.010 / -0.029 | 64 | 9 | 2.7 | 30 | 9 | 2.7 | 46 | 2.7 | 4,500 |
| HS-32 | 10C-9020-A050 | 32 | +0.025 | 73 | -0.010 / -0.029 | 64 | 9 | 2.7 | 40 | 9 | 2.7 | 50 | 2.7 | 3,600 |
| HS-38 | 10C-9020-A060 | 38 | +0.025 | 83 | -0.012 / -0.034 | 64 | 9 | 2.7 | 50 | 9 | 2.7 | 60 | 2.7 | 3,000 |
| HS-40 | 10C-9020-A070 | 40 | +0.025 | 90 | -0.012 / -0.034 | 64 | 9 | 2.7 | 50 | 9 | 2.7 | 60 | 2.7 | 3,000 |
| HS-50 | 10C-9020-A080 | 50 | +0.025 | 95 | -0.012 / -0.034 | 82 | 10 | 2.7 | 60 | 10 | 2.7 | 80 | 2.7 | 2,500 |
| HS-75 | 10C-9020-A090 | 75 | +0.030 | 126 | -0.014 / -0.039 | 92 | 10 | 2.7 | 90 | 10 | 2.7 | 100 | 2.7 | 1,800 |

Rotary feedthroughs with hollow shaft and safety clamp



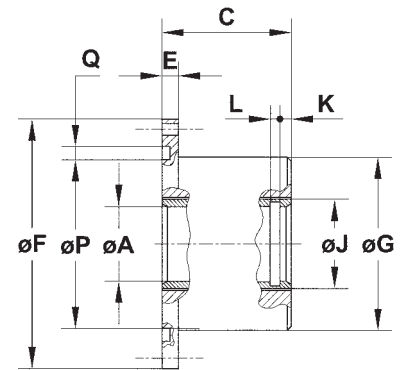
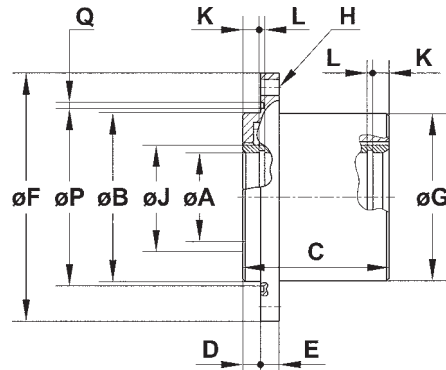
| Model no. | Order code | A | Tolerance to A | B | Tolerance to B | C | D | E | J | K | L | P | Q | Max. revolution (RPM) | a | b |
|-----------|---------------|----|----------------|-----|-----------------|----|-----|-----|----|-----|-----|-----|-----|-----------------------|-----|----|
| HS-10-C | 10C-9020-B010 | 10 | +0.015 | 40 | -0.009 / -0.025 | 50 | 7.5 | 2.7 | 17 | 7.5 | 2.1 | 24 | 2.7 | 6,000 | 36 | 12 |
| HS-12-C | 10C-9020-B020 | 12 | +0.018 | 40 | -0.009 / -0.025 | 50 | 7.5 | 2.7 | 17 | 7.5 | 2.1 | 24 | 2.7 | 6,000 | 38 | 12 |
| HS-20-C | 10C-9020-B030 | 20 | +0.021 | 60 | -0.010 / -0.029 | 64 | 9 | 2.7 | 28 | 10 | 2.1 | 44 | 2.7 | 4,500 | 48 | 15 |
| HS-24-C | 10C-9020-B040 | 24 | +0.021 | 63 | -0.010 / -0.029 | 64 | 9 | 2.7 | 30 | 9 | 2.7 | 46 | 2.7 | 4,500 | 52 | 15 |
| HS-32-C | 10C-9020-B050 | 32 | +0.025 | 73 | -0.010 / -0.029 | 64 | 9 | 2.7 | 40 | 9 | 2.7 | 50 | 2.7 | 3,600 | 58 | 15 |
| HS-38-C | 10C-9020-B060 | 38 | +0.025 | 83 | -0.012 / -0.034 | 64 | 9 | 2.7 | 50 | 9 | 2.7 | 60 | 2.7 | 3,000 | 66 | 15 |
| HS-40-C | 10C-9020-B070 | 40 | +0.025 | 90 | -0.012 / -0.034 | 64 | 9 | 2.7 | 50 | 9 | 2.7 | 60 | 2.7 | 3,000 | 68 | 15 |
| HS-50-C | 10C-9020-B080 | 50 | +0.025 | 95 | -0.012 / -0.034 | 82 | 10 | 2.7 | 60 | 10 | 2.7 | 80 | 2.7 | 2,500 | 86 | 18 |
| HS-75-C | 10C-9020-B090 | 75 | +0.030 | 126 | -0.014 / -0.039 | 92 | 10 | 2.7 | 90 | 10 | 2.7 | 100 | 2.7 | 1,800 | 118 | 21 |

Rotary Feedthroughs with Magnetofluid Sealing

RMS-F1-HS / RMS-F1-HS-C Series

- Housing exposed to atmosphere
- Flange with through holes and O-ring groove
- Construction with or without safety clamp
- Including O-ring seal

Rotary feedthroughs with hollow shaft and flange

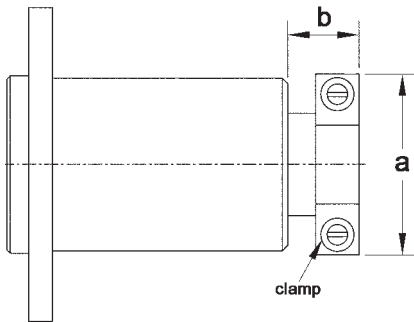


| Model no. | Order code | A | Tolerance to A | B | Tolerance to B | C | D | E | F | G | H | J | K | L | P | Q | Max. revolution (RPM) |
|-----------|---------------|----|----------------|-----|------------------|----|----|----|-----|-----|------------------|----|-----|-----|-----|-----|-----------------------|
| F1-HS-10 | 10C-9020-C010 | 10 | +0.018 0 | - | - | 50 | - | 8 | 70 | 42 | 6-Ø6.7 PD59.8 | 17 | 7.5 | 2.1 | 42 | 2.7 | 6,000 |
| F1-HS-12 | 10C-9020-C020 | 12 | +0.018 0 | - | - | 50 | - | 8 | 70 | 42 | 6-Ø6.7 PD59.8 | 17 | 7.5 | 2.1 | 42 | 2.7 | 6,000 |
| F1-HS-20 | 10C-9020-C030 | 20 | +0.021 0 | 62 | -0.010 -0.029 | 64 | 10 | 10 | 106 | 62 | 6-Ø7 PD90 | 28 | 10 | 2.1 | 70 | 2.7 | 4,500 |
| F1-HS-24 | 10C-9020-C040 | 24 | +0.021 0 | 63 | -0.010 -0.029 | 64 | 10 | 10 | 106 | 63 | 6-Ø7 PD90 | 30 | 9 | 2.7 | 70 | 2.7 | 4,500 |
| F1-HS-26 | 10C-9020-C050 | 26 | +0.021 0 | 70 | -0.010 -0.029 | 64 | 10 | 10 | 120 | 70 | 6-Ø9 PD100 | 32 | 9 | 2.7 | 75 | 4.1 | 4,000 |
| F1-HS-32 | 10C-9020-C060 | 32 | +0.025 0 | 73 | -0.010 -0.029 | 64 | 10 | 10 | 130 | 73 | 6-Ø9 PD110 | 40 | 9 | 2.7 | 85 | 4.1 | 3,000 |
| F1-HS-38 | 10C-9020-C070 | 38 | +0.025 0 | 83 | -0.036 -0.071 | 64 | 10 | 10 | 136 | 83 | 6-Ø9 PD114 | 50 | 9 | 2.7 | 90 | 2.7 | 3,000 |
| F1-HS-40 | 10C-9020-C080 | 40 | +0.025 0 | 83 | -0.036 -0.071 | 64 | 10 | 10 | 136 | 83 | 6-Ø9 PD114 | 50 | 9 | 2.7 | 90 | 2.7 | 3,000 |
| F1-HS-50 | 10C-9020-C090 | 50 | +0.025 0 | 95 | -0.012 -0.034 | 82 | 10 | 10 | 140 | 95 | 6-Ø9 PD124 | 60 | 10 | 2.7 | 100 | 2.7 | 2,500 |
| F1-HS-75 | 10C-9020-C100 | 75 | +0.025 0 | 126 | -0.014 -0.039 | 92 | 10 | 15 | 180 | 126 | 6-Ø11 PD160 | 90 | 10 | 2.7 | 135 | 2.7 | 1,800 |

Rotary Feedthroughs with Magnetofluid Sealing

RMS-F1-HS / RMS-F1-HS-C Series

Rotary feedthroughs with hollow shaft, flange and safety clamp



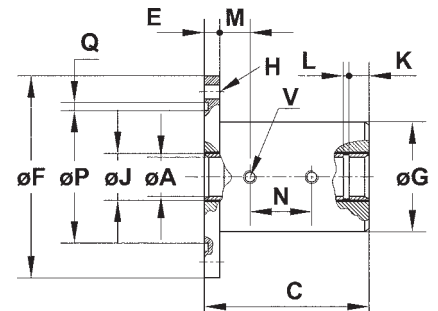
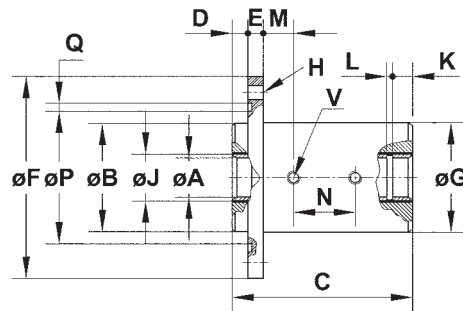
| Model no. | Order code | A | Tolerance to A | B | Tolerance to B | C | D | E | F | G | H | J | K | L | P | Q | Max. revolution (RPM) | a | b |
|------------|---------------|----|----------------|-----|------------------|----|----|----|-----|-----|------------------|----|-----|-----|-----|-----|-----------------------|-----|----|
| F1-HS-10-C | 10C-9020-D010 | 10 | +0.018 0 | - | - | 50 | - | 8 | 70 | 42 | 6-Ø6.7 PD59.8 | 17 | 7.5 | 2.1 | 42 | 2.7 | 6,000 | 38 | 12 |
| F1-HS-12-C | 10C-9020-D020 | 12 | +0.018 0 | - | - | 50 | - | 8 | 70 | 42 | 6-Ø6.7 PD59.8 | 17 | 7.5 | 2.1 | 42 | 2.7 | 6,000 | 38 | 15 |
| F1-HS-20-C | 10C-9020-D030 | 20 | +0.021 0 | 62 | -0.010 -0.029 | 64 | 10 | 10 | 106 | 62 | 6-Ø7 PD90 | 28 | 10 | 2.1 | 70 | 2.7 | 4,500 | 48 | 15 |
| F1-HS-24-C | 10C-9020-D040 | 24 | +0.021 0 | 63 | -0.010 -0.029 | 64 | 10 | 10 | 106 | 63 | 6-Ø7 PD90 | 30 | 9 | 2.7 | 70 | 2.7 | 4,500 | 52 | 15 |
| F1-HS-26-C | 10C-9020-D050 | 26 | +0.021 0 | 70 | -0.010 -0.029 | 64 | 10 | 10 | 120 | 70 | 6-Ø9 PD100 | 32 | 9 | 2.7 | 75 | 4.1 | 4,000 | 52 | 15 |
| F1-HS-32-C | 10C-9020-D060 | 32 | +0.025 0 | 73 | -0.010 -0.029 | 64 | 10 | 10 | 130 | 73 | 6-Ø9 PD110 | 40 | 9 | 2.7 | 85 | 4.1 | 3,000 | 58 | 15 |
| F1-HS-38-C | 10C-9020-D070 | 38 | +0.025 0 | 83 | -0.036 -0.071 | 64 | 10 | 10 | 136 | 83 | 6-Ø9 PD114 | 50 | 9 | 2.7 | 90 | 2.7 | 3,000 | 66 | 15 |
| F1-HS-40-C | 10C-9020-D080 | 40 | +0.025 0 | 83 | -0.036 -0.071 | 64 | 10 | 10 | 136 | 83 | 6-Ø9 PD114 | 50 | 9 | 2.7 | 90 | 2.7 | 3,000 | 68 | 15 |
| F1-HS-50-C | 10C-9020-D090 | 50 | +0.025 0 | 95 | -0.012 -0.034 | 82 | 10 | 10 | 140 | 95 | 6-Ø9 PD124 | 60 | 10 | 2.7 | 100 | 2.7 | 2,500 | 86 | 18 |
| F1-HS-75-C | 10C-9020-D100 | 75 | +0.025 0 | 126 | -0.014 -0.039 | 92 | 10 | 15 | 180 | 126 | 6-Ø11 PD160 | 90 | 10 | 2.7 | 135 | 2.7 | 1,800 | 118 | 21 |

Rotary Feedthroughs with Magnetofluid Sealing

RMS-F1-HS-W / RMS-F1-HS-W-C Series

- Housing exposed to atmosphere
- Flange with through hole and O-ring groove
- Construction with or without safety clamp
- Including O-ring seal

Rotary feedthrough with hollow shaft, flange and water cooling



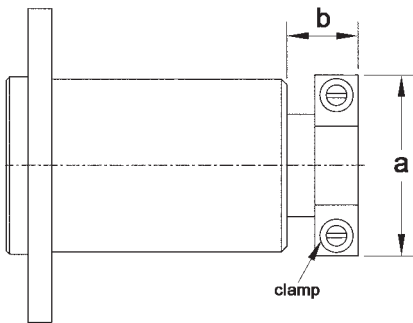
8

| Model no. | Order code | A | Tolerance to A | B | Tolerance to B | C | D | E | F | G | H | J | K | L | M | N | P | Q | V | Max. revolut. (RPM) |
|------------|---------------|----|----------------|-----|------------------|---------|----|----|-----|-----|-----------------|----|----|-----|----|----|-----|-----|-------------|---------------------|
| F1-HS-10-W | 10C-9020-E010 | 10 | +0.015 0 | - | - | 70 | - | 8 | 84 | 52 | 6-Ø6.5 PD70 | 17 | 7 | 2.1 | 19 | - | 50 | 2.7 | 2- Rc1/8 | 6,000 |
| F1-HS-12-W | 10C-9020-E020 | 12 | +0.018 0 | - | - | 70 | - | 8 | 84 | 52 | 6-Ø6.5 PD70 | 17 | 7 | 2.1 | 19 | - | 50 | 2.7 | 2- Rc1/8 | 6,000 |
| F1-HS-20-W | 10C-9020-E030 | 20 | +0.021 0 | 64 | -0.010 -0.029 | 10 5 | 10 | 10 | 116 | 64 | 4-Ø9 PD96 | 28 | 11 | 2.1 | 18 | - | 70 | 4.1 | 2- Rc1/8 | 6,000 |
| F1-HS-24-W | 10C-9020-E040 | 24 | +0.021 0 | 70 | -0.010 -0.029 | 10 5 | 10 | 10 | 120 | 76 | 4-Ø9 PD96 | 30 | 10 | 2.7 | 16 | 38 | 75 | 4.1 | 4- Rc1/8 | 4,000 |
| F1-HS-26-W | 10C-9020-E050 | 26 | +0.021 0 | 70 | -0.010 -0.029 | 116 | 10 | 10 | 130 | 76 | 4-Ø9 PD110 | 32 | 10 | 2.7 | 20 | 40 | 85 | 4.1 | 4- Rc1/8 | 4,000 |
| F1-HS-32-W | 10C-9020-E060 | 32 | +0.025 0 | 73 | -0.010 -0.029 | 116 | 10 | 10 | 130 | 80 | 6-Ø9 PD110 | 40 | 10 | 2.7 | 20 | 38 | 85 | 4.1 | 4- Rc1/8 | 3,600 |
| F1-HS-38-W | 10C-9020-E070 | 38 | +0.025 0 | - | - | 10 2 | - | 10 | 135 | 90 | 6-Ø8.5 PD114 | 50 | 10 | 2.7 | 23 | 37 | 80 | 4.1 | 4- Rc1/8 | 3,000 |
| F1-HS-40-W | 10C-9020-E080 | 40 | +0.025 0 | - | - | 10 2 | - | 10 | 135 | 90 | 6-Ø8.5 PD114 | 50 | 10 | 2.7 | 23 | 37 | 80 | 4.1 | 4- Rc1/8 | 3,000 |
| F1-HS-50-W | 10C-9020-E090 | 50 | +0.025 0 | 105 | -0.012 -0.034 | 110 | 10 | 10 | 155 | 105 | 6-Ø9 PD135 | 60 | 14 | 2.7 | 18 | 38 | 110 | 4.1 | 4- Rc1/8 | 2,500 |
| F1-HS-75-W | 10C-9020-E100 | 75 | +0.030 0 | 130 | -0.014 -0.039 | 110 | 10 | 12 | 178 | 130 | 6-Ø9 PD160 | 90 | 10 | 2.7 | 17 | 36 | 135 | 4.1 | 4- Rc1/8 | 1,800 |

Rotary Feedthroughs with Magnetofluid Sealing

RMS-F1-HS-W / RMS-F1-HS-W-C Series

Rotary feedthrough with hollow shaft, flange and water cooling



| Model no. | Order code | A | Tolerance to A | B | Tolerance to B | C | D | E | F | G | H | J | K | L | M | N | P | Q | V | a | b |
|--------------|---------------|----|----------------|-----|------------------|-----|----|----|-----|-----|-----------------|----|----|-----|----|----|-----|-----|---------|-----|----|
| F1-HS-10-W-C | 10C-9020-F010 | 10 | +0.015 0 | - | - | 70 | - | 8 | 84 | 52 | 6-Ø6.5 PD70 | 17 | 7 | 2.1 | 19 | - | 50 | 2.7 | 2-Rc1/8 | 36 | 12 |
| F1-HS-12-W-C | 10C-9020-F020 | 12 | +0.018 0 | - | - | 70 | - | 8 | 84 | 52 | 6-Ø6.5 PD70 | 17 | 7 | 2.1 | 19 | - | 50 | 2.7 | 2-Rc1/8 | 38 | 12 |
| F1-HS-20-W-C | 10C-9020-F030 | 20 | +0.021 0 | 64 | -0.010 -0.029 | 105 | 10 | 10 | 116 | 64 | 4-Ø9 PD96 | 28 | 11 | 2.1 | 18 | - | 70 | 4.1 | 2-Rc1/8 | 48 | 15 |
| F1-HS-24-W-C | 10C-9020-F040 | 24 | +0.021 0 | 70 | -0.010 -0.029 | 105 | 10 | 10 | 120 | 76 | 4-Ø9 PD96 | 30 | 10 | 2.7 | 16 | 38 | 75 | 4.1 | 4-Rc1/8 | 52 | 15 |
| F1-HS-26-W-C | 10C-9020-F050 | 26 | +0.021 0 | 70 | -0.010 -0.029 | 116 | 10 | 10 | 130 | 76 | 4-Ø9 PD110 | 32 | 10 | 2.7 | 20 | 40 | 85 | 4.1 | 4-Rc1/8 | 52 | 15 |
| F1-HS-32-W-C | 10C-9020-F060 | 32 | +0.025 0 | 73 | -0.010 -0.029 | 116 | 10 | 10 | 130 | 80 | 6-Ø9 PD110 | 40 | 10 | 2.7 | 20 | 38 | 85 | 4.1 | 4-Rc1/8 | 58 | 15 |
| F1-HS-38-W-C | 10C-9020-F070 | 38 | +0.025 0 | - | - | 102 | - | 10 | 135 | 90 | 6-Ø8.5 PD114 | 50 | 10 | 2.7 | 23 | 37 | 80 | 4.1 | 4-Rc1/8 | 66 | 15 |
| F1-HS-40-W-C | 10C-9020-F080 | 40 | +0.025 0 | - | - | 102 | - | 10 | 135 | 90 | 6-Ø8.5 PD114 | 50 | 10 | 2.7 | 23 | 37 | 80 | 4.1 | 4-Rc1/8 | 68 | 18 |
| F1-HS-50-W-C | 10C-9020-F090 | 50 | +0.025 0 | 105 | -0.012 -0.034 | 110 | 10 | 10 | 155 | 105 | 6-Ø9 PD135 | 60 | 14 | 2.7 | 18 | 38 | 110 | 4.1 | 4-Rc1/8 | 86 | 18 |
| F1-HS-75-W-C | 10C-9020-F100 | 75 | +0.030 0 | 130 | -0.014 -0.039 | 110 | 10 | 12 | 178 | 130 | 6-Ø9 PD160 | 90 | 10 | 2.7 | 17 | 36 | 135 | 4.1 | 4-Rc1/8 | 118 | 21 |

Rotary Feedthroughs with Magnetically Linked Drive

MagiDrive Series

Introduction

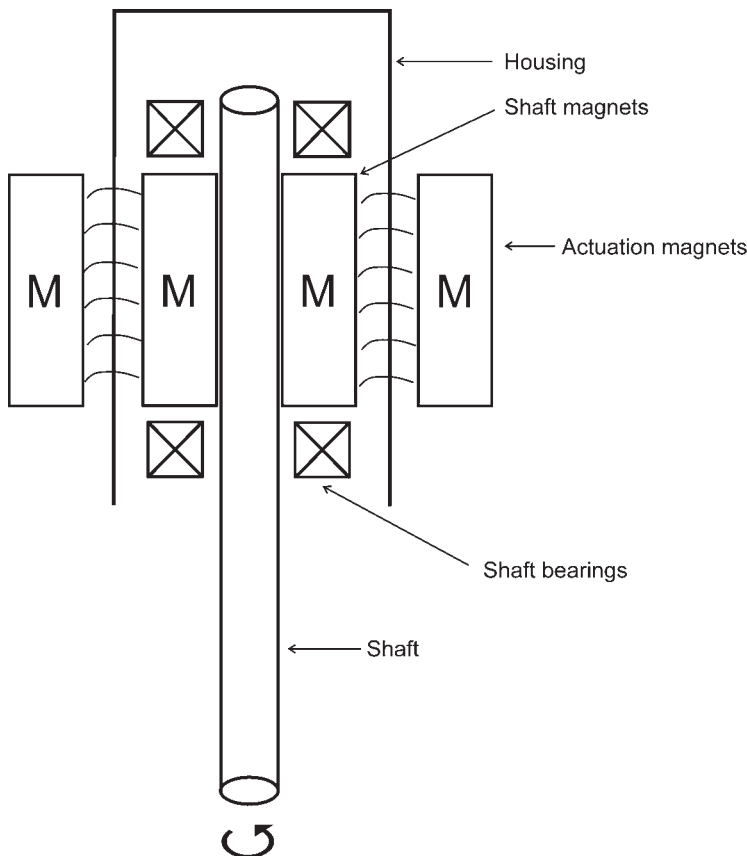
Rotary feedthroughs with magnetically linked drive are the optimal solution to transfer rotations into UHV systems. VACOM offers MagiDrive feedthroughs from the British expert UHV Design.

A rotary feedthrough with magnetically linked drive enables rotation to be transferred into a vacuum system without the need for mechanical connections. The actuated shaft is placed in a totally closed housing and is connected to the vacuum side only. The drive is placed outside of the housing and includes magnets. The magnetic field of the drive couples to the shaft through the wall of the housing. If the drive is moved, the shaft will be rotated too due to the magnetic coupling (see the schematic diagram).

MagiDrive Rotary feedthroughs have many advantages compared to other feedthroughs of similar construction. High power magnets of the latest materials are used for the feedthroughs. This causes very strong magnetic coupling with a very small torsion during rotation. The rotary feedthroughs are bakeable up to 250 °C with installed magnets. Only high-alloyed special steel is used for housings and shafts. The magnetic stray fields are very small. Due to the fact that the drive and the shaft are not mechanically connected there is no need for bellows and other flexible elements as for seals. Leakage at the actuator due to wear of connections or of gaskets is impossible.

Different bearing types are available for the vacuum side shaft bearing for special applications such as freedom in article or semiconductor processes. Numerous drive options - such as manual, pneumatic, motorized - are possible. For further information please see the following pages.

Schematic diagram



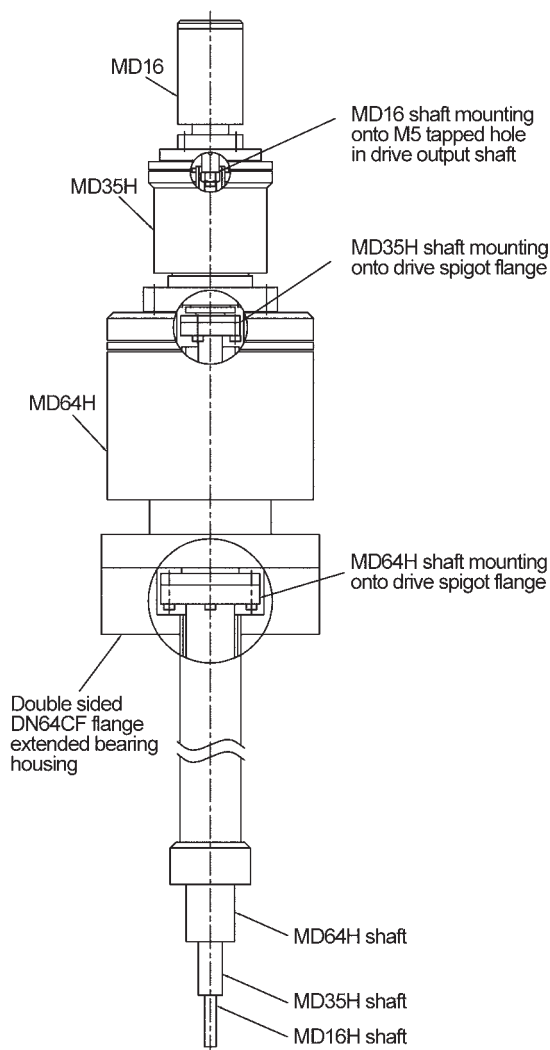
MagiDrive Series

MagiDrive with hollow shaft

MagiDrive feedthroughs of the types MD35H, MD64H and MD100H have an additional CF adapter on the drive end (rear of drive gear). This flange is fixed and does not rotate. The driving shafts of these rotary feedthroughs consist of a tube. Resulting in free passageway from the rear of the feedthrough to the vacuum side. This enables feedthroughs to be passed axially through the tube of the rotating shaft.

A further important feature is the stacking of up to four MagiDrive rotary feedthroughs. This enables to create up to four independently rotating axes. The stacking allows a simple solution for multi-motion requirements.

The free inner diameters of the shafts are \varnothing 12 mm for MD35H with a DN16CF rear flange, \varnothing 26mm for MD64H with DN40CF and for \varnothing 65 mm at MD100H with DN63CF mounted to the rear.



MagiDrive Series



- Magnets of high-performance materials
- Strong magnetic coupling through the wall of the actuator housing
- Housing machined from one piece
- No bellows
- No O-rings
- Complete UHV applicable
- Bakeable
- Low backlash and high precision at low loading or acceleration
- Magnetically shielded (standard)
- Numerous options
- Special constructions on request

Overview MagiDrive models

| Model | Vacuum connection | Max. torque |
|---------------|-------------------|-------------|
| MD10 | DN10CF | 0.18 Nm |
| MD16 | DN16CF | 0.45 Nm |
| MD19 | DN16CF | 0.56 Nm |
| MD20 | DN40CF | 0.45 Nm |
| MD21 | DN40CF | 0.56 Nm |
| MD25 | DN40CF | 2.4 Nm |
| MD35, MD35H | DN40CF | 4.5 Nm |
| MD64, MD64H | DN65CF | 10 Nm |
| MD100, MD100H | DN100CF | 25 Nm |



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Manual actuation

- T = manual with hand wheel (standard)
- F = friction brake for manual actuation
- B = retaining screw for manual actuation
- BF = retaining screw and friction control for manual actuation
- BF = retaining screw and friction control for manual actuation
- CF = hand wheel with degree scaling (5° alternatively 1° graduation) and friction control for manual actuation
- CB = hand wheel with degree scaling (5° alternatively 1° graduation) and retaining screw for manual actuation
- K = annulus with knurled end cap
- P = annulus with timing pulley for individual motor installation

Pneumatic actuation

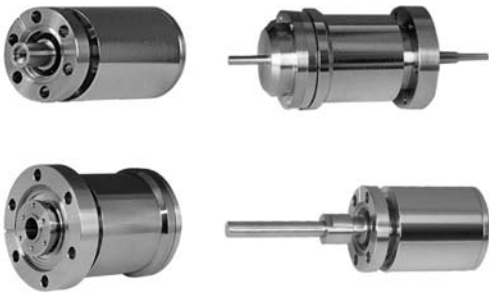
- RA = pneumatic drive, adjustable 30° - 170°, with air flow regulating valves
- RAI = pneumatic actuator similar to RA, with visual position indicator

Electric actuation

- IS = stepper motor axially mounted
- SS = stepper motor sideways mounted
- ISS = stepper motor axially mounted, with visual position indicator
- SSS = stepper motor sideways mounted, with visual position indicator
- ID = DC motor axially mounted
- SD = DC motor sideways mounted

Feedthroughs with Magnetically Linked Drive

MagiDrive Series



Shaft drives

- **X000** = stub shaft or tubular shaft with mounted flange depending on construction
- **X030** = extended shaft, fixed, length 30 mm
- **MX000** = exchangeable shaft extension
- **XD** = double sided shaft
- **H** = hollow shafts for coaxial rotations or supplies



Ball bearings

- **Z** = standard bearing (stainless steel, MoS₂ coated)
- **CE** = ceramic, ultra clean, for UHV high temperature applications
- **SE** = special bearing for semiconductor and cryogenic applications

There exist different options for the actuation, the shaft and the ball bearing. The complete order code is created in connection with the type. Please see possible options in the following table:

| MagiDrive type | Actuation | | | | | | | | | | | | | | | Shaft type | | | | | Ball bearing | | | |
|----------------|-----------|---|---|----|----|----|---|-----------|----|-----|----------|-----|----|-----|----|------------|------|-------|-------|---|--------------|----|----|----|
| | manual | | | | | | | pneumatic | | | electric | | | | | X000 | X030 | MX000 | D | H | Z | CE | SE | |
| Options | T | F | B | BF | CF | CB | K | P | RA | RAI | IS | ISS | SS | SSS | ID | SD | X000 | X030 | MX000 | D | H | Z | CE | SE |
| MD10 | █ | | | | | | | | | | | | | | | | █ | | | | | | | |
| MD16 | █ | | | | | | | | | | | | | | | | █ | | | | | | | |
| MD19 | █ | | | | | | | | | | | | | | | | █ | | | | | | | |
| MD20 | █ | | | | | | | | | | | | | | | | █ | | | | | | | |
| MD21 | █ | | | | | | | | | | | | | | | | █ | | | | | | | |
| MD25 | █ | | | | | | | | | | | | | | | | █ | | | | | | | |
| MD35 | █ | | | | | | | | | | | | | | | | █ | | | | | | | |
| MD35H | █ | | | | | | | | | | | | | | | | █ | | | | | | | |
| MD64 | █ | | | | | | | | | | | | | | | | █ | | | | | | | |
| MD64H | █ | | | | | | | | | | | | | | | | █ | | | | | | | |
| MD100 | █ | | | | | | | | | | | | | | | | █ | | | | | | | |
| MD100H | █ | | | | | | | | | | | | | | | | █ | | | | | | | |

= Standard
 = Option
 = not available

Feedthroughs with Magnetically Linked Drive

MagiDrive Series with DN10CF Flange Connection

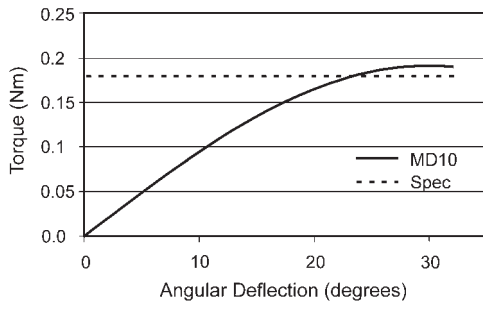


- Smallest possible UHV compatible rotary feedthrough
- Large torque
- Very compact

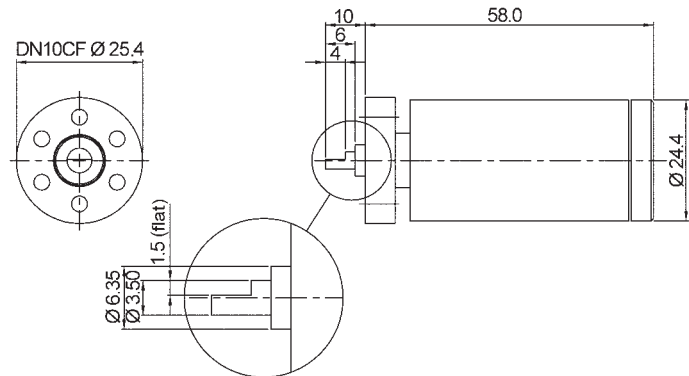
Technical data

- | | |
|---------------------------|---|
| ■ Type description | MD10 |
| ■ Flange connection | DN10CF |
| ■ Construction | machined from one piece, stainless steel 316L |
| ■ Shaft style | stub, \varnothing 3.5 mm, with flattening |
| ■ Break-away torque | 0.18 Nm |
| ■ Max. no load spin speed | 200 rpm |
| ■ Max. shaft axial thrust | 20 N |
| ■ Bakeout temperature | 250 °C |

Torsional Stiffness



| Order code | Description |
|------------|---|
| MD10TX000Z | MD10 rotary feedthrough, manual, standard bearing |



Feedthroughs with Magnetically Linked Drive

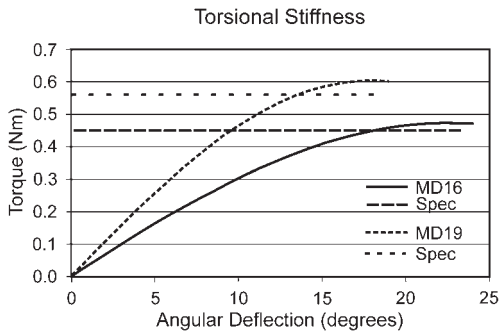
MagiDrive Series with DN16CF Flange Connection



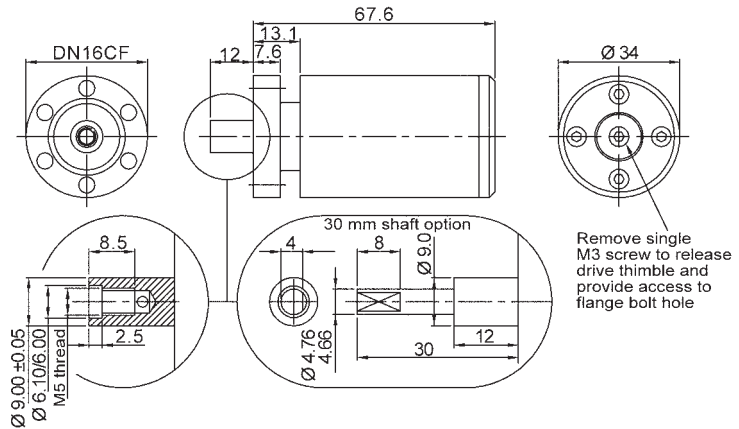
- Two types MD16 and MD19 with different magnetic force
- Established and variable usable construction
- Robust and powerful

Technical data

- Flange connection DN16CF
- Construction machined from one piece, stainless steel 316L
- Shaft style stump, Ø 9 mm, with female thread M5
- Break-away torque
 - MD16 0.45 Nm
 - MD19 0.56 Nm
- Max. no load spin speed 1000 rpm
- Max. shaft axial thrust 66 N
- Bakeout temperature 250 °C



| Order code | Description |
|------------|--|
| MD16TX000Z | MD16 rotary feedthroughs, manual, standard bearing |
| MD19TX000Z | MD19 rotary feedthroughs, manual, standard bearing |



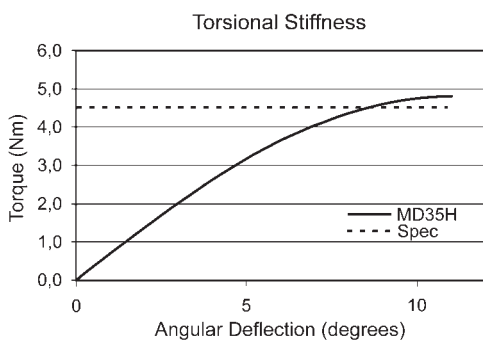
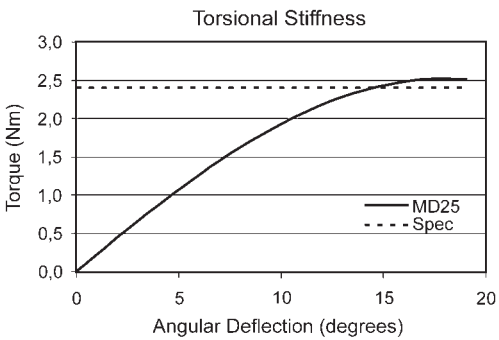
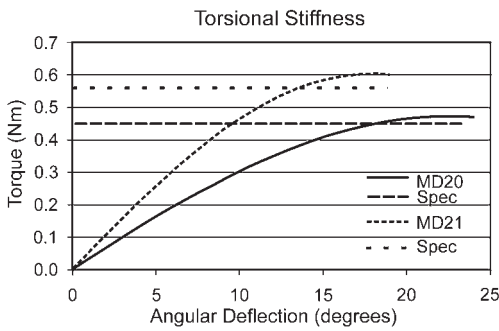
MagiDrive Series with DN40CF Flange Connection



- 5 models with 4 magnetic forces
- 3 shaft types and axial loadings
- Robust and powerful
- Numerous options for actuation and ball bearings
- Model MD35 optional with rear side flange and hollow shaft
- Optionally 2 stage with 2 coaxial rotation axes

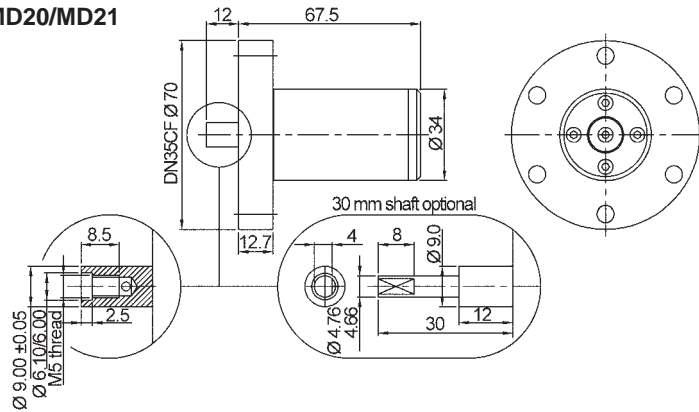
Technical data

- Flange connection DN40CF
- Rear flange DN16CF (MD35H Only)
- Construction machined from one piece, stainless steel 316L
- Shaft style
 - MD20/MD21 Ø 9 mm, with female thread M5
 - MD25 Ø 9.53 mm, solid
 - MD35/MD35H tubular shaft with mounted flange and 3 x M3 threaded holes
- Break-away torque
 - MD20 0.45 Nm
 - MD21 0.56 Nm
 - MD25 2.4 Nm
 - MD35/MD35H 4.5 Nm
- Max. no load spin speed 500 rpm
- Max. shaft axial thrust
 - MD20/MD21 66 N
 - MD25 100 N
 - MD35/MD35H 200 N
- Bakeout temperature 250 °C

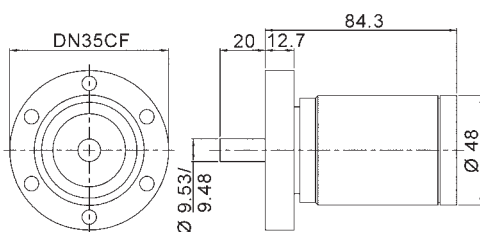


| Order code | Description |
|-------------|---|
| MD20TX000Z | MD20 , manual, standard bearing |
| MD21TX000Z | MD21 rotary feedthrough, manual, standard bearing |
| MD25TX000Z | MD25 rotary feedthrough, manual, standard bearing |
| MD35TX000Z | MD35 rotary feedthrough, manual, standard bearing |
| MD35HTX000Z | MD35H rotary feedthrough, manual, with hollow shaft, standard bearing |

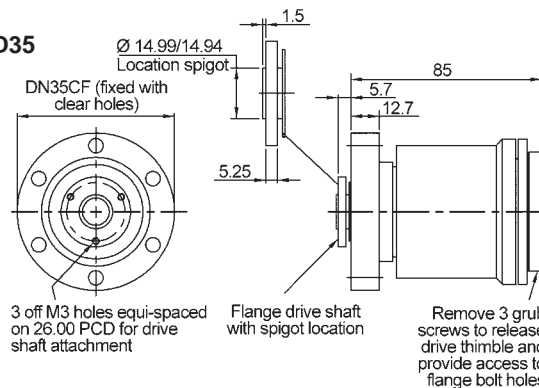
MD20/MD21



MD25



MD35



Feedthroughs with Magnetically Linked Drive

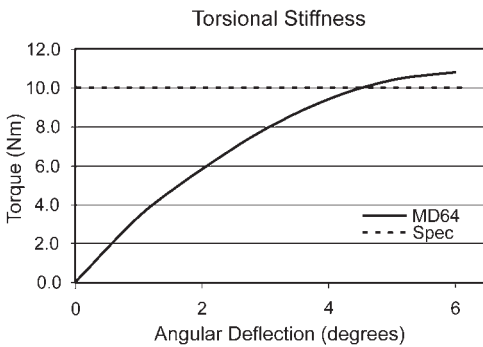
MagiDrive Series with DN63CF Flange Connection



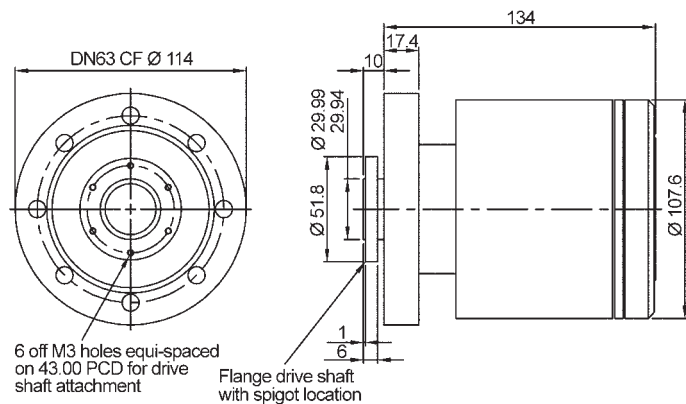
- 2 models with or without rear flange
- Very large torque
- Optionally 2 stage with 2 coaxial rotation axes
- Constructed for high loadings

Technical data

- Flange connection: DN63CF
- Rear flange: DN40CF (MD64H only)
- Construction: machined from one piece, stainless steel 316L
- Shaft style: tubular shaft with mounted flange and 6 x M3 threaded holes
- Break-away torque: 10 Nm
- Max. no load spin speed: 500 rpm
- Max. shaft axial thrust: 400 Nm
- Bakeout temperature: 250 °C



| Order Code | Description |
|--------------------|--|
| MD64TX000Z | MD64 rotary feedthrough, manual, standard bearing |
| MD64HTX000Z | MD64 rotary feedthrough, manual, with hollow shaft, standard bearing |



Feedthroughs with Magnetically Linked Drive

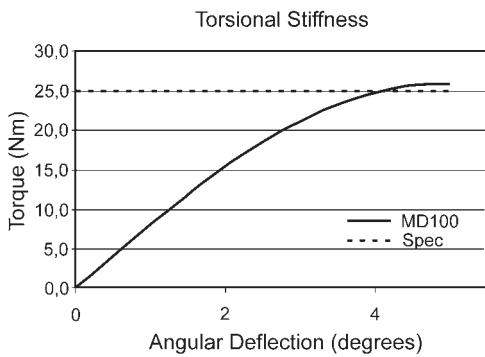
MagiDrive Series with DN100CF Flange Connection



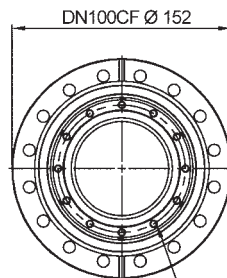
- 2 models with or without rear flange
- Very large torques
- Optionally 3 stage with 3 coaxial rotation axes
- Constructed for high loadings

Technical data

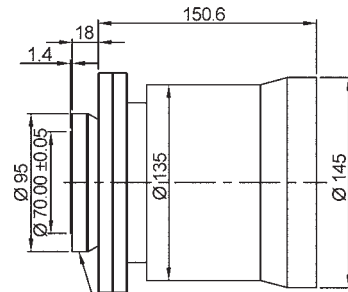
- | | |
|---------------------------|--|
| ■ Flange connection | DN100CF |
| ■ Rear flange | DN40CF (MD100H only) |
| ■ Construction | welded housing, stainless steel 316L |
| ■ Shaft style | tube with mounted flange and 6 x M5 threaded holes |
| ■ Break-away torque | 25 Nm |
| ■ Max. no load spin speed | 200 rpm |
| ■ Max. shaft axial thrust | 400 Nm |
| ■ Bakeout temperature | 250 °C |



| Order code | Description |
|---------------------|---|
| MD100TX000Z | MD100 rotary feedthrough, manual, standard bearing |
| MD100HTX000Z | MD100 rotary feedthrough, with hollow shaft, manual, standard bearing |



6 off M5 holes equi-spaced on 88.00 PCD for drive shaft attachment



Flange drive shaft with spigot location

UHV Rotary Source Shutters



- Switching between to fixed end positions
- Pneumatic actuation
- Compact
- Robust and reliable
- Powerful
- Adjustable tilt
- Variable speed of actuation

Technical data

- Connection CF flanges
- Actuation pneumatic, double-acting
- Tilt 30° - 170°, adjustable end positions
- Mechanic shaft connection Ø 9 mm shaft stub with M5 female thread or tube with mounted flange (see MagiDrive)
- Max. compressed air supply 6.8 bar
- Compressed air connection M5 x 0.8 mm
- Flow rate regulating valve 2 pieces
- Limit switches 2 Reed switches (optional)
- Option baffles and holding fixtures on request

| Order code | Flange connection | Max. torque | End position switch | MagiDrive type |
|--------------|-------------------|-------------|---------------------|----------------|
| MD10RAX000Z | DN10CF | 0.18 Nm | no | MD10 |
| MD10RAIX000Z | DN10CF | 0.18 Nm | yes | MD10 |
| MD16RAX000Z | DN16CF | 0.45 Nm | no | MD16 |
| MD16RAIX000Z | DN16CF | 0.45 Nm | yes | MD16 |
| MD19RAX000Z | DN16CF | 0.45 Nm | no | MD19 |
| MD19RAIX000Z | DN16CF | 0.45 Nm | yes | MD19 |
| MD20RAX000Z | DN40CF | 0.45 Nm | no | MD20 |
| MD20RAIX000Z | DN40CF | 0.45 Nm | yes | MD20 |
| MD21RAX000Z | DN40CF | 0.45 Nm | no | MD21 |
| MD21RAIX000Z | DN40CF | 0.45 Nm | yes | MD21 |
| MD25RAX000Z | DN40CF | 1 Nm | no | MD25 |
| MD25RAIX000Z | DN40CF | 1 Nm | yes | MD25 |
| MD35RAX000Z | DN40CF | 2.5 Nm | no | MD35 |
| MD35RAIX000Z | DN40CF | 2.5 Nm | yes | MD35 |
| MD64RAX000Z | DN64CF | 10 Nm | no | MD64 |
| MD64RAIX000Z | DN64CF | 10 Nm | yes | MD64 |

MPP / MPPL / MPPRL Series

Push pull feedthroughs for linear and rotary motion with magnetically linked drive

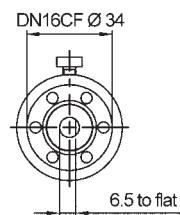


- Three models
 - MPPRL linear and rotary motion
 - MPPL linear motion - guided vacuum shaft
 - MPP linear motion - unguided vacuum shaft
- Small and compact
- UHV compatible
- Smooth operation
- Bellows-free construction
- Bakeable
- Standard stroke 50 to 250 mm

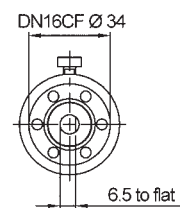
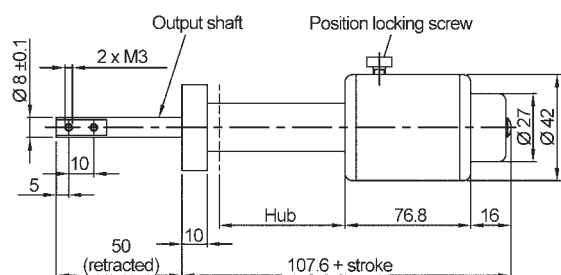
Technical Data

- Mounting flange DN16CF
- Driveshafts hollow shaft \varnothing 8 mm, with flat area and 2 x M3 tapped holes
- Axial force 98 N
- Max. torque 0.45 Nm
- Position fixing locking screw for linear motion only (for model MPP not available)
- Maximum bakeout temperature 250 °C
- Options pneumatic actuation, stepper or DC motor

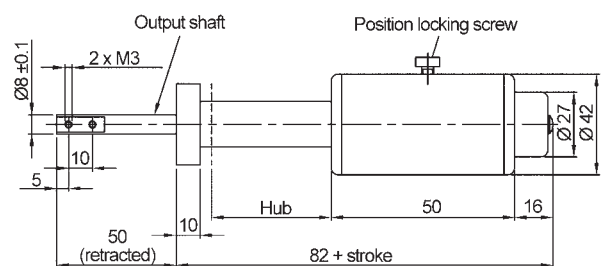
| Order code | Mounting flange | Stroke |
|-------------|-----------------|--------|
| MPPRL-50-H | DN16CF | 50 |
| MPPRL-100-H | DN16CF | 100 |
| MPPRL-150-H | DN16CF | 150 |
| MPPRL-200-H | DN16CF | 200 |
| MPPL-50-H | DN16CF | 50 |
| MPPL-100-H | DN16CF | 100 |
| MPPL-150-H | DN16CF | 150 |
| MPPL-200-H | DN16CF | 200 |
| MPP-50-H | DN16CF | 50 |
| MPP-100-H | DN16CF | 100 |
| MPP-150-H | DN16CF | 150 |
| MPP-200-H | DN16CF | 200 |



MPPRL



MPPL u. MPP



WSL / WSLR Series

Wobble stick feedthroughs for linear and rotary motion with magnetically linked drive



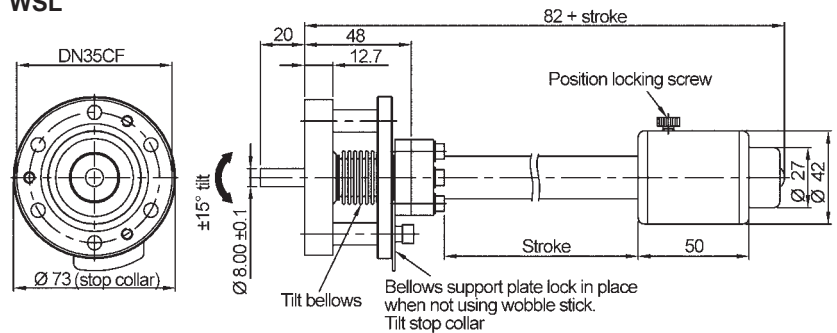
- Two types with 3 or 4 axes of motion
 - WSL linear and tilt motion
 - WSLR linear, rotary and tilt motion
- UHV compatible
- Bakeable
- Standard stroke 150 or 250 mm
- Optional with gripper or pincer

Technical Data

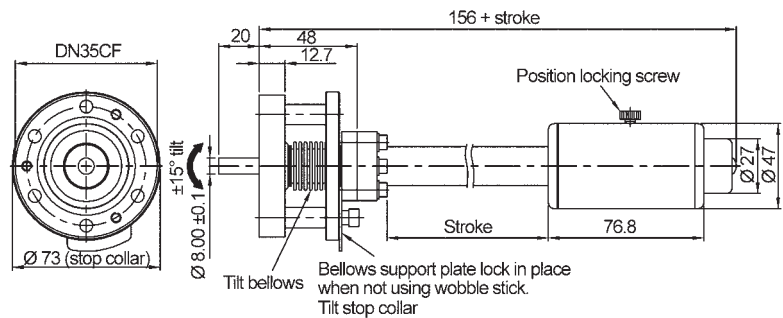
- Mounting flange DN40CF
- Drive shaft round shaft Ø 8 mm
- Max. break-away force 95 N
- Max. angular break-away torque 0.45 Nm
- Suggested maximum sample mass 260 g
- Max. bakeout temperature 250 °C
- Max. tilt ±15°

| Order Code | Mounting flange | Stroke |
|------------|-----------------|--------|
| WSL-150-H | DN40CF | 150 |
| WSL-250-H | DN40CF | 250 |
| WSLR-150-H | DN40CF | 150 |
| WSLR-250-H | DN40CF | 250 |

WSL



WSLR



Model GMVT

Light transfer rod with separately constructed linear translation and rotation

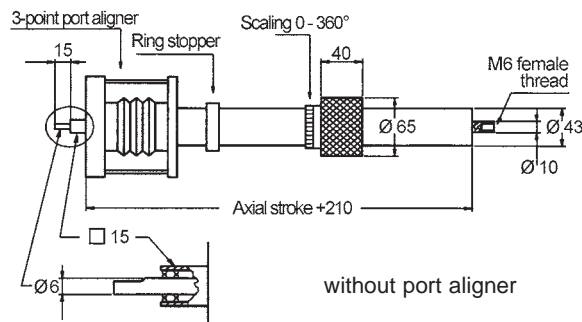
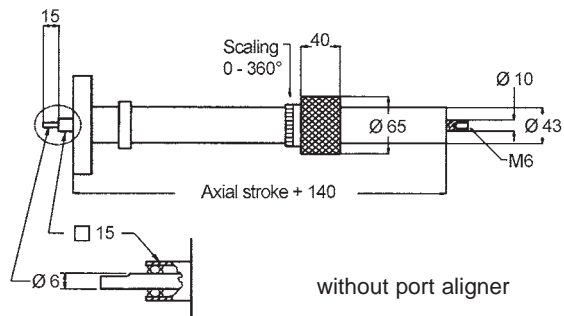


- Especially applicable to light samples and small loadings
- Absolutely UHV applicable
- SmCo magnets
- 360° degree graduation for rotation
- Adjustable stop rings
- Optional with 3 point aligner

Technical data

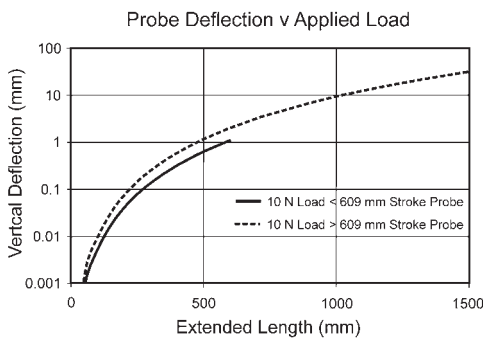
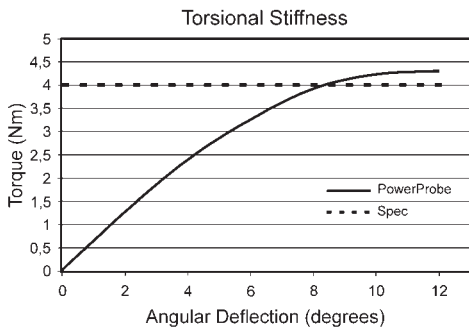
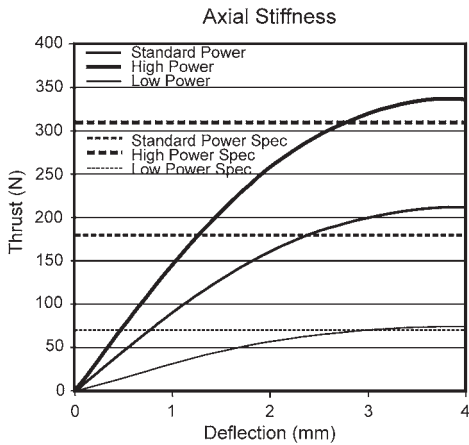
- Stroke 300 - 900 mm
- Materials
 - flange, housing and shafts stainless steel 1.4301
 - magnets SmCo
- Bakeout temperature max. 250 °C
- Axial force max. 61 N (static)
(higher force on request)
- Torque max. 1.6 Nm (static)
(higher torque on request)
- Mounting flange DN40CF or DN63CF
- Drive shafts round shaft Ø 6.0 mm in
square pipe 15.0 x 15.0 mm
- Total length axial stroke (mm) + 120 mm

| Order code | Axial stroke | Mounting flange | Aligner |
|----------------|--------------|-----------------|---------|
| GMVT-T40-300 | 300 | DN40CF | no |
| GMVT-T40-500 | 500 | DN40CF | no |
| GMVT-T40-700 | 700 | DN40CF | no |
| GMVT-T63-700 | 700 | DN63CF | no |
| GMVT-T63-900 | 900 | DN63CF | no |
| GMVT-J-T40-300 | 300 | DN40CF | yes |
| GMVT-J-T40-500 | 500 | DN40CF | yes |
| GMVT-J-T40-700 | 700 | DN40CF | yes |
| GMVT-J-T63-700 | 700 | DN63CF | yes |
| GMVT-J-T63-900 | 900 | DN63CF | yes |



PP Series

Transfer rod useable for all application - also for big loads



- 5 model series
- Linear motion with and without rotation
- Applicable also for big loads
- UHV applicable
- Round shafts of stainless steel
- Huge axial force (180 N standard)
- Optional 2 further forces (70 N or 310 N)
- Very high torque
- Low deflection
- Robust, precise and repeatable
- Suitable for horizontal and vertical mounting
- Locking screw for position fixing
- Bakeable

| Model | Description | Stroke mm |
|-------|--|-----------|
| LPP | Linear motion only | 1219 |
| PP | Linear and rotary motion | 1524 |
| ASP | Linear, rotary or combined linear and rotary motion | 914 |
| EPP | Linear motion with vertical lift mechanism for sample transfer at the shaft cone point | 1219 |
| DAP | Linear and separate rotary motion, 2 coaxial round shafts, outer shaft only with linear motion | 1219 |

Technical data

- Mounting flange
 - DN40CF
 - DN63CF (at 1524 mm stroke only)
- Axial force
 - standard: 180 N
 - high: 310 N (LPP, PP only)
 - low: 70 N (LPP, PP only)
- Torque: see chart
- Max. torque with horizontal mounting: see chart
- Max. load with vertical mounting: see chart
- Actuation options: see table
- Bakeout temperature: 250 °C
- Position fixing: locking screw

Actuation options

- H = hand wheel
- HR = hand wheel with 2 bakeable limit switches for retracted position
- E = hand wheel with extension
- SD = side mounted 24 V DC motor with 2 bakeable limit switches
- SS = side mounted stepper motor with 2 bakeable limit switches

| MagiDrive type | Coupling | | | Actuation | | | | |
|----------------|----------|----------|------|-----------|----|---|----|----|
| | Low | Standard | High | H | HR | E | SS | SD |
| LPP | | | | | | | | |
| PP | | | | | | | | |
| ASP | | | | | | | | |
| EPP | | | | | | | | |
| DAP | | | | | | | | |

- = Standard
- = Option
- = not available

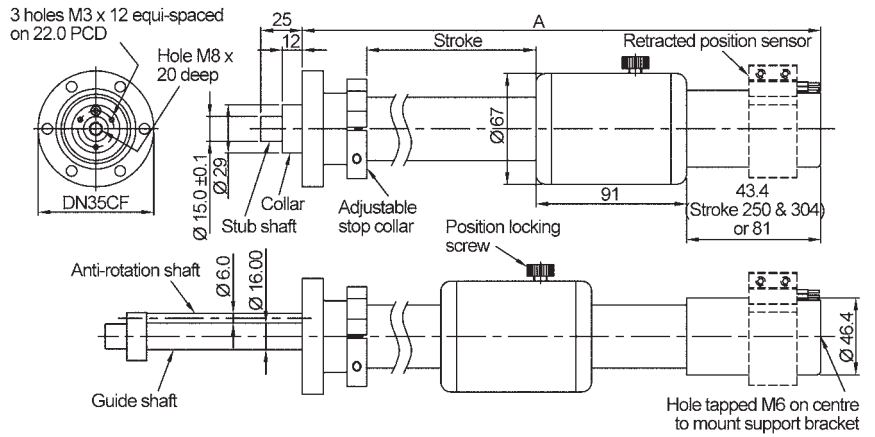
Rotary-Linear Feedthroughs / Transfer Systems

PP Series

Model LPP



- Stroke 250 to 1219 mm
- Drive shaft \varnothing 15 mm with M8 inner thread and guidance for linear motion



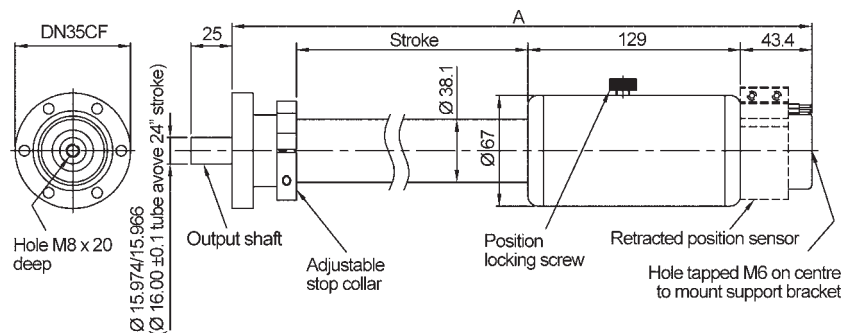
| Stroke | 250 | 304 | 457 | 609 | 914 | 1219 |
|--------|-----|-----|-------|-----|------|--------|
| A | 461 | 515 | 668.4 | 821 | 1125 | 1529.6 |

Model PP35

8



- Stroke 304 to 1524 mm
- Stroke up to 1219 mm with flange DN40CF, stroke 1524 mm with flange DN63CF
- Drive shaft \varnothing 15 mm with M8 inner thread

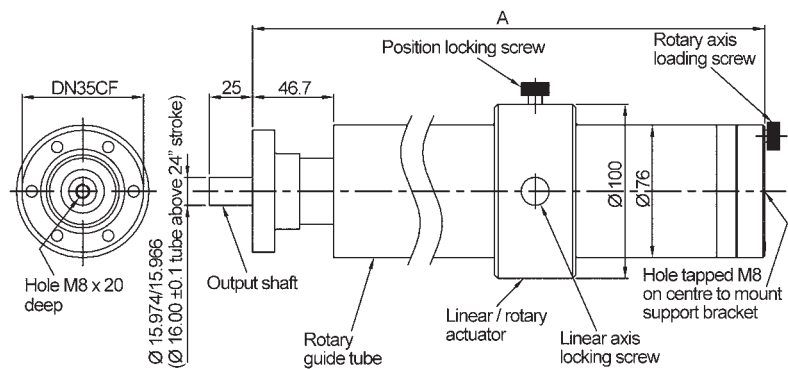


| Stroke | 304 | 457 | 609 | 914 | 1219 |
|--------|-----|-------|-----|------|--------|
| A | 515 | 668.4 | 821 | 1125 | 1529.6 |

Model ASPP



- Stroke 304 to 914 mm
- Drive shaft \varnothing 15 mm with M8 inner thread
- Separate fixing for rotation and/or linear motion



| Stroke | 304 | 457 | 609 | 914 |
|--------|-----|-----|-----|------|
| A | 558 | 711 | 862 | 1168 |

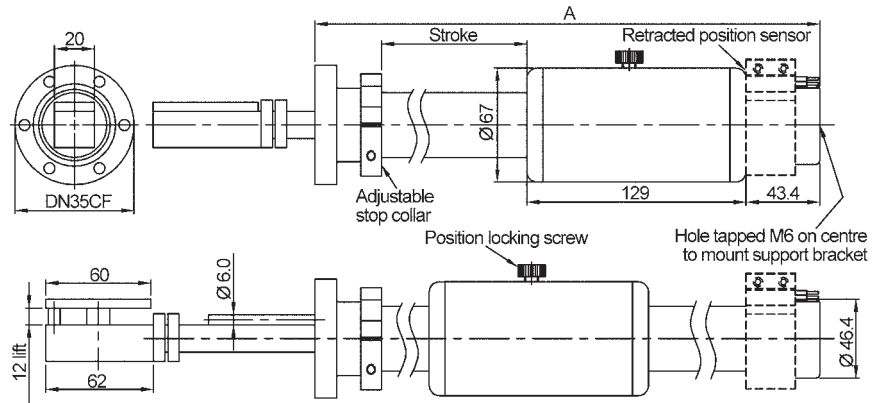
Rotary-Linear Feedthroughs / Transfer Systems

PP Series

Model EPP



- Stroke 250 to 1219 mm
- Drive shaft with lift mechanism in front (plate 20 x 60 mm, stroke 12 mm)

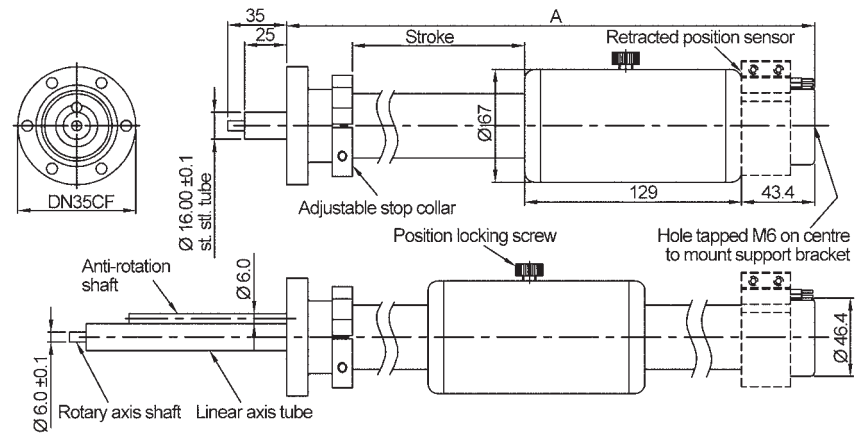


| Stroke | 250 | 304 | 457 | 609 | 914 | 1219 |
|--------|-----|-----|-------|-----|------|--------|
| A | 461 | 515 | 668.4 | 821 | 1125 | 1529.6 |

Model DAP



- Stroke 250 to 1219 mm
- Drive shaft $\varnothing 15$ mm with M8 inner thread and guidance for linear motion

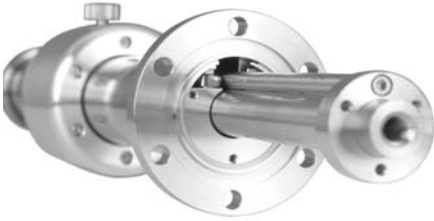


| Stroke | 250 | 304 | 457 | 609 | 914 | 1219 |
|--------|-----|-----|-------|-----|------|--------|
| A | 461 | 515 | 668.4 | 821 | 1125 | 1529.6 |

Rotary-Linear Feedthroughs / Transfer Systems

PP Series

Model LPP



| Order code | Mounting flange | Axial stroke |
|------------|-----------------|--------------|
| LPP-250-H | DN40CF | 250 |
| LPP-304-H | DN40CF | 304 |
| LPP-457-H | DN40CF | 457 |
| LPP-609-H | DN40CF | 609 |
| LPP-914-H | DN40CF | 914 |
| LPP-1219-H | DN40CF | 1219 |

Model PP35



| | | |
|-------------|--------|------|
| PP35-304-H | DN40CF | 304 |
| PP35-457-H | DN40CF | 457 |
| PP35-609-H | DN40CF | 609 |
| PP35-914-H | DN40CF | 914 |
| PP35-1219-H | DN40CF | 1219 |
| PP64-1524-H | DN63CF | 1524 |

Model ASPP



| | | |
|--------------|--------|-----|
| ASPP35-304-H | DN40CF | 304 |
| ASPP35-457-H | DN40CF | 457 |
| ASPP35-609-H | DN40CF | 609 |
| ASPP35-914-H | DN40CF | 914 |

Model EPP



| | | |
|------------|--------|------|
| EPP-250-H | DN40CF | 250 |
| EPP-304-H | DN40CF | 304 |
| EPP-457-H | DN40CF | 457 |
| EPP-609-H | DN40CF | 609 |
| EPP-914-H | DN40CF | 914 |
| EPP-1219-H | DN40CF | 1219 |

Model DAP



| | | |
|------------|--------|------|
| DAP-250-H | DN40CF | 250 |
| DAP-304-H | DN40CF | 304 |
| DAP-457-H | DN40CF | 457 |
| DAP-609-H | DN40CF | 609 |
| DAP-914-H | DN40CF | 914 |
| DAP-1219-H | DN40CF | 1219 |

Shifts for Motion along the Z Axis



- Bellows sealed
- Robust
- Precise and smooth-running
- Repeatable
- Totally UHV compatible
- Various actuation possibilities
- 7 model series

Technical data

- Material diaphragm bellows
- Bakeout temperature
- Life cycle (diaphragm bellows)
- Z stroke

stainless steel 316L
 250 °C (without motor or pneumatic)
 10,000 cycles (optional to 1 m)
 25 mm to 1000 mm (depending on series)

- Actuation

manual, pneumatic, stepper or DC motor

- Accuracy

10 µm (optional)

Type Series

Model LSM



Model HLSM



Model LSML



- Standard construction for all applications
- Largest number of flange connections, DN10 to DN160
- Largest number of actuation options
- Up to 350 mm standard stroke
- Flange with threaded holes
- Model HLSM with through bolt holes (from DN40)

- Construction for big strokes
- Strengthened frame structure
- Nominal width DN40 and DN63
- 200 mm to 1000 mm standard stroke
- Flange with threaded holes (LSML with through bolt holes in mounting flange)

Model CLSM



- Compact construction with short mounting length
- DN40 to DN63
- Up to 100 mm standard stroke
- Flanges with threaded holes

Shifts for Motion along the Z Axis

Model LSMT



- Complies with model LSM, but with adjusting bellows (tilt $\pm 2^\circ$) for the travelling flange
- Nominal width DN40 and DN63
- Up to 100 mm standard stroke
- Flanges with threaded holes

Model LSMX



- Complies with Model LSM, but with adjustment device (X axis ± 5 mm) on the travelling flange
- Nominal width DN40 and DN100
- Up to 100 mm standard stroke
- Flanges with threaded holes

Actuation

- H = manual with hand wheel (with gear ratio for big dimensions)
- P = pneumatic
- SD = side mounted DC motor
- SS = side mounted stepper motor

Manual actuation



Pneumatic actuation



Motorised actuation



Graduations

- ES = engraved scale (resolution 1 mm)
- DLA = digital scale with LCD display (resolution 0.01 mm)
- LP = linear potentiometer (resolution 2 μ m)

DLA



LP



| Model | Actuation | | | | Scale | | |
|------------|-----------|--------|--------|--------|--------|--------|--------|
| | H | P | SS | SD | ES | DLA | LP |
| LSM10 | Standard | Option | Option | Option | Option | Option | Option |
| LSM16 | Standard | Option | Option | Option | Option | Option | Option |
| LSM38. . . | Standard | Option | Option | Option | Option | Option | Option |
| LSML | Standard | Option | Option | Option | Option | Option | Option |
| CLSM | Standard | Option | Option | Option | Option | Option | Option |
| LSMT | Standard | Option | Option | Option | Option | Option | Option |
| LSMX | Standard | Option | Option | Option | Option | Option | Option |

- = Standard
- = Option
- = not available

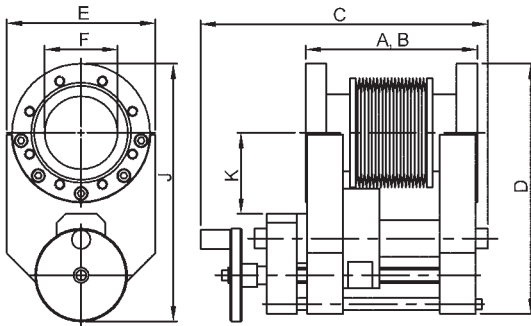
Linear Translators and Aligners

Shifts for Motion along the Z Axis

| Model | Flange | Free inner Ø | Axial stroke | Actuation |
|---------------|---------|--------------|--------------|--------------|
| LSM | DN10CF | 8 | 25 | H |
| | DN16CF | 16 | 25 to 100 | H, P |
| LSM HLSM | DN40CF | 38 | 25 to 350 | H, P, SD, SS |
| | DN63CF | 65 (63) | | |
| | DN100CF | 102 | | |
| | DN160CF | 149 | | |
| LSML HLSML | DN40CF | 38 | 200 to 1000 | H, P, SD, SS |
| | DN63CF | 65 | | |
| CLSM | DN40CF | 38 | 25 to 100 | H, P, SD, SS |
| | DN63CF | 65 | | |
| LSMT | DN40CF | 38 | 25 to 100 | H, P, SD, SS |
| | DN63CF | 65 | | |
| LSMX | DN40CF | 38 | 50 to 100 | H, P, SD, SS |
| | DN63CF | 65 | | |
| | DN100CF | 102 | | |

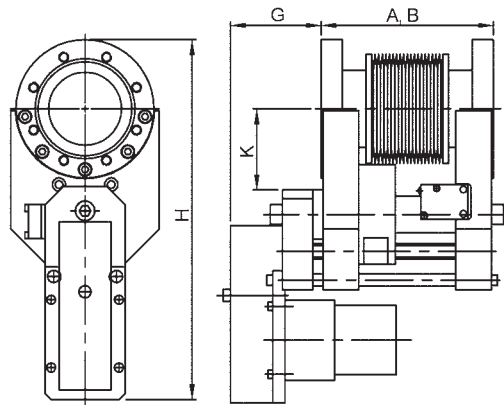
Shifts for Motion along the Z Axis

LSM / HLSM dimensions



A: expanded length
B: compact length

manual actuation



side mounted stepper motor

| Order code | A | B | C | D | E | F | G | H | J | K |
|---------------|-------|-------|-------|-------|------|----|----|-----|-------|------|
| LSM10 | | | | | | | | | | |
| LSM10-25 | 77.3 | 52.3 | 95 | 130.4 | 25.4 | 8 | - | - | 60.7 | 27 |
| LSM16 | | | | | | | | | | |
| LSM16-25 | 55 | 30 | 90 | 82.3 | 34 | 16 | - | - | 78 | 25.8 |
| LSM16-50 | 94.2 | 44.2 | 129 | 82.3 | 34 | 16 | - | - | 78 | 25.8 |
| LSM38 | | | | | | | | | | |
| LSM38-25 | 98.7 | 73.7 | 180 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| LSM38-50 | 123.7 | 73.7 | 204 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| LSM38-75 | 162 | 87 | 243 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| LSM38-100 | 187 | 87 | 268 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| LSM38-150 | 250 | 100 | 331 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| LSM38-175 | 281 | 106 | 363 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| LSM38-200 | 312.5 | 112.5 | 394 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| LSM38-250 | 377.5 | 127.5 | 459 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| LSM38-300 | 446.5 | 146.5 | 531 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| LSM38-350 | 509 | 159 | 594 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| HLSM38 | | | | | | | | | | |
| HLSM38-25 | 98.7 | 73.7 | 180 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| HLSM38-50 | 131.7 | 81.7 | 212 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| HLSM38-75 | 170 | 95 | 251 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| HLSM38-100 | 194.5 | 94.5 | 275.5 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| HLSM38-150 | 260 | 110 | 341 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| HLSM38-175 | 291 | 116 | 373 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| HLSM38-200 | 322.5 | 122.5 | 404 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| HLSM38-250 | 387.5 | 137.5 | 469 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| HLSM38-300 | 456.5 | 156.5 | 541 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |
| HLSM38-350 | 519.5 | 169.5 | 604 | 155.2 | 75 | 38 | 72 | 257 | 163.5 | 39 |

Linear Translators and Aligners

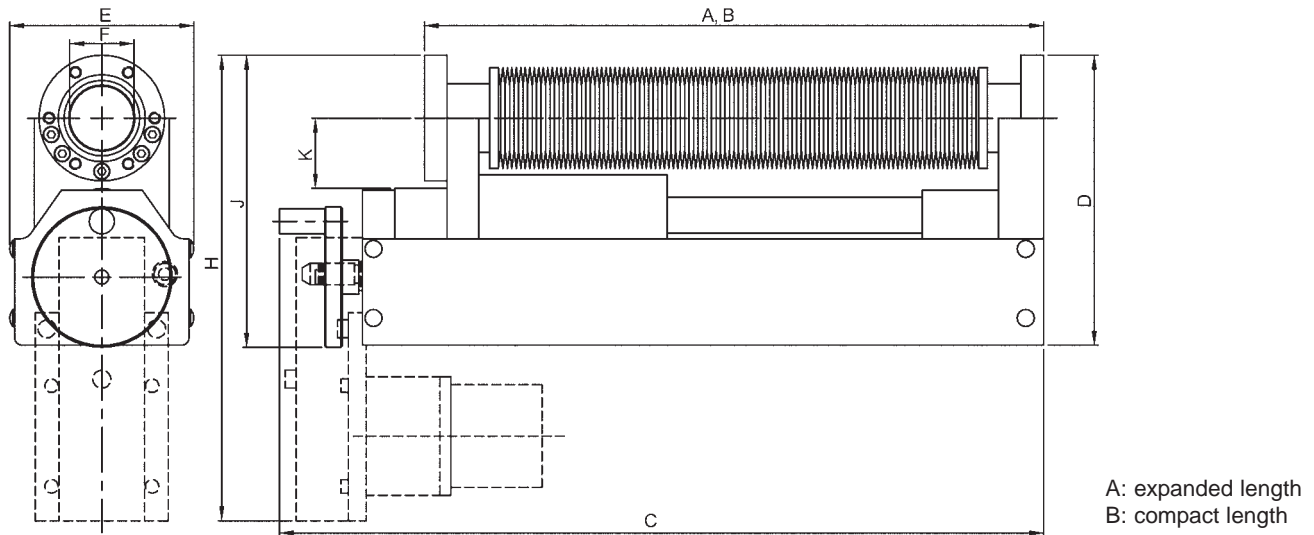
Shifts for Motion along the Z Axis

LSM / HLSM dimensions

| Order code | A | B | C | D | E | F | G | H | J | K |
|----------------|-------|-------|-----|-------|-------|-----|-----|-----|-----|-----|
| LSM64 | | | | | | | | | | |
| LSM64-25 | 136 | 111 | 232 | 203 | 122.5 | 65 | 72 | 297 | 212 | 64 |
| LSM64-50 | 161 | 111 | 258 | 203 | 122.5 | 65 | 72 | 297 | 212 | 64 |
| LSM64-75 | 186 | 111 | 283 | 203 | 122.5 | 65 | 72 | 297 | 212 | 64 |
| LSM64-100 | 211 | 111 | 308 | 203 | 122.5 | 65 | 72 | 297 | 212 | 64 |
| LSM64-150 | 261 | 111 | 358 | 203 | 122.5 | 65 | 72 | 297 | 212 | 64 |
| LSM64-200 | 317 | 117 | 415 | 203 | 122.5 | 65 | 72 | 297 | 212 | 64 |
| LSM64-250 | 378 | 118 | 475 | 203 | 122.5 | 65 | 72 | 297 | 212 | 64 |
| LSM64-300 | 448 | 118 | 535 | 203 | 122.5 | 65 | 72 | 297 | 212 | 64 |
| HLSM64 | | | | | | | | | | |
| HLSM64-25 | 136 | 111 | 232 | 203 | 122.5 | 63 | 72 | 297 | 212 | 64 |
| HLSM64-50 | 161 | 111 | 258 | 203 | 122.5 | 63 | 72 | 297 | 212 | 64 |
| HLSM64-75 | 186 | 111 | 283 | 203 | 122.5 | 63 | 72 | 297 | 212 | 64 |
| HLSM64-100 | 211 | 111 | 308 | 203 | 122.5 | 63 | 72 | 297 | 212 | 64 |
| HLSM64-150 | 274 | 124 | 370 | 203 | 122.5 | 63 | 72 | 297 | 212 | 64 |
| HLSM64-200 | 336 | 136 | 433 | 203 | 122.5 | 63 | 72 | 297 | 212 | 64 |
| HLSM64-250 | 404 | 154 | 500 | 203 | 122.5 | 63 | 72 | 297 | 212 | 64 |
| HLSM64-300 | 467.3 | 167.3 | 564 | 203 | 122.5 | 63 | 72 | 297 | 212 | 64 |
| LSM100 | | | | | | | | | | |
| LSM100-25 | 175 | 150 | 289 | 266.5 | 177 | 102 | 105 | 376 | 273 | 92 |
| LSM100-50 | 200 | 150 | 314 | 266.5 | 177 | 102 | 105 | 376 | 273 | 92 |
| LSM100-75 | 225 | 150 | 339 | 266.5 | 177 | 102 | 105 | 376 | 273 | 92 |
| LSM100-100 | 250 | 150 | 364 | 266.5 | 177 | 102 | 105 | 376 | 273 | 92 |
| LSM100-150 | 300 | 150 | 414 | 266.5 | 177 | 102 | 105 | 376 | 273 | 92 |
| LSM100-200 | 350 | 150 | 464 | 266.5 | 177 | 102 | 105 | 376 | 273 | 92 |
| HLSM100 | | | | | | | | | | |
| HLSM100-25 | 175 | 150 | 289 | 266.5 | 177 | 102 | 105 | 376 | 273 | 92 |
| HLSM100-50 | 200 | 150 | 314 | 266.5 | 177 | 102 | 105 | 376 | 273 | 92 |
| HLSM100-75 | 225 | 150 | 339 | 266.5 | 177 | 102 | 105 | 376 | 273 | 92 |
| HLSM100-100 | 250 | 150 | 364 | 266.5 | 177 | 102 | 105 | 376 | 273 | 92 |
| HLSM100-150 | 300 | 150 | 414 | 266.5 | 177 | 102 | 105 | 376 | 273 | 92 |
| HLSM100-200 | 358 | 150 | 472 | 266.5 | 177 | 102 | 105 | 376 | 273 | 92 |
| LSM150 | | | | | | | | | | |
| LSM150-25 | 176 | 151 | 288 | 305 | 229 | 149 | 104 | 414 | 313 | 105 |
| LSM150-50 | 201 | 151 | 317 | 305 | 229 | 149 | 104 | 414 | 313 | 105 |
| LSM150-75 | 226 | 151 | 338 | 305 | 229 | 149 | 104 | 414 | 313 | 105 |
| LSM150-100 | 251 | 151 | 367 | 305 | 229 | 149 | 104 | 414 | 313 | 105 |
| LSM150-150 | 276 | 151 | 388 | 305 | 229 | 149 | 104 | 414 | 313 | 105 |
| LSM150-200 | 365 | 165 | 479 | 305 | 229 | 149 | 104 | 414 | 313 | 105 |
| HLSM150 | | | | | | | | | | |
| HLSM150-25 | 176 | 151 | 288 | 305 | 229 | 149 | 104 | 414 | 313 | 105 |
| HLSM150-50 | 201 | 151 | 317 | 305 | 229 | 149 | 104 | 414 | 313 | 105 |
| HLSM150-75 | 226 | 151 | 338 | 305 | 229 | 149 | 104 | 414 | 313 | 105 |
| HLSM150-100 | 251 | 151 | 367 | 305 | 229 | 149 | 104 | 414 | 313 | 105 |
| HLSM150-150 | 276 | 151 | 388 | 305 | 229 | 149 | 104 | 414 | 313 | 105 |
| HLSM150-200 | 372 | 172 | 486 | 305 | 229 | 149 | 104 | 414 | 313 | 105 |

Shifts for Motion along the Z Axis

LSML / HLSML dimensions



A: expanded length
B: compact length

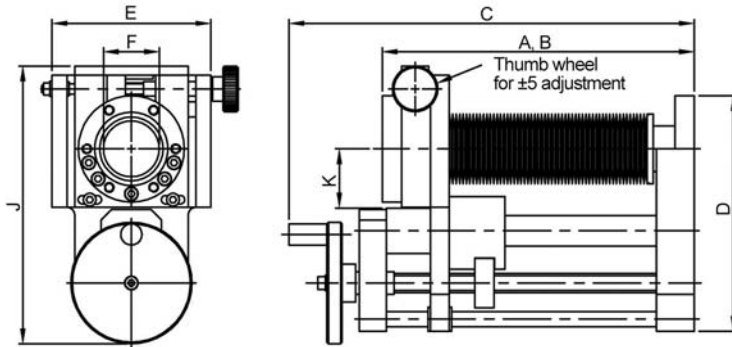
actuation: manual/motor

8

| Order code | A | B | C | D | E | F | G | H | J | K |
|----------------|-------|-------|------|-----|-------|----|------|-----|-------|----|
| LSML38 | | | | | | | | | | |
| LSML38-200 | 322 | 122 | 402 | 161 | 102.5 | 38 | 72 | 259 | 163.5 | 39 |
| LSML38-300 | 452.5 | 152.5 | 534 | 161 | 102.5 | 38 | 72 | 259 | 163.5 | 39 |
| LSML38-400 | 576 | 176 | 657 | 161 | 102.5 | 38 | 72 | 259 | 163.5 | 39 |
| LSML38-500 | 707 | 207 | 788 | 161 | 102.5 | 38 | 72 | 259 | 163.5 | 39 |
| HLSML38 | | | | | | | | | | |
| HLSML38-200 | 335 | 135 | 416 | 161 | 102.5 | 38 | 72 | 259 | 163.5 | 39 |
| HLSML38-300 | 462.5 | 162.5 | 533 | 161 | 102.5 | 38 | 72 | 259 | 163.5 | 39 |
| HLSML38-400 | 586 | 186 | 667 | 161 | 102.5 | 38 | 72 | 259 | 163.5 | 39 |
| HLSML38-500 | 717 | 217 | 798 | 161 | 102.5 | 38 | 72 | 259 | 163.5 | 39 |
| LSML64 | | | | | | | | | | |
| LSML64-200 | 311 | 111 | 399 | 204 | 161 | 65 | 41,2 | 314 | 163.5 | 64 |
| LSML64-300 | 446 | 146 | 534 | 204 | 161 | 65 | 41,2 | 314 | 163.5 | 64 |
| LSML64-400 | 592 | 192 | 663 | 204 | 161 | 65 | 41,2 | 314 | 163.5 | 64 |
| LSML64-500 | 700 | 200 | 771 | 204 | 161 | 65 | 41,2 | 314 | 163.5 | 64 |
| LSML64-600 | 860 | 260 | 1009 | 204 | 161 | 65 | 41,2 | 314 | 163.5 | 64 |
| LSML64-800 | 1111 | 311 | 1181 | 204 | 161 | 65 | 41,2 | 314 | 163.5 | 64 |
| HLSML64 | | | | | | | | | | |
| HLSML64-200 | 325 | 125 | 413 | 204 | 161 | 65 | 41,2 | 314 | 163.5 | 64 |
| HLSML64-300 | 459 | 159 | 547 | 204 | 161 | 65 | 41,2 | 314 | 163.5 | 64 |
| HLSML64-300 | 602 | 202 | 673 | 204 | 161 | 65 | 41,2 | 314 | 163.5 | 64 |
| HLSML64-500 | 700 | 200 | 771 | 204 | 161 | 65 | 41,2 | 314 | 163.5 | 64 |
| HLSML64-600 | 860 | 260 | 1009 | 204 | 161 | 65 | 41,2 | 314 | 163.5 | 64 |
| HLSML64-800 | 1111 | 311 | 1181 | 204 | 161 | 65 | 41,2 | 314 | 163.5 | 64 |

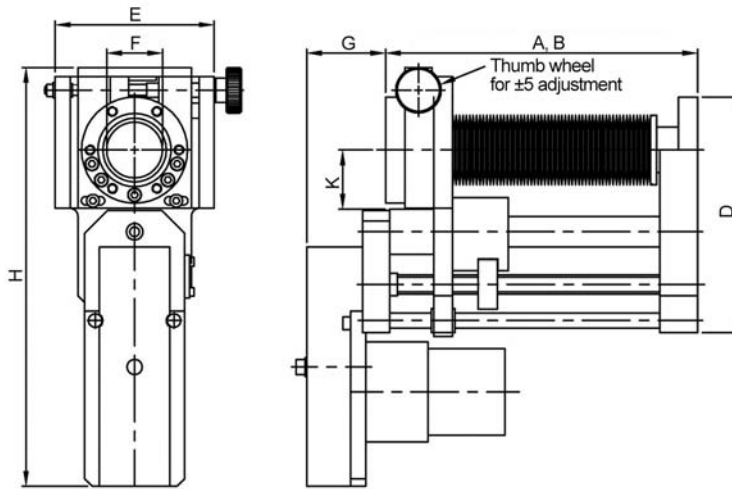
Shifts for Motion along the Z Axis

LSMX dimensions



manual actuation

A: expanded length
B: compact length



side mounted stepper motor

| Order code | A | B | C | D | E | F | G | H | J | K |
|---------------|-----|-----|-----|-----|-----|----|----|-----|-----|----|
| LSMX38 | | | | | | | | | | |
| LSMX38-50 | 143 | 93 | 205 | 155 | 105 | 26 | 52 | 257 | 183 | 39 |
| LSMX38-100 | 206 | 106 | 267 | 155 | 105 | 26 | 52 | 257 | 183 | 39 |

Port Aligners Diaphragm Bellows for Length and Angle Compensation



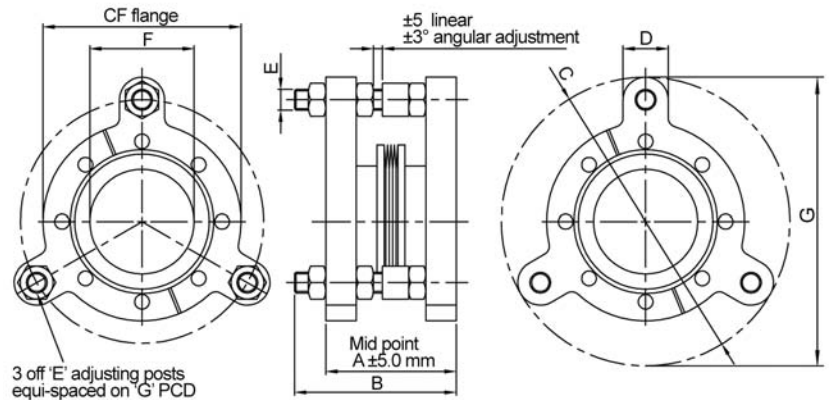
- Robust
- Compact
- Highly stressable

Technical data

- Axial stroke ± 5 mm
- Adjustment angle $\pm 3^\circ$
- Bellow material stainless steel 316L
- Flange material stainless steel 316L
- Bakeout temperature 250°C

| | Mounting flange | A | B | C | D | E | F | G |
|--------|-----------------|-----|------|-------|----|-----|------|-------|
| PA-35 | DN40CF | 59 | 73,4 | 106 | 20 | M8 | 38 | 88 |
| PA-64 | DN63CF | 75 | 93 | 166 | 26 | M12 | 65 | 140 |
| PA-100 | DN100CF | 90 | 108 | 206 | 26 | M12 | 102 | 180 |
| PA-150 | DN160CF | 100 | 125 | 279.4 | 45 | M16 | 127* | 238.4 |
| PA-150 | DN160CF | 100 | 125 | 329.4 | 45 | M16 | 127* | 290 |

* Options available



| Order code | Through holes (H) | Tapped holes (T) |
|------------|-------------------|-------------------|
| PA-35H | M6 | |
| PA-35T | | $\varnothing 6.4$ |
| PA-64H | M8 | |
| PA-64T | | $\varnothing 8.4$ |
| PA-100H | M8 | |
| PA-100T | | $\varnothing 8.4$ |
| PA-150H | M8 | |
| PA-150T | | $\varnothing 8.4$ |

Y Translators for 1 Axis Linear Motion



- Mounting flange DN63CF or DN100CF
- Diaphragm bellows sealed
- Robust
- Precise and smooth-running
- Repeatable
- Totally UHV compatible
- Various actuation possibilities

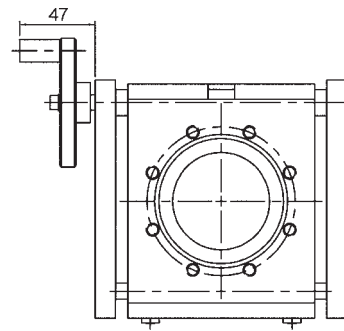
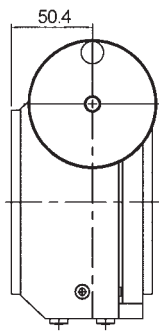
Technical data

- Mounting flange CF flanges, screw orientation shifted, M8 threaded holes
- Diaphragm bellows stainless steel 316L
- Bellows durability 10,000 cycles
- Bakeout temperature 250 °C (motor demounted)
- Actuation options manual with hand wheel, stepper or DC motor

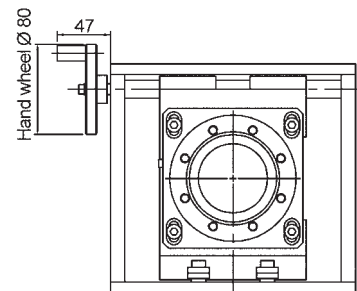
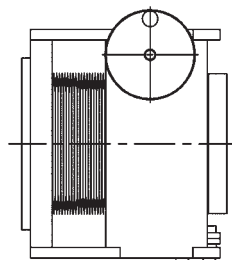
| Model | LDM64/38 | LDM64/64 | LDM100/38 | LDM100/64 |
|-----------------|----------|----------|-----------|-----------|
| Main flange | DN63CF | DN63CF | DN100CF | DN100CF |
| Trav. flange | DN40CF | DN40CF | DN40CF | DN63CF |
| Stroke | ±7.5 | ±7.5 | ±31 | ±31 |
| Bellows ID | 60 | 60 | 90 | 90 |
| Free ID | 38 | 60 | 38 | 60 |
| Mounting height | 87.5 | 87.5 | 182 | 182 |

| Order code | Main flange | Trav. flange | Actuation |
|--------------|-------------|--------------|-----------|
| LDM-64-38-H | DN63CF | DN40CF | manual |
| LDM-64-64-H | DN63CF | DN63CF | manual |
| LDM-100-38-H | DN100CF | DN40CF | manual |
| LDM-100-64-H | DN100CF | DN63CF | manual |

LDM64-64-H



LDM100-64-H



Translators for 2 Axes Linear Motion

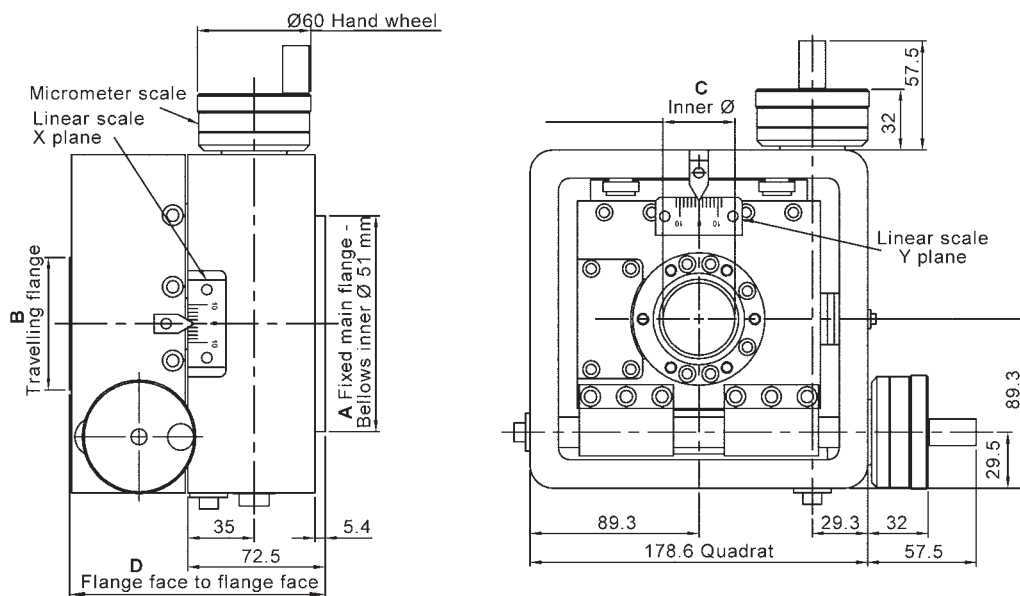


- Mounting flange DN63CF, DN100CF or DN160CF
- Max. stroke ± 14 mm or ± 31 mm
- Diaphragm bellows sealed
- Robust
- Precise and smooth-running
- Repeatable
- Totally UHV compatible
- Hand or stepper motor actuation

Technical data

- | | |
|---|--|
| <ul style="list-style-type: none"> ■ Connection ■ Bellows material ■ Bellows durability ■ XY resolution ■ Bakeout temperature ■ Actuation options | <p>CF flanges, screw orientation shifted, M8 threaded holes stainless steel 316L 10,000 cycles ± 0.01 mm with manual drive ± 0.0005 mm with stepper motor 250 °C (motor demounted) hand wheel with micrometer scale, stepper motor with gear</p> |
|---|--|

XY14 (manual actuation)



Scale drawing for XY31 on page 8-44

| Order code | A fixed mounting flange | B travelling flange | C Inner Ø | D flange to flange | XY stroke | Sample Ø | Drive |
|---------------|-------------------------|---------------------|-----------|--------------------|--|------------------------------|------------|
| XY14-64-38-H | DN63CF | DN40CF | 38 | 135 | ± 14 mm (vector) | max. 22 mm (for full stroke) | hand wheel |
| XY14-100-38-H | DN100CF | DN40CF | 38 | 147 | ± 10 mm (per axis) | | |
| XY31-100-38-H | DN100CF | DN40CF | 38 | 165.5 | ± 31 mm (vector) ± 22 mm (per axis) | max. 28 mm (for full stroke) | |
| XY31-100-64-H | DN100CF | DN63CF | 60 | 165.5 | | | |
| XY31-150-64-H | DN160CF | DN63CF | 60 | 180 | | | |

Modular Translators for Linear Motion along all 3 Axes

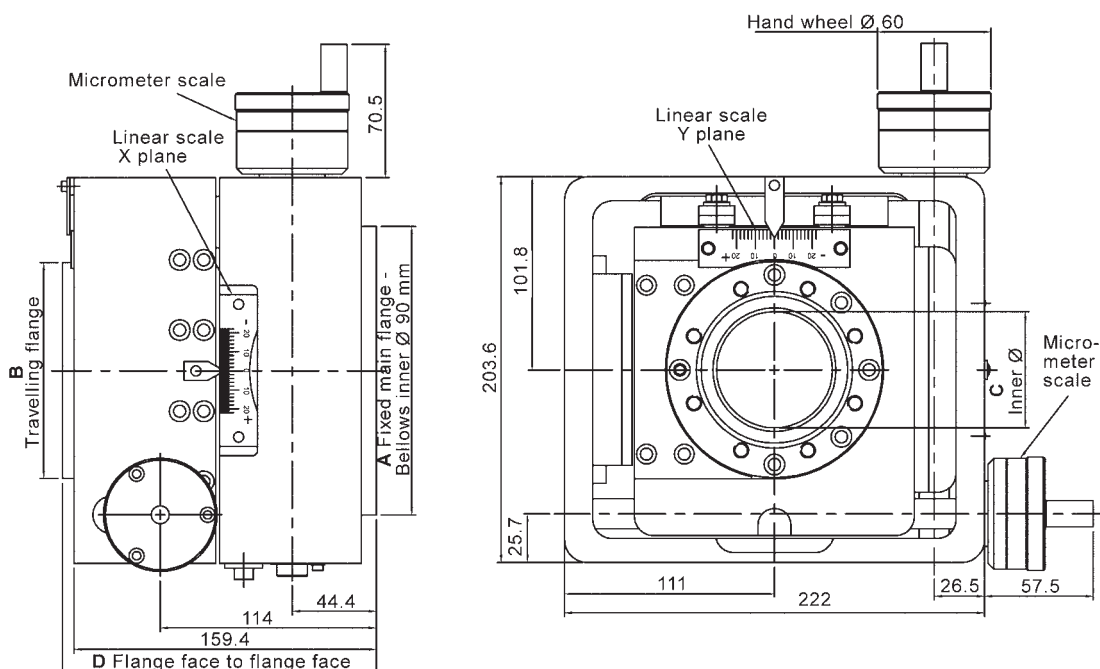


- Combination of Z linear translator and XY translator
- 5 XY translator models
- Up to 1000 mm Z stroke
- Highly stressable
- Separate diaphragm bellows for motion in XY and Z (exchangeable)
- Optional manual or motor actuation

Technical data

- | | |
|--|---|
| <ul style="list-style-type: none"> ■ Main flange ■ Travelling flange ■ XY resolution ■ Bakeout temperature ■ Actuation options ■ Z stroke ■ Z stroke resolution ■ Diaphragm bellows material ■ Mounting position ■ Actuation options | <ul style="list-style-type: none"> DN63CF, DN100CF or DN160CF (screw orientation shifted, M8 threaded holes) DN40CF or DN63CF, (screw orientation shifted, M6 or M8 threaded holes) ±0.01 mm with manual actuation ±0.0005 mm with stepper motor 250 °C (motor demounted) hand wheel with micrometer scale, stepper motor with gear 25 to 1000 mm ±0.25 mm with manual drive ±0.01 mm with digital linear scale ±0.0005 mm (semi step mode) stainless steel 316L any, without support manual, stepper or DC motor |
|--|---|

XY31 (manual drive)



Dimension table on page 8-43

XYZ Translators

Modular Translators for Linear Motion along all 3 Axes

| Order code | Z stroke | Mounting flange | Travelling flange | Actuation |
|------------------------|----------|-----------------|-------------------|-----------|
| XY14-64-38-H-Z-25-H | 25 | DN63CF | DN40CF | manual |
| XY14-64-38-H-Z-50-H | 50 | | | |
| XY14-64-38-H-Z-100-H | 100 | | | |
| XY14-64-38-H-Z-200-H | 200 | | | |
| XY14-64-38-H-Z-400-H | 400 | | | |
| XY14-64-38-H-Z-600-H | 600 | | | |
| XY14-100-38-H-Z-25-H | 25 | DN100CF | DN40CF | manual |
| XY14-100-38-H-Z-50-H | 50 | | | |
| XY14-100-38-H-Z-100-H | 100 | | | |
| XY14-100-38-H-Z-200-H | 200 | | | |
| XY14-100-38-H-Z-400-H | 400 | | | |
| XY14-100-38-H-Z-600-H | 600 | | | |
| XY31-100-38-H-Z-25-H | 25 | DN100CF | DN40CF | manual |
| XY31-100-38-H-Z-50-H | 50 | | | |
| XY31-100-38-H-Z-100-H | 100 | | | |
| XY31-100-38-H-Z-200-H | 200 | | | |
| XY31-100-38-H-Z-400-H | 400 | | | |
| XY31-100-38-H-Z-600-H | 600 | | | |
| XY31-100-38-H-Z-1000-H | 1000 | | | |
| XY31-100-64-H-Z-25-H | 25 | DN100CF | DN63CF | manual |
| XY31-100-64-H-Z-50-H | 50 | | | |
| XY31-100-64-H-Z-100-H | 100 | | | |
| XY31-100-64-H-Z-200-H | 200 | | | |
| XY31-100-64-H-Z-400-H | 400 | | | |
| XY31-100-64-H-Z-600-H | 600 | | | |
| XY31-100-64-H-Z-1000-H | 1000 | | | |
| XY31-150-64-H-Z-25-H | 25 | DN160CF | DN63CF | manual |
| XY31-150-64-H-Z-50-H | 50 | | | |
| XY31-150-64-H-Z-100-H | 100 | | | |
| XY31-150-64-H-Z-200-H | 200 | | | |
| XY31-150-64-H-Z-400-H | 400 | | | |
| XY31-150-64-H-Z-600-H | 600 | | | |
| XY31-150-64-H-Z-1000-H | 1000 | | | |