

ROTARY JOINTS for Machine Tools

Nobody knows Rotary Joint like **RIX**



RIX Company Information

RIX is a manufacturer of diverse rotary joints.

RIX rotary joints cover a wide range of industries

history

- 1907 Foundation
- 1967 Manufacturing and sales of high-pressure hydraulic pumps
- 1969 **Manufacturing and sales of rotary joints**
- 1983 Manufacturing and sales of high pressure precision cleaning equipment
- 1991 Research & Development Center is established in Fukuoka.
- 1992 High pressure water jet deflashing equipment (AX) is selected by Semiconductor International Magazine as one of the best products developed in 1992.
- 1996 RIX is listed on Fukuoka Stock Exchange.
- 2003 Established RIX TECHNOLOGY (THAILAND)CO.,LTD.in Thailand (Sales Office)
Established RIX CORPORATION SHANGHAI OFFICE in China (Sales Office)
- 2006 Established SIAM RIX MANUFACTURING CO., LTD in Thailand (Factory)
- 2007 **100th Annivesary**
- 2008 RIX is listed on the second section of the Tokyo Stock Exchange.
Established RIX CHANGZHOU MANUFACTURING CO., LTD in China (Factory)
- 2012 Established RIX Europe GmbH in Germany (Sales Office)
- 2013 Established RIX DALIAN MANUFACTURING CO., LTD in China (Factory)
- 2016 Established RIX North America, LLC in USA (Sales Office)
RIX is listed on the first section of the Tokyo Stock Exchange.



profile

Trade name : RIX CORPORATION

Founded: October 1907

Establishment : May 1944

Capital: 827,9 Million Yen

Management Headquarters : Fukuoka, Japan

Sales Headquarters : Tokyo, Japan



RIX Global Network



Contact Information

Country	Company	Address	Tel	Fax	e-mail
■ Asia					
China	RIX Dalian Manufacturing Co., Ltd.	No.41-4, Wanta Road, Dalian Economic & Technological development Zone, Dalian	+86-411-66162205	+86-411-66162209	info@rix-dl.com
Korea	WOO JEON Trading Co., Ltd.	#317 Lotte Gold Rosell, 890-59 Daech-Dong, Kangnam-Gu, Seoul, 135-839	+82-2-561-8601	+82-2-561-8604	woojeon@woojeon.com
Taiwan	IKEHARA Co., Ltd.	No.158, Tung-An St, Feng-Yuan Taichung County 420	+886-4-2524-2907	+886-4-2528-0799	kw.chang@ikehara.com
Thailand	RIX Technology Thailand Co., Ltd.	1558/12 Bangna-Trad Rd., Bangna, Bangkok 10260	+66-2-182-0146	+66-2-182-0148	sale@rix.co.th
India	INDO NIHON Technologies	"No. 1/1, Ekambaram Naicker Industrial Estate, Alapakkam, Chennai-600116"	+91-446-5611-852	+91-444-2805-327	info@indonihon.co.in
Other Asian Countries	RIX International Business Division	1-15-15 Sanno, Hakata-Ku, Fukuoka City, 812-8672 JAPAN	+81-92-472-7312	+81-92-475-2983	rixibd@rix.co.jp
■ Europe					
European Countries	RIX Europe GmbH	Am Wallgraben 99, 70565 Stuttgart	+49-711-489999-0	+49-711-489999-20	info-reu@rix.co.jp
■ North America					
USA	RIX North America, LLC	2127 Topside Road, Suite B, Louisville, TN, 37777	+1-865-977-7475	+1-865-977-7697	info-rix@rix-us.com
■ Other Countries					
JAPAN	RIX International Business Division	1-15-15 Sanno, Hakata-Ku, Fukuoka City, 812-8672 JAPAN	+81-92-472-7312	+81-92-475-2983	rixibd@rix.co.jp

Safety & installation precautions for bearing built-in type rotary joints

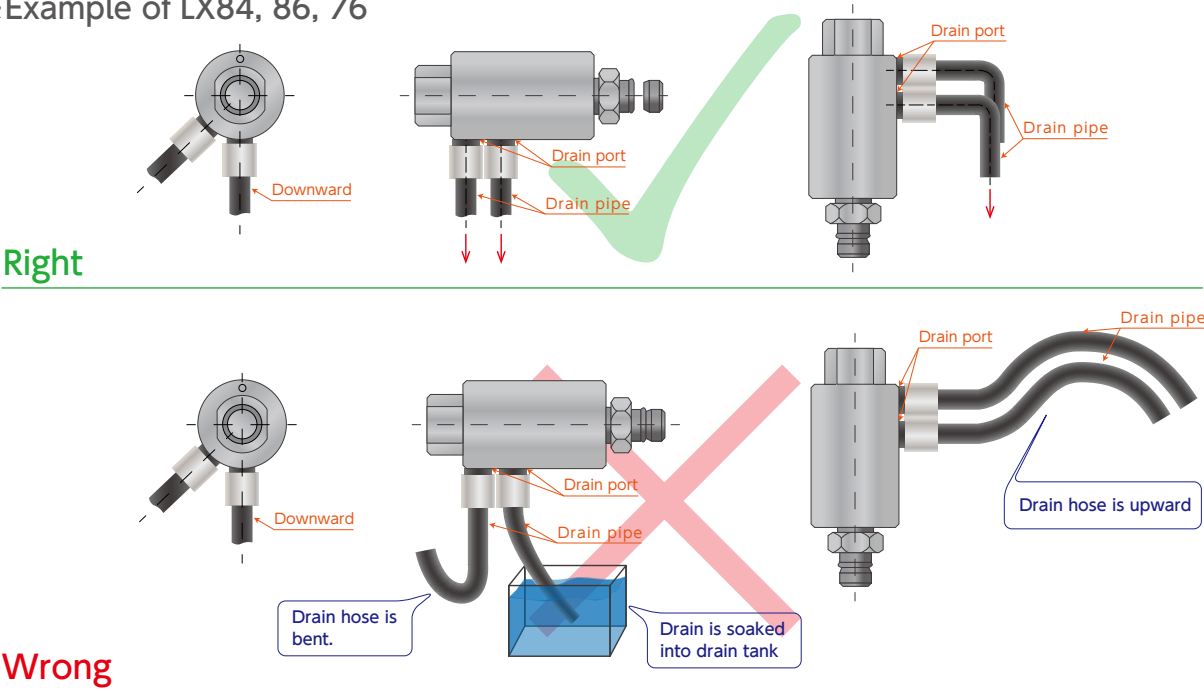
This page contains instructions on the installation of the bearing built-in type rotary joints for using safely and keeping longer life of the products.

Before using the bearing built-in type rotary joint, you should thoroughly read this page and refer to specification and instruction manual.

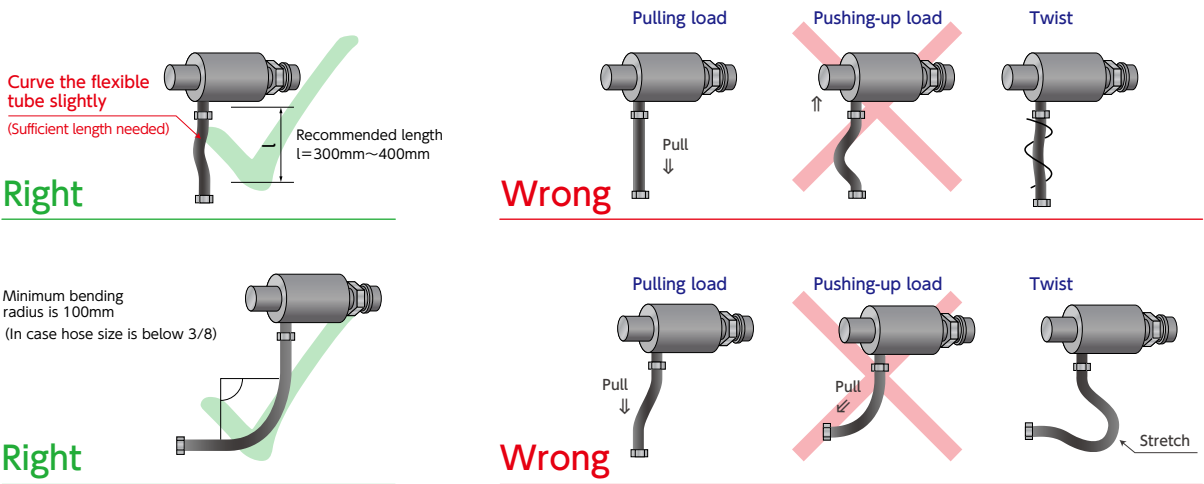
■ Installation precaution

1. Flushing
Install rotary joint after flushing thoroughly connecting parts of the rotary joint and inside of the piping.
2. Filter
Install filter at the suction ports of the coolant and supply ports of the oil mist and dry air.
If foreign particles enter into sealing part, it might cause leakage or seal damage.
Please refer to manufactured specification and instruction manual to check filtration accuracy.
3. Drain port
Install the drain ports downward.
Install the piping downward not to generate any back pressure when you connect pipe to drain port.
Use pipe to connect drain port that has pipe fitting with large inner diameter more than $\Phi 8$.
Use flexible tube to connect supply port of joint and drain port

※Example of LX84, 86, 76



4. Supply hose
Connect flexible tube that is curved slightly without pulling load and pushing-up load.



Application Data

Specification Use	Bearing	No. of port	Features	Pressure			Max. speed (min ⁻¹ &rpm)		Rotation without fluid	Direction			Model	Page	
										Vertical (upper) : Rotating part is upper side Vertical (lower) : Rotating part is lower side					
				Coolant	Oil mist	Dry air				Vertical (upper)	Vertical (lower)	Horizontal			
Through-spindle	Bearing less	1	2 fluid (Coolant and oil mist)	0.5~14 MPa 72.5~2,030 psi	0.2~1 MPa 29~145 psi 2~10 bar	×	Max 40,000		○	○	○	○	ESX series	P07 P08 P10	
		1	3 fluid (Coolant, oil mist and dry air)	5~140 bar	0.3~1 MPa 43.5~145 psi 3~10 bar	0.3~1 MPa 43.5~145 psi 3~10 bar							ESX (3 fluid) series	P09	
	Built-in	1	Standard	~7 MPa ~1,015 psi ~70 bar	~0.7 MPa ~101.5 psi ~7 bar	×	Max 6,000		×	○	×	○	L series	P13	
		1	2 fluid (Coolant and oil mist) High speed type Rotation without fluid: OK	0.5~7 MPa 72.5~1,015 psi 5~70 bar	0.2~1 MPa 29~145 psi 2~10 bar	×	Max 15,000		○	○	○	○	LX series	P11	
		1	3 fluid (Coolant, oil mist and dry air) High speed type Rotation without fluid: OK			0.2~1 MPa 29~145 psi 2~10 bar			○	○	○	○	LX (3 fluid) series	P12	
		1	3 fluid (Coolant, oil mist and dry air) Bore-mounted type				9801 Max 25,000 10106 Max 36,000	○	○	○	○	LX88V-9801 (Hexagonal connection) LX88V-10106 (Octagonal connection)	P14		
		Turning machine chuck or table	Built-in			1	1 port Enables vertical installation. Dry air usage only.	~7 MPa ~1,015 psi ~70 bar	—	~1 MPa ~145 psi ~10 bar	Max 6,000		○	○	×
	2			2 ports	[P1] ~7 MPa ※1 ~1,015 psi ~70 bar [P2] N/A	[P1] ~0.6 MPa ※1 ~87 ps ~6 bar	[P2] ~0.2 MPa ※1 ~29 psi ~2 bar	Max 8,000		○	○	×	○	EES-2P03	P18
	3 or more			3 ports or more Contact us for more details.	—	—	—	—		—	—	—	—		—
	Ball screw cooling	Bearing less	Duo flow	Ball screw cooling	~1 MPa ~145 psi ~10 bar	—	—	Max 5,000		×	○	○	○	ES50 series	P15 P16

※ 1 : Condition depends upon oil type. Contact us for more details.

Model

Bearing-less type for through spindle

ESX20 M - L 012 Y

Rotary joint type
ESX20: 1 port Bearing-less type

Type of fluid
M: 2 fluid (Coolant & Oil mist)
V: 3 fluid (Coolant, Oil mist & dry air)

Seal type: Heat shrink fit

Screw size at rotating (rotor) side
010:M10×1 (L.H)
012:M12×1.25 (L.H)
016:M16×1.5 (L.H)

Stationary seal type
L: Long stroke straight type
S: For hollow motor straight type
E: Hollow motor use for both straight and elbow type
T: Multi spindle type

Bearing built-in type for through spindle

L X 84 M - 234

Rotary joint type
L: 1 port bearing type

Rotation without fluid
X : OK
Nil: NG

Supply port
84: Straight
86: Elbow (90°)
95: Straight
96: Elbow (90°)

Rotor connection
234: Φ16, M16×1.5 (L.H)
244: Φ18, M16×1.5 (L.H)

Type of fluid
M: 2 fluid (Coolant & Oil mist)
V: 3 fluid (Coolant, Oil mist & dry air)

Turning machine chuck or table

LA-1P 01

Rotary joint type
LA-1P: 1 port bearing type

Rotor connection
01: Φ16, M16×1.5 (L.H)
02: Φ18, M16×1.5 (L.H)

Ball screw cooling

ES50 - 1600

Screw size at rotating (rotor) side
1600:M16×1.5
2000:M20×1.5

- Long stroke (max.8 mm)
- Body: Stainless steel

ESX20M-L Series



Photo : ESX20M-L012Y

Bearing-less type

Model

ESX20M - L 012 Y

Seal type: Heat shrink fit

Screw size at rotating (rotor) side
012: M12×1.25 (L.H)
016: M16×1.5 (L.H)

Operating Specifications

Fluid			Pressure		Flow rate (coolant)	Max. speed	Max. temprature	Stroke (Axial movement)
Coolant	Oil mist	Dry air	Coolant	Oil mist				
○	○	×	0.5~14 MPa 72.5 ~ 2,030 psi 5 ~ 140 bar	0.2~1 MPa 29 ~ 145 psi 2 ~ 10 bar	Below 20 L/min Below 5.28 gal/min	Max. 40,000 min ⁻¹ Max. 40,000 rpm	Max. 60 °C Max. 140 °F	Max. 8 mm

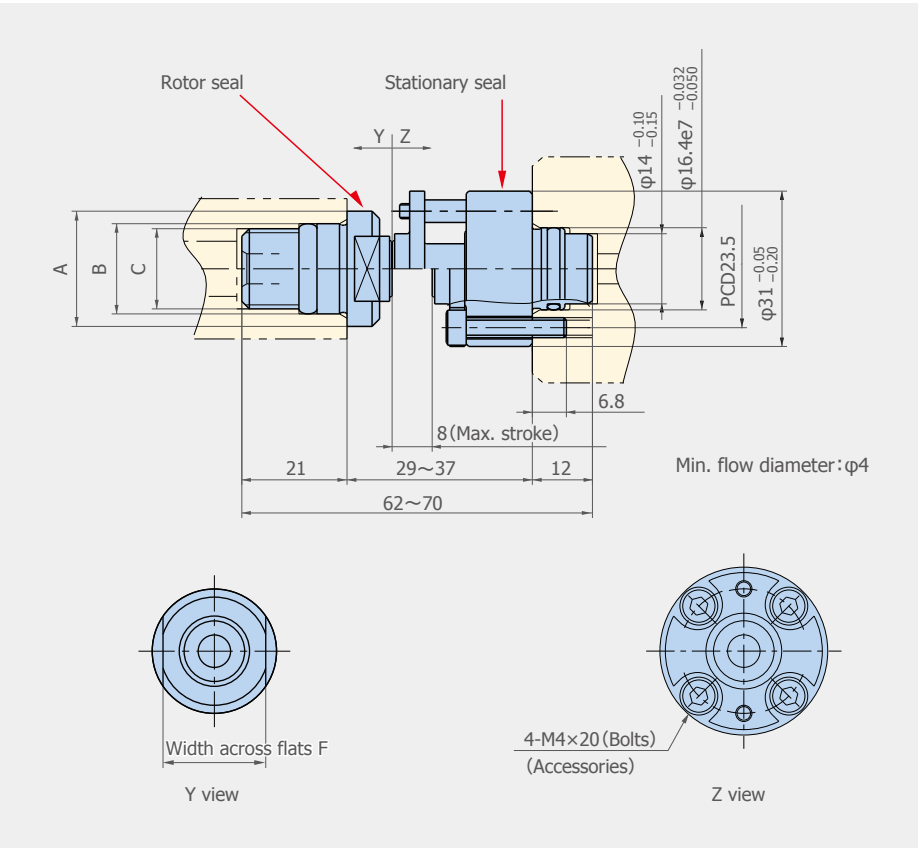
Installation Specifications

Direction			Rotation without fluid	Min flow rate to operate seal *In case fluid is coolant	Thrust loading to spindle side *In case fluid pressure is 7 MPa (1,015 psi, 70 bar).
Horizontal	Vertical *rotating part is upper side	Vertical *rotating part is lower side			
○	○	○	○	over 10 L/min over 2.64 gal/min	490 N *Thrust loading is directly proportional to fluid pressure

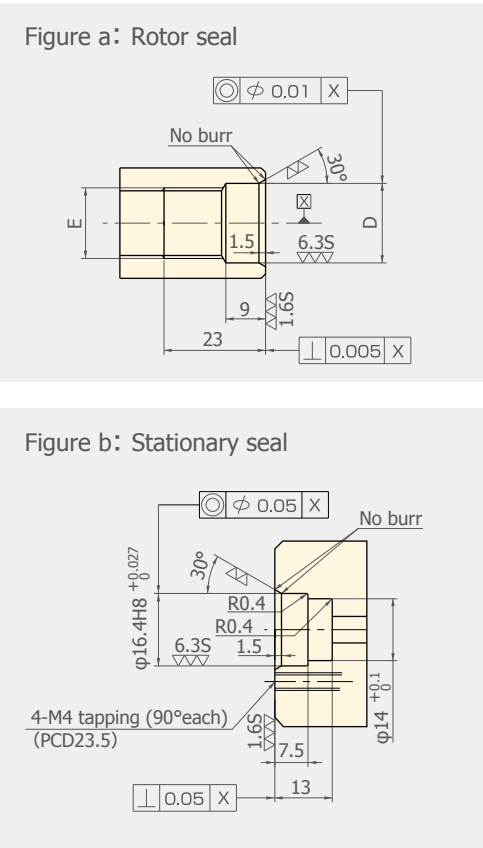
Dimensions

Model	A	B	C	D(Refer to figure a.)	E(Refer to figure a.)	F
ESX20M-L012Y	20	φ13h5 0 -0.008	M12×1.25 (L.H)	φ13 +0.008 +0.001	M12×1.25 (L.H)	17
ESX20M-L016Y	23	φ18h5 0 -0.008	M16×1.5 (L.H)	φ18 +0.008 +0.001	M16×1.5 (L.H)	19

Outline drawings



Installation dimensions



- Applicable for hollow motor
- 4.5 mm stroke

ESX20M-S&E Series



Photo : ESX20M-S012

Bearing-less type

Model

ESX20M - S 012

Screw size at rotating (rotor) side
012: M12×1.25 (L.H)
016: M16×1.5 (L.H)

Stationary seal type
S: Straight type
E: Both straight and elbow type

Operating Specifications

Fluid			Pressure		Flow rate (coolant)	Max. speed	Max. temprature	Stroke (Axial movement)
Coolant	Oil mist	Dry air	Coolant	Oil mist				
○	○	×	0.5~14 MPa 72.5 ~ 2,030 psi 5 ~ 140 bar	0.2~1 MPa 29 ~ 145 psi 2 ~ 10 bar	Below 20 L/min Below 5.28 gal/min	Max. 40,000 min ⁻¹ Max. 40,000 rpm	Max. 60 °C Max. 140 °F	Max. 4.5mm

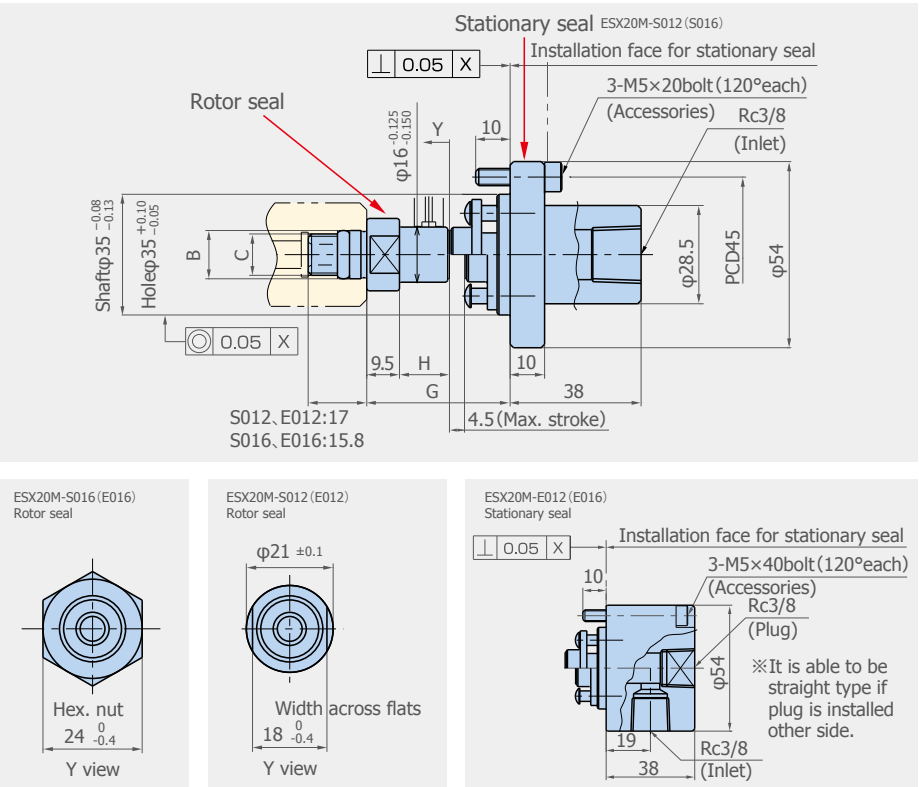
Installation Specifications

Direction			Rotation without fluid	Min flow rate to operate seal *In case fluid is coolant	Thrust loading to spindle side *In case fluid pressure is 7 MPa (1,015 psi, 70 bar).
Horizontal	Vertical *rotating part is upper side	Vertical *rotating part is lower side			
○	○	○	○	over 10 L/min over 2.64 gal/min	873 N *Thrust loading is directly proportional to fluid pressure

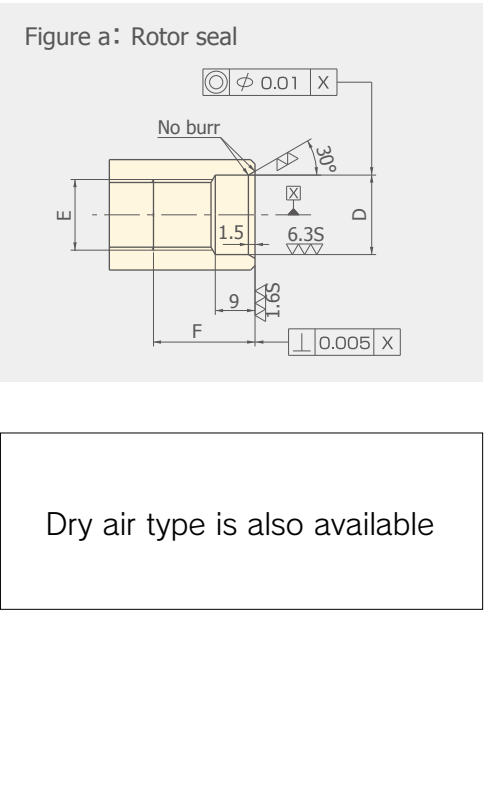
Dimensions

Model	B	C	D(Refer to figure a.)	E(Refer to figure a.)	F(Refer to figure a.)	G	H
ESX20M-S012	φ14 0 -0.008	M12×1.25 (L.H)	φ14 +0.008 +0.001	M12×1.25 (L.H)	18.5	37.1~41.6	14.5
ESX20M-S016	φ18 -0.007 -0.033	M16×1.5 (L.H)	φ18 +0.010 -0.005	M16×1.5 (L.H)	17	42~46.5	19.4
ESX20M-E012	φ14 0 -0.008	M12×1.25 (L.H)	φ14 +0.008 +0.001	M12×1.25 (L.H)	18.5	37.1~41.6	14.5
ESX20M-E016	φ18 -0.007 -0.033	M16×1.5 (L.H)	φ18 +0.010 -0.005	M16×1.5 (L.H)	17	42~46.5	19.4

Outline drawings



Installation dimensions



Dry air type is also available

- Long stroke (max.8 mm)
- Applicable for dry air
- Body: Stainless steel

ESX20V-L Series



Photo : ESX20V-L112

Bearing-less type

■ Model ESX20V -L 112 Y Seal type: Heat shrink fit

Screw size at rotating (rotor) side
112: M12×1.25 (L.H)
116: M16×1.5 (L.H)

Operating Specifications

Fluid			Pressure		Flow rate (coolant)	Max. speed	Max. temprature	Stroke (Axial movement)
Coolant	Oil mist	Dry air	Coolant	Oil mist / Dry air				
○	○	○	0.5~14 MPa 72.5 ~ 2,030 psi 5 ~ 140 bar	0.2~1 MPa 29 ~ 145 psi 2 ~ 10 bar	Below 20 L/min Below 5.28 gal/min	Max. 40,000 min ⁻¹ Max. 40,000 rpm	Max. 60 °C Max. 140 °F	Max. 8 mm

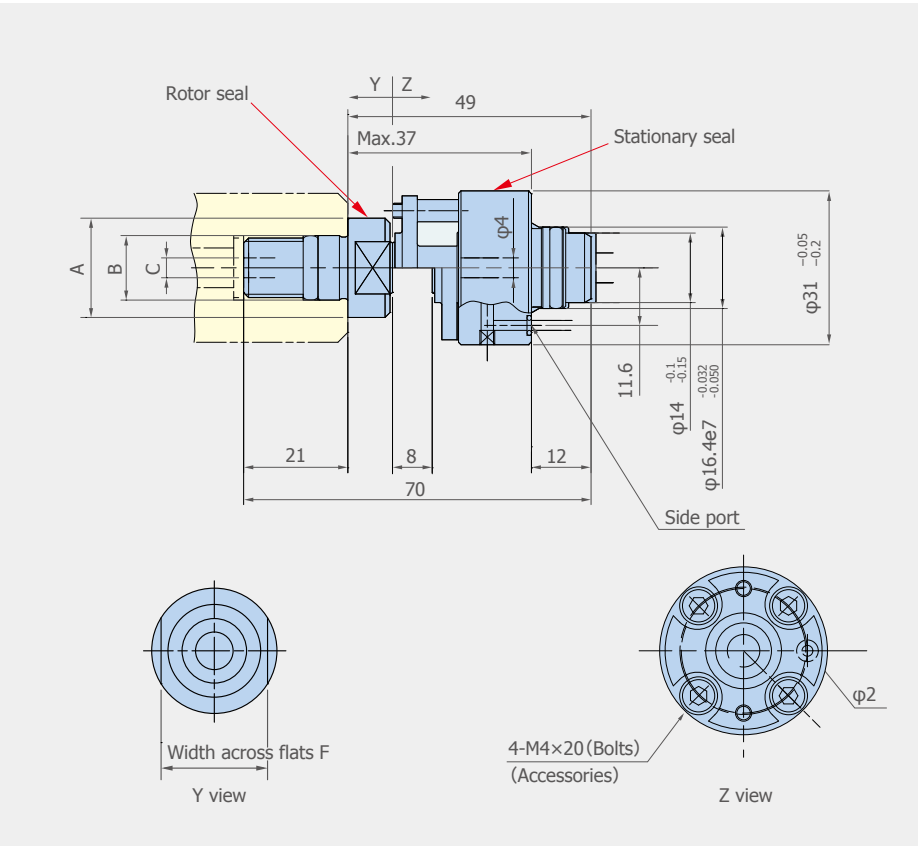
Installation Specifications

Direction			Rotation without fluid	Min flow rate to operate seal *In case fluid is coolant	Thrust loading to spindle side *In case fluid pressure is 7 MPa (1,015 psi, 70 bar).
Horizontal	Vertical *rotating part is upper side	Vertical *rotating part is lower side			
○	○	○	○	over 10 L/min over 2.64 gal/min	490 N *Thrust loading is directly proportional to fluid pressure

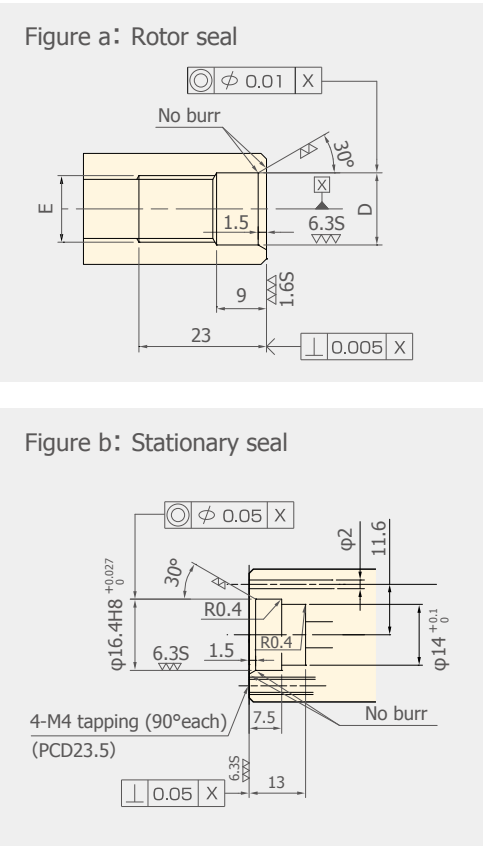
Dimensions

Model	A	B	C	D(Refer to figure a.)	E(Refer to figure a.)	F
ESX20V-L112Y	20	φ13h5 0 -0.008	M12×1.25 (L.H)	φ13 +0.008 +0.001	M12×1.25 (L.H)	17
ESX20V-L116Y	23	φ18h5 0 -0.008	M16×1.5 (L.H)	φ18 +0.008 +0.001	M16×1.5 (L.H)	19

Outline drawings



Installation dimensions



- Minimum length type
- Applicable for M10 rotor
- Body: Stainless steel
- Minimize amount of drain by maintaining seal contact. [ES20M-T010]

ES20M ESX20M-T Series



Photo : ESX20M-T010

Bearing-less type

■ Model ESX20M - T010

X: Rotation without fluid (OK)
Nil: Rotation without fluid (NG) <Spring maintains seal contact>

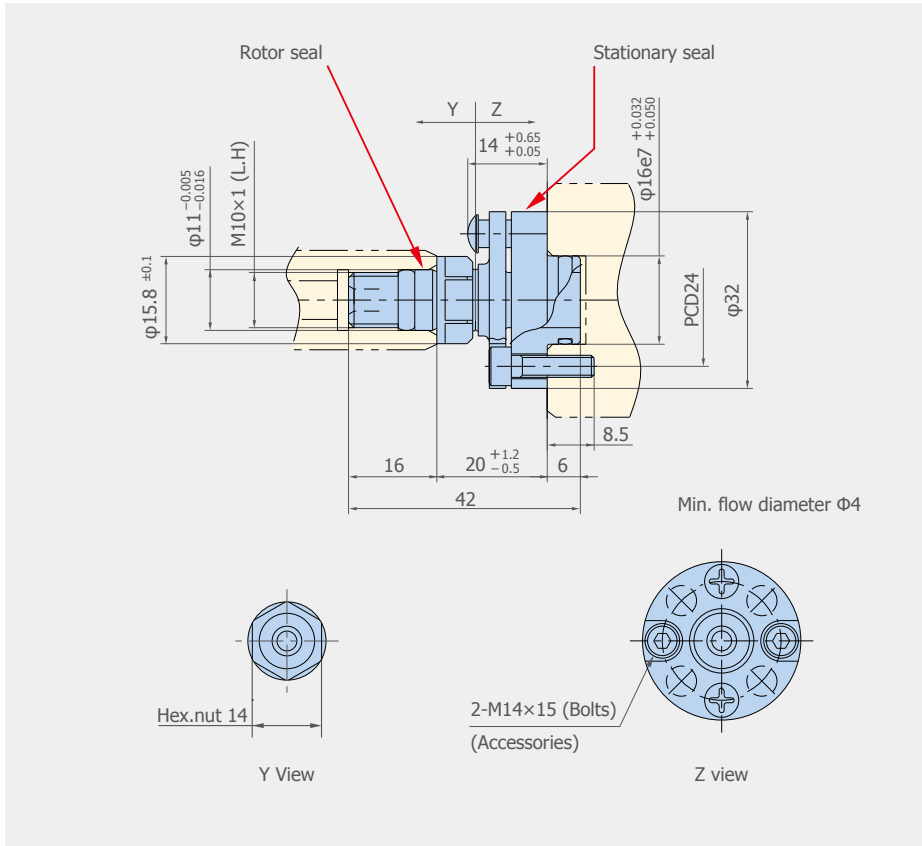
Operating Specifications

Fluid			Pressure [ES20M-T010]		Pressure [ESX20M-T010]		Flow rate (coolant)	Max. speed	Max. temprature
Coolant	Oil mist	Dry air	Coolant	Oil mist	Coolant	Oil mist			
○	○	×	~12 MPa 1,740 psi 120 bar	~1.0 MPa 145 psi 10 bar	0.5~12 MPa 72.5~1,740 psi 5~120 bar	0.2~1.0 MPa 29~145 psi 2~10 bar	Below 2 0L/min Below 5.28 gal/min	Max. 40,000 min ⁻¹ Max. 40,000 rpm	Max. 60 °C Max. 140 °F

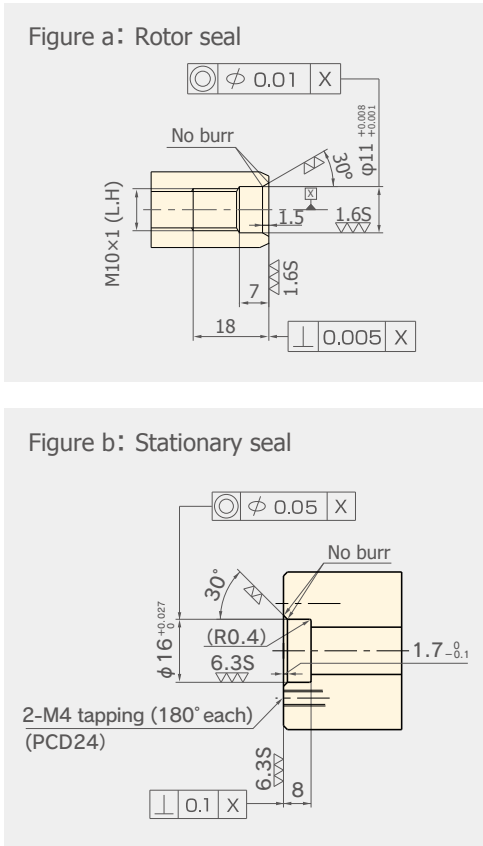
Installation Specifications

Direction			Rotation without fluid	Min flow rate to operate seal *In case fluid is coolant	Thrust loading to spindle side *In case fluid pressure is 7 MPa (1,015 psi, 70 bar).
Horizontal	Vertical *rotating part is upper side	Vertical *rotating part is lower side			
○	○	○	[ES20M-T010] × [ESX20M-T010] ○	[ES20M-T010] Nil (seal is always contact) [ESX20M-T010] over 10 L/min 2.64 gal/min	550 N *Thrust loading is directly proportional to fluid pressure

Outline drawings



Installation dimensions



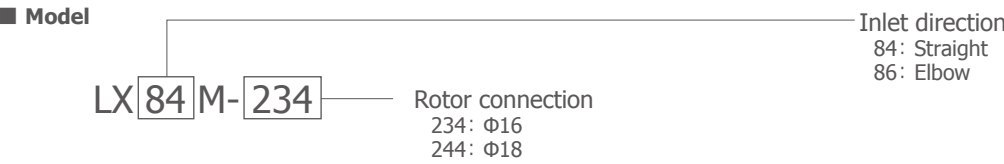
- High pressure and high speed type
- Double drain structure (Applicable for vertical mounting)



Photo : LX84M-234

LX84M,LX86M Series

Built-in bearing type



Operating Specifications

Fluid			Pressure		Flow rate (coolant)	Max. speed	Max. temprature
Coolant	Oil mist	Dry air	Coolant	Oil mist			
○	○	×	0.5~7 MPa 72.5 ~ 1,015 psi 5 ~ 70 bar	0.2~1 MPa 29 ~ 145 psi 2 ~ 10 bar	Below 20 L/min Below 5.28 gal/min	Max. 15,000 min ⁻¹ Max. 15,000 rpm	Max. 60 °C Max. 140 °F

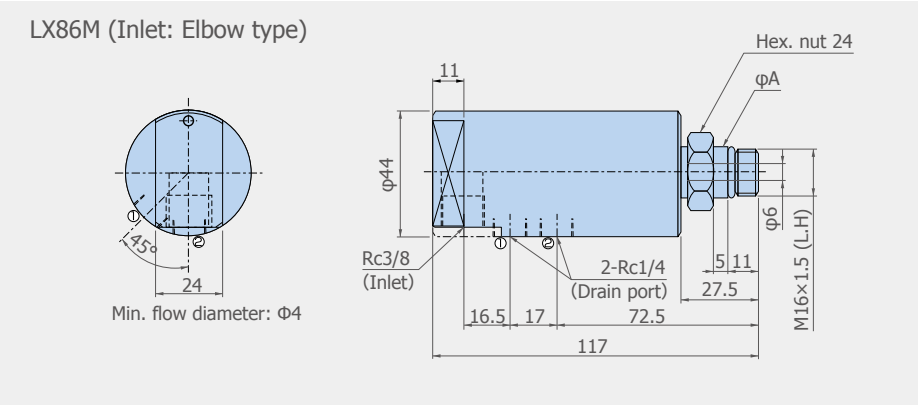
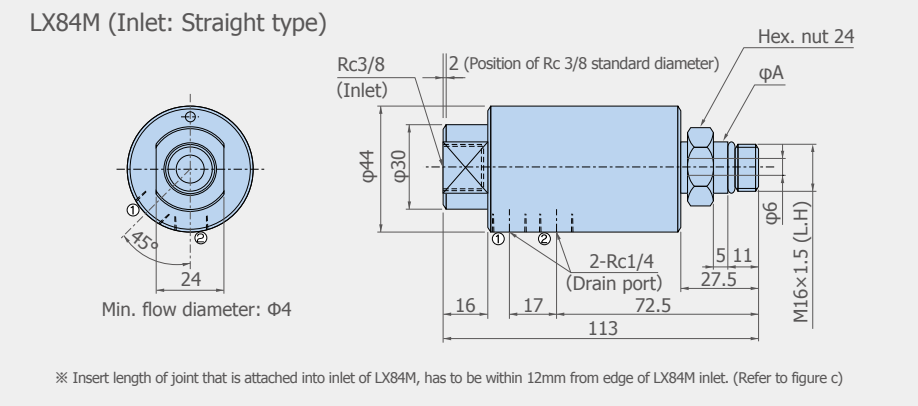
Installation Specifications

Direction			Rotation without fluid	Min. flow rate to operate seal ※In case fluid is coolant
Horizontal	Vertical ※rotating part is upper side	Vertical ※rotating part is lower side		
○	○	○	○	over 10 L/min 2.64 gal/min

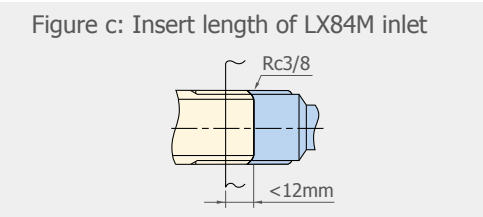
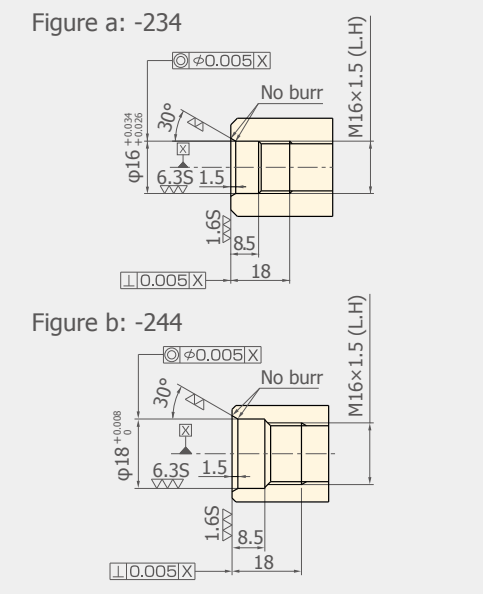
Dimensions

Model	A	Spindle side dimension	Weight (kg)
LX84M-234	Φ16 ^{+0.025} / _{+0.017}	Figure a	0.43
LX84M-244	Φ18 ^{+0.001} / _{-0.009}	Figure b	0.43
LX86M-234	Φ16 ^{+0.025} / _{+0.017}	Figure a	0.46
LX86M-244	Φ18 ^{+0.001} / _{-0.009}	Figure b	0.46

Outline drawings



Spindle side dimensions



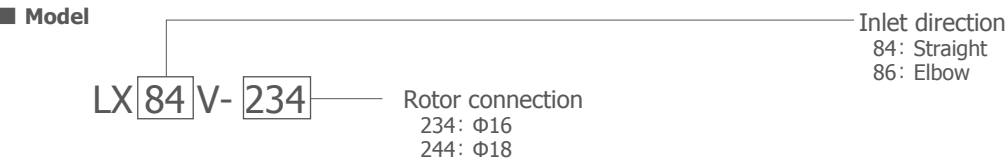
- Applicable for dry air
- High pressure and High speed type
- Double drain structure (Applicable for vertical mounting)



Photo : LX84V-234

LX84V,LX86V Series

Built-in bearing type



Operating Specifications

Fluid			Pressure		Flow rate (coolant)	Max. speed	Max. temprature
Coolant	Oil mist	Dry air	Coolant	Oil mist			
○	○	○	0.5~7 MPa 72.5 ~ 1,015 psi 5 ~ 70 bar	0.2~1 MPa 29 ~ 145 psi 2 ~ 10 bar	Below 20 L/min Below 5.28 gal/min	Max. 15,000 min ⁻¹ Max. 15,000 rpm	Max. 60 °C Max. 140 °F

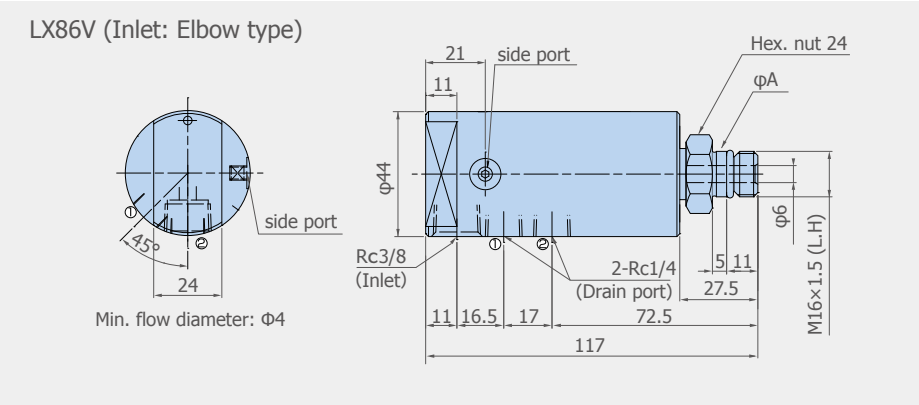
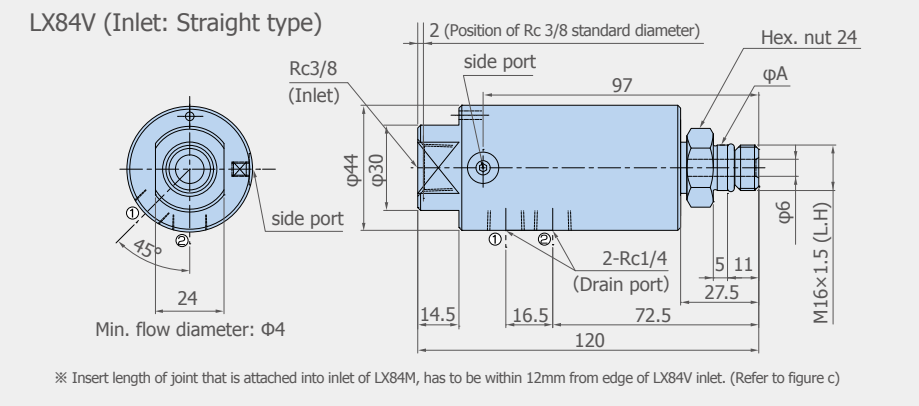
Installation Specifications

Direction			Rotation without fluid	Min. flow rate to operate seal ※In case fluid is coolant
Horizontal	Vertical ※rotating part is upper side	Vertical ※rotating part is lower side		
○	○	○	○	over 10 L/min 2.64 gal/min

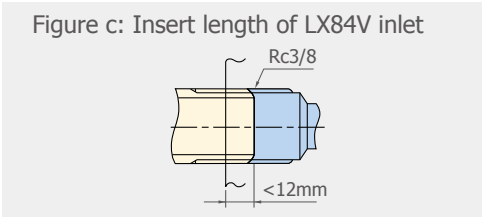
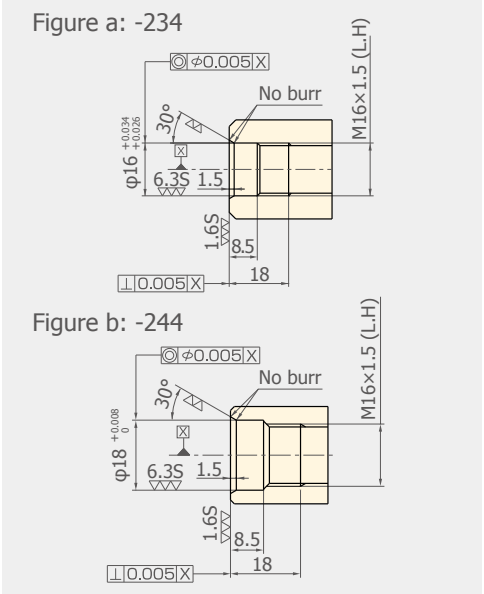
Dimensions

Model	A	Spindle side dimension	Weight (kg)
LX84V-234	Φ16 ^{+0.025} / _{+0.017}	Figure a	0.43
LX84V-244	Φ18 ^{+0.001} / _{-0.009}	Figure b	0.43
LX86V-234	Φ16 ^{+0.025} / _{+0.017}	Figure a	0.46
LX86V-244	Φ18 ^{+0.001} / _{-0.009}	Figure b	0.46

Outline drawings



Spindle side dimensions



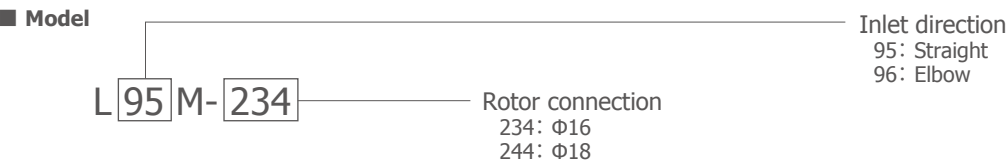
·Standard type



Photo : L95M-244

L95M,L96M Series

Built-in bearing type



Operating Specifications

Fluid			Pressure		Flow rate (coolant)	Max. speed	Max. temprature
Coolant	Oil mist	Dry air	Coolant	Oil mist			
○	○	×	~7 MPa ~1,015 psi ~70 bar	~0.7 MPa 101.5 psi ~7 bar	Below 20 L/min Below 5.28 gal/min	Max. 6,000 min ⁻¹ Max. 6,000 rpm	Max. 60 °C Max. 140 °F

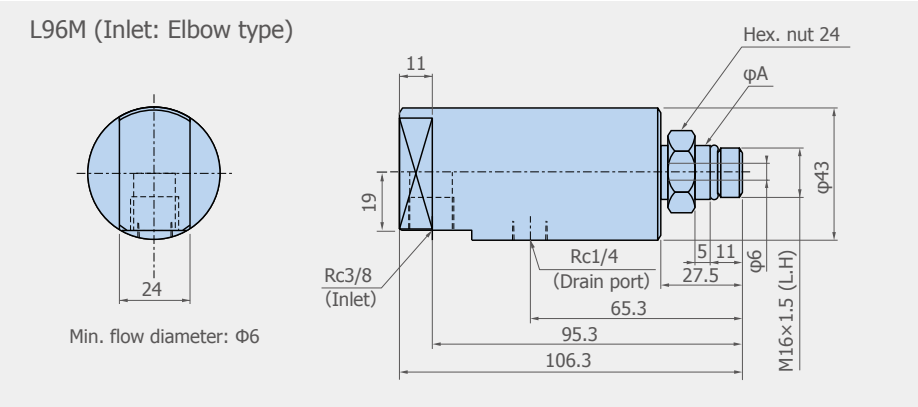
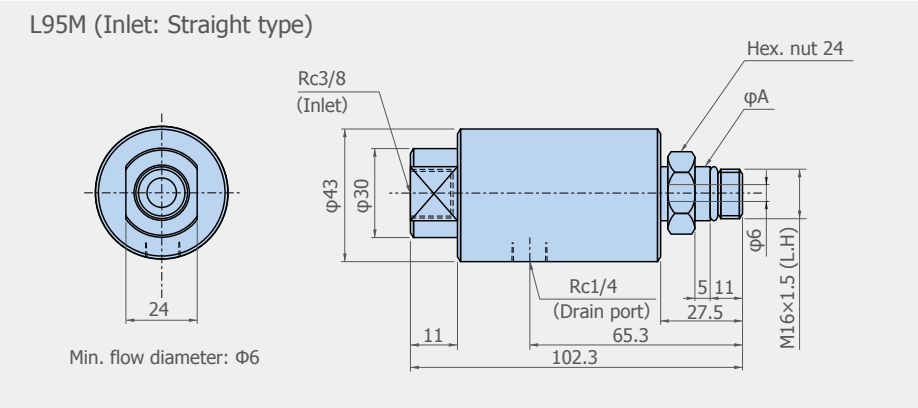
Installation Specifications

Direction			Rotation without fluid	Min. flow rate to operate seal *In case fluid is coolant
Horizontal	Vertical *rotating part is upper side	Vertical *rotating part is lower side		
○	○	×	×	Seal has always contact

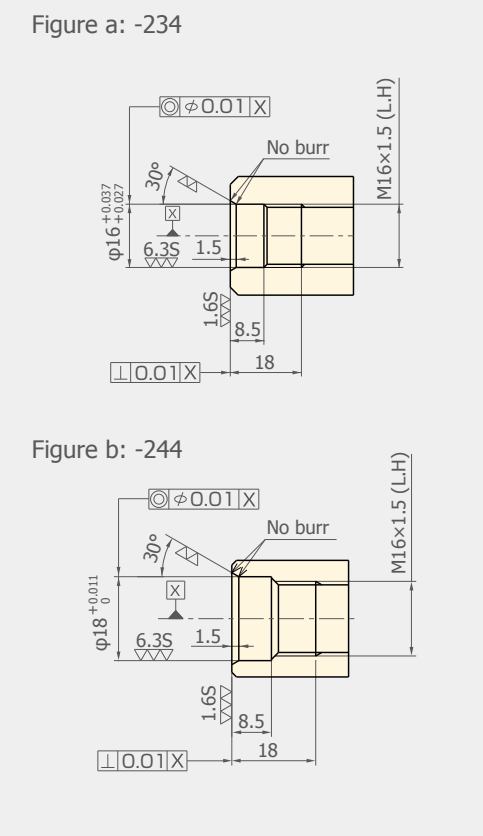
Dimensions

Model	A	Spindle side dimension	Weight (kg)
L95M-234	$\phi 16$ ^{+0.025} / _{+0.017}	Figure a	0.4
L95M-244	$\phi 18$ ^{+0.025} / _{+0.017}	Figure b	0.4
L96M-234	$\phi 16$ ^{+0.025} / _{+0.017}	Figure a	0.4
L96M-244	$\phi 18$ ^{+0.025} / _{+0.017}	Figure b	0.4

Outline drawings



Spindle side dimensions



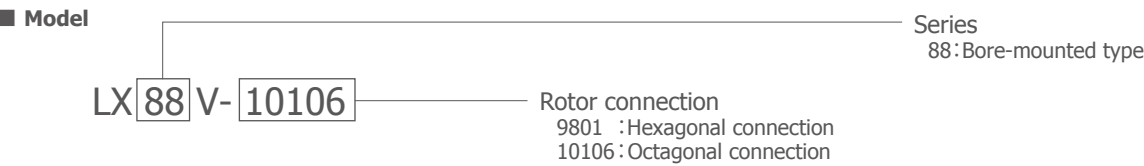
- Bore-Mounted type
- Applicable for dry air
- High pressure and high speed type



Photo : LX88V-10106

LX88V Series

Built-in bearing type



Operating Specifications

Fluid			Pressure		Flow rate (coolant)	Max. speed		Max. temprature
Coolant	Oil mist	Dry air	Coolant	Oil mist / Dry air		[LX88V-9801]	[LX88V-10106]	
○	○	○	0.5~7 MPa 72.5~1,015 psi 5~70 bar	0.2~1 MPa 29~145 psi 2~10 bar	Below 20 L/min Below 5.28 gal/min	Max. 25,000 min ⁻¹ Max. 25,000 rpm	Max. 36,000 min ⁻¹ Max. 36,000 rpm	Max. 60 °C Max. 140 °F

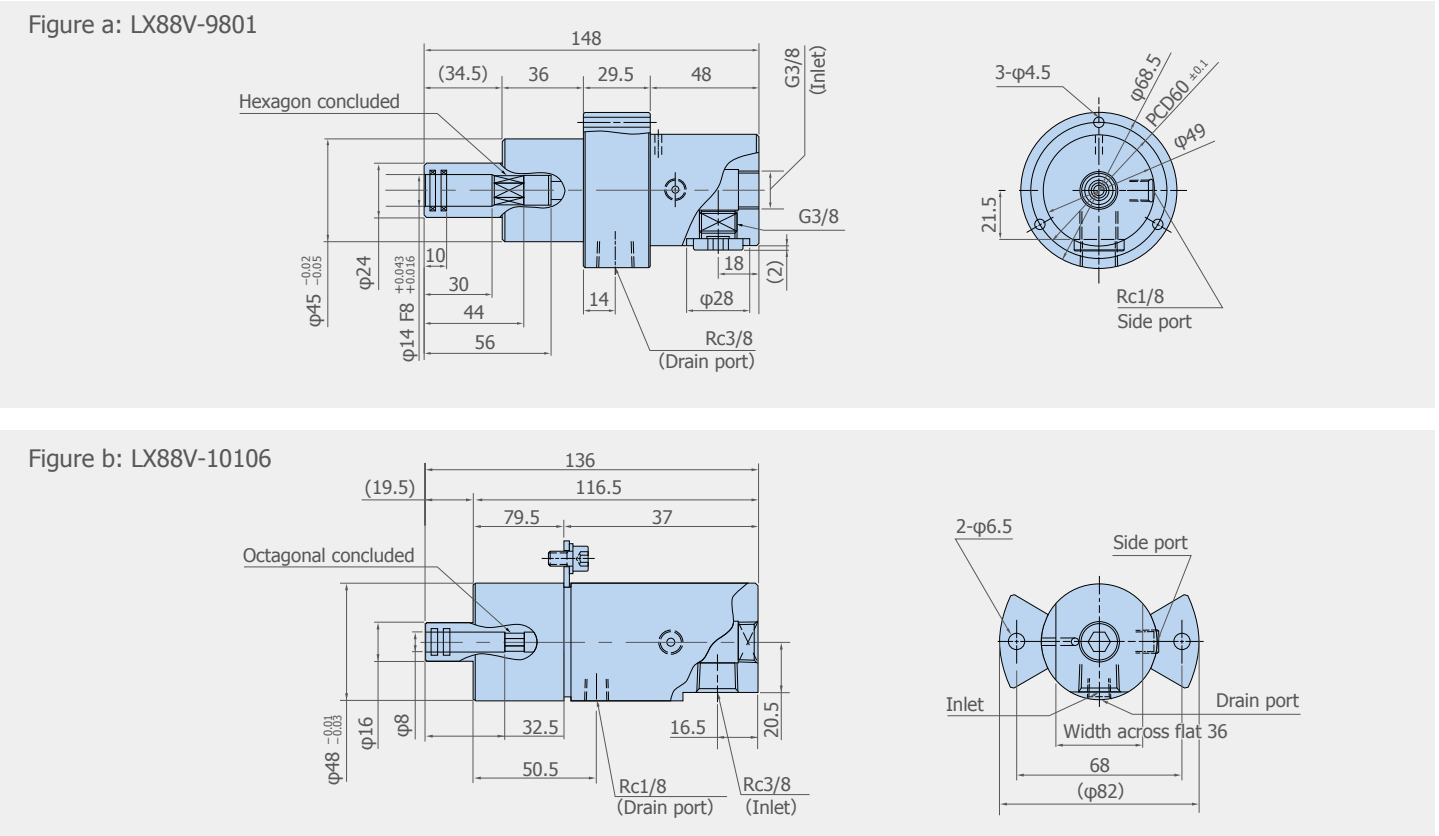
Installation Specifications

Direction			Rotation without fluid	Min. flow rate to operate seal *In case fluid is coolant
Horizontal	Vertical *rotating part is upper side	Vertical *rotating part is lower side		
○	○	○	○	over 10 L/min 2.64 gal/min

Dimensions

Model	A	Spindle side dimension	Weight (kg)
LX88V-9801	$\phi 16$ ^{+0.025} / _{+0.017}	Figure a	0.6
LX88V-10106	$\phi 18$ ^{+0.025} / _{+0.017}	Figure b	0.6

Outline drawings



- Mechanical seal type for supply and drain of coolant oil.
- Easy removal installation at edge of ball screw.
- High speed type

ES50 Series



Photo : ES50-1600

Ball screw cooling type

Model

ES50-1600 Screw size for rotor side
 1600: M16×1.5 (R.H)
 2000: M20×1.5 (R.H)

Operating Specifications

Fluid	Pressure	Max. speed	Max. temprature
Coolant oil (VG10)	~1 MPa	Max. 5,000 min ⁻¹	Max. 60 ℃
	~ 145 psi		
	~ 10 bar	Max. 5,000 rpm	Max. 140 ℉

Installation Specifications

Direction			Rotation without fluid		Thrust loading to spindle side *In case fluid pressure is 0.5 MPa (72.5 psi, 5 bar).	
Horizontal	Vertical *rotating part is upper side	Vertical *rotating part is lower side				
○	○	○	×		[ES50-1600] 196 N [ES50-2000] 265 N	*Thrust loading is directly proportional to fluid pressure

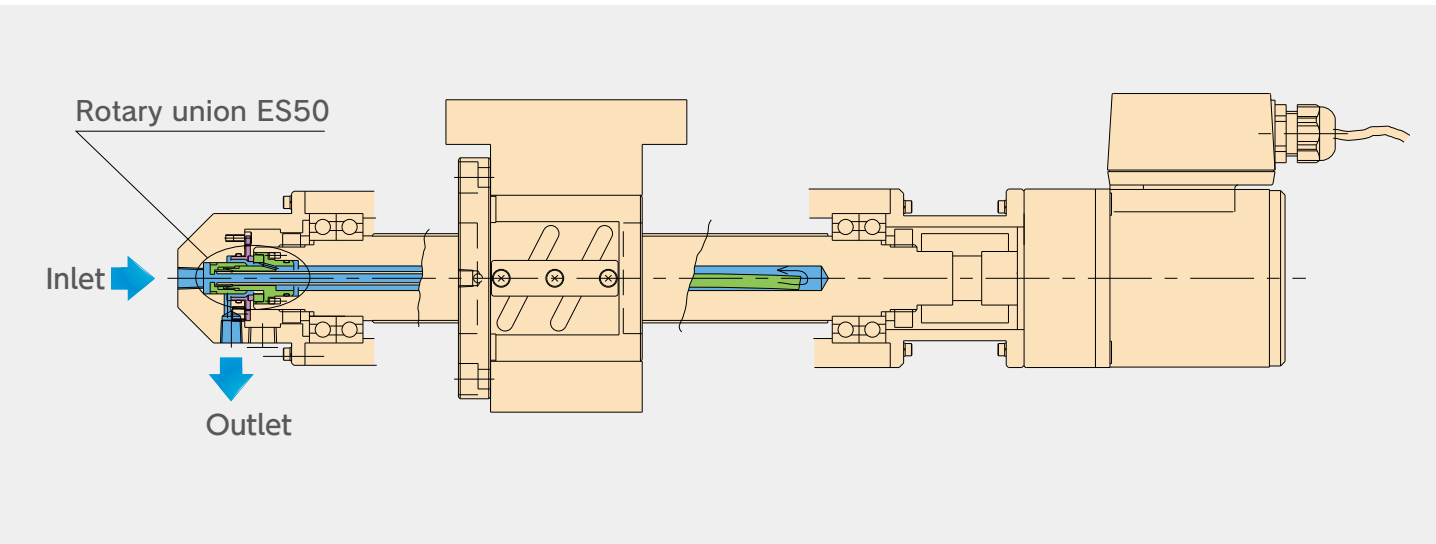
Pressure loss data (Reference of VG10 coolant oil)

Model	Diameter of tube	Flow rate		Length of tube								
		(L/min)	(gal/min)	0.5 m (MPa)	(psi)	(bar)	1.0 m (MPa)	(psi)	(bar)	2.0 m (MPa)	(psi)	(bar)
ES50-1600	Outside diameter φ6	3	0.79	0.16	23	1.6	0.21	30	2.1	0.37	53	3.7
	Inside diameter φ4	5	1.32	0.32	46	3.2	0.43	62	4.3	0.68	98	6.8
ES50-2000	Outside diameter φ8	5	1.32	0.07	10	0.7	0.08	11	0.8	0.11	16	1.1
	Inside diameter φ6	10	2.64	0.23	33	2.3	0.28	40	2.8	0.41	59	4.1

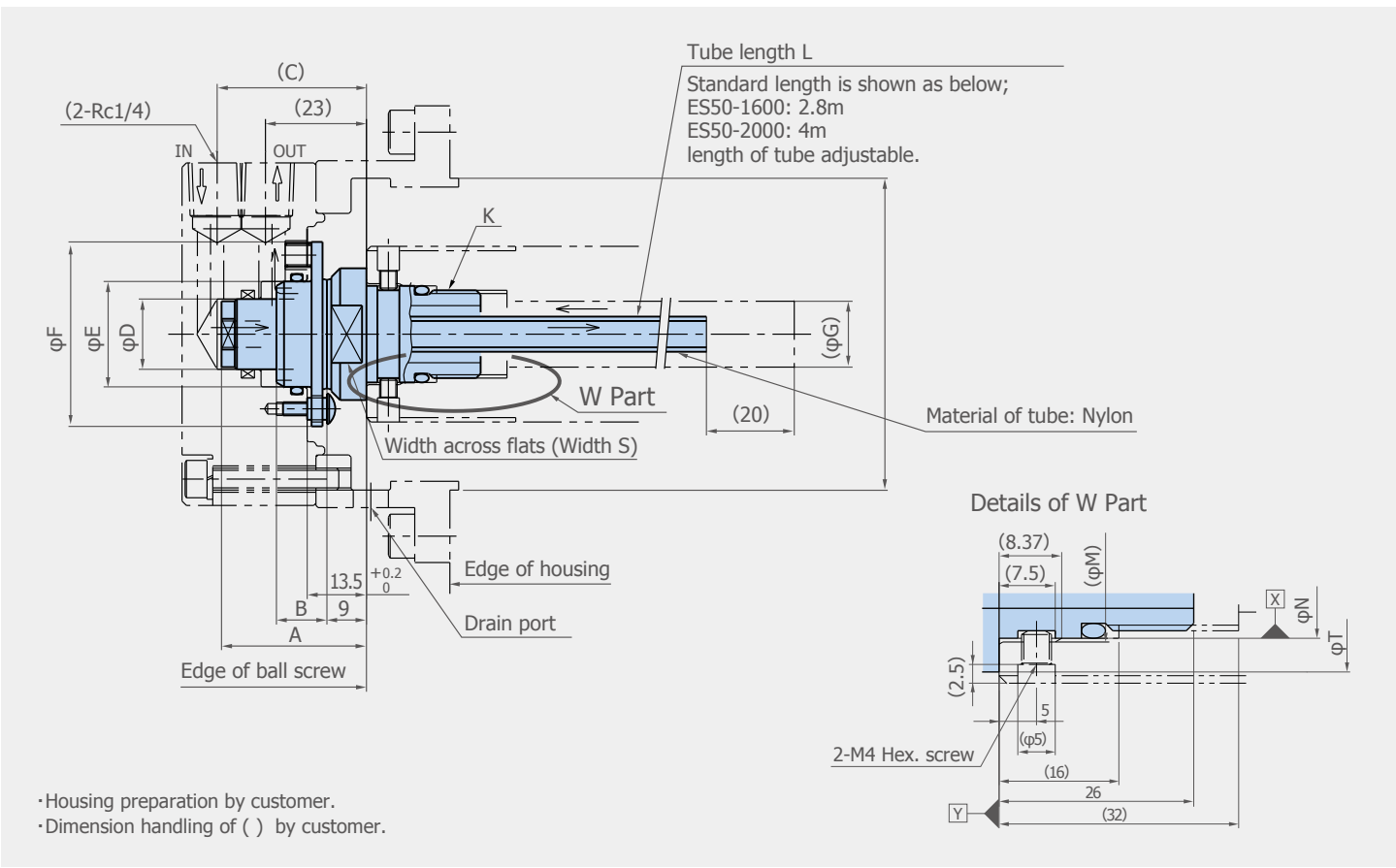
Dimensions

Model	A	B	C	D	E	F	G	K	M	N	T	S	Stationary side dimension	Tube diameter
ES50-1600	32	11	33	14	20	38	12	M16×1.5 (R.H)	19	φ18f7 (H7)	27	24	Figure a	Outside diameter φ6 Inside diameter φ4
ES50-2000	33	11.5	34	16	24	42	15	M20×1.5 (R.H)	23	φ22g6 (H7)	34	27	Figure b	Outside diameter φ8 Inside diameter φ6

Image of ball screw



Model



Installation dimensions

Figure a: Stationary seal (ES50-1600)

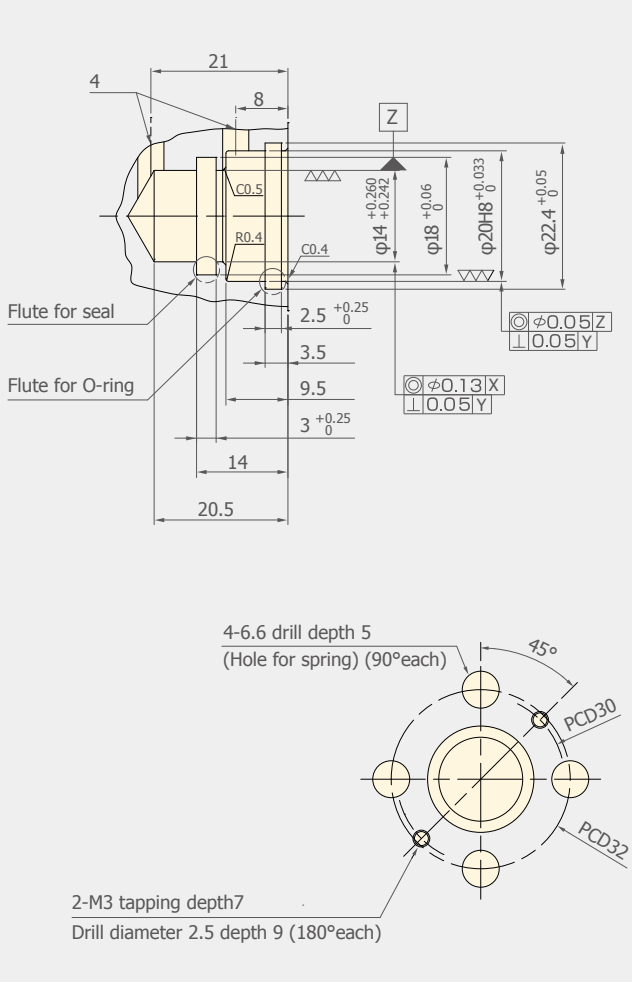
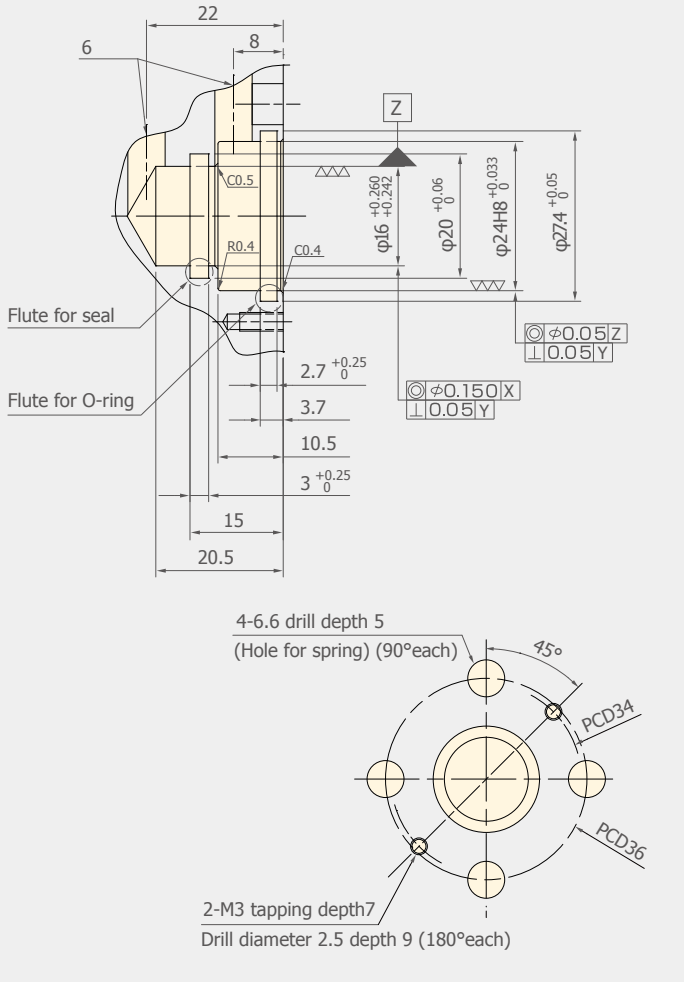


Figure b: Stationary seal (ES50-2000)



LA-1P Series



Photo : LA-1P01

Turning machine for chucking

Model

LA-1P01 Rotor connection
01: Φ16, M16×1.5 (L.H)
02: Φ18, M16×1.5 (L.H)

Operating Specifications

Fluid			Pressure			Flow rate (coolant)	Max. speed	Max. temprature
Coolant	Oil mist	Dry&Vacuum air	Coolant	Dry air	Vacuum air			
○	○	○	7 MPa	1.0 MPa	-0.1 MPa	Below 20 L/min	Max. 6,000 min ⁻¹	Max. 60 °C
			1,015 psi	145 psi	-14.5 psi	Below 5.28 gal/min	Max. 6,000 rpm	Max. 140 °F
			70 bar	10 bar	-1 bar			

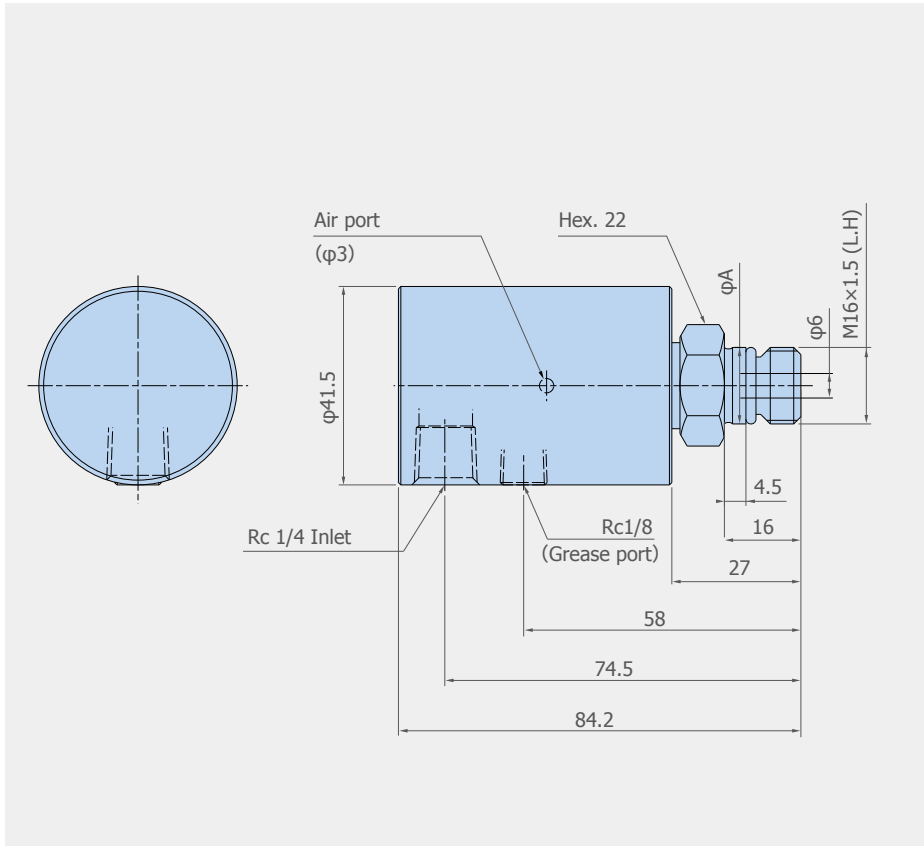
Installation Specifications

Direction			Rotation without fluid
Horizontal	Vertical ※rotating part is upper side	Vertical ※rotating part is lower side	
○	○	× ※Only applicable for dry air	○

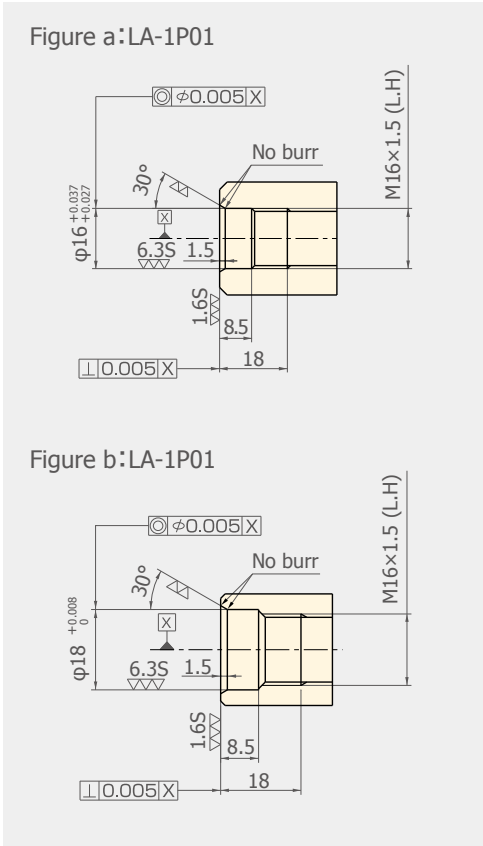
Dimensions

Model	A	Spindle side dimension	Weight (kg)
LA-1P01	φ16 +0.025 +0.017	Figure a	0.33
LA-1P02	φ18 -0.001 -0.009	Figure b	0.33

Outline drawings



Spindle side dimensions



EES-2P03 Series



Photo : EES-2P03

Turning machine for chucking

Operating Specifications

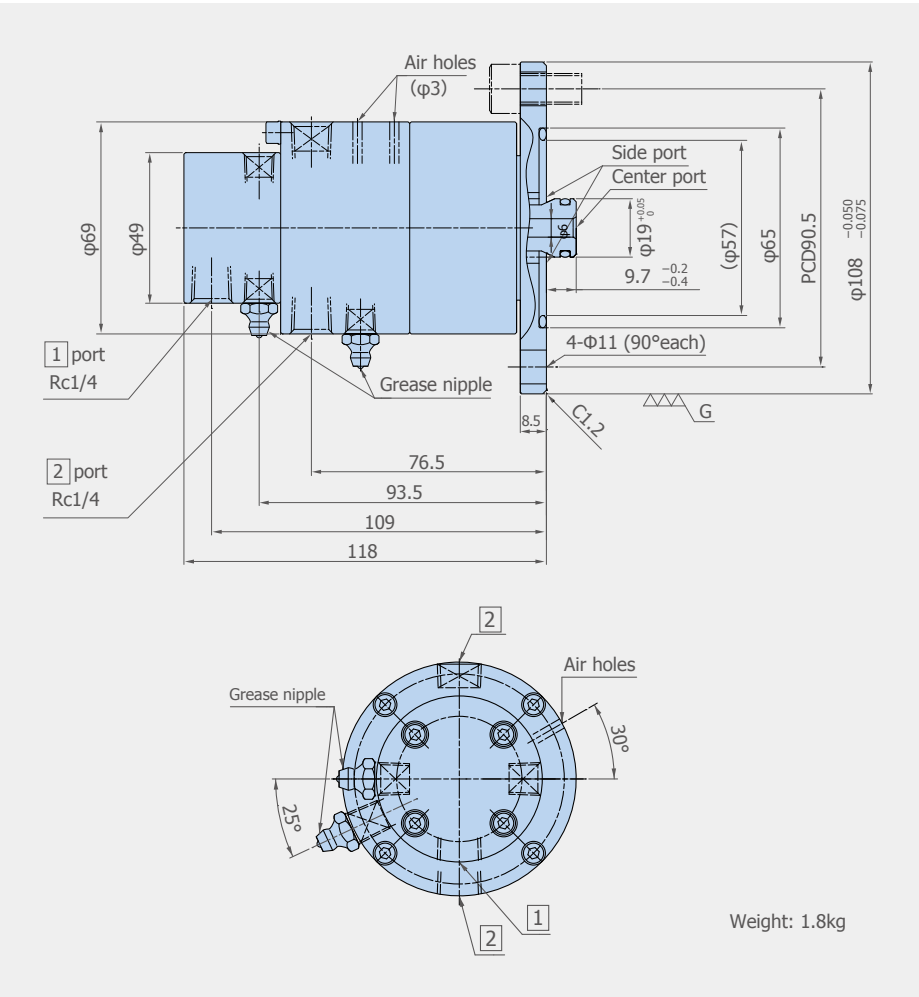
Port No	Fluid	Use	Pressure	Max. speed
1	Oil based coolant Water soluble coolant	Coolant through	7.0 MPa / 1,015 psi / 70 bar	Max. 8,000 min ⁻¹ / Max. 8,000 rpm
	Dry air	Air blow	0.6 MPa / 87 psi / 6 bar ※1	Max. 8,000 min ⁻¹ / Max. 8,000 rpm
	Oil air	Actuator		
2		Mating detection	1.0 MPa / 145 psi / 10 bar	Max. 4,000 min ⁻¹ / Max. 4,000 rpm
			7.0 MPa / 1,015 psi / 70 bar	Max. 4,000 min ⁻¹ / Max. 4,000 rpm
			3.5 MPa / 507 psi / 35 bar	Max. 4,500 min ⁻¹ / Max. 4,500 rpm
2	Dry air	Air blow	0.2 MPa / 29 psi / 2 bar	Max. 8,000 min ⁻¹ / Max. 8,000 rpm
	Oil air	Actuator		
		Mating detection		

※1: Mating detection is 0.2 MPa (29 psi, 2 bar)

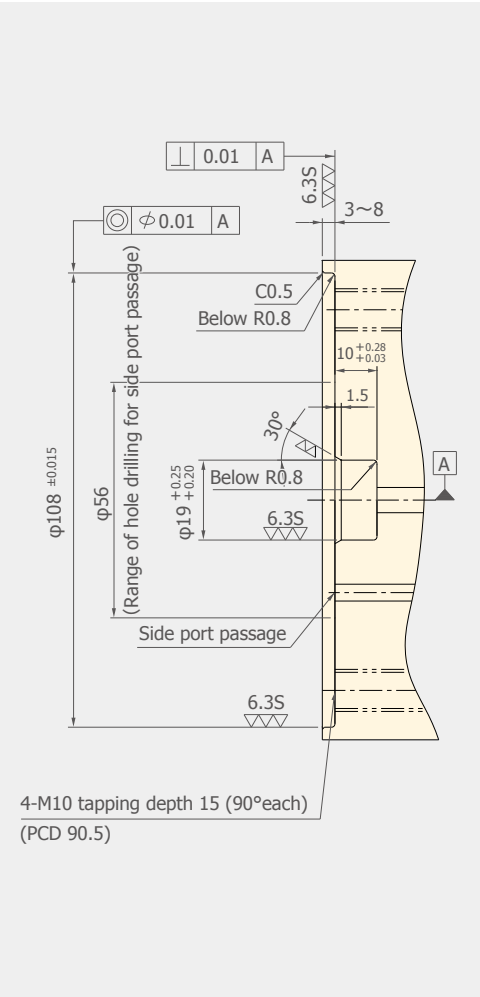
Installation Specifications

Direction			Rotation without fluid
Horizontal	Vertical ※rotating part is upper side	Vertical ※rotating part is lower side	
○	○	○ ※Depends on condition. Please contact us.	○

Outline drawings



Installation dimensions

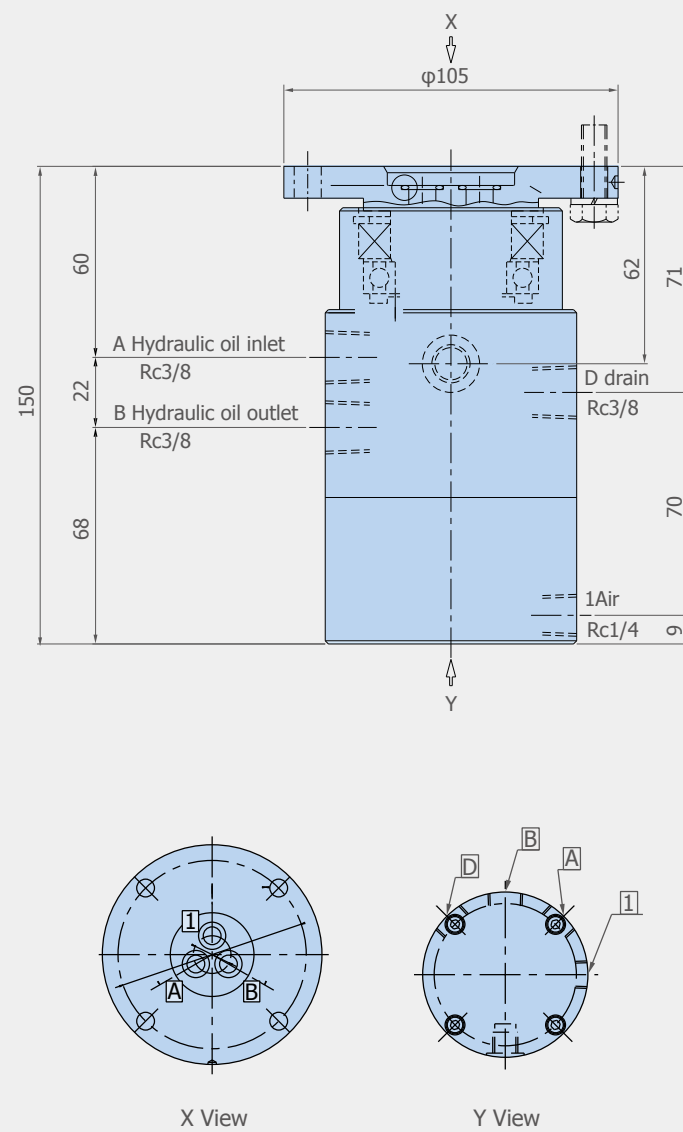


Multi-port rotary joint (3 ports or more)

■ Operating specifications (example)

Fluid		Pressure		Max. speed	Max. temperature	Weight (kg)
Hydraulic oil	Air	Hydraulic oil	Air			
		7 MPa	0.6 MPa	Max. 6,000 min ⁻¹	Max. 60 °C	
		1,015 psi	87 psi	Max. 6,000 rpm	Max. 140 °F	
		70 bar	6 bar			6

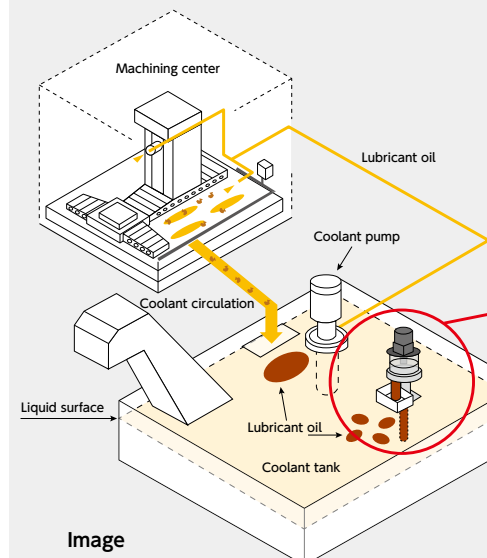
■ Outline drawings (example)



Multi-port (3 ports or more) rotary joint
is order made base.
Please feel free to contact us.

Additional Products — RIX oil skimmer

■ Product outline



Our oil skimmer removes floating oil that is mixed together with cooling lubricants of the machine tool's coolant tank.

The collection of tramp oil is the solution to prevent deterioration and extend the life span of cooling lubricants and cutting tools.

Low maintenance cost

No separation tank required. Therefore, no regular cleaning separation tank, no exchange or adjusting of belt and squeegee needed.

Space saving

Approx. 40% installation space saved compared to a standard belt or disk type oil skimmer.

Low running cost

Standard motor is 6W. Electricity consumption is very small compared to a standard belt type oil skimmer.

Best selling

Screw type oil skimmer (SLS type)

High performance

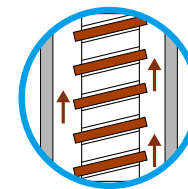
Max. 850ml/hr (0.225 gallon per hour) in continuous operation. ※1

Popularity of our products

RIX oil skimmers have been adopted by well-known automobile and motor cycle manufacturers since its release in 2004.

Wide product range

Supplying motors with different voltages



- High viscosity oil is lifted by rotating screw.
- Low viscosity coolant is dropped.



More applications

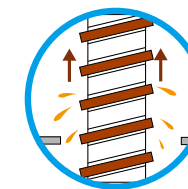
Spiral type oil skimmer (MOS type)

Wider range of applications

The MOS type is suitable for coolant containing more sludge and metal cutting chips

Capacity

Max. 100 ml/hr (0.026 gallon per hour) in continuous operation. ※1



- Shaft rotates and lifts up oil along a fixed spiral.
- Sludge and metal cutting chips are dropped together with low viscosity coolant from spiral.



※1: Actual performance may vary depending on usage conditions and environment.

For more details, please feel free to contact us.

Technology, Information & Service

ROCKY

High-speed rotary joints for machine tools

ROCKY JOINT



RIX RIX CORPORATION

Bearing-less rotary joints for spindle-through coolant applications

ESX series

The ESX series of bearing-less rotary joints was developed to answer rising need for high-speed machine tool spindles, and today are the major choice for machine tool joints.

Including two stational seals mounted on the housing, and the rotary seal on the spindle shaft, the joint itself has no bearings.

Vibration is extremely low because there are no internal bearings, and the compactness contributes to design smaller machine tools.



Selection chart of Bearing-less Rocky Joint

	Rocky Joint model		Applicable fluid (option)	Max. pressure (MPa)	Max. rotation speed (min ⁻¹)	Features and Main Usagaes	
For general machining centers and multi-tasking machine.	ESX20M-N012		For both coolant and oil mist	coolant 14	40,000	Classic type bearing-less rotary joint. Stroke: 3.5 mm. Recommended for use in general machining centers.	
	ESX20M-N016						
	ESX20M-L012					This compact type with long stroke of 8mm is best suited for tools with long drawbar stroke or application requiring a smaller spindle.	
	ESX20M-L016						
	For hollow motor	ESX20M-S012 (former 6793)		For both coolant and oil mist	oil mist 1	40,000	This type is recommended for rotary joints in the specifications for FANUC α iIT series spindle motors. This can be also used for normal built-in spindles.
		ESX20M-S016 (former 6902)					
		ESX20M-E012 (former 7248)					
		ESX20M-E016 (former 7308)					
for custom machines		ESX20M-T010		For both coolant and oil mist	coolant 12 oil mist 1	40,000	This is designed for smaller size requirements for specialized machine tools including multi-spindle machining tools. Two types are available: ESX, allowing for dry running, and ES reducing drain using pressure-contact spring.
		ES20M-T010					
Dry air applicable type		New! ESX20V-L012 ESX20V-L016		These can be used for coolant, oil mists and dry air all interchangeably. For information on the usage requirements, refer to the description in the main text.			Multiple fluids can be used including dry air by our Force Optimization Technology (F.O.T.) New! that enables switching to optimal contact pressure, depending on the fluids used. This is an environmentally-friendly joint that can eliminate conventional external oil lubrication.
		ESX20J-N012					External lubrication of sealed surfaces will allow for use of dry air.

Joint type

ES is an abbreviation for End Seal. This bearing-less joint is a rotary seal mounted on the spindle shaft end.

Seal size

- 20:** The standard size for spindle-through coolant designs.
- 10:** Where small size is essential in spindle-through coolant use.

First two digits indicate statinal seal specifications.

Last two digits are rotary seal specifications.

ESX20M-N012

Seal structure

- X:** Automatic open/close structure allows free running even with coolant supply halted (coolant-free rotation applicable).
- None:** A spring forces the seal into constant contact; recommended where drain reduction from the seal is required.

Types of fluids used

- M:** Also used for oil mist (semi-dry) machining
- V:** For multi-fluid (using our Force Optimization Technology F.O.T. New!)
- J:** For dry air (with external lubrication)
- S:** Drain reduced type (New! For more information, refer to the column in P. 13.)
- None:** For coolant only

Third and fourth digits show rotary seal screw size

- 10:** M10×1, left thread
- 12:** M12×1.25, left thread
- 16:** M16×1.5, left thread

Second digit is always "0" (reserved for future use)

First digit indicates statinal seal characteristics

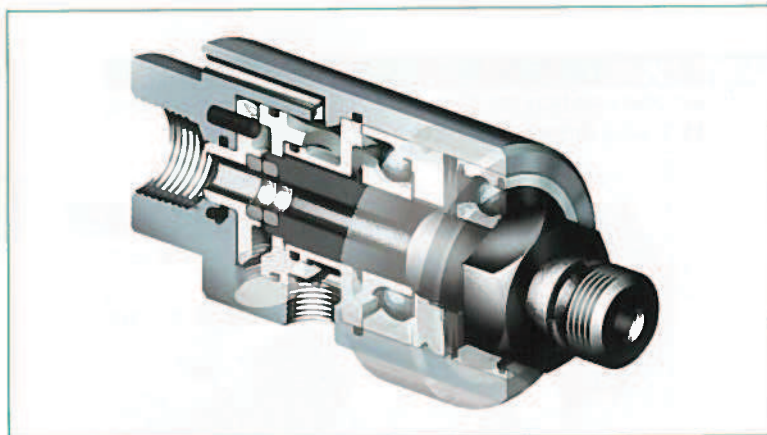
- N:** Standard type
- L:** Long-stroke type
- S:** Oil mist (semi-dry cutting) compatible type (for hollow-core motors); straight inlet
- E:** Oil mist (semi-dry cutting) compatible type (for hollow-core motors); elbow inlet
- T:** Multi-spindle machine type

Special- and custom-order products also available. Please contact us for details.

Rotary joints with built-in bearing for spindle-through coolant applications

LX and L series

The LX and L series rotary joints with built-in bearing are mounted on spindle shafts, and are single units incorporating rotor seal, housing, bearings and stational seals. The joint is independent of the spindle, making it easy to mount and ensuring simple assembly and maintenance. These characteristics have earned it widespread use in the industry.



LX84M-234

Seal structure

X: Automatic open/close structure allows free running even with coolant supply halted (coolant-free rotation applicable).

None: A spring ensures constant seal contact.

A: Dry air applicable joint (special item), using grease for lubrication.

Joint type

L indicates a joint with internal bearings.

Options

M: Oil mist (semi-dry cutting)

V: For multi-fluid (using our Force Optimization Technology F.O.T. New!)

None: For coolant only

End shape

234: Socket dia. 16 mm

Screw M16 x 1.5, left-hand thread

244: Socket dia. 18 mm

Screw M16 x 1.5, left-hand thread

Series and shape symbols

Symbol	Supply direction	Characteristics
84	Straight	Drain evacuation performance, which can cause problems in vertical mounting, has been improved. Automatic open/close mechanism on seal allows free run without coolant supply. Optional oil mist compatible type also available.
86	Elbow (90°)	
91	Straight	Ultra-high speed rotation type joint, with design optimized to minimize vibration at high speeds.
92	Elbow (90°)	
95	Straight	High-speed rotation, and long life. The standard type joint.
96	Elbow (90°)	

Selection chart for rotary joints with built-in bearing

Rocky Joint model	Applicable fluid	Max. pressure (option) (MPa)	Max. rotation speed (min ⁻¹)	Characteristics
LX84M(V)-234, 244	For both Coolant and Oil mist	Coolant 7(12) Oil mist 1 (Dry air) (LX84V, LX86V)	15,000	Coolant-free rotation applicable.
LX86M(V)-234, 244				
L91M-234, 244		Coolant 12 Oil mist 0.7	16,000	Ultra-high speed, high-pressure operation type for coolant.
L92M-234, 244				
L95M-234, 244		Coolant 7 Oil mist 0.7	6,000	High-speed standard type for coolant.
L96M-234, 244				

Rotary Joint for Lathe Chucks

EES Type / LA Type

EES Type / LA type is a rotary joint that is attached to the driving cylinder of a lathe chuck and supplies the chuck section with coolant for cutting chips removal, or air for mating detection, blow or actuator.

Two types are available: one with 2 ports for supplying both coolant and air at the same time and the other with 1 port that is interchangeable either for air or coolant.

2 Port Type



EES-2P01

Joint type

EES refers to a type with joint structure that supports two types of fluids.

Number of ports

This means two types of fluids will be supported.

This refers to a variation including different fitting shape.

1 Port Type



LA-1P01

Joint type

joint with a built-in bearing and supports for both air and coolant at the same time by its grease lubrication structure.

Number of ports

This type has only one flow pathway but is interchangeable either for air or coolant.

This refers to a variation including different fitting shape.

01:234 fitting:
Socket diameter $\phi 16$
Screw: M16 $\times$ 1.5 left

02:244 fitting:
Socket diameter $\phi 18$
Screw: M18 $\times$ 1.5 left

Selection chart of Rotary Joint for Lathe Chucks

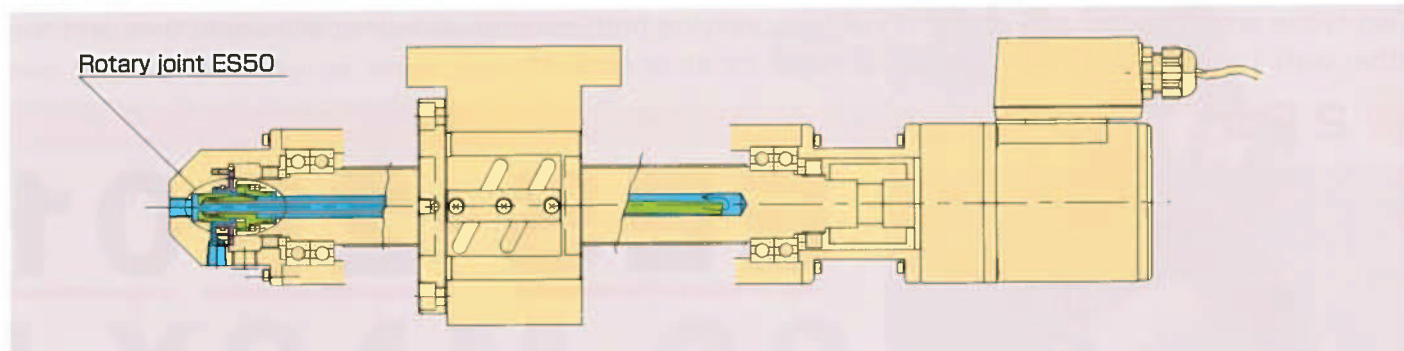
(For detailed information, please refer to respective description pages(P.17.18) and the drawings of specifications.)

Rocky joint type	No. of port	Fluid used	Max pressure (MPa)	Max. rotation speed (min ⁻¹)	Descriptions
EES-2P01	2	Air	0.6	8,000	Air and coolant can be used at the same time.
		Coolant	7		
LA-1P01,02	1	Air	1.0	6,000	Interchangeable for either air or coolant.
		Coolant	7		

Ball screw cooling rotary joints

ES50 series

Recent machining demands increasingly high precision and efficiency. To prevent accuracy loss caused by heat generation, ball screws require hollow-core cooling. The ES50 series of ball screw cooling joints meets these needs completely.



The ES50 is available in two specifications, for different flow rates

ES50-1600/2000

Rotor screw M16 x 1.5 low flow rate

Rotor screw M20 x 1.5 high flow rate

Selection chart for ball screw cooling rotary joints

Rocky Joint type	Applicable fluid	Fluid flow rate (liters/min)	Rotation speed (min ⁻¹)	Applications
ES50-1600	Cooling oil	3	Max. 5000	Recommended for ball screws up to #40
ES50-2000		5	Typ. 3000	Recommended for ball screws over #40

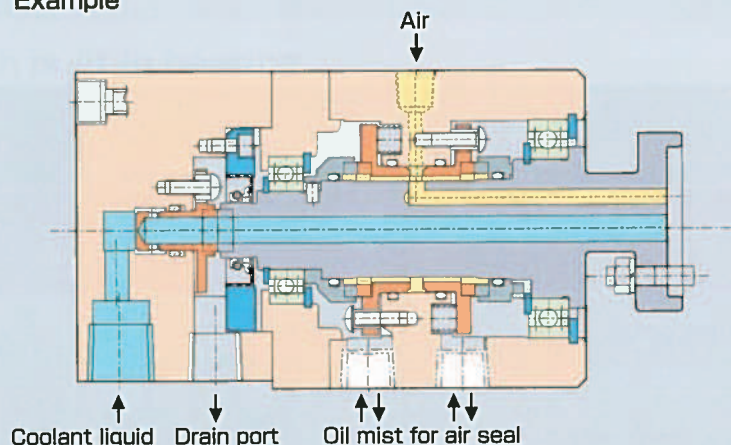
Multi - port Rotary joints

In addition to spindle-through, lathe chuck and ball screw cooling applications, machine tools are required to supply multi-fluid to rotating sections.

RIX provides various multi-port rotary joints that serve for many applications required for machine tools.

See Page 20 also.

Example



ESX20M-N012/N016



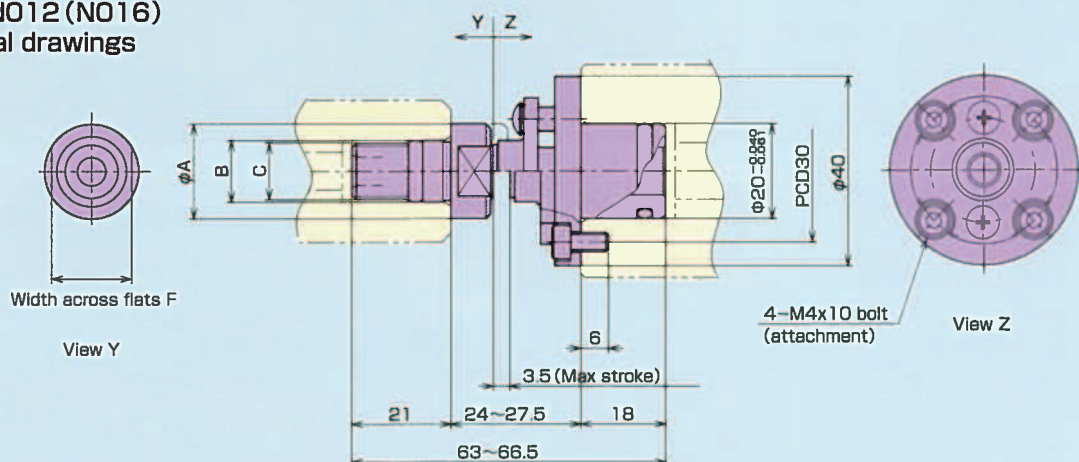
The classic design for bearing-less rotary joints.

Stable open/close performance

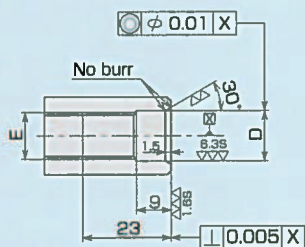
- Our unique mechanism offers minimal sliding resistance, delivering reliable seal open/close performance even when fluid flow is turned on or off. Drain is also minimized.
- Has a 3.5mm stroke, absorbing the drawbar stroke.

Usage conditions	
Fluid used	Water-soluble/ oil-based coolant, oil mist
Standard flow rate	20 liters/min.
Operating temperature	Max. 60°C
Pressure	Coolant Max. 14MPa Oil mist Max. 1MPa
Rotation speed	Max. 40,000 min ⁻¹

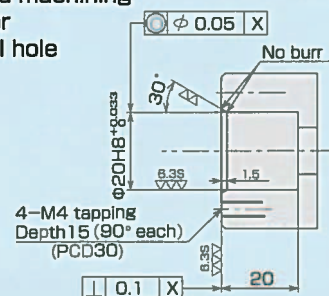
ESX20M-N012 (N016)
dimensional drawings



Recommended machining
dimensions for
rotor seal hole



Recommended machining
dimensions for
stational seal hole



ESX20M-N012 (N016) dimensions

Model	A	B	C	D	E	F
ESX20-N012	20	$\phi 13h5_{-0.008}$	M12×1.25 (left-hand thread)	$\phi 13_{+0.008}^{+0.008}$	M12×1.25 (left-hand thread)	17
ESX20-N016	23	$\phi 18h5_{-0.008}$	M16×1.5 (left-hand thread)	$\phi 18_{+0.008}^{+0.008}$	M16×1.5 (left-hand thread)	19

ESX20M-L012/L016



Developed specifically for use in main machining spindles on multi-function lathes or multi-function machine tools.

Compact design

●Outer diameter and length minimized to answer demand for smaller main spindles or multi-function machine tools.

Long stroke

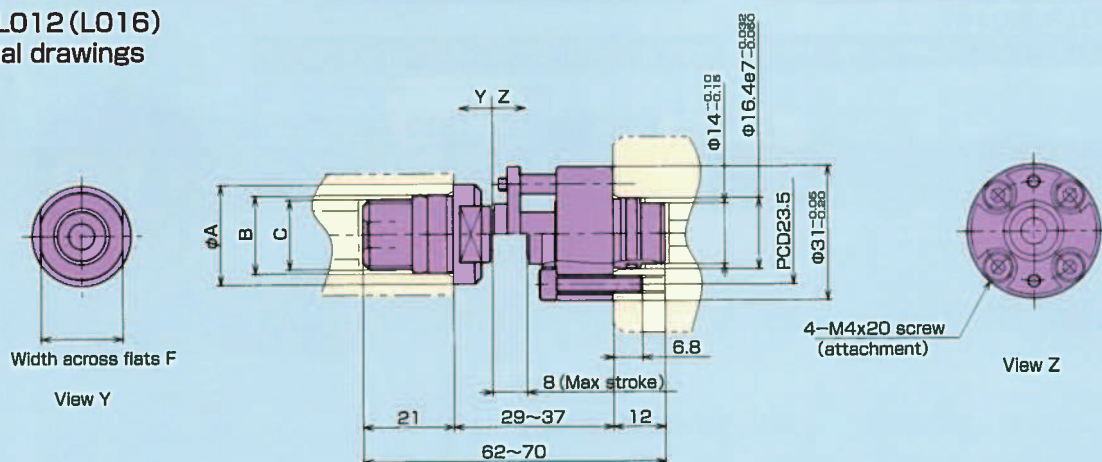
●In recent years, HSK, CAPTO and other dual-face-contact tools are being increasingly used, making long drawbar strokes essential. Rotary joints must be able to absorb these strokes.

This rotary joint provides a long, 8-mm stroke, in a compact design only 31 mm outer diameter.

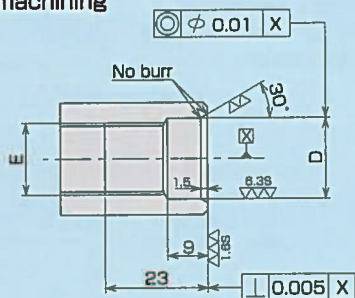
Usage conditions

Fluid used	Water-soluble/ oil-based coolant, oil mist
Standard flow rate	20 liters/min.
Operating temperature	Max. 60°C
Pressure	Coolant Max. 14MPa Oil mist Max. 1MPa
Rotation speed	Max. 40,000 min ⁻¹

ESX20M-L012 (L016)
dimensional drawings



Recommended machining
dimensions for
rotor seal hole



Bearing-less rotary joint For hollow core motors

ESX20M-S012/S016
E012/E016

(Old model nos. ESX20M-6793/6902/7248/7308)



Used with increasing frequency on hollow-core motor spindles in automotive component manufacturing lines for its excellent maintainability.

Developed especially as a rotary joint for hollow-core motor spindles, with oil mist support standard.

Applicable for hollow-core motors

Specified as recommended for use with FANUC α T Series spindle motors.

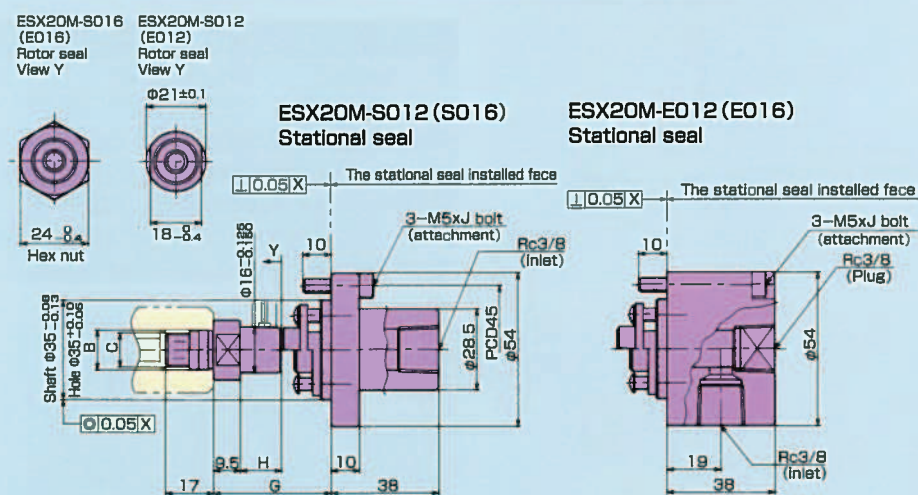
It is highly rated by users for outstanding performance, including:

- Simple mounting.
- Reliable seal open/close mechanism for reduced drain.
- Sludge-resistant design

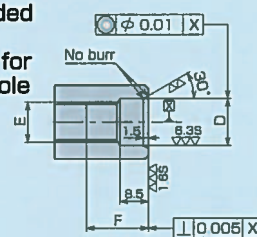
(Can also be used with conventional built-in motor spindles.)

Usage conditions	
Fluid used	Water-soluble/ oil-based coolant, oil mist
Standard flow rate	20 liters/min. (coolant)
Operating temperature	Max. 60°C
Pressure	Coolant Max. 14MPa Oil mist Max. 1MPa
Rotation speed	Max. 40,000 min ⁻¹

ESX20M-S012(S016/E012/E016) dimensional drawings



Recommended machining dimensions for rotor seal hole



Revised model numbers

The model numbers have been changed for rotary joints, as indicated below.

Old model no.	New model no.
ESX20M-6793	ESX20M-S012
ESX20M-6902	ESX20M-S016
ESX20M-7248	ESX20M-E012
ESX20M-7308	ESX20M-E016

ESX20M-S012/S016/E012/E016 dimensions

Model	B	C	D	E	F	G	H	J
ESX20M-S012	$\phi 14 \pm 0.008$	M12×1.25 (left-hand thread)	$\phi 14 \pm 0.008$	M12×1.25 (left-hand thread)	18.5	37.1~41.6	14.5	20
ESX20M-S016	$\phi 18 \pm 0.008$	M16×1.5 (left-hand thread)	$\phi 18 \pm 0.008$	M16×1.5 (left-hand thread)	17	42~46.5	19.4	20
ESX20M-E012	$\phi 14 \pm 0.008$	M12×1.25 (left-hand thread)	$\phi 14 \pm 0.008$	M12×1.25 (left-hand thread)	18.5	37.1~41.6	14.5	40
ESX20M-E016	$\phi 18 \pm 0.008$	M16×1.5 (left-hand thread)	$\phi 18 \pm 0.008$	M16×1.5 (left-hand thread)	17	42~46.5	19.4	40



Bearing-less rotary joint For multi-spindle machines

ESX20M-T010 ES20M-T010



Developed specifically for recent demand in dedicated, multi-spindle machines.

Compact

- Smaller outer diameter contributes to reduced shaft separation distance.
- Shorter in the axial dimension as well to help resolve need for more compact spindles and reduced volume.

Simple assembly

- The rotor seal screws in, and the stationary seals mount quickly with two bolts. No need for time-consuming spring assembly.

Two models for different applications

① ESX20M-T010

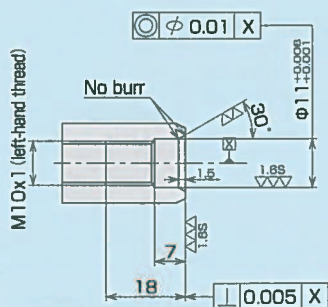
→ Allows free running even with coolant supply halted. Recommended if coolant-free rotating operation exists.

② ES20M-T010

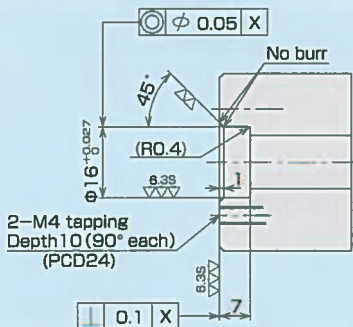
→ Recommended where drain must be minimized. Spring maintains seal is contact, reducing drain to the minimum.

✳ The two models are completely compatible and can be swapped freely.

Recommended machining dimensions for rotor seal hole



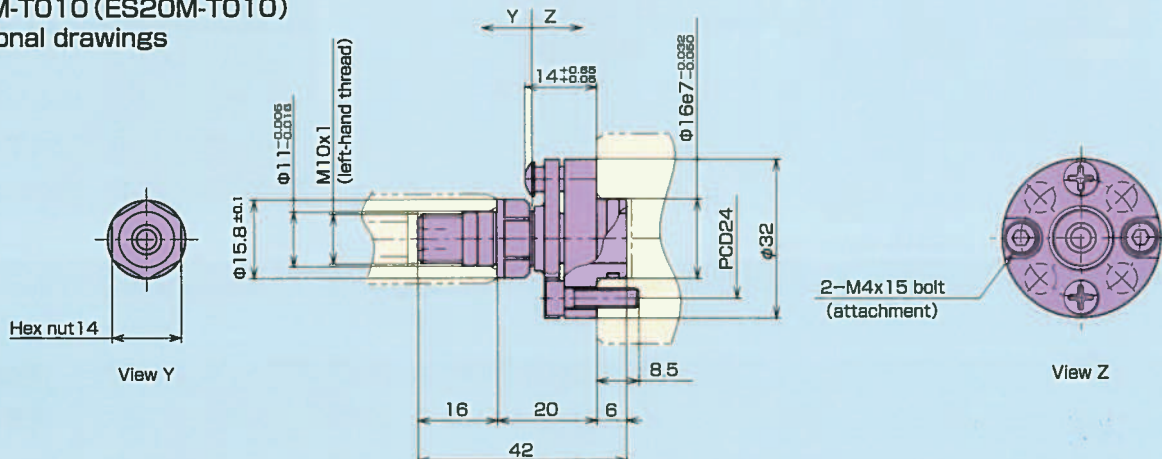
Recommended machining dimensions for stationary seal hole



Usage conditions

Fluid used	Water-soluble/ oil-based coolant, oil mist
Standard flow rate	20 liters/min.(coolant)
Operating temperature	Max. 60°C
Pressure	Coolant Max. 1.2MPa Oil mist Max. 1MPa
Rotation speed	Max. 40,000 min ⁻¹

ESX20M-T010 (ES20M-T010)
dimensional drawings

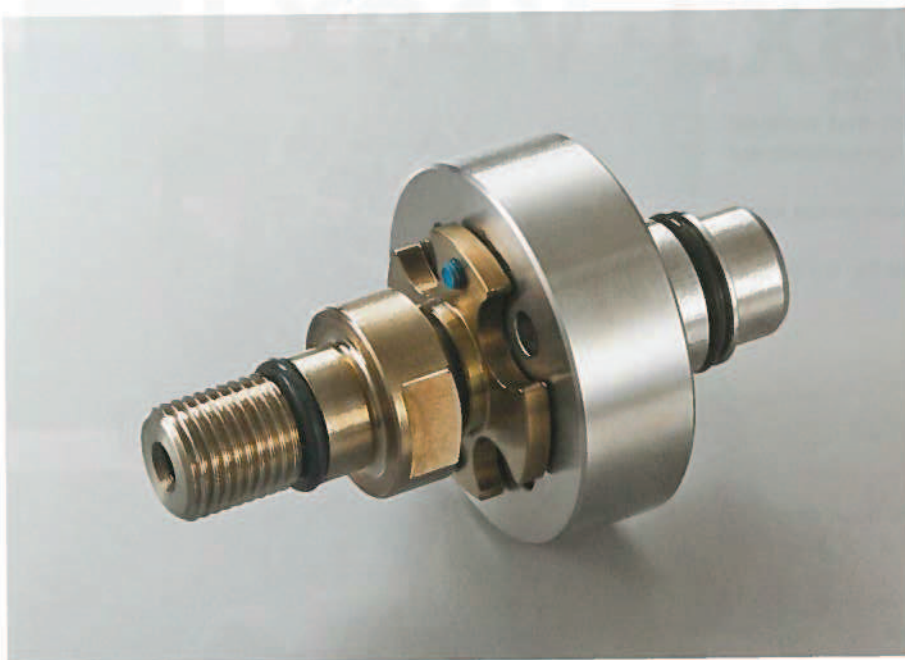


Bearing-less rotary joint Dry air applicable type. For multi-fluid

ESX20V-L012/L016

patent-pending

New



These joints are designed as rotary joints that can handle multiple fluids used for spindle-through, including coolant, oil mists and dry air.

Force Optimization Technology(F.O.T)

- The technology optimizes contact pressure on ceramic seals of lubricant coolant, oil mists/non-lubricant dry air.

These joints succeeded in achieving non-leaking and high sealing performance and stability against coolant and oil mist.

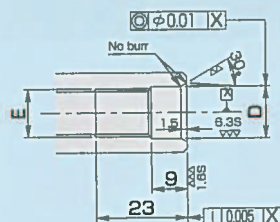
No need for external lubrication

- Our Force Optimization Technology successfully eliminated external lubrication that was conventionally required for non lubricant dry air applications. Our joints support oil-less, mist-less spindle applications as part of recent environmental measures. More compact type is also available. Contact us for details.

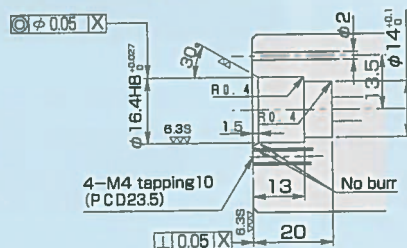
Identical dimensions of smaller
ESX20M-L012/L016 are available.
Please ask us for detail.

New

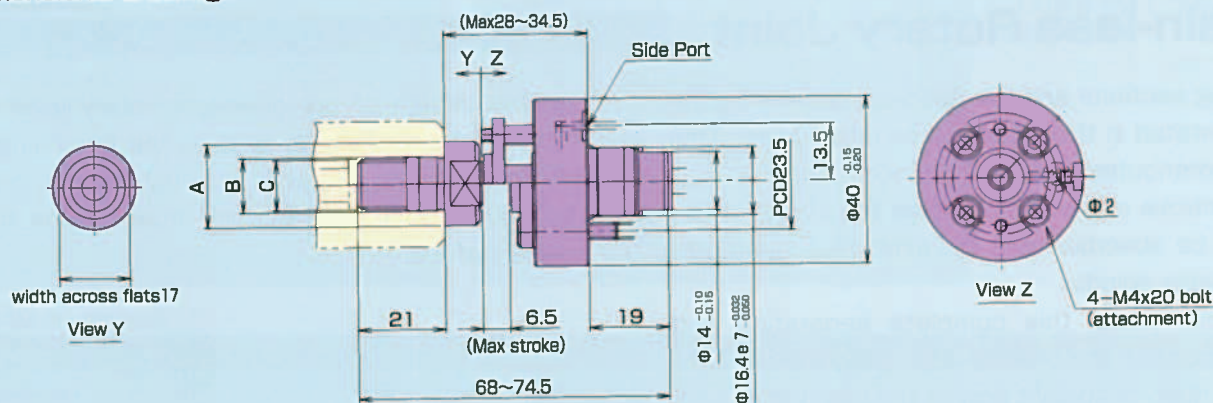
Recommended machining dimensions for rotor seal hole



Recommended machining dimensions for stationary seal hole



ESX20V-L012/L016 dimensional drawings



ESX20V-L012/L016dimensions

型式	A	B	C	D	E	F
ESX20V-L012	20	$\phi 13h5 -g_{0.008}$	M12×1.25 (left-hand thread)	$\phi 13^{+0.009}_{-0.008}$	M12×1.25 (left-hand thread)	17
ESX20V-L016	23	$\phi 18h5 -g_{0.008}$	M16×1.5 (left-hand thread)	$\phi 18^{+0.009}_{-0.008}$	M16×1.5 (left-hand thread)	19

■ Product Line of Rotary Joints for Dry Air Cutting

In addition to the ESX20V series mentioned in the previous pages that adopt our "Force Optimization Technology", RIX has a variety of rotary joints for dry air cutting, including traditional "external lubrication type" and "enclosed-grease lubrication type".

■ ESX20J - N012

This is a bearing-less rotary joint used for dry air cutting. The sealed surface has a special lubrication slot that receives forced lubrication from outside thereby enabling non-lubricant dry air spindle-through application. This allows for combined use of coolant and oil mists at the same time. The maximum rotation of 35,000 min⁻¹ is available for dry air cutting.



■ L84J

This is a rotary joint for dry air cutting with built-in bearing. Like ESX20J type, this allows for dry air cutting by means of forced lubrication on the sealed surface. This allows for combined use of both coolant and oil mists. The maximum rotation of 15,000min⁻¹ is available.



■ LA95 and LA96 series

Grease filled-in around the sealing sections of the L95 and L96 rotary joints with the built-in bearing mentioned on Page 16 for lubrication will enable it to use dry air. This allows for combined use of coolant and oil mists. The maximum rotation of 6,000 min⁻¹ is available.

For more information on these rotary joints, please contact us.

Patent

■ Drain-less Rotary Joint

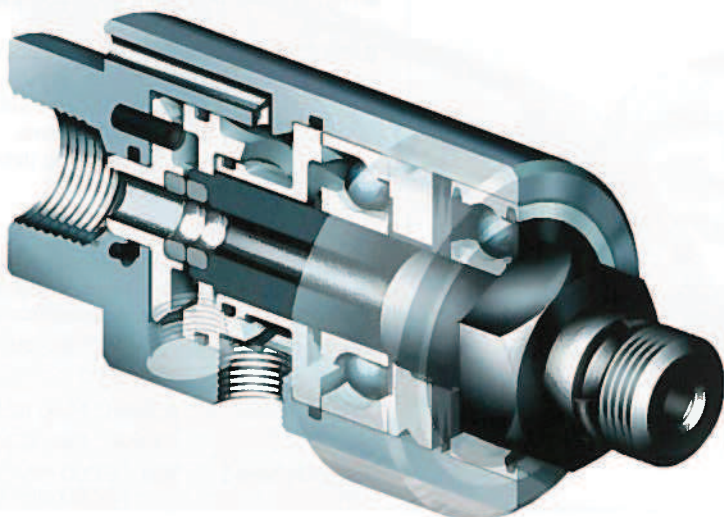
The rotating sections and the fixed sections are completely separated in this bearing-less rotary joint. This structure contributes to a higher speed spindle. RIX's long stroke rotary joint enables the stroke of the drawbar to be absorbed into the joint, thus contributing to a smaller spindle. On the other hand, this complete separation and stroke structure of the bearing-less rotary joint results in a minute drain of coolant flow at the beginning.

The unique design of our drain-less rotary joint not only reduces drain nearly to zero at the beginning of coolant flow, but also prevents residual coolant in the pipe connected to the rotary joint from leaking from the sealed surface.

For more information on this technology, please contact us.

**ROCKY
JOINT**

Patent



- Resistance at the seal has been minimized, ensuring rotation even when there is no coolant lubrication effect.

- New mechanism dramatically improves drain evacuation performance, providing improved durability even in vertical mounting.

- The LX84 has a straight inlet, the LX86 an elbow.
 - The 234 has a 16-mm diameter socket using M16 x 1.5 (left-hand) screws.
 - The 244 has an 18-mm diameter socket, also using M16 x 1.5 (left-hand) screws.
- (See drawings below for mounting details.)

Usage conditions	
Fluid	Water- or oil-based coolant, oil mist
Standard flow rate	20 liters/min. (coolant)
Operating temperature	Max. 60°C
Pressure	Coolant: Max. 7 MPa (option 12 MPa)
	Oil mist: Max. 1 MPa
Rotation speed	Max. 15,000 min ⁻¹

[illegible][illegible]

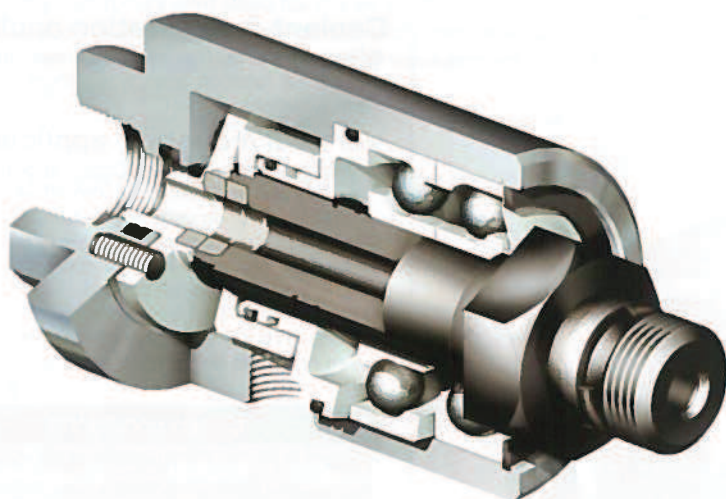
Technical drawing of a shaft-hub assembly. The shaft has a diameter of $\phi 18 \pm 0.006$ and a length of 18. The hub has an inner diameter of $\phi 18 \pm 0.005$ and an outer diameter of $\phi 26 \pm 0.005$. The hub length is 15.5. The assembly is shown with a 30° chamfer on the shaft end. The text "No burr" is written on the shaft. The text "left-hand thread" is written on the right side of the drawing.

New!

Model	K	M	N	A	D	F	G	H	L	J	P	Q	R	T	weight (kg)
LX84M-234	M16×1.5LH	Rc 3/8	16.025 16.017	113	27.5	44	24	72.5	Rc 1/4	17	5	11	16	30	0.43
LX84M-244	M16×1.5LH	Rc 3/8	17.999 17.991	113	27.5	44	24	72.5	Rc 1/4	17	5	11	16	30	0.43

Model	K	M	N	A	D	F	G	H	L	J	S	P	Q	R	weight (kg)
LX86M-234	M16×1.5LH	Rc 3/8	16.025 16.017	117	27.5	44	24	72.5	Rc 1/4	17	16.5	5	11	11	0.46
LX86M-244	M16×1.5LH	Rc 3/8	17.999 17.991	117	27.5	44	24	72.5	Rc 1/4	17	16.5	5	11	11	0.46

L91M·L92M

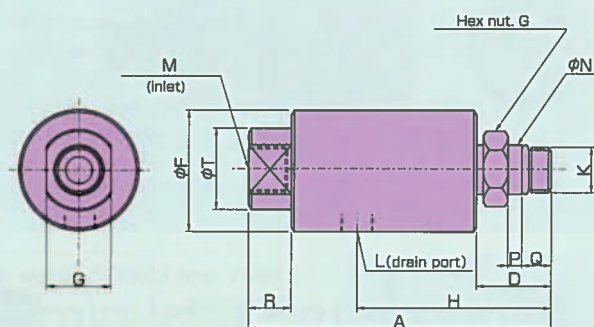


- Rotating shaft has been highly finished for the absolute minimum vibration in ultra high-speed operation, supported by pre-pressurized bearings and other design features.
- The L91 has a straight inlet, and the L92 an elbow.
- The 234 has a 16-mm diameter socket using M16 x 1.5 (left-hand) screws.
- The 244 has an 18-mm diameter socket, also using M16 x 1.5 (left-hand) screws.
(See drawings P.12 for mounting details.)
- Vertical mount applicable

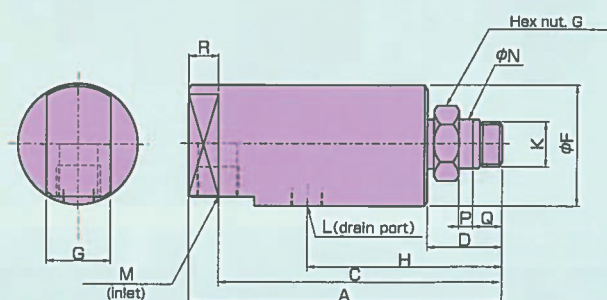
Usage conditions

Fluid	Water- or oil-based coolant, Oil mist
Standard flow rate	20 liters/min. (coolant)
Operating temperature	Max. 60°C
Pressure	Coolant : Max. 12 MPa Oil mist : Max. 0.7 MPa
Rotation speed	Max. 16,000 min ⁻¹ (9 MPa) 12,000 min ⁻¹ (12 MPa)

L91M dimensional drawings



L92M dimensional drawings



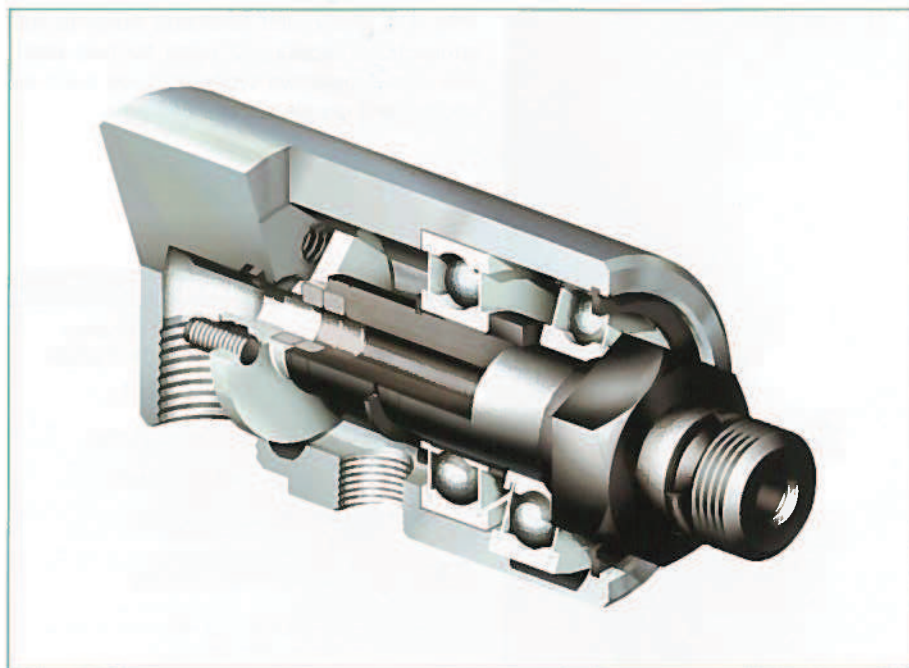
L91M dimensions

Model	K	M	N	A	D	F	G	H	L	P	Q	R	T	Weight (kg)
L91M-234	M16x1.5LH	Rc 3/8	16.025 16.017	102	27.5	43	24	65	Rc 1/4	5	11	11	30	0.34
L91M-244	M16x1.5LH	Rc 3/8	17.999 17.991	102	27.5	43	24	65	Rc 1/4	5	11	11	30	0.34

L92M dimensions

Model	K	M	N	A	C	D	F	G	H	L	L	P	Q	R	Weight (kg)
L92M-234	M16x1.5LH	Rc 3/8	16.025 16.017	106	94	27.5	43	24	65	Rc 1/4	19	5	11	11	0.37
L92M-244	M16x1.5LH	Rc 3/8	17.999 17.991	106	94	27.5	43	24	65	Rc 1/4	19	5	11	11	0.37

L95M • L96M



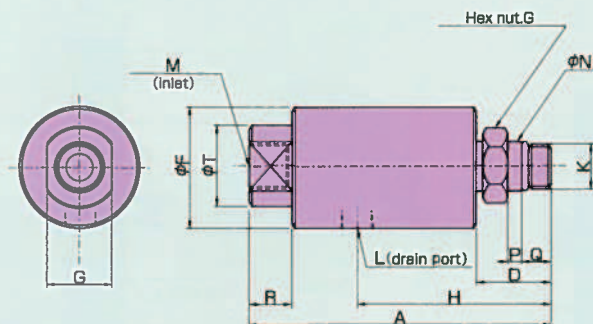
Standard type

- The standard design for a rotary joint with bearings, combining high-speed rotation, and a long service life.
- The L95 has a straight inlet, and the L96 an elbow.
- The 234 has a 16-mm diameter socket using M16 x 1.5 (left-hand) screws.
- The 244 has an 18-mm diameter socket, also using M16 x 1.5 (left-hand) screws. (See drawings P.12 for mounting details.)
- Horizontal mount only
- Fill-in grease type, LA95 and 96 series are also available for dry air cutting. See Page 13.

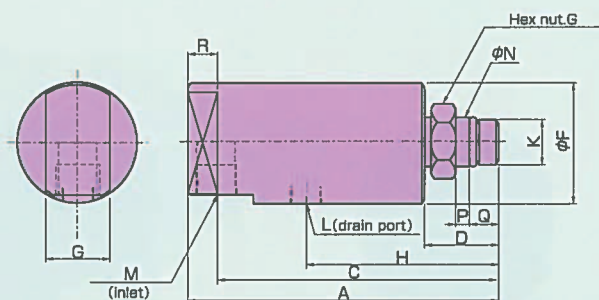
Usage conditions

Fluid	Water- or oil-based coolant, Oil mist
Standard flow rate	20 liters/min. (coolant)
Operating temperature	Max. 60°C
Pressure	Coolant : Max. 7 MPa Oil mist : Max. 0.7 MPa
Rotation speed	Max. 6,000 min ⁻¹

L95M dimensional drawings



L96M dimensional drawings



L95M dimensions

Model	K	M	N	A	D	F	G	H	L	P	Q	R	T	Weight (kg)
L95M-234	M16x1.5 LH	Rc 3/8	16.025 16.017	102	27.5	43	24	65	Rc 1/4	5	11	11	30	0.34
L95M-244	M16x1.5 LH	Rc 3/8	17.999 17.991	102	27.5	43	24	65	Rc 1/4	5	11	11	30	0.34

L96M dimensions

Model	K	M	N	A	C	D	F	G	H	L	S	P	Q	R	Weight (kg)
L96M-234	M16x1.5 LH	Rc 3/8	16.025 16.017	106	94	27.5	43	24	65	Rc 1/4	19	5	11	11	0.37
L96M-244	M16x1.5 LH	Rc 3/8	17.999 17.991	106	94	27.5	43	24	65	Rc 1/4	19	5	11	11	0.37

EES-2P01

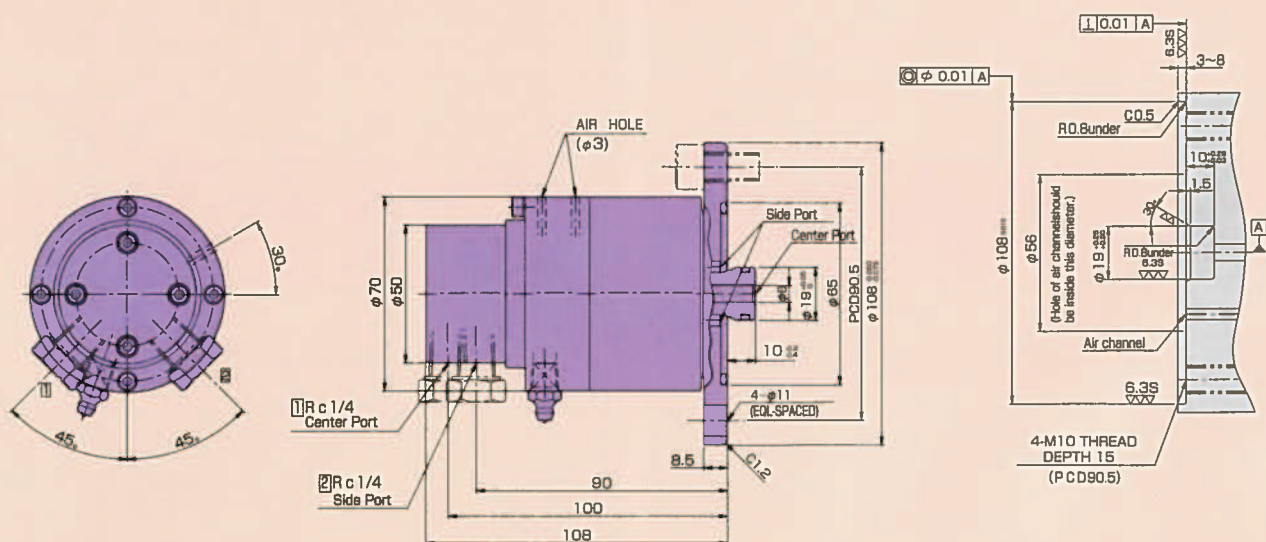


This is a rotary joint to supply fluids to the lathe chuck section. 2 ports for fluid pathway can supply two types of fluids such as coolant and dry air at the same time.

Usage conditions	
Fluid used	Water-soluble/oil-based coolant, dry air and oil air.
Pressure	Coolant Max.7MPa
	Dry air Max.0.2MPa
	Oil air Max.0.6MPa
Rotation Speed	Max. 8,000 min ⁻¹
Weight	1.8kg

For combination of fluids to be used and their conditions, please contact us.

EES-2P01 dimensional drawings



LA-1P01/1P02



This is a rotary joint to supply fluid to the lathe chuck section.

It is designed to filled-in grease around the sealing section to allow for switching to either coolant or dry air.

For the fitting section:

1P01 for 234 fitting, socket diameter $\phi 16$

Screw: M16 $\times$ 1.5 (left)

1P02 for 244 fitting, socket diameter $\phi 18$

Screw: M16 $\times$ 1.5 left

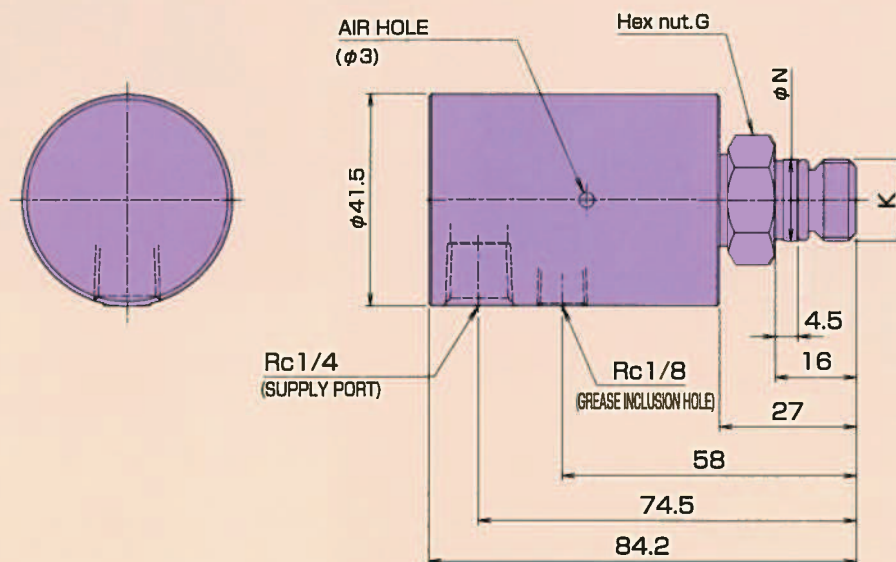
(For the shape of the fitting section, refer to Page 14.)

This can also be used for the spindle of a machining center.

Usage conditions

Fluid used	Water-soluble/oil-based coolant, dry air and oil air.
Pressure	Coolant Max.7MPa Dry air Max.1.0MPa
Rotation Speed	Max. 6,000 min ⁻¹

LA-1P01/LA-1P02 dimensional drawings



LA-1P01/LA-1P02 dimensions

Model	K	N	G	Weight (kg)
LA-1P01	M16 $\times$ 1.5 (left-hand thread)	16.026~16.008	22	0.33
LA-1P02	M16 $\times$ 1.5 (left-hand thread)	17.999~17.991	22	0.33

Rotary joint for ball screw cooling

ES50-1600/2000



Recent machining demands increasingly high precision and efficiency. To prevent accuracy loss caused by heat generation, ball screws require hollow-core cooling.

The ES50 uses a return-type joint design to resolve the problems of the traditional oil seal method.

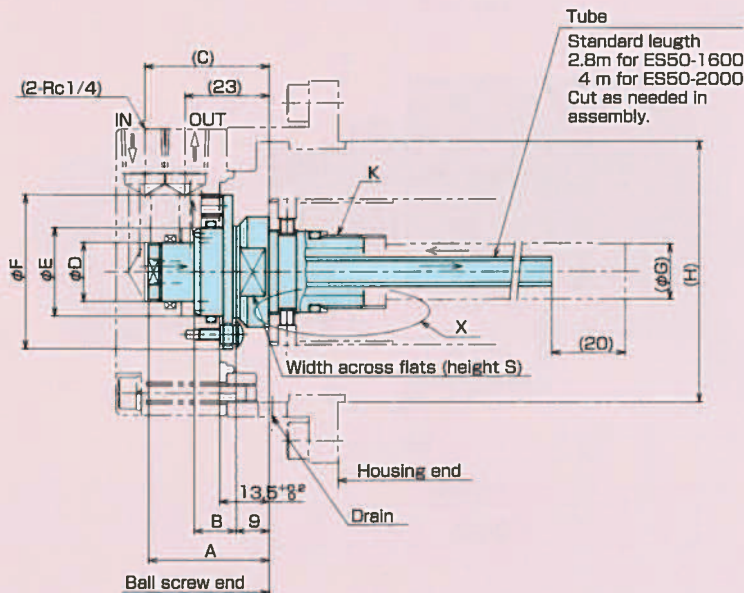
Long life, low friction, excellent maintainability

- Long life: Low-friction mechanical seal assures long oil seal service life.
- Low torque and low heat generation: Low-friction mechanical seal reduces torque to only a tenth that of oil seal designs.
- Excellent maintainability: Return structure makes it possible to replace joints without removing other components.

Usage conditions

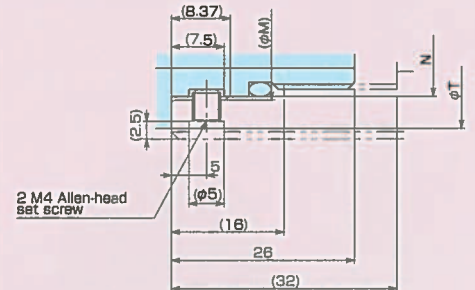
Fluid	Cooling oil
Standard flow rate	ES50-1600:3 liters/min ES50-2000:5 liters/min
Operating temperature	Max. 60°C
Pressure	Max. 1 MPa
Rotation speed	Max. 5,000 min ⁻¹ Typ. 3,000 min ⁻¹

ES50-1601/2002 dimensional drawings



Dimensions given in () are handled by customer

Detail of X



ES50-1600 (2000) dimensions

Model	A	B	C	D	E	F	G	H	K	L	M	N	T	S
ES50-1600	32	11	33	14	20	38	12	φ61h5 (H7)	M16×1.5 (right-hand thread)	2.8m	19	φ18f7 (H7)	27	24
ES50-2000	33	11.5	34	16	24	42	15	φ71h5 (H7)	M20×1.5 (right-hand thread)	4m	23	φ22g6 (H7)	34	27

■ Multi-port Rotary Joint

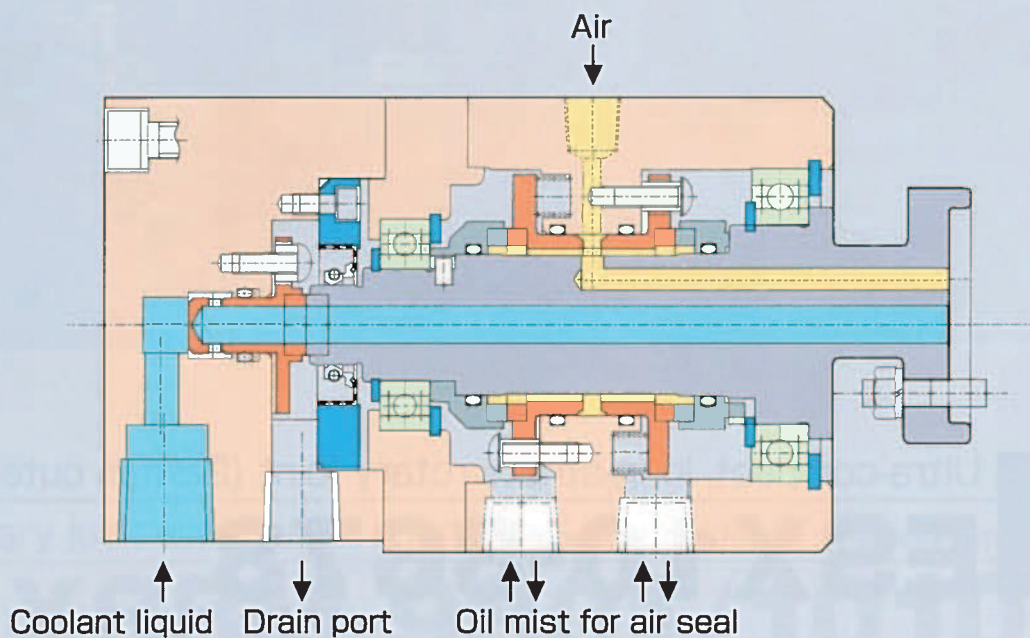
In addition to spindle-through, lathe chuck and ball screw cooling applications, machine tools are required to supply multiple fluids to rotating sections.

RIX provides various multi-port rotary joints that serve the many applications required for machine tools, including mating detection (coolant/air), internal mixing MQL (oil/air), spindle cooling (coolant/cooling oil) and rotating table control (hydraulic oil).

These multi-port rotary joints are all tailor-made based on the specifications given by the customers.

For more information, please contact us.

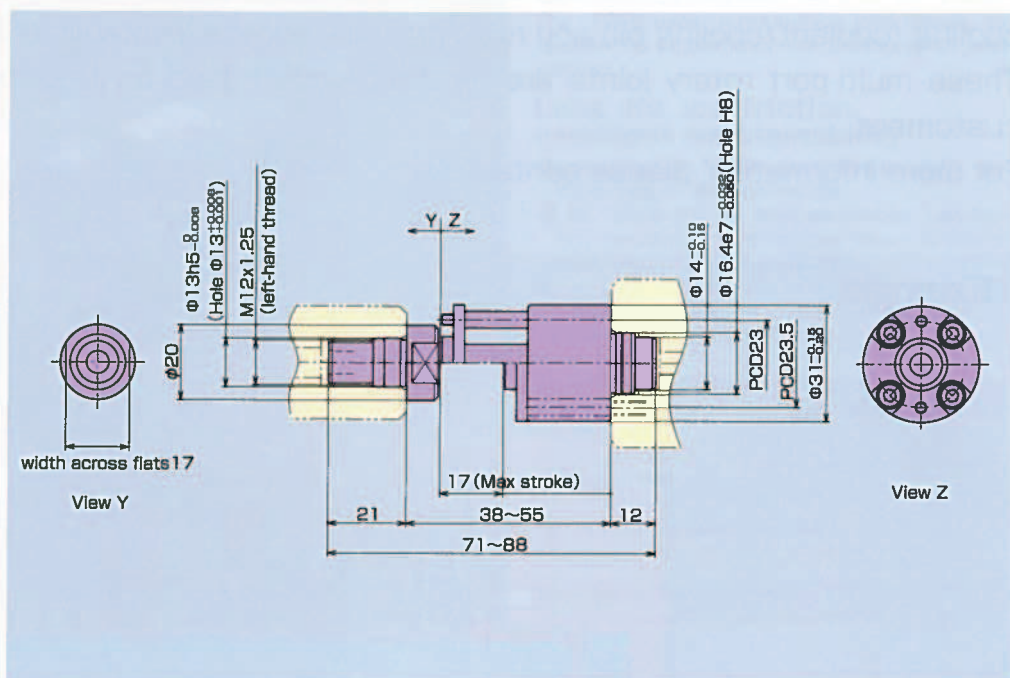
Example



Ultra-long stroke rotary joint

ESX20-8834

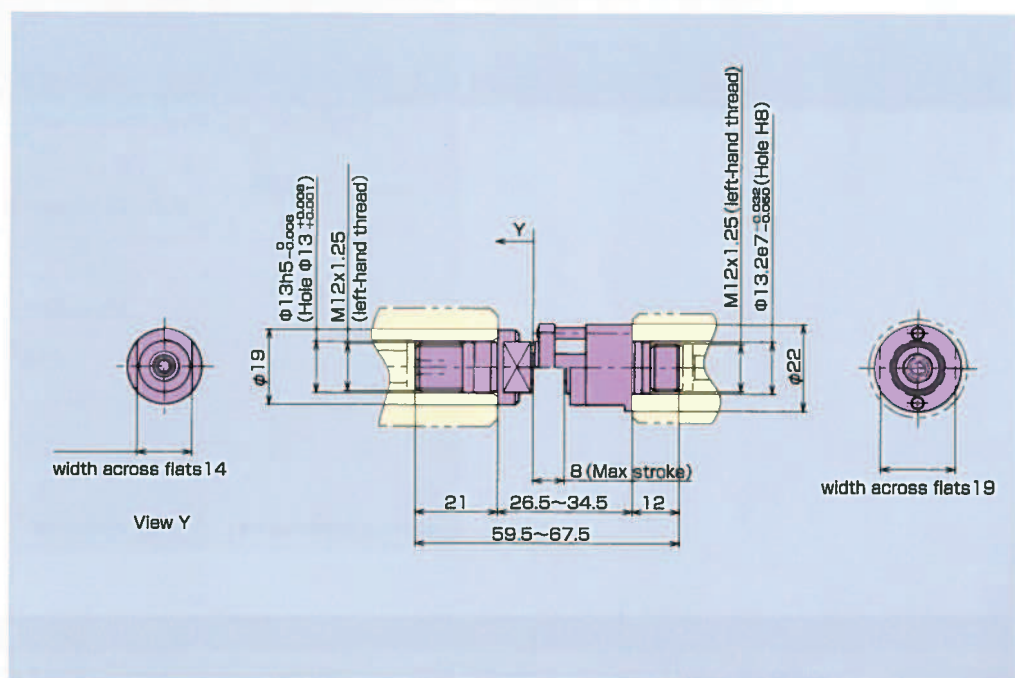
It is possible for the rotary joint to completely absorb long strokes from HSK, CAPTO and other shanks. While still in a compact design, with dimensions unchanged, this rotary joint offers an astonishing 17-mm stroke.



Ultra-compact, long-stroke rotary joint (22-mm outer diameter)

ESX10-8678

To meet strong demand for even smaller models, this compact design offers an outer diameter of only 22 mm while providing a long 8-mm stroke. Recommended for developing small multi-function machines.



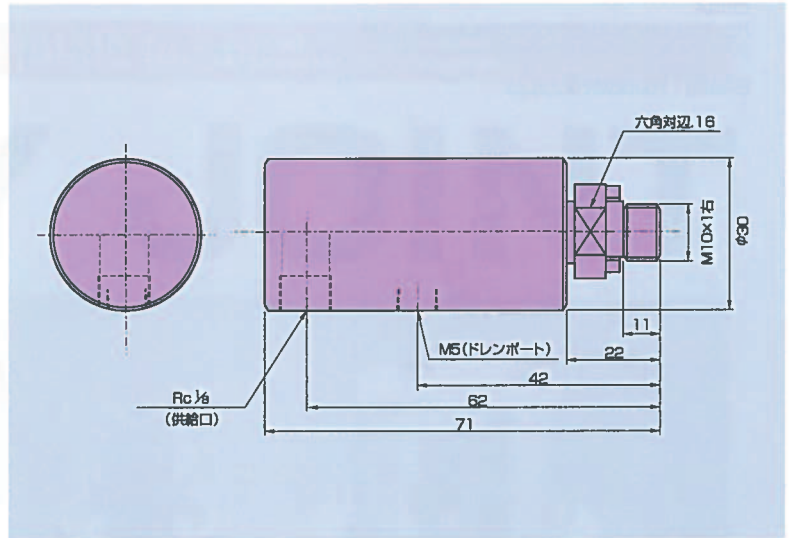
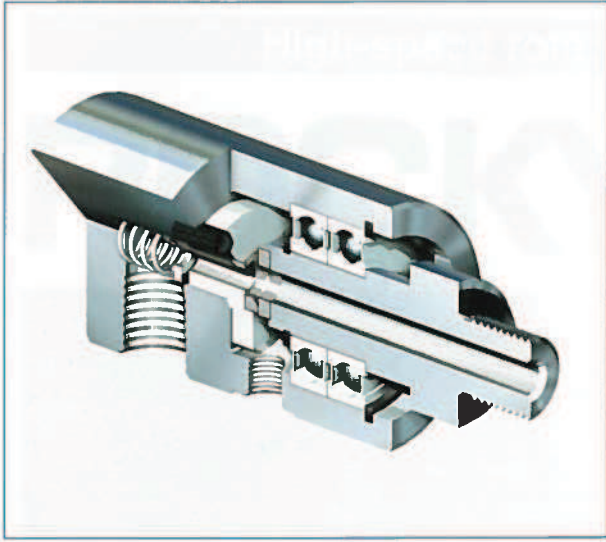
e flexibly. We also offer a selection of special rotary joints for special needs.

Rotary joint with built-in bearing Compact , high-pressure type

L60

High pressure specification in a compact body

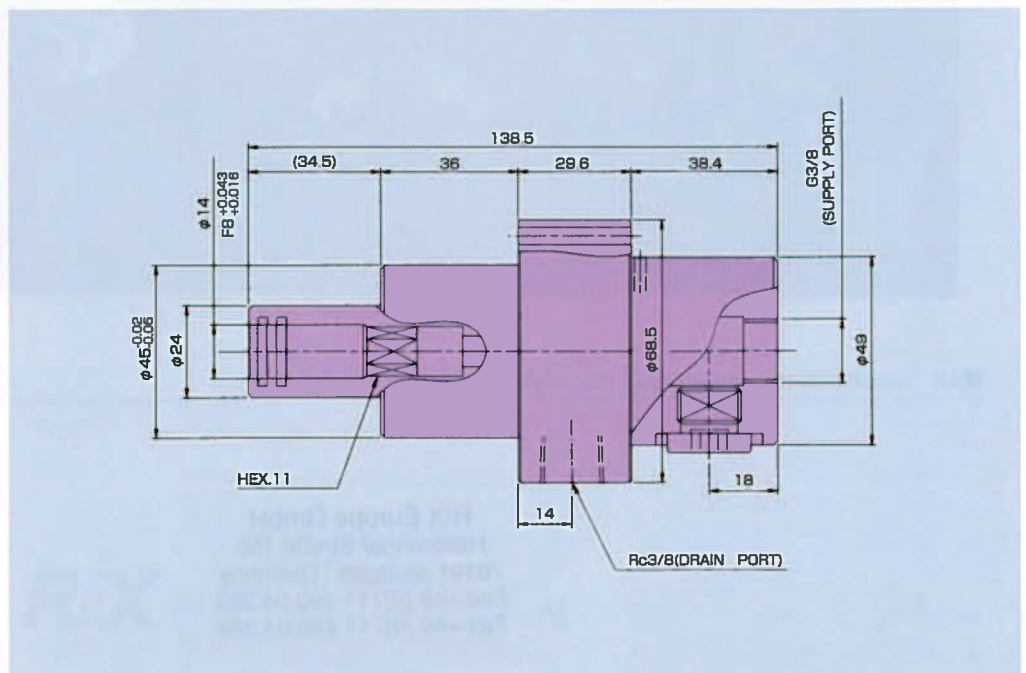
Designed for high pressure, small volume applications.
The compact body is recommended for applications where space is restricted.



Rotary joint with built-in bearing Polygonal joint fitting, externally-supported type.

LX88M-9801/10106

The rotary joint with built-in bearing will firmly support the joint body and transmit rotation with polygon shape (hexagonal and octagonal) to achieve high speed rotation.



For details on rotary joints, please contact the following.
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■All specifications are subject to change without notice

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Innovative Ölskimmer für Bearbeitungszentren



Schraubenskimmer



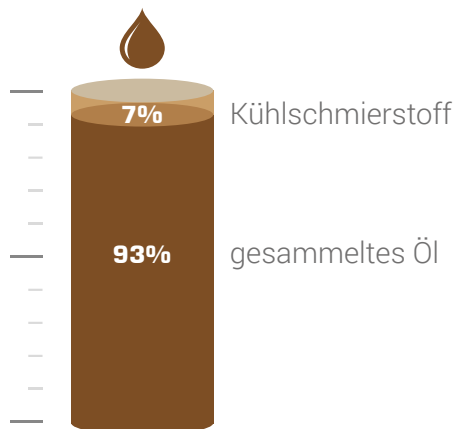
Spiralskimmer

- / Niedrige Wartungskosten
- / Niedriger Kühlmittelverlust
- / Geringe Betriebskosten
- / Platzsparendes Design

Vorteile der RIX-Ölskimmer

Weniger Flüssigabfall und geringere Entsorgungskosten:

- / Es wird fast ausschließlich Öl gesammelt

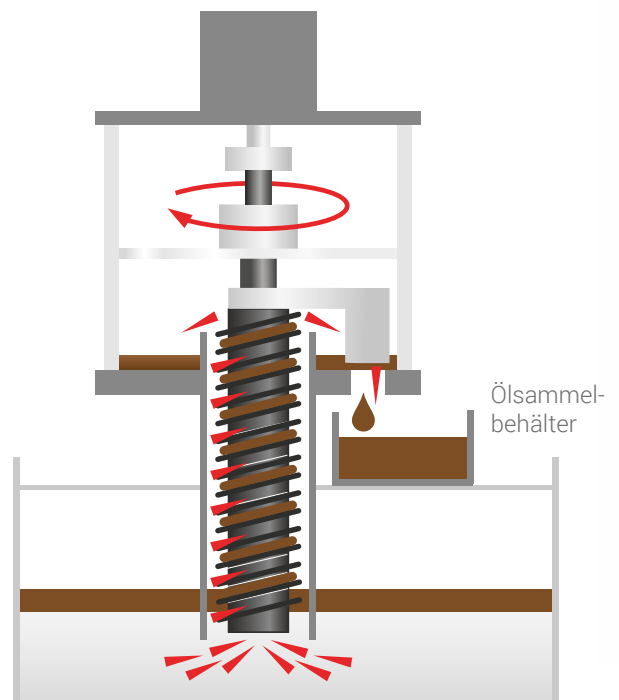


Platzsparendes Design:

- / Ca. 40 % Platzersparnis zu Bandskimmern mit Standardgröße
- / Kein Ölabscheidetank nötig

Niedrige Wartungskosten und leichte Instandhaltung:

- / Kein Ölabscheidetank nötig, dadurch auch keine Wartung des Ölabscheidetanks
- / Einfache Reinigung





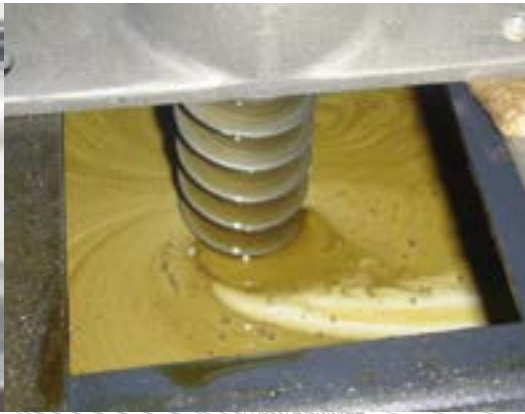
RIX Schraubenskimmer SLS-Typ

Der SLS - Ölsammelmechanismus:

- / Hochviskoses Öl wird von der rotierenden Schraube nach oben transportiert und im Sammelbehälter bis zur Entsorgung zwischengelagert
- / Niedrigviskoser Kühlschmierstoff fließt nach unten ab und kann wiederverwendet werden

Produktvorteile:

- / Der Schraubenskimmer bietet flexible Einsatzmöglichkeiten und ist leicht zu transportieren. Er ist schlank und funktional konzipiert, so dass die Installation einfach und individuell an der gewünschten Stelle vorgenommen werden kann
- / Er spart Wartungskosten, da er nur halbjährlich gereinigt werden muss
- / Hohe Ölsammelgeschwindigkeit und sehr hohe Ölsammelleistung, so dass die Entsorgungskosten für das Öl sinken
- / Das Gerät ist 40% platzsparender als herkömmliche Geräte
- / Der Schraubenskimmer benötigt wenig Strom



Einfache Reinigung durch
ein Gebläse von außen

RIX Spiralskimmer MOS-Typ

Beim Spiralskimmer ist unten statt der Schraube eine frei- und feststehende Spirale angebracht, die sich um einen rotierenden Metallstab wickelt. Durch die Rotation des Metallstabes in der Mitte der Spirale wird das Öl indirekt nach oben befördert, wodurch kleine und größere Schnittreste den Prozess nicht stören.

Durch den indirekten Transport ist beim Spiralskimmer die Sammelleistung bzgl. die Reinheit des Öls höher.

Der MOS - Ölsammelmechanismus:

- / Ein rotierender Metallstab inmitten einer feststehenden Spirale befördert das Öl nach oben
- / Schlammige Rückstände und Schnittreste fließen zusammen mit dem niedrigviskosen Kühlschmierstoff nach unten ab

Weitere Produktvorteile des MOS-Typs:

Der Spiralskimmer eignet sich besonders gut, wenn im Kühlmittelschmierstoff vermehrt schlammige Rückstände und Schnittreste enthalten sind.



Funktion

Der Ölsammelmechanismus:

1. Die Schraube rotiert in der Röhre des Ölskimmers. Dadurch, dass das Öl eine hohe Viskosität besitzt, haftet es an der Schraubenfläche. Das Kühlmittel verfügt hingegen über eine niedrigere Viskosität, wodurch es zurückbleibt.
2. Das Öl sammelt sich im Spalt zwischen Schraube und Rohr. Durch Rotation wird es dann nach oben transportiert.
3. Das Öl, das über den Rand der Schraube tritt, tropft langsam durch den Auslass für den Öltank ab.
4. Es wird nur Öl gesammelt.
Dadurch ist kein Trennungstank notwendig!



Technische Daten

Schraubenskimmer

SLS- **200** SB- **BT**

Eintauchtiefe (A)

Abmessung A	Symbol
200 mm	200
300 mm	300

Motor

Spezifikation	Symbol
Induktionsmotor 3 Phasen, 200V mit Anschlusschutz	BT
Induktionsmotor 1 Phase, 200V/230V mit Anschlussbox	SP220V
Induktionsmotor 3 Phasen, 380V/400V/415V mit Anschlussbox	HV

Spiralskimmer

MOS- **200** - **G3P-200V-BT**

Eintauchtiefe (A)

Abmessung A	Symbol
200 mm	200
300 mm	300

Motor

Spezifikation	Symbol
Induktionsmotor 3 Phasen, 200V mit Anschlusschutz	G3P-200V-BT
Induktionsmotor 1 Phase, 200V/230V mit Anschlussbox	G1P-220V
Induktionsmotor 3 Phasen, 380V/400V/415V mit Anschlussbox	G3P-380V

(Alle Ölskimmer werden ohne Kabel vertrieben.)

Achtung

- Dieses Produkt wurde für Bearbeitungszentren mit wasserlöslichem Kühlschmierstoff entwickelt. Beabsichtigen Sie es woanders einzusetzen, kontaktieren Sie bitte uns oder unsere Lieferanten.
- Anwendung möglich bei Ölviskosität VG 22 bis 68 und Kühlschmierstofftemperatur von 10 bis 50 °C.
- Nicht anwendbar bei pflanzenölbasierten, wasserlöslichen Kühlschmierstoffen.
- pH-Wert Anwendungsbereich: pH4 bis pH9.
- Der Filtergebrauch wird empfohlen, damit Schnittreste nicht in den Kühlschmierstofftank gelangen.
- Bitte verwenden Sie dieses Produkt nicht bei Reinigungsmitteln oder Bearbeitungsablagerungen. Dieses Produkt ist nicht einsetzbar bei Reinigungslösungen oder Kühlschmierstoffen mit Schleifmitteln.
- Die beste Einbauposition ist dort, wo sich das Öl ansammelt und stagniert.
- Es wird empfohlen, genug Abstand zum Tankboden zu lassen, damit schlammige Rückstände nicht aufgewirbelt werden. Für Details lesen Sie bitte die Bedienungsanleitung.

Spezifikationen unterliegen Änderungen ohne vorherige Ankündigung.

Erhältliche Varianten

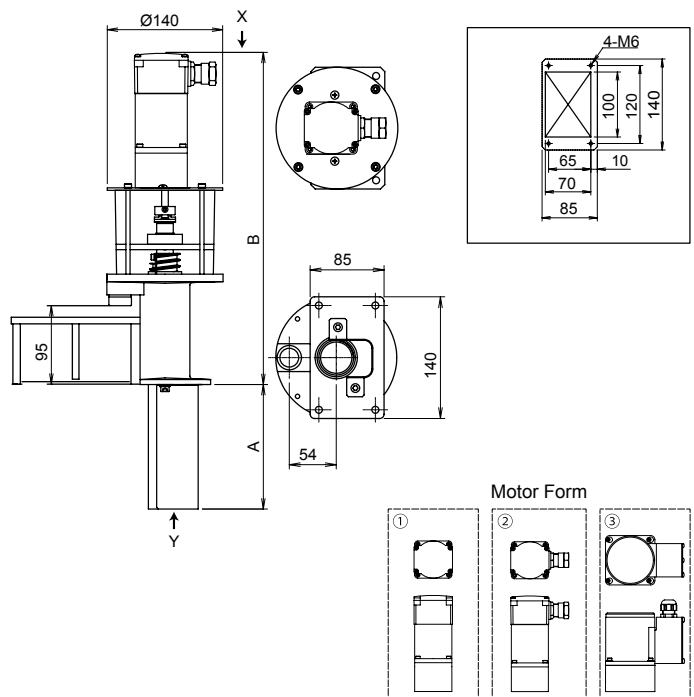
Schraubenskimmer

Modell	Maße (mm)		Motor	Gewicht (kg)	Leistung (ml/h)
	A	B	Typ		
SLS-200SB-BT	200	392	1	3,8	850
SLS-200SB-SP220V			2		
SLS-200SB-HV		389	3	4,8	
SLS-300SB-BT	300	392	1	4,3	
SLS-300SB-SP220V			2		
SLS-300SB-HV		389	3	5,3	

Spiralskimmer

Modell	Maße (mm)		Motor	Gewicht (kg)	Leistung (ml/h)
	A	B	Typ		
MOS-200-G3P-200V-BT	200	390	1	4,1	100
MOS-200-G1P-220V			2		
MOS-200-G3P-380V		389	3	5,1	
MOS-300-G3P-200V-BT	300	390	1	4,2	
MOS-300-G1P-220V			2		
MOS-300-G3P-380V		389	3	5,2	

Außenabmessungen



Vorfürhrgeräte zu Testzwecken sind sowohl für Schraubenskimmer als auch für Spiralskimmer erhältlich.



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Storm Rage

with AWT (Advanced Whirlwind Technology)



RIX RIX CORPORATION

Coolant-related Applications



ROCKY JOINT

We supply Rocky-brand rotary unions which are used for chucking, tool sensing, rotary index table and other machine tool applications.



OIL SKIMMER

Oil Skimmer achieved extremely space-save, running-cost reduction by the patented unique screwed design.



We have already established 6 subsidiary firms in 6 different countries so far and are also closely associated with the local distributors / agents to worldwide extend various supports for our customers.



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High-performance Cyclonic Filtration System/ STORM RAGE remains the coolant of machine tools constantly clean.

Storm Rage

Machining accuracy improved

Maintenance-Free

Low-cost

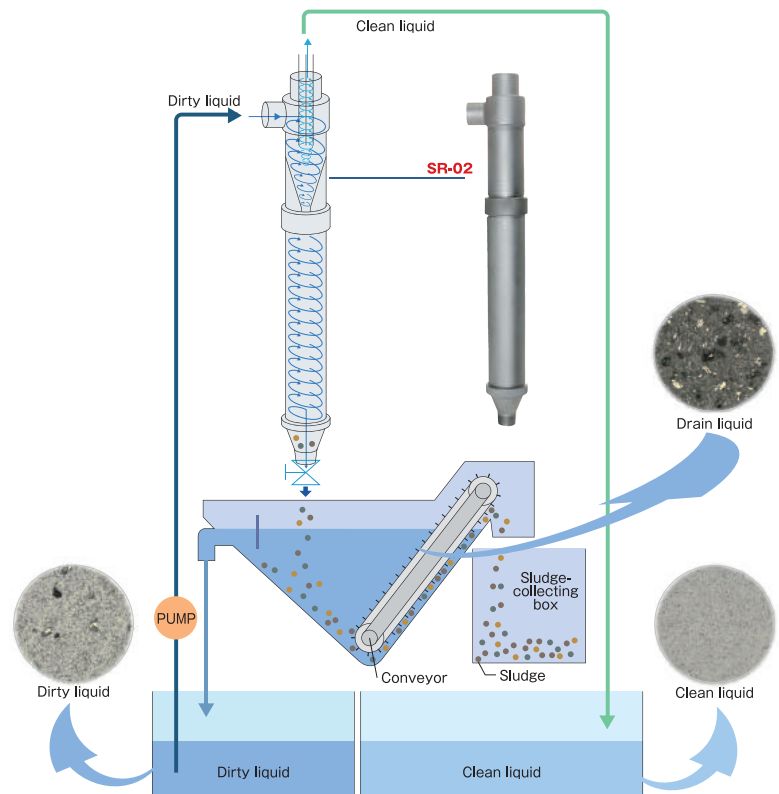
Storm Rage is

a Hydrocyclonic Filtration System that is developed for the purpose of remaining the coolant constantly clean. Nowadays, Cyclone technology has been widely used for vacuum cleaners & others.

Based on this technology, we draw on our cyclonic centrifugal application which is also developed by our own proprietary technology to separate solid waste from the coolant.

As compared to other similar products, the greater filtration performance is the biggest characteristics of STORM RAGE. STORM RAGE is also designed as more compact with lower cost.

On the other hand, it still remains the manufacturing accuracy unchanged, and reduces defect rate to achieve more excellent efficiency & high-quality product.



Advantage 1

Lowering costs

As compared to other similar products, Storm Rage achieved size compact & low-cost.

Advantage 2

Low-maintenance

It is easy to maintain, as the Filter itself may be dismantled.

Advantage 3

Perform in high-efficiency

Effectively remove more than 90% of sludge in 10~20 μ m size from the coolant

Advantage 4

Non-magnetic particles also can be removed

Effectively remove not only magnetic subjects from the coolant, but also Non-magnetic material, such as abrasive grains, aluminium etc..

Advantage 5

High filtration accuracy

The filtration accuracy dramatically improved by enhancing the flow-rate & centrifugal force in Storm Rage.

Advantage 6

No foaming issue

There is no problem with foam which generally caused by cyclonic equipment.

SR-01 α



SR-02 α



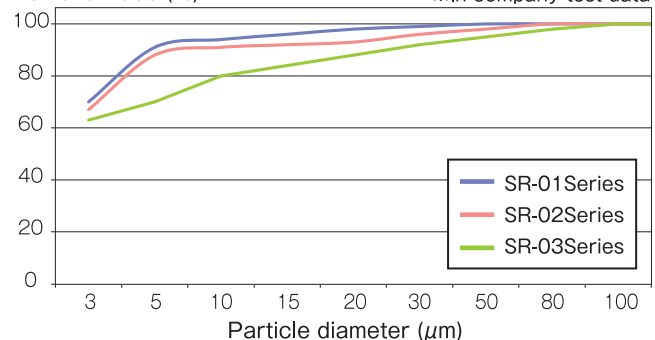
SR-03 α Z



■ Graph shows what percentage of particles Storm Rage is able to eliminate.

Removal ratio (%)

※In-company test data



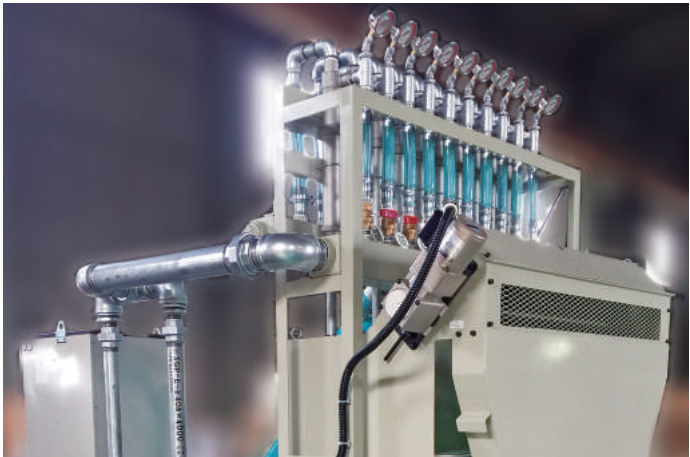
Extremely suitable to center-through coolant used on small machining centers.



SR-01α



SR-01D

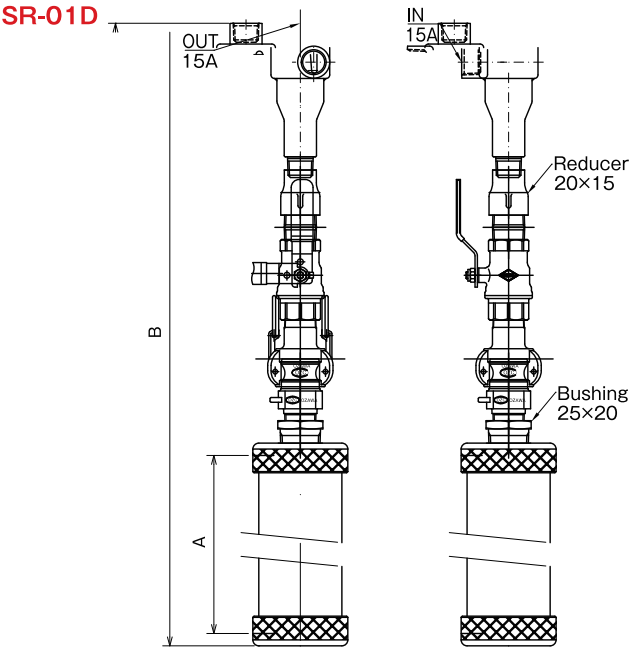
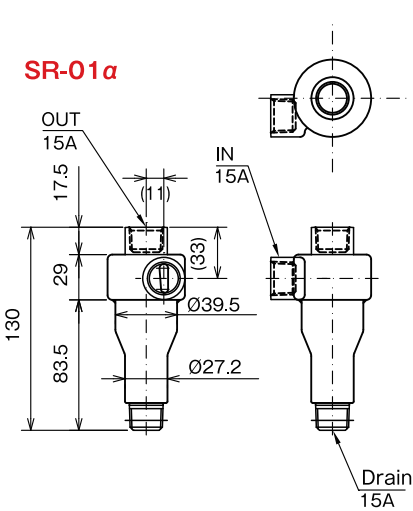


Filtration capability

Supply Pressure		Drain part inside dia (φ)		Clean liquid flow		Drain liquid flow		Total liquid flow		Filtration ratio(%) >20μm
bar	psi	mm	inch	LPM	GPM US	LPM	GPM US	LPM	GPM US	%
2.5	36			24	6.34	3	0.79	27	7.13	95
1.5	22	9.2	0.36	20	5.28	2	0.53	22	5.81	93
1.0	15			17	4.49	2	0.53	19	5.02	90

Test pump capability:60l/min-3bar

*If there is a letter "D" mentioned at the last of the model description, which means it comes with an optional drain-pod.
*3 kinds of pod capacity available, i.e.300cc (150mm high), 500cc(250mm high), & 900cc(400mm high),



A=Drain Pod Length B=Total Length
A= 150 / B= 525
A= 250 / B= 625
A= 400 / B= 775

Extremely suitable to the secondary filtration for machining centers & grinding machines.



SR-02α



SR-02



SR-02D



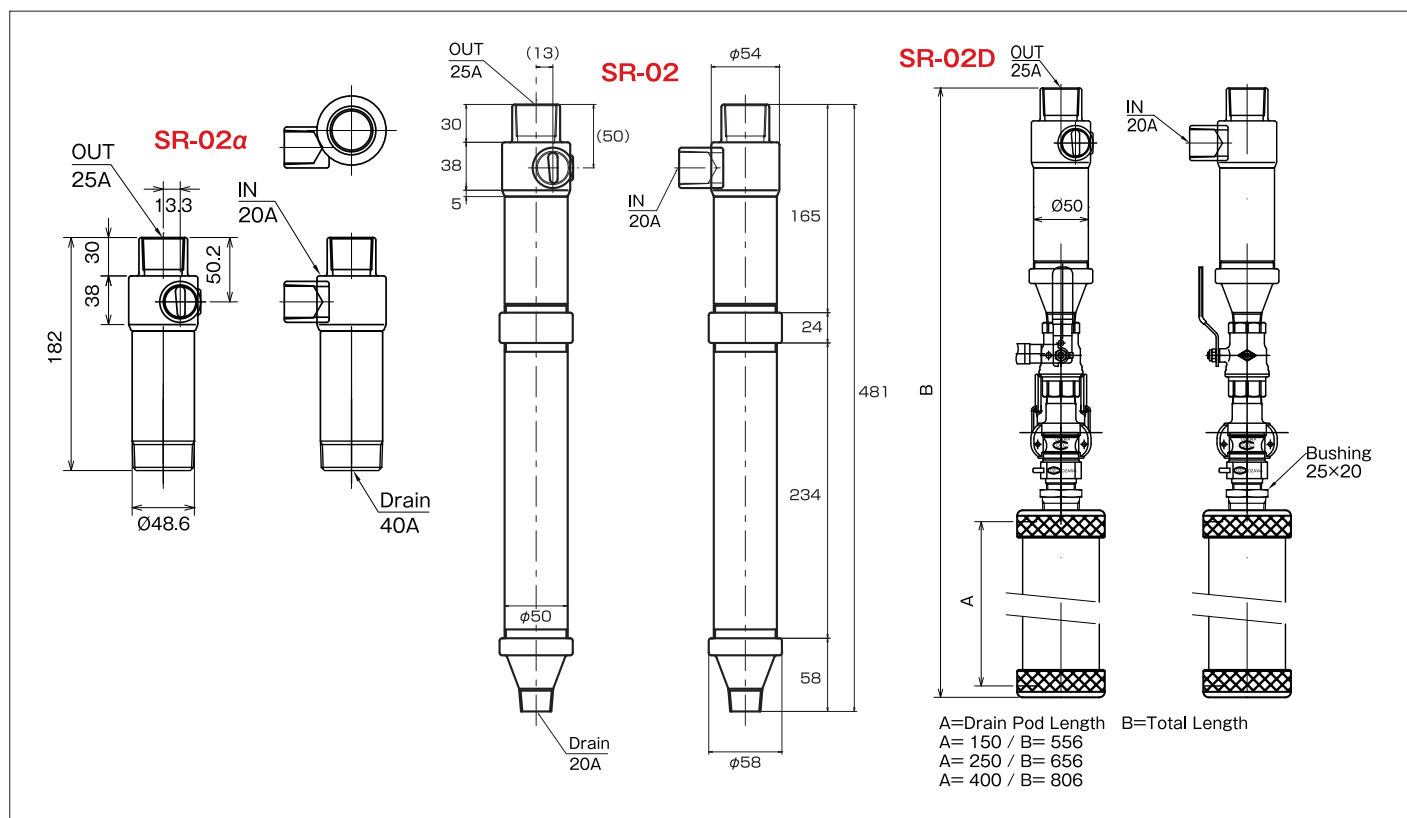
Filtration capability

Supply Pressure		Drain part inside dia (φ)		Clean liquid flow		Drain liquid flow		Total liquid flow		Filtration ratio(%) >20μm
bar	psi	mm	inch	LPM	GPM US	LPM	GPM US	LPM	GPM US	%
2.5	36	9	0.35	47	12.4	2	0.53	49	12.9	95
		12	0.47	44	11.6	12	3.17	57	15.1	
		19	0.75	33	8.72	13	3.43	46	12.2	
2.0	29	9	0.35	44	11.6	1.5	0.4	45.5	12	95
		12	0.47	41	10.8	10	2.64	51	13.5	
		19	0.75	30	7.93	13	3.43	43	11.4	
1.5	22	9	0.35	35	9.25	1.5	0.4	36.5	9.642	95
		12	0.47	33	8.72	9	2.38	42	11.1	
		19	0.75	27	7.13	11	2.91	38	10	
1.0	15	9	0.35	31	8.19	1.5	0.4	32.5	8.59	85
		12	0.47	26	6.87	7	1.85	33	8.72	
		19	0.75	25	6.6	8	2.11	33	8.72	

Test pump capability: 100l/min-3bar

*If there is a letter "D" mentioned at the last of the model description, which means it comes with an optional drain-pod.

*3 kinds of pod capacity available, i.e.300cc (150mm high), 500cc(250mm high), & 900cc(400mm high),



Extremely suitable to the secondary filtration for machining centers & grinding machines.

SR-03series

Model : SR-03aZ SR-03 SR-03aZD



Filtration capability

Supply Pressure		Drain part inside dia (φ)		Clean liquid flow		Drain liquid flow		Total liquid flow		Filtration ratio(%) >20μm
bar	psi	mm	inch	LPM	GPM US	LPM	GPM US	LPM	GPM US	%
2.5	36	Open		150	39.4	14	3.7	164	43.3	95
2.0	29			135	35.7	12	3.17	147	38.8	96
1.5	22			100	26.4	10	2.64	119	31.4	90
1.0	15			86	22.7	9	2.38	95	25.1	86

*If there is a letter "D" mentioned at the last of the model description, which means it comes with an optional drain-pod.

*3 kinds of pod capacity available, i.e.300cc (150mm high), 500cc(250mm high), & 900cc(400mm high),

Test pump capability:180l/min-3bar

