

# MAGRON FEEDTHROUGH

MAGRON  
March 2024

Solid Shaft Feedthrough

Hollow Shaft Feedthrough

Multiaxial Feedthrough

Special Application Feedthrough



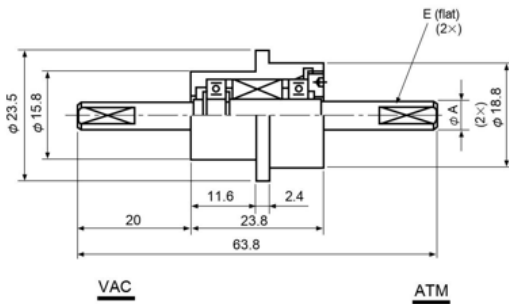
# Contents

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<b>01</b>	<b>Solid Shaft Feedthrough</b> Miniature, Through Hole Mount, Flange Mount, Heavy Duty	3p
<b>02</b>	<b>Hollow Shaft Feedthrough</b> Cartridge, Flange Mount, Cantilevered Seal	5p
<b>03</b>	<b>Multiaxial Feedthrough</b> Two Coaxial, Three Axis	7p
<b>04</b>	<b>Special Application Feedthrough</b> Ultra High Vacuum, Three Coaxial and Linear, Purge Mode, Rotary Gas Union	8p

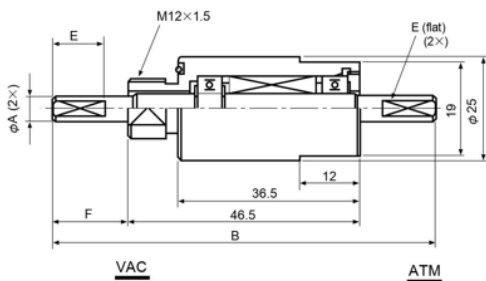
# Feedthrough

## ● Miniature Feedthrough



Shaft Diameter	004	005	006
A	(-0.018)4(+0)	(-0.018)5(+0)	(-0.018)6(+0)
E	0.5Dp. / 10Lg.	0.5Dp. / 10Lg.	0.5Dp. / 10Lg.

Model Number	MML004NN	MML005NN	MML006NN
Torque capacity(kg·cm)	5.8	6.4	6.4
Vacuum pressure Pa,(Torr)	$10^{-6}$ , ( $10^{-8}$ )		
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	<10 <sup>-12</sup>		
(Torr·l/sec)	<10 <sup>-11</sup>		
Pressure capacity[Static](kg/cm <sup>2</sup> )	2		
Temperature range(°C)	0 – 80		
Gas compatibility	Inert Gas		
Bearing type	686	686	686
Bearing material	SUS440C		
Housing material	SUS303		
Shaft material	SUS630		



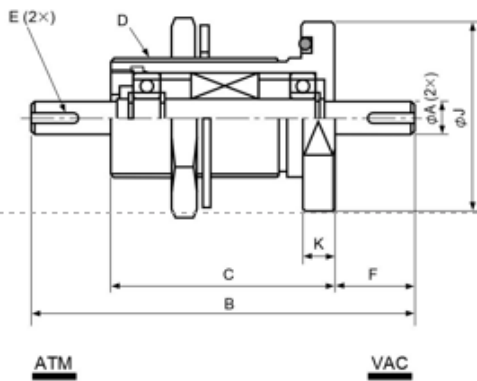
Shaft Diameter	004	005	006
A	(-0.018)4(+0)	(-0.018)5(+0)	(-0.018)6(+0)
B	76.5	76.5	76.5
E	0.5Dp. / 10Lg.	0.5Dp. / 10Lg.	0.5Dp. / 10Lg.
F	15	15	15

Model Number	MSL004NN	MSL005NN	MSL006NN
Torque capacity(kg·cm)	5.8	6.4	6.4
Vacuum pressure Pa,(Torr)	$10^{-6}$ , ( $10^{-8}$ )		
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	<10 <sup>-12</sup>		
(Torr·l/sec)	<10 <sup>-11</sup>		
Pressure capacity[Static](kg/cm <sup>2</sup> )	2		
Temperature range(°C)	0 – 80		
Gas compatibility	Inert Gas		
Bearing type	686	686	686
Bearing material	SUS440C		
Housing material	SUS303		
Shaft material	SUS630		

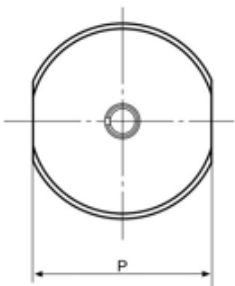
\*Reactive-gas compatible feedthroughs are also available.(Specify application when requesting quotation or placing order.)

# Feedthrough

## Through Hole Mount Feedthroughs



Shaft Diameter	006	010
A	$(-0.018)6(+0)$	$(-0.022)10(+0)$
B	97.5	97.5
C	57.5	57.5
D	M32 x 1.5	M38 x 1.5
E	0.5Dp.x 12Lg.(flat)	3W x 1.8Dp. x 14Lg. (keyway)
F	20	25
J	55	60
K	10	10
P	49	55



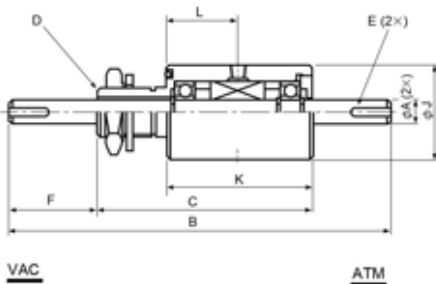
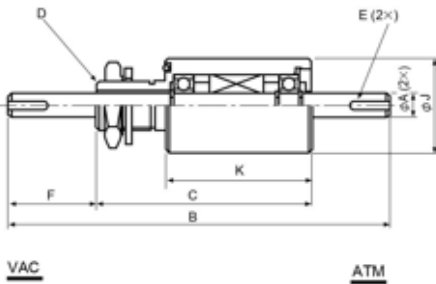
Model Number	MML 006 NN	MNF 006 NN	MML 010 NN	MNF 010 NN
Torque capacity(kg·cm)	9.7	9.7	62	62
Vacuum pressure Pa,(Torr)	$10^{-6},(10^{-8})$	$10^{-5},(10^{-7})$	$10^{-6},(10^{-8})$	$10^{-5},(10^{-7})$
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	$<10^{-12}$			
(Torr·ℓ/sec)	$<10^{-11}$			
Pressure capacity[Static](kg/cm <sup>2</sup> )	2.5	2	2.5	2
Temperature range(°C)	0 – 80			
Gas compatibility	Inert	Active	Inert	Active
Bearing type	627	627	6001	6001
Bearing material	SUS440C			
Housing material	SUS303	SUS304	SUS303	SUS304
Shaft material	SUS630			

# Feedthrough

## Through Hole Mount Feedthroughs



Shaft Diameter	012	020
A	(-0.027)12(+0)	(-0.033)20(+0)
B	179	211
C	109	121
D	M25 x 1.5	M30 x 1.5
E (keyway)	4W x 2.5Dp.x 20Lg.	6W x 3.5Dp. x 25Lg.
F	40	55
J	48	63
K	74	82
L	36.5	40.5



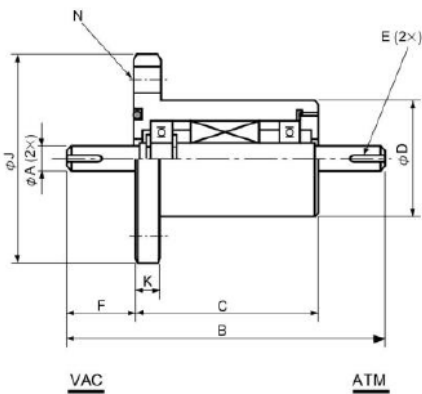
L : Locations for water cooling  
Water Cooling Type

Model Number	MTL 012 NN	MTF 012 NN	MTL 020 NN	MTF 020 NN
Torque capacity(kg·cm)	124	124	615	615
Vacuum pressure Pa,(Torr)	$10^{-6}$ ,( $10^{-8}$ )	$10^{-5}$ ,( $10^{-7}$ )	$10^{-6}$ ,( $10^{-8}$ )	$10^{-5}$ ,( $10^{-7}$ )
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	<math>10^{-12}</math>			
(Torr·l/sec)	<math>10^{-11}</math>			
Pressure capacity[Static](kg/cm <sup>2</sup> )	2.5	2	2.5	2
Temperature range(°C)	0 – 80			
Gas compatibility	Inert	Active	Inert	Active
Bearing type	6002	6002	6005	6005
Bearing material	SUS440C			
Housing material	SUS303	SUS304	SUS303	SUS304
Shaft material	SUS630			

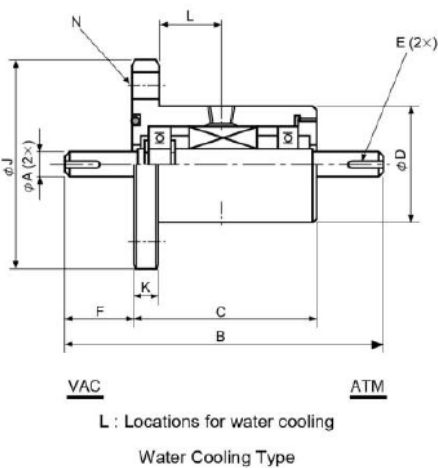
Note : Tapped bore Type model number should change MFO-000-WN

# Feedthrough

## ● Flange Mount Feedthroughs



Shaft Diameter	006	010	012	020
A	(-0.018)6(+0)	(-0.022)10(+0)	(-0.027)12(+0)	(-0.033)20(+0)
B	97.5	119.5	133.5	151.5
C	57.5	69.5	73.5	81.5
D	38	44	48	63
E	0.5Dp.x 12Lg.(flat)	3W x 1.8Dp. x 14Lg.	4W x 2.5Dp.x 20Lg.	6W x 3.5Dp. x 25Lg.
F	20	25	30	35
J	80	80	90	105
K	10	10	10	10
L	18	24	27	31
N	PD60/4-   10	PD60/4-   10	PD70/4-   10	PD85/4-   10



Model Number	MFL 006 NN	MFL 010 NN	MFL 012 NN	MFL 020 NN	MFF 006 NN	MFF 010 NN	MFL 012 NN	MFL 020 NN
Torque capacity(kg·cm)	9.7	62	124	615	9.7	62	124	615
Vacuum pressure Pa.(Torr)	10 <sup>-6</sup> ,(10 <sup>-8</sup> )				10 <sup>-5</sup> ,(10 <sup>-7</sup> )			
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	<10 <sup>-12</sup>							
(Torr·l/sec)	<10 <sup>-11</sup>							
Pressure capacity[Static](kg/cm <sup>2</sup> )	2				2.5			
Temperature range(°C)	0 – 80							
Gas compatibility	Inert				Active			
Bearing type	627	6001	6002	6005	627	6001	6002	6005
Bearing material	SUS440C							
Housing material	SUS303				SUS304			
Shaft material	SUS630							

Note : Conflat flange or any other defined configuration may be specified and is available as an option.

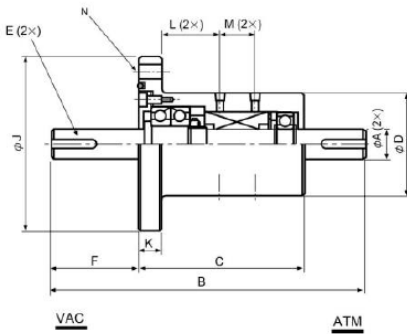
Tapped bore for tube fitting is available for use in high temperature or high rotation speed applications.

The model number should change to MFO-000-WN

Shaft length and terminations may be specified by the user.

# Feedthrough

## ● Heavy Duty Feedthroughs



L and M : Locations for water cooling  
Water Cooling Type

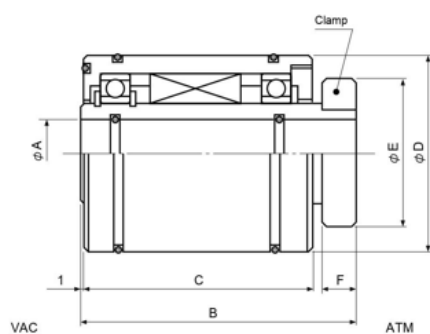
Shaft Diameter	020	025	030	040	050
A	(-0.033)20(+0)	(-0.033)25(+0)	(-0.033)30(+0)	(-0.039)40(+0)	(-0.039)50(+0)
B	255	288	321	357	406
C	135	138	141	157	166
D	85	95	105	125	140
E (keyway)	6W x 3.5Dp. x 50Lg.	7W x 4Dp. x 63Lg.	10W x 5Dp. x 80Lg.	12W x 5Dp. x 90Lg.	14W x 5.5Dp. x 110Lg.
F	60	75	90	100	120
J	145	160	160	185	210
K	18	18	20	22	24
L	48	50	50	55.5	59.5
M	29	29	29	33	33
N	PD120/6-   12	PD135/6-   12	PD135/6-   12	PD160/8-   12	PD185/8-   12

Model Number	MFL 020 WH	MFL 025 WH	MFL 030 WH	MFL 040 WH	MFL 050 WH
Torque capacity(kg·cm)	616	1066	1706	3413	6106
Vacuum pressure Pa,(Torr)	10 <sup>-5</sup> ,(10 <sup>-7</sup> )				
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	<10 <sup>-12</sup>				
(Torr·ℓ/sec)	<10 <sup>-11</sup>				
Pressure capacity[Static](kg/cm <sup>2</sup> )	3				
Temperature range(°C)	0 – 80				
Bearing type (VAC)	7206CDF	7207CDF	7208CDF	7210CDF	7212CDF
Bearing type (ATM)	6205	6206	6207	6009	6211
Bearing material	SUJ2				
Housing material	SUS303				
Shaft material	SUS630				

Note : Coaxial shaft cooling system is available for use in high temperature or high rotational speed application

# Feedthrough

## ● Hollow Shaft Feedthroughs (Cartridge Type)



∥ G : Recommended shaft diameter.  
∥ H : Recommended housing diameter.

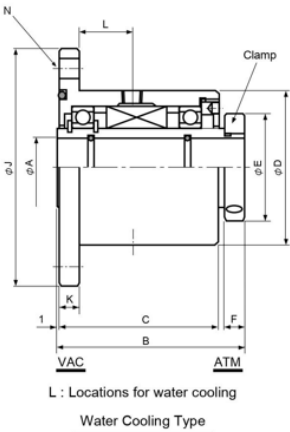
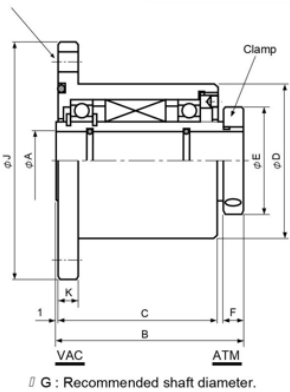
Shaft Diameter	010	020	025	030	040	050	075
A	+0.0310+0.01	+0.0420+0.02	+0.0425+0.02	+0.0430+0.02	+0.0540+0.02	+0.0550+0.02	+0.0675+0.03
B	78	82.5	88	93	96	98	115
C	64	68.5	74	79	80	82	96
D	+048-0.02	+058-0.03	+063-0.03	+073-0.03	+088-0.04	+098-0.04	+0137-0.04
E	34	44	49	54	69	79	109
F	10	10	10	10	12	12	15
G	-0.0110+0.03	-0.0120+0.03	-0.0125+0.03	-0.0130+0.03	-0.0140+0.03	-0.0150+0.03	-0.0175+0.04
H	+0.0548+0.03	+0.0658+0.03	+0.0663+0.03	+0.0673+0.03	+0.0788+0.04	+0.0798+0.04	+0.08137+0.05

Model Number	MTL 010 CN	MTL 020 CN	MTL 025 CN	MTL 030 CN	MTL 040 CN	MTL 050 CN	MTL 075 CN
Torque capacity(kg·cm)	----						
Vacuum pressure Pa,(Torr)	$10^{-5},(10^{-7})$						
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	<10 <sup>-12</sup>						
(Torr·l/sec)	<10 <sup>-11</sup>						
Pressure capacity[Static](kg/cm <sup>2</sup> )	3						
Temperature range(°C)	0 – 80						
Gas compatibility	Inert Gas						
Bearing type	16003	6906	6907	6908	6910	6912	6918
Bearing material	SUJ2						
Housing material	SUS303						
Shaft material	SUS630						



# Feedthrough

## ● Hollow Shaft Feedthroughs (Flange Mount Type)



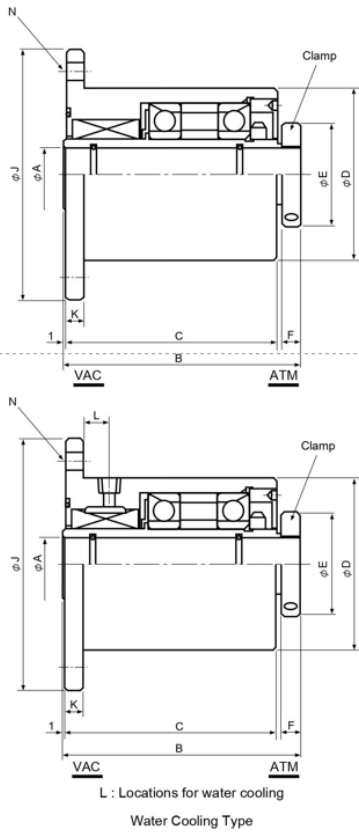
Shaft Diameter	10	20	25	30	40	50	75
A	+0.0310+0.01	+0.0420+0.02	+0.0425+0.02	+0.0430+0.02	+0.0540+0.02	+0.0550+0.02	+0.0675+0.03
B	78	82.5	88	93	96	98	115
C	64	68.5	74	79	80	82	96
D	51	63	71	78	90	103	143
E	34	44	49	54	69	79	109
F	10	10	10	10	12	12	15
G	-0.0110-0.03	-0.0120-0.03	-0.0125-0.03	-0.0130-0.03	-0.0140-0.03	-0.0150-0.03	-0.0175-0.04
J	90	105	120	120	145	160	210
K	10	10	10	10	10	12	12
L	20	22.5	26	27	27	26.5	33
M	PD70/4-   10	PD85/4-   10	PD100/4-   10	PD100/4-   10	PD120/4-   10	PD135/4-   10	PD185/4-   10

Model Number	MFL 010 CN	MFL 020 CN	MFL 025 CN	MFL 030 CN	MFL 040 CN	MFL 050 CN	MFL 075 CN
Torque capacity(kg·cm)	----						
Vacuum pressure Pa,(Torr)	10 <sup>-6</sup> ,(10 <sup>-8</sup> )						
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	<10 <sup>-12</sup>						
(Torr·ℓ/sec)	<10 <sup>-11</sup>						
Pressure capacity[Static](kg/cm <sup>2</sup> )	3						
Temperature range(°C)	0 – 80						
Gas compatibility	Inert Gas						
Bearing type	16003	6906	6907	6908	6910	6912	6918
Bearing material	SUJ2						
Housing material	SUS303						
Shaft material	SUS630						

Note : Conflat flange is available as an option. Tapped bore Type model number should change to MFL-000-WN

# Feedthrough

## ● Hollow Shaft Feedthroughs (Cantilevered Seal Type)

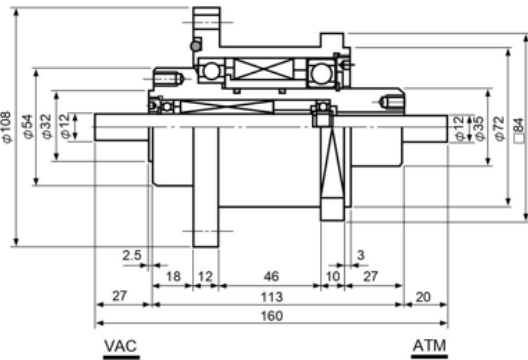


Shaft Diameter	020	025	030	040	050
A	+0.0420+0.02	+0.0425+0.02	+0.0430+0.02	+0.0540+0.02	+0.0550+0.02
B	123.5	126	130.5	141	147.5
C	109.5	112	116.5	125	131.5
D	78	90	96	106	132
E	44	49	54	67	79
F	10	10	10	12	12
G	-0.0120-0.03	-0.0125-0.03	-0.0130-0.03	-0.0140-0.03	-0.0150-0.03
J	120	145	145	160	185
K	10	10	10	12	12
L	14.5	13	14	12	12.5
N	PD100/4-   10	PD120/4-   12	PD120/4-   12	PD135/4-   12	PD160/8-   12

Model Number	MFF 020 CC	MFF 025 CC	MFF 030 CC	MFC 040 CC	MFF 050 CC
Torque capacity(kg·cm)	----				
Vacuum pressure Pa,(Torr)	$10^{-5},(10^{-7})$				
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	<10 <sup>-12</sup>				
(Torr·l/sec)	<10 <sup>-11</sup>				
Pressure capacity[Static](kg/cm <sup>2</sup> )	2.5				
Temperature range(°C)	0 – 80				
Gas compatibility	Reactive Gas				
Bearing type	7206CDB	7207CDB	7208CDB	7210CDB	7212CDB
Bearing material	SUJ2				
Housing material	SUS304 (SU316:Option)				
Shaft material	SUS630				

Note : Conflat flange is available as an option. Tapped bore Type model number should change to MFL-000-MC

# Feedthrough

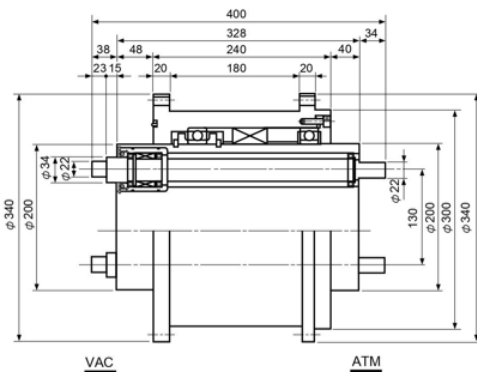


## Two coaxial type

Model	MFF012NN
Vacuum pressure Pa, (Torr)	$10^{-6}$ , ( $10^{-8}$ )
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	$<10^{-12}$
(Torr·ℓ/sec)	$<10^{-11}$
Pressure capacity [Static] (kg/cm <sup>2</sup> )	2
Temperature range (°C)	0 – 80
Gas compatibility	Reactive Gas
Bearing type	(out)ATM6007, VAC6908 (in)6901
Bearing material	SUJ2
Housing material	SUS304
Shaft material	SUS630

The small and light weight model with high rotating accuracy and small runout.

A typical application is a Wafer Transfer Robot in Vacuum. (called a SCARA type robot.)



## Three axis type

Model	MFL200NN
Vacuum pressure Pa, (Torr)	$10^{-6}$ , ( $10^{-8}$ )
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	$<10^{-12}$
(Torr·ℓ/sec)	$<10^{-11}$
Pressure capacity [Static] (kg/cm <sup>2</sup> )	2
Temperature range (°C)	0 – 80
Gas compatibility	Inert Gas
Bearing type	(out)6840 (in)6906
Bearing material	SUJ2
Housing material	A2024
Shaft material	SUS630

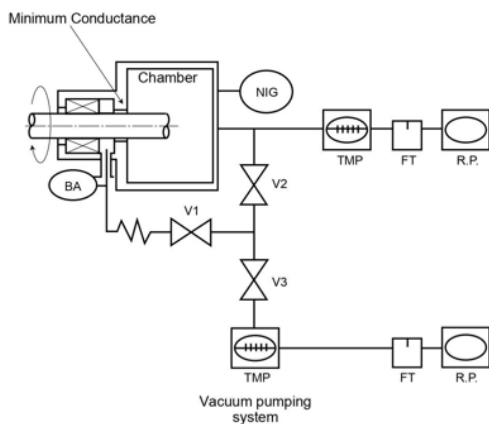
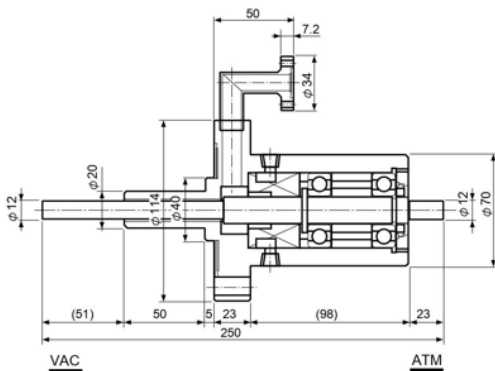
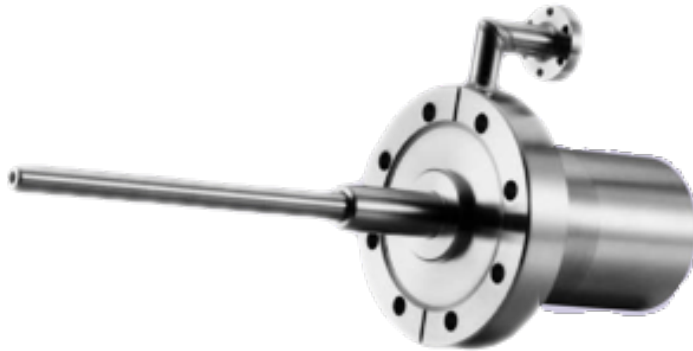
Three axis type with high stiffness provides high rotating accuracy and small runout.

The optional aluminum housing can be used to minimize the weight of the assembly.

A typical application is a Transfer Robot in Vacuum, designed for handling large glass substrates for LCD manufacturing. (called a Frog arm type robot.)

# Feedthrough

## ● Ultra High Vacuum Feedthroughs

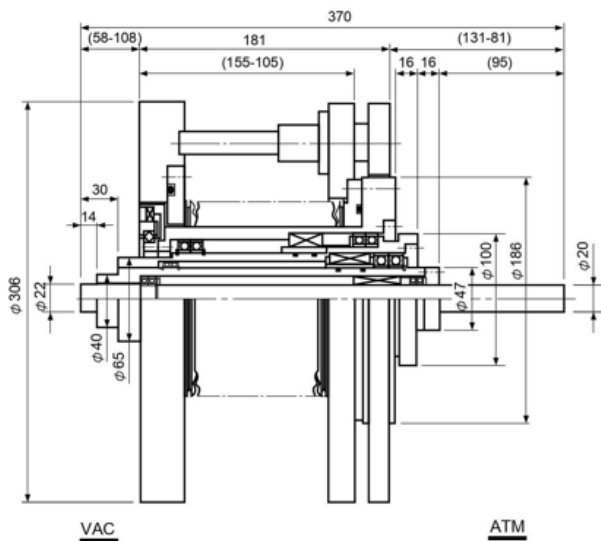


Model	MSCV-012WC
Vacuum pressure Pa, (Torr)	$10^{-7}, (10^{-9})$
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	$<10^{-12}$
(Torr·ℓ/sec)	$<10^{-11}$
Pressure capacity [Static] (kg/cm <sup>2</sup> )	2.5
Temperature range (°C)	0 – 80
Gas compatibility	Inert Gas
Bearing type	7303CDB
Bearing material	SUJ2
Housing material	SUS304
Shaft material	SUS630

1. Ferrofluid for UHV operation is used, which has low vapor pressure at high temperature
2. The main chamber is protected from baking out gas by differential pumping.
3. Easy baking condition is the same as for TMP.
4. A differential pumping line and a main pumping line can be unified up to  $10^{-9}$ Torr vacuum level.
5. The compact equipment can be provided with a simplified seal construction is UHV processing equipment.

# Feedthrough

## ● Three Coaxial and Linear Feedthroughs



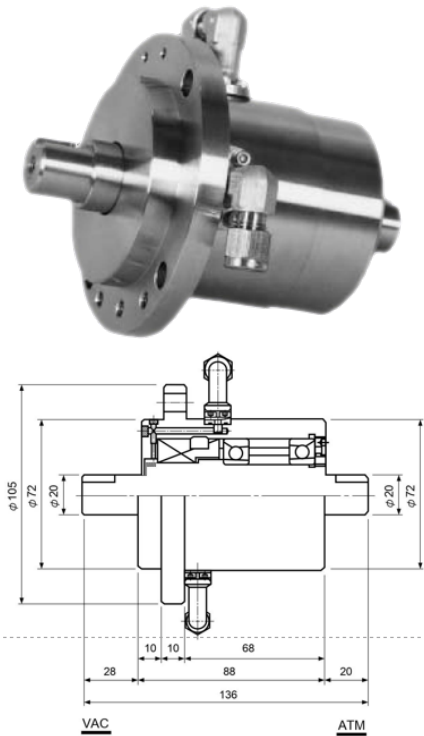
Model	MFF022NN
Vacuum pressure Pa,(Torr)	$10^{-8}, (10^{-8})$
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	$<10^{-12}$
(Torr·l/sec)	$<10^{-11}$
Pressure capacity[Static](kg/cm <sup>2</sup> )	2
Temperature range(°C)	0 – 80
Gas compatibility	Reactive Gas
Bearing type	(L)VAC6814, ATM6816
	(M)VAC6808, ATM6909
	(S) 6804
Bearing material	SUJ2
Housing material	SUS304
Shaft material	SUS630
Bellows stroke	50mm
Bellows life	OVER $10^6$

Three coaxial spindle types with high stiffness provide high rotational accuracy and small runout.

This model, with 50mm of linear motion stroke, is adapted for a Cluster Tool application.

Typical application for this spindle include processing 300mm wafers, large substrates for LCD and a transfer robot in a vacuum environment.

# Feedthrough



## ● Purge Mode type

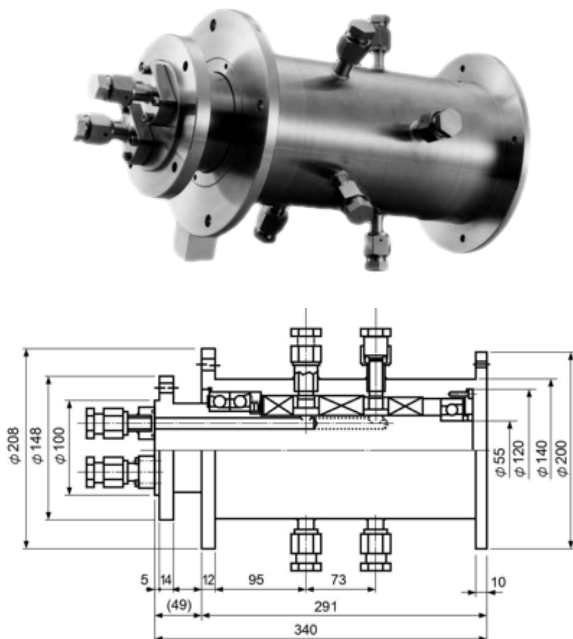
Model	MSFV-020WC
Vacuum pressure Pa, (Torr)	$10^{-6}, (10^{-8})$
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	$<10^{-12}$
(Torr·l/sec)	$<10^{-11}$
Pressure capacity[Static](kg/cm <sup>2</sup> )	2.5
Temperature range(°C)	0 – 80
Gas compatibility	Reactive Gas
Bearing type	7006CDB
Bearing material	SUJ2
Housing material	SUS304
Shaft material	SUS630

Longer life can be realized by installing a purge gas structure in the seal unit.

This prevents flowing of process gas into the seal area and eliminates generation of any type of deposition near the seal area.

This spindle is for reactive gas and CVD and furnace applications which generate material that may be deposited inside the spindle.

## ● Rotary Gas Union



Model	MSFH-100NH
Vacuum pressure Pa, (Torr)	$10^{-6}, (10^{-8})$
Leakage rate [He] (Pa·m <sup>3</sup> /sec)	$<10^{-12}$
(Torr·l/sec)	$<10^{-11}$
Pressure capacity[Static](kg/cm <sup>2</sup> )	3.5
Temperature range(°C)	0 – 80
Gas compatibility	Inert Gas
Bearing type	(left) 7015CDB (right) 6211
Bearing material	SUJ2
Housing material	SUS304
Shaft material	SUS630

Highly purified gas can be applied into a chamber using this feedthrough.

A typical application is a rotary gas union for light bulb manufacturing equipment.

# Ferrofluid Seal

## What is Ferrofluid Seal?

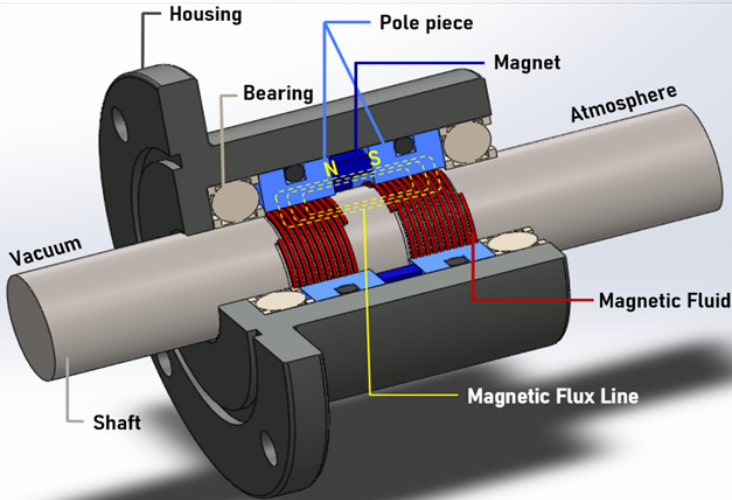
**Ferrofluid Seal:**

Ferrofluid seal is a component used to shield gases and dust in high vacuum. It creates a magnetic field with a magnet and a pole piece in the gap between the magnet and the axis of rotation. When magnetic fluid is injected into this gap, it forms the shape of a liquid O-ring and is a non-contact seal that acts as sealing. Typically, feedthrough uses several ferrofluid rings. Each ring has a pressure capacity that remains vacuumed, and the total pressure capacity is approximately equal to the sum of the pressure capacities of each ring. No friction increases facility, durability and blocks harmful gases and dust in ultra-high vacuum conditions.

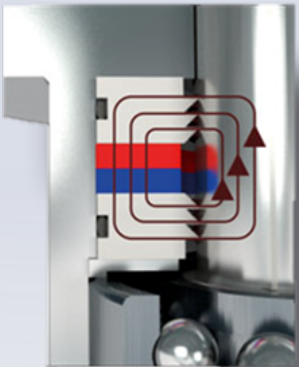
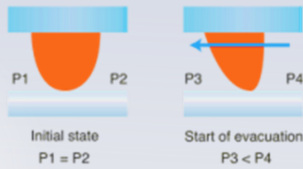
## Features & Advantages

- Maintaining extremely high vacuums  
극 고진공 유지
- Non-contact Sealing  
비접촉 밀봉
- Long life span  
긴 수명
- No friction  
마모 없음
- High transmission Torque  
높은 전달 토크

## Feedthrough Parts Diagram

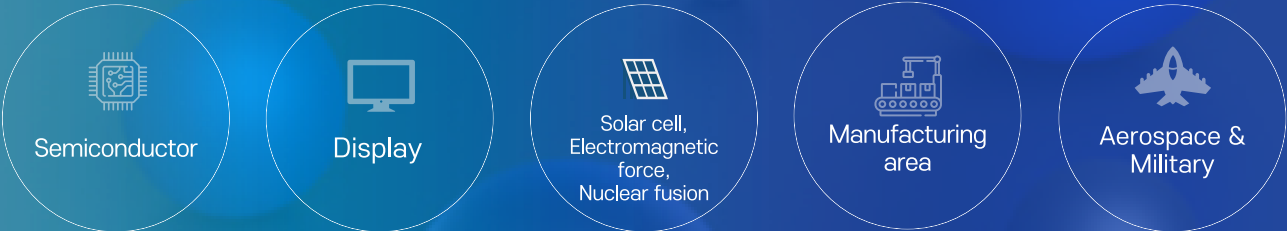


● ferrofluid



# Application

## Ferrofluid & Feedthrough application



- CVD
- Sputtering system
- Ion implanter
- Etching system
- Vacuum transfer robot
- Arc discharge
- Ion beam system
- Film panel
- LED, OLED manufacturing equipment
- Anode x-ray generator
- Vacuum chuck
- Solar panel
- New energy battery
- Single crystal growth
- Vacuum furnace
- Stirring assembly

Feedthrough



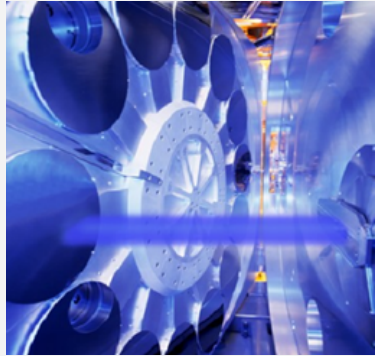
Chemical vapor deposition equipment



Sputtering systems

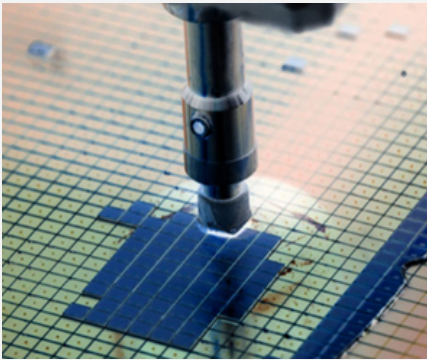


Ion implanter





Etching system



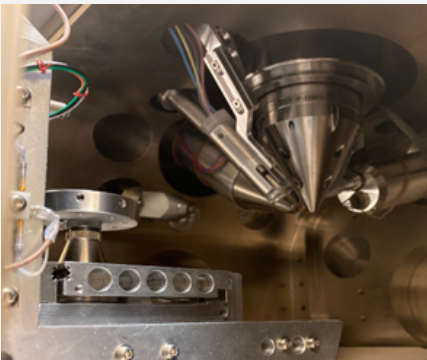
Vacuum transfer robot



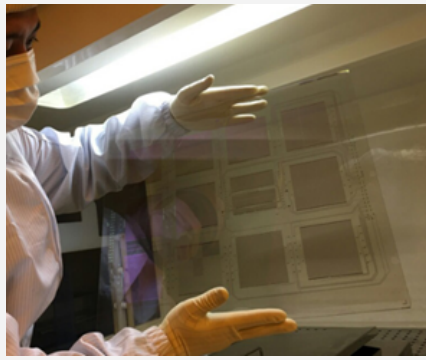
Arc discharge



Ion beam system



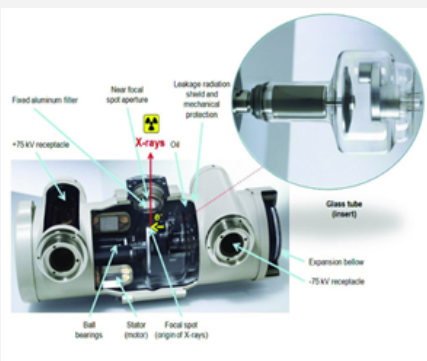
Film panel



LED, OLED manufacturing equipment



Anode x-ray generator



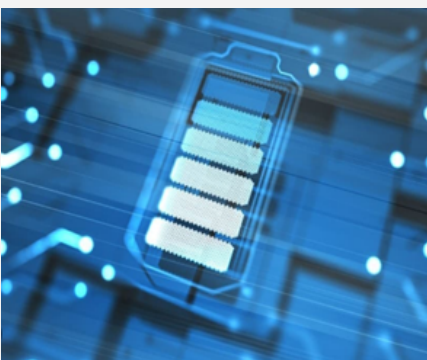
Vacuum chuck



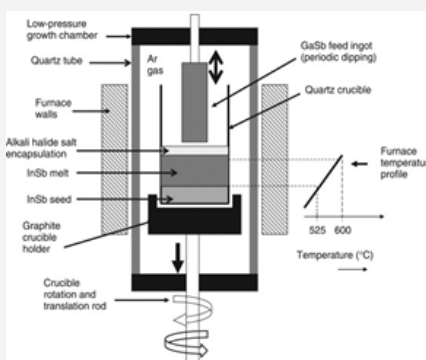
Solar panel



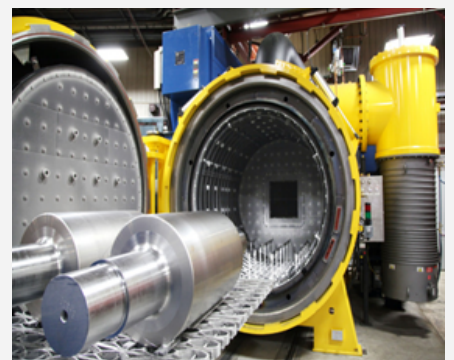
New energy battery



Single crystal growth



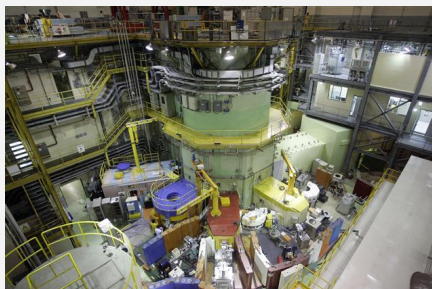
Vacuum furnace



## Nuclear power



## Nuclear fusion



## Military



## Medical equipment



## Aerospace



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