

4. Inductive tie-rod cylinders-MGHC

tuv ISO-9001 : 2000 quality certified

working pressure : 70,140kgf/cm²

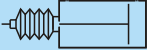

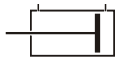
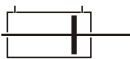
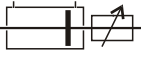


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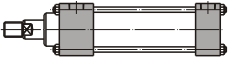
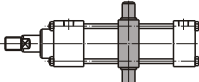
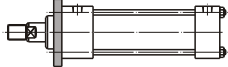
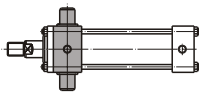
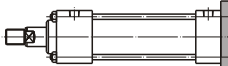
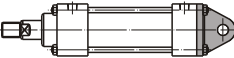
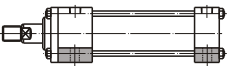
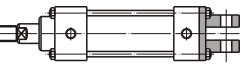
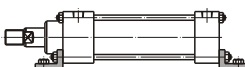
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Inductive tie-rod cylinders-MGHC

Type

type	symbol	drawing	with bellow	heat proof	bore(mm)
					
double acting	MGHC-A		MGHC-AH	MGHC-AJ	32,40,50,63 80,100,125 150
double rod	MGHC-C		MGHC-CH	MGHC-CJ	
double rods with alignment	MGHC-D		MGHC-DH	MGHC-DJ	

Installation

symbol	name	drawing	symbol	name	drawing
SD	basic		TC	intermediate trunnion	
FA	flange		TA	head trunnion	
FB	cap flange		CA	clevis	
LA	foot		CB	dual clevis	
LB	end angles				

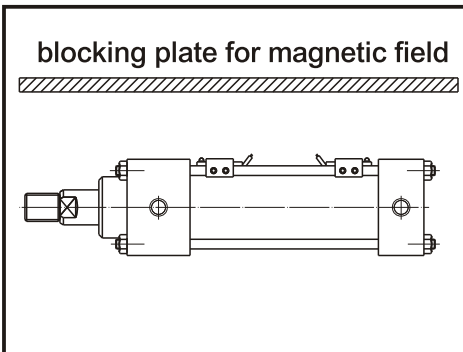
Features

1. Proximity's signal is detected by magnetic sensing between a proximity on the surface of a tube and a magnet embedded in piston.
2. The position of proximity's signal is determined by the position of proximity resided on the surface of the cylinder tube.
3. Proximity can be set and aligned easily that saves time in design and assembly.
4. External dimensions of MGHC inductive cylinders are the same as HC tie-rod cylinders.

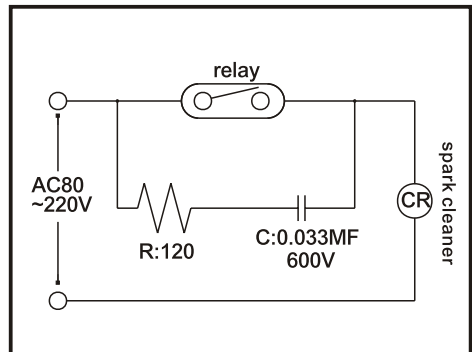
Notes

1. Working oil needs to be in normal temperature range($-10\sim+60^{\circ}\text{C}$) to prevent the magnet erosion due to high temperature.
2. a blocking plate should be used while attaching proximities on cylinders that are close to a strong magnetic field interruption around the working environment (e.g. welding machine or a nearly steel plate)(see drawing 1)
3. Proximity using DC current needs to have the \oplus end of the wire match the \oplus end of the other side, otherwise signals are still correct but LED will not be lit.
4. Uses of voltage and current should not be over the limitation of a proximity spec. °
5. Proximity should not be used to drive a load(e.g. solenoid valves) directly. A parallel protection circuit such as relay should be applied together.(see drawing 2)

drawing 1



drawing 2



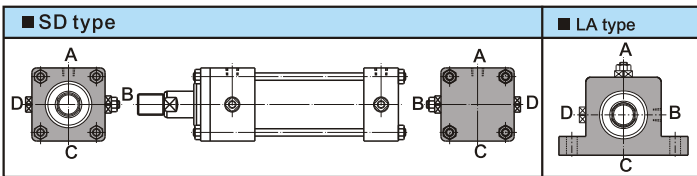
Seals materials with fitted oil and temperature

oil \ material symbol	(PU)	(NBR)	(FPM)
	1	2	3
mineral	○	○	○
water solutions	×	○	○
soluble	×	○	○
phosphate ester	×	×	○
temperature	-10°C~+80°C		-10°C~+200°C
	20~400mm ² /s{cSt}		

note :

- 1.mineral oil (e.g.:CPC-R68.)
- 2.If mineral oil is used,"PU"seals will be used on standard hydraulic products with no need to specify selections of materials.
- 3.FPM must be selected should phosphate ester oil or high temperature(>80°C) is applied
- 4.note ○ : O.K. × : can not be used

Port and cushion positions



e.g : order form for position HCA70-LA-C-100×200-B-B-A
input port= B position
cushion=A position

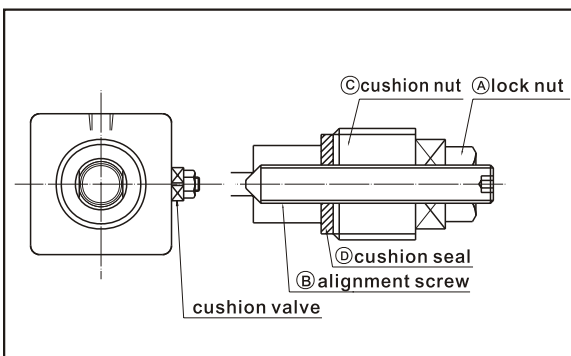
standard= A : input port B : cushion position D : check valve position

Cushion length

bore(mm)	L	ℓ
32~63	20	10
80~160	25	15
180~224	30	27
250	35	32

- Should the movement of a cylinder with loading is above 500mm/Sec., cushion device needs to be used.
- If the moving speed is higher than 750mm/sec,external reducing speed valves should be used.

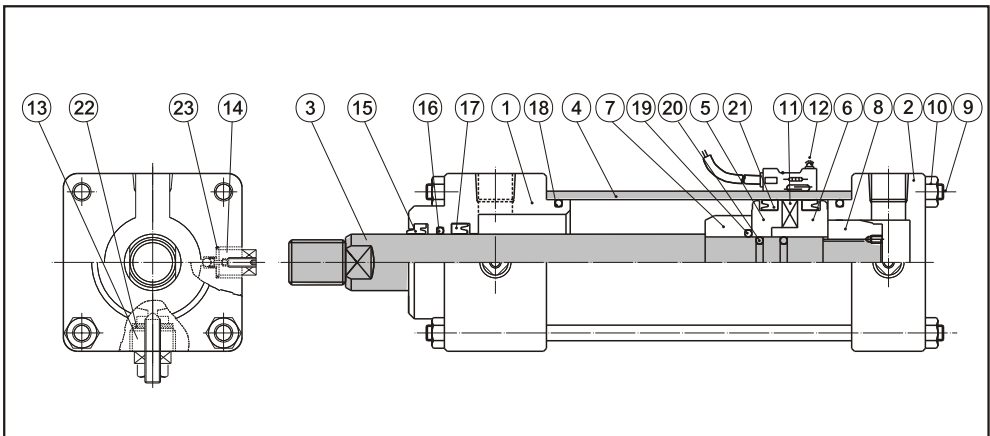
Use of cushion valves



■alignment steps:

- 1.Turn lock nut ① toward counter clockwise with 1/4circle by wrench.
- 2.Using hex . wrench to adjust the alignment screw ② :
① clockwise, rod speed will be slow down
② counter clockwise, rod speed will be up.
- 3.After alignment ,use hex. wrench to fix the alignment screw ②, and then tighten the cushion nut ③ to prevent possible leakage from cushion seal ④
- 4.Tighten the lock nut ①

Internal structure and part names



item	part name	q'ty	item	part name	q'ty
①	rod cover	1	⑬	cushion aligning valve	2
②	head cover	1	⑭	check and vent valve	2
③	piston rod	1	⑮	dust seal	1
④	stainless steel tube	1	⑯	rod o-ring	1
⑤	piston(1)	1	⑰	rod packing	1
⑥	piston(2)	1	⑱	cover o-ring	2
⑦	rod cushion	1	⑲	cushion o-ring	1
⑧	head cushion	1	⑳	piston o-ring	1
⑨	tie-rod	4	㉑	piston packing	2
⑩	tie-rod nut	8	㉒	cushion washer	2
⑪	magnet	1	㉓	valve o-ring	2
⑫	proximity	2			

Inductive tie-rod cylinders-MGHC

Seal spec.

item	⑮	⑯	⑰	⑱	⑲	⑳	㉑	㉒	㉓	
name rod bore	dust seal (PU)	rod o-ring (1B)	rod packing (PU)	cover o-ring (1B)	cushion o-ring (1A)	piston o-ring (1A)	piston packing (PU)	cushion washer	valve o-ring (1A)	
	1	1	1	2	1	2	2	2	2	
32	C	DH16	P16	UHS16	G25 (cushion type SM32×1.5)	SM12.5	P10A	UHS23.5	13×5×3 ^t	—
	B	DH20	P20	UHS20						
40	C	DH20	P20	UHS20	G35 (cushion type SM40)	SM14	P10A	UHS30	13×5×3 ^t	—
	B	DH25	P25	UHS25						
50	C	DH25	P25	UHS25	G45	SM18	P14	UHS40	13×5×3 ^t	P9
	B	DH30	P30	UHS30						
63	C	DH30	P30	UHS30	G55	P24	P20	UHS53	13×5×3 ^t	P9
	B	DH35	P35	UHS35						
80	C	DH35	P35	UHS35	G75	G30	G25	UHS70	13×5×3 ^t	P9
	B	DH40	P40	UHS40						
100	C	DH40	P40	UHS40	G95	G35	G30	UHS85	19×6.5×4 ^t	P15
	B	DH56	P56	UHS56		G45	G40			
125	C	DH56	P56	UHS56	G120	G45	G40	UHS112	19×6.5×4 ^t	P15
	B	DH70	P70	UHS70		G50	G45			

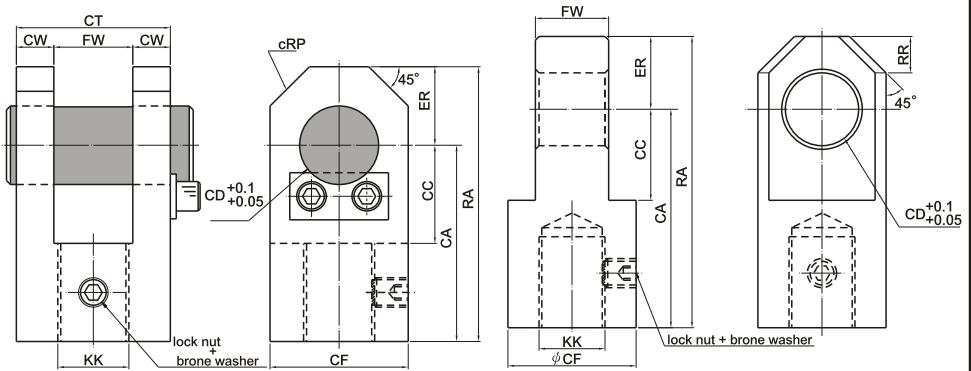
Connectors

■ Y connector

■ I connector

Order form	MGHC-Y- $\phi 63 \times M24 \times 1.5$ ① ②	Order form	MGAC-I- $\phi 50 \times M20 \times 1.5$ ① ②
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① : suiyed bore (mm) ② : thread used

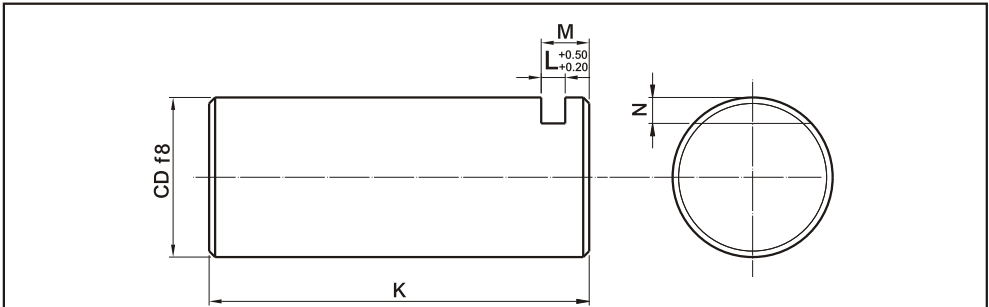


70 / 140kg/cm²

symbol bore	KK		FW		CA		RA		CF		CD ^{H9}	CT	CC		ER	CW	RP	RR
	rod	rod	Y	I	Y	I	Y	I	Y	I			Y	I				
32	M12×1.5	M16×1.5	20 ^{+0.40} / _{+0.10}	20 ^{-0.10} / _{-0.40}	49	69	65	85	32	38	16	45	24	24	16	12.5	8	8
40	M16×1.5	M20×1.5	20 ^{+0.40} / _{+0.10}	20 ^{-0.10} / _{-0.40}	49	69	65	85	32	38	16	45	24	24	16	12.5	8	8
50	M20×1.5	M24×1.5	25 ^{+0.40} / _{+0.10}	25 ^{-0.10} / _{-0.40}	60	80	80	100	40	44	20	55	35	30	20	15	10	10
63	M24×1.5	M30×1.5	30 ^{+0.40} / _{+0.10}	30 ^{-0.10} / _{-0.40}	75	105	105	135	60	60	31.5	63	40	45	30	16.5	15	15
80	M30×1.5	M36×1.5	30 ^{+0.40} / _{+0.10}	30 ^{-0.10} / _{-0.40}	75	105	105	135	60	60	31.5	63	40	45	30	16.5	15	15
100	M36×1.5	M48×1.5	40 ^{+0.40} / _{+0.10}	40 ^{-0.10} / _{-0.40}	100	120	140	160	70	70	40	78	50	50	40	19	20	20
125	M48×1.5	M64×2.0	63 ^{+0.40} / _{+0.10}	63 ^{-0.10} / _{-0.40}	180	180	230	230	100	100	50	126	70	65	50	31.5	25	25
150	M60×2.0	M76×2.0	80 ^{+0.60} / _{+0.10}	80 ^{-0.10} / _{-0.60}	225	255	290	290	120	120	63	160	90	85	65	40	32	32

Inductive tie-rod cylinders-MGHC

Pin

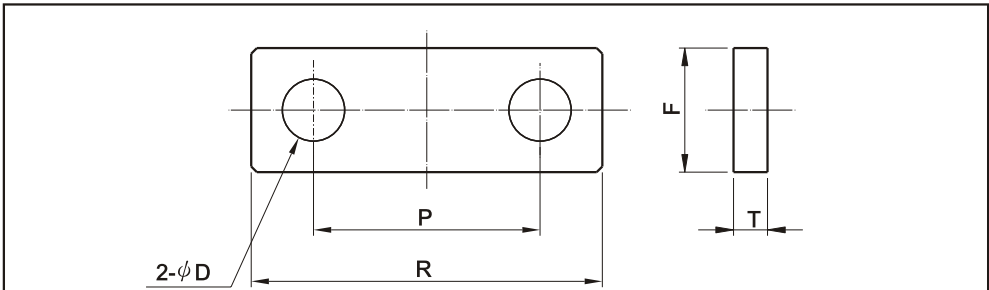


■ 70/140kg/cm²

unit : mm

bore symbol	32	40	50	63	80	100	125	140	150	160	180	200	224	250
CD	16	16	20	31.5	31.5	40	50	63	63	71	80	90	100	100
K	57	57	68	76	76	95	143	183	183	183	225	250	280	280
M	7	7	7	9	9	12	12	18	18	19	20	20	24	24
N	3.5	3.5	3.5	5.5	5.5	6.5	7.5	10	10	11	12	15	15.5	15.5
L	3	3	3	6	6	6	6	9	9	9	12	12	12	12

Keeper



■ 70/140kg/cm²

unit : mm

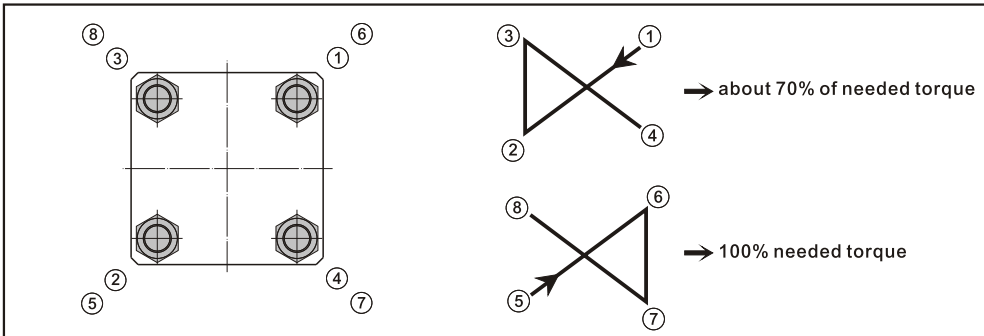
bore symbol	32	40	50	63	80	100	125	140	150	160	180	200	224	250
D	6.5	6.5	6.5	11	11	11	11	14	14	14	16	16	18	18
F	16	16	16	25	25	25	25	32	32	38	38	38	38	38
T	3	3	3	6	6	6	6	9	9	9	12	12	12	12
P	18	18	18	33	33	40	50	63	63	71	80	90	100	100
R	28	28	28	55	55	62	72	93	93	101	115	125	140	140
steel bolt	M6			M10				M12			M14		M16	

Rod nuts

bore : 32~100				bore : 100~250									
KK	B	C	H	KK	DD	H	S	T	KK	DD	H	S	T
M12×1.5	19	22	8	M48×1.5	70	18	6	2.5	M80×2.0	115	30	8	3.5
M16×1.5	24	27	10	M60×2.0	90	20	7	3	M95×2.0	135	35	10	4
M20×1.5	30	34	11						M100×2.0	150	35	10	4
M24×1.5	36	41	13	M72×2.0	105	25	8	3.5	M120×2.0	180	40	12	5
M30×1.5	41	47	17	M76×2.0	110	30	8	3.5	M130×2.0	200	40	12	5
M36×1.5	50	57	18										
M39×1.5	50	57	18										

Notes of tie-rod assembly



1. sequences of tie-rod assembly



2. needed torque values for assembling tie-rods (carbon steel) and nuts (carbon steel)

bore(mm)	32.40.50	63	80	100	125	150	180	200	224	250	
thread	M10×1.5	M12×1.5	M16×1.5	M18×1.5	M22×1.5	M26×1.5	M30×1.5	M33×1.5	M39×1.5	M42×1.5	
needed torque (kgf-cm)	C class	210	350	870	1300	2400	4500	6300	8300	12000	18000
	B class	210	350	870	1800	3400	6400	8900	12000	20000	25000

Features of proximity

model	applied jufan cylinders	drawing	features										
JFS-01	AL,AM,FC,SU,IU AMGC,IUGC, SUGC,MGHC		LED on the top										
JFS-01CC	adapting		1.can be main tained by non-technical person 2.easy main tenance										
JFS-01AA	front male part												
JFS-01BB	real female part												
model item	LED Postion	name	voltage (v)	current (ma)	cada-city	resp-onse time	conn-ec-tion type	protect-ion class	LED color	wire	inner voltage	temper-ature	
JFS-01	U (or space)	top	standard	DC4-24 AC4-240	5~300	40(20)W	on+off <1ms	open	IP-67	green	φ4mm 2C gray 2m	max. 2.5V	-10° +60°C
	- A	top	large current	AC12-240	0.1~1A	40(20)VA	on+off <2ms			green			
	- B	top	B connection	DC4-24	5~20	2(1)W	close	yellow					
	- H	top	high magnd	DC4-24 AC4-240	5~40	6(3)W 8(4)VA		open		green			
	- L	top	low magnd							green			
	-NPN	top	3 wise	DC10-24	OFF:7 ON:16	100MA	on+off <2ms			red	φ4mm 3C gray 2m	max. 1.5V	
	-PNP		3 wise					green					

Order form

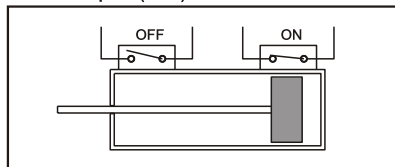
NO/NC Connection

JFS-01 — U — 2M × 1

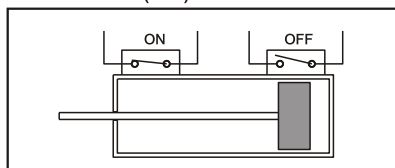
① ② ③ ④

①	kind	(1)JFS-01 (2)JFS-01CC : Adapting (3)JFS-01AA : Front male part (4)JFS-01BB : Real female part
②	type	(1)space or U : standard(NO) (2)A : large current (3)B : normal close(NC) (4)PNP : 3 connections (5)NPN : 3 connections
③	wire length	(1)space (2)5M
④	q'ty	unit : piece

normal open(NO)connection

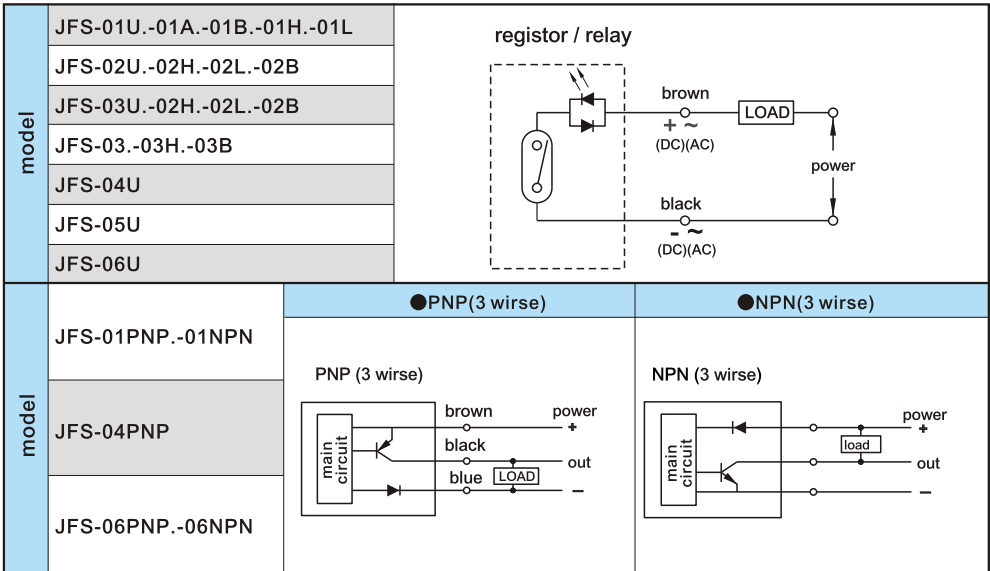


normal close(NC)connection

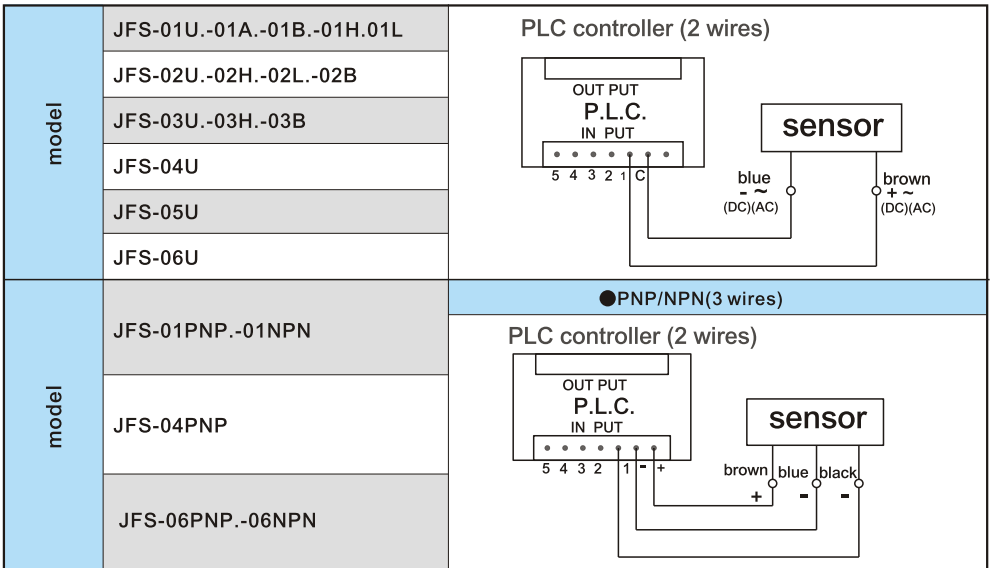


Circuits diagrams

■ register / relay



■ PLC Programmable



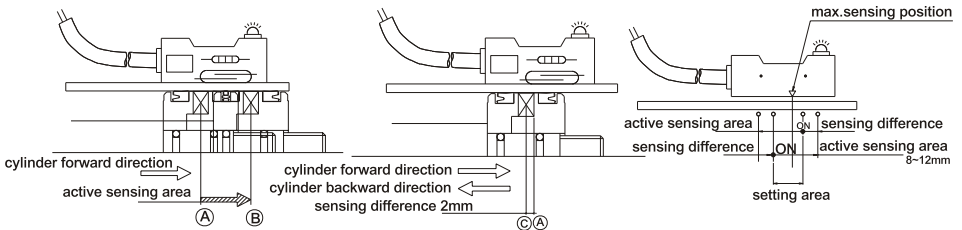
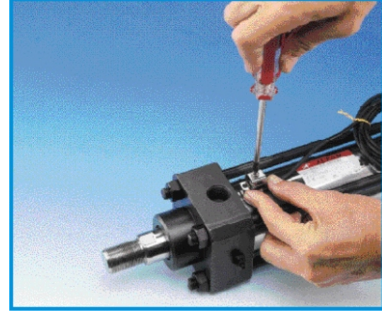
Inductive tie-rod cylinders-MGHC

Proximity setting

■ using bracket



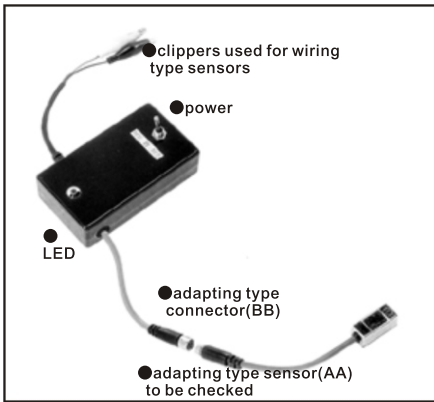
■ using band



■ While piston moving forward, (A) position to activate, the distance between (A) and (B) is called "active sensing area"

■ While piston moving backward from (A) position to (C) position, sensing is still "on", the distance between (A) and (C) is called "sensing difference".

Trouble shooting



1. Check box (see right side picture) is used to check functions of sensors.
2. ⊕ end of check box is connected to ⊕ end of a sensor and ⊖ end
3. No lit of the LED on the box means defect of a sensor

External Dimensions

<p>JFS-01U</p>	<p>4.2</p> <p>brown+</p> <p>blue</p> <p>LED</p> <p>11.1</p> <p>12.5</p> <p>26.5</p> <p>27.9</p>
<p>JFS-01AA (front male part)</p>	<p>male(AA)</p> <p>LED</p> <p>140 ± 0.2</p> <p>11.1</p> <p>12.5</p> <p>26.5</p> <p>27.9</p> <p>4</p> <p>24.8</p> <p>5.8</p> <p>30.6</p> <p>7.8</p>
<p>JFS-01BB (real female part)</p>	<p>female(BB)</p> <p>4.5</p> <p>9</p> <p>7</p> <p>32</p> <p>+</p> <p>brown</p> <p>-</p> <p>blue</p> <p>output:black</p> <p>for "NPN" or "PNP" only</p> <p>not:The black wire needs to be cut off when it is used for Not(NPN or PNP) spec.</p>

Inductive tie-rod cylinders-MGHC

Proximity bracket

MGHC-F		<ol style="list-style-type: none"> 1. Use 2mmL wrench to loose 2 M4 set screw. 2. Move a proximity to the needed position and hold it. 3. Tighten the set screw. 4. LED will be lit should the position is correct.
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Proximity band

MGHC-B		<ol style="list-style-type: none"> 1. Use a screw driver to loose the fix screw and then hold the proximity and clipper. 2. Move them to the needed position. 3. Press the proximity tightly with the tube. 4. Tighten the fix screw and lock nut. 5. LED will be lit should the position is correct.
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Order from

MGHCF — **63** × **2**

①
②
③

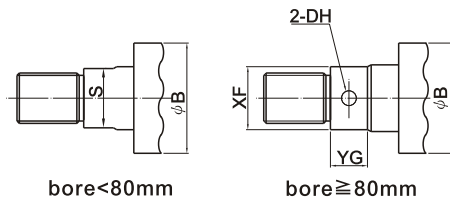
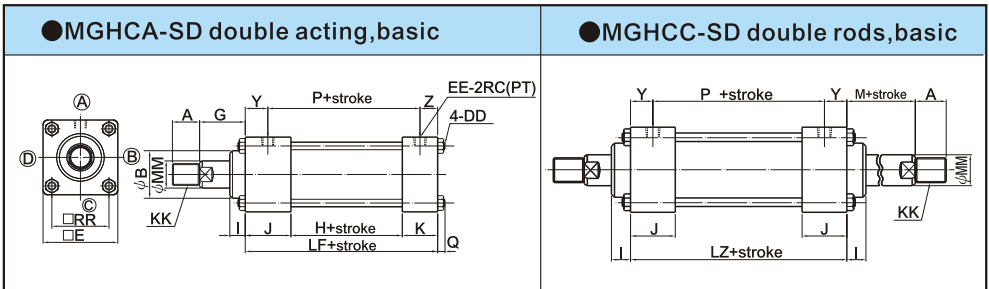
①	kind	(1)F : bracket (2)B : band
②	bore(mm)	32,40,50,63,80,100,125,150
③	q'ty	unit : piece

Order form

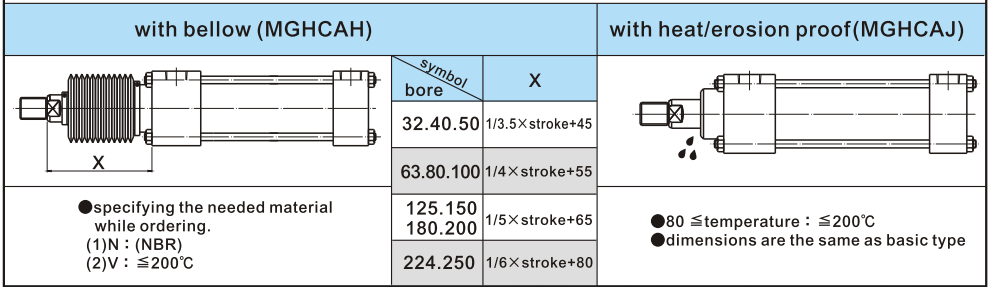
MGHC A 70 H FA C 80 × 100 B Y 25mm 1 Tn A B 1
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮

MGHC : Inductive tie-rod cylinders		
①	type	(1) A : double acting (2) C : double rods (3) D : double rods with stroke alignment
②	working pressure	(1)70 : 70kgf/cm ² (2)140 : 140kgf/cm ²
③	options	(1)H : with bellow (2)J : with heat/erosion proof (note : "space"if not be used)
④	mounting type	SD,FA,FB,CA,CB,LA,LB,TA,TC
⑤	rod size	(1)C : C class (2)B : B class note : 1.standard HC-70+C class rod. 2.standard HC-140+B class rod. 3.Please specify when HC-70+B class rod or HC-140+Cclass rod.
⑥	tube bore(mm)	32,40,50,63,80,100,125,150
⑦	stroke(mm)	max. stroke refer to p2.4
⑧	cuslion	(1)space : no cushion (2)B : cushions on both ends (3)R : cushion on rod cover (4)H : cushion on head cover
⑨	connectors	(1)Y connector (2)I connector
⑩	stroke alignment	only forward alignment and aligned length ≦stroke length
⑪	spec.	(1)JFS-01 (2)JFS-01CC (3)JFS-01AA (4)JFS-01BB
⑫	sensor and q'ty	(1)T : 2 wires, 2 meters P : PNP3 wires, 2 meters N : NPN3 wires, 2 meters (2)n : q'ty
⑬	port position	refer to P4.4
⑭	cushion position	refer to P4.4
⑮	packing	(1)1 : (PU)(standard usage) (2)2 : (NBR) (3)3 : (FPM)

External dimensions

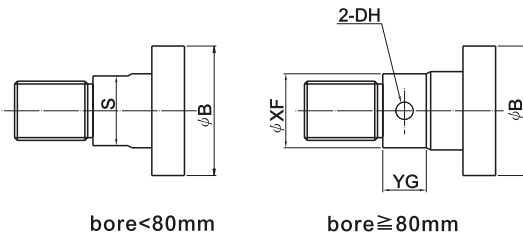
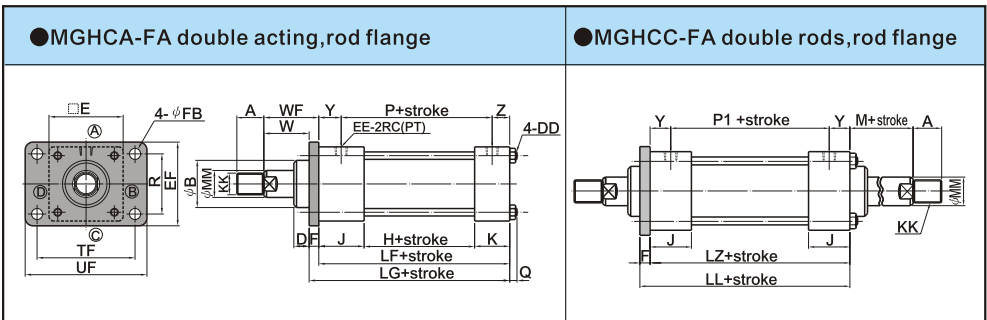


symbol bore	DH	XF	YG
80	φ 10	79	20
85	φ 10	84	20
90	φ 10	89	20
100	φ 12	99	24
112	φ 12	111	24
125	φ 12	124	24
140	φ 12	139	24



symbol bore	bore C class			bore B class			S																			
	MM	KK	A	MM	KK	A	B	E	G	H	I	J	K	M	P	P1	Q	C	B	Y	Z	DD	EE	LF	LZ	RR
	32	16	M12×1.5	18	20	M16×1.5	25	35	55	41	50	25	36	26	30	79	84	10	14	17	19	14	M10×1.5	3/8	112	122
40	20	M16×1.5	25	25	M20×1.5	30	40	65	41	50	25	36	26	30	78	80	10	17	21	21	13	M10×1.5	3/8	112	122	45
50	25	M20×1.5	30	30	M24×1.5	35	46	75	44	58	28	42	34	33	88	88	10	21	27	27	19	M10×1.5	3/8	134	142	52
63	30	M24×1.5	35	35	M30×1.5	45	55	90	50	58	29	42	34	34	88	88	12	27	32	27	19	M12×1.5	1/2	134	142	63
80	35	M30×1.5	45	40	M36×1.5	55	65	110	53	62	32	46	40	37	98	98	15	32	37	28	22	M16×1.5	1/2	148	154	80
100	40	M36×1.5	60	56	M48×1.5	70	80	135	60	74	34	50	40	39	114	114	17	37	50	30	20	M18×1.5	3/4	164	174	102
125	56	M48×1.5	75	70	M64×2.0	90	95	165	69	83	41	58	48	51	123	124	21	50	65	38	28	M22×1.5	3/4	189	199	122
150	65	M60×2.0	85	85	M76×2.0	110	110	196	78	89	47	58	48	57	129	132	25	62	-	38	28	M26×1.5	3/4	195	205	148
180	80	M72×2.0	110	100	M95×2.0	130	125	220	88	95	56	68	58	66	151	149	27	-	-	40	30	M30×1.5	1	221	231	168
200	90	M80×2.0	120	112	M100×2.0	150	140	245	92	100	61	68	58	71	158	156	28	-	-	38	30	M33×1.5	1	226	236	190
224	100	M95×2.0	130	125	M120×2.0	170	150	292	101	105	68	68	58	78	161	161	35	-	-	40	30	M39×1.5	1 1/4	231	241	225
250	112	M100×2.0	140	140	M130×2.0	190	170	325	111	105	75	68	58	85	161	161	39	-	-	40	30	M42×1.5	1 1/4	231	241	250

External dimensions

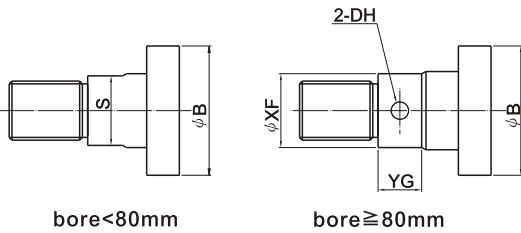
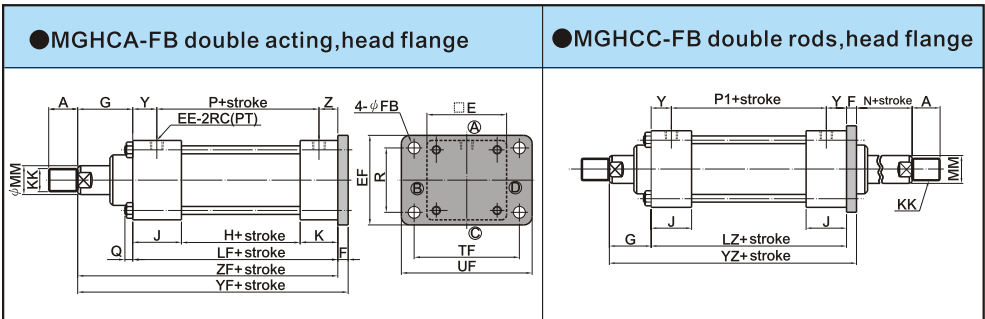


Symbol bore	DH	XF	YG
80	φ 10	79	20
85	φ 10	84	20
90	φ 10	89	20
100	φ 12	99	24
112	φ 12	111	24
125	φ 12	124	24
140	φ 12	139	24

Symbol bore	bore C class			bore B class			B	D		E	F		H	J	K	M	P	P1	Q	R
	MM	KK	A	MM	KK	A		C	B		C	B								
32	16	M12×P1.5	18	20	M16×P1.5	25	35	14	14	55	11	11	50	36	26	30	79	84	10	40
40	20	M16×P1.5	25	25	M20×P1.5	30	40	14	14	65	11	11	50	36	26	30	78	80	10	46
50	25	M20×P1.5	30	30	M24×P1.5	35	46	14	10	75	14	18	58	42	34	33	88	88	10	58
63	30	M24×P1.5	35	35	M30×P1.5	45	55	14	9	90	15	20	58	42	34	34	88	88	12	65
80	35	M30×P1.5	45	40	M36×P1.5	55	65	14	8	110	18	24	62	46	40	37	98	98	15	87
100	40	M36×P1.5	60	56	M48×P1.5	70	80	14	6	135	20	28	74	50	40	39	114	114	17	109
125	56	M48×P1.5	75	70	M64×P2.0	90	95	17	8	165	24	33	83	58	48	51	123	124	21	130
150	65	M60×P2.0	85	85	M76×P2.0	110	110	19	8	196	28	39	89	58	48	57	129	132	25	155
180	80	M72×P2.0	110	100	M95×P2.0	130	125	23	10	220	33	46	95	68	58	66	151	149	27	185
200	90	M80×P2.0	120	112	M100×P2.0	150	140	24	10	245	37	51	100	68	58	71	158	156	28	206
224	100	M95×P2.0	130	125	M120×P2.0	170	150	27	10	292	41	58	105	68	58	78	161	161	35	230
250	112	M100×P2.0	140	140	M130×P2.0	190	170	29	10	325	46	65	105	68	58	85	161	161	39	250

Symbol bore	S		W	Y	Z	DD	EE	EF	FB	LL		LG		LF	LZ	TF	UF	WF	
	C	B								C	B	C	B					C	B
32	14	17	30	19	14	M10×P1.5	3/8	63	11	133	133	123	123	112	122	88	109	41	41
40	17	21	30	21	13	M10×P1.5	3/8	69	11	133	133	123	123	112	122	95	118	41	41
50	21	27	30	27	19	M10×P1.5	3/8	85	14	156	160	148	152	134	142	115	145	44	48
63	27	32	35	27	19	M12×P1.5	1/2	98	18	157	162	149	154	134	142	132	165	50	55
80	32	37	35	28	22	M16×P1.5	1/2	118	18	172	178	166	172	148	154	155	190	53	59
100	37	50	40	30	20	M18×P1.5	3/4	150	22	194	202	184	192	164	174	190	230	60	68
125	50	65	45	38	28	M22×P1.5	3/4	175	26	223	232	213	222	189	199	224	272	69	78
150	62	—	50	38	28	M26×P1.5	3/4	210	30	233	244	223	234	195	205	270	320	78	89
180	—	—	55	40	30	M30×P1.5	1	243	33	264	277	254	267	221	231	315	375	88	101
200	—	—	55	38	30	M33×P1.5	1	272	36	273	287	263	277	226	236	355	425	92	106
224	—	—	60	40	30	M39×P1.5	1 1/4	300	42	282	299	272	289	231	241	395	475	101	118
250	—	—	65	40	30	M42×P1.5	1 1/4	335	45	287	306	279	296	231	241	425	515	111	130

External dimensions



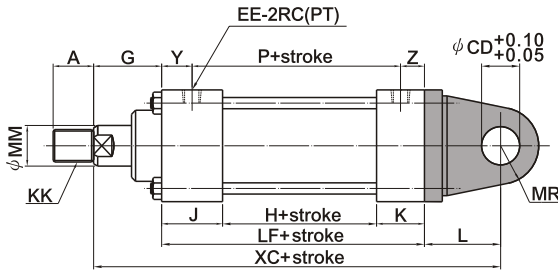
Symbol	DH	XF	YG
bore 80	φ 10	79	20
85	φ 10	84	20
90	φ 10	89	20
100	φ 12	99	24
112	φ 12	111	24
125	φ 12	124	24
140	φ 12	139	24

Symbol	bore C class			bore B class			E	F		G	H	J	K	N		P	P1	Q	R
	MM	KK	A	MM	KK	A		C	B					C	B				
32	16	M12×P1.5	18	20	M16×P1.5	25	55	11	11	41	50	36	26	19	19	79	84	10	40
40	20	M16×P1.5	25	25	M20×P1.5	30	65	11	11	41	50	36	26	19	19	78	80	10	46
50	25	M20×P1.5	30	30	M24×P1.5	35	75	14	18	44	58	42	34	19	15	88	88	10	58
63	30	M24×P1.5	35	35	M30×P1.5	45	90	15	20	50	58	42	34	19	14	88	88	12	65
80	35	M30×P1.5	45	40	M36×P1.5	55	110	18	24	53	62	46	40	19	13	98	98	15	87
100	40	M36×P1.5	60	56	M48×P1.5	70	135	20	28	60	74	50	40	19	11	114	114	17	109
125	56	M48×P1.5	75	70	M64×P2.0	90	165	24	33	69	83	58	48	27	18	123	123	21	130
150	65	M60×P2.0	85	85	M76×P2.0	110	196	28	39	78	89	58	48	29	18	129	132	25	155
180	80	M72×P2.0	110	100	M95×P2.0	130	220	33	46	88	95	68	58	33	20	151	149	27	185
200	90	M80×P2.0	120	112	M100×P2.0	150	245	37	51	92	100	68	58	34	20	158	156	28	206
224	100	M95×P2.0	130	125	M120×P2.0	170	292	41	58	101	105	68	58	37	20	161	161	35	230
250	112	M100×P2.0	140	140	M130×P2.0	190	325	46	65	111	105	68	58	39	20	161	161	39	250

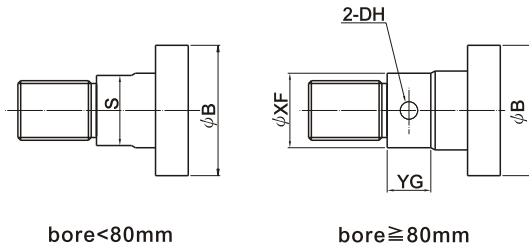
Symbol	S		Y	Z	EE	EF	FB	LF	LZ	TF	UF	YF		YZ		ZF
	C	B										C	B	C	B	
32	14	17	19	14	3/8	63	11	112	122	88	109	164	164	174	174	153
40	17	21	21	13	3/8	69	11	112	122	95	118	164	164	174	174	153
50	21	27	27	19	3/8	85	14	134	142	115	145	192	196	202	206	178
63	27	32	27	19	1/2	98	18	134	142	132	165	199	204	207	212	184
80	32	37	28	22	1/2	118	18	148	154	155	190	219	225	225	231	201
100	37	50	30	20	3/4	150	22	164	174	190	230	244	252	254	262	224
125	50	65	38	28	3/4	175	26	189	199	224	272	282	291	292	301	258
150	62	—	38	28	3/4	210	30	195	205	270	320	301	312	311	322	273
180	—	—	40	30	1	243	33	221	231	315	375	342	355	352	365	309
200	—	—	38	30	1	272	36	226	236	355	425	355	369	365	379	318
224	—	—	40	30	1 1/4	300	42	231	241	395	475	373	290	383	400	332
250	—	—	40	30	1 1/4	335	45	231	241	425	515	388	407	398	417	342

External dimensions

●MGHCA-CA double acting, clevis



EW tolerance : 1. φ 32~ φ 100 :-0.10~-0.40
2. φ 125~ φ 280 :-0.1~-0.60

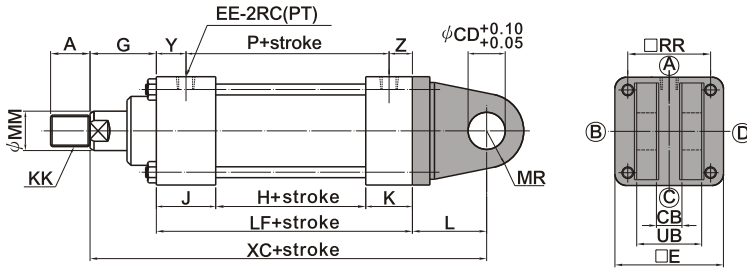


Symbol bore	DH	XF	YG
80	φ 10	79	20
85	φ 10	84	20
90	φ 10	89	20
100	φ 12	99	24
112	φ 12	111	24
125	φ 12	124	24
140	φ 12	139	24

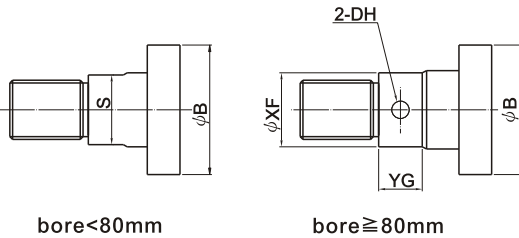
Symbol bore	bore C class			bore B class			E	G	H	J	K	L	P	S		Y	Z	CD	EE	EW	LF	MR	RR	XC
	MM	KK	A	MM	KK	A								C	B									
32	16	M12×P1.5	18	20	M16×P1.5	25	55	41	50	36	26	38	79	14	17	19	14	16	3/8	25	112	16	40	191
40	20	M16×P1.5	25	25	M20×P1.5	30	65	41	50	36	26	38	78	17	21	21	13	16	3/8	25	112	16	45	191
50	25	M20×P1.5	30	30	M24×P1.5	35	75	44	58	42	34	45	88	21	27	27	19	20	3/8	31.5	134	20	52	223
63	30	M24×P1.5	35	35	M30×P1.5	45	90	50	58	42	34	63	88	27	32	27	19	31.5	1/2	40	134	31.5	63	247
80	35	M30×P1.5	45	40	M36×P1.5	55	110	53	62	46	40	72	98	32	37	28	22	31.5	1/2	40	148	31.5	80	273
100	40	M36×P1.5	60	56	M48×P1.5	70	135	60	74	50	40	84	114	37	50	30	20	40	3/4	50	164	40	102	308
125	56	M48×P1.5	75	70	M64×P2.0	90	165	69	83	58	48	100	123	50	65	38	28	50	3/4	63	189	50	122	358
150	65	M60×P2.0	85	85	M76×P2.0	110	196	78	89	58	48	122	129	62	—	38	28	63	3/4	80	195	63	148	395
180	80	M72×P2.0	110	100	M95×P2.0	130	220	88	95	68	58	150	151	—	—	40	30	80	1	100	221	80	168	459
200	90	M80×P2.0	120	112	M100×P2.0	150	245	92	100	68	58	170	158	—	—	38	30	90	1	125	226	90	190	488
224	100	M95×P2.0	130	125	M120×P2.0	170	292	101	105	68	58	185	161	—	—	40	30	100	1 1/4	125	231	100	225	517
250	112	M100×P2.0	140	140	M130×P2.0	190	325	111	105	68	58	185	161	—	—	40	30	100	1 1/4	125	231	100	250	527

External dimensions

●MGHCA-CB double acting,dual clevis



LH tolerance : 1. $\phi 32 \sim \phi 125 : +0.10 \sim +0.40$
 2. $\phi 150 \sim \phi 250 : +0.10 \sim +0.60$



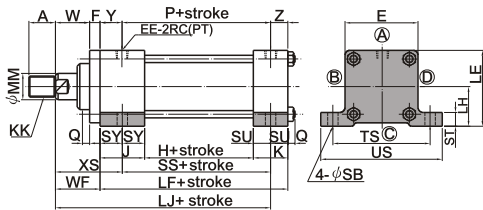
Symbol bore	DH	XF	YG
80	$\phi 10$	79	20
85	$\phi 10$	84	20
90	$\phi 10$	89	20
100	$\phi 12$	99	24
112	$\phi 12$	111	24
125	$\phi 12$	124	24
140	$\phi 12$	139	24

Symbol bore	bore C class			bore B class			E	G	H	J	K	L	P	S		Y	Z	CB	CD	EE	LF	MR	RR	UB	XC
	MM	KK	A	MM	KK	A								C	B										
32	16	M12×P1.5	18	20	M16×P1.5	25	55	41	50	36	26	38	79	14	17	19	14	25	16	3/8	112	16	40	50	191
40	20	M16×P1.5	25	25	M20×P1.5	30	65	41	50	36	26	38	78	17	21	21	13	25	16	3/8	112	16	45	50	191
50	25	M20×P1.5	30	30	M24×P1.5	35	75	44	58	42	34	45	88	21	27	27	19	31.5	20	3/8	134	20	52	63.5	223
63	30	M24×P1.5	35	35	M30×P1.5	45	90	50	58	42	34	63	88	27	32	27	19	40	31.5	1/2	134	31.5	63	80	247
80	35	M30×P1.5	45	40	M36×P1.5	55	110	53	62	46	40	72	98	32	37	28	22	40	31.5	1/2	148	31.5	80	80	273
100	40	M36×P1.5	60	56	M48×P1.5	70	135	60	74	50	40	84	114	37	50	30	20	50	40	3/4	164	40	102	100	308
125	56	M48×P1.5	75	70	M64×P2.0	90	165	69	83	58	48	100	123	50	65	38	28	63	50	3/4	189	50	122	126	358
150	65	M60×P2.0	85	85	M76×P2.0	110	196	78	89	58	48	122	129	62	—	38	28	80	63	3/4	195	63	148	160	395
180	80	M72×P2.0	110	100	M95×P2.0	130	220	88	95	68	58	150	151	—	—	40	30	100	80	1	221	80	168	200	459
200	90	M80×P2.0	120	112	M100×P2.0	150	245	92	100	68	58	170	158	—	—	38	30	125	90	1	226	90	190	251	488
224	100	M95×P2.0	130	125	M120×P2.0	170	292	101	105	68	58	185	161	—	—	40	30	125	100	1 1/4	231	100	225	251	517
250	112	M100×P2.0	140	140	M130×P2.0	190	325	111	105	68	58	185	161	—	—	40	30	125	100	1 1/4	231	100	250	251	527

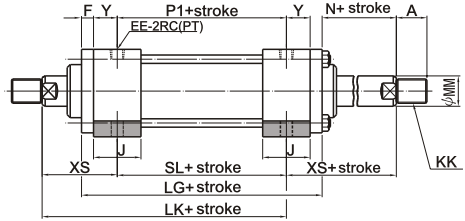
Inductive tie-rod cylinders-MGHC

External dimensions

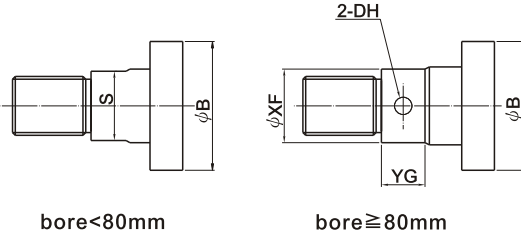
●MGHCA-LA double acting,foot flange



●MGHCC-LA double rods,foot flange



LH tolerance : 1. φ 32~φ 63:±0.25
2. φ 80~φ 250:±0.50

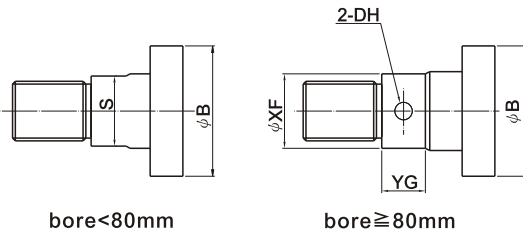
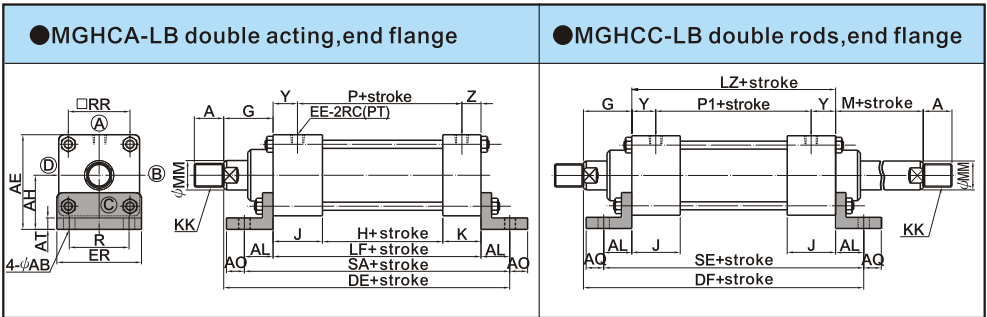


symbol bore	DH	XF	YG
80	φ 10	79	20
85	φ 10	84	20
90	φ 10	89	20
100	φ 12	99	24
112	φ 12	111	24
125	φ 12	124	24
140	φ 12	139	24

symbol bore	bore C class			bore B class					E	F	H	J	K	M	P	P1	Q	S		
	MM	KK	A	MM	KK	A	C	B										B		
32	16	M12×P1.5	18	20	M16×P1.5	25	55	11	50	36	26	19	79	84	10	14	17			
40	20	M16×P1.5	25	25	M20×P1.5	30	65	11	50	36	26	19	78	80	10	17	21			
50	25	M20×P1.5	30	30	M24×P1.5	35	75	14	58	42	34	19	88	88	10	21	27			
63	30	M24×P1.5	35	35	M30×P1.5	45	90	15	58	42	34	19	88	88	12	27	32			
80	35	M30×P1.5	45	40	M36×P1.5	55	110	18	62	46	40	19	98	98	15	32	37			
100	40	M36×P1.5	60	56	M48×P1.5	70	135	20	74	50	40	19	114	114	17	37	50			
125	56	M48×P1.5	75	70	M64×P2.0	90	165	24	83	58	48	27	123	124	21	50	65			
150	65	M60×P2.0	85	85	M76×P2.0	110	196	28	89	58	48	29	129	132	25	62	—			
180	80	M72×P2.0	110	100	M95×P2.0	130	220	33	95	68	58	33	151	149	27	—	—			
200	90	M80×P2.0	120	112	M100×P2.0	150	245	37	100	68	58	34	158	156	28	—	—			
224	100	M95×P2.0	130	125	M120×P2.0	170	292	41	105	68	58	37	161	161	35	—	—			
250	112	M100×P2.0	140	140	M130×P2.0	190	325	46	105	68	58	39	161	161	39	—	—			

symbol bore	Y	Z	EE	LE	LF	LG	LH	LK	LJ	SB	SL	SS	ST	SU	SY	TS	US	W	WF	XS
32	19	14	3/8	62.5	112	144	35	145	140	11	86	81	14	13	18	88	109	30	41	59
40	21	13	3/8	70	112	144	37.5	145	140	11	86	81	14	13	18	95	118	30	41	59
50	27	19	3/8	82.5	134	170	45	165	161	14	100	96	17	17	21	115	145	30	44	65
63	27	19	1/2	95	134	172	50	171	167	18	100	96	19	17	21	132	165	35	50	71
80	28	22	1/2	115	148	190	60	184	181	18	108	105	25	20	23	155	190	35	53	76
100	30	20	3/4	138.5	164	214	71	209	204	22	124	119	27	20	25	190	230	40	60	85
125	38	28	3/4	167.5	189	247	85	239	234	26	141	136	32	24	29	224	272	45	69	98
150	38	28	3/4	204	195	261	106	254	249	30	147	142	37	24	29	270	320	50	78	107
180	40	30	1	242.5	221	297	125	285	280	33	163	158	47	29	34	315	375	55	88	122
200	38	30	1	271	226	310	140	294	289	36	168	163	52	29	34	355	425	55	92	126
224	40	30	1 1/4	296	231	323	150	308	303	42	173	168	52	29	34	395	475	60	101	135
250	40	30	1 1/4	332.5	231	333	170	318	313	45	173	168	57	29	34	425	515	65	111	145

External dimensions



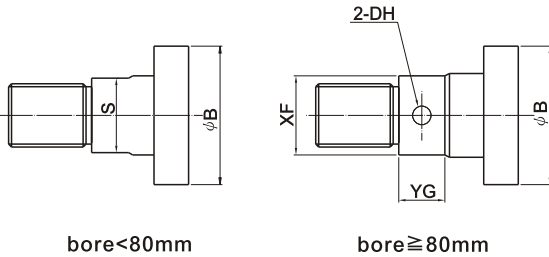
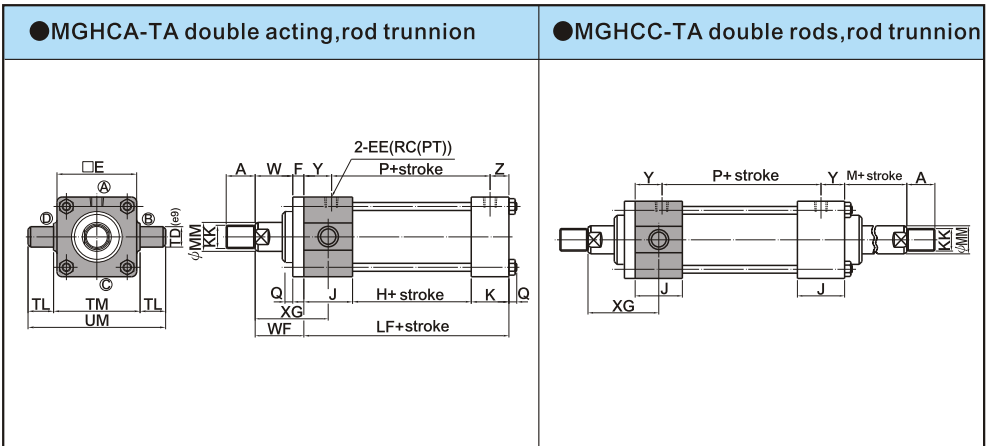
symbol bore	DH	XF	YG
80	ϕ 10	79	20
85	ϕ 10	84	20
90	ϕ 10	89	20
100	ϕ 12	99	24
112	ϕ 12	111	24
125	ϕ 12	124	24
140	ϕ 12	139	24

symbol bore	bore C class			bore B class					ER	G	H	J	K	M	P	P1	R	S	
	MM	KK	A	MM	KK	A	C	B											
32	16	M12×P1.5	18	20	M16×P1.5	25	55	41	50	36	26	30	79	84	35	14	17		
40	20	M16×P1.5	25	25	M20×P1.5	30	65	41	50	36	26	30	78	80	45	17	21		
50	25	M20×P1.5	30	30	M24×P1.5	35	75	44	58	42	34	33	88	88	50	21	27		
63	30	M24×P1.5	35	35	M30×P1.5	45	90	50	58	42	34	34	88	88	58	27	32		
80	35	M30×P1.5	45	40	M36×P1.5	55	110	53	62	46	40	37	98	98	78	32	37		
100	40	M36×P1.5	60	56	M48×P1.5	70	135	60	74	50	40	39	114	114	96	37	50		
125	56	M48×P1.5	75	70	M64×P2.0	90	165	69	83	58	48	51	123	124	120	50	65		
150	65	M60×P2.0	85	85	M76×P2.0	110	196	78	89	58	48	57	129	132	146	62	—		
180	80	M72×P2.0	110	100	M95×P2.0	130	235	88	95	68	58	66	151	149	180	—	—		
200	90	M80×P2.0	120	112	M100×P2.0	150	262	92	100	68	58	71	158	156	200	—	—		
224	100	M95×P2.0	130	125	M120×P2.0	170	310	101	105	68	58	78	161	161	222	—	—		
250	112	M100×P2.0	140	140	M130×P2.0	190	335	111	105	68	58	85	161	161	250	—	—		

symbol bore	Y	Z	AB	AE	AH	AL	AO	AT	DE	DF	RR	EE	LF	LZ	SA	SE
32	19	14	11	67.5	40	32	13	8	185	195	40	3/8	112	122	176	186
40	21	13	11	75.5	43	32	13	8	185	195	45	3/8	112	122	176	186
50	27	19	14	87.5	50	35	15	8	213	221	52	3/8	134	142	202	212
63	27	19	18	105	60	42	18	10	226	234	63	1/2	134	142	218	226
80	28	22	18	127	72	50	20	12	251	257	80	1/2	148	154	248	254
100	30	20	22	152.5	85	55	20	12	279	289	102	3/4	164	174	274	284
125	38	28	26	187.5	105	66	29	15	324	334	122	3/4	189	199	321	331
150	38	28	30	221	123	75	30	18	348	358	148	3/4	195	205	345	355
180	40	30	33	258	148	85	40	20	394	404	168	1	221	231	391	401
200	38	30	36	287.5	165	98	40	25	416	426	190	1	226	236	422	432
224	40	30	42	331	185	115	45	30	447	457	225	1 1/4	231	241	462	472
250	40	30	45	370.5	208	130	50	35	472	482	250	1 1/4	231	241	491	501

Inductive tie-rod cylinders-MGHC

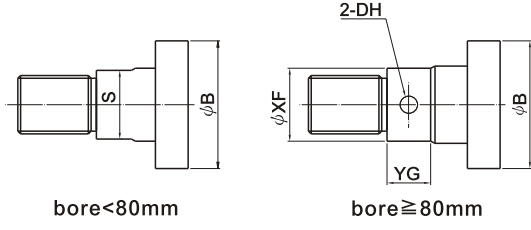
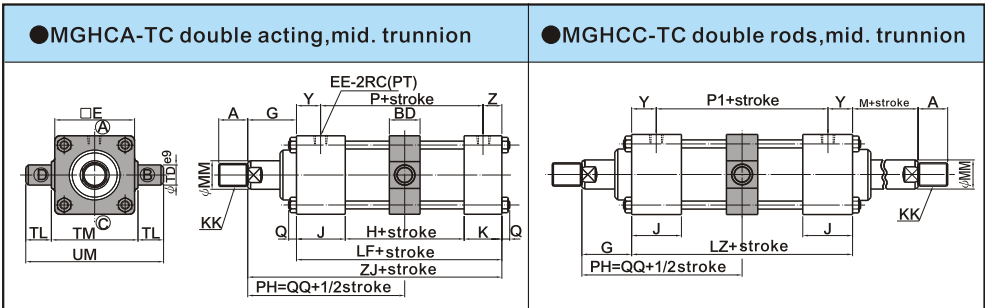
External dimensions



symbol bore	DH	XF	YG
80	φ 10	79	20
85	φ 10	84	20
90	φ 10	89	20
100	φ 12	99	24
112	φ 12	111	24
125	φ 12	124	24
140	φ 12	139	24

symbol bore	bore C class			bore B class			E	F	H	J	K	M	P	P1	Q	S		W	Y	Z	EE	LF	TD	TL	TM	UM	XG
	MM	KK	A	MM	KK	A										C	B										
	MM	KK	A	MM	KK	A										C	B										
32	16	M12×P1.5	18	20	M16×P1.5	25	55	11	50	36	26	88	79	84	10	14	17	30	19	14	3/8	112	20	20	58 ^{+0.3} ₀	98	59
40	20	M16×P1.5	25	25	M20×P1.5	30	65	11	50	36	26	109	78	80	10	17	21	30	21	13	3/8	112	20	20	69 ^{+0.3} ₀	109	59
50	25	M20×P1.5	30	30	M24×P1.5	35	75	14	58	42	34	135	88	88	10	21	27	30	27	19	3/8	134	25	25	85 ^{+0.35} ₀	135	65
63	30	M24×P1.5	35	35	M30×P1.5	45	90	15	58	42	34	161	88	88	12	27	32	35	27	19	1/2	134	31.5	31.5	98 ^{+0.35} ₀	161	71
80	35	M30×P1.5	45	40	M36×P1.5	55	110	18	62	46	40	181	98	98	15	32	37	35	28	22	1/2	148	31.5	31.5	118 ^{+0.35} ₀	181	76
100	40	M36×P1.5	60	56	M48×P1.5	70	135	20	74	50	40	225	114	114	17	37	50	40	30	20	3/4	164	40	40	145 ^{+0.40} ₀	225	85
125	56	M48×P1.5	75	70	M64×P2.0	90	165	24	83	58	48	275	123	124	21	50	65	45	38	28	3/4	189	50	50	175 ^{+0.40} ₀	275	98
150	65	M60×P2.0	85	85	M76×P2.0	110	196	28	89	58	48	332	129	132	25	62	—	50	38	28	3/4	195	63	63	206 ^{+0.46} ₀	332	107

External dimensions



symbol bore	DH	XF	YG
80	φ 10	79	20
85	φ 10	84	20
90	φ 10	89	20
100	φ 12	99	24
112	φ 12	111	24
125	φ 12	124	24
140	φ 12	139	24

symbol bore	bore C class			bore B class			E	G	H	J	K	M	P	P1
	MM	KK	A	MM	KK	A								
32	16	M12×P1.5	18	20	M16×P1.5	25	55	41	50	36	26	30	79	84
40	20	M16×P1.5	25	25	M20×P1.5	30	65	41	50	36	26	30	78	80
50	25	M20×P1.5	30	30	M24×P1.5	35	75	44	58	42	34	33	88	88
63	30	M24×P1.5	35	35	M30×P1.5	45	90	50	58	42	34	34	88	88
80	35	M30×P1.5	45	40	M36×P1.5	55	110	53	62	46	40	37	98	98
100	40	M36×P1.5	60	56	M48×P1.5	70	135	60	74	50	40	39	114	114
125	56	M48×P1.5	75	70	M64×P2.0	90	165	69	83	58	48	51	123	124
150	65	M60×P2.0	85	85	M76×P2.0	110	196	78	89	58	48	57	129	132
180	80	M72×P2.0	110	100	M95×P2.0	130	220	88	95	68	58	66	151	149
200	90	M80×P2.0	120	112	M100×P2.0	150	245	92	100	68	58	71	158	156
224	100	M95×P2.0	130	125	M120×P2.0	170	292	101	105	68	58	78	161	161
250	112	M100×P2.0	140	140	M130×P2.0	190	325	111	105	68	58	85	161	161

symbol bore	Q	S		Y	Z	BD	EE	LF	LZ	QQ	TD	TL	TM	UM	ZJ
		C	B												
32	10	14	17	19	14	28	3/8	112	122	102	20	20	58 ^{0.3}	98	153
40	10	17	21	21	13	28	3/8	112	122	102	20	20	69 ^{0.3}	109	153
50	10	21	27	27	19	33	3/8	134	142	115	25	25	85 ^{0.35}	135	178
63	12	27	32	27	19	43	1/2	134	142	121	31.5	31.5	98 ^{0.35}	161	184
80	15	32	37	28	22	43	1/2	148	154	130	31.5	31.5	118 ^{0.35}	181	201
100	17	37	50	30	20	53	3/4	164	174	147	40	40	145 ^{0.40}	225	224
125	21	50	65	38	28	58	3/4	189	199	168.5	50	50	175 ^{0.40}	275	258
150	25	62	—	38	28	78	3/4	195	205	180.5	63	63	206 ^{0.46}	332	273
180	27	—	—	40	30	98	1	221	231	203.5	80	80	243 ^{0.46}	403	309
200	28	—	—	38	30	108	1	226	236	210	90	90	272 ^{0.52}	452	318
224	35	—	—	40	30	117	1 1/4	231	241	221.5	100	100	308 ^{0.52}	500	332
250	39	—	—	40	30	117	1 1/4	231	241	231.5	100	100	335 ^{0.57}	535	342