For Multi-Port Connection (Manual)

Multi Cupla

MAM Type

Multiple air port system

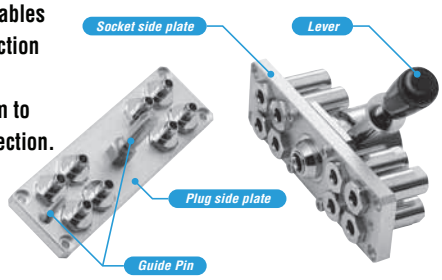
Working pressure: 0.7 MPa {7 kgf/cm²}

Valve structure: One-way shut-off

Applicable fluid: Air

Simultaneously connects several ports securely in one operation! Greatly cuts cycle time in multiple ports replacement.

- Handles several ports at once.
- Simple action with lever enables easy connection / disconnection manually.
- Comes with lock mechanism to prevent accidental disconnection.
- Valve on socket side only.



Specifications

Body material		Cupla : Brass (Chrome-plated) Plate : Aluminum alloy (4, 8, 12 ports) / Plate : Steel (16 ports) Locking unit : Steel and others		
Size (Thread)		Rc 1/8		
Working pressure	MPa	0.7		
	kgf/cm²	7		
	bar	7		
	PSI	102		
Seal material Working temperature range		Seal material	Mark	Working temperature range
		Nitrile rubber	NBR (SG)	−20°C to +60°C

Max. Tightening Torque — Nm {kgf•cm}

Torque	5 {51}

Interchangeability

No connection is possible between plates with different number of ports.

Min. Cross-Sectional Area — (mm²)

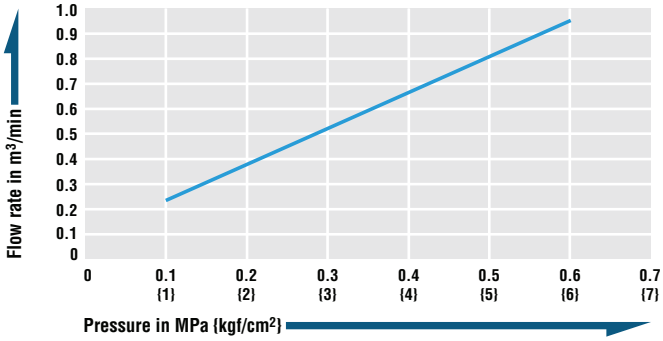
Per port	15.9

Suitability for Vacuum

Not suitable for vacuum application in either connected or disconnected condition.

Pressure - Flow Characteristics — Per port with Cupla

[Test conditions] •Fluid : Air •Temperature : Room temperature



Models and Dimensions

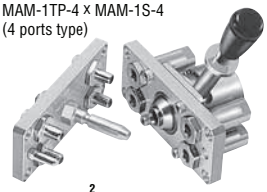
WAF : WAF stands for width across flats.

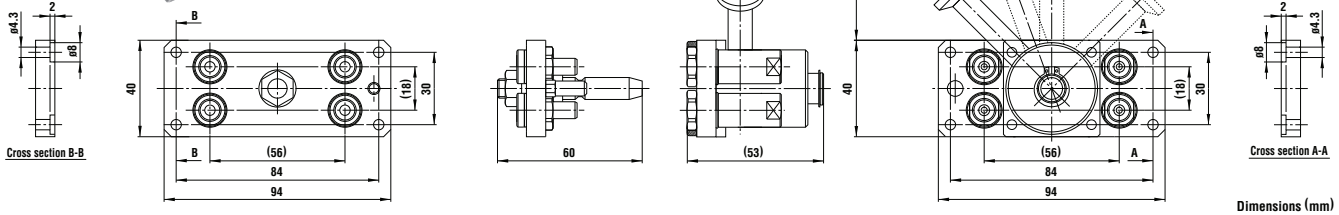
Model MAM-1TP-4 x MAM-1S-4 (4 ports type)

Application: R 1/8 Mass: 150 g (Plug), 500 g (Socket)

Plug: Model MAM-1TP-4 Socket: Model MAM-1S-4

MAM-1TP-4 x MAM-1S-4 (4 ports type)





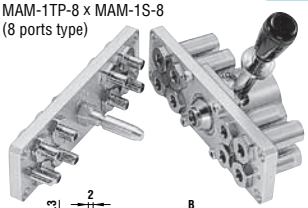
Dimensions (mm)

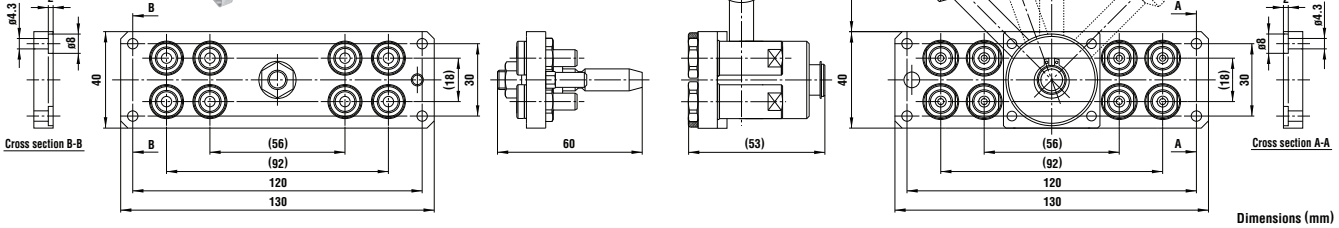
Model MAM-1TP-8 x MAM-1S-8 (8 ports type)

Application: R 1/8 Mass: 250 g (Plug), 650 g (Socket)

Plug: Model MAM-1TP-8 Socket: Model MAM-1S-8

MAM-1TP-8 x MAM-1S-8 (8 ports type)





Dimensions (mm)

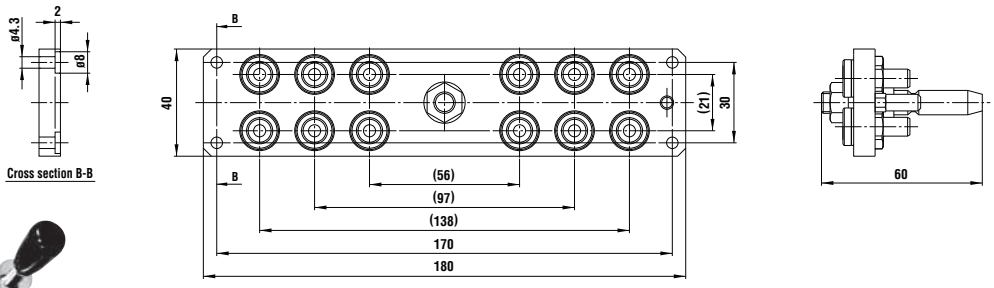
Models and Dimensions

WAF : WAF stands for width across flats.

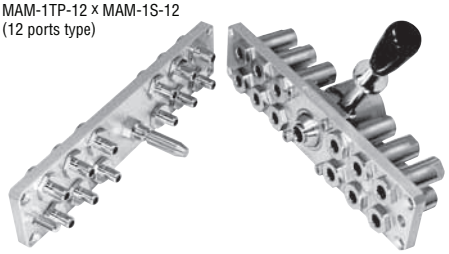
Model MAM-1TP-12 x MAM-1S-12 (12 ports type)

Application: R 1/8 **Mass: 350 g (Plug), 800 g (Socket)**

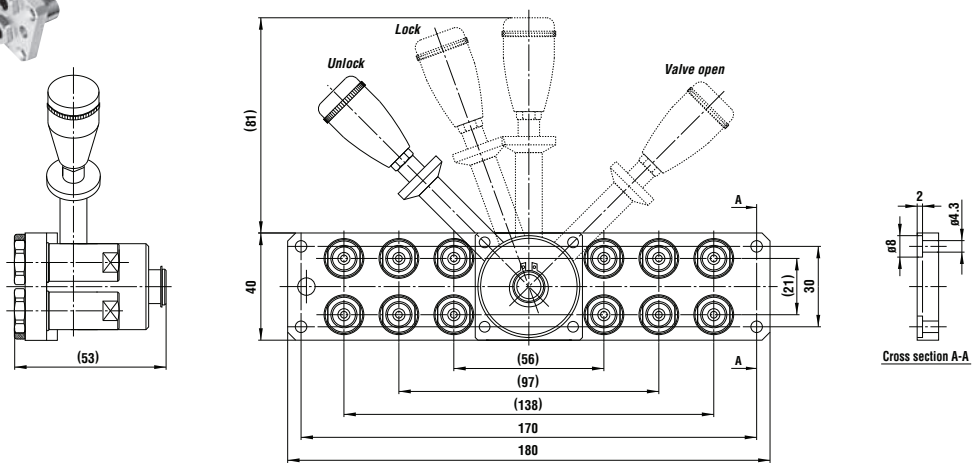
Plug: Model **MAM-1TP-12**



MAM-1TP-12 x MAM-1S-12
(12 ports type)



Socket: Model **MAM-1S-12**

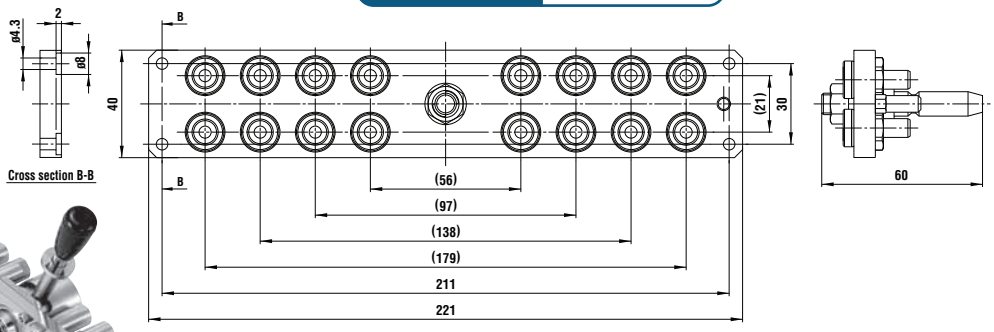


Dimensions (mm)

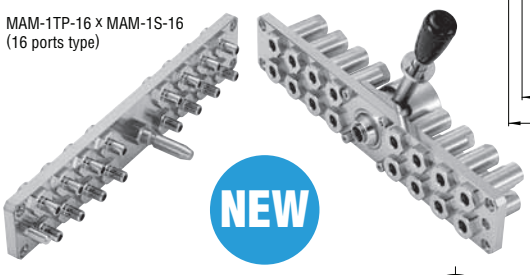
Model MAM-1TP-16 x MAM-1S-16 (16 ports type)

Application: R 1/8 **Mass: 680 g (Plug), 1180 g (Socket)**

Plug: Model **MAM-1TP-16**

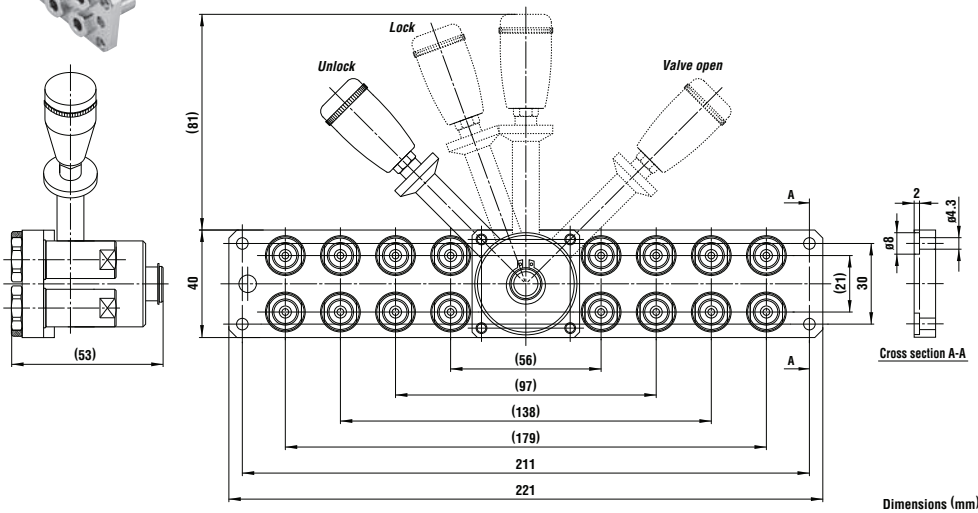


MAM-1TP-16 x MAM-1S-16
(16 ports type)



NEW

Socket: Model **MAM-1S-16**



Dimensions (mm)

For Multi-Port Connection (Manual)

Multi Cupla

MAM-B Type

Multiple port system

Working pressure: 1.0 MPa {10 kgf/cm²}

Valve structure: Two-way shut-off

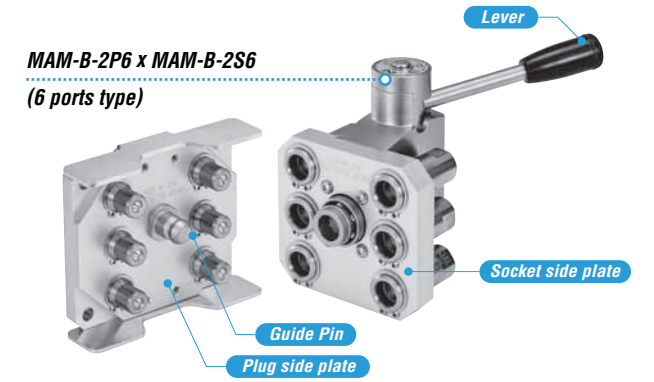
Applicable fluid: Air, Water

Simultaneously connects several ports securely in one operation. Greatly reduces changeover time in multiple ports replacement.

- Handles several ports at once.
- Simple manual lever action completes easy connection / disconnection.
- Two-stage lever operation prevents Cupla from accidental dropping due to sudden detachment.
- Comes with lock mechanism to prevent accidental disconnection.
- Large flow equivalent to that of SP Cupla Type A.
- Two kinds of plates are available for each size.
- Automatic shut-off valves in both socket and plug prevent fluid spill out on disconnection.
- Self-aligned valve design provides safety sealing of individual socket or plug when disconnected.

MAM-B-2P6 x MAM-B-2S6

(6 ports type)

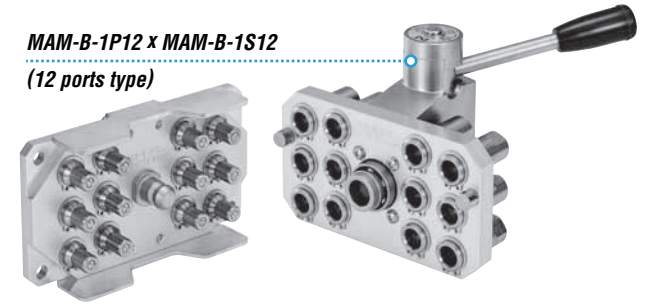


MAM-B-1P8 x MAM-B-1S8

(8 ports type)

MAM-B-1P12 x MAM-B-1S12

(12 ports type)



Specifications

Model					
	Plug	MAM-B-1P8	MAM-B-1P12	MAM-B-2P6	MAM-B-2P8
	Socket	MAM-B-1S8	MAM-B-1S12	MAM-B-2S6	MAM-B-2S8
Number of ports		8	12	6	8
Size (Thread)		1/8"		1/4"	
Body material		Cupla: Brass (Nickel-plated) Plate: Aluminum alloy Locking unit: Steel (Autocatalytic nickel-phosphorus coating)			
Working pressure	MPa	1.0			
	kgf/cm²	10			
	bar	10			
	PSI	145			
Ambient temperature range		0°C to +60°C			

Sealing material Working temperature range	Sealing material	Mark	Working temperature range	Remarks
	Fluoro rubber	FKM (X-100)	−20°C to +180°C	Standard material

Max. Tightening Torque — Nm {kgf•cm}

Size (Thread)	1/8"	1/4"
Torque	5 {51}	9 {92}

Interchangeability

No connection is possible between plates with different number of ports.

Min. Cross-Sectional Area per Port — (mm²)

Model	1SP type	2SP type
Min. cross-sectional area	14	26

Suitability for Vacuum — 1.3×10^{-1} Pa {1×10^{-3} mmHg}

Socket only	Plug only	When connected
—	—	Operational

Admixture of Air on Connection per Port — (mL)

Admixture of air may vary depending upon the usage conditions.

Model	1SP type	2SP type
Volume of air	0.6	1.1

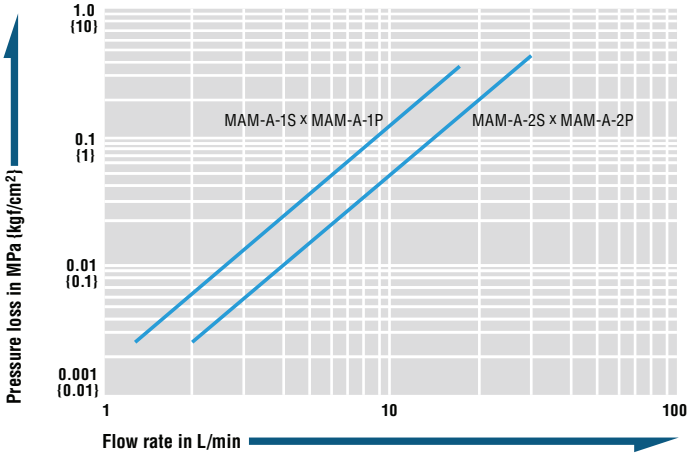
Volume of Spillage on Disconnection per Port — (mL)

Volume of spillage may vary depending upon the usage conditions.

Model	1SP type	2SP type
Volume of spillage	0.4	0.8

Flow Rate - Pressure Loss Characteristics — Per port of Cupla

[Test conditions] •Fluid : Water •Temperature : 25°C ± 5°C



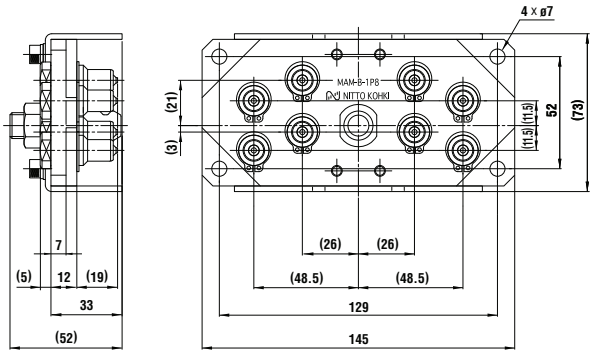
Models and Dimensions

WAF : WAF stands for width across flats.

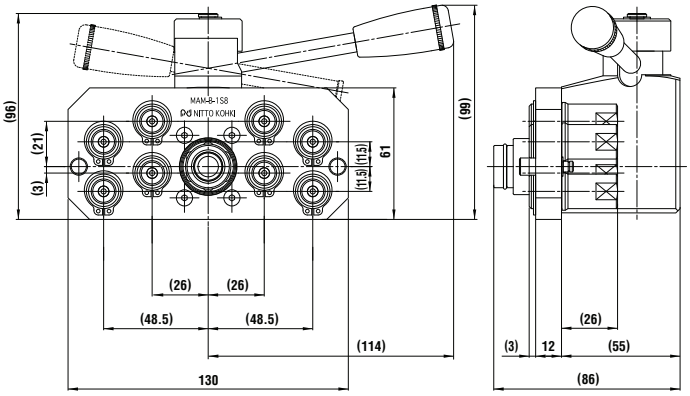
Model MAM-B-1P8 x MAM-B-1S8 (8 ports type)

• Application: R 1/8 Mass: 660 g (Plug), 1210 g (Socket)

Plug: Model MAM-B-1P8



Socket: Model MAM-B-1S8

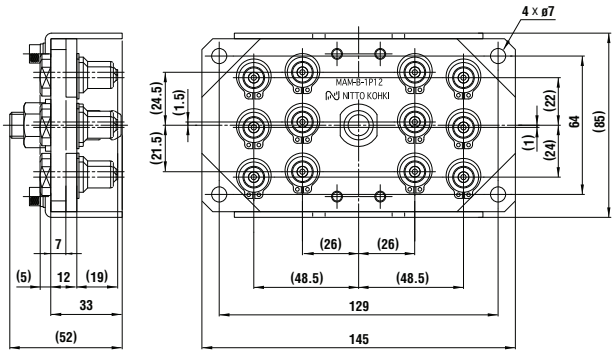


Dimensions (mm)

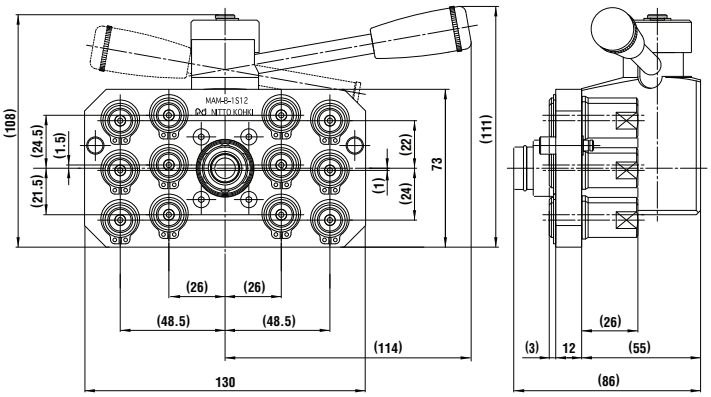
Model MAM-B-1P12 x MAM-B-1S12 (12 ports type)

• Application: R 1/8 Mass: 790 g (Plug), 1430 g (Socket)

Plug: Model MAM-B-1P12



Socket: Model MAM-B-1S12

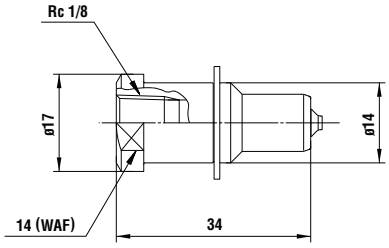


Dimensions (mm)

Plug Model MAM-A-1P (Individual Cupla)

• Application: R 1/8 Mass: 25 g

• Can be mounted on model MAM-B-1P8 and MAM-B-1P12.

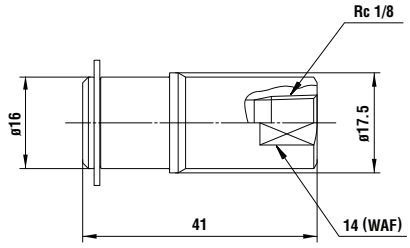


Dimensions (mm)

Socket Model MAM-A-1S (Individual Cupla)

• Application: R 1/8 Mass: 49 g

• Can be mounted on model MAM-B-1S8 and MAM-B-1S12.



Dimensions (mm)

Made-to-order Multi Cuplas are available on request, such as a combination of different sizes on the flange plate.

Models and Dimensions

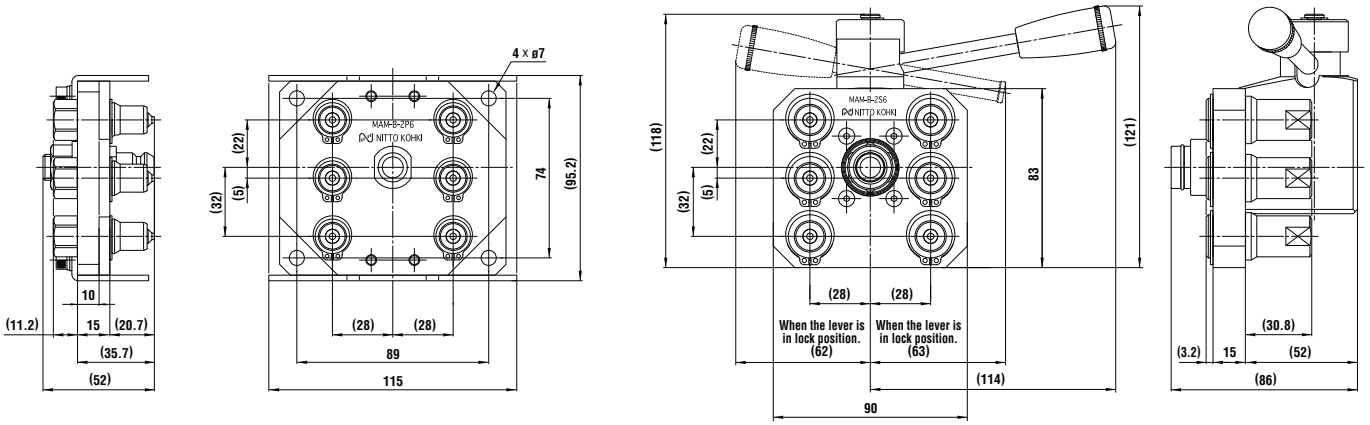
WAF : WAF stands for width across flats.

Model MAM-B-2P6 x MAM-B-2S6 (6 ports type)

• **Application: R 1/4** **Mass: 740 g (Plug), 1280 g (Socket)**

Plug: Model **MAM-B-2P6**

Socket: Model **MAM-B-2S6**



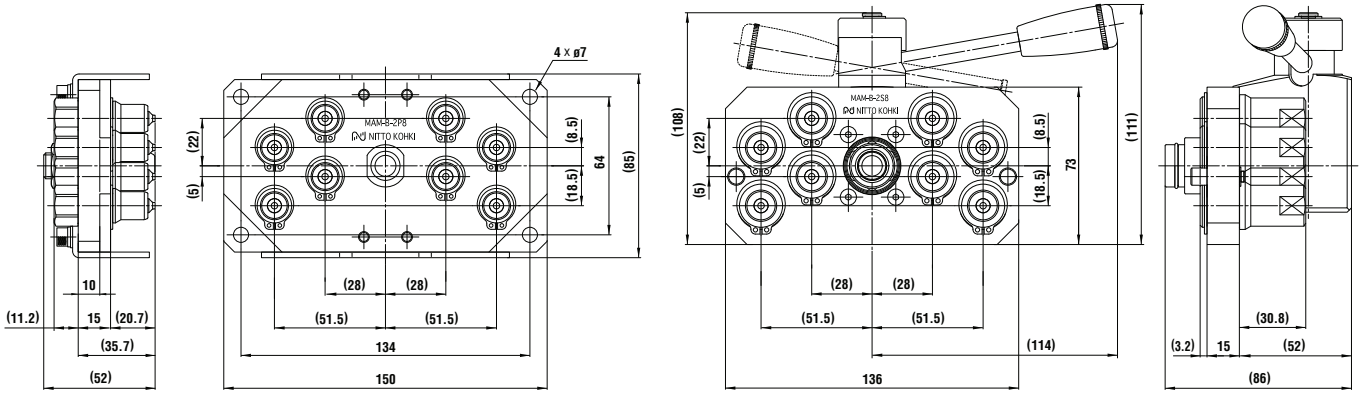
Dimensions (mm)

Model MAM-B-2P8 x MAM-B-2S8 (8 ports type)

• **Application: R 1/4** **Mass: 920 g (Plug), 1550 g (Socket)**

Plug: Model **MAM-B-2P8**

Socket: Model **MAM-B-2S8**

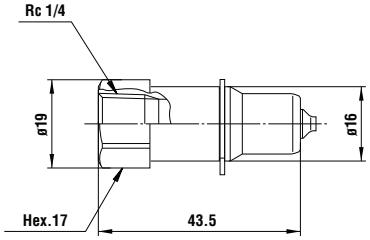


Dimensions (mm)

Plug Model MAM-A-2P (Individual Cupla)

• **Application: R 1/4** **Mass: 40 g**

• **Can be mounted on model MAM-B-2P6 and MAM-B-2P8.**

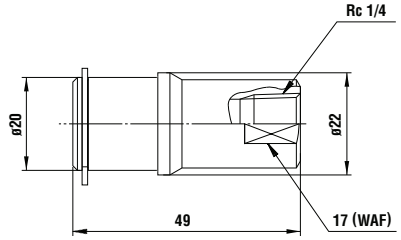


Dimensions (mm)

Socket Model MAM-A-2S (Individual Cupla)

• **Application: R 1/4** **Mass: 82 g**

• **Can be mounted on model MAM-B-2S6 and MAM-B-2S8.**

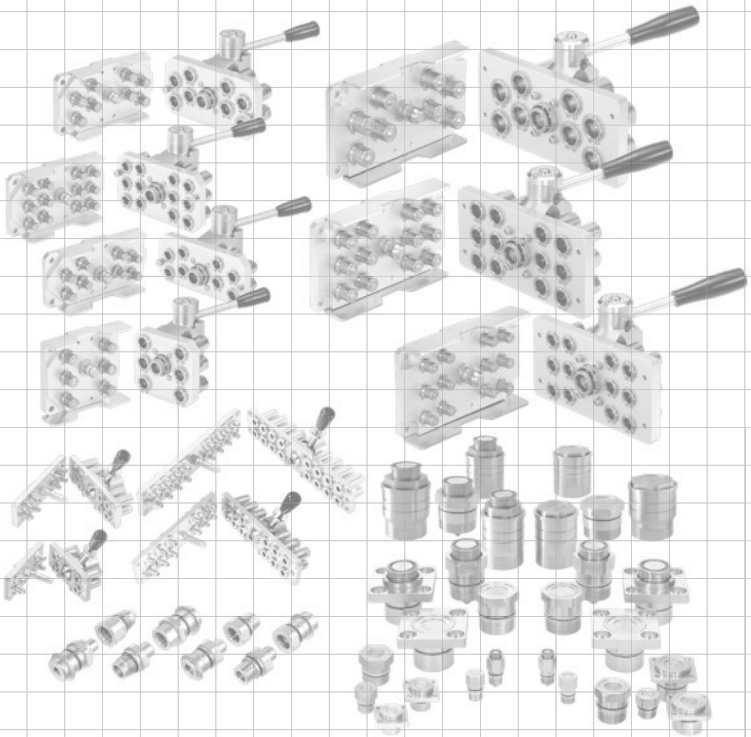


Dimensions (mm)

Made-to-order Multi Cuplas are available on request, such as a combination of different sizes on the flange plate.

Before use, please be sure to read "Safety Guide" described at the end of this book and "Instruction Sheet" that comes with the products.

MULTI CUPLA SERIES



For Multi-Port Connection (Manual)

Multi Cupla

MAM-A Type

Multiple port system

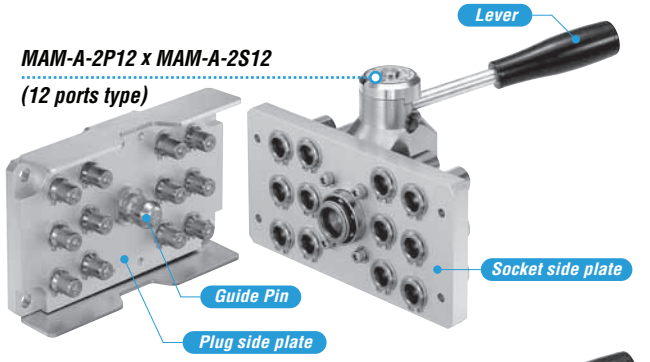
Working pressure: 1.0 MPa {10 kgf/cm²}

Valve structure: Two-way shut-off

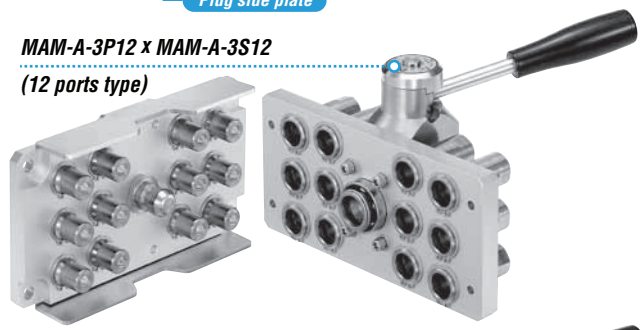
Applicable fluid: Air, Water

Simultaneously connects several ports securely in one operation! Greatly reduces changeover time in multiple ports replacement.

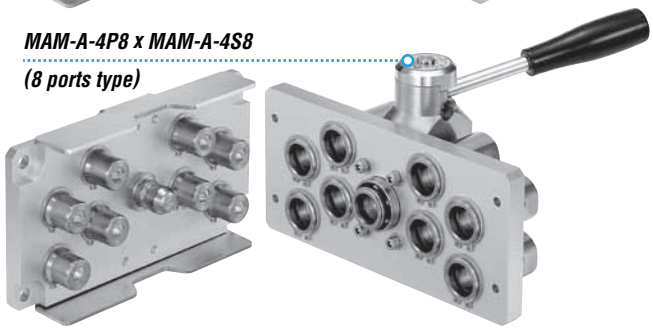
- Handles several ports at once.
- Simple manual lever action completes easy connection / disconnection.
- Two-stage lever operation prevents Cupla from accidental dropping due to sudden detachment.
- Comes with lock mechanism to prevent accidental disconnection.
- Large flow equivalent to that of SP Cupla Type A.
- Two kinds of plates are available for each size.
- Automatic shut-off valves in both socket and plug prevent fluid spill out on disconnection.
- Self-aligned valve design provides safety sealing of individual socket or plug when disconnected.



MAM-A-2P12 x MAM-A-2S12
(12 ports type)



MAM-A-3P12 x MAM-A-3S12
(12 ports type)



MAM-A-4P8 x MAM-A-4S8
(8 ports type)

Specifications

Model							
	Plug	MAM-A-2P6	MAM-A-2P12	MAM-A-3P6	MAM-A-3P12	MAM-A-4P4	MAM-A-4P8
	Socket	MAM-A-2S6	MAM-A-2S12	MAM-A-3S6	MAM-A-3S12	MAM-A-4S4	MAM-A-4S8
Number of ports		6	12	6	12	4	8
Size (Thread)		1/4"		3/8"		1/2"	
Body material		Cupla: Brass (Nickel-plated) Plate: Aluminum alloy Locking unit: Steel (Autocatalytic nickel-phosphorus coating)					
Working pressure	MPa	1.0					
	kgf/cm²	10					
	bar	10					
	PSI	145					
Ambient temperature range		0°C to +60°C					

Sealing material Working temperature range	Sealing material	Mark	Working temperature range	Remarks
	Fluoro rubber	FKM (X-100)	−20°C to +180°C	Standard material

Max. Tightening Torque — Nm {kgf•cm}

Size (Thread)	1/4"	3/8"	1/2"
Torque	9 {92}	12 {122}	30 {306}

Interchangeability

No connection is possible between plates with different number of ports.

Min. Cross-Sectional Area per Port — (mm²)

Model	2SP type	3SP type	4SP type
Min. cross-sectional area	26	51	73

Suitability for Vacuum — 1.3×10^{-1} Pa {1×10^{-3} mmHg}

Socket only	Plug only	When connected
—	—	Operational

Admixture of Air on Connection per Port — (mL)

Admixture of air may vary depending upon the usage conditions.

Model	2SP type	3SP type	4SP type
Volume of air	1.1	2.7	3.9

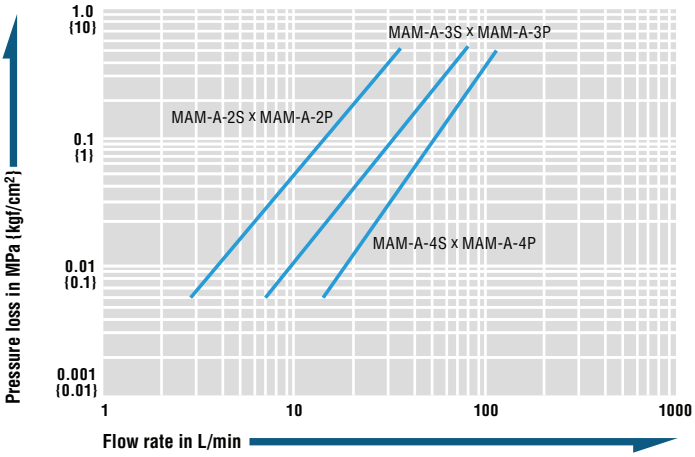
Volume of Spillage on Disconnection per Port — (mL)

Volume of spillage may vary depending upon the usage conditions.

Model	2SP type	3SP type	4SP type
Volume of spillage	0.8	2.1	3.4

Flow Rate - Pressure Loss Characteristics — Per port of Cupla

[Test conditions] •Fluid : Water •Temperature : 25°C ±5°C



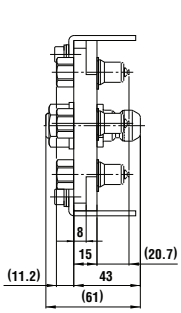
Models and Dimensions

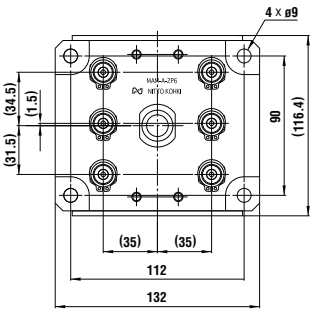
WAF : WAF stands for width across flats.

Model MAM-A-2P6 x MAM-A-2S6 (6 ports type)

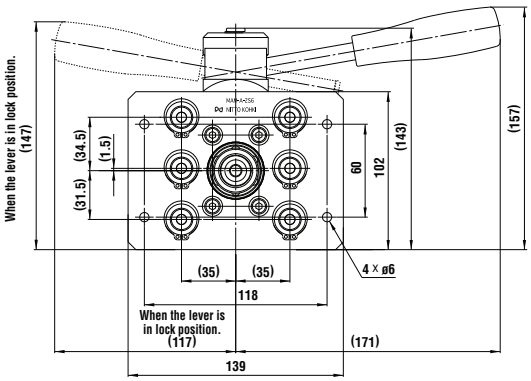
• Application: R 1/4 Mass: 1100 g (Plug), 2150 g (Socket)

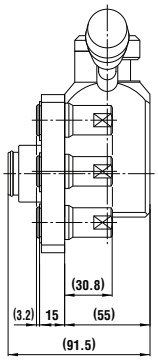
Plug: Model MAM-A-2P6





Socket: Model MAM-A-2S6



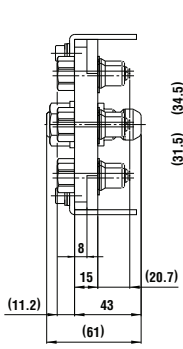


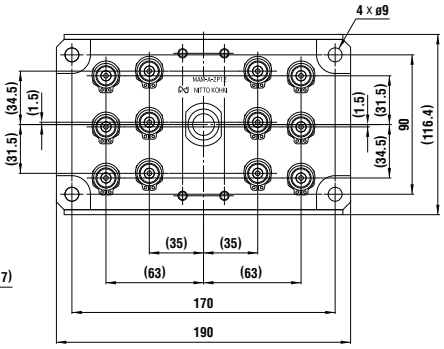
Dimensions (mm)

Model MAM-A-2P12 x MAM-A-2S12 (12 ports type)

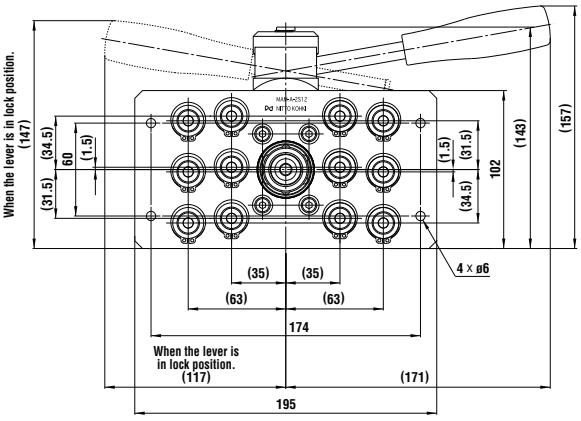
• Application: R 1/4 Mass: 1650 g (Plug), 2800 g (Socket)

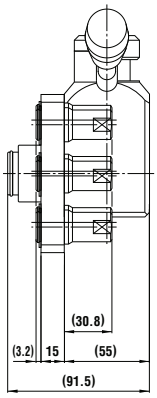
Plug: Model MAM-A-2P12





Socket: Model MAM-A-2S12

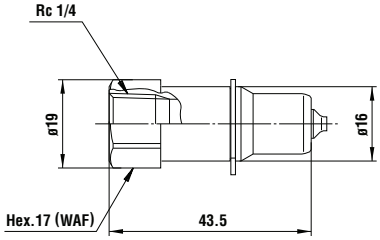




Dimensions (mm)

Plug Model MAM-A-2P (Individual Cupla)

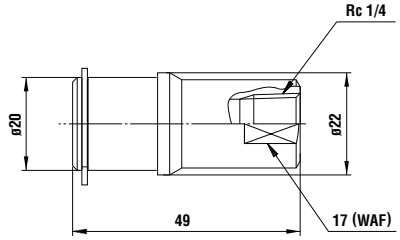
• Application: R 1/4 Mass: 40 g



Dimensions (mm)

Socket Model MAM-A-2S (Individual Cupla)

• Application: R 1/4 Mass: 82 g



Dimensions (mm)

Made-to-order Multi Cuplas are available on request, such as a combination of different sizes on the flange plate.

Models and Dimensions

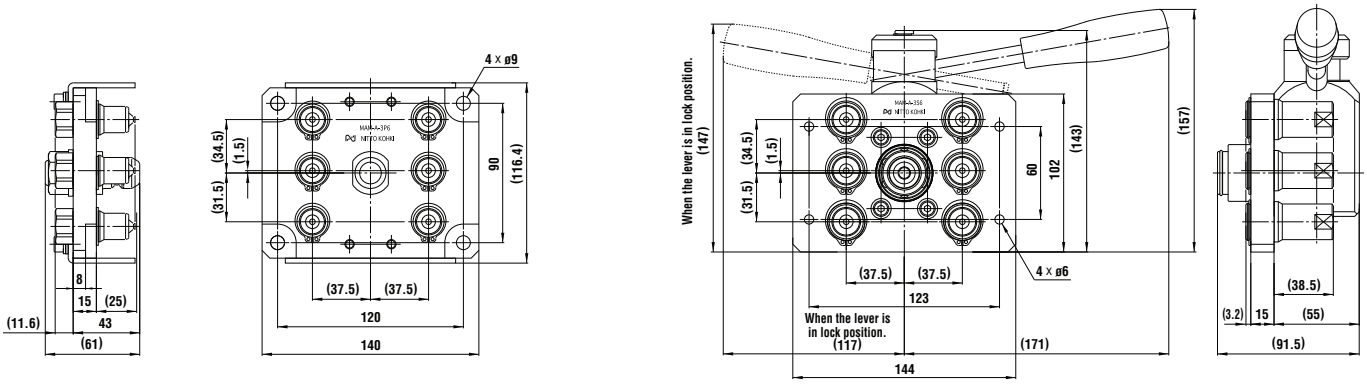
WAF : WAF stands for width across flats.

Model MAM-A-3P6 x MAM-A-3S6 (6 ports type)

• **Application: R 3/8** **Mass: 1250 g (Plug), 2400 g (Socket)**

Plug: Model **MAM-A-3P6**

Socket: Model **MAM-A-3S6**



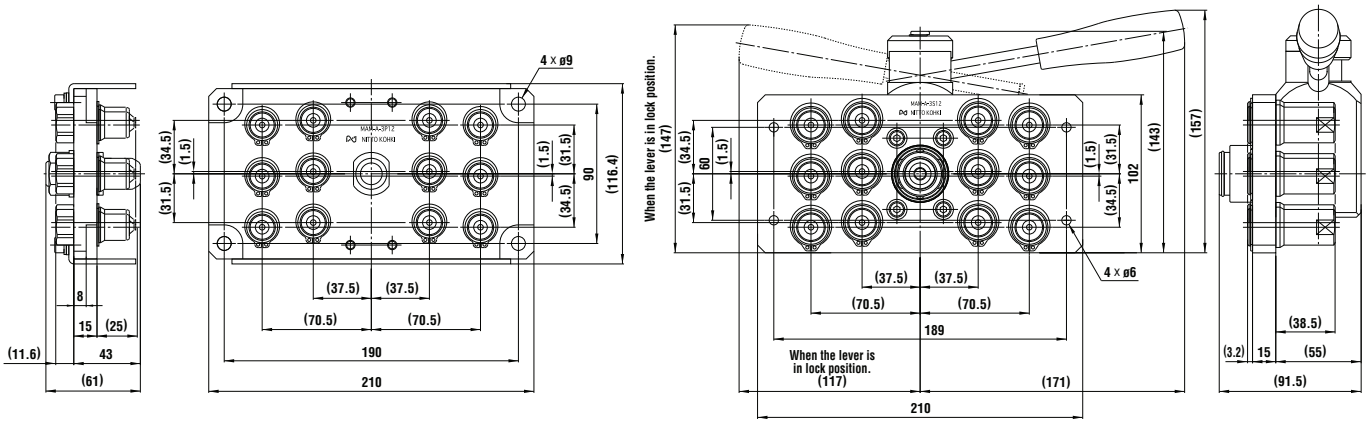
Dimensions (mm)

Model MAM-A-3P12 x MAM-A-3S12 (12 ports type)

• **Application: R 3/8** **Mass: 1950 g (Plug), 3300 g (Socket)**

Plug: Model **MAM-A-3P12**

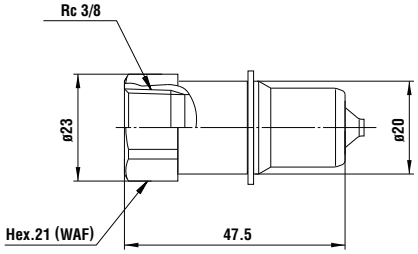
Socket: Model **MAM-A-3S12**



Dimensions (mm)

Plug Model MAM-A-3P (Individual Cupla)

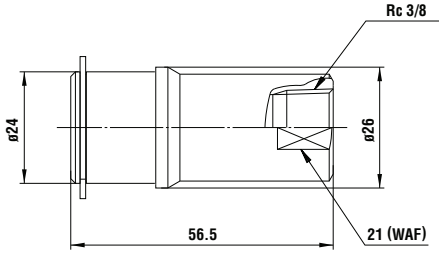
• **Application: R 3/8** **Mass: 62 g**



Dimensions (mm)

Socket Model MAM-A-3S (Individual Cupla)

• **Application: R 3/8** **Mass: 122 g**



Dimensions (mm)

Made-to-order Multi Cuplas are available on request, such as a combination of different sizes on the flange plate.

Before use, please be sure to read "Safety Guide" described at the end of this book and "Instruction Sheet" that comes with the products.

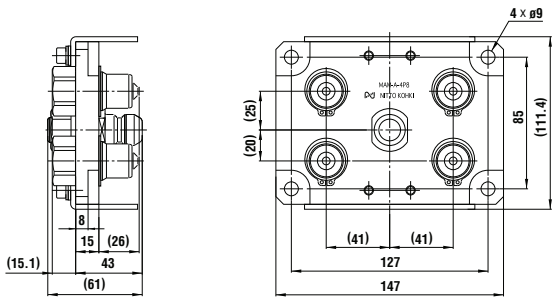
Models and Dimensions

WAF : WAF stands for width across flats.

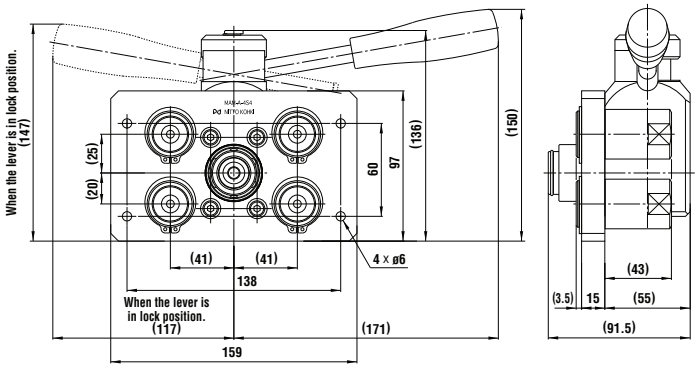
Model MAM-A-4P4 x MAM-A-4S4 (4 ports type)

• Application: R 1/2 Mass: 1400 g (Plug), 2700 g (Socket)

Plug: Model MAM-A-4P4



Socket: Model MAM-A-4S4

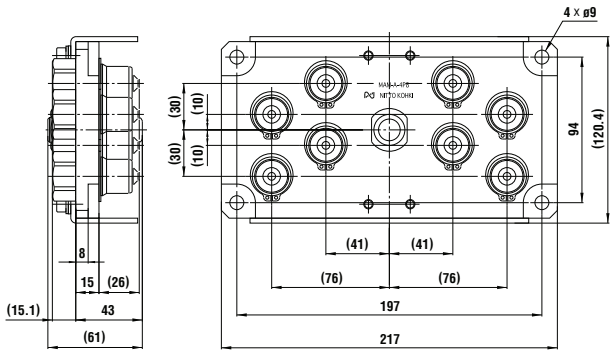


Dimensions (mm)

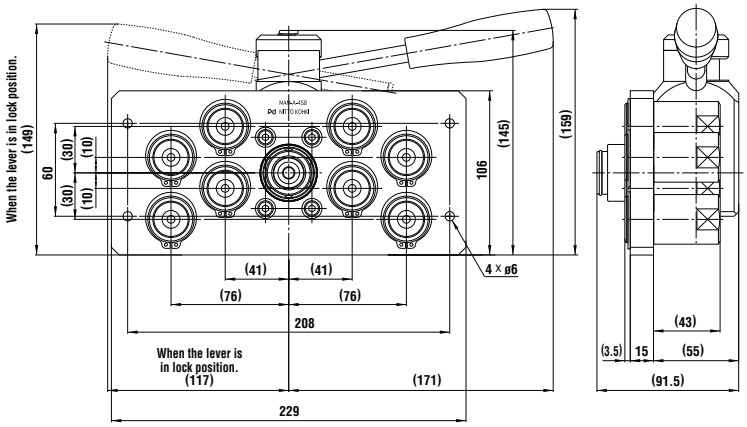
Model MAM-A-4P8 x MAM-A-4S8 (8 ports type)

• Application: R 1/2 Mass: 2300 g (Plug), 4000 g (Socket)

Plug: Model MAM-A-4P8



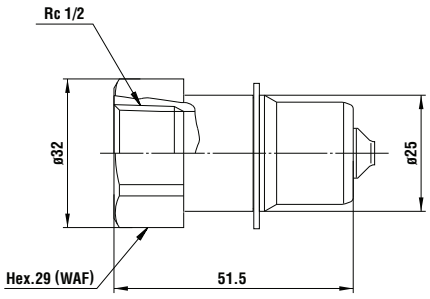
Socket: Model MAM-A-4S8



Dimensions (mm)

Plug Model MAM-A-4P (Individual Cupla)

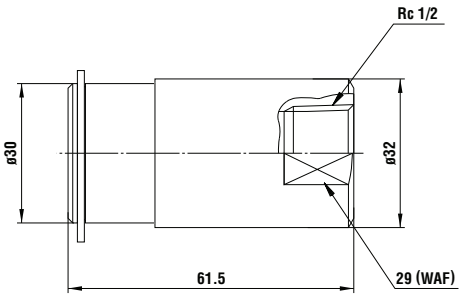
• Application: R 1/2 Mass: 127 g



Dimensions (mm)

Socket Model MAM-A-4S (Individual Cupla)

• Application: R 1/2 Mass: 256 g



Dimensions (mm)

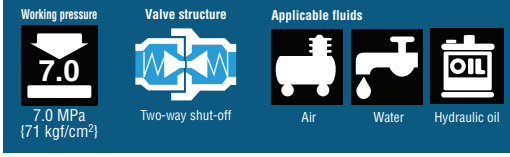
Made-to-order Multi Cuplas are available on request, such as a combination of different sizes on the flange plate.

For Multi-Port Connection (Automatic)

Multi Cupla

MAS Type / MAT Type

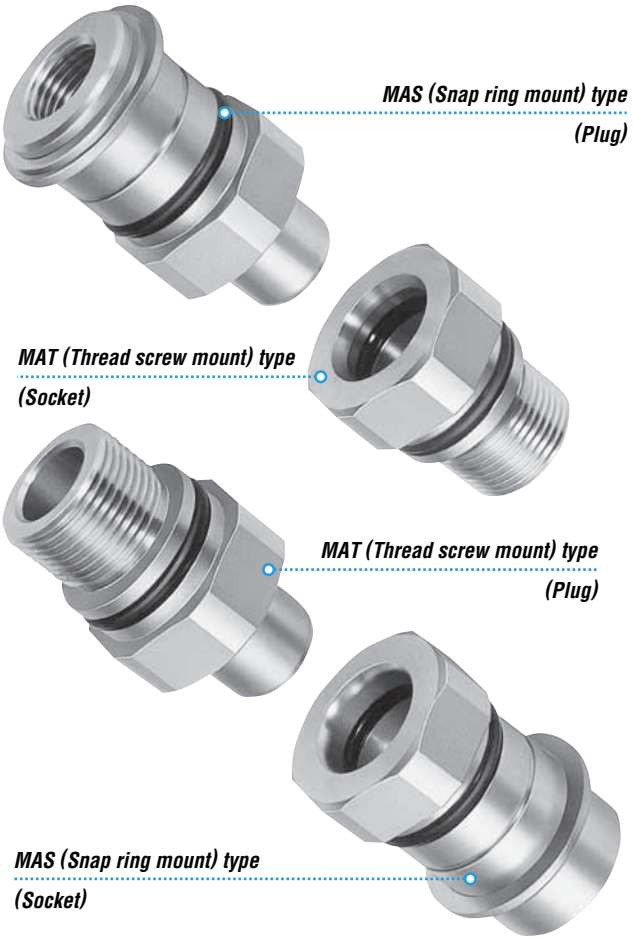
7.0 MPa {71 kgf/cm²} general purpose type



Connects multiple lines simultaneously with a single operation for different fluids and sizes.

- Ideal for automated hydraulic or pneumatic cylinder operated systems that need to connect and disconnect several lines simultaneously.
- Automatic shut-off valves in both sockets and plugs ensure no outflow of fluid on disconnection.
- Body materials other than stainless steel are available, which can be ordered with or without valves (made-to-order products).
- Snap ring and screw thread-in types to mount on the base plate are standardized.
- MAS type can accept axial eccentricity between socket and plug. The allowance of eccentricity is within the radius range of 0.3mm.

* Cupla connection or disconnection with fluid under dynamic pressure cannot be made.



Specifications

Body material		Stainless steel (Autocatalytic nickel-phosphorus coating)		
Working pressure	MPa	7.0		
	kgf/cm²	71		
	bar	70		
	PSI	1020		
Sealing material Working temperature range		Sealing material	Mark	Working temperature range
		Fluoro rubber	FKM (X-100)	−20°C to +180°C

Max. Tightening Torque — Nm {kgf•cm}

Size (Thread)	1/4"	3/8"	1/2"	3/4"	1"
Torque (MAS type)	14 {143}	22 {224}	60 {612}	90 {918}	120 {1224}

Size (Thread)	M20	M24	M30	M39	M45
Torque (MAT type)	50 {510}	50 {510}	50 {510}	70 {714}	80 {816}

Interchangeability

- MAS & MAT or MAS & MAS types of the same size are to be connected.
- Connection between the same MAT types is virtually not possible because there is no allowance for eccentricity.

Min. Cross-Sectional Area — (mm²)

Model	2SP	3SP	4SP	6SP	8SP
Min. cross-sectional area	23	41	76	145	224

Suitability for Vacuum — 1.3 x 10⁻¹ Pa {1 x 10⁻³ mmHg}

Socket only	Plug only	When connected
—	—	Operational

Admixture of Air on Connection — Admixture of air may vary depending upon the usage conditions. (mL)

Model	2SP	3SP	4SP	6SP	8SP
Volume of air	1.1	2.4	3.2	10.5	17.0

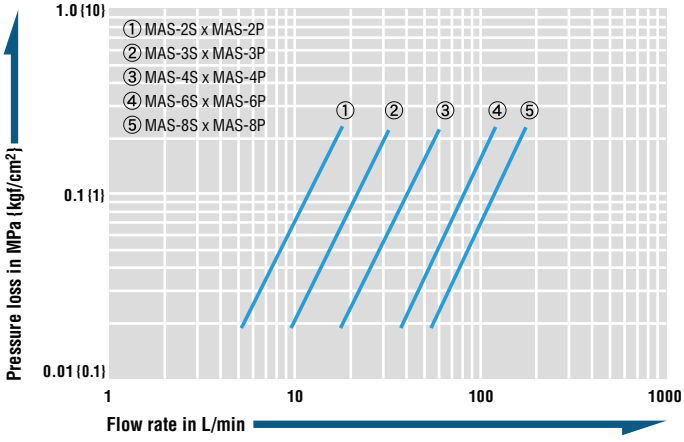
Load Required to Maintain Connection When Line Is Pressurized

Model	2SP	3SP	4SP	6SP	8SP
Maximum acceptable load N {kgf}	3200 {327}	5200 {531}	9000 {919}	13900 {1419}	20200 {2062}
Minimum load required to maintain connection N {kgf} *	Px185+45 {px1.85+4.5}	Px310+70 {px3.1+7}	Px545+75 {px5.45+7.5}	Px850+95 {px8.5+9.5}	Px1225+120 {px12.25+12}

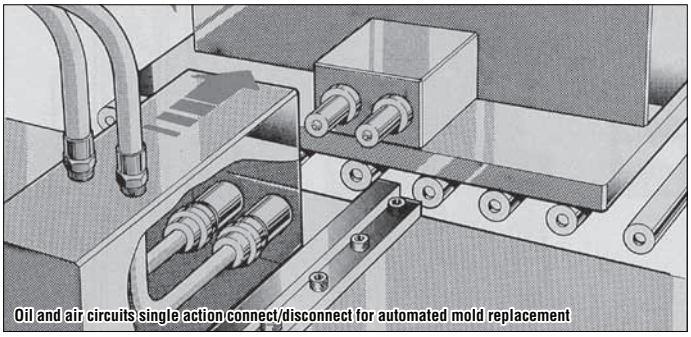
* Assign the actual value of pressure [P (MPa), p (kgf/cm²)] to the above formula to calculate the load. Maintain the connection with the minimum load or more, but not more than the maximum acceptable load.

Flow Rate - Pressure Loss Characteristics

[Test conditions] •Fluid : Water •Temperature : 20°C ± 5°C



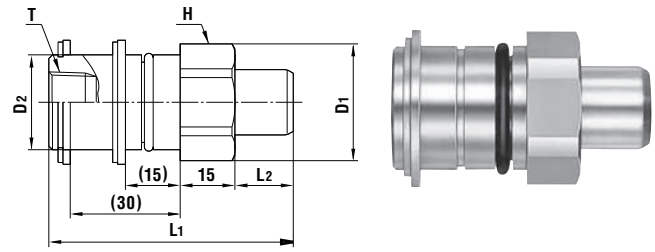
Application Example


Oil and air circuits single action connect/disconnect for automated mold replacement

Models and Dimensions

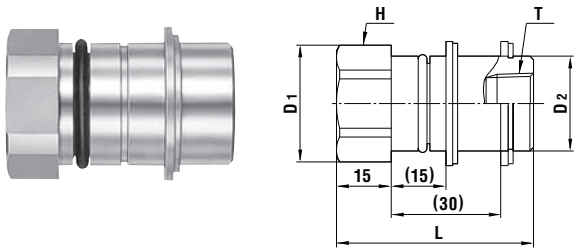
WAF : WAF stands for width across flats.

Plug MAS type (Snap ring mount type)



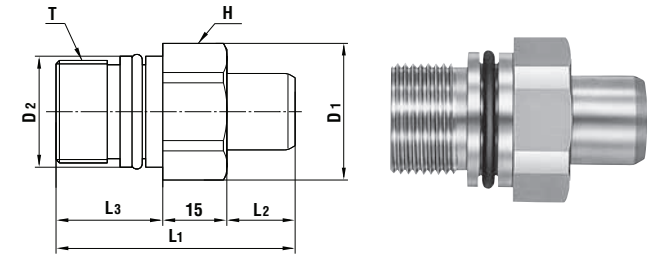
Model	Application	Mass (g)	Dimensions (mm)					
			L1	L2	øD1	øD2	H(WAF)	T
MAS-2P	R 1/4	150	65	14	28	21.9	Hex.26	Rc 1/4
MAS-3P	R 3/8	203	67	16	35	25.9	Hex.32	Rc 3/8
MAS-4P	R 1/2	412	73	20	44	35.9	Hex.41	Rc 1/2
MAS-6P	R 3/4	579	76.5	23.5	50	41.9	Hex.46	Rc 3/4
MAS-8P	R 1	720	78	24	58	47.9	Hex.54	Rc 1

Socket MAS type (Snap ring mount type)



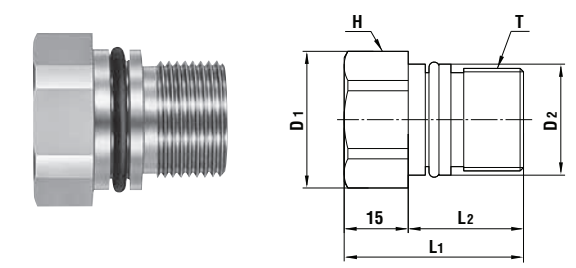
Model	Application	Mass (g)	Dimensions (mm)				
			L	øD1	øD2	H(WAF)	T
MAS-2S	R 1/4	126	51.5	28	21.9	Hex.26	Rc 1/4
MAS-3S	R 3/8	171	55	35	25.9	Hex.32	Rc 3/8
MAS-4S	R 1/2	406	65	44	35.9	Hex.41	Rc 1/2
MAS-6S	R 3/4	604	76	50	41.9	Hex.46	Rc 3/4
MAS-8S	R 1	825	87	58	47.9	Hex.54	Rc 1

Plug MAT type (Thread screw mount type)



Model	Application	Mass (g)	Dimensions (mm)						
			L1	L2	L3	øD1	øD2	H(WAF)	T
MAT-2P	See the diagram below.	121	53	14	(24)	28	21.9	Hex.26	M20x1.5
MAT-3P		164	56	16	(25)	32	25.9	Hex.29	M24x1.5
MAT-4P		332	67	20	(32)	44	35.9	Hex.41	M30x2
MAT-6P		453	73	23.5	(34.5)	50	41.9	Hex.46	M39x2
MAT-8P		571	76	24	(37)	54	47.9	Hex.50	M45x2

Socket MAT type (Thread screw mount type)

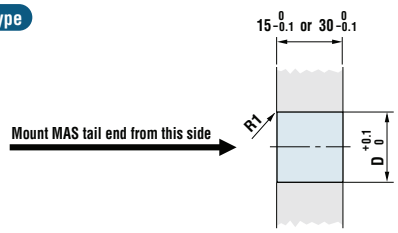


Model	Application	Mass (g)	Dimensions (mm)					
			L1	L2	øD1	øD2	H(WAF)	T
MAT-2S	See the diagram below.	95	39	(24)	28	21.9	Hex.26	M20x1.5
MAT-3S		124	42	(27)	32	25.9	Hex.29	M24x1.5
MAT-4S		246	48	(33)	44	35.9	Hex.41	M30x2
MAT-6S		382	58	(43)	50	41.9	Hex.46	M39x2
MAT-8S		506	66	(51)	54	47.9	Hex.50	M45x2

• MAT type must be coupled with MAS type.

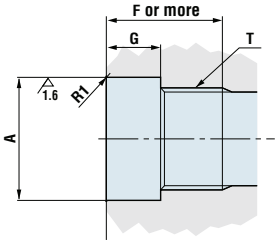
Tail End Configuration

MAS Type

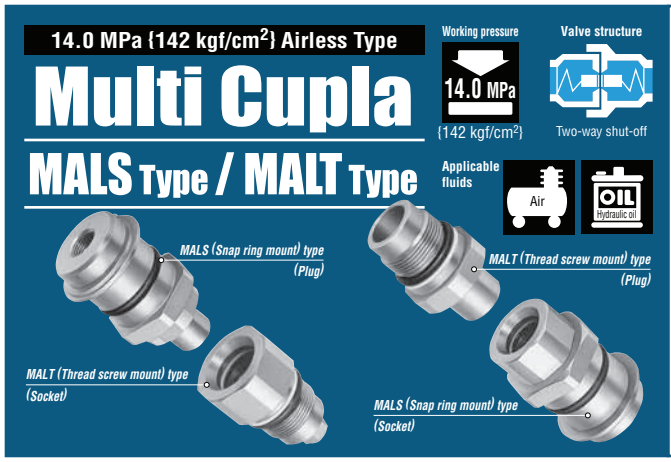


Model	Diameter (mm)
	øD
MAS-2S / MAS-2P	23
MAS-3S / MAS-3P	27
MAS-4S / MAS-4P	37
MAS-6S / MAS-6P	43
MAS-8S / MAS-8P	49

MAT Type



Model	Diameter (mm)				
	øA	G	F		T
			Pulg	Socket	
MAT-2S / MAT-2P	22 +0.06 0	13	25		M20 x 1.5
MAT-3S / MAT-3P	26 +0.06 0	13	26	28	M24 x 1.5
MAT-4S / MAT-4P	36 +0.08 0	16	34	35	M30 x 2
MAT-6S / MAT-6P	42 +0.08 0	17	36.5	45	M39 x 2
MAT-8S / MAT-8P	48 +0.08 0	17	39	53	M45 x 2



Minimal air admixture during Cupla connection

- Special valve structure allows minimal air admixture in fluid lines during Cupla connection.
- Liquid bleeding on Cuplas disconnection is very little, which makes it best for frequent connection/disconnection applications.
- Snap ring and thread screw mount types to mount on the base plate are standard.
- MALS type can accept axial eccentricity of socket and plug, or allow a plate hole position tolerance of ±0.3mm because of the O-ring around the body.

Specifications

Body material	Steel (Autocatalytic nickel-phosphorus coating)		
Working pressure	14.0 MPa, 142 kgf/cm², 140 bar, 2030 PSI		
Sealing material Working temperature range	Sealing material	Mark	Working temperature range
	Fluoro rubber	FKM (X-100)	−20°C to +180°C

Please check with us for details on these products.

Before use, please be sure to read "Safety Guide" described at the end of this book and "Instruction Sheet" that comes with the products.

For Multi-Port Connection (Automatic)

Multi Cupla

MALC-SP Type for Medium Pressure Use

Low spill type for medium pressure use

Working pressure: 1.5 to 7.0 MPa {15 to 71 kgf/cm²}

Valve structure: Two-way shut-off (Non-Spill)

Applicable fluids: Water, Hydraulic oil, Air

A single operation enables simultaneous connections of multiple lines. A special design for medium pressure use minimizes air admixture in fluid lines upon connection.

- Compared with conventional Multi Cuplas, approximately double flow rates are realized. This could reduce the size of required plates. (Rate of flow increase depends on Cupla sizes.)
- The MALC type realizes a 2 mm axial eccentricity allowance, while the conventional Multi Cupla is only 0.6 mm.
- Special valve design enables connection of socket and plug under pressure of up to 2 MPa. (up to 1.5 MPa for MALC-12SP.)
- When connected, the distance between the socket plate and the plug plate is designed to be 30 mm for all sizes. This means that any size of Cupla can be mounted and used on the same plate.
- Low spill valves minimize outflow of fluid and admixture of air into the fluid line.

Specifications

Body material		Socket body: Stainless steel (Autocatalitic nickel-phosphorus coating)		
Model	Thread screw mount	MALC-1SP	MALC-2 to 8SP	MALC-12SP
	Flange	–	MALC-2 to 8SP-FL	–
	Snap ring	–	MALC-8SP-10F	MALC-12SP(-F/-16F)
Working pressure *	MPa	7.0 (2.0)	5.0 (2.0)	1.5 (2.0)
	kgf/cm²	71 (20)	51 (20)	15 (20)
	bar	70 (20)	50 (20)	15 (20)
	PSI	1020 (290)	725 (290)	218 (290)
Sealing material / Working temperature range		Sealing material	Mark	Working temperature range
		Fluoro rubber	FKM (X-100)	−20°C to +180°C

* The value in brackets is working pressure of individual plug or socket.

Max. Tightening Torque — Nm {kgf•cm}

Model	1SP	2SP	3SP	4SP	6SP	8SP	12SP	12SP-16F
Thread screw mount	20 {204}	30 {306}	35 {357}	45 {460}	60 {612}	75 {765}	80 {816}	–
Flange	–	7 {71.5}	7 {71.5}	7 {71.5}	7 {71.5}	23 {235}	–	–
Snap ring	–	–	–	–	–	260 {2652}	280 {2856}	350 {3570}

Interchangeability

Socket and plug in the same size can be connected regardless of their end configurations.

Min. Cross-Sectional Area — (mm²)

Model	1SP	2SP(-FL)	3SP(-FL)	4SP(-FL)	6SP(-FL)	8SP(-FL/-10F)	12SP(-F/-16F)
Min. cross-sectional area	26	49.5	87	153	227	347	795

Suitability for Vacuum

Not suitable for vacuum application in either connected or disconnected condition.

Admixture of Air on Connection — Admixture of air may vary depending upon the usage conditions. (mL)

Model	1SP	2SP(-FL)	3SP(-FL)	4SP(-FL)	6SP(-FL)	8SP(-FL/-10F)	12SP(-F/-16F)
Volume of air	0.08	0.14	0.26	0.55	0.95	0.85	1.46

Volume of Spillage per Disconnection — Volume of spillage may vary depending upon the usage conditions. (mL)

Model	1SP	2SP(-FL)	3SP(-FL)	4SP(-FL)	6SP(-FL)	8SP(-FL/-10F)	12SP(-F/-16F)
Volume of spillage	0.08	0.14	0.26	0.55	0.95	0.85	1.46

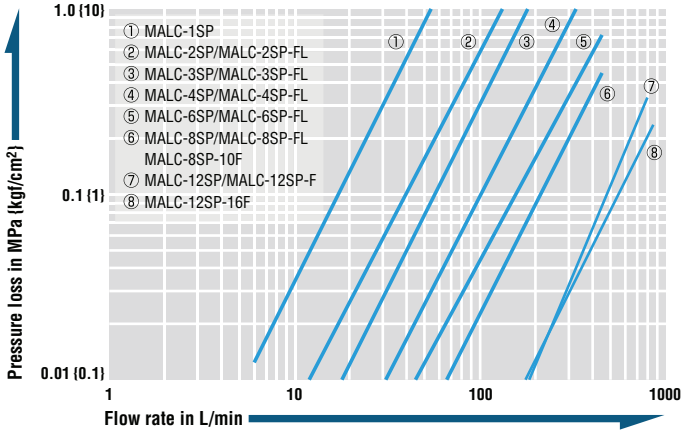
Load Required to Maintain Connection When Line Is Pressurized

Model	1SP	2SP(-FL)	3SP(-FL)	4SP(-FL)	6SP(-FL)	8SP(-FL/-10F)	12SP(-F/-16F)
Maximum acceptable load N {kgf}	2800 {286}	4500 {459}	5600 {571}	10000 {1019}	14000 {1427}	15600 {1591}	8200 {837}
Minimum load required to maintain connection N {kgf} *	P x 170 + 85 {p x 1.7 + 8.5}	P x 345 + 180 {p x 3.45 + 18}	P x 460 + 190 {p x 4.6 + 19}	P x 855 + 260 {p x 8.55 + 26}	P x 1160 + 260 {p x 11.6 + 26}	P x 1360 + 310 {p x 13.6 + 31}	P x 2260 + 400 {p x 22.6 + 40}

* Assign the actual value of pressure [P (MPa), p (kgf/cm²)] to the above formula to calculate the load. Maintain the connection with the minimum load or more, but not more than the maximum acceptable load.

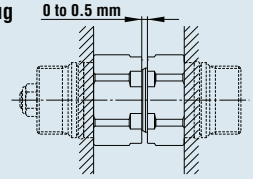
Flow Rate - Pressure Loss Characteristics

[Test conditions] •Fluid : Water •Temperature : 19°C to 25°C



Acceptable distance between socket and plug

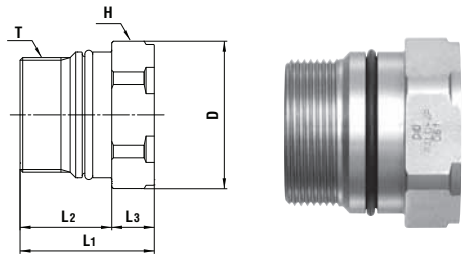
Plug and socket must be used in contact with each other.
Maximum 0.5 mm distance between socket and plug is acceptable.



Models and Dimensions

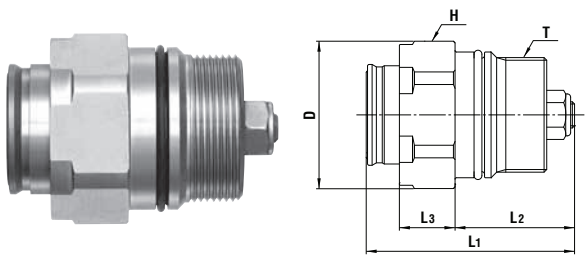
WAF : WAF stands for width across flats.

Plug MALC-1 to 12P type (Thread screw mount)



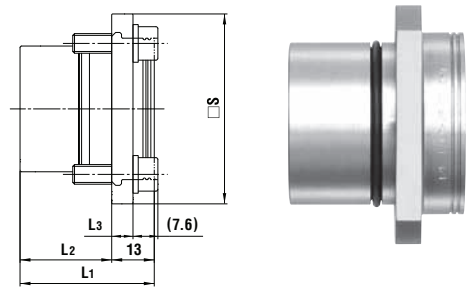
Model	Application	Mass (g)	Dimensions (mm)					
			L1	L2	L3	øD	H(WAF)	T
MALC-1P	See P113	40	32	(18)	14	21	Hex.19	M16 x 1
MALC-2P	See P113	75	33	(20)	13	28	Hex.26	M20 x 1.5
MALC-3P	See P113	95	33	(20)	13	32	Hex.29	M24 x 1.5
MALC-4P	See P113	248	41	(28)	13	45	Hex.41	M35 x 1.5
MALC-6P	See P113	369	50.5	(37.5)	13	50	Hex.46	M40 x 2
MALC-8P	See P113	399	53	(41)	12	54	Hex.50	M45 x 2
MALC-12P	See P113	724	57	(45)	12	74	Hex.67	M62 x 2

Socket MALC-1 to 12S type (Thread screw mount)



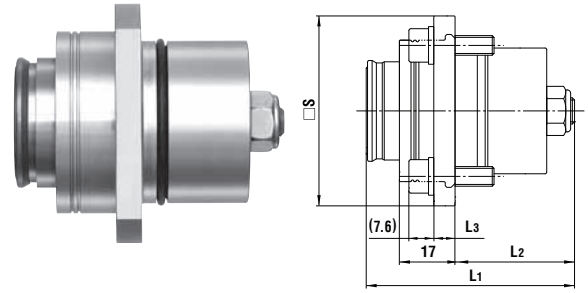
Model	Application	Mass (g)	Dimensions (mm)					
			L1	L2	L3	øD	H(WAF)	T
MALC-1S	See P113	53	(45)	(23)	16	21	Hex.19	M16 x 1
MALC-2S	See P113	95	(49)	(26)	17	28	Hex.26	M20 x 1.5
MALC-3S	See P113	120	(51)	(26)	17	32	Hex.29	M24 x 1.5
MALC-4S	See P113	306	(64)	(36.5)	17	45	Hex.41	M35 x 1.5
MALC-6S	See P113	471	(78.5)	(47.5)	17	50	Hex.46	M40 x 2
MALC-8S	See P113	590	(86)	(53)	18	54	Hex.50	M45 x 2
MALC-12S	See P113	1176	(98)	(60)	18	74	Hex.67	M62 x 2

Plug MALC-2 to 6P-FL type (With flange)



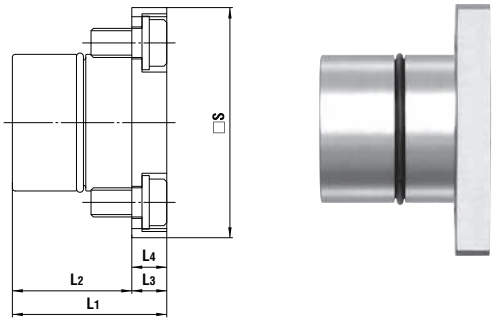
Model	Application	Mass (g)	Dimensions (mm)			
			L1	L2	L3	□S
MALC-2P-FL	See P113	146	30	(17)	6	40
MALC-3P-FL	See P113	180	33	(20)	6	45
MALC-4P-FL	See P113	390	41	(28)	6.5	58
MALC-6P-FL	See P113	553	50.5	(37.5)	6.5	64

Socket MALC-2 to 6S-FL type (With flange)



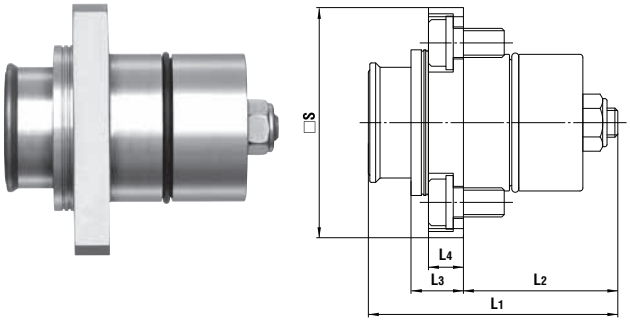
Model	Application	Mass (g)	Dimensions (mm)			
			L1	L2	L3	□S
MALC-2S-FL	See P113	173	(49)	(26)	6	40
MALC-3S-FL	See P113	208	(51)	(26)	6	45
MALC-4S-FL	See P113	449	(64)	(36.5)	6.5	58
MALC-6S-FL	See P113	663	(78.5)	(47.5)	6.5	64

Plug MALC-8P-FL type (With flange)



Model	Application	Mass (g)	Dimensions (mm)				
			L1	L2	L3	L4	□S
MALC-8P-FL	See P113	796	53	(41)	12	12	79

Socket MALC-8S-FL type (With flange)

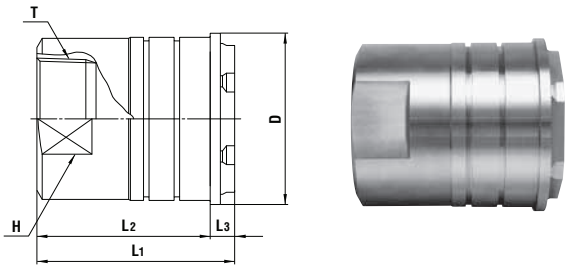


Model	Application	Mass (g)	Dimensions (mm)				
			L1	L2	L3	L4	□S
MALC-8S-FL	See P113	978	(86)	(53)	18	12	79

Models and Dimensions

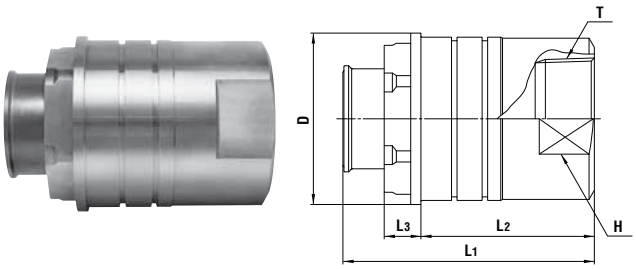
WAF : WAF stands for width across flats.

Plug MALC-8 / 12P type (With snap ring)



Model	Application	Mass (g)	Dimensions (mm)					
			L1	L2	L3	øD	H(WAF)	T
MALC-8P-10F	See drawings below.	1182	(87)	75	(12)	64	54	Rc 1 1/4
MALC-12P-F		2054	(97)	85	(12)	84	58	Rc 1 1/2
MALC-12P-16F		2128	(97)	85	(12)	84	71	Rc 2

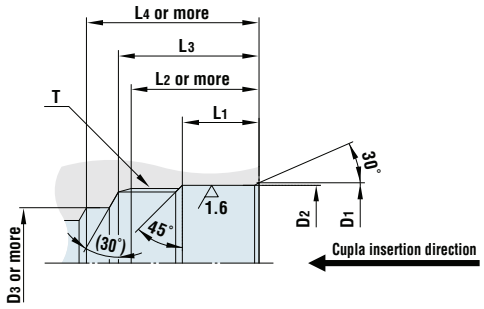
Socket MALC-8 / 12S type (With snap ring)



Model	Application	Mass (g)	Dimensions (mm)					
			L1	L2	L3	øD	H(WAF)	T
MALC-8S-10F	See drawings below.	1373	(108)	75	(18)	64	54	Rc 1 1/4
MALC-12S-F		2505	(123)	85	(18)	84	58	Rc 1 1/2
MALC-12S-16F		2579	(123)	85	(18)	84	71	Rc 2

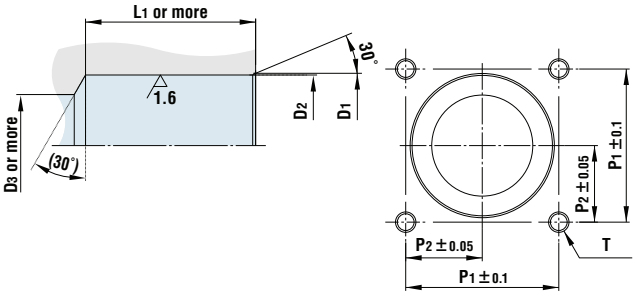
Dimensions of End Configurations

MALC-1 to 12SP type (Thread screw mount)



Model	Dimensions (mm)							
	øD1	øD2	øD3	L1	L2	L3	L4	T
MALC-1S / MALC-1P	18.3 +0.1 0	17.3 +0.06 0	13	11	20	22	25	M16 x 1
MALC-2S / MALC-2P	24 +0.1 0	23 +0.06 0	16	11.5	22	25	28	M20 x 1.5
MALC-3S / MALC-3P	27.6 +0.1 0	26.6 +0.08 0	18	11	22	25	29	M24 x 1.5
MALC-4S / MALC-4P	39.5 +0.1 0	38.5 +0.08 0	26	15.5	30	33	40.5	M35 x 1.5
MALC-6S / MALC-6P	45 +0.1 0	44 +0.08 0	30	20	40	44	51.5	M40 x 2
MALC-8S / MALC-8P	48 +0.3 0	47 +0.08 0	35	27	43	47	55	M45 x 2
MALC-12S / MALC-12P	66 +0.3 0	64 +0.1 0	45	30	50	54	65	M62 x 2

MALC-2 to 8SP-FL type (With flange)



Model	Dimensions (mm)						
	øD1	øD2	øD3	L1	P1	P2	T
MALC-2S-FL / MALC-2P-FL	24 +0.1 0	23 +0.06 0	16	28 / 19	28	14	4 x M6 Thread depth 17 mm or more
MALC-3S-FL / MALC-3P-FL	27.6 +0.1 0	26.6 +0.08 0	18	28 / 22	31	15.5	
MALC-4S-FL / MALC-4P-FL	39.5 +0.1 0	38.5 +0.08 0	26	39 / 30.5	40	20	
MALC-6S-FL / MALC-6P-FL	45 +0.1 0	44 +0.08 0	30	50 / 40	45	22.5	
MALC-8S-FL / MALC-8P-FL	48 +0.3 0	47 +0.08 0	35	53 / 43	55	27.5	4 x M10 Thread depth 15 mm or more

MALC-8 / 12P type (With snap ring)

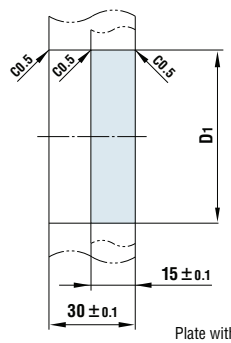


Plate with 15 mm or 30 mm thickness can be mounted.

Model	Dimensions (mm)
	øD1
MALC-8S-10F / MALC-8P-10F	60.1 +0.1 0
MALC-12S-F / MALC-12P-F	80.1 +0.1 0
MALC-12S-16F / MALC-12P-16F	80.1 +0.1 0

Before use, please be sure to read "Safety Guide" described at the end of this book and "Instruction Sheet" that comes with the products.

MULTI CUPLA SERIES

For Multi-Port Connection (Automatic)

Multi Cupla

MALC-HSP Type for High Pressure Use

Low spill type for high pressure use

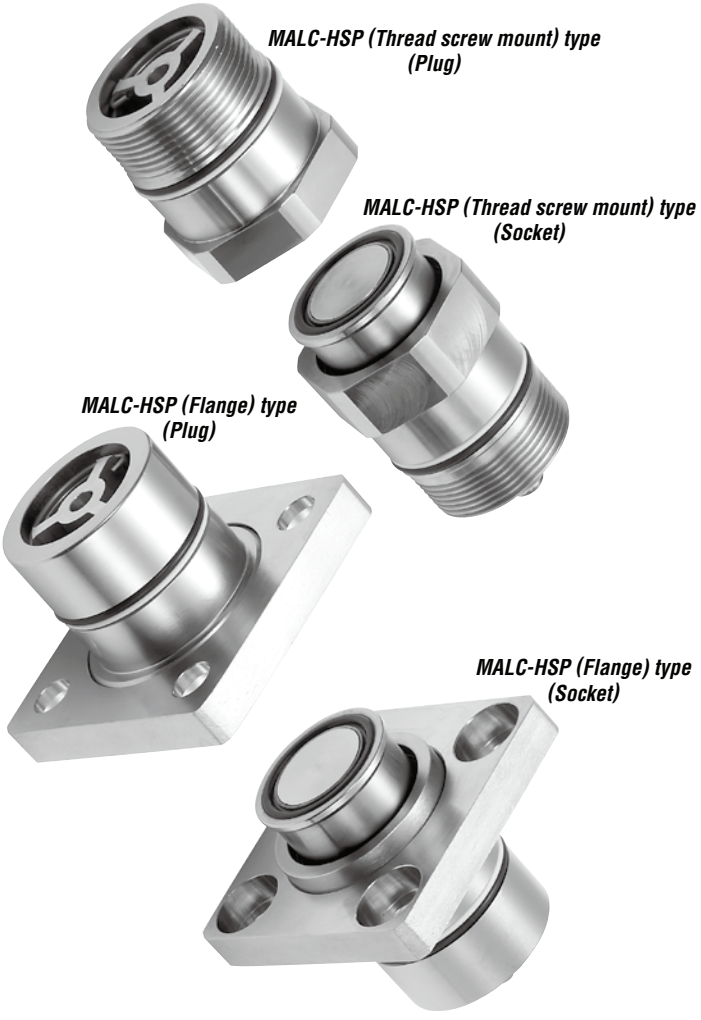
Working pressure: 21.0 to 25.0 MPa (214 to 255 kgf/cm²)

Valve structure: Two-way shut-off

Applicable fluids: Hydraulic oil

A single operation enables simultaneous connections of multiple lines. A special design minimises air admixture in fluid lines upon connection. Suitable for high pressure hydraulic circuits.

- Compared with conventional Multi Cuplas, approximately double flow rates are realized. This could reduce the size of required plates. (Rate of flow increase depends on Cupla sizes.)
- The MALC type realizes a 2 mm axial eccentricity allowance, while the conventional Multi Cupla is only 0.6 mm.
- Special valve design enables connection of socket and plug under dynamic pressure of up to 8 MPa.
- When connected, the distance between the socket plate and plug plate is designed to be 30 mm for all sizes. This means any size of Cupla can be mounted and used on the same plate.
- Low spill valves minimize outflow of fluid and admixture of air into the fluid line.



Specifications

Body material		Special steel (Autocatalytic nickel-phosphorus coating)		
Model	Thread screw mount	MALC-1HSP	MALC-2 to 8HSP	
	Flange	–	MALC-2 to 8HSP-FL	
Working pressure	MPa	25.0 (Either socket or plug only:8.0)	21.0 (Either socket or plug only:8.0)	
	kgf/cm²	255 (Either socket or plug only:81)	214 (Either socket or plug only:81)	
	bar	250 (Either socket or plug only:80)	210 (Either socket or plug only:80)	
	PSI	3630 (Either socket or plug only:1160)	3050 (Either socket or plug only:1160)	
Sealing material Working temperature range		Sealing material	Mark	Working temperature range
		Fluoro rubber	FKM (X-100)	-20°C to +180°C

Max. Tightening Torque — Nm {kgf•cm}

Model	1HSP	2HSP	3HSP	4HSP	6HSP	8HSP
Thread screw mount	30 {306}	50 {510}	53 {540}	65 {663}	80 {816}	95 {969}
Flange	–	9 {91}				30 {306}

Interchangeability

Socket and plug in the same size can be connected regardless of their end configurations.

Min. Cross-Sectional Area — (mm²)

Model	1HSP	2HSP	3HSP	4HSP	6HSP	8HSP
Min. cross-sectional area	26	49.5	87	153	227	347

Suitability for Vacuum

Not suitable for vacuum application in either connected or disconnected condition.

Admixture of Air on Connection — (mL)

Admixture of air may vary depending upon the usage conditions.

Model	1HSP	2HSP	3HSP	4HSP	6HSP	8HSP
Volume of air	0.08	0.14	0.26	0.55	0.95	0.85

Volume of Spillage per Disconnection — (mL)

Volume of spillage may vary depending upon the usage conditions.

Model	1HSP	2HSP	3HSP	4HSP	6HSP	8HSP
Volume of spillage	0.08	0.14	0.26	0.55	0.95	0.85

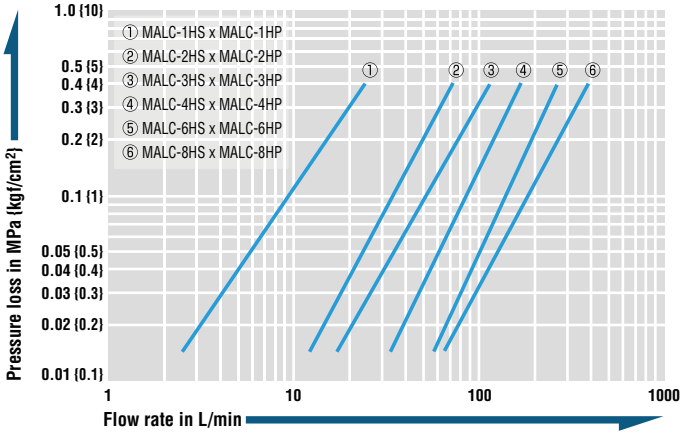
Load Required to Maintain Connection When Line Is Pressurized

Model	1HSP	2HSP	3HSP	4HSP	6HSP	8HSP
Maximum acceptable load N {kgf}	9300 {948}	16500 {1683}	22000 {2244}	40500 {4130}	55000 {5609}	64500 {6577}
Minimum load required to maintain connection N {kgf} *	Px170+85 {px1.7+8.5}	Px345+180 {px3.45+18}	Px460+190 {px4.6+19}	Px855+260 {px8.55+26}	Px1160+260 {px11.6+26}	Px1360+310 {px13.6+31}

* Assign the actual value of pressure [P (MPa), p (kgf/cm²)] to the above formula to calculate the load. Maintain the connection with the minimum load or more, but not more than the maximum acceptable load.

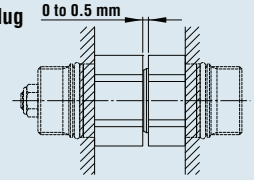
Flow Rate - Pressure Loss Characteristics

[Test conditions] •Fluid : Hydraulic oil •Temperature : 30°C ±5°C
•Fluid viscosity : 32 x 10^{-6} m^2/s •Density : 0.87 x 10^3 kg/m^3



Acceptable distance between Socket and Plug

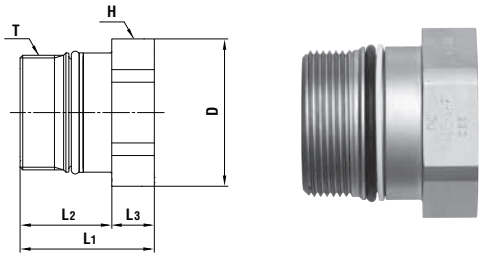
Plug and socket must be used in contact with each other.
Maximum 0.5 mm distance between socket and plug is acceptable.



Models and Dimensions

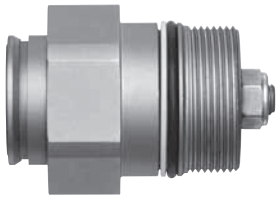
WAF : WAF stands for width across flats.

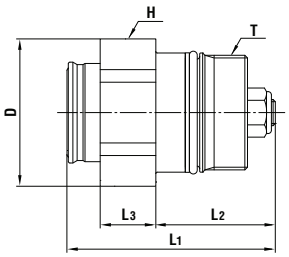
Plug MALC-1 to 8HP type (Thread screw mount)



Model	Application	Mass (g)	Dimensions (mm)					
			L1	L2	L3	øD	H(WAF)	T
MALC-1HP	See P117	39	32	(18)	14	21	Hex.19	M16 x 1
MALC-2HP	See P117	73	33	(20)	13	28	Hex.26	M20 x 1.5
MALC-3HP	See P117	96	33	(20)	13	32	Hex.29	M24 x 1.5
MALC-4HP	See P117	250	41	(28)	13	45	Hex.41	M35 x 1.5
MALC-6HP	See P117	357	50.5	(37.5)	13	50	Hex.46	M40 x 2
MALC-8HP	See P117	391	53	(41)	12	54	Hex.50	M45 x 2

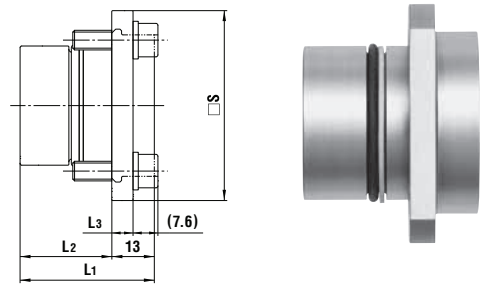
Socket MALC-1 to 8HS type (Thread screw mount)





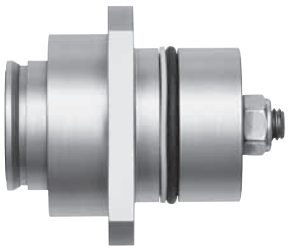
Model	Application	Mass (g)	Dimensions (mm)					
			L1	L2	L3	øD	H(WAF)	T
MALC-1HS	See P117	51	(45)	(23)	16	21	Hex.19	M16 x 1
MALC-2HS	See P117	89	(49)	(26)	17	28	Hex.26	M20 x 1.5
MALC-3HS	See P117	117	(51)	(26)	17	32	Hex.29	M24 x 1.5
MALC-4HS	See P117	290	(64)	(36.5)	17	45	Hex.41	M35 x 1.5
MALC-6HS	See P117	447	(78.5)	(47.5)	17	50	Hex.46	M40 x 2
MALC-8HS	See P117	579	(86)	(53)	18	54	Hex.50	M45 x 2

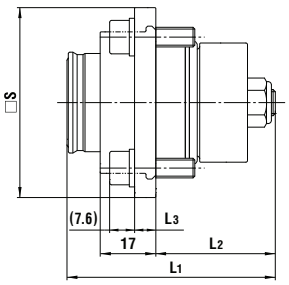
Plug MALC-2 to 6HP-FL type (With flange)



Model	Application	Mass (g)	Dimensions (mm)			
			L1	L2	L3	□S
MALC-2HP-FL	See P117	142	30	(17)	6	40
MALC-3HP-FL	See P117	179	33	(20)	6	45
MALC-4HP-FL	See P117	367	41	(28)	6.5	58
MALC-6HP-FL	See P117	514	50.5	(37.5)	6.5	64

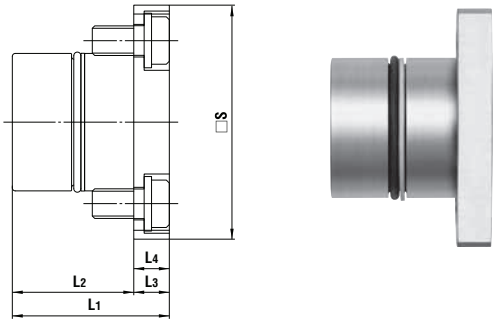
Socket MALC-2 to 6HS-FL type (With flange)





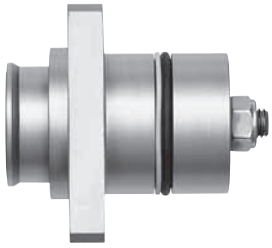
Model	Application	Mass (g)	Dimensions (mm)			
			L1	L2	L3	□S
MALC-2HS-FL	See P117	163	(49)	(26)	6	40
MALC-3HS-FL	See P117	200	(51)	(26)	6	45
MALC-4HS-FL	See P117	418	(64)	(36.5)	6.5	58
MALC-6HS-FL	See P117	611	(78.5)	(47.5)	6.5	64

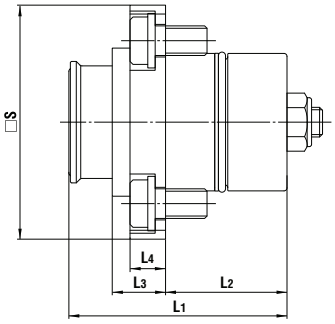
Plug MALC-8HP-FL type (With flange)



Model	Application	Mass (g)	Dimensions (mm)				
			L1	L2	L3	L4	□S
MALC-8HP-FL	See P117	786	53	(41)	12	12	79

Socket MALC-8HS-FL type (With flange)

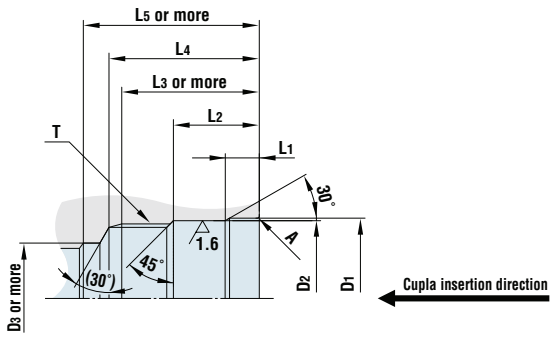




Model	Application	Mass (g)	Dimensions (mm)				
			L1	L2	L3	L4	□S
MALC-8HS-FL	See P117	964	(86)	(53)	18	12	79

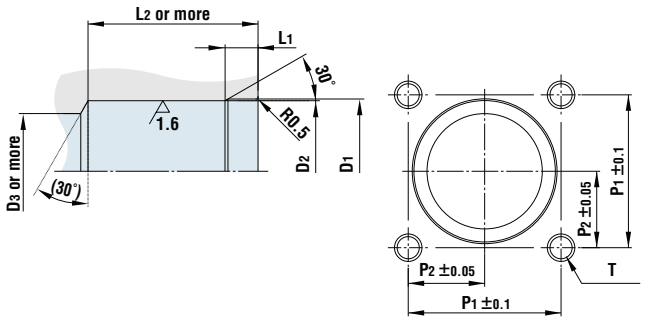
Dimensions of End Configurations

MALC-1 to 8HSP type (Thread screw mount)



Model	Dimensions (mm)									
	øD1	øD2	øD3	L1	L2	L3	L4	L5	T	A
MALC-1HS MALC-1HP	$17.8^{+0.1}_{0}$	$16.8^{+0.06}_{0}$	13	$3.5^{+0.2}_{0}$	11	20	22	25	M16 x 1	C0.2
MALC-2HS MALC-2HP	$23^{+0.1}_{0}$	$22^{+0.06}_{0}$	16	$2.8^{+0.2}_{0}$	11	22	25	28	M20 x 1.5	R0.5
MALC-3HS MALC-3HP	$27.1^{+0.1}_{0}$	$26^{+0.08}_{0}$	18	$2.8^{+0.2}_{0}$	11	22	25	29	M24 x 1.5	R0.5
MALC-4HS MALC-4HP	$37.7^{+0.3}_{0}$	$36.5^{+0.08}_{0}$	26	$6^{\pm0.2}$	18	30	33	40.5	M35 x 1.5	R0.5
MALC-6HS MALC-6HP	$42.5^{+0.3}_{0}$	$41.5^{+0.08}_{0}$	30	$6^{\pm0.2}$	23	40	44	51.5	M40 x 2	R0.5
MALC-8HS MALC-8HP	$47.5^{+0.3}_{0}$	$46.5^{+0.08}_{0}$	35	$10.5^{\pm0.2}$	27	43	47	55	M45 x 2	R0.5

MALC-2 to 8HSP-FL type (With flange)



Model	Dimensions (mm)							
	øD1	øD2	øD3	L1	L2	P1	P2	T
MALC-2HS-FL	$23^{+0.1}_{0}$	$22^{+0.06}_{0}$	16	$2.8^{+0.2}_{0}$	28	28	14	4 x M6 Thread depth 17 mm or more
MALC-2HP-FL					19			
MALC-3HS-FL	$27.1^{+0.1}_{0}$	$26^{+0.08}_{0}$	18	$2.8^{+0.2}_{0}$	28	31	15.5	
MALC-3HP-FL					22			
MALC-4HS-FL	$37.7^{+0.3}_{0}$	$36.5^{+0.08}_{0}$	26	$6^{\pm0.2}$	39	40	20	
MALC-4HP-FL					30.5			
MALC-6HS-FL	$42.5^{+0.3}_{0}$	$41.5^{+0.08}_{0}$	30	$6^{\pm0.2}$	50	45	22.5	
MALC-6HP-FL					40			
MALC-8HS-FL	$47.5^{+0.3}_{0}$	$46.5^{+0.08}_{0}$	35	$10.5^{\pm0.2}$	53	55	27.5	4 x M10 Thread depth 15 mm or more
MALC-8HP-FL					43			