

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/cm<sup>2</sup>)

Valve structure



Two-way shut-off  
(Non-Spill)

Applicable fluids



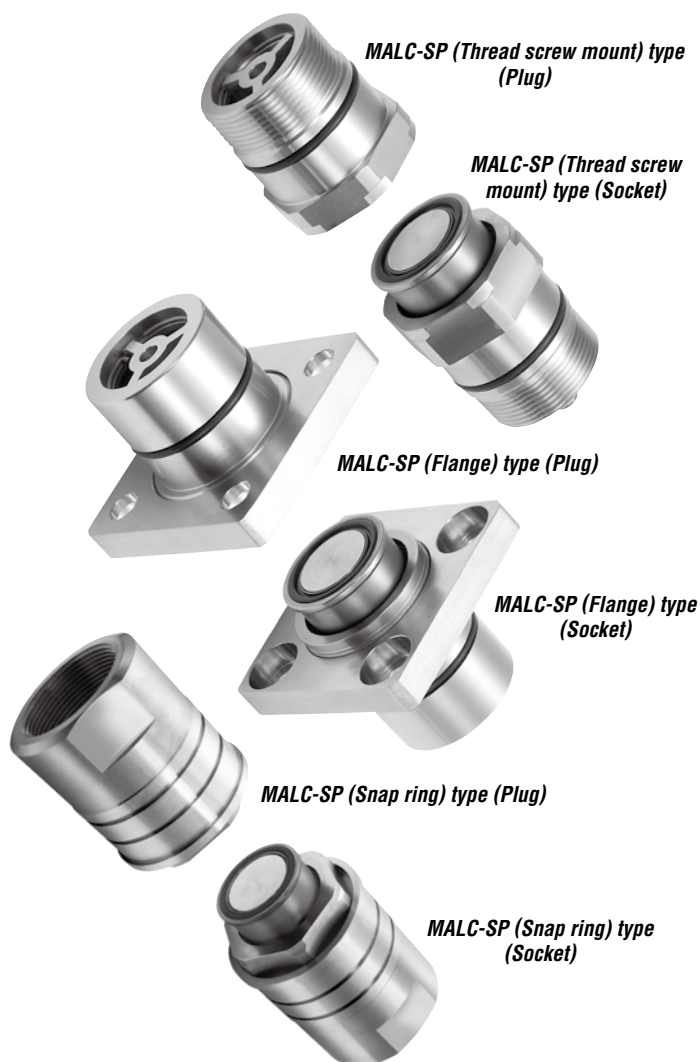
Water

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		Stainless steel (Socket body: Nickel plated)		
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 (1.5)
	kgf/cm <sup>2</sup>	71 (20)	51 (20)	15 (15)
	bar	70 (20)	50 (20)	15 (15)
	PSI	1020 (290)	725 (290)	218 (218)
Seal material		Sealing material	Mark	Working temperature range
Working temperature range		Fluoro rubber	FKM (X-100)	-20°C to +180°C

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

## Max. Tightening Torque

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

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

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

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

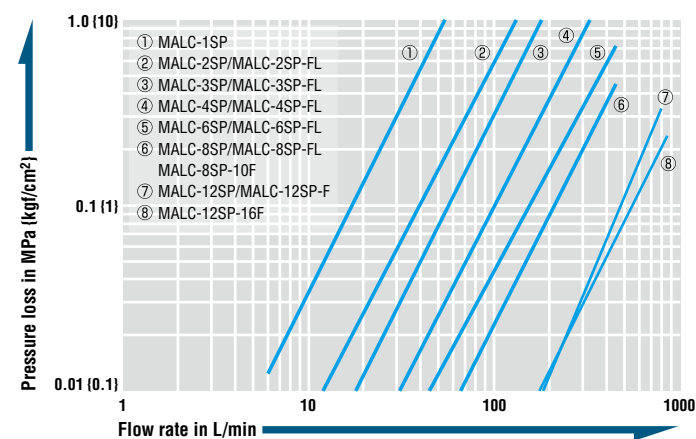
## Load Required to Maintain Connection When Line Is Pressurized

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) *	$P \times 170 + 85$ { $p \times 1.7 + 8.5$ }	$P \times 345 + 180$ { $p \times 3.45 + 18$ }	$P \times 460 + 190$ { $p \times 4.6 + 19$ }	$P \times 855 + 260$ { $p \times 8.55 + 26$ }	$P \times 1160 + 260$ { $p \times 11.6 + 26$ }	$P \times 1360 + 310$ { $p \times 13.6 + 31$ }	$P \times 2260 + 400$ { $p \times 22.6 + 40$ }

\* Assign the actual value of pressure [P (MPa), p (kgf/cm<sup>2</sup>)] 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.

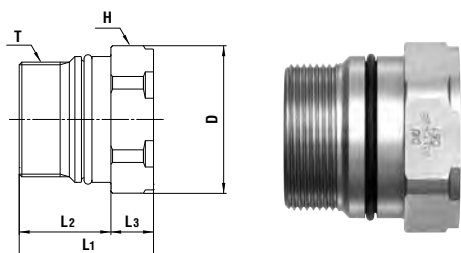
## Flow Rate - Pressure Loss Characteristics

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



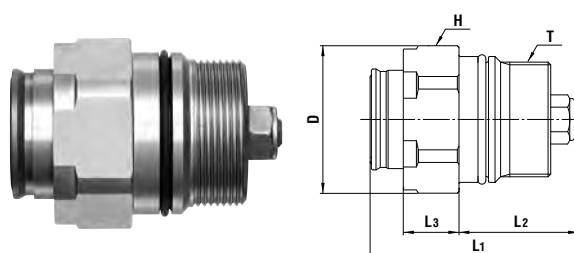
Models and Dimensions

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



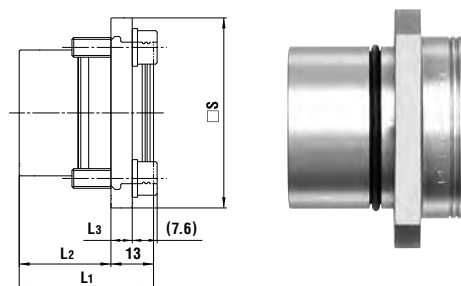
Model	Application	Mass (g)	Dimensions (mm)					
			L1	L2	L3	ϕD	H(WAF)	T
MALC-1P	See P117	40	32	(18)	14	21	Hex.19	M16 x 1
MALC-2P		75	33	(20)	13	28	Hex.26	M20 x 1.5
MALC-3P		95	33	(20)	13	32	Hex.29	M24 x 1.5
MALC-4P		248	41	(28)	13	45	Hex.41	M35 x 1.5
MALC-6P		369	50.5	(37.5)	13	50	Hex.46	M40 x 2
MALC-8P		399	53	(41)	12	54	Hex.50	M45 x 2
MALC-12P		724	57	(45)	12	74	Hex.67	M62 x 2

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



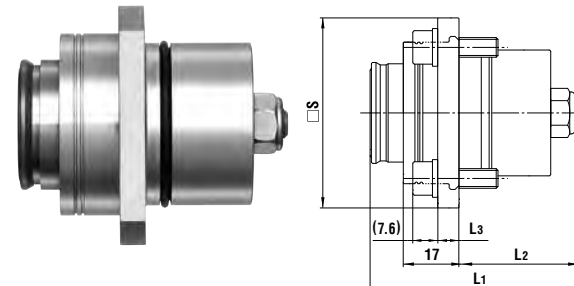
Model	Application	Mass (g)	Dimensions (mm)					
			L1	L2	L3	ϕD	H(WAF)	T
MALC-1S	See P117	53	(45)	(23)	16	21	Hex.19	M16 x 1
MALC-2S		95	(49)	(26)	17	28	Hex.26	M20 x 1.5
MALC-3S		120	(51)	(26)	17	32	Hex.29	M24 x 1.5
MALC-4S		306	(64)	(36.5)	17	45	Hex.41	M35 x 1.5
MALC-6S		471	(78.5)	(47.5)	17	50	Hex.46	M40 x 2
MALC-8S		590	(86)	(53)	18	54	Hex.50	M45 x 2
MALC-12S		1176	(98)	(60)	18	74	Hex.67	M62 x 2

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



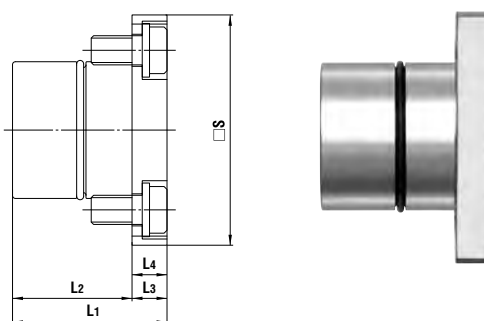
Model	Application	Mass (g)	Dimensions (mm)			
			L1	L2	L3	□ S
MALC-2P-FL	See P117	146	30	(17)	6	40
MALC-3P-FL		180	33	(20)	6	45
MALC-4P-FL		390	41	(28)	6.5	58
MALC-6P-FL		553	50.5	(37.5)	6.5	64

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



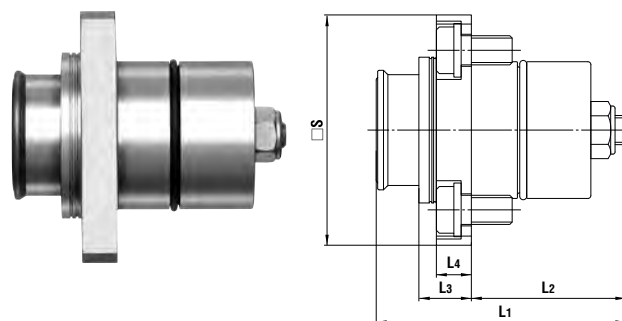
Model	Application	Mass (g)	Dimensions (mm)			
			L1	L2	L3	□ S
MALC-2S-FL	See P117	173	(49)	(26)	6	40
MALC-3S-FL		208	(51)	(26)	6	45
MALC-4S-FL		449	(64)	(36.5)	6.5	58
MALC-6S-FL		663	(78.5)	(47.5)	6.5	64

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



Model	Application	Mass (g)	Dimensions (mm)				□ S
			L1	L2	L3	L4	
MALC-8P-FL	See P117	796	53	(41)	12	12	79

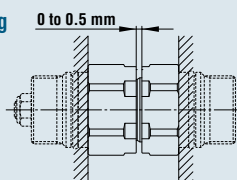
**Socket MALC-8S-FL type (With flange)**



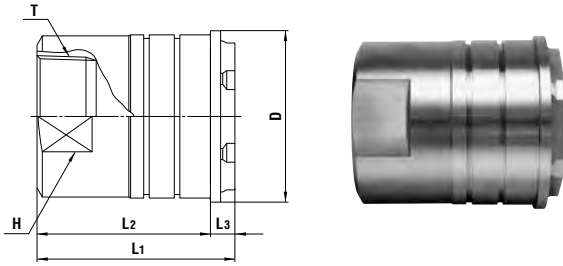
Model	Application	Mass (g)	Dimensions (mm)				□ S
			L1	L2	L3	L4	
MALC-8S-FL	See P117	978	(86)	(53)	18	12	79

**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.

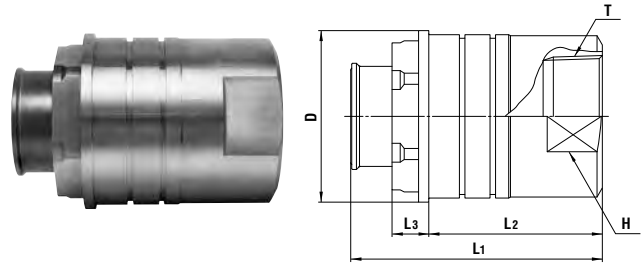


**Plug MALC-8 / 12P type (With snap ring)**



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

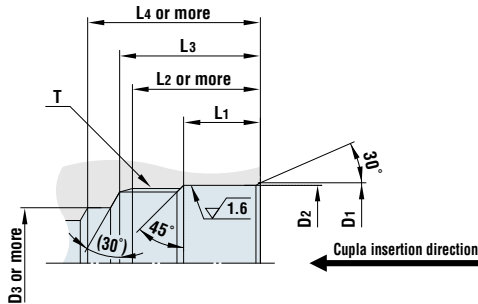
**Socket MALC-8 / 12S type (With snap ring)**



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

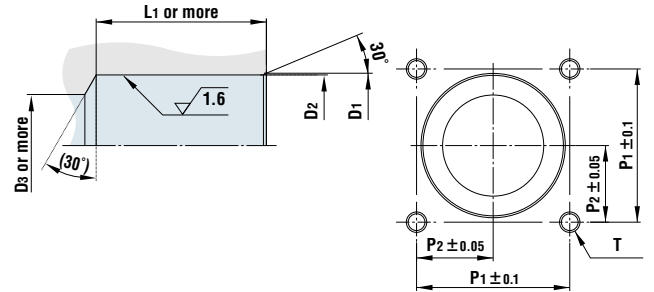
**Dimensions of End Configurations**

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



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

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



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

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

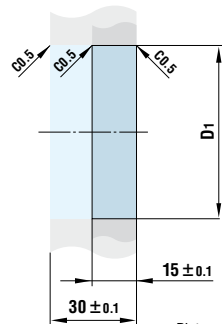


Plate with 15 mm or 30 mm thickness can be mounted.

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

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