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 — 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 minimizes 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 (Nickel plated)		
Model	Thread screw mount	MALC-1HSP	MALC-2 to 8HSP	
	Flange	–	MALC-2 to 8HSP-FL	
Working pressure *	MPa	25.0 (8.0)	21.0 (8.0)	
	kgf/cm²	255 (81)	214 (81)	
	bar	250 (80)	210 (80)	
	PSI	3630 (1160)	3050 (1160)	
Seal 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 Max working pressure of individual plug or socket.

Max. Tightening Torque — N·m {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 — May vary depending upon the usage conditions. (mL)

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 — May vary depending upon the usage conditions. (mL)

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

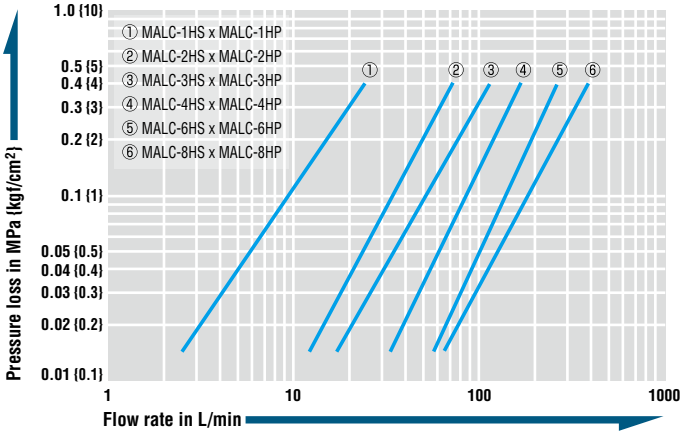
Load Required to Maintain Connection When Line Is Pressurized

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

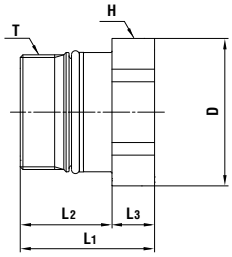
[Test conditions] •Fluid : Hydraulic oil •Temperature : 30°C ± 5°C •Fluid viscosity : 32 × 10^{-6} m^2/s •Density : 0.87 × 10^3 kg/m^3



Models and Dimensions

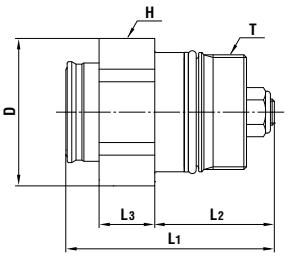
WAF : WAF stands for width across flats.

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



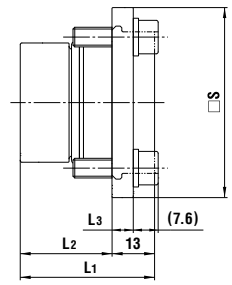
Model	Application	Mass (g)	Dimensions (mm)					
			L1	L2	L3	øD	H(WAF)	T
MALC-1HP	See P121	39	32	(18)	14	21	Hex.19	M16 x 1
MALC-2HP		73	33	(20)	13	28	Hex.26	M20 x 1.5
MALC-3HP		96	33	(20)	13	32	Hex.29	M24 x 1.5
MALC-4HP		250	41	(28)	13	45	Hex.41	M35 x 1.5
MALC-6HP		357	50.5	(37.5)	13	50	Hex.46	M40 x 2
MALC-8HP		391	53	(41)	12	54	Hex.50	M45 x 2

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



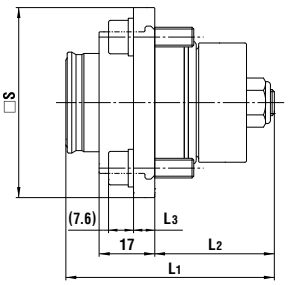
Model	Application	Mass (g)	Dimensions (mm)					
			L1	L2	L3	øD	H(WAF)	T
MALC-1HS	See P121	51	(45)	(23)	16	21	Hex.19	M16 x 1
MALC-2HS		89	(49)	(26)	17	28	Hex.26	M20 x 1.5
MALC-3HS		117	(51)	(26)	17	32	Hex.29	M24 x 1.5
MALC-4HS		290	(64)	(36.5)	17	45	Hex.41	M35 x 1.5
MALC-6HS		447	(78.5)	(47.5)	17	50	Hex.46	M40 x 2
MALC-8HS		579	(86)	(53)	18	54	Hex.50	M45 x 2

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



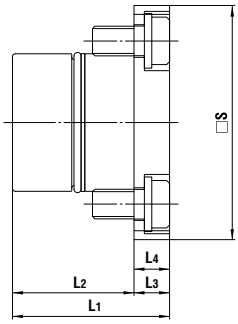
Model	Application	Mass (g)	Dimensions (mm)			
			L1	L2	L3	□S
MALC-2HP-FL	See P121	142	30	(17)	6	40
MALC-3HP-FL		179	33	(20)	6	45
MALC-4HP-FL		367	41	(28)	6.5	58
MALC-6HP-FL		514	50.5	(37.5)	6.5	64

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



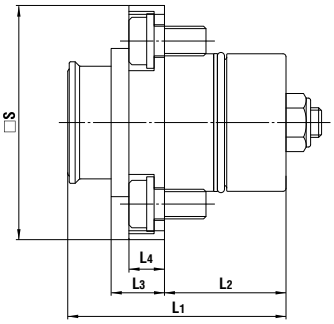
Model	Application	Mass (g)	Dimensions (mm)			
			L1	L2	L3	□S
MALC-2HS-FL	See P121	163	(49)	(26)	6	40
MALC-3HS-FL		200	(51)	(26)	6	45
MALC-4HS-FL		418	(64)	(36.5)	6.5	58
MALC-6HS-FL		611	(78.5)	(47.5)	6.5	64

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



Model	Application	Mass (g)	Dimensions (mm)				
			L1	L2	L3	L4	□S
MALC-8HP-FL	See P121	786	53	(41)	12	12	79

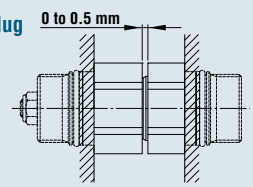
Socket MALC-8HS-FL type (With flange)



Model	Application	Mass (g)	Dimensions (mm)				
			L1	L2	L3	L4	□S
MALC-8HS-FL	See P121	964	(86)	(53)	18	12	79

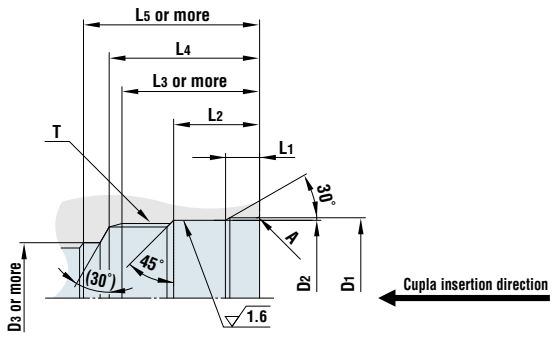
Acceptable distance between Socket and Plug

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



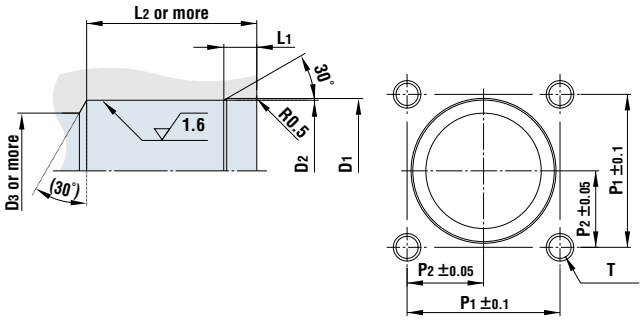
Dimensions of End Configurations

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



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

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			