For Low Pressure

MOLD CUPLA

General purpose and mold coolant port coupling

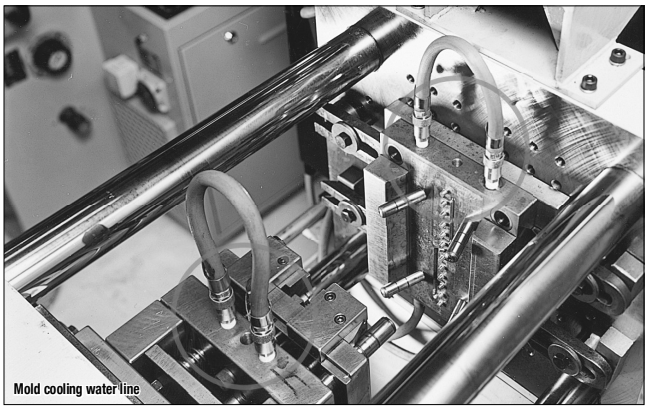
Working pressure: 1.0 MPa {10 kgf/cm²}

Valve structure: One-way shut-off / Straight through

Applicable fluids: Water / Heated oil

Designed for quick replacement for die and mold ! Rust resistant models having many variations.

- **Space saving design for molds with closely spaced coolant ports.**
- **Long sleeve socket facilitates connection/disconnection with plug embedded in mold.**
- **Enables quick mold cooling water line connection/disconnection.**
- **Various sizes and end configurations to suit a wide variety of mold applications.**
- **Can be connected with SUPER CUPLA, excluding K3 and K4 types.**
- **Push-to-connect design. (Built-in automatic shut-off valve in the socket) Also available is CUPLA without valve (Please specify in ordering).**
- **CUPLA for braided hose connection requires no hose clamp. (Model K-90SN)**


Mold cooling water line

Specifications

Body material		Brass			
Size	Thread	1/8", 1/4", 3/8"			
	Hose barb	Hose: 1/4", 3/8" / Braided hose: ø9 mm x ø15 mm			
Pressure unit		MPa	kgf/cm²	bar	PSI
Working pressure		1.0	10	10	145
Seal material Working temperature range		Seal material	Mark	Working temperature range	Remarks
		Nitrile rubber	NBR (SG)	-20˚C to +80˚C	Standard material
		Fluoro rubber	FKM (X-100)	-20˚C to +180˚C	Available on request

Maximum working pressure and working temperature range of CUPLA for braided hoses depend upon the specifications of braided hoses to be used.

Maximum Tightening Torque — Nm {kg •cm}

Size (Thread)	1/8"	1/4"	3/8"
Torque	5 {51}	9 {92}	11 {112}

Tighten the nut until it is flush against the hose barb base after pushing a braided hose to the end.

Flow Direction

Fluid flow can be bi-directional when socket and plug are connected.

Interchangeability

Sockets and plugs can be connected regardless of end configurations and sizes. K-0 series are not interchangeable with high flow type K3 and K4 series. Can be connected with SUPER CUPLA.

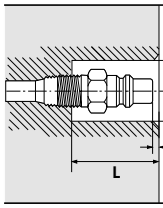
Minimum Cross-Sectional Area — (mm²)

Plug \ Socket	K-02SH	K-02TSH	K-03SH	K-03TSH	K-02SM	K-02TSM	K-03SM	K-03TSM	K-02SF	K-02TSF	K-02SHL	K-03SHL	K-03TSHL	K-90SN
K-02PH	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
K-03PH	19	19	28	28	28	28	28	28	28	28	15.5	28	28	28
K-01PM	19	19	23	23	23	23	23	23	23	23	15.5	23	23	23
K-01PM-HH	19	19	23	23	23	23	23	23	23	23	15.5	23	23	23
K-02PM	19	19	28	28	28	28	28	28	28	28	15.5	28	28	28
K-02PM-HH	19	19	23	23	23	23	23	23	23	23	15.5	23	23	23
K-03PM	19	19	28	28	28	28	28	28	28	28	15.5	28	28	28
K-01PF	19	19	28	28	28	28	28	28	28	28	15.5	28	28	28
K-02PF	19	19	28	28	28	28	28	28	28	28	15.5	28	28	28
K-03PF	19	19	28	28	28	28	28	28	28	28	15.5	28	28	28
K-01PML	19	19	19	19	19	19	19	19	19	19	15.5	19	19	19
K-02PML	19	19	28	28	28	28	28	28	28	28	15.5	28	28	28
K-03PML	19	19	28	28	28	28	28	28	28	28	15.5	28	28	28

Suitability for Vacuum

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

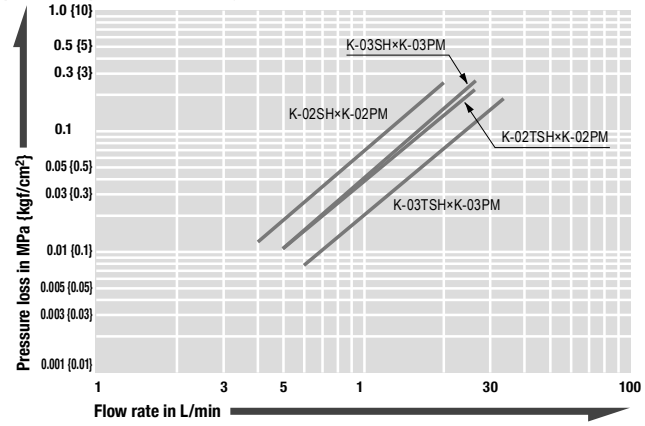
Plug Embedment Dimensions — (mm)



Model	D*	C*	L	Remarks
K-01PM	20 or more	0 to 3	28	* Socket interference prevents connection/disconnection when C exceeds 3 mm. * Size D should be bigger than the outer diameter of the socket wrench to be used. (See JISB4636-1, JISB4636-2)
K-01PM-HH	20 or more	0 to 3	24	
K-02PM	20 or more	0 to 3	29	
K-02PM-HH	20 or more	0 to 3	24	
K-03PM	20 or more	0 to 3	30	

Flow Rate – Pressure Loss Characteristics

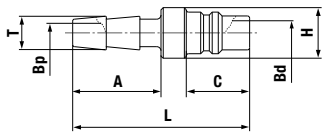
[Test conditions] •Fluid : Water •Temperature : 25˚C±5˚C



Models and Dimensions

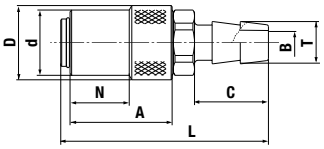
WAF : WAF stands for width across flats.

Plug PH type (Hose barb)



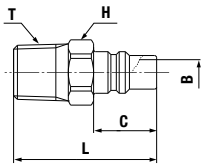
Model	Application (Hose)	Mass (g)	Dimensions (mm)						
			L	A	C	øH	øT	øBp	øBd
K-02PH	1/4"	17	42	21	15	12	8	4.5	6
K-03PH	3/8"	19	42	21	15	15	12	7	6

Socket SH type (Hose barb)



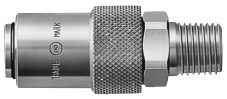
Model	Application (Hose)	Mass (g)	Dimensions (mm)							
			L	øD	ød	N	A	C	øT	øB
K-02SH	1/4	52	(67)	(21)	18.5	16.8	29	29	8	5
K-02TSH *1	1/4	52	(67)	(21)	18.5	16.8	29	29	8	5
K-03SH	3/8	60	(59)	(21)	18.5	16.8	29	21	12	7
K-03TSH *1	3/8	60	(59)	(21)	18.5	16.8	29	21	12	7

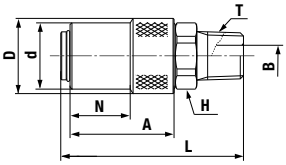
Plug PM type (Male thread)



Model	Application (Thread)	Mass (g)	Dimensions (mm)				
			L	H(WAF)	C	T	øB
K-01PM	Rc 1/8	14	31	Hex.12	15	R 1/8	5.5
K-02PM	Rc 1/4	20	34	Hex.14	15	R 1/4	6
K-03PM	Rc 3/8	35	35	Hex.17	15	R 3/8	6

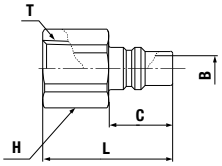
Socket SM type (Male thread)





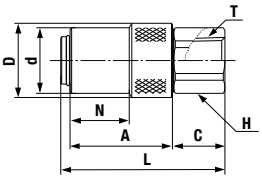
Model	Application (Thread)	Mass (g)	Dimensions (mm)							
			L	øD	ød	N	A	H(WAF)	T	øB
K-02SM	Rc 1/4	70	(51)	(21)	18.5	16.8	29	Hex.17	R 1/4	6
K-02TSM *1	Rc 1/4	70	(51)	(21)	18.5	16.8	29	Hex.17	R 1/4	6
K-03SM	Rc 3/8	82	(52)	(21)	18.5	16.8	29	Hex.19	R 3/8	6
K-03TSM *1	Rc 3/8	82	(52)	(21)	18.5	16.8	29	Hex.19	R 3/8	6

Plug PF type (Female thread)



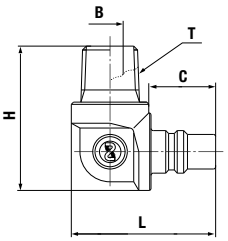
Model	Application (Thread)	Mass (g)	Dimensions (mm)				
			L	H(WAF)	C	T	øB
K-01PF	R 1/8	16	28	Hex.14	15	Rc 1/8	6
K-02PF	R 1/4	22	30.5	Hex.17	15	Rc 1/4	6
K-03PF	R 3/8	35	32	Hex.21	15	Rc 3/8	6

Socket SF type (Female thread)



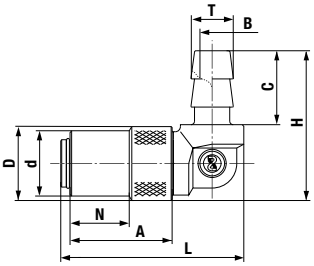
Model	Application (Thread)	Mass (g)	Dimensions (mm)							
			L	øD	ød	N	A	C	T	H(WAF)
K-02SF	R 1/4	57	(46.5)	(21)	18.5	16.8	29	14.5	Rc 1/4	Hex.17
K-02TSF *1	R 1/4	57	(46.5)	(21)	18.5	16.8	29	14.5	Rc 1/4	Hex.17

Plug PML type (Male thread)



Model	Application (Thread)	Mass (g)	Dimensions (mm)				
			L	C	H	T	øB
K-01PML	Rc 1/8	43	33.5	15	30.5	R 1/8	5
K-02PML	Rc 1/4	53	33.5	15	33.5	R 1/4	6
K-03PML	Rc 3/8	71	33.5	15	33.5	R 3/8	6

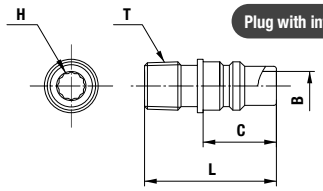
Socket SHL type (Hose barb)



Model	Application (Hose)	Mass (g)	Dimensions (mm)								
			L	øD	ød	N	A	C	øT	H	øB
K-02SHL	1/4	79	(52)	(21)	18.5	16.8	29	21	8	(42.5)	4.5
K-03SHL	3/8	87	(52)	(21)	18.5	16.8	29	21	12	(42.5)	7
K-03TSHL *1	3/8	87	(52)	(21)	18.5	16.8	29	21	12	(42.5)	7

***1**: Also available without socket valve (Made-to-order item), identified by product code TS (e.g. K-03SH without valve is K-03TSH). Also available are sockets with sleeve stopper (Made-to-order item).

Plug PM-HH type (Male thread)

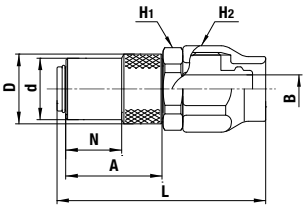


Plug with internal hexagon socket for Allen wrench

• The photo shows model K-01PM-HH.

Model	Application (Thread)	Mass (g)	Dimensions (mm)					
			Outside Diameter	L	H	C	T	øB
K-01PM-HH	Rc 1/8	9	ø11	27	5	15	R 1/8	6
K-02PM-HH	Rc 1/4	15	(ø13.4)	29	5	15	R 1/4	6

Socket SN type (For braided hose connection)



Model	Application (Hose) (mm)	Hose wall thickness (mm)	Mass (g)	Dimensions (mm)							
				L	øD	ød	N	A	H1(WAF)	H2(WAF)	øB
K-90SN	ø9 x ø15	3±0.3	122	(63)	(21)	18.5	16.8	29	Hex.23	Hex.24	8.5

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 Low Pressure

MOLD CUPLA

High Flow Type

High flow type mold coolant port coupling

Working pressure: 1.0 MPa {10 kgf/cm²}

Valve structure: One-way shut-off, Straight through

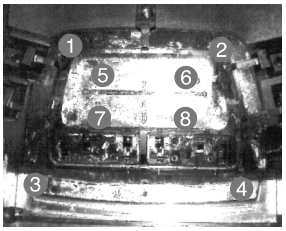
Applicable fluids: Water, Heated oil

Flow rate has doubled to increase productivity.

- **High flow type K3 and K4 series are added to MOLD CUPLA series for mold coolant and heated oil port coupling.**
- **Almost double flow rate compared with our standard K-01, K-02 and K-03 series, increasing productivity.**
- **Space saving design for molds with closely spaced coolant ports.**
- **Long sleeve socket facilitates connection / disconnection with plug embedded in mold.**
- **Enables quick mold coolant hose connection / disconnection.**

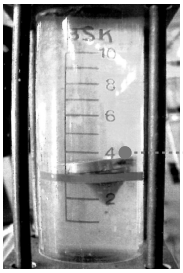
Results of reduced cooling time in the field

A customer replaced conventional K-0 series MOLD CUPLA with the K3 series and shortened the cooling time from 30 seconds to 21 seconds meaning an 18% reduction per shot and increased productivity by 20%. Temperature checks at 8 positions on the mold showed that surface temperatures on average had fallen by 3˚C, providing evidence of the high cooling efficiency.



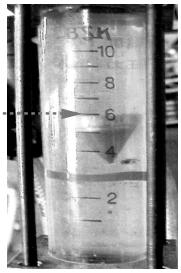
Flow comparison

Coolant water flow rate was checked with a flow meter, which confirmed increase by 1.7 to 1.8 times, when MOLD CUPLA K3 series are used.



Conventional K-0 series MOLD CUPLA were used.

Increased by 1.7 to 1.8 times UP



K3 series are used.

Specifications

Body material		Brass			
Size	Thread	1/4", 3/8", 1/2"			
	Hose barb	3/8", 1/2" hose			
Pressure unit		MPa	kgf/cm²	bar	PSI
Working pressure		1.0	10	10	145
Seal material Working temperature range		Seal material	Mark	Working temperature range	Remarks
		Nitrile rubber	NBR (SG)	-20˚C to +80˚C	Standard material
		Fluoro rubber	FKM (X-100)	-20˚C to +180˚C	Available on request

Maximum Tightening Torque — Nm {kgf•cm}

Size (Thread)	1/4"	3/8"	1/2"
Torque	9 {92}	11 {112}	20 {204}

Flow Direction

Fluid flow can be bi-directional when socket and plug are connected.

Interchangeability

K3 series sockets and plugs can be connected regardless of end configuration and sizes.
K4 series sockets and plugs can be connected regardless of end configuration and sizes.
K3 series and K4 series are not interchangeable with each other.
Also not interchangeable with other K-0 series.

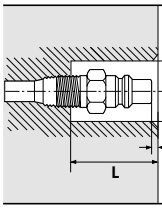
Minimum Cross-Sectional Area — (mm²)

Plug \ Socket	K3-03SH	K3-04SH	K3-03SM	K3-03SF	K4-04SH
K3-03PH	38	38	38	38	–
K3-02PM	38	62.5	62.5	62.5	–
K3-03PM	38	62.5	62.5	62.5	–
K3-03PF	38	62.5	62.5	62.5	–
K4-04PM	–	–	–	–	78.5

Suitability for Vacuum

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

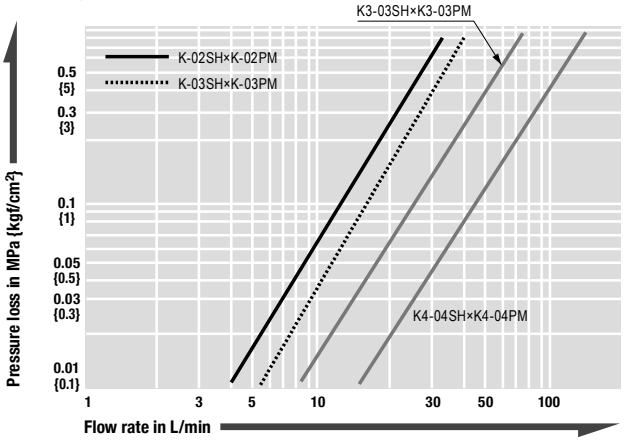
Plug Embedment Dimensions — (mm)



Model	D*	C*	L	Remarks
K3-02PM	24 or more	0 to 3	31	* Socket interference prevents connection/disconnection when C exceeds 3 mm. * Size D should be bigger than the outer diameter of the socket wrench to be used. (See JISB4636-1, JISB4636-2)
K3-03PM	24 or more	0 to 3	31	
K4-04PM	32 or more	0 to 3	39	

Flow Rate – Pressure Loss Characteristics (Comparison with MOLD CUPLA)

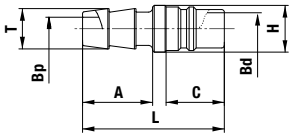
[Test conditions] •Fluid : Water •Temperature : 25˚C±5˚C



Models and Dimensions

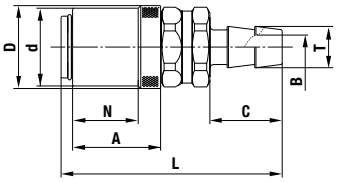
WAF : WAF stands for width across flats.

Plug PH type (Hose barb / High flow type)



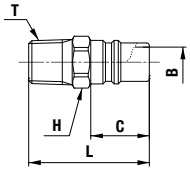
Model	Application (Hose)	Mass (g)	Dimensions (mm)						
			L	A	C	øH	øT	øBp	øBd
K3-03PH	3/8"	19	42.5	21	17.5	14	12	7	9.5

Socket SH type (Hose barb / High flow type)



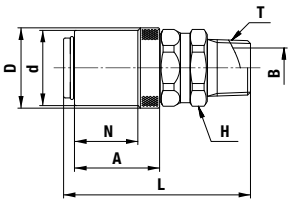
Model	Application (Hose)	Mass (g)	Dimensions (mm)							
			L	øD	ød	N	A	C	øT	øB
K3-03SH	3/8"	100	(65)	(24)	22.5	19	25.5	21	12	7
K3-04SH	1/2"	102	(67)	(24)	22.5	19	25.5	23	15	10
K4-04SH	1/2"	226	(82)	(32)	30	26.5	34	23	15	10

Plug PM type (Male thread / High flow type)



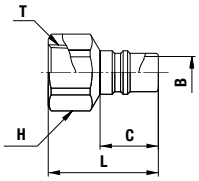
Model	Application (Thread)	Mass (g)	Dimensions (mm)				
			L	C	H(WAF)	øT	øB
K3-02PM	Rc 1/4	16	36	17.5	Hex.14	R 1/4	9
K3-03PM	Rc 3/8	25	36	17.5	Hex.17	R 3/8	9.5
K4-04PM	Rc 1/2	50	46	21.5	Hex.22	R 1/2	13

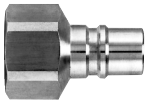
Socket SM type (Male thread / High flow type)



Model	Application (Thread)	Mass (g)	Dimensions (mm)							
			L	øD	ød	N	A	H(WAF)	T	øB
K3-03SM	Rc 3/8	90	(56)	(24)	22.5	19	25.5	Hex.21	R 3/8	12

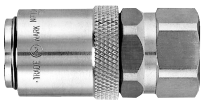
Plug PF type (Female thread / High flow type)

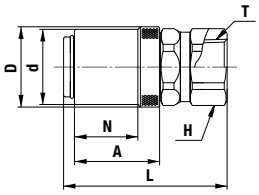




Model	Application (Thread)	Mass (g)	Dimensions (mm)				
			L	H(WAF)	C	T	øB
K3-03PF	R 3/8	30	33	Hex.21	17.5	Rc 3/8	9.5

Socket SF type (Female thread / High flow type)





Model	Application (Thread)	Mass (g)	Dimensions (mm)						
			L	øD	ød	N	A	T	H(WAF)
K3-03SF	R 3/8	87	(49)	(24)	22.5	19	25.5	Rc 3/8	Hex.21

Notes: Also available without socket valve (Made-to-order item), identified by product code TS (e.g. K3-03SH without valve is K3-03TSH). Also available are CUPLA with sleeve stopper (Made-to-order item).

For Low Pressure

FLOW METER

Flow meter with special valve for mold cooling line

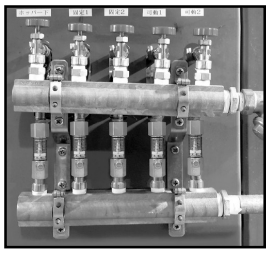
Working pressure: 0.5 MPa {5 kgf/cm²}

Applicable fluids: Water

For stable and accurate coolant flow rate.

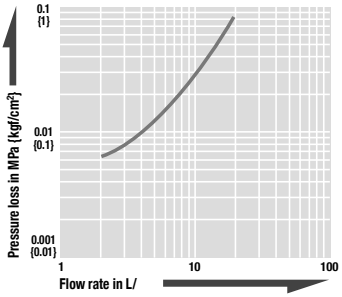
- Graduated scale enables easy visual check of coolant flow rate regardless of operator.
- Built-in flow rate adjustment valve enables desired setting of mold conditions for each machine.
- Easy resumption of previously set molding conditions to cut lead times.
- T2 side is equipped with rotary function. Even after fixing the body on T1 side to the piping, additional screw tightening on T2 side is possible.

Application



Pressure - Flow Characteristics

[Test conditions] • Fluid : Water • Temperature : Room temperature • Valve open level : 100%



Specifications

Body material	Body: Brass Graduated tube: Polycarbonate			
Size (Thread)	Both ends Rc 3/8 female thread			
Pressure unit	MPa	kgf/cm²	bar	PSI
Working pressure	0.5	5	5	72.5
Maximum flow rate	18 L/min (5 to 18 L/min adjustable)			
Seal material / Working temperature range	Seal material	Mark	Working temperature range	Remarks
	Nitrile rubber	NBR (SG)	-20˚C to +60˚C	Standard material

• Use within the temperature range of +10˚C to +60˚C due to plastic float material.

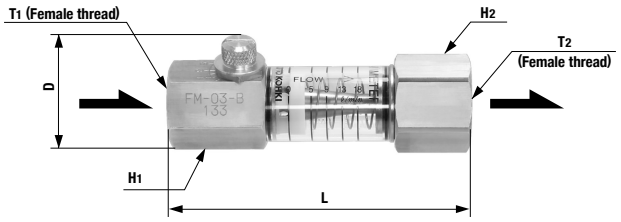
Maximum Tightening Torque

Nm {kg •cm}

Torque	11 {112}

Models and Dimensions / Flow Direction

WAF : WAF stands for width across flats.



Fluid must flow in the direction of the arrows.

Model	Mass (g)	Dimensions (mm)					
		L	D	H1(WAF)	H2(WAF)	T1	T2
FM-03-B	190	(89)	(33)	Hex.23	Hex.26	Rc 3/8	Rc 3/8

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