# Miniature Fittings

Applicable Tubing: ø2 Connection Thread: M3, M5

Made to Order Order (Refer to page 193 for details.)

RoHS

Applicable tubing O.D. x I.D.: Ø2 x Ø1.2 Connection thread: M3 x 0.5 / M5 x 0.8 One-touch fitting size: Ø3.2 / Ø4



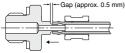
#### **Tubing Connection and Removal**

#### Connection of tubing

- Cut the tubing perpendicularly allowing additional length.
- 2. Insert the tubing into the sleeve.



 Insert the tubing slowly into the fittings. Make sure to secure a gap of approx. 0.5 mm between the tubing end and the barb end.



 Insert the sleeve slowly. Make sure not to allow any gap between the sleeve end side and the body end side. (Please refer to the illustration below.)

If you feel any strong resistance and cannot push the sleeve completely to the end side, this may be caused due to jamming. Remove and repeat again by starting from step 1 making sure to secure a gap in the step 3.

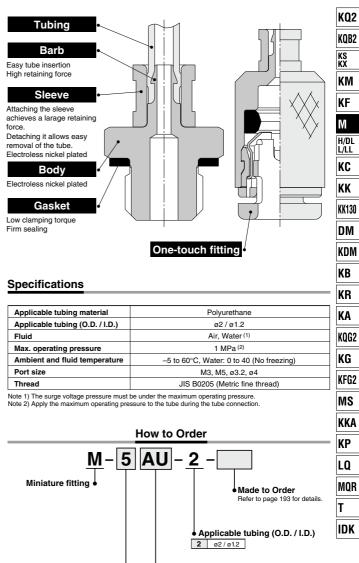
Note) When installing the tubing, the sleeve must be attached. Operation without attaching the sleeve may cause tubing disconnection.

\_\_\_\_+ There should not be any gap.



#### Removal of tubing

- Withdraw the sleeve straight along the tubing. Use a tool such as long-nose pliers if it is difficult to pull out by hand.
- 2. Withdraw the tubing straight.
- When reusing the tubing, cut off the previously installed portion of the tubing to avoid possible leakage and/or disconnection of the tubing.



 3
 M3 x 0.5

 5
 M5 x 0.8

 32
 ø3.2

 04
 ø4

Port size

Model

Barb fitting

Barb elbow

Barb One-touch

Plug-in reducer

M3. M5

M3

M5

ø3.2. ø4

AU

ALU

ALHU

F

R

# M Series

#### Barb Fitting: M-3AU-2, M-5AU-2 Applicable tubing Connection O.D. / I.D. (mm) thread



ø2/ø1.2

Com	component Parts							
No.	Description	Material	Note					
1	Sleeve	C3604	Electroless nickel plated					
2	Barb fitting	C3604	Electroless nickel plated					
3	Gasket	NBR, Stainless steel 304	-					

M3 x 0.5 M-3AU-2

M5 x 0.8 M-5AU-2 7

Model н Α в С D Е F

> 4.5 9 3

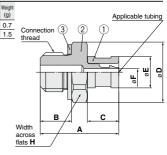
10 4

5

7.7

4

4 0.9



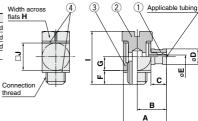
#### Barb Elbow: M-3ALU-2, M-5ALHU-2



,													
Applicable tubing O.D. / I.D. (mm)	Connection thread	Model	н	A	в	с	D	Е	F	G	Т	J	Weight (g)
ø2/ø1.2	M3 x 0.5	M-3ALU-2	5	9	6.5			0.0	2.5	2.5	9.4	5	1.6
	M5 x 0.8	M-5ALHU-2	7	11	7.5	4	4	0.9	3.5	3.5	13.5	7	3.5

#### Component Parts

No.	Description	Material	Note
1	Sleeve	C3604	Electroless nickel plated
2	Stud	C3604	Electroless nickel plated
3	Barb elbow	C3604	Electroless nickel plated
4	Gasket	NBR, Stainless steel 304	_



ő

#### Barb One-touch: M-32F-2, M-04F-2

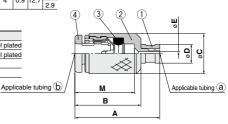
(2 4

	1000
1	Station .
-	8888888
Contra la	100000

Applicable tubing (mm)				-	с		F		Weight
a) (O.D. / I.D.)	(O.D.)	Model	A	в	C	U	E	М	(g)
ø2/ø1.2	ø <b>3.2</b>	M-32F-2	17.7	13.7	7.5			10.7	2.4
02/01.2	ø <b>4</b>	M-04F-2	18	14	8.5	14	0.9	12.7	2.9

#### Component Parts

	p		
No.	Description	Material	Note
1	Sleeve	C3604	Electroless nickel plated
2	Body	C3604	Electroless nickel plated
3	Seal	NBR	_
4	Cassette	POM, Stainless steel 304	_
<u>.</u>	ouoootto		

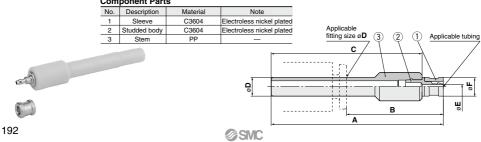


#### Plug-in Reducer: M-32R-2, M-04R-2

Applicable tubing O.D. / I.D. (mm)		Model	A	<b>B</b> <sup>(1)</sup>	<b>B</b> <sup>(2)</sup>	с	Е	F	Weight (g)
ø2/ø1.2	ø <b>3.2</b>	M-32R-2	36	23.3	20.5	31.5	0.9	4	0.7
02101.2	ø <b>4</b>	M-04R-2	36.5	23.8	20.5	32	0.9	4	0.8

Note 1) Dimensions when connected to the M5 and M6 connection threads for KJ series and KQ series. Note 2) Dimensions when connected to KQ series.

#### **Component Parts**



M Series Made to Order Specifications Please contact SMC for detailed dimensions, specifications and lead times.



KQ2

# 1 Gasket Material Modification

Symbol	Specifications				
	Gasket materia	I: Stainless steel 304, FKM			
X226	Applicable thread	Gasket part no.			
	M3	M3G-DPH00489			
	Gasket material: Stainless steel 316, Special FKM				
X112	Applicable thread	Gasket part no.			
	M5	M-5G3			

#### **Spare Parts**

Description	Part no.	Applicable thread	Material
	IN-233-706	M3	Stainless steel 304, NBR
Gasket	M-5G2	M5	Stainless steel 304, NBR
	M-5G3	CIVI	Stainless steel 316, Special FKM
Sleeve	M-5-2-P02	_	C3604 (With electroless nickel plated)

## ▲ Specific Product Precautions

Be sure to read this before handling the products. Refer to back page 50 for Safety Instructions and pages 13 to 17 for Fittings and Tubing Precautions.

#### **∆**Caution

1. Tightening of M3/M5 Threads

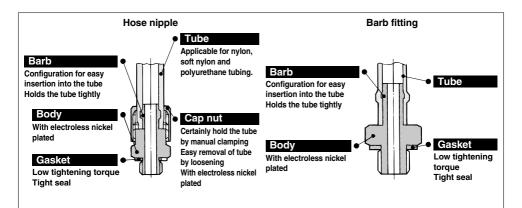
1) Tighten a barb fitting by hand, and give it an additional 1/6 turn with a wrench.

2) Tighten a barb elbow by hand, and give it an additional 1/3 turn with a wrench.

KQB2
KS KX
КМ
KF
Μ
H/DL L/LL
KC
KK
KK130
DM
KDM
KB
KR
KA
KQG2
KG
KFG2
MS
KKA
KP
LQ
MQR
T
IDK

# **Miniature Fittings** M Series

Applicable Tubing: ø3.2, ø4, ø6 Connection Thread: M3, M5, R 1/8



#### Compact piping space

Hose nipple tubing connection/disconnection is simple while keeping a large retaining force.

#### Line up various types

For air connection in confined areas.

#### Accepts many types of plastic tubing

Hose nipple and hose elbow accepts nylon, soft nylon, and polyurethane tubing.





Made to Order (Refer to page 200 for details.)

#### Specifications

Applicable tu	Applicable tubing material		Soft n	ylon <sup>(1)</sup>	Polyurethane	Super PFA (2)	FEP (3)	Modified PTFE (4)
Applicable	M3	—		ø4/ø2.5	ø3.18/ø2 ø4/ø2.5	-	-	—
tubing O.D. / I.D.	M5, R 1⁄8	ø4/ø2.5 ø6/ø4	ø3.18/ø2.18	ø4/ø2.5 ø6/ø4	ø3.18/ø2 ø4/ø2.5 ø6/ø4	ø6/ø4	ø4/ø2.5 ø6/ø4	ø4/ø2.5 ø6/ø4
Fluid		Air, Water <sup>(5)</sup>						
Max. operating p	ressure (at 20°C)	1.5 MPa	1 N	1Pa	0.8 MPa	1 MPa	1.5 MPa	1.4 MPa
Ambient and fluid temperature -5 to 60				to 60°C, Water: 0 to 40°C (No freezing)				
Connection	n size	M3, M5, R 1/8 M5, R 1/8						
Thread	Thread JIS B0205, Class 2 (Metric fine thread) JIS B0203 (Taper thread for piping)							

Note 1) Soft nylon tubing is not compatible with water.

Note 2), Note 3), Note 4) Compatible only with hose nipple type.

Note 5) Barb fitting, barb elbow, barb elbow (H) are not compatible with water.

#### **Principal Parts Material**

Material	Body	C3604BD (Nipple M-3N, M-5N: Stainless steel 303)
Material	Gasket	Nylon 66: GF30%, Stainless steel 304: NBR (PVC for M3)

Fitting Markings for Applicable Tubing Material (Barb fitting, Barb elbow, Barb elbow (H)) Tubing material determines the compatible fittings. (Refer to the table below.)

Connection	Tubing	Fitting mar	king for applicable tubir	ng material
CONNECTION	rubing	Barb fittings	Barb elbow	Barb elbow (H)
МЗ	Soft nylon tubing Polyurethane tubing			
R 1⁄8,	Nylon tubing			
		Marking	Marking	Marking

\* Body of M-5E, M-5ER, M-5M is not surface-treated. Electroless nickle plate treated is available as option -X2.



# Miniature Fittings **M Series**

#### M3, R 1/8 Series

#### M5 Series

ies Model	Description	Appli	cation	Note	Series	Model	Description	Appli	cation	Note	Series	Model	Description	Application	Note	
M-3AU-3	Barb fitting for soft tube	tubing For po		Ø3.18/2.18 x M3 Ø3.18/2 x M3		M-5AN-4	Barb fitting for nylon tubing	For ny tubing		ø4/2.5 x M5		M-5T	tee	Both sides allow 90° connection	M5 female x M5 female x M5 female	
	1 million		ft nylon	x IVI3 Ø4/2.5		M-5AN-6	P.197			ø6/4 x M5			P.198	connection	x ivio iemaie	KC
M-3AU-4	P.196 Barb elbow for	thane	blyure- tubing For soft	x M3 ø3.18/2.18		M-5AU-3	Barb fitting for soft tubing	tubing		ø3.18/2.18 x M5		M-5UL	Universal elbow	Body rotates at 360°	M5 female	KQ
M-3ALU-	soft tubing		nylon tubing	x M3			A P	For po thane		ø3.18/2 x M5 ø4/2.5		W-JOL	P.198	around the stud axis	x M5 male	KS KX
		Body rotates at 360° around the	For poly- urethane tubing	ø3.18/2 x M3		M-5AU-4		and po		x M5 Ø6/4			Universal tee	Body rotates at 360°	M5 female	K
M-3ALU-	1	stud axis	For soft nylon and poly-	ø4/2.5		M-5AU-6	P.197 Barb elbow	thane		x M5 ø4/2.5		M-5UT		around the stud axis	x M5 female x M5 male	K
	P.196 Universal		urethane tubing	x M3		M-5ALN-4	for nylon tubing		ylon rotates )° around	x M5			P.198 Extention fitting	Solid piece		Μ
3 M-3UL	elbow	Body at 360	rotates )°	M3 female		M-5ALN-6	P.197		ud axis	ø6/4 x M5		M-5J		moves fitting up from	M5 male x M5 female	H/ L/I
5 W-50L	P.196	aroun stud a		x M3 male		M-5ALU-3	Barb elbow for soft tubing		For soft nylon tubing	ø3.18/2.18 x M5			P.198 Nipple	workpiece Fitting to		K
	Universal tee		rotates	M3 female			<b>7</b> p	Body rotates at 360°	For poly- urethane tubing	ø3.18/2 x M5 ø4/2.5		M-5N		workpiece and fitting	M5 male x M5 male	K
М-ЗИТ		at 360 aroun stud a	d the	x M3 female x M3 male		M-5ALU-4	37	around the stud axis	For soft nylon and poly- urethane	x M5 Ø6/4			P.198	to fitting connection		KK
	P.196 Nipple	Fitting				M-5ALU-6	P.197 Barb elbow (H)		tubing	x M5 ø4/2.5	M5	M-5UN	Universal nipple	Body rotates at 360°	M5 male x M5 male	D
M-3N	-	workp and fi	iece tting	M3 male x M3 male		M-5ALHN-4	for nylon tubing	rotates at 360°	For nylon tubing	x M5		W-50N	P.198	around the stud axis	PAT.	K
	P.196	to fitti conne		X IIIO IIIUIO	M5	M-5ALHN-6	P.197	around the stud axis		ø6/4 x M5			Bulkhead union	Panel-mount	M5 female	K
	Plug	Use t				M-5ALHU-3	Barb elbow (H) for soft tubing		For soft nylon tubing For poly-	ø3.18/2.18 x M5		M-5E	0-1	connection	x M5 female	K
M-3P	(M)	unuse port	20 1013				F.	Body rotates at 360°	urethane tubing	ø3.18/2 x M5 ø4/2.5			P.198 Bulkhead reducer	Reduction from Rc 1/8 to		K
	P.196					M-5ALHU-4	B	around the stud axis	For soft nylon and polyure- thane	x M5 Ø6/4		M-5ER		M5 including panel or bracket	Rc 1⁄8 x M5 female	KO
ies Model	Description Barb fitting		cation	Note ø4/2.5 x		M-5ALHU-6	P.197 Hose nipple	For ny	tubing	x M5 ø4/2.5			P.199 Manifold	For reducing Rc		K
M-01AN-	for nylon tubing	For ny tubing		R 1/8		M-5H-4		soft ny and	/lon	x M5		м-5м	0	1/8 female be diverted to up to 9, M5 stations,	Rc 1/8 x M5 female	KF
M-01AN-	P.196			ø6/4 x R 1⁄8		M-5H-6	P.197	polyur tubing	ethane	ø6/4 x M5			P.199	including panel or bracket mounting	(9 stations)	M
M-01AU-	Barb fitting for soft tubing	For so		ø4/2.5 x R <sup>1</sup> /8		M-5HL-4	Hose elbow	• For n	ylon, ylon and	ø4/2.5 x M5		M-5B	Bushing	For reducing R 1/8 female	R 1⁄8	K
8 M-01AU-		polyu		ø6/4 x R 1/8		M-5HL-6		polyu tubin	, irethane g	ø6/4 x M5		W-3D	P.199	to M5.	x M5 female	K
M-01H-4	P.196 Hose nipple	For n		ø4/2.5 x		M-5HLH-4	P.198 Hose elbow (H)	Body at 36 arour		ø4/2.5		M-5P	Plug	Use to plug unused M5		
		soft n and p uretha	, oly-	R 1/8 ø6/4 x		-	Y	stud		x M5 ø6/4		W-3P	P.199	port.		M
M-01H-6	P.196	tubing		R 1/8		M-5HLH-6	P.198 Elbow			x M5						Т

P.198

M-5L

l

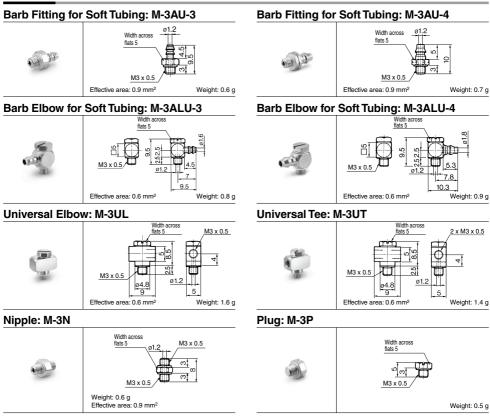
One-sided 90° elbow M5 female

x M5 female

IDK

# M Series

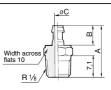
#### M3 Series



#### R 1/8 Series

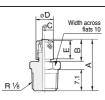
#### Barb Fitting for Nylon Tubing, Soft Tubing: M-01AD-4/-6

	Applicable tubing	Model	A	в	øC	Effective area (mm <sup>2</sup> )	Weight (g)
A Martin	Nylon tubing	M-01AN-4	15.1	5	1.8	2.1	6.4
Varmer	Nyion tubing	M-01AN-6	17.1	7	2.5	4.0	6.6
	Soft tubing	M-01AU-4	15.1	5	1.8	2.1	6.5
	Solt tubing	M-01AU-6	17.1	7	2.5	4.0	6.7



#### Hose Nipple: M-01H-4/-6

	Model	A	в	øC	øD	E	Effective area (mm²)	Weight (g)
. Kum	M-01H-4	18.6	8.5	1.8	6.5	7	2.1	7.1
	M-01H-6	19.6	9.5	3	8.5	8	5.5	7.7





#### M5 Series

#### Barb Fitting for Nylon Tubing: M-5AN-4/-6

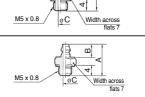
	6
	Ŧ
UNIT .	There

Model	A	в	øC	Effective area (mm²)	Weight (g)	
M-5AN-4	12	5	1.8	2.1	1.6	
M-5AN-6	14	8	2.5	4.0	1.7	

#### Barb Fitting for Soft Tubing: M-5AU-3/-4/-6

	Model	A	в	øC	Effective area (mm²)	Weight (g)
H.	M-5AU-3	11.5	4.5	1.6	1.7	1.5
	M-5AU-4	12	5	1.8	2.1	1.6
	M-5AU-6	14	7	2.5	4.0	1.8

. |



11.5 4

ŝ

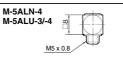
ŝ

#### Barb Elbow for Nylon Tubing: M-5ALN-4/-6 Barb Elbow for Soft Tubing: M-5ALU-3/-4/-6 Madal



A	Р	L L	ØD	(mm²)	(g)
13	9	5	1.8	1.4	4.0
15	11	7	2.5	2.4	4.4
13	9	4.5	1.6	1.1	4.0
13.5	9.5	5	1.8	1.4	4.1
15.5	11.5	7	2.5	2.4	4.5
	13 15 13 13.5	13         9           15         11           13         9           13.5         9.5	13         9         5           15         11         7           13         9         4.5           13.5         9.5         5	13         9         5         1.8           15         11         7         2.5           13         9         4.5         1.6           13.5         9.5         5         1.8	13         9         5         1.8         1.4           15         11         7         2.5         2.4           13         9         4.5         1.6         1.1           13.5         9.5         5         1.8         1.4

Effective area Weight



M-5ALN-6 M-5ALU-6



## H/DL L/LL KC KK KK130 DM 밍 KDM KB KR KA KQG2 KG KFG2

MS

KKA

KP

LO

MQR

т IDK

KQ2 KQB2

KS KX

KM

KF

Μ

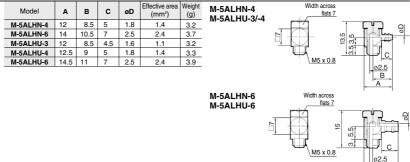
B

ø2.5

В

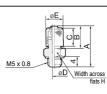
ø2.5 B

#### Barb Elbow for Nylon Tubing: M-5ALHN-4/-6 Barb Elbow for Soft Tubing: M-5ALHU-3/-4/-6



#### Hose Nipple: M-5H-4/-6

	Model	A	в	с	øD	øE	н	Effective area (mm²)	Weight (g)
012	M-5H-4	15.5	8.5	7	1.8	6.5	7	2.1	2.7
	M-5H-6	16.5	9.5	8	2.5	8.5	8	4.0	3.9



R

# M Series

#### M5 Series

#### Hose Elbow: M-5HL-4/-6

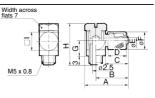
18		5.	1.12	
	Y			
			1000	

Model	A	в	с	D	øE	øF	Effective area (mm²)	Weight (g)
M-5HL-4	16.5	12.5	8.5	7	1.8	6.5	1.4	4.4
M-5HL-6	17.5	13.5	9.5	8	2.5	8.5	2.4	5.2
	· · · · · ·							

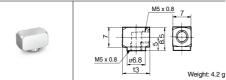


#### Hose Elbow: M-5HLH-4/-6

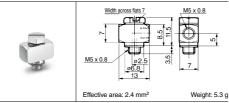
	Model	A	в	с	D	øE	øF	G	н	٦I	Effective area (mm²)	Weight (g)
8	M-5HLH-4	15.5	12	8.5	7	1.8	6.5	5.5	15	7	1.4	4.5
	M-5HLH-6	17.5	13.5	9.5	8	2.5	8.5	6	16	8	2.4	6.6



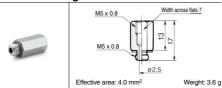
#### Elbow: M-5L



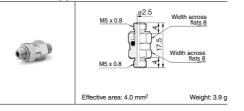
#### Universal Elbow: M-5UL



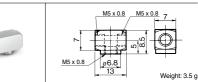
#### **Extension Fitting: M-5J**



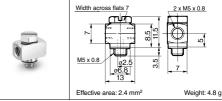
#### **Universal Nipple: M-5UN**



#### Tee: M-5T



#### **Universal Tee: M-5UT**



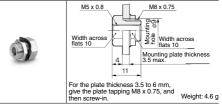
#### Nipple: M-5N



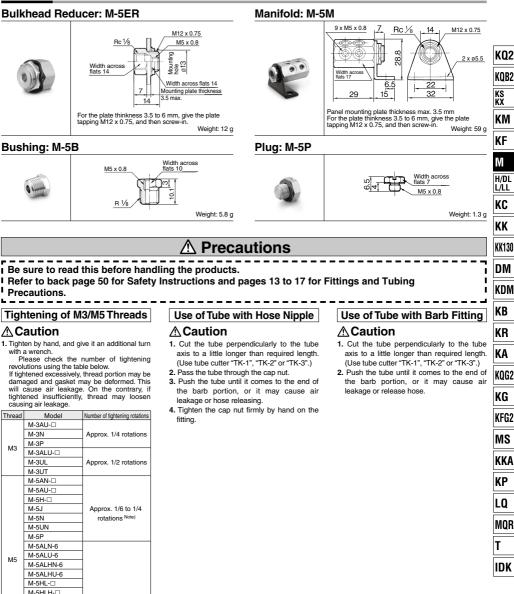
Width across flats 7 M5 x 0.8 ø2.5 M5 x 0.8 Effective area: 4.0 mm<sup>2</sup>

Weight: 1.5 g

#### Bulkhead Union: M-5E



#### M5 Series



Note) As a guideline, the tightening torque should be 1 to 1.5 N·m.

M-5ALN-4 M-5ALU-3,4 M-5ALHN-4 M-5ALHU-3,4 M-5UL M-5UL Approx. 1/2 rotations Note

M Series Made to Order Specifications Please contact SMC for detailed dimensions, specifications and lead times.

Order

# 1 Gasket Material Modification

Symbol	Specifications		
X83	Gasket material: Stainless steel 304, NBR		
	Applicable thread	Gasket part no.	
	M3	M-3G2	
	M5 Note)	M-5G2	
X226	Gasket material: Stainless steel 304, FKM		
	Applicable thread	Gasket part no.	
	M3	M3G-DPH00489	
X112	Gasket material: Stainless steel 316, Special FKM		
	Applicable thread	Gasket part no.	
	M5	M-5G3	

Note) Compatible with only models using M-5GH.

#### **Spare Parts**

Description	Part no.	Applicable thread	Material	Applicable model
Gasket	M-3G	M3	PVC	-
	M-3G2	IVIS	Stainless steel 304, NBR	-
	M-5G1		PVC	-
	M-5G2		Stainless steel 304, NBR	_
	M-5G3	M5	Stainless steel 316, Special FKM	-
	M-5GH		Nylon 66, GF30%	M-5AL□-6, M-5ALH□-6
	M-5GH			M-5HL-4, 6, M-5HLH4, 6
	M-6G	M6	Stainless steel 304. NBR	For KQ2 M6 thread
	M-10/32G	10-32 UNF	Stamless steel 304, NBR	KQ2 Series, 10-32 UNF
Cap nut -	M-5-4-P01	—	C3604	M-01H-4, M-5H-4
			(With electroless nickel plated)	M-5HL-4, M-5HLH-4
	M-5-6-P01	_	C3604	M-01H-6, M-5H-6
			(With electroless nickel plated)	M-5HL-6, M-5HLH-6