TECHNICAL GUIDANCE

COMPACT AND USER FRIENDLY

MX series

METAL TUBE ROTAMETERS

OUTLINE

MX is a series of metal tube variable area flowmeters. Thanks to standardized specification and scale range arrangement, very competitive price is offered. All required versions of local indicator, alarm contact as well as electric output are available to meet wide applications.

STANDARD SPECIFICATION

Function and types

MODEL	FUNCTION
MX-400	Local Indication only
MX-71☐	Local Indication + Alarm contact output
MX-52☐	Local Indication + Analog output

Available sizes : 15, 20, 25, 40, 50, 65, 80 and 100mm
Measuring object : Liquids and Gases
Op. Press. : Max. 34kg/cm²G (3.33MPa)
Op. Temp. : Max. 120˚C
(To be within the flange limitation)
Process conn. : Flange connection
JIS 10K, 20K, ANSI#150, #300
Thread Conection (Upto 50mm, 2")
Rc thread, NPT thread, others
Flow direction : Bottom → Top

Standard material construction

Part name	Material 1	Material 2	Material 3
Flange	Carbon Steel	316SS	316LSS
Tapered tube	316SS	316SS	316LSS
Float	316SS	316SS	316LSS

Flow rate indication : By pointer and scale plate
Indication accuracy : ±1.5% (of Full Scale)
Range ability : 10:1

Output

Model	Output
MX-400	No output provided, indication only
MX-710	One point alarm, weather proof
MX-71S	One point alarm, intrinsically safe *1
MX-52E	Anlog output, pressure tight Ex-proof *2

*1: Recommended safety relay IBRC601 ☐ R, JIS i3aG5 class intrinsically safe
*2: Ex d IIC T6, Type approve No. C11791 (TIIS Japan)

MODEL CODE

MX-										Description
Function	4	0	0							Local indication only
	7	1	0							Local indication + 1 point alarm (Weather proof)
	7	1	S							Local indication + 1 point alarm (Intrinsically safe)
	5	2	E							Local indication + Analog output (Ex-d)
Meter size				0	1	5				15mm (1/2")
				0	2	0				20mm (3/4")
				0	2	5				25mm (1")
				0	4	0				40mm (1-1/2")
				0	5	0				50mm (2")
				0	6	5				65mm (2-1/2")
				0	8	0				80mm (3")
				1	0	0				100mm (4")
Scale range							L	1		Liquid standard range 1
							L	2		Liquid standard range 2
							L	3		Liquid standard range 3
							L	9		Liquid custom made range
							G	1		Gas standard range 1
							G	2		Gas standard range 2
							G	3		Gas standard range 3
							G	9		Gas custom made range
Material									1	Material class 1
									2	Material class 2
									3	Material class 3
									9	Other
Connection										JIS 10K flange
										JIS 20K flange
										ANSI#150 flange
										ANSI#300 flange
										Rc thread (Upto 50mm)
										NPT thread (Upto 50mm)

STANDARD RANGE PRODUCTS

1) FOR LIQUID MEASUREMENT

MODEL CODE	MODEL CODE mm(inch)	SCALE RANGE
MX-□□□-015-L1	15 (1/2)	0.02~0.2 m³/h
MX-□□□-015-L2		0.05~0.5 m³/h
MX-□□□-015-L3		0.1~1.0 m³/h
MX-□□□-020-L1	20 (3/4)	0.05~0.5 m³/h
MX-□□□-020-L2		0.1~1.0 m³/h
MX-□□□-020-L3		0.2~2 m³/h
MX-□□□-025-L1	25 (1)	0.15~1.5 m³/h
MX-□□□-025-L2		0.2~2.0 m³/h
MX-□□□-025-L3		0.3~3.0 m³/h
MX-□□□-040-L1	40 (1-1/2)	0.4~4.0 m³/h
MX-□□□-040-L2		0.5~5.0 m³/h
MX-□□□-040-L3		0.8~8.0 m³/h
MX-□□□-050-L1	50 (2)	0.5~5.0 m³/h
MX-□□□-050-L2		1~10 m³/h
MX-□□□-050-L3		1.5~15 m³/h
MX-□□□-065-L1	65 (2-1/2)	1.5~15 m³/h
MX-□□□-065-L2		2~20 m³/h
MX-□□□-065-L3		2.5~25 m³/h
MX-□□□-080-L1	80 (3)	2~20 m³/h
MX-□□□-080-L2		3~30 m³/h
MX-□□□-080-L3		4~40 m³/h
MX-□□□-100-L1	100 (4)	5~50 m³/h
MX-□□□-100-L2		6~60 m³/h
MX-□□□-100-L3		8~80 m³/h

Above table is applicable for measurement of water (Sp. Gr. 1.0, Viscosity 1.0 cP). In case the operating condition is different from above, a compensation calculation is required.

2) FOR GASES MEASUREMENT

MODEL CODE	MODEL CODE mm(inch)	SCALE RANGE
MX-□□□-015-G1	15 (1/2)	0.5~5 Nm³/h
MX-□□□-015-G2		1~10 Nm³/h
MX-□□□-015-G3		2~20 Nm³/h
MX-□□□-020-G1	20 (3/4)	1.5~15 Nm³/h
MX-□□□-020-G2		3~30 Nm³/h
MX-□□□-020-G3		5~50 Nm³/h
MX- □□□-025-G1	25 (1)	3~30 Nm³/h
MX-□□□-025-G2		5~50 Nm³/h
MX-□□□-025-G3		6~60 Nm³/h
MX-□□□-040-G1	40 (1-1/2)	8~80 Nm³/h
MX-□□□-040-G2		12~120Nm³/h
MX-□□□-040-G3		15~150Nm³/h
MX-□□□-050-G1	50 (2)	10~100Nm³/h
MX-□□□-050-G2		20~200Nm³/h
MX-□□□-050-G3		30~300Nm³/h
MX-□□□-065-G1	65 (2-1/2)	45~450Nm³/h
MX-□□□-065-G2		60~600Nm³/h
MX-□□□-065-G3		75~750Nm³/h
MX-□□□-080-G1	80 (3)	40~400Nm³/h
MX-□□□-080-G2		60~600Nm³/h
MX-□□□-080-G3		80~800Nm³/h
MX-□□□-100-G1	100 (4)	100~1000Nm³/h
MX-□□□-100-G2		120~1200Nm³/h
MX-□□□-100-G3		150~1500Nm³/h

Above table is applicable for measurement of air at 0˚C, 1 atm. In case the operating condition is different from above, a compensation calculation is required.

POSSIBLE SCALE RANGE FOR ORDER MADE PRODUCTS

1) FOR LIQUID MEASUREMENT

MODEL CODE	MAX. VISCOSITY (cP)	SIZE mm(inch)	POSSIBLE SCALE RANGE(m³/h)
MX-□□□-015-L9	30	15 (1/2)	Min. 0.01~0.1 Max.0.15~1.5
MX-□□□-020-L9	40	20 (3/4)	Min. 0.05~0.5 Max. 0.2~2
MX-□□□-025-L9	50	25 (1)	Min. 0.1~1.0 Max.0.4~4
MX-□□□-040-L9	80	40 (1-1/2)	Min. 0.3~3 Max. 1~10
MX-□□□-050-L9	100	50 (2)	Min. 0.3~3 Max.2~20
MX-□□□-065-L9	120	65 (2-1/2)	Min. 1.5~15 Max.2.5~25
MX-□□□-080-L9	150	80 (3)	Min.1.5~15 Max.4~40
MX-□□□-100-L9	200	100 (4)	Min.3~30 Max.8~80

Above table is applicable for measurement of water (Sp. Gr. 1.0, Viscosity 1.0 cP). In case the operating condition is different from above, conduct compensation calculation by the following formula and confirm that the required scale range is within the table range for your selected size.

$$Qw = Qa \times \sqrt{(\gamma \times 6.3) \div (7.3 - \gamma)}$$

Qw : Water converted flow rate
Qa : Flow rate of liquid to be measured
γ : Density of liquid to be measured

2) FOR GASES MEASUREMENT

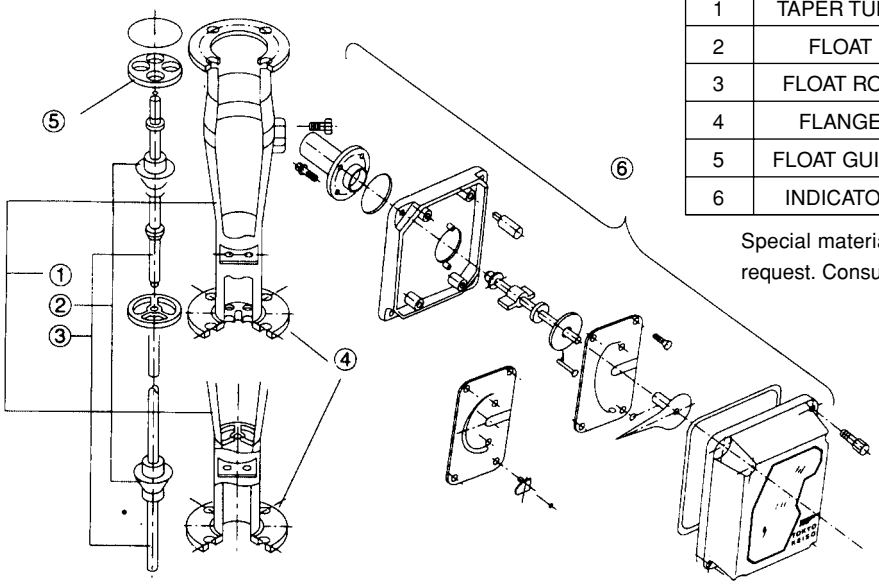
MODEL CODE	SIZE mm (inch)	POSSIBLE SCALE RANGE (Nm³/h)
MX-□□□-015-G9	15 (1/2)	Min. 0.3 ~ 3 Max. 3 ~ 30
MX-□□□-020-G9	20 (3/4)	Min. 1.5 ~ 15 Max. 6 ~ 60
MX-□□□-025-G9	25 (1)	Min. 3 ~ 30 Max. 10 ~ 100
MX-□□□-040-G9	40 (1-1/2)	Min. 6 ~ 60 Max. 20 ~ 200
MX-□□□-050-G9	50 (2)	Min. 10 ~ 100 Max. 45 ~ 450
MX-□□□-065-G9	65(2-1/2)	Min. 45 ~ 450 Max. 75 ~ 750
MX-□□□-080-G9	80 (3)	Min. 45 ~ 450 Max. 100 ~ 1000
MX-□□□-100-G9	100 (4)	Min. 100 ~ 1000 Max. 150 ~ 1500

Above table is applicable for measurement of air at 0˚C, 1 atm. In case the operating condition is different from above, conduct compensation calculation by the following formula and confirm that the required scale is within the table range for your selected size.

$$QA = QG \times \sqrt{\gamma / 1.293} \times \sqrt{1.033 / (1.033 + p)} \times \sqrt{(273 + t) / 273}$$

QA : Air converted flow rate
QG : Flow rate of Gas to be measured
γ : Density of Gas to be measured (kg/Nm³)
p : Operating pressure (kg/cm²G)
t : Operating temperature (˚C)

MATERIAL



No.	DESCRIPTION	MATERIAL CLASS		
		1	2	3
1	TAPER TUBE	316SS	316SS	316LSS
2	FLOAT	316SS	316SS	316LSS
3	FLOAT ROD	316SS	316SS	316LSS
4	FLANGE	Carbon Steel	316SS	316LSS
5	FLOAT GUIDE	316SS	316SS	316LSS
6	INDICATOR	ADC12	ADC12	ADC12

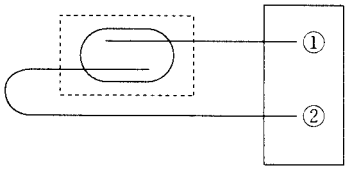
Special material, i.e. Hastelloy C, Titanium, Tantalum, etc, on request. Consult factory for details

ELECTRIC CONNECTIONS

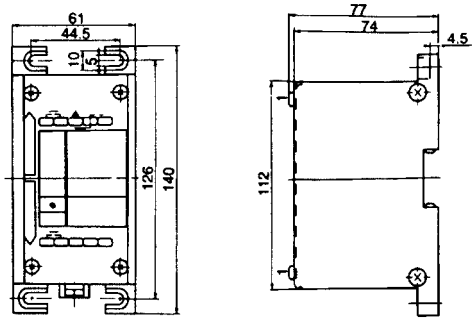
Alarm contact output type (MX-71□)

Cable entry Water tight cable gland
(Acceptable cable diameter 4.5 ~ 6.5mm)
Terminal screw M3.5
Recommended safety relay for Intrinsically safe use
IBRC601□R (Izumi Electric Co.)

Terminal arrangement



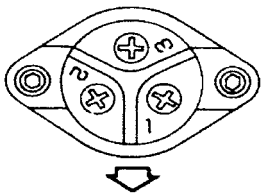
Dimension of Recommended Safety Relay



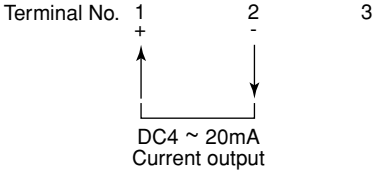
Analog output type (MX-52E)

Cable entry G 1/2 thread
Use specified flame proof cable
type SXBM-16B (for cable dia. 8 ~ 10mm)
Terminal screw M3.5

Terminal arrangement

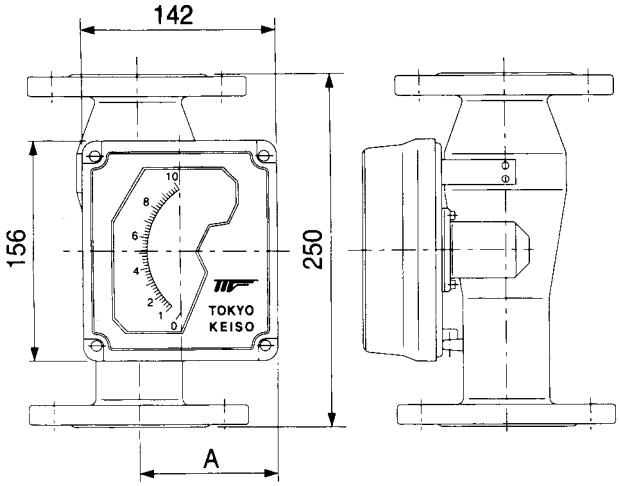


Cable Entry



DIMENSION, WEIGHT

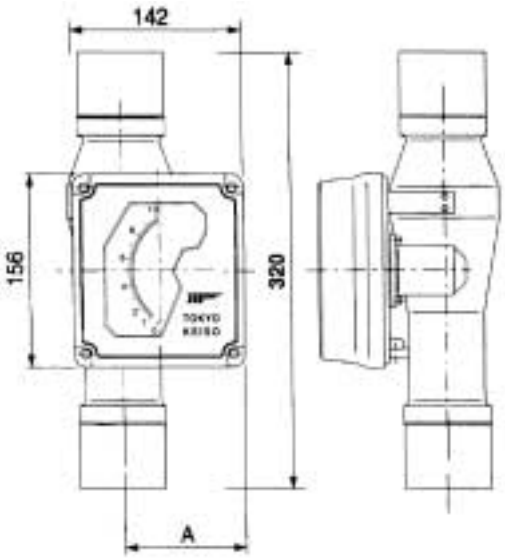
• FRONT VIEW • SIDE VIEW



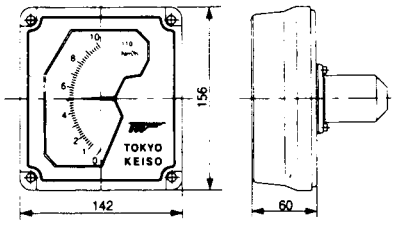
MX-400 LOCAL INDICATOR

SIZE mm (inch)	A (mm)	WEIGHT (kg)	
		Flanges	Thread
15(1/2)	90	5	4
20(3/4)	90	5.5	4.5
25(1)	90	6	5
40(1-1/2)	100	8	6
50(2)	105	10	8
65(2-1/2)	120	13	-
80(3/4)	125	15	-
100(4)	140	20	-

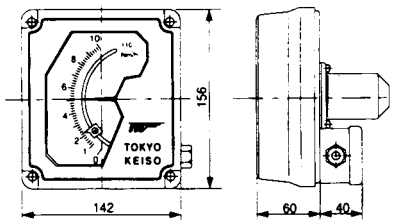
• FRONT VIEW • SIDE VIEW



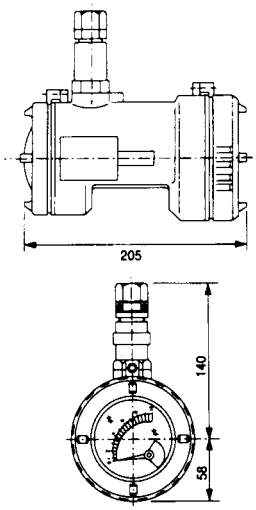
• INDICATOR, TRANSMITTER



MX-400 LOCAL INDICATOR



MX-71 □ ALARM TRANSMITTER



MX-52E ELECTRIC TRANSMITTER

* Specification subject to change without notice

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