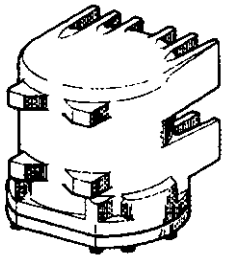
PENBERTHY®

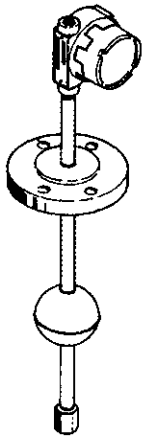
Section	4000
Application Form	4770
Issued	7/99
Replaces	2/99

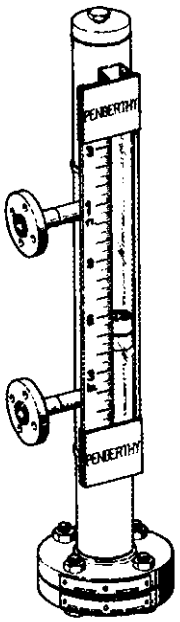
Ordering Information

for

MULTIVIEW™ Magnetic Liquid Level Gages







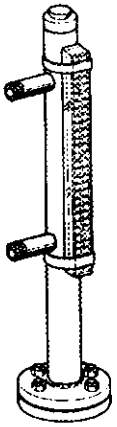


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Table of Contents

Utilizing the matrices enclosed within the following pages will allow you to develop PIN numbers for ordering either a complete MULTIVIEW™ Magnetic Liquid Level Gages or primary components.

Ordering a complete magnetic gage will require a minimum of three separate PIN numbers; the standpipe, the indicator and the float.

Using the following specifications we will demonstrate what final component PIN numbers will look like and how they are developed.

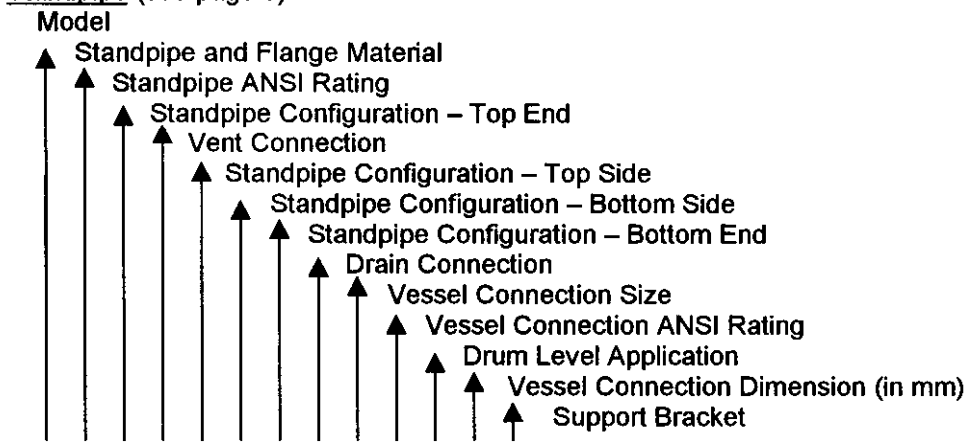
Example

Your customer has specified the following conditions to you.

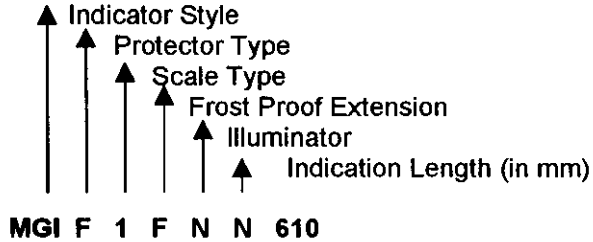
They require a magnetic gage with a C-C dimension of 24".
The requested standpipe material is Sch 40 316 STS.
The design rating for the unit is 500 psig @ 150°F.
The specific gravity at the normal operating temperature is 0.78.
The vessel connections need to be 1-1/2" 300# RF flanges.
The indicator should be flag style with a scale in feet / inches.
Vent and drain connections of 1" 300# RF flanges are required.

Based upon this information you would need to order the following PIN numbers.

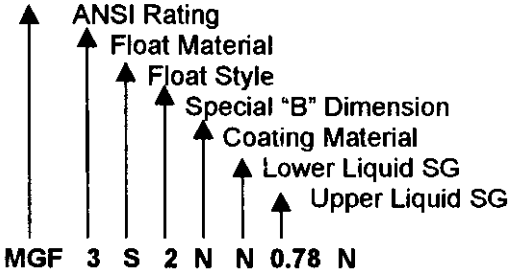
Standpipe (see page 3)



Indicator (see page 6)



Float (see page 7)



These three PIN numbers are required to provide a fully functional magnetic gage for the application conditions. If additional accessories such as transmitters or switches are required, they are ordered under separate model numbers.

Distributor: _____

Customer Name: _____

Process Liquid: _____ **Qty:** _____
Viscosity: _____(cp) **Tag No(s):** _____

	Minimum	Operating	Maximum
Pressure **	_____	_____	_____ **psig / kPa g** (circle one)
Temperature **	_____	_____	_____ **°F / °C** (circle one)
Specific Gravity	_____	_____	_____

MULTIVIEW Standpipe Matrix

Model	Code	Standpipe and Flange Material
MGP	S	316/316L STS
	F	304/304L STS
	M	Monel
	A	Alloy-20
	H	Hastelloy-C
	I	Inconel 625
	P	PVC
	C	CPVC
	K	PVDF
	T	Halar™ Lined 304/304L STS (15 mil)
	U	Halar™ Lined 316/316L STS (15 mil)
	V	Tefzel™ Lined 304/304L STS (15 mil)
	W	Tefzel™ Lined 316/316L STS (15 mil)
	X	Special

Standard Gasket Material for all Metallic Units is Graphite Ribbon with a 316 STS Insert

Standard Gasket Material for Polymer Units is PTFE

To Specifiy Special Gasket Material See Page 12

Code	Standpipe ANSI Rating
1	150# (Schedule 10)
2	150# (Schedule 40)
3	300# (Schedule 10)
4	300# (Schedule 40)
6	600# (Schedule 40)
9	900# (Schedule 40)
X	Special

Code	Standpipe Configuration - Top End
	See Table #1
X	Special

Code	Vent Connection
	See Table #3
N	None
X	Special

Code	Standpipe Configuration - Top Side
	See Table #2
N	None
X	Special

Code	Standpipe Configuration - Bottom Side
	See Table #2
N	None
X	Special

Code	Standpipe Configuration - Bottom End
	See Table #1
X	Special

Code	Drain Connection
	See Table #3
N	None
X	Special

Code	Vessel Connection Size
	See Table #3
X	Special

Code	Vessel Connection ANSI Rating
1	150#
3	300#
6	600#
9	900#
X	Special

Code	Drum Level Application
N	No
Y	Yes

Code	*Vessel Connection Dimension (in mm)
	To the nearest even whole number (0000)

Code	Support Bracket
	Quantity
N	None

See Accessories Page for Details

MGP

*** The specified vessel connection distance will determine the available indication length**
**** Include the design pressure / temperature rating with the model number. If no rating provided, the standard pressure rating @ 100° F for the requested Standpipe ANSI Rating will be used.**

Table #1 (Top End and / or Bottom End Configuration)	
Code	**Description**
A	Welded End Cap with NPT-F vent/drain and plug **(Default Top End Connection)**
B	Welded End Cap and NPT-F connection
C	Welded End Cap and female socket weld connection
D	Welded End Cap, socket weld nipple and weldneck flange
E	Welded End Cap, socket weld nipple and NPT-M connection
F	Welded End Cap, socket weld nipple and male socket weld connection
1	ASME End Cap with NPT-F vent/drain and plug
2	ASME End Cap and NPT-F connection
3	ASME End Cap and female socket weld connection
4	ASME End Cap, socket weld nipple and weldneck flange
5	ASME End Cap, socket weld nipple and NPT-M connection
6	ASME End Cap, socket weld nipple and male socket weld connection
7	ASME End Cap with no vent/drain connection
G	Slip On Flange with Blind Flange, NPT-F vent/drain and plug **(Default Bottom End Connection)**
H	Slip On Flange with Blind Flange and NPT-F connection
I	Slip On Flange with Blind Flange and female socket weld connection
J	Slip On Flange with Blind Flange, socket weld nipple and weld neck flange
K	Slip On Flange with Blind Flange, socket weld nipple and NPT-M connection
L	Slip On Flange with Blind Flange, socket weld nipple and male socket weld connection
M	Weld Neck Flange with Blind Flange, NPT-F vent/drain and plug
O	Weld Neck Flange with Blind Flange and NPT-F connection
P	Weld Neck Flange with Blind Flange and female socket weld connection
Q	Weld Neck Flange with Blind Flange, socket weld nipple and weld neck flange
R	Weld Neck Flange with Blind Flange, socket weld nipple and NPT-M connection
S	Weld Neck Flange with Blind Flange, socket weld nipple and male socket weld connection
T	Standard Halar™ / Tefzel™ Lined - Side Connection Configuration **(utilizes 2-1/2" Weld Neck Flange with Blind Flange)**
V	Standard Halar™ / Tefzel™ Lined - End Connection Configuration **(utilizes 2-1/2" Weld Neck Flange)**
Y	Standard Sanitary Application - Side Connection Configuration

All non-lined configurations will include a float stop spring

Table #2 (Top Side and / or Bottom Side Configuration)	
Code	**Description**
A	NPT-M full penetration weld at standpipe **(default)**
B	NPT-M fillet weld at standpipe
C	Weld Neck Flange, full penetration weld at standpipe
D	Weld Neck Flange, fillet weld at standpipe
E	Male Socket Weld, full penetration weld at standpipe
F	Male Socket Weld, fillet weld at standpipe
G	NPT-M with weldolet at standpipe
H	Weld Neck Flange with weldolet at standpipe
I	Male Socket Weld with weldolet at standpipe
J	NPT-M, saddle at standpipe (polymer construction only)
K	Slip On Flange, saddle at standpipe (polymer construction only)
M	Male Socket Weld, saddle at standpipe (polymer construction only)
O	Standard Halar™ / Tefzel™ Lined Configuration

Table #3 (Connection Size)		
Code	**Connection Size**	**Comments**
1	1/2"	Available in NPT, Socket Weld and Flange Connections
2	3/4"	
3	1"	
4	1-1/4"	Codes 4 thru 8 available in Flange Connections Only
5	1-1/2"	
6	2"	
7	2-1/2"	
8	3"	

All References To Full Penetration or Fillet Welds Applies Only to Metallic Construction. Slip On Flanges, Saddles and Solvent Welds are used for Polymer Construction.

Standard Standpipe Configurations

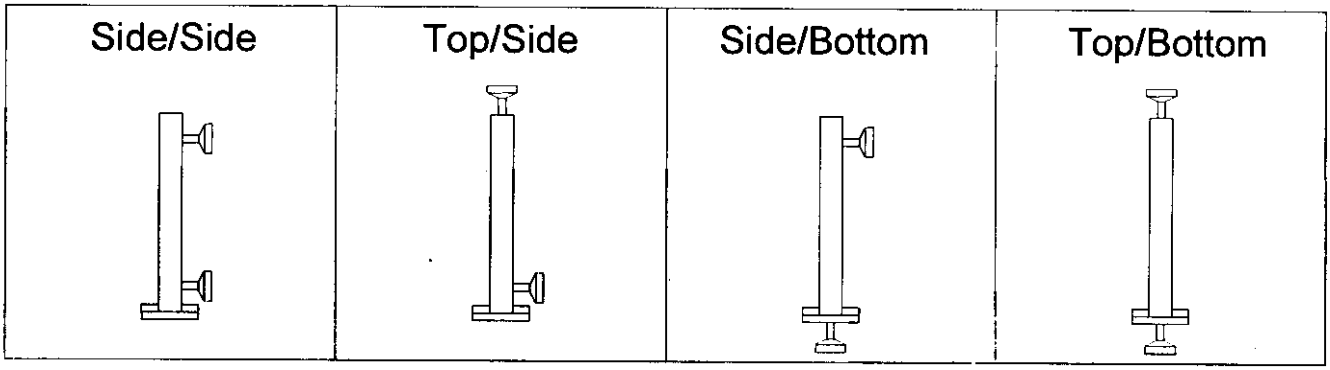


Table #1 Descriptions

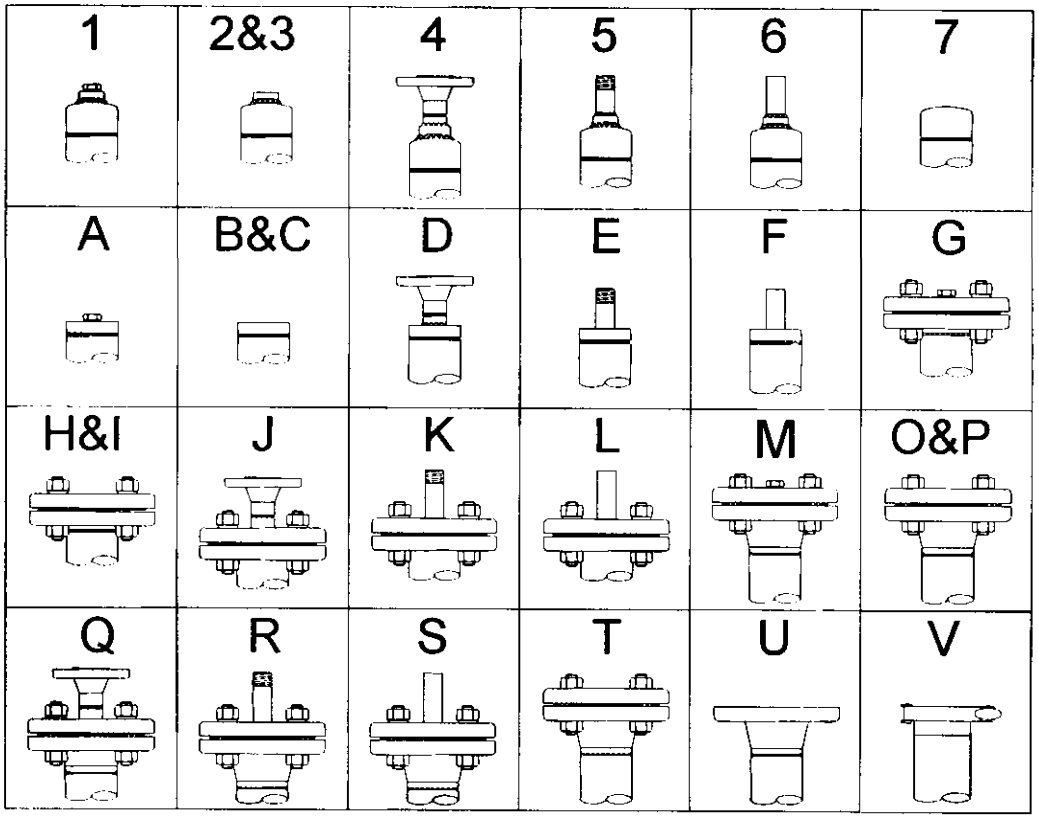
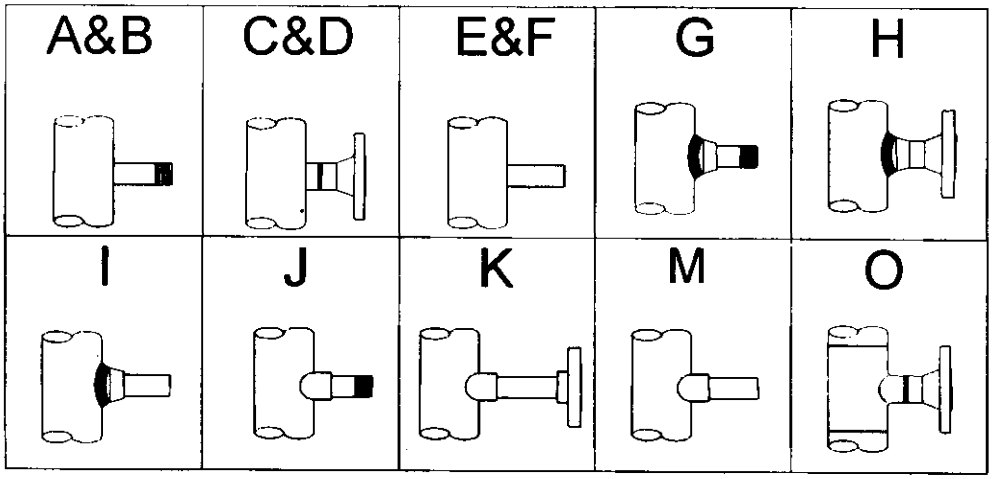


Table #2 Descriptions



MULTIVIEW Visual Indicator Order Matrix

Model	Code	Indicator Style
MGI	F	Flag
	A	Follower w/aluminum housing
	S	Follower w/stainless steel housing

Code	Protector Type (required for Flag, optional w/aluminum housing, N/A w/STS housing)
1	PMMA (maximum temperature limit of 225 °F) (107 °C)
2	Glass
N	None (STS Follower)

Code	Scale Type (Mounted To Left Side of Indicator)
F	Feet / Inches
M	Meters / Centimeters
P	Percentage (of vessel centers)
X	Special
N	None

Code	Frost Proof Extension
N	None
1	2" (50 mm) to -30 °F (-35 °C)
2	4" (100 mm) to -94 °F (-70 °C)
3	6" (150 mm) to -148 °F (100 °C)
4	8" (200 mm) to -211 °F (-135 °C)
5	10" (250 mm) to -274 °F (-170 °C)
6	12" (300 mm) to -328 °F (-200 °C)

Code	Illuminator
N	None
Y	Yes

For Ordering Information See Page 13

Code	** Indication Length (in millimeters)
	to the nearest even whole number (0000)

MGI						

***** If no indication length is specified, the default length will be based upon the vessel connection distance. Overall indicator length is larger than the usable indication length.**

MULTIVIEW Float Order Matrix

Model	Code	ANSI Rating
MGF	1	150#
	3	300#
	6	600#
	9	900#
	X	Special

Code	Float Material
S	316/316L STS
T	Titanium
M	Monel
A	Alloy-20
H	Hastelloy-C
P	PVC
C	CPVC
K	PVDF
X	Special

Code	Float Style
1	Standard Length
2	Extended Length
3	Interface
X	Special

Code	Special "B" Dimension (see below)
N	None
	to the nearest even whole millimeter (000)

Code	Coating Material
N	None
H	Halar (15 mil)
T	Tefzel (15 mil)
X	Special

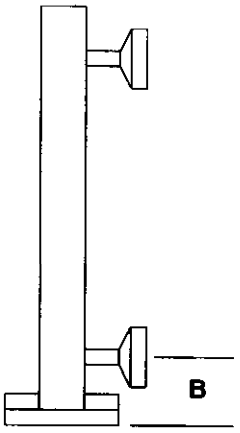
Code	Lower Liquid Specific Gravity (required for all floats)
	to the nearest hundredth (0.00)

Code	Upper Liquid Specific Gravity (Interface Only)
N	None
	to the nearest hundredth (0.00)

MGF							

Note: Specific Gravity required is at operating temperature.

For Standard "B" dimensions see Dimension Sheets 4700 thru 4704



Metallic Floats

Float Style	Nominal Pressure Rating	Float Diameter	Material	Minimum Specific Gravity
Standard Length	150# ANSI	2.25" (57 mm) Sch 40 Standpipe	316L STS	0.78
			Titanium	0.53
			Monel	0.90
			Alloy-20	0.82
			Hast-C	0.91
		2.50" (63.5 mm) Sch 10 Standpipe	316L STS	0.53
			Titanium	0.41
			Monel	0.56
			Alloy-20	0.52
			Hast-C	0.58
	300# ANSI	2.25" (57 mm) Sch 40 Standpipe	316L STS	0.80
			Titanium	0.56
			Monel	0.92
			Alloy-20	0.84
			Hast-C	0.93
	600# ANSI	2.25" (57 mm) Sch 40 Standpipe	316L STS	0.89
			Titanium	0.62
			Monel	0.96
			Alloy-20	0.88
			Hast-C	0.97
	900# ANSI	2.25" (57 mm) Sch 40 Standpipe	316L STS	0.93
			Titanium	0.64
			Monel	0.97
			Alloy-20	0.90
			Hast-C	0.97

Float Style	Nominal Pressure Rating	Float Diameter	Material	Minimum Specific Gravity
Extended Length	150# ANSI	2.25" (57 mm) Sch 40 Standpipe	316L STS	0.74
			Titanium	0.37
			Monel	0.84
			Alloy-20	0.76
			Hast-C	0.84
		2.50" (63.5 mm) Sch 10 Standpipe	316L STS	0.49
			Titanium	0.47
			Monel	0.51
			Alloy-20	0.47
			Hast-C	0.53
	300# ANSI	2.25" (57 mm) Sch 40 Standpipe	316L STS	0.76
			Titanium	0.51
			Monel	0.86
			Alloy-20	0.78
			Hast-C	0.87
	600# ANSI	2.25" (57 mm) Sch 40 Standpipe	316L STS	0.84
			Titanium	0.57
			Monel	0.90
			Alloy-20	0.83
			Hast-C	0.91
	900# ANSI	2.25" (57 mm) Sch 40 Standpipe	316L STS	0.85
			Titanium	0.60
			Monel	0.91
			Alloy-20	0.84
			Hast-C	0.91

Non-Metallic Floats

Material	Float Diameter	Minimum Specific Gravity
PVC	1.97" (50 mm)	0.79
CPVC	1.97" (50 mm)	0.86

Distributor: _____

Distributor: _____

Customer Name: _____

Process Liquid: _____ **Qty:** _____
Viscosity: _____(cp) **Tag No(s):** _____

	Minimum	Operating	Maximum
Pressure	_____	_____	_____ **psig / kPa g** (circle one)
Temperature	_____	_____	_____ **°F / °C** (circle one)
Specific Gravity	_____	_____	_____

MULTIVIEW Mini Magnetic Gage Standpipe Matrix (MMG)

Model	Code	Standpipe and Flange Material
MMG	S	316/316L STS
	F	304/304L STS

Code	Vessel Connection Type
1	NPTM (1/2" only for Side/Side - 1/2", 3/4" or 1" for Top/Bottom)
2	150# ANSI Flange
3	Male Socket Weld (1/2" only for Side/Side - 1/2", 3/4" or 1" for Top/Bottom)
X	Special

Code	Vessel Connection Size
A	1/2"
B	3/4"
C	1"
X	Special

Code	Vessel Connection Style
1	Side / Side (1/2" only)
2	Top / Bottom (1/2", 3/4" or 1")
3	Top / Side
4	Side / Bottom
X	Special

Code	**Vessel Connection Dimension (in millimeters)
	to the nearest even whole number (0000)

MMG					

**THE SPECIFIED VESSEL CONNECTION DISTANCE WILL DETERMINE THE AVAILABLE INDICATION LENGTH. OVERALL LENGTH WILL BE DETERMINED BY THE CONNECTION DISTANCE AND FLOAT.

MULTIVIEW™ Mini Magnetic Gage Float Order Matrix

Model	Code	Float Material
MMGF	1	316/316L STS
	2	Titanium

Code	Float Style
S	Standard Length
E	Extended Length

Code	Lower Specific Gravity (required for all floats)
	to the nearest hundreth (0.00)

Code	Upper Specific Gravity (interface only)
N	None
	to the nearest hundreth (0.00)

MMGF					

Note: Specific Gravity required is at operating temperature

MULTIVIEW™Mini Magnetic Gage / Top Mounted Magnetic Gage Indicator Matrix

Model	Code	Indicator
MMGI	G	Black / Yellow Flag Style **Default**
	C	Custom Color Combination **(must be from the 10 standard EIA colors)**
	X	Special

Code	Customer Indicator Color Front (indicates no liquid)
N	None (used with code "G" above)
0	Black
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Grey
9	White

Code	Custom Indicator Color Back (indicates presence of liquid)
N	None (used with code "G" above)
0	Black
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Grey
9	White

Code	Scale
N	None (Default)
F	Feet / Inches
M	Meters / Centimeters
P	Percentage (of vessel centers)
X	Special

Code	** Indication Length (in mm)
	to the nearest even whole number (0000)

MMGI					

****If no indication length is specified, the default length will be based upon the vessel connection distance.**

Distributor: _____

Customer Name: _____

Process Liquid: _____ **Qty:** _____

Viscosity: _____ (cp) **Tag No(s):** _____

	Minimum	Operating	Maximum
Pressure	_____	_____	_____ **psig / kPa g** (circle one)
Temperature	_____	_____	_____ **°F / °C** (circle one)
Specific Gravity	_____	_____	_____

MULTIVIEW™ Top Mounted Magnetic Gage Order Matrix (TMMG)

Model	Code	ANSI Rating
TMMG	1	150#
	2	300#

Code	Standpipe and Flange Material
S	316/316L STS
F	304/304L STS
T	Titanium
M	Monel
I	Inconel 625
A	Alloy-20
H	Hastelloy-C
X	Special

Code	Float Material
1	316L STS
2	Titanium
3	Inconel 625
4	Alloy-20
5	Hastelloy-C
6	Monel
X	Special

Code	Float Diameter
A	3.5" (8.1 cm)
B	4.5" (11.4 cm)
C	6" (15.2 cm)
D	8" (20.3 cm)
E	10" (25.4 cm)
X	Special

Code	Float Guide
P	Penberthy Guide System
S	Customer Supplied Stilling Well
N	None (Not Recommended)

Code	Connection Flange Size
1	4"
2	6"
3	8"
4	10"
5	12"
X	Special

Code	Indication Height (in millimeters) *
	Standard Range from 610 to 3556

Code	Overall Nozzle Offset (in millimeters)
	to the nearest even whole number (0000)

Code	Lower Liquid Specific Gravity (required for all)
	to the nearest hundredth (0.00)

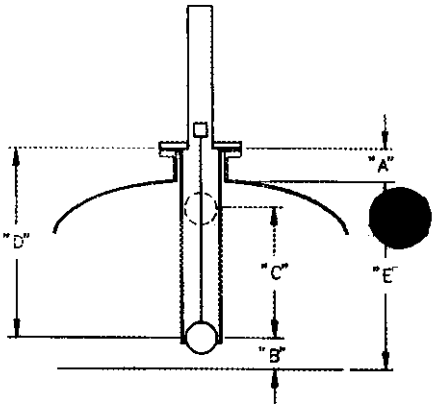
Code	Upper Liquid Specific Gravity (interface only)
N	None
	to the nearest hundredth (0.00)

TMMG										

***Consult the factory for indications outside this range.**
Final length of indication will be determined by the application conditions.

To properly size a TMMG, the following is the minimum information required

- **Length of Nozzle (A)**
- **Size of Flange Connection**
- **Specific Gravity of Process Liquid**
- **ANSI Rating**
- **Tank Height (E) or Indication Length (C)**



Distributor: _____

Customer Name: _____

Process Liquid: _____ [362 In-Tank Only] **Qty:**_____

Viscosity: _____(cp) [362 In-Tank Only] **Tag No(s):**_____

	Minimum	Operating	Maximum
Pressure	_____	_____	_____ **psig / kPa g** (circle one) [362 In-Tank Only]
Temperature	_____	_____	_____ **°F / °C** (circle one)
Specific Gravity	_____	_____	_____

MULTIVIEW Transmitter Order Matrix

Model	Code	Transmitter Style
MGT-36	2	Reed Switch Based Unit
	6	Magnetostrictive (Non-HART)
	7	Magnetostrictive with HART Protocol

Code	Model 362 Options
I	Integral Side Mount
R	Remote Side Mount
B	In-Tank Unit / NPT Mounted (Integral)
C	In-Tank Unit / Flange Mounted (Integral)
D	In-Tank Unit / NPT Mounted (Remote)
E	In-Tank Unit / Flange Mounted (Remote)
N	None (Use for 366 / 367 Models)

Code	Electronics Enclosure Options
4	Type 4 - Plastic Enclosure (MGT-362 B or C option only)
7	Type 7 - Aluminum Enclosure - (Default for MGT-362 and MGT-366 / 367)

Code	Model 362 In-Tank Connection Options
1	1" NPT
2	2" NPT
4	4" Flange (150# ANSI)
5	4" Flange (300# ANSI)
6	6" Flange (150# ANSI)
7	6" Flange (300# ANSI)
X	Special
N	None (Use for 362 Side Mount, 366 and 367)

Code	Model 362 Sensor Material
S	316 STS (Default for 362 Side Mount, 366 and 367)
A	Alloy 20
H	Hastelloy C
I	Inconel 625
M	Monel
X	Special

Code	Model 362 In-Tank Float Material
N	None (Default for 362 Side Mount, 366 and 367)
1	316 STS
2	Titanium
3	Alloy 20
4	Hastelloy C
5	Inconel 625
6	Monel
X	Special

Code	Length of Nozzle (in millimeters) (362 In-Tank Only)
N	None (Default for 362 Side Mount, 366 and 367) to the nearest even whole number (0000)

Code	Lower Liquid Specific Gravity (362 In-Tank Only)
N	None (default for 362 Side Mount, 366 and 367) to the nearest hundredth (0.00)

Code	Upper Liquid Specific Gravity (interface only)
N	None (default for 362 Side Mount, 366 and 367) to the nearest hundredth (0.00)

Code	Indication Length (in millimeters)
	to the nearest even whole number (0000)

Switches

MGS-314 (5 Amp, SPDT)	Qty_____
MGS-314D (10 Amp, DPDT)	Qty_____
MGS-314L (1 Amp, SPDT) (for use with MULTIVIEW)	Qty_____
MGS-314M (1 Amp, SPDT) (for use with MMG or TMMG)	Qty_____
MGS-314P (Pneumatic)	Qty_____

Illuminators

Model	Code	Gage Type
I	M	Incandesent Magnetic Gage
	N	LED Magnetic Gage

Code	Type of Extension
S	Standard
F	Frost Proof

Code	Extension Depth (If Frost Proof)
N	Not Applicable
4	4" (100 mm) to -94 °F (-70 °C)
6	6" (150 mm) to -148 °F (100 °C)
8	8" (200 mm) to -211 °F (-135 °C)
A	10" (250 mm) to -274 °F (-170 °C)
C	12" (300 mm) to -328 °F (-200 °C)

Code	Indicator Length (in millimeters)
	to the nearest even whole number (0000)

Code	Service and Threads
1	115 Vac Standard Thread
A	115 Vac ISO Thread
2	230 Vac Standard Thread
B	230 Vac ISO Thread
4	24 Vdc Standard Thread
D	24 Vdc ISO Thread

Code	Power
2	25 Watts
6	60 Watts

I

Note: The maximum length for a single illuminator 96". For indicators greater than 96" multiple illuminators will be provided.

Insulation Jacket

Model	Code	Jacket Thickness
J	1	1/2"
	2	1"
	3	1-1/2"
	4	2"

Code	Insulation Material
E	Type E Fiberglass
X	Special

Code	Jacket / Liner Material
1	PTFE Coated Fiberglass Cloth
2	Silicone Rubber Coated Fiberglass Cloth
X	Special

J

Note: For insulation jackets > 2" thick or requiring rigid construction contact the factory.

Thermal Tracing

Model	Code	Tracing Type
T	E	Electric
	S	Steam
	G	liquid

Code	Tube Size (steam and liquid only)
1	1/4"
2	3/8"
3	1/2"
N	Not Applicable

Code	Tube Material (steam and liquid only)
S	Stainless Steel
C	Copper
N	Not Applicable

Code	Number of Tubes (steam and liquid only)
2	2
3	3
4	4
N	Not Applicable

Code	Power Supply (electric only)
A	115 Vac
B	230 Vac
C	277 Vac
N	Not Applicable

Code	Power (electric only)
	Watts
N	Not Applicable

Code	Indication Length (in mm)
	to the nearest even whole number (0000)

T							

Magnetic Trap

Model	Code	Size
MT	1	1/2"
	2	3/4"
	3	1" NPT Standard
	4	2"
	5	2-1/2" (flange connection only)

Code	Placement on Magnetic Gage
L	Lower Vessel Connection
U	Upper Vessel Connection
D	Drain

Code	Connection Style
1	NPT-M
2	Flange

MT			

Gaskets

Model	Code	Material
G	A	Graphite Ribbon w/ 316 STS Insert **(Default for Metallic Units)**
	B	Non-Asbestos
	C	Garlock 3000, 3100, 3200, 3300
	D	Top Chem 2000
	E	Gylon 3500, 3504, 3510
	F	20% Glass Filled PTFE
	G	PTFE **(Default for Polymer Units)**
	H	Garlock 5500
	J	Kynar [PVDF]
	K	Viton [FKM]
	L	Daikin (Kel-F) [PCTFE]
	M	EPDM
	N	Neoprene
	P	Buna-N
G		

Support Brackets

Unless otherwise specified all support brackets will be evenly spaced between the vessel connections and mounted at the factory in the same plane as the vessel connections. For any other type of mounting orientation approval drawings are required.

If the bracket(s) is to be shipped loose for installation at the jobsite this must be noted at time of order entry.

Conversions

To Convert From	To	Multiply By
Dimensions		
Inches	Centimeters	2.540
Inches	Millimeters	25.40
Centimeters	Inches	0.3937
Millimeters	Inches	0.03937
Pressures		
Pounds/Square Inch Gauge (psig)	kPa g	6.8948
Pounds/Square Inch Gauge (psig)	kg/cm^2 g	0.0703
Pounds/Square Inch Gauge (psig)	bar g	0.0689
kPa g	psig	0.145
kg/cm^2 g	psig	14.22
bar g	psig	14.5
Temperature		
Centigrade	Fahrenheit	(°C x 1.8) +32
Fahrenheit	Centigrade	(°F – 32) x 0.555

Notes

Notes