Dynisco

From lab to production,
providing a window into the process

Vertex™

MERCURY FREE SENSORS

A New Standard in Durability, Environmental Safety, and Reliability

Features

- No fill material
- RoHS compliant for sustainability programs
- Robust, thicker Inconel diaphragm is coated with Dymax®
- Available with a thermocouple temperature output
- 0-250 to 0-10,000 PSI pressure range capability
- HART™ digital communication available

Description

Dynisco's Vertex melt pressure sensor innovation matches or exceeds the performance of the traditional sensor. The big differences are that Vertex is more robust, much faster, and significantly friendlier to the environment.

The direct measurement tip is a simple and elegant design with a more robust diaphragm. Direct measurement of the process reduces errors that are transferred by complicated internal support structures, transmission fill materials, or moving push rods. The diaphragm thickness is pressure range dependent and can be up to 7.5 times thicker than a traditional sensor. Add to these features, a diaphragm composition of Inconel 718 coated with the corrosion and abrasion resistant properties of Dymax® and experience the true definition of a robust sensor that has proven to increase the life of the sensor and significantly lowers the cost of owner-ship. Vertex design innovation also extends to the speed of response of the sensor. Faster processes and controls demand faster sensing measurements. Vertex is many times faster than traditional sensors improving real time production.

Environmental regulations and community conscientiousness are driving sustainability policies and programs in large and small companies. Waste stream reduction and longer life cycles are good for the environment and the budget. There is no mercury, no NaK, no oil, no Gallium, no fill material what-so-ever. Vertex is also RoHS compliant.

Vertex sensors are designed to work with universal pressure indicators. HART digital communication is available for more extensive diagnostics and remote configuration. An optional Type J or K thermocouple is available to provide a melt temperature signal as well as a 4-20 mA temperature output. Vertex is equipped with a 1/2-20 UNF for installation in standard transducer mounting holes. An adapter is also available to install 1/2-20 UNF units into a Button Seal application. A sealed welded shell and electrical connection are available if washdown capability is needed for food or medical applications (not available if thermocouple option TCx is selected).

Performance Characteristics	
Input, Excitation:	mV/V: 10-12VDC; mA; voltage 16-36VDC
Diaphragm Operating Temp. Range[1]:	-40°F to +752°F (-40°C to +400°C
Electronics Operating Temp. (Max):	185°F (85°C)
Zero Shift (Electronics Temp.):	0.012%/°F (0.022%/°C)
Span Shift (Electronics Temp.):	0.012%/°F (0.022%/°C)
Hex/Transition Temp. (Max):	300°F (150°C)
Zero Shift (Hex Temp.):	0.022%/°F (0.039%/°C)
Overload Pressure Rating:	1.5x FPS
Pressure Ranges (PSI):	2.5C, 5C, 7.5C, 1.0M, 1.5M, 3M, 5M, 7.5M or 10M
Pressure Units:	PSI, Bar, Kg/cm^2, MPa, KPA
Zero Balance Adjustment (±% FSO):	mV/V: na; mA: ±3%, Voltage ±20%
Zero Balance Setting (±% FSO):	mV/V: 10%; mA: ±3%, Voltage ±3%
Insulation Resistance:	mV/V: 100 MΩ @50VDC
Internal Shunt Calibration (R-Cal):	80% FSO ±1% FSO
Zero Shift (Process Temp. Change):	1.0%/100°F (2.0%/100°C)
Mechanical & Packaging	
Diaphragm Wetted Parts:	Inconel 718, DyMax® coated
Mounting Torque:	250 in-lbs recommended, 500 in-lbs max
Temp. Sensor (Optional):	Type J or Type K thermocouple (available on flex units only)
Ingress Protection:	IP54 (IP67 if welded and temperature sensor code is NTR)
Approvals & Certifications	
CE:	Directive 2004/108/EC
ISO:	ISO9001:2008 production environment
RoHS 1:	Directive 2011/95/EC
RoHS 2:	Directive 2011/65/EU
ATEX IS	Intrinsically Safe

[1]Diaphragm Operating Temp. Range refers to the functional limits of the snout tip. Refer to the manual for greater detail on the operating compensated temperature ranges of the diaphragm tip, flex and electronics.

Ordering Guide

VERT-XXX-XXX-XXX-XXX-XXX-XXX-XXX-XXX-XXX-XXX-XXX-XXX-XXXXXXX

Option Code
Options not shown in ordering guide may be available. Consult factory for available options.

Compliance Specials
NCC = No Compliance Certification (CE included)
ISE = Intrinsically Safe (IS) ATEX, (for MA4 and MPT Analog Outputs only)

Analog Output
MV3 = 3.33mV/V
MA4 = 4-20mA
VT1 = 0-10 VDC
VT2 = 0-5 VDC
VT3 = 1-11 VDC
VT4 = 1-6 VDC
MPT= 4-20 mA pressure & temperature

Accuracy[2]
MM1= ±0.25% accuracy, BFSL
HH1 = ±0.15% accuracy, (for MA4 and MPT Analog Outputs only)

Temperature Sensor
NTR = No Temperature Sensor
TCJ = Thermocouple J-type with 3 inch flex (IP54 only)
TCK = Thermocouple K-type with 3 inch flex (IP54 only)

Digital Communications
NDC = No digital communications
HT1 = HART (for MA4 and MPT Analog Outputs only)

Flex Length
NFL = No Flex Length
F18 = 18 inches (45.7 cm)
F30 = 30 inches (76.2 cm)
F48 = 48 inches (121.9 cm)
F72 = 72 inches (182.9 cm)

Snouth Length*
S03 = 3 inch (7.6 cm)
S06 = 6 inch (15.2 cm)
S09 = 9 inch (22.9 cm)
S12 = 12 inch (30.5 cm)
**Note: Snout length does not include tranistion shell (see outline drawing on pgs 3-4).*

Units of Measure
PSI = PSI
BAR = Bar
KG2 = Kgf/cm^2
MPA = MPa
KPA = KPa

Pressure Range*

R13 or T13 =	250 PSI;	17.5 Bar;	17.5 Kg/cm^2;	1.75 MPa;	1750 KPa
R14 or T14 =	500 PSI;	35 Bar;	35 Kg/cm^2;	3.5 MPa;	3500 KPa
R15 or T15 =	750 PSI;	50 Bar;	50 Kg/cm^2;	5 MPa;	5000 KPa
R16 or T16 =	1000 PSI;	70 Bar;	70 Kg/cm^2;	7 MPa;	7000 KPa
R17 or T17 =	1500 PSI;	100 Bar;	100 Kg/cm^2;	10 MPa;	10000 KPa
R20 or T20 =	3000 PSI;	200 Bar;	200 Kg/cm^2;	20 MPa;	20000 KPa
R21 or T21 =	5000 PSI;	350 Bar;	350 Kg/cm^2;	35 MPa;	35000 KPa
R22 or T22 =	7500 PSI;	500 Bar;	500 Kg/cm^2;	50 MPa;	50000 KPa
R23 or T23 =	10000 PSI;	700 Bar;	700 Kg/cm^2;	70 MPa;	70000 KPa

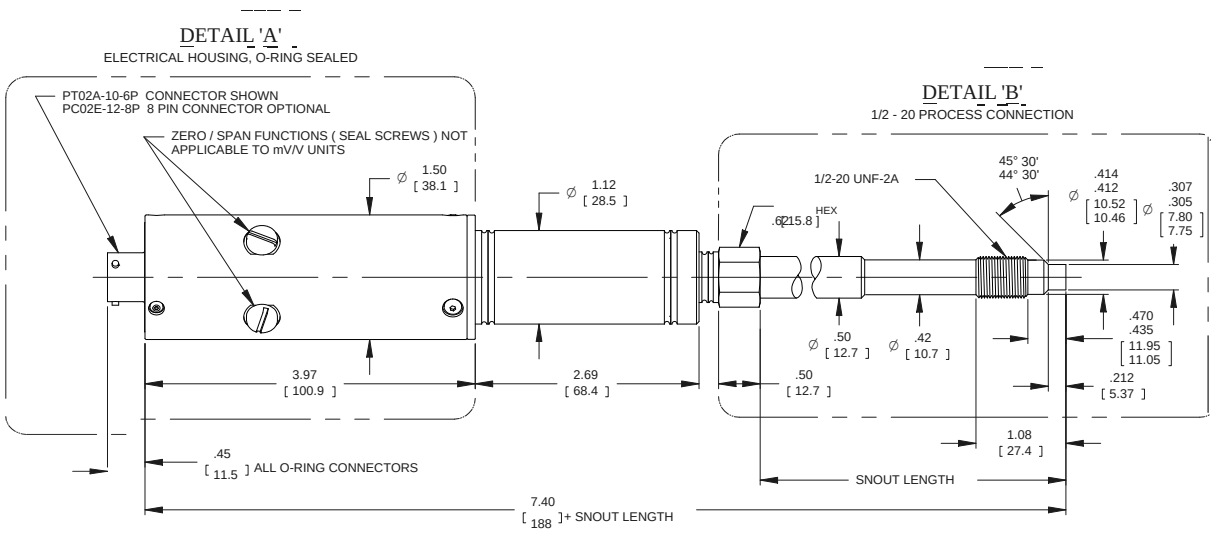
**Note: Use RXX codes for standard pressure. Use TXX codes if turndown is required. Turndown ratio 6:1. When using TXX codes be sure to indicate in option code section. For example: 3000 PSI Turned down to 2500 would be a T20 with option code @2500*

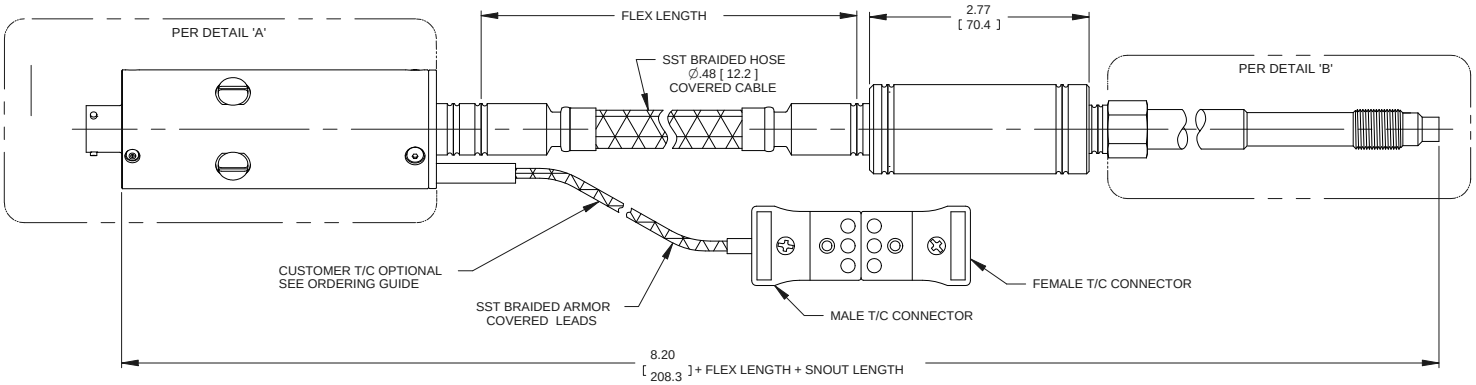
Electrical Connection
6PN = 6 pin bayonet style o-ring sealed (IP54 only)
*3AC = 3-wire conduit -42 inches, welded (for MA4 Analog Output only)
*5AC = 5-wire conduit -42 inches, welded (for MA4 and MPT Analog Output only)
*6AC = 6-wire conduit -42 inches, welded (for MV3 Analog Output only)
**6PW = 6 pin bayonet style, welded
**8PW = 8 pin bayonet style, welded (for MA4 and Analog Output only)
8CN = 8 pin threaded style (PC) o-ring sealed (for MV3 Analog Output only (IP54 only)
**8CW = 8 pin threaded style (PC), welded (for MA4 and MPT Analog Output only)
**Note: Other lengths are available. Contact factory for available options.*
***IP67 units require special mating cable. See accessory section of prodcut manual for P/N.*

Process Connection*
UNF = 1/2-20 UNF
F25 = Standard Small Flange
**Note: Other process connections are available. Contact factory for available options.*

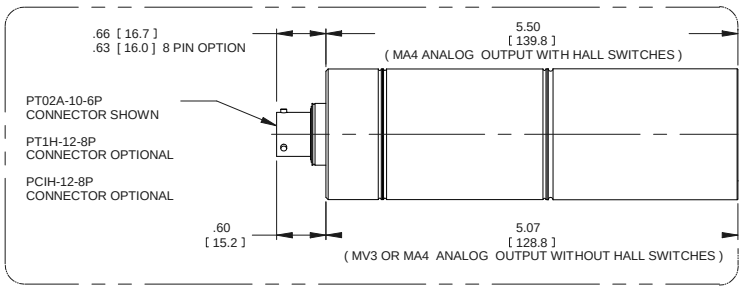
[2]Accuracy Defined as the combined error expressed as a percentage of full scale output. Combined error includes linearity BFSL, hysteresis, and repeatability at ambient temperature, as defined in ISA-S37

Mechanical Dimensions

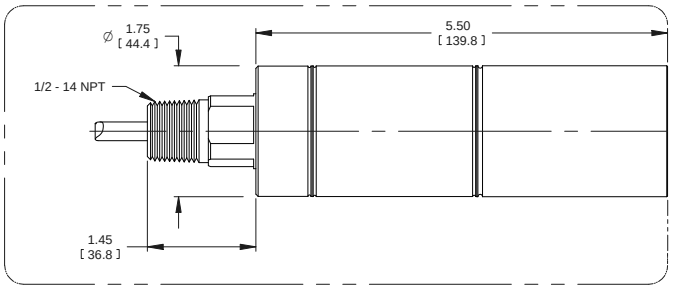




ELECTRICAL HOUSING " WELDED / CONNECTOR " CONFIGURATION



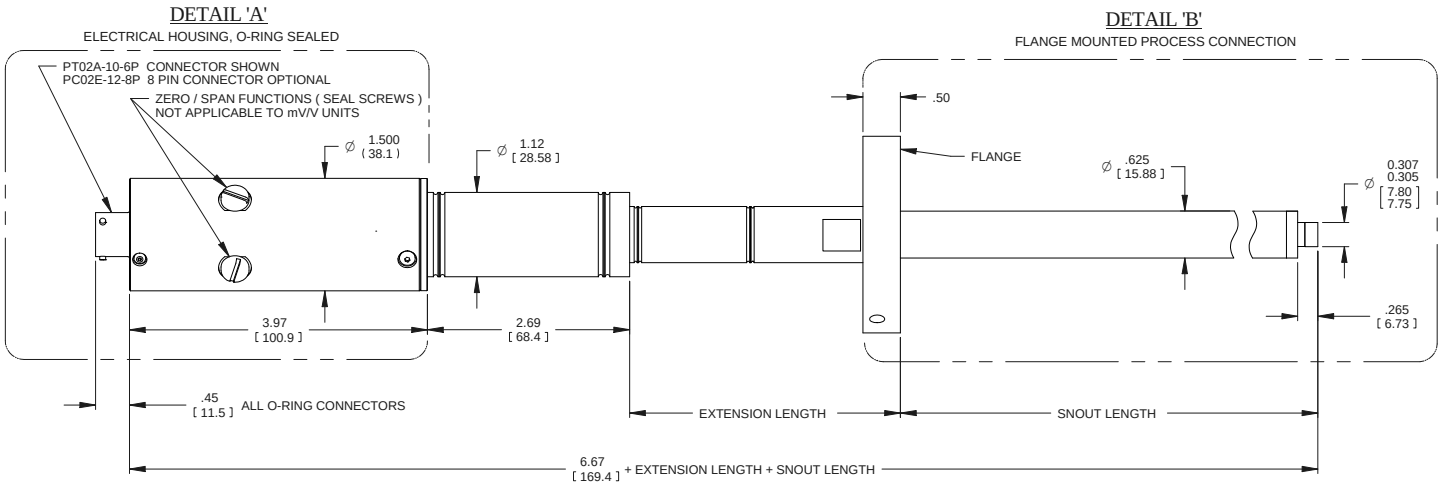
ELECTRICAL HOUSING " WELDED / CONDUIT " CONFIGURATION

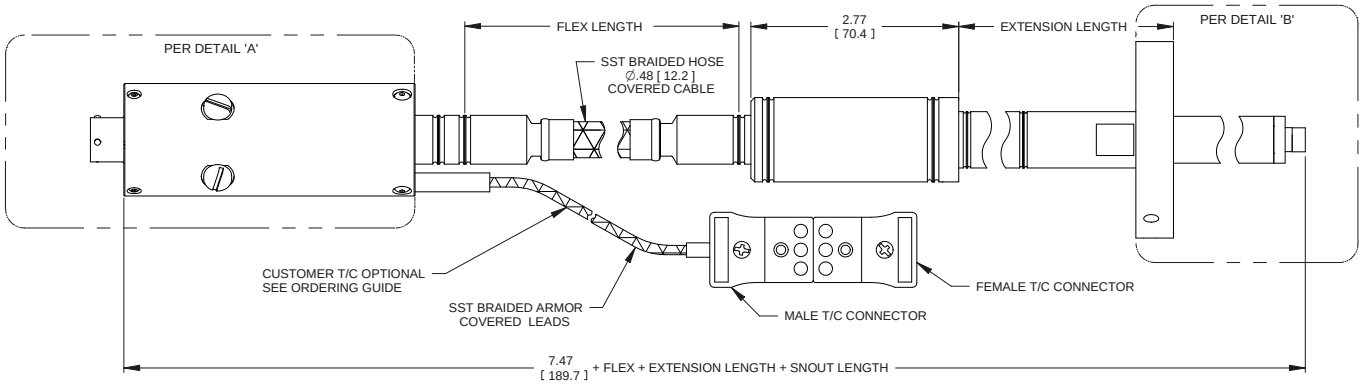


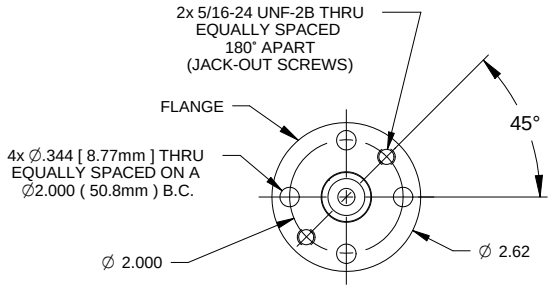
NOTES:

1. DIMENSIONS ARE IN INCHES [MILLIMETERS].
2. DIMENSIONS ARE NOMINAL AND FOR REFERENCE ONLY.
3. NOT ALL CONFIGURATIONS & OPTIONS ARE SHOWN, CONSULT FACTORY.

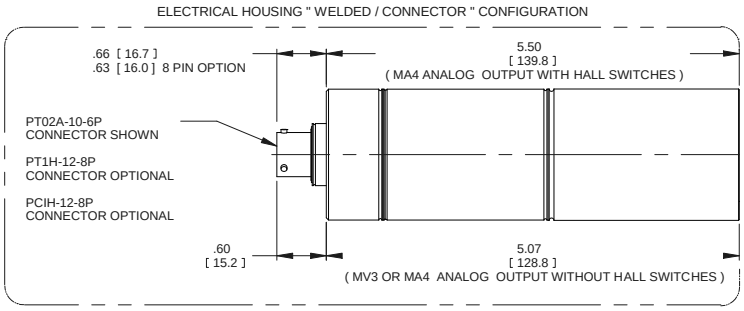
Mechanical Dimensions

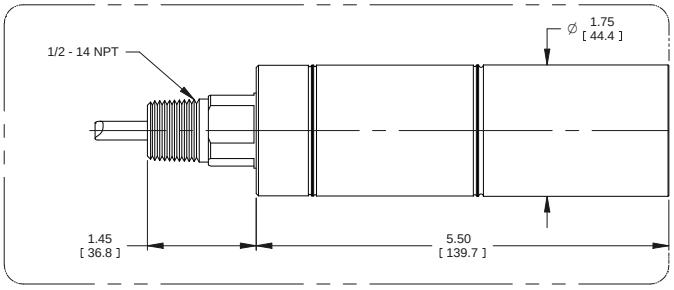






STD. FLANGE " F25 " SHOWN





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Electrical Connections

CONNECTOR OPTIONS	
6 PIN PT	BENDIX PT02-10-6P OR EQUIVALENT MATING CONNECTOR PT06-10-6S
8 PIN PC	BENDIX PC02-12-8P OR EQUIVALENT MATING CONNECTOR PC02-12-8S
8 PIN PT	BENDIX PT02-12-8P OR EQUIVALENT MATING CONNECTOR PT06A-12-8S

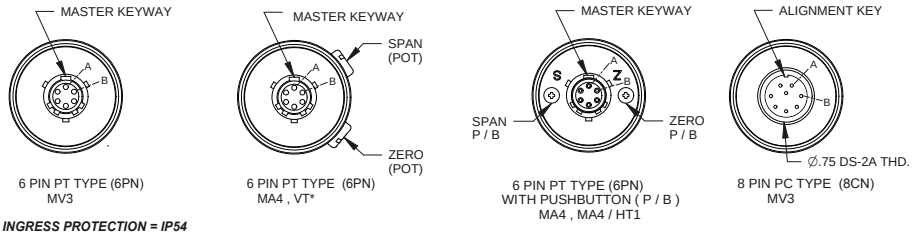
ANALOG OUTPUT MA4, MPT		CONNECTION TYPE			
SIGNAL	TERMINAL DESCRIPTION	[1]CONDUIT-LEAD COLOR	6-PIN	8-PIN	DYNISCO MATING CABLE COLOR
PRIMARY 4-20mA	PWR+/SIG+	RED	A	A	RED
	PWR-/SIG-	BLACK	B	B	BLACK
	CASE	GREEN	-	-	-
OPTIONAL RCAL	RCAL+	ORANGE	F	E	ORANGE
	RCAL-	BLUE	E	D	BLUE
OPTIONAL SECONDARY 4-20mA	PWR+/SIG+	ORANGE	N/A	G	VIOLET
	PWR-/SIG-	BLUE	N/A	H	YELLOW

[1]UNITS THAT HAVE CONDUIT LEADS ARE AVAILABLE WITH OPTIONAL RCAL OR TEMPERATURE 4-20mA SIGNAL, NOT BOTH.

ANALOG OUTPUT MV3		CONNECTION TYPE		
SIGNAL	TERMINAL DESCRIPTION	CONDUIT-LEAD OR DYNISCO CABLE WIRE COLOR	6-PIN	8-PIN
PRIMARY OUTPUT	SIG+	RED	A	B
	SIG-	BLACK	B	D
SUPPLY	PWR+	WHITE	C	A
	PWR-	GREEN	D	C
RCAL	RCAL+	ORANGE	F	F
	RCAL-	BLUE	E	E
N/A	-	-	-	G
	-	-	-	H

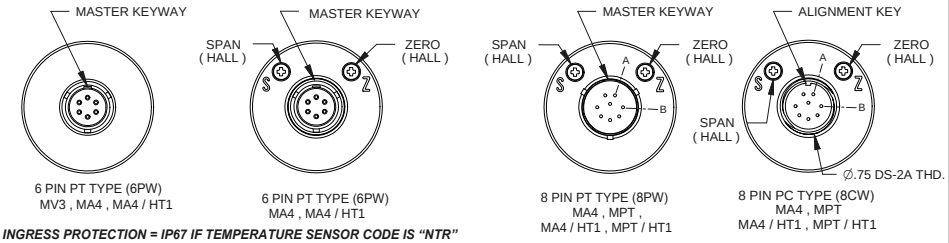
ANALOG OUTPUT VT*		CONNECTION TYPE	
SIGNAL	TERMINAL DESCRIPTION	DYNISCO CABLE WIRE COLOR	6-PIN
PRIMARY OUTPUT	SIG+	RED	A
	SIG-	BLACK	B
SUPPLY	PWR+	WHITE	C
	PWR-	GREEN	D
RCAL	RCAL+	ORANGE	F
	RCAL-	BLUE	E

"O-RING SEALED CONNECTORS" (O-RING SEALED DESIGN)



INGRESS PROTECTION = IP54

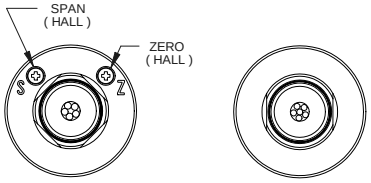
"WELDED CONNECTORS" (WELDED DESIGN)



INGRESS PROTECTION = IP67 IF TEMPERATURE SENSOR CODE IS "NTR"
INGRESS PROTECTION = IP54 IF TEMPERATURE SENSOR CODE IS NOT "NTR"

HALL ZERO AND SPAN SWITCHES ARE INTERNAL SPRING LOADED, MAGNETICALLY ACTUATED.

"CONDUIT ENDPLATE" (WELDED DESIGN)



INGRESS PROTECTION = IP67
IF TEMPERATURE SENSOR CODE IS "NTR"
INGRESS PROTECTION = IP54
IF TEMPERATURE SENSOR CODE IS NOT "NTR"

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