



Davis Controls®

A breed above the rest

Magnetic Level Gauge

Accurate, Affordable, Adaptable and Reliable



SPECIFICATIONS

Omni-directional magnet system - guide free float
High pressure capability - up to 3000 PSIG unvented
High temp capability up to 400°C / 752°F
Standard SG range 0.5 - 2.2
Unlimited length
PP / PVC / PVDF / Fibreglass Versions



FEATURES

- Eliminates preventive maintenance
- An economical alternative to conventional level gauges and other measuring systems
- Automatic float failure warning
- Edge magnetized, coloured wafers
- Red flag colour (ideal for use in all applications)
- Anti-spin stops
- Large visual display
- Continuous control of liquid level
- No leakage to atmosphere
- Unlimited length
- Dual bridle design
- Valves and accessories
- Immediate and accurate response to level changes, providing clean and sharp legibility
- Particularly suitable for dangerous or toxic fluids
- Display can be rotated through 360° irrespective of float position



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CHAMBER

- Hydrostatically tested to 1.5 times the design pressure
- Fabricated from seamless pipe; full penetration welds
- Standard material is 304SS, 316SS, 321SS, Titanium and corrosion resistant plastic
- Special chamber materials, Alloy 825, Hastalloy B & C, Sanicro 28 (duplex), Monel and other materials available upon request
- Standard 2" schedule 10 or 40; 2-1/2" schedule 40 or 80. Optional 1-1/4" schedule 40 or 80 chamber available
- Flanges and other vessel connections are available in Stainless Steel or Carbon Steel depending on the application (standard 316L, or ASTM A105N)
- Standard vessel connections; Flanged 3/4", 1", 1-1/2" and 2" ANSI 150/300/600/900 lb.
- Drain and vent connections normally plugged 1/2" NPT
- Maximum single length 6m/20ft. between flanged joints
- Intermediate support standard for chambers over 3.5m/10ft.

OTHER OPTIONS

- Alternative Chamber & Float Materials
- Aluminum Display Housing
- Epoxy Coated Indicator Assembly
- Steam Heat Tracing
- NDE (Non-Destructive Exam) Test Reports
- General Arrangement Drawing
- Hydrostatic Test Reports
- Radiography

ACCESSORIES

- Isolation valve
- Graduated Scales *
- Non-Frost Block
- Insulation Jacket
- Support Brackets
- Single Point Switches *
- Continuous 4-20 mA Transmitter



* Level Gauge with Single Point Switch
and Graduated Scale

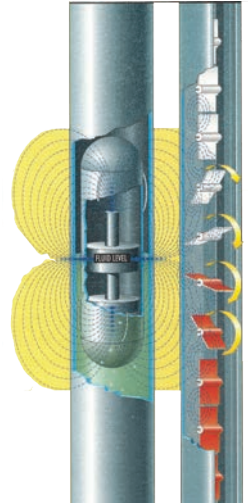
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THE WELL PROVEN DAVIS MAGNETIC LEVEL GAUGE is particularly suited for use where dangerous and toxic liquids or gases are involved, also where leaks to atmosphere are not permitted, and where the danger of failure of standard gauge materials through stress or corrosion cannot be tolerated.

The magnetic gauge is designed so that the liquid being measured is enclosed within a sealed stainless steel chamber.

A stainless steel or titanium float fitted with a permanent magnet moves freely inside the chamber and actuates the magnetic wafers within the indicator, mounted on the outside of the chamber. As the float rises or falls with the liquid level, each wafer rotates 180° and presents a contrasting colour.

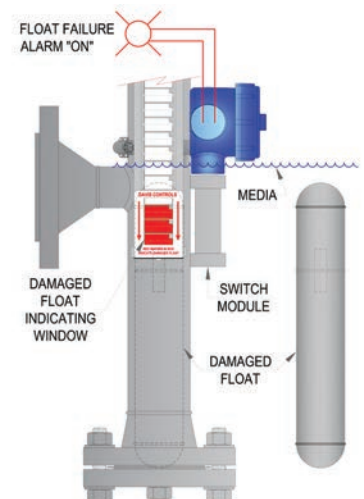


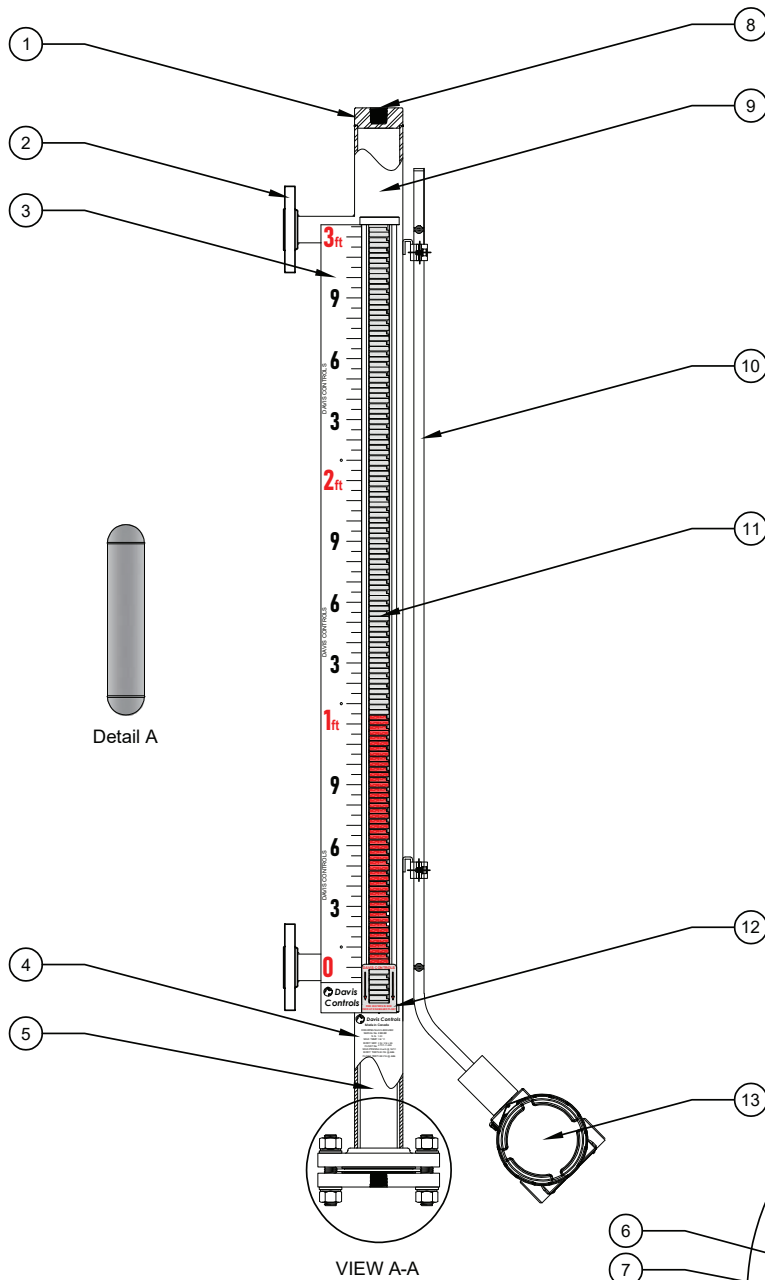
DISPLAY/INDICATORS

The Davis Controls wafer magnetization technique is protected by U.S.A, Canadian and UK patents. The unique system of 1" wide molded ferrite wafers, remains magnetically locked in vertical position until disturbed by the greater magnetic force of the float magnet. The magnetized wafers interlock with each other, eliminating the problems caused by vibrations. Other non-patented wafer designs can rotate randomly displaying incorrect or confusing visual level information.

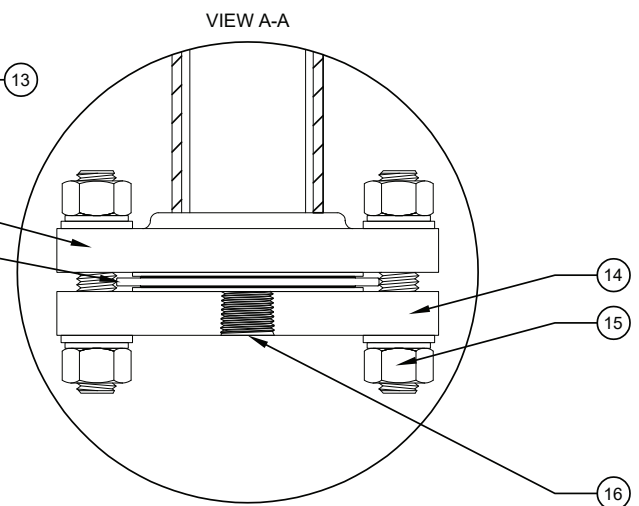
Float failure is a potential problem with any magnetic level gauge. If leakage into the float occurs, or if sediment accumulates on top of the float, it will sink to the bottom. In all other designs, the floats sinking to the bottom of the chamber causes the display to indicate that the vessel is empty. Only the Davis design has an alarm indicator located at the bottom of the display which warns that the float has failed, not that the vessel is empty.

The Davis Controls design has the largest (1" wide) and easiest to read display on the market (red and white are standard but green and other colours are available). Research shows that red and white offer the best visual contrast while creating the least chance of washout caused by bright lighting or glare from the sun.





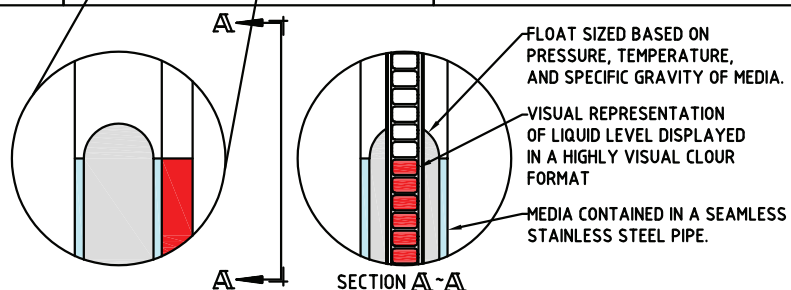
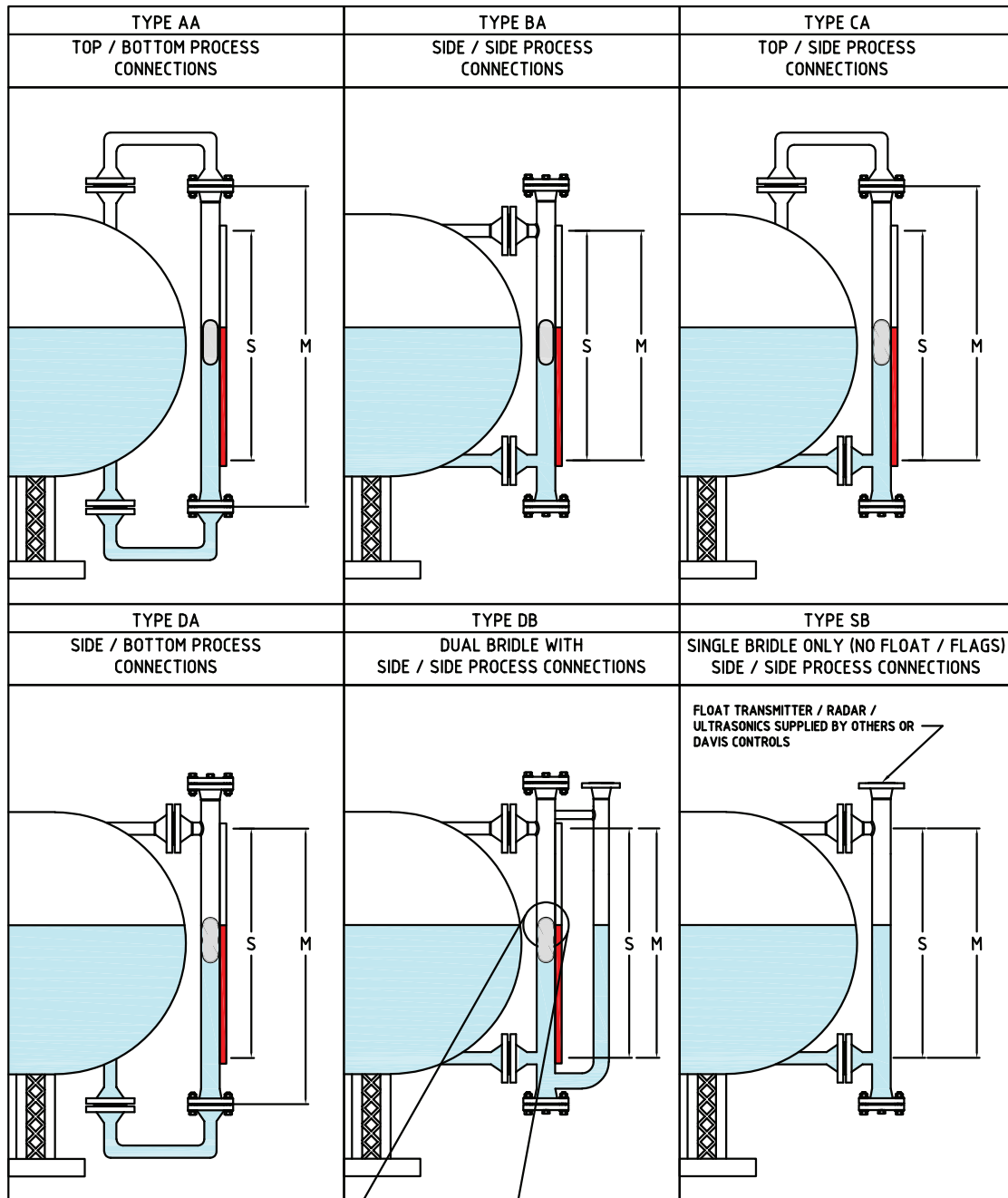
MLG Identification	
1	End Cap
2	Vessel Connection Flange
3	Graduated Scale
4	Name Plate
5	Float
6	Chamber Flange
7	Gasket
8	Vent
9	Chamber Body
10	Transmitter Stem
11	Indicator
12	Damaged Float Indicator
13	Transmitter Head
14	Blind Flange
15	Flange Hardware
16	Drain





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MAGNETIC LEVEL GAUGE ORDER INFORMATION SPECIFICATION

Client Information

Company Name:		
First Name:	Last Name:	
Street Address:		
Street Address 2:		
City:	Prov/State:	Postal/Zip:
Phone Number:	Cell Number:	
Email:		
Reference:		

Gauge Information

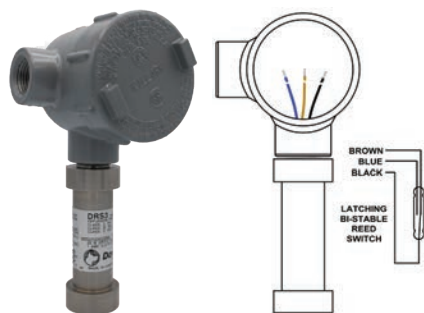
Fluid Description:	Fluid SG(s):
Interface required:	Quantity of Gauges:
Max. Operating Pressure:	Max. Operating Temperature:
Center to Center Length "M":	Visible Length "S":
Vessel Connections:	Size & Rating:
Vessel Material:	Mounting Configurations:
	If other, please specify:

Accessories

Transmitter 4-20 mA:	Graduated Scale Measuring Units:
Point Level Switches/Alarms required:	If other, please specify
If yes, enter QTY:	Insulated Jacket required:
Additional Notes: Please send completed form to info@daviscontrols.com	

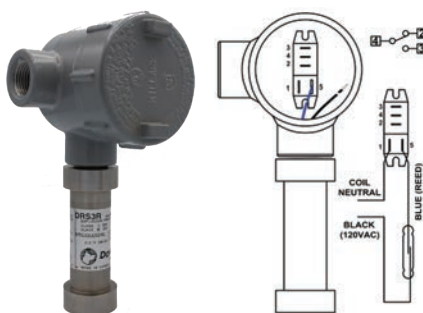
Magnetic Level Gauge Switches

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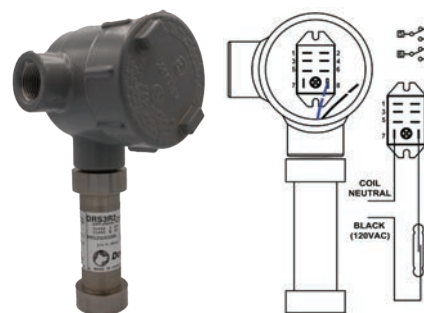
DRS3

Low Power Single Pole Reed



DRS3R

High Power Single Pole Relay



DRS3R2

High Power Double Pole Relay



CSA (NRTL) APPROVED FOR
HAZARDOUS LOCATIONS

CLASS 1 DIVISION 1 GROUP C & D

CLASS 2 DIVISION 1 GROUP D E, F & G

CLASS 1 DIVISION 2 GROUP A, B, C & D



CSA (NRTL) APPROVED FOR
HAZARDOUS LOCATIONS

CLASS 1 DIVISION 1 GROUP C & D

CLASS 2 DIVISION 1 GROUP E, F & G



CSA (NRTL) APPROVED FOR
HAZARDOUS LOCATIONS

CLASS 1 DIVISION 1 GROUP C & D

CLASS 2 DIVISION 1 GROUP E, F & G

EXPLOSION PROOF

ELECTRICAL RATING

Voltage:	120 VAC MAX
Switching Power:	25 WATTS OR VA MAX. A Snubber or suppressor must be used across all inductive loads (Relays)
Temperature: (see note 1)	-40 to 125 °C MAX -40 to 257 °F MAX

Voltage:	120 VAC MAX
Switching Current:	10 AMPS MAX (Relay Contacts)
Temperature: (see note 1)	-40 to 125 °C MAX -40 to 257 °F MAX

Voltage:	120 VAC MAX
Switching Power:	10 AMPS MAX (Relay Contacts)
Temperature: (see note 1)	-40 to 125 °C MAX -40 to 257 °F MAX

TERMINALS

BLACK	COMMON (LIVE IN)	1	NEUTRAL IN (TO ONE SIDE OF COIL)	1	SWITCHED OUT POLE 1	6	POLE 2 OUT COMM
BLUE	MAKES WITH BLACK ON FLOAT ASCENT	2	SWITCHED OUT	2	SWITCHED OUT POLE 2	7	COIL IN NEUTRAL
BROWN	MAKES WITH BLACK ON FLOAT DESCENT	3	SWITCHED OUT	3	SWITCHED OUT POLE 1	8	COIL (INTERNAL CONNECTION TO BLUE WIRE) BLACK WIRE LIVE 120V IN
		4	LIVE IN (RELAY COM & INTERNAL BLACK WIRE)	4	SWITCHED OUT POLE 2		
		5	COIL (INTERNAL CONNECTION TO BLUE WIRE)	5	POLE 1 OUT COMM		

Note: 1. Higher temperatures can be achieved by using layers of micro-therm insulation.



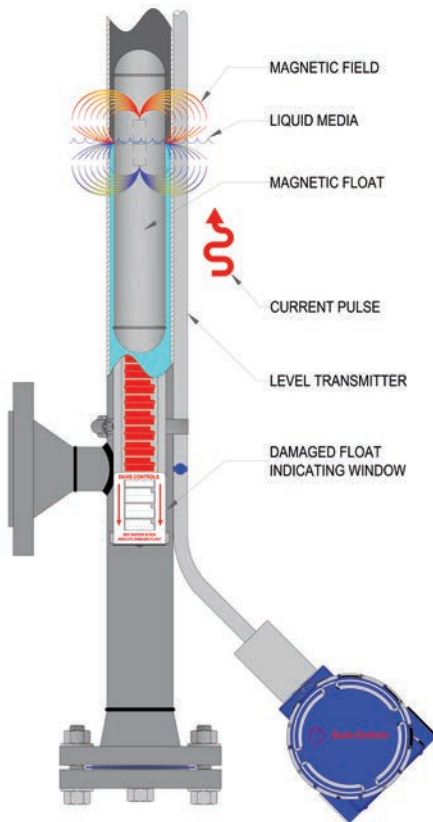
Davis Controls®

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Magnetostrictive Level Transmitter

Accurate, Affordable, Adaptable and Reliable

MAGNETOSTRICTIVE LIQUID LEVEL SENSORS consists of a stem, sensor head and a float that travels through the level chamber. The float contains a permanent magnet and the stem houses a wire waveguide. The level head generates electrical pulses which travel through the vertical wiring within the waveguide or sensor tube. These fixed pulses generate a magnetic field around the wire, which interacts with the float inside the process chamber.



THE WAVEGUIDE is constructed of a metal with ferromagnetic properties, making it possible to measure the float position. As a result, the molecules in the metal waveguide line up with magnetic fields. A magnetostrictive level transmitter uses two magnetic fields to align the molecules in different directions to create a detectable point on the wire waveguide. The waveguide is magnetized by an electrical pulse that passes across it, aligning the molecules in one direction. Molecules aligned in a different direction by the pulse's contact with the float's competing magnetic field cause a vibration to return to the sensor housing at a defined speed. This vibration is known as a strain pulse. By measuring the time delay between the initial electrical pulse and resulting strain pulse, the distance to the float can be determined with a high degree of accuracy.



Features

- Explosion Proof - Class I Division 1 & 2 Groups C & D, Class I Zone 1, Class I Zone 2
- Highly accurate and repeatable readings
- 4-20mA, RS-486 (Modbus RTU) output *
- Rugged and reliable, lengths up to 12.74 feet (3.9 m)
- Reverse polarity protection

*** Contact Davis Controls Ltd
at info@daviscontrols.com
for HART communication**

Magnetostrictive Level Transmitter

Accurate, Affordable, Adaptable and Reliable

Resolution:	4-20 mA: 14 bit DAC (1 mm) Modbus: 0.04 in (1 mm)	Distance Accuracy:	4-20 mA, Modbus: Greater of ±0.05% of FS or 1 mm
Programming:	RS-485: optional RST-6001 USB to RS-485 converter 4-20 mA: factory set or optional RST-4100 programming module	Probe Operation Temperature:	-40° - 85 °C (-40° - 185 °F) Optional: Up to 148.8 °C (300 °F) using microtherm
Enclosure:	IP65	Housing:	Cast aluminum, epoxy coated
Stem:	0.5" Ø 316L SS	Stem Length:	1 - 12.74 ft (0.3 - 3.9 m)
Electrical Connection:	Terminal Block, 12-24 VDC	Typical Current Draw:	4-20 mA: (single) 4-22 mA, Modbus (RS-485): 25 mA
Output:	Single or dual loop-powered 4-20 mA	Set Points:	RS-485: optional RST-6001 USB to RS-485 converter 4-20 mA: factory set or optional RST-4100 programming module

CALIBRATION

Zero Adjust Range:	Anywhere within the active length
Span Adjust Range	FS = 0.5 ft from Zero
Electronics Orientation	Top or bottom options available

FIELD INSTALLATION

Transmitter Length:	Up to 12.74 ft (3.9 m)
Size (Electronics Enclosure)	Call for details
Wiring	2-wire connection shielded cable or twisted pair to screw terminals through a conduit opening.

ENVIRONMENTAL

Sealing	Potted sensor cartridge, electronics conformally coated	Humidity	1 to 100% R.H.
Electronic Operating Temp.	-34 to 71 °C (-30 to 160 °F)	Materials	Contact Davis Controls for insertion type level device 316 Stainless Steel standard. Optional, other material available.

AGENCY APPROVALS

CANADIAN STANDARDS (cCSAus)

Rated 12-24 VDC; 4-20 mA Ta 85 °C Class I, Division 1 & 2 Groups C & D T4	Ex d IIB T4 Ex nA IIB T4 Class I, Zone 1; AEx d IIB T4 Class I, Zone 2; AEx nA IIB T4
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*All specifications are subject to change without notice.
Consult DavisControls Ltd. for verification of specifications critical to your needs.*

DT__

T__

Sa__

Sb__

DB__

B__

BLIND		FIXED		NPT
FIXED	REMOVABLE	FEMALE		MALE
		DT3 	DT4 	

BLIND		FIXED		NPT
FIXED	REMOVABLE	FEMALE		FEMALE
T1 	T2 	T3 	T4 	T5
	T15 			








BLIND	NPT		FLANGE	
	MALE	FEMALE	RFSO	RFWN
S1 	S2 	S3 	S4 	S5
















BLIND		FIXED		NPT
FIXED	REMOVABLE	FEMALE		MALE
B1 	B2 	B3 	B4 	B5
	B15 			



BLIND		FIXED		NPT
FIXED	REMOVABLE	FEMALE		MALE
DB1 	DB2 	DB3 	DB4 	DB5
	DB15 			

DUAL BRIDLE DESIGN ONLY
(TYPE DB)

DUAL BRIDLE DESIGN ONLY
(TYPE DB)

			FLANGE		WELD			
REMOVABLE			FIXED	REMOVABLE	FIXED		REMOVABLE	
FEMALE		MALE			SOCKET	BUTT	SOCKET	BUTT
DT6 	DT7 		DT9 	DT10 				
DT16 	DT17 			DT19 				

			FLANGE		WELD			
REMOVABLE			FIXED	REMOVABLE	FIXED		REMOVABLE	
FEMALE		MALE			SOCKET	BUTT	SOCKET	BUTT
T6 	T7 	T8 	T9 	T10 	T11 	T12 	T13 	T14 
T16 	T17 	T18 		T19 			T20 	T21 

WELD	
SOCKET	BUTT
S6 	S7 
















Sa & Sb (Sides)

















- S1. No connection
- S2. NPT (MALE) nipple
- S3. NPT (FEMALE) coupling
- S4. ANSI flange
- S5. Weldneck flange
- S6. Socketweld coupling
- S7. Buttweld nipple

NOTE: Connection codes background shaded grey are most common types.

SELECT BLUE SECTION ONLY FOR A SINGLE BRIDLE DESIGN

SELECT RED AND BLUE SECTION ONLY FOR A DUAL BRIDLE DESIGN

			FLANGE		WELD			
REMOVABLE			FIXED	REMOVABLE	FIXED		REMOVABLE	
FEMALE		MALE			SOCKET	BUTT	SOCKET	BUTT
B6 	B7 	B8 	B9 	B10 	B11 	B12 	B13 	B14 
B16 	B17 	B18 		B19 			B20 	B21 

			FLANGE		WELD			
REMOVABLE			FIXED	REMOVABLE	FIXED		REMOVABLE	
FEMALE		MALE			SOCKET	BUTT	SOCKET	BUTT
DB6 	DB7 	DB8 	DB9 	DB10 	DB11 	DB12 	DB13 	DB14 
DB16 	DB17 	DB18 		DB19 		DB22 	DB20 	DB21 



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