

PIG-SIG® V

Scraper Passage Indicator

Optional mounting system available



T.D. Williamson

Bulletin No: 5110.003.10

Version: 1.2018

Supersedes: 5110.003.09 (11.2015)



Description

TDW's PIG-SIG V Scraper Passage Indicator is a device installed at prescribed intervals on pipelines to detect the passage of a scraper or sphere. This unique product functions by extending an omnidirectional trigger into the pipeline through a welded fitting; the trigger is tripped by the passage of a scraper/sphere. The TDW PIG-SIG V Scraper Passage Indicator is easy to install, compatible with all standard THREAD-O-RING nipples, as well as flanged fittings, and all but eliminates trigger breakage.

Signaling systems available with the PIG-SIG V device include a flag indicator, an electrical indicator or a flag/electrical indicator. It is compatible with all standard THREAD-O-RING nipples previously sold by TDW and are interchangeable. This makes it possible to order the PIG-SIG V unit as an upgrade conversion kit without nipple, or as a new installation kit complete with nipple.

The PIG-SIG V device can also be provided in a flange-mounted configuration per the required pipeline pressure class (up to 2500 lb.).

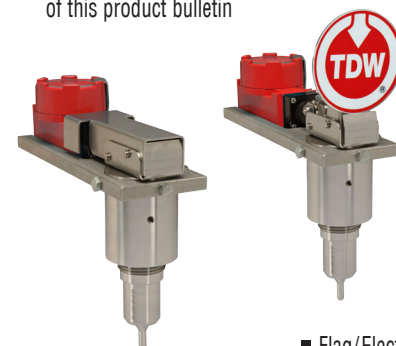
Features

Standard PIG-SIG V Passage Indicators are built to withstand the most severe offshore/onshore environments. Each PIG-SIG V device is weatherproof and corrosion-resistant. All components exposed to pipeline products are completely sealed to prevent leakage. Components exposed to the atmosphere are all 316 stainless steel — except on electrical models, where the MICRO SWITCH™ is aluminum with a protective powder coating (unless stainless steel is specially requested). The MICRO SWITCH flag indicator offers high visibility. Because the triggering toggle that extends into a pipe is omnidirectional, it does not require adjustments after it is set. This means the flag can be oriented to face any desired direction. The carbon steel nipple is manufactured from easily weldable material. All PIG-SIG indicators can be installed on or removed from a pressurized pipeline by using a TDW T-101 Tapping Machine and accessories.

Options

Available options:

- Flag Indicator with Manual Reset
- Electrical Indicator with Auto Reset
- Flag/Electrical Indicator combined
- Extended models, for installation on buried pipelines, are available in all configurations
- Special materials and O-ring seals
- Isolation Ball Valve (upon request)
- Unit can be thread-mounted to THREAD-O-RING nipple or flange-mounted
- "Build your own" PIG-SIG V assembly from the charts on the pages of this product bulletin



■ Electrical Indicator

■ Flag/Electrical Indicator

T.D. Williamson is committed to providing you with the right product to assist you in planning, budgeting and meeting the specifications for your individual application needs.

The PIG-SIG® V is patented in the U.S. (7861665) and other countries.

Viton®, Teflon®, Buna-N® and Kalrez® are trademarks of E.I. DuPont de Nemours Company.

MICRO SWITCH™ is a trademark of Honeywell International, Inc.

AFLAS® is a trademark of Asahi Glass Co., Ltd.

PIG-SIG® V Scraper Passage Indicator

04-XXXX - XXXX -

Class Options

Class*	Pipe Sizes	Mounting
9550	2 – 4-inch (50 – 100 mm)	TOR† Nipple-Mounted
9548	5-inch (125 mm) and Larger	TOR† Nipple-Mounted
4400	150 # RF	Flange-Mounted
4410	300 # RF	Flange-Mounted
4420	600 # RF	Flange-Mounted
4430	600 # RTJ	Flange-Mounted
4440	900 / 1500 # RF	Flange-Mounted
4450	900 / 1500 # RTJ	Flange-Mounted
4460	2500 # RF	Flange-Mounted

* All Ratings are ANSI Class † TOR = THREAD-O-RING™

Shaft Assembly

Extension Length		
0	None	None
1	12"	304.8 mm
2*	24"	609.6 mm
3*	36"	914.4 mm
4*	48"	1219.2 mm
5	60"	1524.0 mm
6	72"	1828.8 mm
7*	84"	2133.6 mm
8	96"	2438.4 mm
9*	108"	2743.2 mm
A*	120"	3048.0 mm

* Special options available upon request. Factory lead times may vary.

Plug Assembly

THREAD-O-RING™ Nipple-Mounted

0 = 316 Stainless Steel Omnidirectional	0
1* = Naval Brass	1
* Special options available upon request. Factory lead times may vary.	
	2
	3†
	4†
	5
	6†
	7†
	8†
	9†

OPTIONAL



Indicator Assembly

Indicator Option

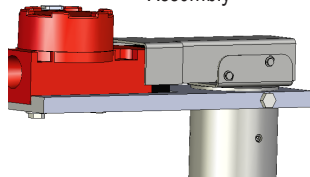
0	Flag with Manual Reset
1	Electrical with Auto Reset
2	Flag/Electrical Combined
3*	Electrical with Auto Reset (Stainless Steel Switch Housing)
4*	Flag/Electrical Combined (Stainless Steel Switch Housing)

* Special options available upon request. Factory lead times may vary.

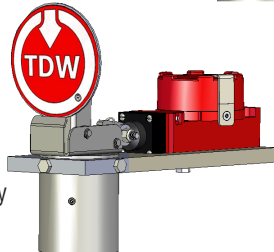
Flag Indicator Assembly



Electrical Indicator Assembly



Flag/Electrical Indicator Assembly

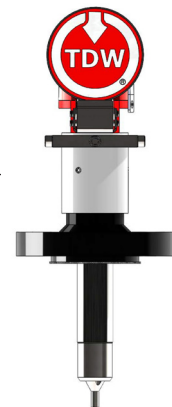


Extended Indicator



Flange-Mounted THREAD-O-RING™ Material

0	A105 & A350 LF2 CL1 Dual Certification
1	A105 & A350 LF2 CL1 Dual Certification
2	A182 F316 w/EN-10204 3.1 Certification
3	A182 F316 w/EN-10204 3.2 Certification
4	A694 F52 w/EN-10204 3.1 Certification



Example: 04-9548-0100-51

This example is a PIG-SIG V indicator with a THREAD-O-RING nipple and a nipple-mounted flag indicator, 12 in. extended shaft for 6 in. and larger pipe with .250 in. to .500 in. wall.

Suffix*

OPTION

THREAD-O-RING™ Nipple-Mounted Options

Flange-Mounted Assembly Options

O-Ring Material

Nom. Pipe Size

Wall Thickness

Nipple Length

Suffix

		in.	mm	in.	mm	in.	mm	Suffix
0	Explosive Decompression & Extrusion Resistant Viton®	2	50	0.125 - 0.188	3.175 - 4.775	4.250	108.0	11
1	Buna-N (Low Temp.)	2	50	0.189 - 0.375	4.801 - 9.525	4.125	104.8	07
2	Neoprene	2.5	65	0.125 - 0.188	3.175 - 4.775	4.250	108.0	10
3†	EPDM	2.5	65	0.189 - 0.375	4.801 - 9.525	4.125	104.8	06
4†	Kalrez®	3	80	0.062 - 0.125	1.575 - 3.175	4.375	111.1	24
5	Buna	3	80	0.125 - 0.188	3.175 - 4.775	4.250	108.0	09
6†	Viton® GF	3	80	0.189 - 0.375	4.801 - 9.525	4.125	104.8	05
7†	Teflon®	3	80	0.376 - 0.562	9.550 - 14.275	3.938	100.0	18
8†	Explosive Decompression Resistant AFLAS®	3.5	90	0.125 - 0.188	3.175 - 4.775	4.250	108.0	08
9†	Viton® (Low Temp.)	3.5	90	0.189 - 0.375	4.801 - 9.525	4.125	104.8	04
		4	100	0.062 - 0.125	1.575 - 3.175	4.375	111.1	24
		4	100	0.125 - 0.188	3.175 - 4.775	4.250	108.0	03
		4	100	0.189 - 0.375	4.801 - 9.525	4.120	104.8	01
		4	100	0.376 - 0.562	9.550 - 14.275	3.938	100.0	17
		4	100	0.400 - 0.587	10.160 - 14.910	3.913	99.4	22
		4	100	0.563 - 0.750	14.300 - 19.050	3.750	95.3	21
		5	125	0.125 - 0.188	3.175 - 4.775	4.250	108.0	13
		5	125	0.189 - 0.375	4.801 - 9.525	4.125	104.8	12
		5	125	0.563 - 0.750	14.300 - 19.050	3.750	95.3	20
		6 & up	150 & up	0.250 - 0.500	6.350 - 12.700	4.000	101.6	51
		6 & up	150 & up	0.501 - .0750	12.725 - 19.050	3.750	95.3	52
		6 & up	150 & up	0.751 - 1.000	19.075 - 25.400	3.500	88.9	53
		6 & up	150 & up	1.001 - 1.250	25.425 - 31.750	3.250	82.6	54
		6 & up	150 & up	1.251 - 1.500	31.775 - 38.125	3.000	76.2	55
		6 & up	150 & up	1.501 - 1.750	38.125 - 44.450	2.750	69.9	56
		6 & up	150 & up	0.125 - 0.249	3.175 - 6.375	4.250	108.0	64
								99

† Special options available upon request.
Factory lead times may vary.

Option

w/EN-10204 3.1

w/EN-10204 3.2

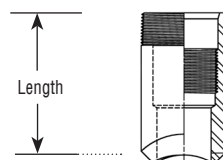
Contact your TDW representative with pipe size, wall thickness, desired extension length and flange type to determine the appropriate 4-digit suffix.



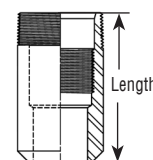
* Please indicate if protection for environmentally harsh conditions is required.

THREAD-O-RING™ Nipple
part number: 00-1023-0333-SUFFIX

5 in. & Smaller Pipe



6 in. & Larger Pipe



PIG-SIG® V Scraper Passage Indicator

THREAD-O-RING™ Nipple Material

Size & Grade:	2 NPS XXS ASTM A 333 Grade 6 seamless steel pipe
Tensile Requirements:	35,000 psi SMYS - 60,000 psi SMTS
Impact Requirements:	13 ft-lbf min. avg. three specimens 10 ft-lbf min. one specimen only
	Impact Temperature -50° F
Chemical Requirements:	Composition, % - Carbon 0.30 max, Manganese 0.29-1.06 Phosphorus 0.025 max., Sulfur 0.025 max., Silicon 0.10 min.
Test Report:	Certified Test Reports furnished per ASTM A 530

THREAD-O-RING™ Flange Material

Grade:	A105 / A694 F52 / A350 LF2 triple certified
Tensile Requirements:	Yield 360 N/mm2, Tensile 485 N/mm2
Impact Requirements:	-46° C, 27 J avg. three specimen, 20 J minimum one specimen
Chemical Requirements:	C 0.26% max., Mn 1.35 % max., P 0.025% max., S 0.025% max., Si 1% max.
Test Report:	EN 10204 3.1

THREAD-O-RING™ Pressure Temperature Ratings

Pressures are in pounds per square inch, gage (psig). Temperatures are in Fahrenheit.

Piping Code Temp. ° F	B31.3	B31.4 F = .72	F = .72	B31.8 F = .60	F = .50	F = .40
-50	3159					
-20 to 250	3159	3743	3743	3120	2600	2080
300	3159		3620	3017	2514	2011
350	3159		3493	2911	2425	1940
400	3159		3369	2808	2340	1872
450	3072		3246	2246	1872	1497
500	2985					

THREAD-O-RING™ Pressure Temperature Ratings

Pressures are in bar. Temperatures are in Celsius.

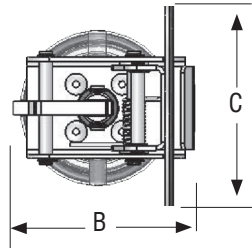
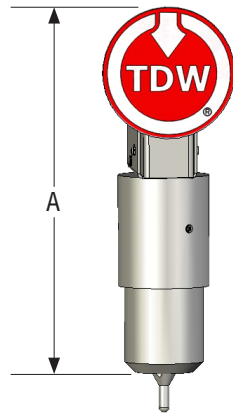
Piping Code Temp. ° C	B31.3	B31.4 F = .72	F = .72	B31.8 F = .60	F = .50	F = .40
-46	218					
-29 to 116	218	258	258	215	179	143
149	218		250	208	173	139
177	218		241	201	167	134
204	218		232	194	161	129
232	212		224	155	129	103
260	206					

Pressures do not include allowance for corrosion. O-Ring material selection must be suitable for service fluids and temperature requirements.

Due to magnet degradation, the temperature for the plug assembly is limited to 200° F (93° C)

PIG-SIG® V Scraper Passage Indicator

Flag Indicator with Manual Reset



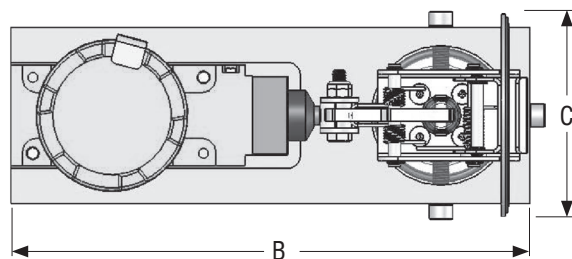
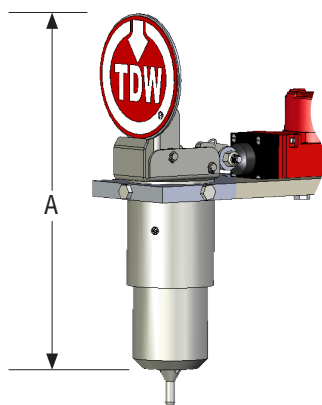
	A		B		C		Weight		Part Number
	Inch	mm	Inch	mm	Inch	mm	Lb.	Kg.	
Basic:	11.26	311	3.09	78	4.00	101	9	4	04-9548-0000
Extended:									
	36	900					20	9.0	04-9548-0300*
	48	1200					25	11.5	04-9548-0400*
	60	1500					29	13.0	04-9548-0500
	72	1800					34	15.5	04-9548-0600
	84	2000					39	18.0	04-9548-0700*
	96	2500					44	20.5	04-9548-0800

The basic indicator includes:
2 in. (50 mm) THREAD-O-RING™ nipple,
plug assembly and indicator assembly.

The extended indicator includes the
same items, as well as an extended
length indicator assembly.

* Special options available upon request. Factory lead times may vary.

Flag Indicator with Manual Reset - Electrical Indicator with Auto Reset Combined



	A		B		C		Weight		Part Number
	Inch	mm	Inch	mm	Inch	mm	Lb.	Kg.	
Basic:	11.26	311	10.25	260	4.125	105	14	6	04-9548-2000
Extended:									
	36	900					25	11.0	04-9548-2300*
	48	1200					30	14.0	04-9548-2400*
	60	1500					35	16.0	04-9548-2500
	72	1800					40	18.0	04-9548-2600
	84	2000					45	20.0	04-9548-2700*
	96	2500					50	23.0	04-9548-2800

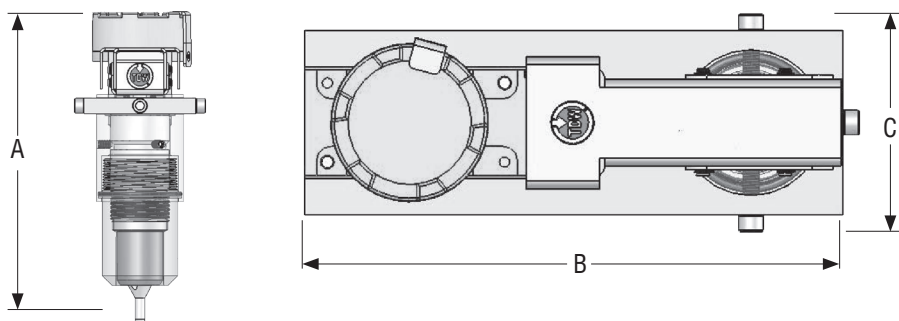
The basic indicator includes: 2 in.
(50 mm) THREAD-O-RING nipple,
plug assembly and flag/electrical indicator
assembly. The electrical indicator consists
of a weatherproof, explosion-proof, ATEX
Certified MICRO SWITCH™ (LSX, double-
pole, double-throw).

The extended indicator includes the
same items, as well as an extended length
indicator assembly.

* Special options available upon request. Factory lead times may vary.

PIG-SIG® V Scraper Passage Indicator

Electrical Indicator with Auto Reset



The basic indicator includes:
2 in. (50 mm) THREAD-O-RING™ nipple,
plug assembly and electrical indicator
assembly. The electrical indicator consists
of a weatherproof, explosion-proof, ATEX
Certified MICRO SWITCH™ (LSX, double-
pole, double-throw).

The extended indicator includes the
same items, as well as an extended length
indicator assembly.

	A		B		C		Weight		Part Number
	Inch	mm	Inch	mm	Inch	mm	Lb.	Kg.	
Basic	8.59	218	10.25	260	4.125	105	14	6	04-9548-1000
Extended:									
	36	900					25	11.0	04-9548-1300*
	48	1200					30	14.0	04-9548-1400*
	60	1500					35	16.0	04-9548-1500
	72	1800					40	18.0	04-9548-1600
	84	2000					45	20.0	04-9548-1700*
	96	2500					50	23.0	04-9548-1800

* Special options available upon request. Factory lead times may vary.

PIG-SIG® V Scraper Passage Indicator

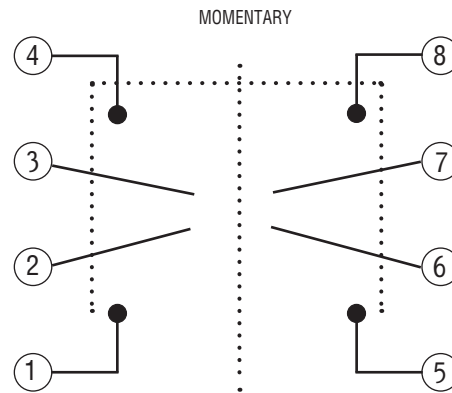
Electrical Indicator Switch Specifications

MICRO SWITCH™ Electrical Diagram

Electrical specifications:

- Double-Pole
- 2 N.O., 2 N.C.
- 3/4 in. conduit

Note: When a Flag Indicator is used in combination with the electrical switch, the switch will open or close when the flag is reset.



Switch Specifications

MICRO SWITCH™	Weatherproof, explosion-proof switch BXC4L for use either indoors or outdoors in hazardous atmospheres
Temperature Range:	-40° F (-40° C) to 185° F (85° C)
Housing Materials:	Aluminum and Zinc (Optional: Stainless Steel)
Seals:	Fluorosilicone
NEMA Standards:	1, 3, 4, 4X, 6, 7, 9 and 13
UL listed (File No. E61730) and CSA certified (File No. LR57327):	Class I, Div. 1, Groups B, C, and D (Listings covered in Div. 1 are also covered in the same groups in Div. 2) Class II, Div. 1, Groups E, F and G (IEC standards: EExd IICT6, IP67)
Electrical Ratings:	10 amps continuous carry. Circuits on any one pole must be the same polarity
ATEX Certification:	EExd II T6 category II 2 GD, SIRA 00ATEX 1037X

AC Volts - Pilot Duty: 600 VAC, 720VA

Circuitry	VAC	Amps at 0.35 Power Factor	
		Make	Break
Double-Pole, Double-Throw	120	30	3
	240	15	1.5
	480	7.5	0.75
	600	6	0.60

DC Volts - Pilot Duty: 240 VDC, 30 watts

Circuitry	VDC	Make and Break Amps	
		Inductive	Resistive
Double-Pole, Double-Throw	24	10	10
	120	0.25	0.8
	240	0.15	0.4

PIG-SIG® V Scraper Passage Indicator

Recommended Spare Parts List

Component	Quantity in Assembly	Part Number
O-ring, Plug	1	00-8440-0003-00
Backup Ring	1	00-1586-0066-00
O-ring, Cap	1	00-8144-0001-00
Set Screw	3	00-8176-0001-00
1-inch Hex Plug Holder*	1	00-8138-0000-00
1-inch Hex Bit †	1	00-8235-0001-00
Brush Magnet Adapter*	1	04-3998-0000-00
THREAD-O-RING™ Thread Chaser	1	05-0347-0000-00
Magnet Holder Assm. with Filter Pack	1	04-4133-0000-00

* If PIG-SIG V is to be installed or removed under pressure with removal tool, these component(s) will be required.

† If PIG-SIG V is to be installed with no pipeline pressure, these component(s) will be required.