City of Pompano Beach, Purchasing Division
1190 N.E. 3rd Avenue, Building C
Pompano Beach, Florida, 33060

October 5, 2012

ADDENDUM #4, BID H-24-12
REHABILITATION OF WASTEWATER PUMP STATION NO. 81

To Whom It May Concern,

The deadline for submission of sealed bids is extended to 2:00 p.m., October 15.

Please review the following responses to requests for information.

Q1: In Article 41 of the above referenced projects, you state that in the event the work involves the removal and disposal of asbestos-related materials, Contractor shall carry Asbestos Liability-Occurrence insurance. Please confirm whether there is asbestos related materials on this project or not, and whether you will require this insurance coverage.

A1: No asbestos-related materials on the project.

Q2: How can we obtain a full size set of plans that are clear and to scale? The plans we downloaded from your website are very small and the printing is fuzzy and they are not to scale, and there are no dimensions on the plans to scale from.

A2: The scales are shown on the plans as follows:

- 1” = 10’ Plan View
- 1” = 2’ Elevation

They should print on 36” x 24”.

Q3: What length is required for the pump power cords and sensor cables for LS #65 & LS #81?

A3: It is defined by the depth of the well to the control panel, with a few feet of slack to be coiled and attached to the cable hooks inside the wet well. The length changes for each site.

Q4: There are many types of test reports that can be supplied for submersible pumps. The specifications for LS #65 & #81 (page 33 32 16 -2) state that Test reports must be submitted via a written report showing that factory pump inspections and tests have been successfully performed. Could a more detailed description of what type of pump inspections and test reports are to be provided?

A4: Pump manufacturers test and inspect each pump once assembled and prior to shipping to the client. A test/inspection report for each pump is then generated. Contractor is to request said test report from the manufacturer for all pumps and provide a copy to the City

Q5: (Station 81) **Bid Item 26.** Description Furnish and Install Flow Meter with By Pass – We see nothing on the plans or specifications for this bid item.

A5: Bid H-24-12 (Pump Station No. 81) page 17, Bid Proposal form, Item 26., is changed to read "Furnish and install force main pressure transducer" (lump sum). *The description and location for the force main pressure transducer is enclosed with this Addendum. This item has been revised on the bid proposal page; bidders must use the revised bid proposals form.*

Q6: (Station 81) **Bid Item 27.** Description is for FPL Service Replacement Cost/Electrical Service Conduit & Wire. Please advise if there are suppose to be any FPL Cost associated with Bid Item 27? Seems to be confusion with allowance amount for Bid Item 29?

A6: Delete this line item; Allowance in item 29 is to cover this.
The revised bid proposal page is enclosed; bidders must use the revised page.

Q7: (Station 81) **Bid Item 29.** Description Service Metercan, Disconnects, Step Down Transformer Is an allowance for $16,200.00 – is this correct? We are not to include these items in our bid but use the allowance amount?

A7: Correct.

Q8: Coatings – There are a few products out now that are equal too or better than sewpercoat can we us an equal coatings system?

A8: The City has approved Refratta HAC 100 as an approved equal to Sewpercoat.

Q9: Could you please provide direction on the requirement's to submit our patented epoxy coating products as equal for the pumping stations 65, 81 projects and other projects in the future?

A9: The Utilities Department has a procedure to review new products, such as coatings, for use in the City's system. The procedure is outlined on the the City's website: http://mypompanobeach.org/directory/utilities/pdf/Procedures%20for%20Evaluating.pdf Contact Bobby Clayton, Wastewater Pumping Supervisor, at (954) 786-4154, to start the process of having alternate coatings reviewed for including in future bids.

Q10: Request C.C. Control Corp. to be approved as an equal control panel supplier to Champion Controls.

A10: So long as the plans/specs are adhered to (with exception of the manufacturer), we see no reason why CC Controls Corp. could not be considered as an alternative to Champion Controls for the control panel.

Q11: Are Pumps and control panel supplied by city? If so, what brand? Also, what is lead time for city supplied equipment? Plans listed panel and pumps supplied by city.

A11: Please refer to Items #1 and #2 on Addendum #1.

Q12: If lead time of pump(s) and controls is 10-12 weeks will contract time be extended and/or NTP delayed?

A12: City will evaluate lead time and if warranted incorporate into schedule and grant time extension based on critical path schedule.

Q13: Are professional surveyor as builts required for this project?

A13: Yes. Refer to Section 1.3 SUBMITTALS of the Technical Specifications.

Q14: Sheet C.4.0 note says contractor shall verify valve seal in “good” operating condition. What does “good” entail? If seal is not good, it is called out to be replaced. Please define what contractor is responsible for in replacing seal. Line stop may be necessary unless there is an isolation valve in close proximity. Does contractor include cost of line stop? Also, what style and brand of valve is existing?

A14: A valve in good operating condition is one that is fully operable, is able to provide a leak-free seal when in the closed position and still possesses well-encapsulated plug. The contractor shall obtain approval of their assessment of this valve under the supervision of a City representative. If it is determined that the valve isn’t sealing properly and a line-stop is required this will be addressed as a change order.

Q15: Underground pumpout is shown as flanged with stainless bolts. Is this correct, or is mj desired? Stainless steel bolts are required for buried fittings?

A15: MJ fittings are acceptable for underground installation. All bolts within the wet well/valve vault must be 316 SS.

Q16: Will any 300 grade stainless suffice?

A16: Grade 316 SS shall be used.

Q17: Who supplies blue ribbon transmitter w/kit?

A17: Transmitter shall be provided by the contractor.

Q18: Wet well condition & cleaning system compounds issue of MIC (biogenic corrosion) and creates an even more harsh environment for equipment and new proposed coating. Would city/engineer connecting this unit into city water/reuse in order to cut down on sulfate levels in wet well and prolong life of coating and equipment?

A18: The requirement for the wastewater conditioning and cleaning system is deleted from these two projects. Do not include this system in your bid.

Q19: Please provide detailed list of what materials/equipment are being provided by city with cut sheets if available.

A19: Information was provided in Addendum #1.

Q20: Drawing E.3 on LS 81 refers to 480 volt transformers to remain on the FPL pole. Electrical riser calls for 120/208 volts. What is the voltage for this site?

A20: Voltage for LS-81 is 480v. Voltages indicated on the meter and control panel have been changed to properly reflect this.

Q21: Drawing E.3 also indicates install a disconnect before the meter. If the power is FPL they won't allow a disconnect before the meter.

A21: Code requires a meter disconnect to be installed ahead of the meter to interrupt service for meter maintenance on 480v services and above. This is not considered the primary service disconnect. This would only be required on LS-81 and not LS-65.

Q22: How far away is the FPL pole from the station at LS 65 for the electrical service?

A22: Based on sheet C.3.0 the utility pole is approximately 110 feet from the control panel station.

Q23: What type of conduit will be required for underground, exposed and also to the wet well from the control panel?

A23: PVC conduit should be used for the underground connections as well as the connection from the wet well to the control panel. Galvanized steel conduit should be used for the exposed connections.

Q24: Can we please get the coatings verified for the pipe, valves and fittings portion of the project?

A24: All exterior pipe surfaces to be 100% Polyamine Epoxy, Tnemec Perma-Glaze, Series 435. Inside lining of all pipe shall be Protecto 401 lined. The exterior of the discharge headed and valve vault piping to be coated in Tnemec.

Q25: Request to supply HOMA pump as an approved equal. Lift Station 65 AMX434-250/13P/C. Lift Station 81 AMX644-270/29P/C.

A25: The City has no objections to the proposed HOMA pumps.

Q26: Request to supply Ebara pump as an approved equal; Lift Station 65 80DKCMKFU67.5 (10 HP), Lift Station 81 100DLKFU618 (25 HP.)

A26: The City has no objections to the proposed HOMA pumps.

Q27: Request to supply Wilo EMU pumps as an approved equal.

A27: We cannot accept EMU at this time as the City has not completed its evaluation of this pump in our system.

Q28: We have spoken with the named pump vendor. If everything was perfect and the pumps were released early there would not be enough time left to complete these projects with the time limits set in the bid documents. We are requesting the City consider adding 30 to 60 days to the contract time.

A28: Contract completion times will not be changed. If the awarded contractor runs into this issue the City will consider granting a time extension based on pump manufacturer letter.

ADDITIONAL INFORMATION AND CLARIFICATIONS

The City's electrical sub-consultant has revised two plan sheets as follows:

E3.0 on #65, revised electrical riser and notes on site plans

E3.0 on #81, revised electrical riser and notes on site plans

The revised plan sheets are posted enclosed this addendum.

The remainder of the solicitation is unchanged at this time.

Revised bid proposal pages 16-18 are enclosed; bidders must submit their bid on the revised pages.

Acknowledge receipt of this Addendum in the area provided on Page 14 of the bid.

Very truly yours,

Leeta Hardin
General Services Director

enclosures

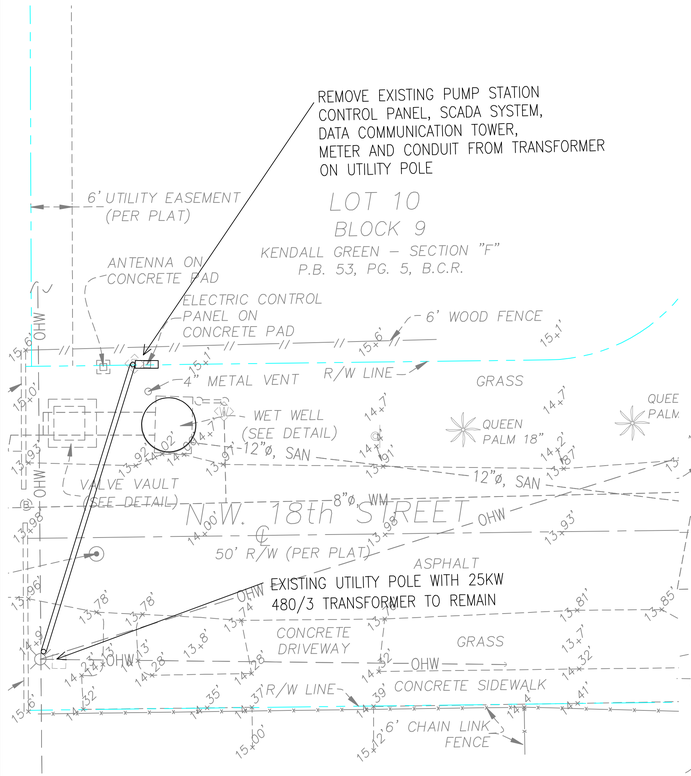
cc: website
file

Item	Description	Quantity	Unit	Unit Price	Amount
	GENERAL				
1.	Bonds and Insurance	1	LS	$_____	$_____
2.	Mobilization	1	LS	$_____	$_____
3.	Maintenance of Traffic	1	LS	$_____	$_____
4.	Bypass Pumping Operation for Duration of Construction Activities	1	LS	$_____	$_____
5.	Furnish and Install Temporary Lift Station Bypass Pumps and Piping	1	LS	$_____	$_____
6.	Permit Fees	1	AL	$ 5000.00	$ 5000.00
7.	Tree Canopy Fund	1	AL	$ 1000.00	$ 1000.00
8.	Indemnification	1	LS	$ 10.00	$ 10.00
9.	Contingency	1	AL	$ 25000.00	$ 25000.00
10.	Spare Parts Per Note 22. On Sheet E.4.3	1	LS	$_____	$_____
	SUBTOTAL, GENERAL				**$**_____
	DEMOLITION				
11.	Remove Existing 8” Forcemain	50	LF	$_____	$_____
12.	Remove and Salvage Existing Pumps	1	LS	$_____	$_____
13.	Remove and Salvage Existing Valves in Wet Well and Valve Vault	1	LS	$_____	$_____
14.	Remove and Dispose of All Existing Pipe, Fittings, Hatches, Vents, Equipment and Panels	1	LS	$_____	$_____
15.	Electrical Demolition	1	LS	$_____	$_____
	SUBTOTAL, DEMOLITION				**$**_____
	SANITARY SEWER & WATERMAIN				
16.	Core Drill Existing Sanitary Sewer Structure	9	EA	$_____	$_____
17.	Furnish and Install Wet Well 3’x4’ TPD Hatch	1	EA	$_____	$_____

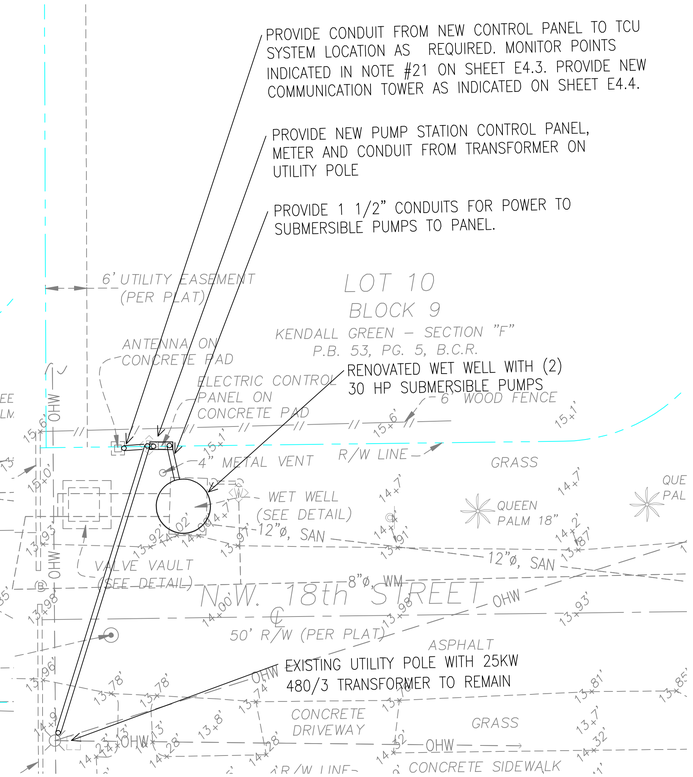
18.	Furnish and Install Valve Vault 4.5'x5' TPD Hatch	1	EA	$_____	$_____
19.	Clean and Coat Interior Surfaces of All (Existing and Proposed) Concrete Structures	1	LS	$_____	$_____
20.	Connection to Existing 10" Forcemain	1	LS	$_____	$_____
21.	Furnish and Install 8" Forcemain	50	LF	$_____	$_____
22.	Furnish and Install 2 Submersible Pumps	1	LS	$_____	$_____
23.	Furnish and Install Lift Station Components in Wet Well and Valve Vault per Plans	1	LS	$_____	$_____
24.	Furnish and Install Pressure Transmitter	1	EA	$_____	$_____
25.	Testing	1	LS	$_____	$_____
26.	Supply and Install Force Main Pressure Transducer	1	LS	$_____	$_____
	SUBTOTAL, SANITARY SEWER & WATERMAIN				**$**_____
	ELECTRICAL				
27.	~~FPL Service Replacement Cost / Electrical Service Conduit & Wire~~	1	LS	$_____delete_	$_____delete_
28.	Electrical Power and Control Conduit and Wire, Grounding	1	LS	$_____	$_____
29.	Service Metercan, Disconnects, Step Down Transformer	1	AL	$____16200.00	$____16200.00
30.	Duplex Station Control Panel Equipment	1	LS	$_____	$_____
31.	Bypass Pumping Temp Power + Temp Controls + Emergency Power	1	LS	$_____	$_____
32.	RTU Programming @ LS CP and Owner Central Computer	1	LS	$_____	$_____
33.	New RTU Antenna Tower, DFS RTU & Batt encl / Batt	1	LS	$_____	$_____

34.	Level Transducer, CGD, Backup HWL Float	1	LS	$_____	$_____
	SUBTOTAL, ELECTRICAL				**$**_____
	RESTORATION				
35.	Stockpile or Remove Existing Limerock Base (8" Avg)	8	SY	$_____	$_____
36.	Stabilization of Subgrade (12" Avg)	8	SY	$_____	$_____
37.	Furnish and Compact Limerock Base Material (8" Avg)	8	SY	$_____	$_____
38.	Furnish and Install Sod (Match Existing Species)	8	SY	$_____	$_____
	SUBTOTAL, RESTORATION				**$**_____
	GRAND TOTAL				**$**_____

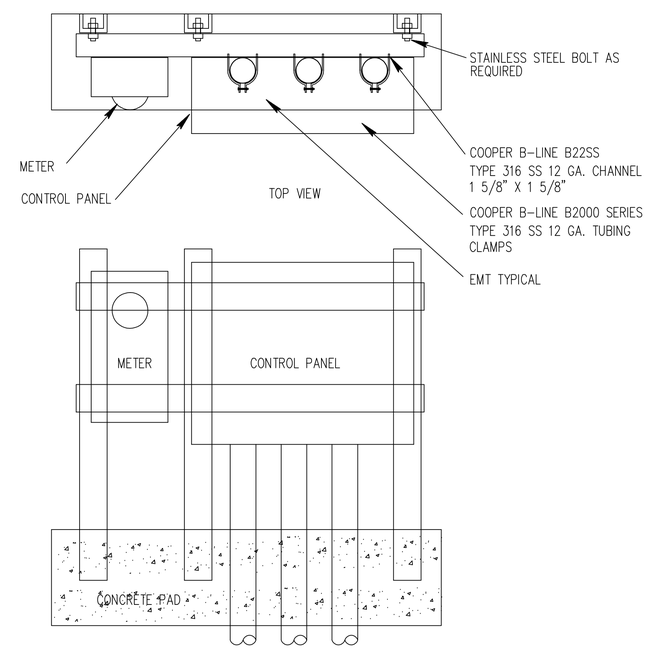
GRAND TOTAL in Words: _____



ELECTRICAL DEMOLITION
SCALE: 1"=2'



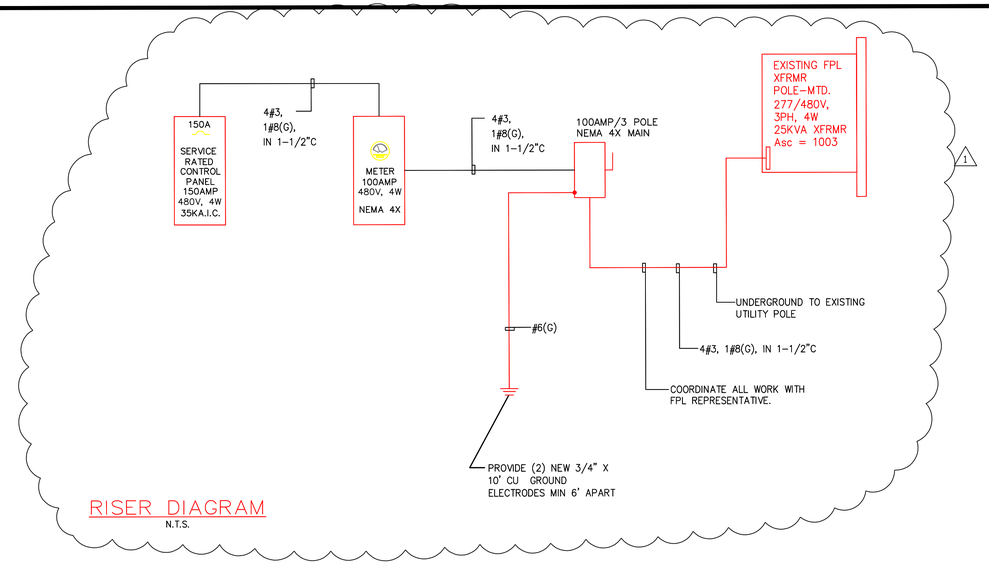
ELECTRICAL NEW CONSTRUCTION
SCALE: 1"=2'



ELEVATION

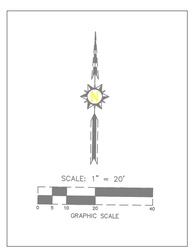
CONTROL PANEL / METER SUPPORT DETAIL

NOT TO SCALE



RISER DIAGRAM

N.T.S.



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www.callsunshine.com

THESE PLANS ARE NOT FINAL CONSTRUCTION DOCUMENTS UNTIL APPROVALS BY PERMITTING AND JURISDICTIONAL AGENCIES HAVE BEEN OBTAINED. CONSTRUCTION WITHOUT SAID APPROVALS IS AT SOLE RISK TO CONTRACTOR. ENGINEER IS NOT RESPONSIBLE FOR CHANGES MADE DUE TO PERMITTING/JURISDICTIONAL DIRECTIONS, IF CONSTRUCTION PROCEEDS WITHOUT DUE AUTHORIZATION/APPROVALS.

pompano beach
Florida's Warmest Welcome

CITY OF POMPANO BEACH, BROWARD COUNTY, FL

1201 NE 5th AVE
POMPANO BEACH, FL 33060

EAC Consulting, Inc.
CA # 7011
815 NW 57th AVE, SUITE 402
MIAMI, FL 33126
(305) 265-5400

project CAINE ENGINEERING INCORPORATED
MECHANICAL ELECTRICAL PLUMBING/FIRE PROTECTION

PUMP STATION #81 REHABILITATION

100% SUBMITTAL

DRAWING ISSUED

SUBMITTAL	No.	DESCRIPTION	DATE	BY
REVIEW 60 %				
REVIEW 90 %				
REVIEW 100 %			08/12/11	TBL
PERMIT	ø			

REVISION	No.	DESCRIPTION	DATE	BY
1		CITY COMMENTS	6/15/12	

DESIGNED : VNW | CHECKED : RBC
DRAWN : VNW | FINAL CHECK BY : RBC

ROBERT B. CAINE, P.E.
STATE OF FLORIDA – LICENSE NO. 37637

DATE : AUGUST 2011 | SCALE : AS SHOWN

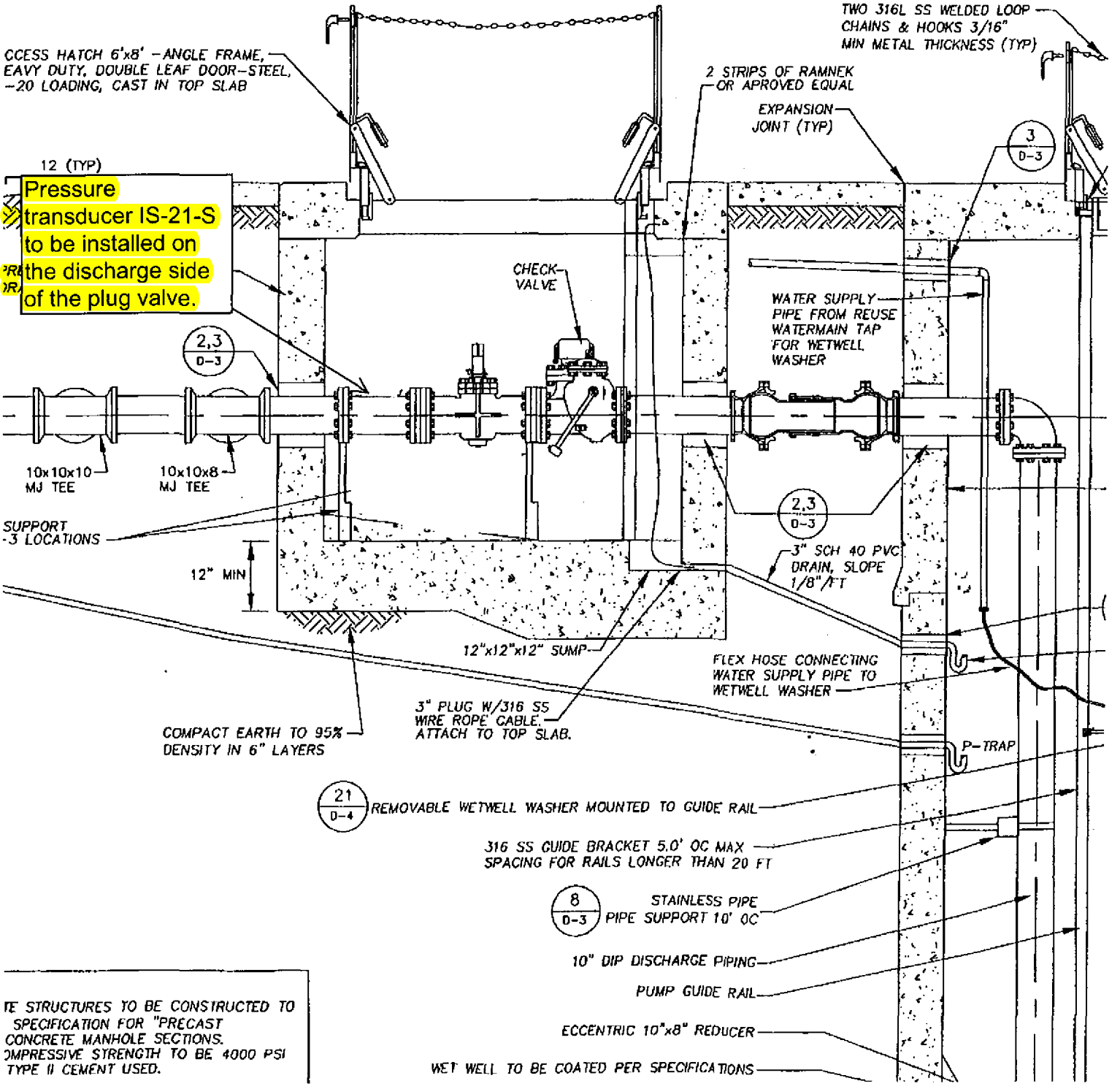
DWG TITLE: ELECTRICAL DEMOLITION/ NEW CONST.

DWG No. E.3.0

(NOT PART OF BROWARD COUNTY NOTES NOR APPROVAL) DRAWING SCALE SHOWN CORRESPONDS TO PLOT SIZE OF 24"X36". IF THIS DRAWING IS PLOTTED ON OTHER SIZE SHEET ENGINEER OF RECORD DOES NOT WARRANT ACCURACY OF DRAWING SCALE.

LOCATION REFERENCE for WATEWATER PRESSURE TRANSDUCER

IS-21-S, 0-100 PSI transducer to be installed in the valve box. Conduit to be installed to the control panel for connection purposes; the transducer is to be connected via 4-20mA to DataFlow for monitoring purposes. All associated nipples, valves and tee's shall be stainless steel.



Intrinsically Safe Pressure Transmitters for installation in hazardous locations Models IS-20-S, IS-21-S, IS-20-F, IS-21-F

WIKA Datasheet IS-20

FM APPROVED C US

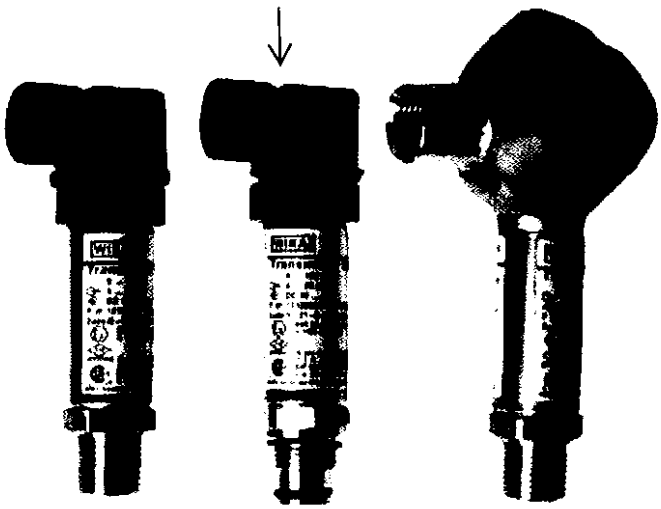
Applications

- Chemical, Petrochemical
- Oil and gas refining
- Food industry
- Mechanical engineering

Special Features

- Pressure ranges from 50 INWC to 15,000 PSI
- FM, CSA approval for
  - Intrinsically safe Class I, II and III Division 1, Group A, B, C, D, E, F, G
  - Dust Class II and III Division 1, Group E, F, G
  - Class I, Zone 0, AEx ia II C
- Ex- protection EEx ia I/II C T6 according to ATEX for:

Gases, vapors and mist:	Connection to Zone 0, Zone 1 and Zone 2
Dust:	Connection to Zone 20, Zone 21 and Zone 22
Mining:	Category M1 and M2



Left: IS-20-S standard version
Center: IS-21-S with flush diaphragm
Right: IS-20-F with integral junction box

Description

Approvals meet international standards
The IS-20 series of intrinsically safe pressure transmitters are designed for industrial pressure measurement applications in hazardous areas where intrinsically safe ratings are required.

Multiple intrinsically safe approvals include FM, ATEX, and CSA. These multiple approvals provide for global recognition and acceptance of the intrinsically safe ratings. The transmitters are labeled with all three approvals to help support international shipments of OEM equipment designed with these transmitters.

Rugged construction
The stainless steel wetted parts feature an all-welded measuring cell for improved media compatibility. There are no internal soft sealing materials that may react with the media or deteriorate over time. The compact case is also made of stainless steel and is available with environmental protection ratings up to NEMA 6 (IP 68).

The IS-21-S and IS-21-F transmitters feature a flush diaphragm process connection. They are specifically designed for the measurement of viscous fluids or media containing solids that may clog a NPT process connection.

Models IS-20-F and IS-21-F feature an integral stainless steel junction box with internal terminal block for use in extremely harsh environments. A ½" NPT female conduit connection is standard on all models and a cable compression electrical connection is available as an option.

All models require a 10 to 30 volt supply provided by an intrinsically safe power supply or through an approved intrinsically safe zener diode barrier.

WIKA®
Part of your business

Specifications — Models IS-20-S, IS-21-S, IS-20-F, IS-21-F

Specifications without model designation apply for all models.

Pressure range	50inWC	5psi	10psi	25psi	30psi	60psi	100psi	160psi	200psi
Maximum pressure*	15psi	29psi	58psi	145psi	145psi	240psi	500psi	1160psi	1160psi
Burst pressure**	29psi	35psi	69psi	170psi	170psi	290psi	600psi	1390psi	1390psi
Pressure range	300psi	500psi	1000psi	2000psi	3000psi	5000psi	8000psi	10000psi[1]	15000psi[1]
Maximum pressure*	1160psi	1160psi	1740psi	4600psi	7200psi	11,600psi	17,400psi	17,400psi	21,750psi
Burst pressure**	1390psi	5800psi	7970psi	14,500psi	17,400psi	24,650psi[2]	34,800psi[2]	34,800psi	43,500psi

(vacuum, gauge pressure, compound ranges, and absolute pressure references are available)

[1] Ranges only available with Model IS-20

[2] For Model IS-21 the burst pressure is limited to 21,000psi unless the pressure seal is accomplished by using the sealing ring underneath the hex.

*Pressure applied up to the maximum rating will cause no permanent change in specifications but may lead to zero and span shifts

**Exceeding the burst pressure may result in destruction of the transmitter and possible loss of media

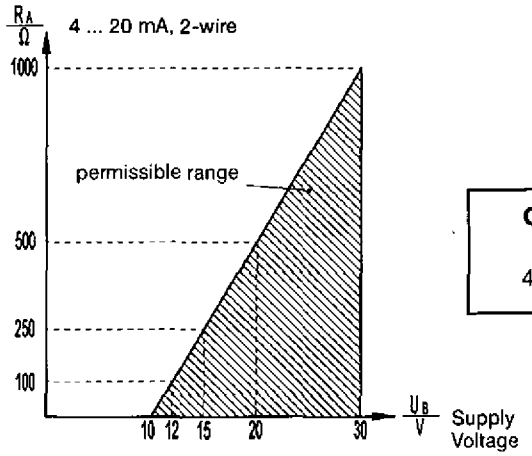
Materials		
■ Wetted parts		(for other materials see WIKA diaphragm seal program)
➢ Models IS-20-S, IS-20-F		Stainless steel
➢ Models IS-21-S, IS-21-F		Stainless steel (Hastelloy C4) O-ring: NBR (Viton or EPDM)
■ Case		Stainless steel
Internal transmission fluid [3]		Synthetic oil (Halocarbon oil for oxygen applications) [4] (Listed by FDA for food applications)
	[3] Not available with Model IS-20 in pressure ranges > 300 psi	
	[4] Media temperature for oxygen version: -30 ... +60 °C / -22 ... +140 °F. Not available in vacuum or absolute pressure ranges or in Model IS-21 flush diaphragm version > 500 psi	
Power supply U_B	DC V	$10 < U_B \leq 30$ ($11 < U_B \leq 30$ with Model IS-2ε-F)
Signal output and		4 ... 20 mA, 2-wire
Maximum load R_A		
➢ Models IS-2ε-S		$R_A \leq (U_B - 10\ V) / 0.02\ A$ – (length of cable in feet x 0.043 Ohm)
➢ Models IS-2ε-F		$R_A \leq (U_B - 11\ V) / 0.02\ A$ with R_A in Ohms and U_B in Volts
Test circuit signal / max. load R_A		$R_A < 15$ Ohm (only for Model IS-2 ε-F)
Adjustability zero/span	%	± 10 using potentiometers inside the instrument
Response time (10 ... 90 %)	ms	≤ 1 (≤ 10 ms at media temperatures below –22°F (-30°C) for ranges < 300 psi
Isolation voltage		Insulation complies with EN 50020, 6.4, 12
Accuracy [5]	% of span	≤ 0.25 (0.125) [6] (BFSL)
	% of span	≤ 0.5 (0.25) [6] (limit point calibration)
	[5] Including linearity, hysteresis and repeatability. Limit point Calibration performed in vertical mounting position with pressure connection facing down.	
	[6] For pressure ranges above 100 inWC	
Non-repeatability	% of span	≤ 0.05
1-year stability	% of span	≤ 0.2 (at reference conditions)
Permissible temperature		
■ Medium [7] [8]		-22 ... +221°F | -30 ... +105°C (extended temperature ranges see Page 6) [9]
■ Ambient [7] [8]		-22 ... +221°F | -30 ... +105°C
■ Storage [8]		-40 ... +221°F | -40 ... +105°C
	[8] Also complies with EN 50178, Tab. 7, Type C, Class 4KH Operation, 1K4 Storage, 1K3 Transport	
	[9] Response time for IS-20: ≤ 10 ms at medium temp. below -30 °C (-22 °F) for pressure ranges up to 300 psi Response time for IS-21: ≤ 10 ms at medium temp. below -30 °C (-22 °F) for all pressure ranges	
Compensated temperature range		32 ... +176°F | 0 ... +80°C
Temperature coefficients (TC) within compensated temperature range:		
■ Mean TC of zero	% of span	≤ 0.2 / 10 K (< 0.4 for pressure range ≤ 100 inWC)
■ Mean TC of range	% of span	≤ 0.2 / 10 K
Ex -protection	ATEX	Categories [7] 1G, 1/2G, 2G, 1D, 1/2D, 2D, M1, M2
Ignition protection type		EEx ia I/II C T4, EEx ia I/II C T5, EEx ia I/II C T6
-protection	FM, CSA	Class I, II and III
Ignition protection type		Intrinsically safe Class I, II, III Division 1, Groups A, B, C, D, E, F, G and Class I, Zone 0 AEx ia II C
	7) Refer to the EC type-examination certificate (BVS 04 ATEX E 068 X) for more information	

Specifications		Models IS-20-S, IS-21-S, IS-20-F, IS-21-F	
CE - conformity		89/336/EWG interference emission and immunity see EN 61 326, interference emission limit class A and B EN 50 014 (general part), EN 50 020 (instrinsic safety), {EN 50 284 (Zone 0)}, {EN 50 281-1 (dust-Ex)}, {EN 50 303 (mining industry)}	
FM, CSA		FM standards according to FMRC 3600, 3610, 3611 (including supplement #1), ISA-S12.0.01, IEC 60 529 (including amendment #1) CSA standard C22.2 No. 0-M1991 / 142-M1987 / 157-M1992 UL 50, Eleventh Edition / UL 508, Seventeenth Edition / UL 913, Sixth Edition	
HF-immunity	V/m	10	
BURST	KV	2	
Shock resistance			
➢ Model IS-2X-S	g	1000 according to IEC 60068-2-27	(mechanical shock)
➢ Model IS-2X-F	g	600 according to IEC 60068-2-27	(mechanical shock)
Vibration resistance			
➢ Model IS-2X-S	g	20 according to IEC 60068-2-6	(vibration under resonance)
➢ Model IS-2X-F	g	10 according to IEC 60068-2-6	(vibration under resonance)
Wiring protection		Protected against reverse polarity and short circuiting	
Weight ➢ Model IS-2X-S	lb	Approx. 0.45	
➢ Model IS-2X-F	lb	Approx. 0.80	

{ } Items in curved brackets { } are optional extras at additional cost.

Output signal and permissible load

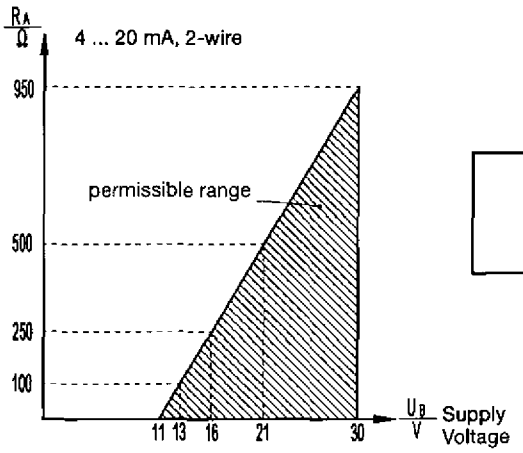
Model IS-2X-S



Output current (2-wire)

4 ... 20 mA: $R_A \leq (U_B - 10\ V) / 0.02\ A$

Model IS-2X-F



Output current (2-wire)

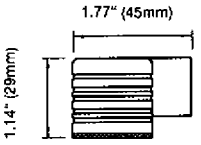
4 ... 20 mA: $R_A \leq (U_B - 11\ V) / 0.02\ A$

Dimensions in inches (mm)

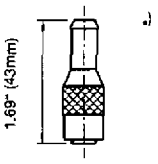
IS-2X-S (electrical connections)

Ingress Protection IP per IEC 60 529

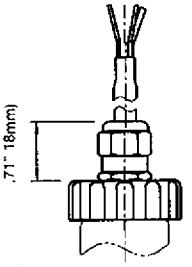
L-connector plug
DIN EN 175301-803,
Form A
½ NPT conduit
IP 65
Order code: AX
ATEX: 1/2 G, M1



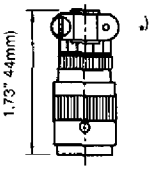
Circular connector,
M 12x1, 4-pin
IP 67
Order code: M4
ATEX: 1/2 G, M1

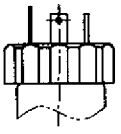


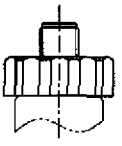
Cable with free ends
outer conductor
diameter 6.8 mm, PUR
NEMA 4 / IP 67
Order code: DL
ATEX: 1/2 G, M1

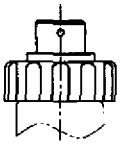


Bayonet connector
6-pin NEMA 4 / IP 67
Order code: C6
ATEX: 1/2 G
(not available with
mining approval)

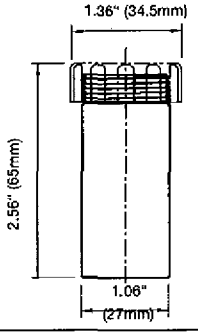






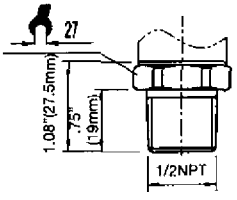


Case

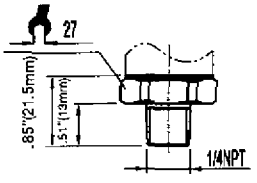


Pressure connnections IS-20-S and IS-20-F

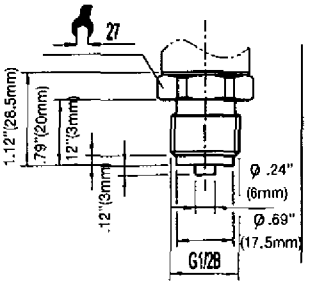
1/ 2 NPT male
Order code: ND



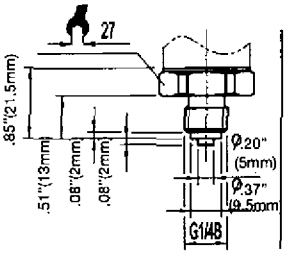
1/4 NPT male
Order code: NB



G 1/2 metric
EN 837
Order code: GD



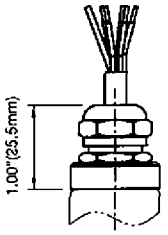
G 1/4 metric
EN 837
Order code: GB



.) Mating connectors not included.

Electrical connections IS-2*-S

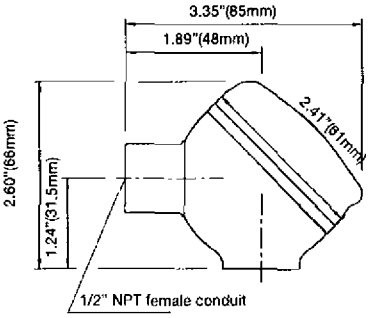
Cable with free ends, zero/span not adjustable, conductor outer diameter 6.8 mm, PUR IP 68/NEMA 6
Order code: EM
ATEX: 1/2 G, M1



Other connections available

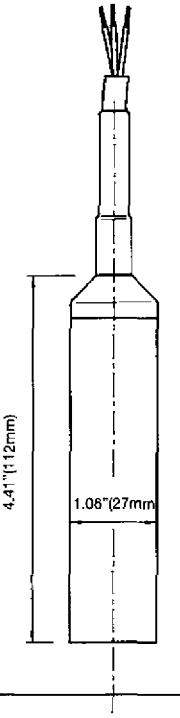
Electrical connections IS-2*-F

Integral junction box with internal spring clip terminals NEMA 4X IP 67
Order code:
FE (1/2" NPT female conduit standard)
FH (threaded connection brass nickel-plated)
FC (threaded connection stainless steel)
ATEX: 1/2 G, M1

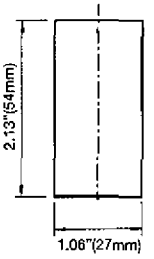


Electrical connections IS-2*-S

Cable with free ends, zero/span not adjustable, conductor outer diameter 7.5 mm, PUR (FEP)
NEMA 6P / IP 68
Order code: DM
ATEX: 1G, 1D, M1

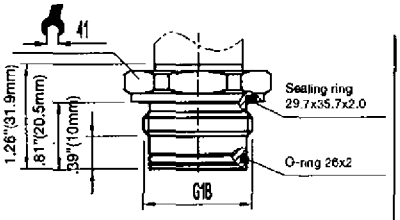


Case dimensions

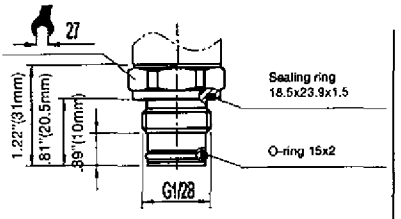


IS-21-S and IS-21-F flush diaphragm pressure connections

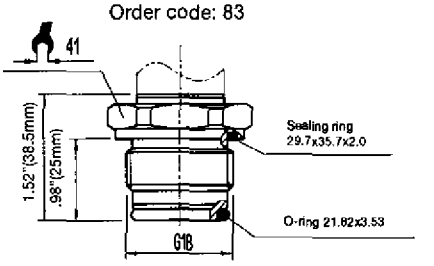
G 1
50 INWC to 25 PSI
Order code: 85



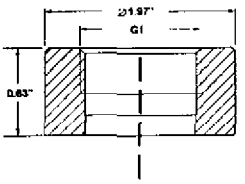
G 1/2
30 PSI to 8,000 PSI
Order code: 86



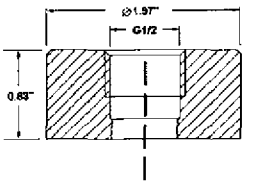
G 1
according to EHEDG **)
100 INWC to 250 PSI
Order code: 83



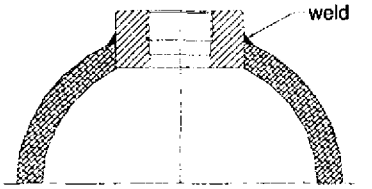
Matching P-1 weld insert adapters for IS-21-S and IS-21-F transmitters



P-1 G1 weld insert adapter
Part # 1206974
for pressure ranges ≤ 25 PSI



P-1 G1/2 weld insert adapter
Part # 1097008
for pressure ranges ≥ 30 PSI



Cross section view of P-1 adapter installed in pipe.

**) European Hygienic Equipment Design Group
( ) Items in curved brackets are optional extras at additional cost.

pressure connections for high temperature media

IS-21-S and IS-21-F, flush diaphragm
-4 °F to 302 °F (-20 °C to 150 °C)

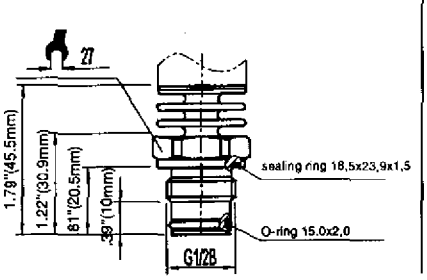
G 1/2
with 2 cooling fins (version Ⓐ)
0 ... 30 PSI up to 0 ... 8000 PSI
Order code: 86 and C

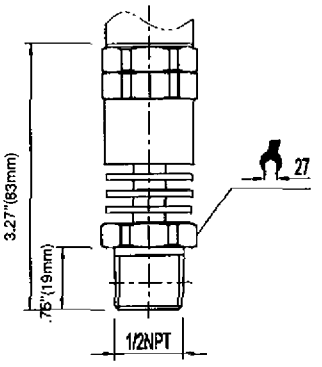
IS-20-S and IS-20-F
-40 °F to 302 °F (-40 °C to 150 °C)

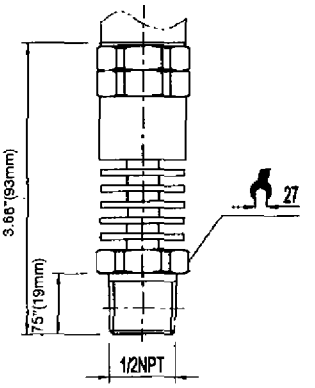
1/2 NPT male
with 3 cooling fins (version Ⓑ)
0 - 5PSI to 0-15,000 PSI
Order code: ND and 8

IS-20-S and IS-20-F
-40 °F to 392 °F (-40 °C to 200 °C)

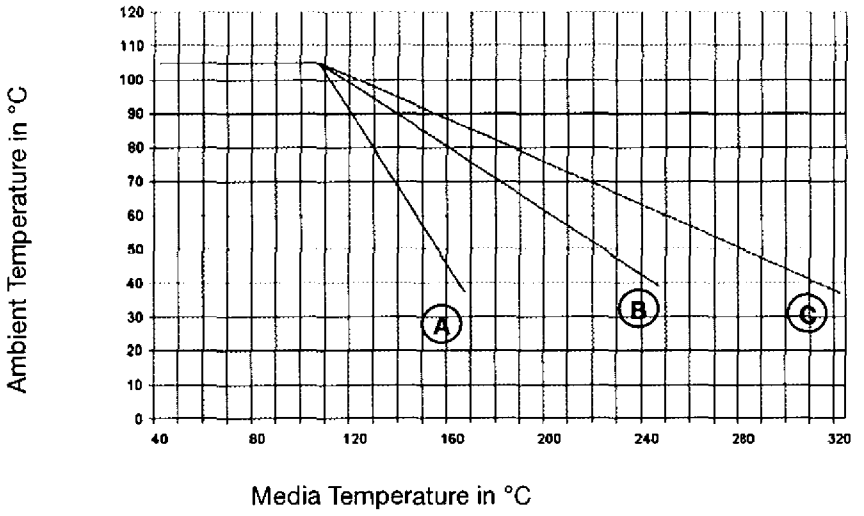
1/2 NPT male
with 5 cooling fins (version Ⓒ)
0-5 PSI to 0-15,000 PSI
Order code: ND and 9







Relationship of media temperature to ambient temperature



Version	Ⓐ	Ⓑ	Ⓒ
Cooling fins	2	3	5
K *	0.47	0.68	0.76

*cooling constant specific to each version

Calculation of cooling element performance:

$T_B = T_{med} - (T_{med} - T_{amb}) \times K$

T_B = Operating temperature of transmitter
T_{med} = maximum temperature of process media
T_{amb} = maximum ambient temperature
K = Constant of cooling element

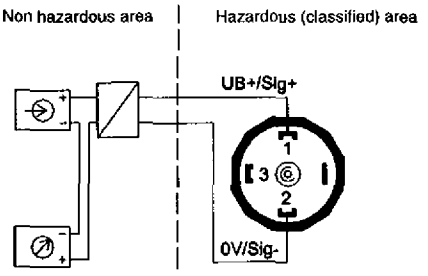
Maximum permissible ambient temperature:

$T_{amb} = T_{med} + (T_B - T_{med}) / K$

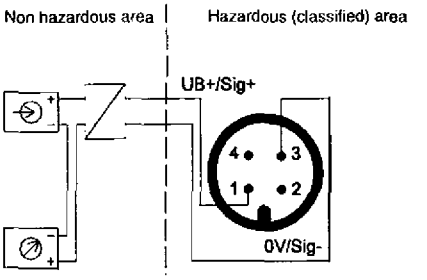
Wiring

Model IS-2*-S
2-wire

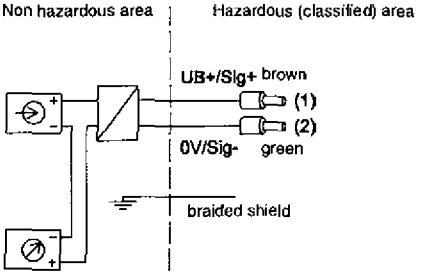
L-connector



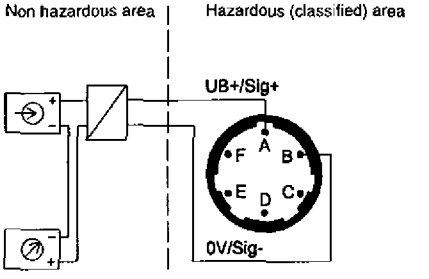
Circular connector
M 12x1



5 foot (1.5 m) of vented cable with free ends

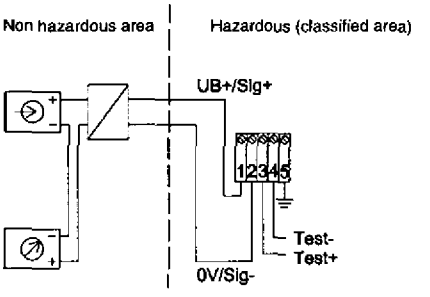


6 pin mil plug connector

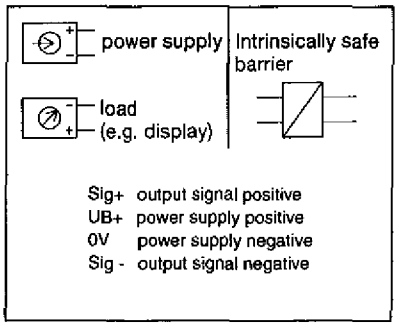


Model IS-2*-F
2-wire

Field case
(internal spring clip terminal)



Legend



Hazardous areas (ATEX zone classifications)

Group II: **Electrical equipment for use in all areas (except mines) which are endangered by an explosive atmosphere.**

Zone	Category	Occurrence of explosive atmosphere
Zone 0	Category 1G (gas)	Continuous
Mounting to zone 0	Category 1/2 G	
Zone 20	Category 1D (dust)	
Mounting to zone 20	Category 1/2 D	
Zone 1	Category 2G	Intermittent
Zone 21	Category 2D	
Zone 2	Category 3G	Hazard under abnormal conditions
Zone 22	Category 3D	

Zone	Category	Requirements
	Category M1	Very high degree of safety
	Category M2	High degree of safety
		(instruments have to be turned off if they are exposed to an explosive atmosphere)

Hazardous areas (ATEX compared to FM and CSA)

		ATEX Group	FM / CSA Group	Class
Above ground	Gases and Vapors **Dusts** Fibers	IIA / IIB / IIC	I II III	A / B / C / D / E / F / G
Mining	Gas / Dusts	I	ID / IIF	

	Flammable material present continuously	Flammable material present intermittently	Flammable material normally not present
ATEX	Zone 0 (Zone 20 Dust)	Zone 1 (Zone 21 Dust)	Zone 2 (Zone 22 Dust)
FM / CSA	Zone 0 Division 1	Zone 1	Zone 2 Division 2
FM (NEC505)	Zone 0	Zone 1	Zone 2

Specifications and dimensions provided in this data sheet represent the state of engineering at the time of printing.
Modifications may take place and specified materials may change without prior notice.

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