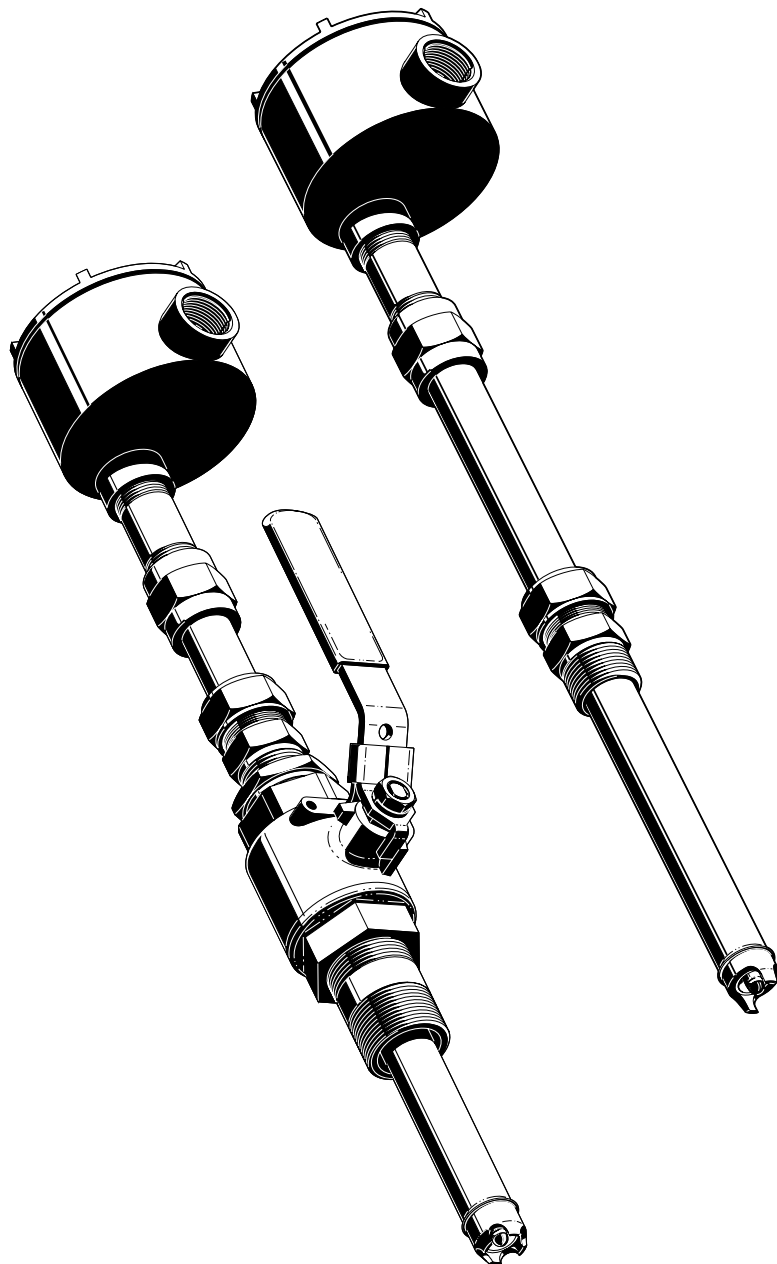

Instruction Manual

Model PH87 Retraction Sensor Assembly



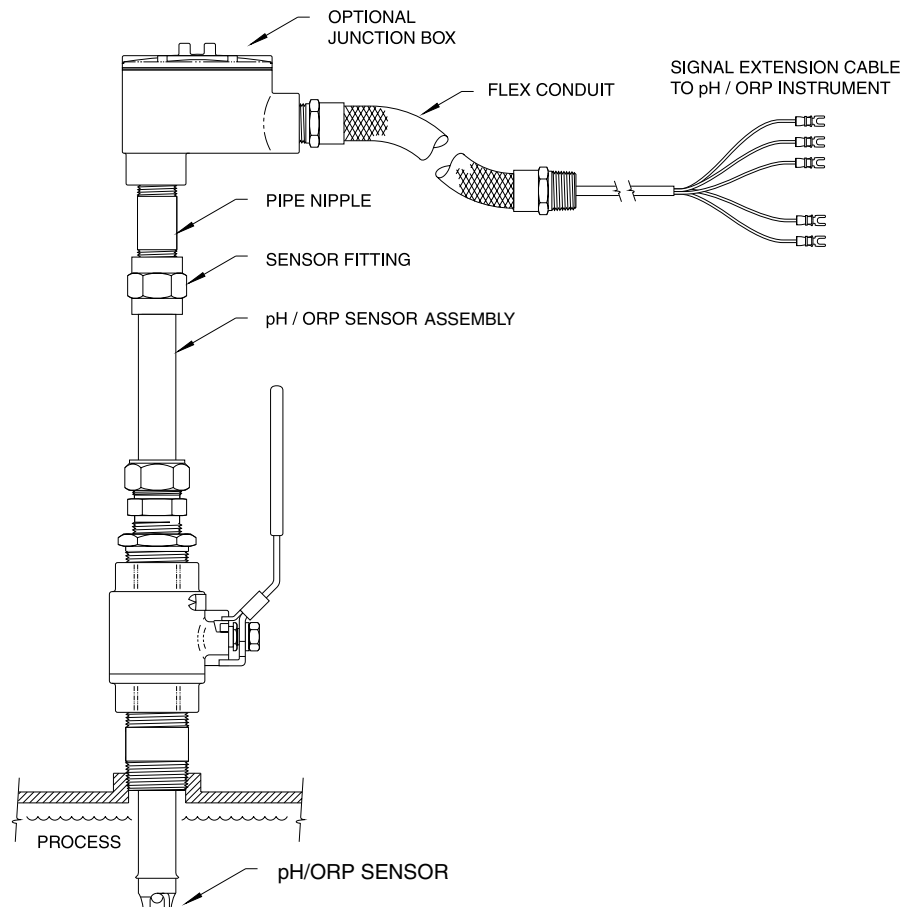
Overview	3
Assembly Instructions-Stage #1	4
Assembly Installation Instructions- with /B ball valve option	8
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Sensor Service	11
Sensor Replacement.....	14
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PH87 Dimensions and Clearance Requirements	18

Sensor Installation Overview

NOTE: THE FOLLOWING INFORMATION IS INTENDED TO PROVIDE THE USER WITH A PREVIEW OF WHAT WILL BE REQUIRED TO INSTALL THE MODEL PH87 SENSOR ASSEMBLY. PLEASE REVIEW THE DIAGRAM AND GUIDELINES BEFORE PROCEEDING.

Typical Sensor Installation Diagram

Shown with Optional /B Ball Valve



Sensor Installation Guidelines:

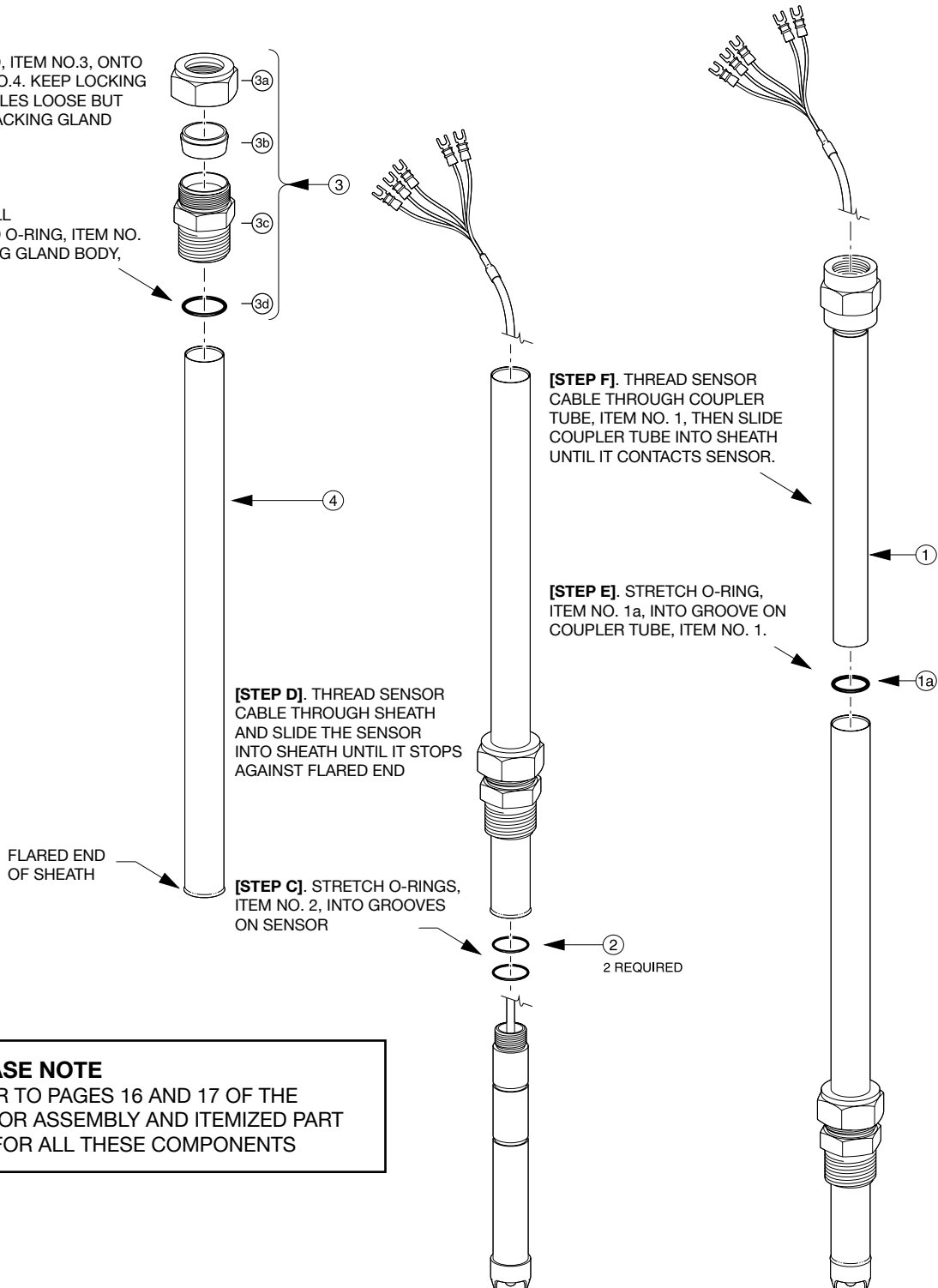
- [1]. Install the model PH97 sensor in pipe or vessel between 15° and 90° from horizontal.
- [2]. Connect flex conduit with adequate service loop to junction box.
- [3]. Connect the sensor cable to the terminals inside the junction box.
- [4]. Keep cable run between junction box and pH / ORP instrument as short as possible.

Sensor Assembly Instructions-Stage 1

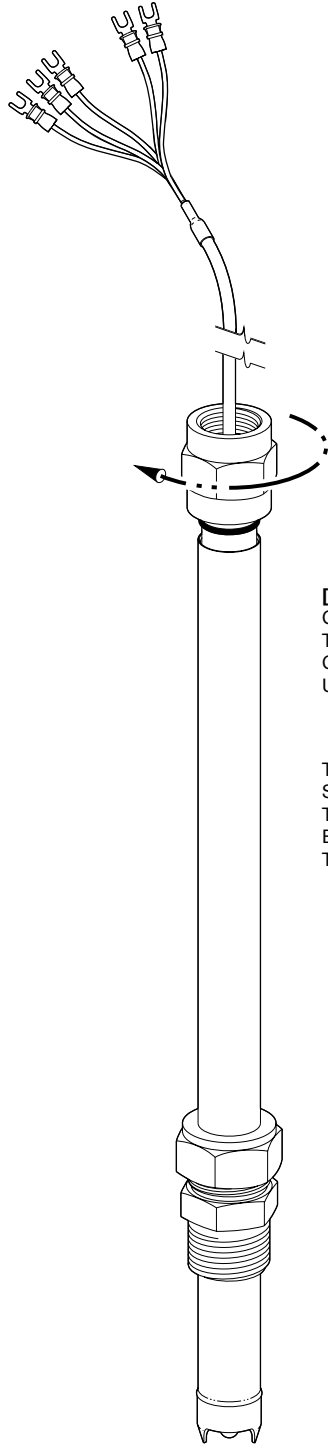
BEGIN STAGE #1 ASSEMBLY OF THE MODEL PH87 BY FOLLOWING THE STEP-BY-STEP INSTRUCTIONS [A] THROUGH [F] IN ORDER AS SHOWN BELOW:

[STEP B]. SLIDE PACKING GLAND, ITEM NO.3, ONTO SHEATH, ITEM NO.4. KEEP LOCKING NUT AND FERRULES LOOSE BUT ATTACHED TO PACKING GLAND

[STEP A]. INSTALL PACKING GLAND O-RING, ITEM NO. 3d, INTO PACKING GLAND BODY, ITEM NO. 3c.



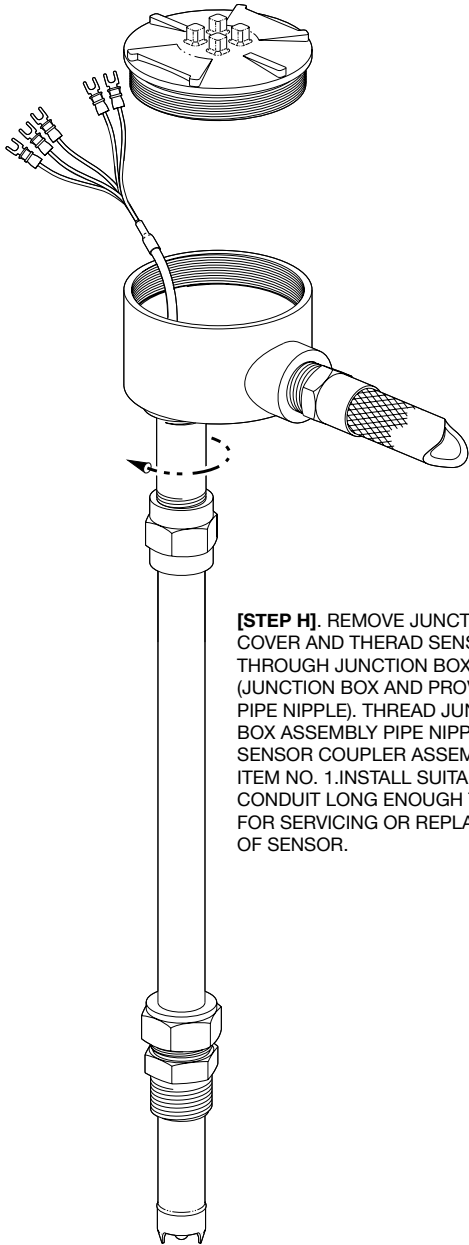
Sensor Assembly Instructions-Stage1 (Continued)



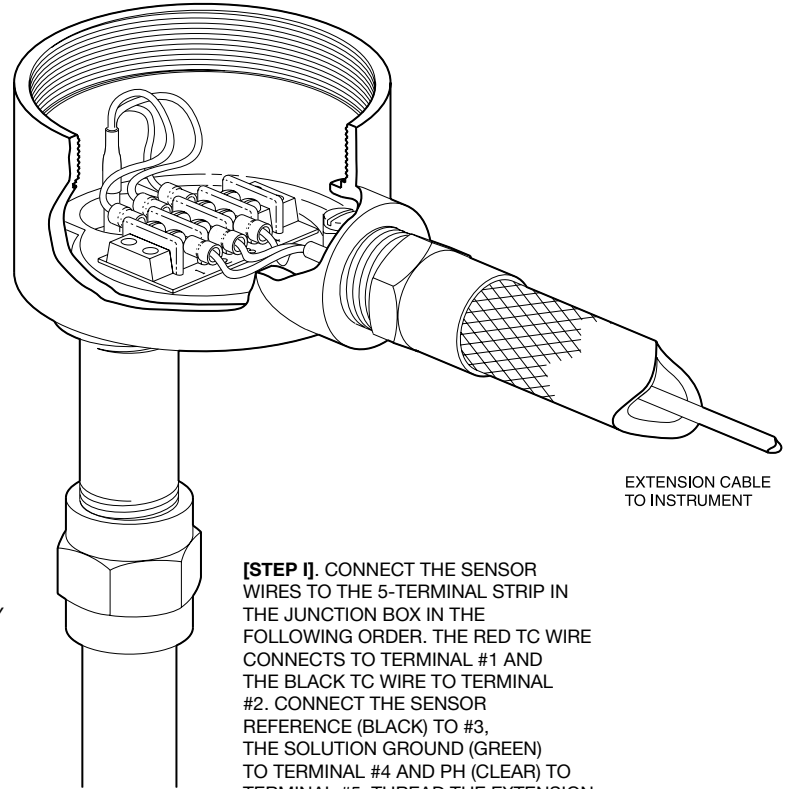
[STEP G]. THREAD SENSOR CABLE THROUGH COUPLER TUBE, ITEM NO. 1, THEN SLIDE COUPLER TUBE INTO SHEATH UNTIL IT CONTACTS SENSOR.

THE COUPLER TUBE AND SENSOR SHOULD BE THREADED TOGETHER UNTIL BOTH ARE SEATED AGAINST THE ENDS OF THE SHEATH,

Sensor Assembly Instructions-Stage1 (Continued)



[STEP H]. REMOVE JUNCTION BOX COVER AND THERAD SENSOR CABLE THROUGH JUNCTION BOX ASSEMBLY (JUNCTION BOX AND PROVIDED PIPE NIPPLE). THREAD JUNCTION BOX ASSEMBLY PIPE NIPPLE INTO SENSOR COUPLER ASSEMBLY, ITEM NO. 1. INSTALL SUITABLE FLEX CONDUIT LONG ENOUGH TO ALLOW FOR SERVICING OR REPLACEMENT OF SENSOR.



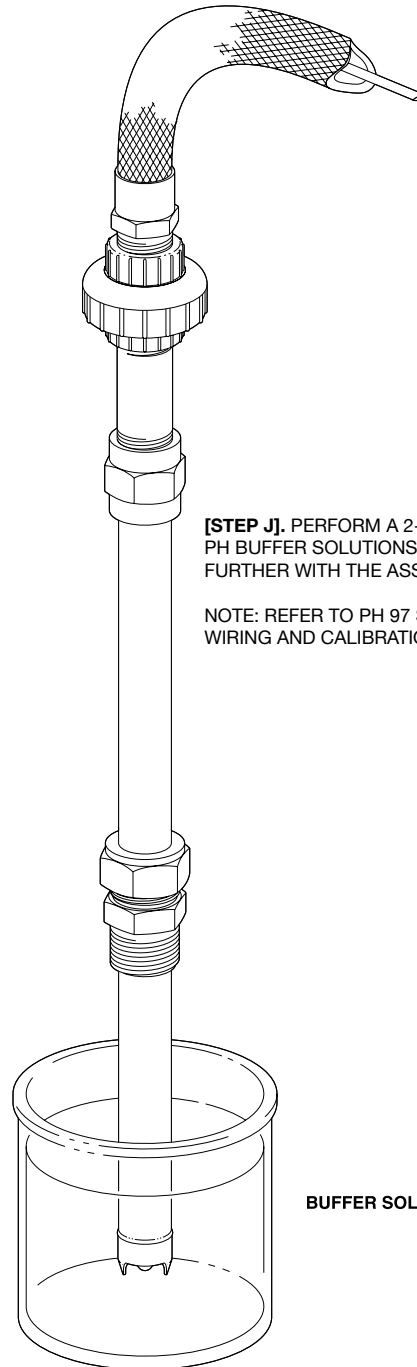
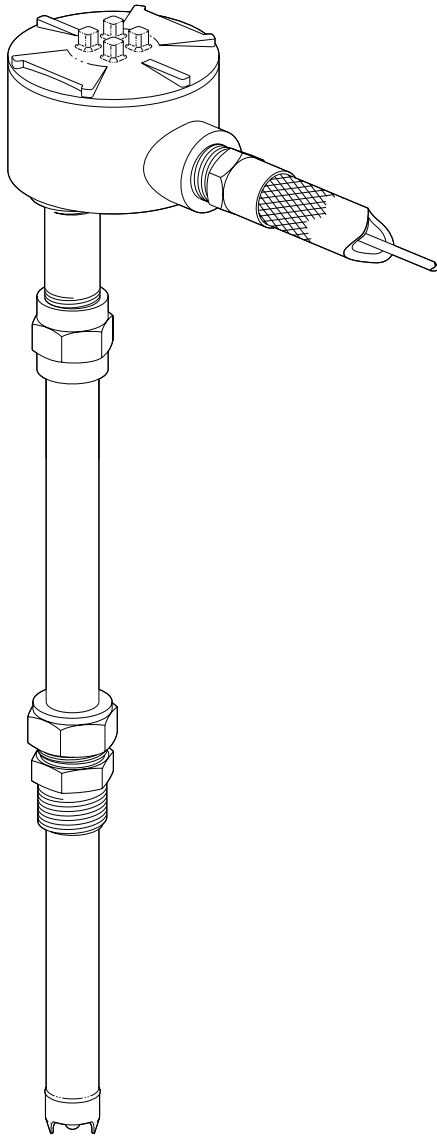
EXTENSION CABLE
TO INSTRUMENT

[STEP I]. CONNECT THE SENSOR WIRES TO THE 5-TERMINAL STRIP IN THE JUNCTION BOX IN THE FOLLOWING ORDER. THE RED TC WIRE CONNECTS TO TERMINAL #1 AND THE BLACK TC WIRE TO TERMINAL #2. CONNECT THE SENSOR REFERENCE (BLACK) TO #3, THE SOLUTION GROUND (GREEN) TO TERMINAL #4 AND PH (CLEAR) TO TERMINAL #5. THREAD THE EXTENSION CABLE THROUGH CONDUIT. ATTACH THE LABELED WIRES TO THE TERMINALS IN THE SAME ORDER AS THE SENSOR WIRES LISTED ABOVE. REPLACE THE JUNCTION BOX COVER.

Sensor Assembly Instructions-Stage1 (Continued)

THE STAGE #1 ASSEMBLY OF THE pH97 SENSOR IS NOW COMPLETE AND SHOULD APPEAR AS ONE OF THE TWO ASSEMBLIES SHOWN BELOW

STANDARD ASSEMBLY



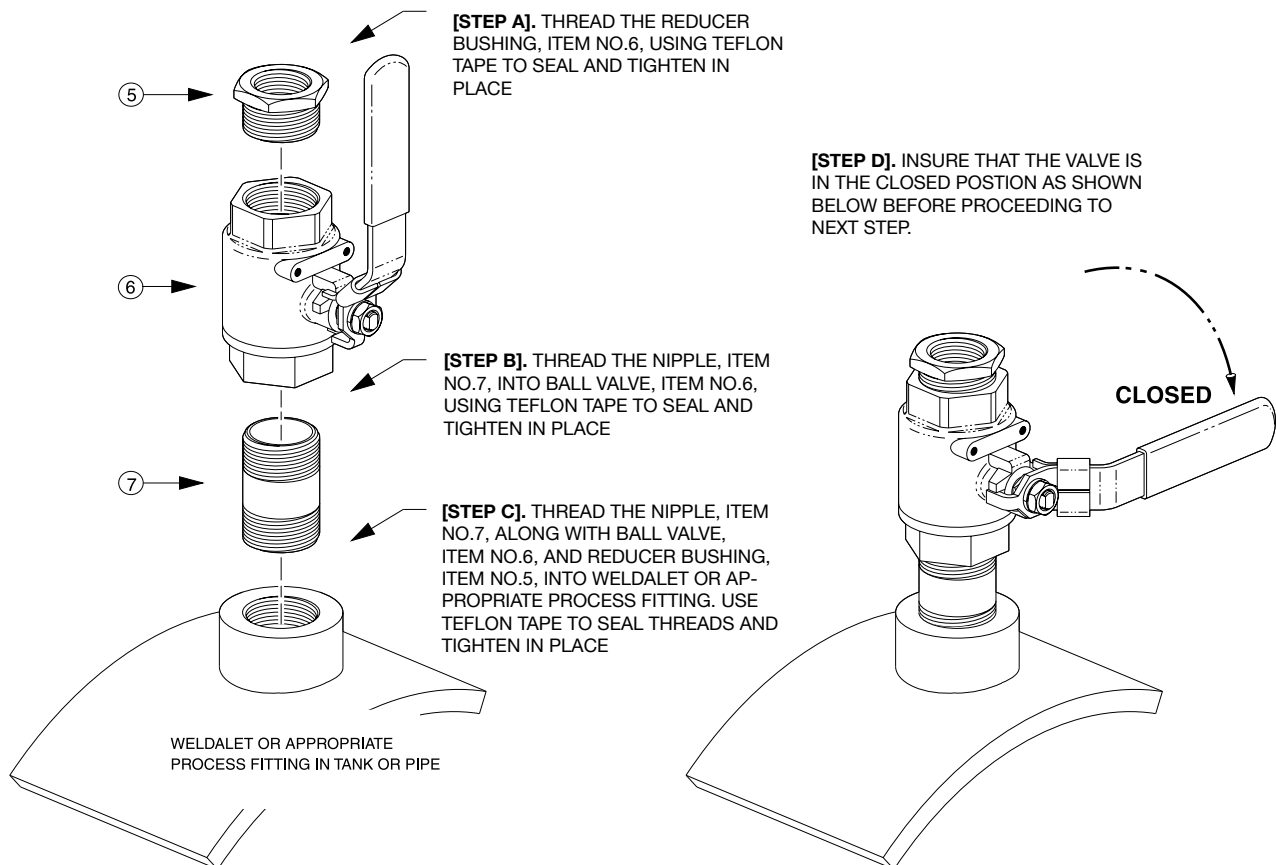
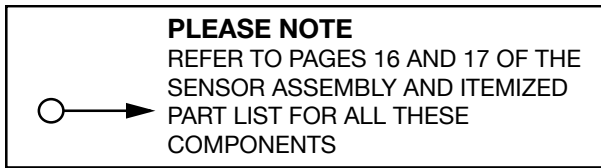
[STEP J]. PERFORM A 2-POINT CALIBRATION WITH PH BUFFER SOLUTIONS BEFORE PROCEEDING FURTHER WITH THE ASSEMBLY AND INSTALLATION.

NOTE: REFER TO PH 97 SENSOR INSTRUCTIONS FOR WIRING AND CALIBRATION PROCEDURES.

BUFFER SOLUTION

Sensor Assembly Instructions-/B Ball Valve Option

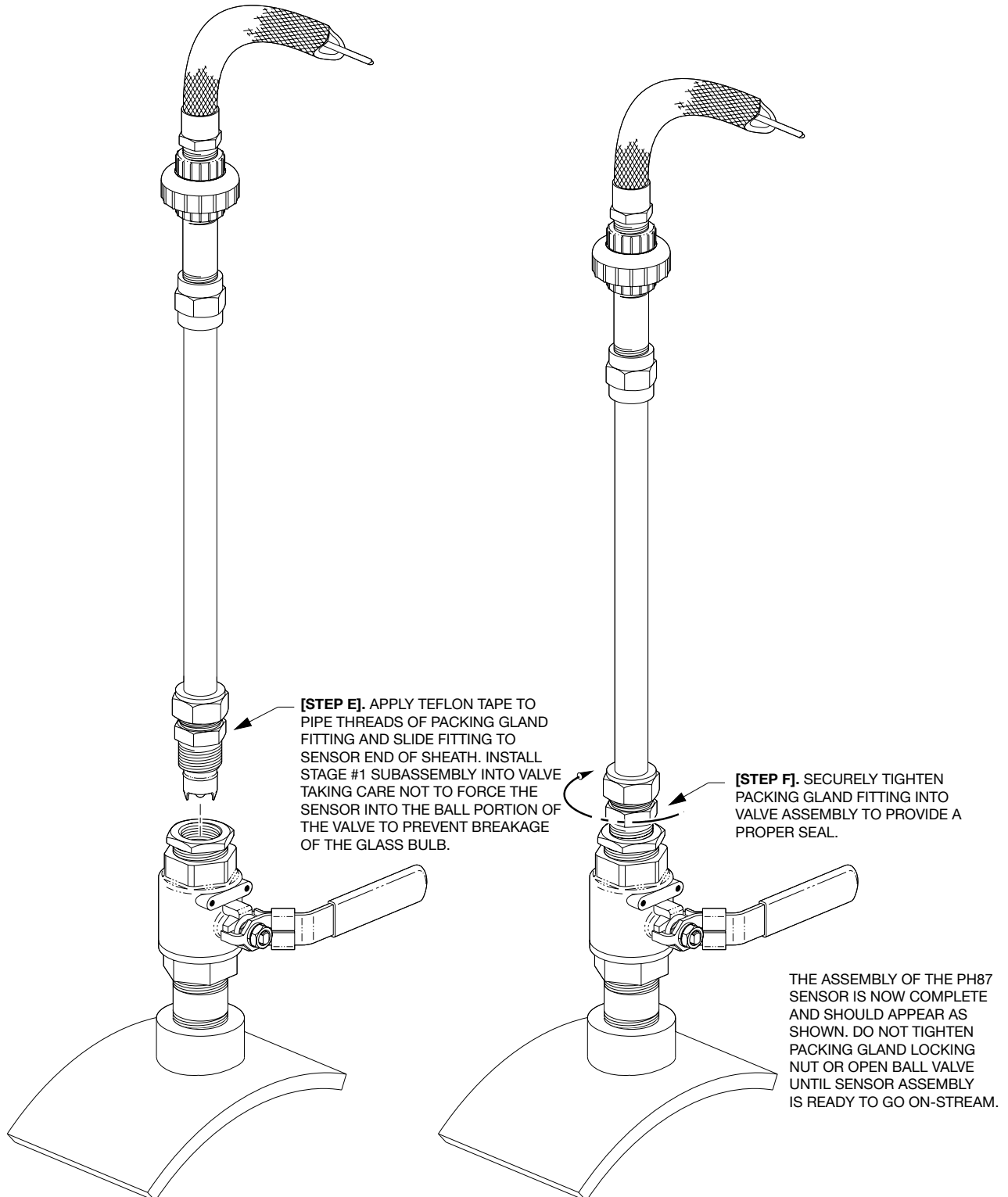
BEGIN ASSEMBLY OF THE /B BALL VALVE OPTION FOR MODEL PH87 SENSOR BY FOLLOWING THE STEP-BY-STEP INSTRUCTIONS [A] THROUGH [D] IN ORDER AS SHOWN BELOW:



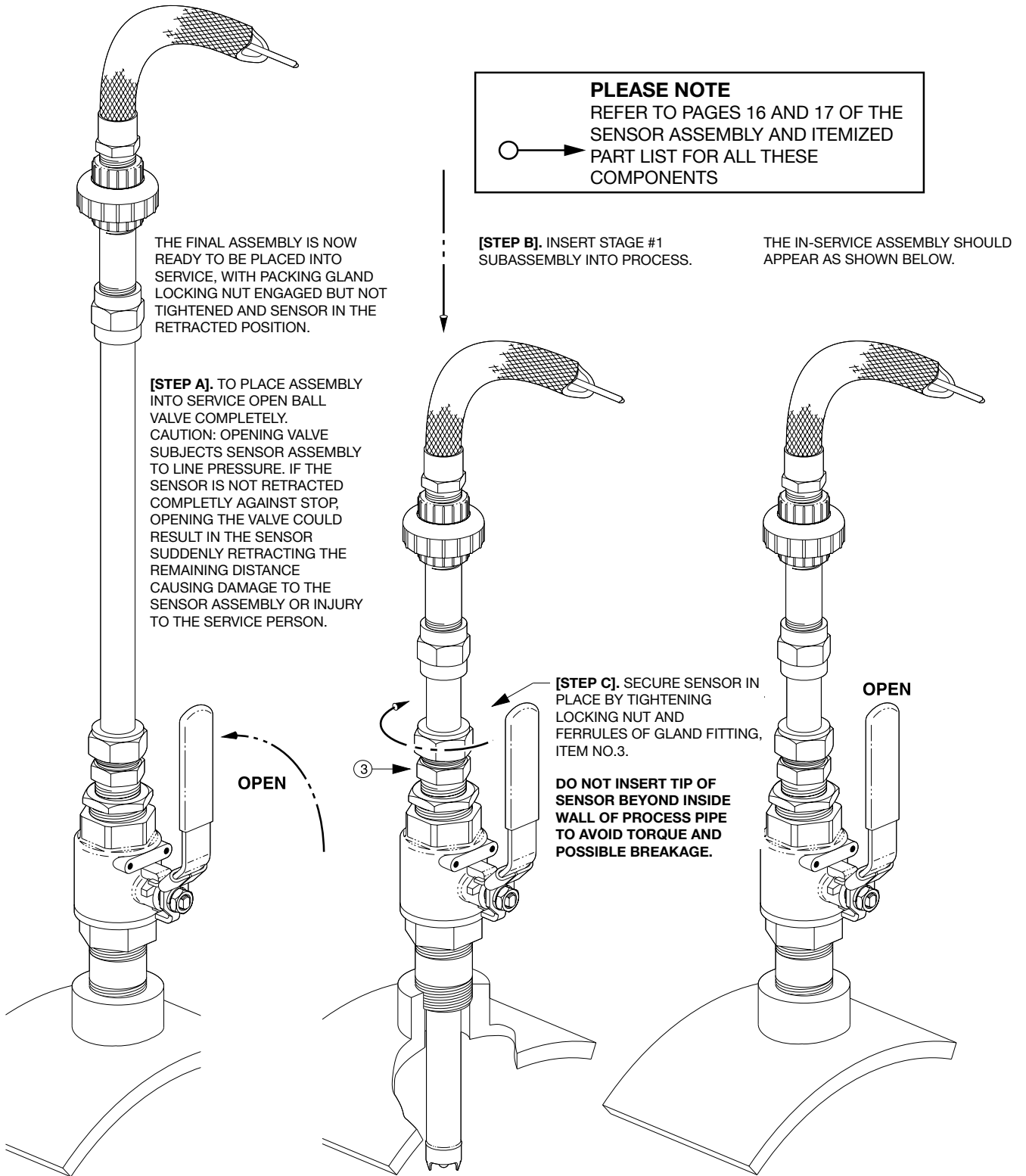
PLEASE NOTE: /B OPTION IS REQUIRED (OR CUSTOMER SUPPLIED BALL VALUE IS REQUIRED) FOR RETRACTION OF PH87 WHILE PROCESS IS UNDER PRESSURE

Sensor Assembly Installation Instructions-/B Ball Valve (Continued)

COMPLETE /B BALL VALVE OPTION ASSEMBLY OF THE MODEL PH87 BY FOLLOWING THE STEP-BY-STEP INSTRUCTIONS [E] AND [F] IN ORDER AS SHOWN BELOW:



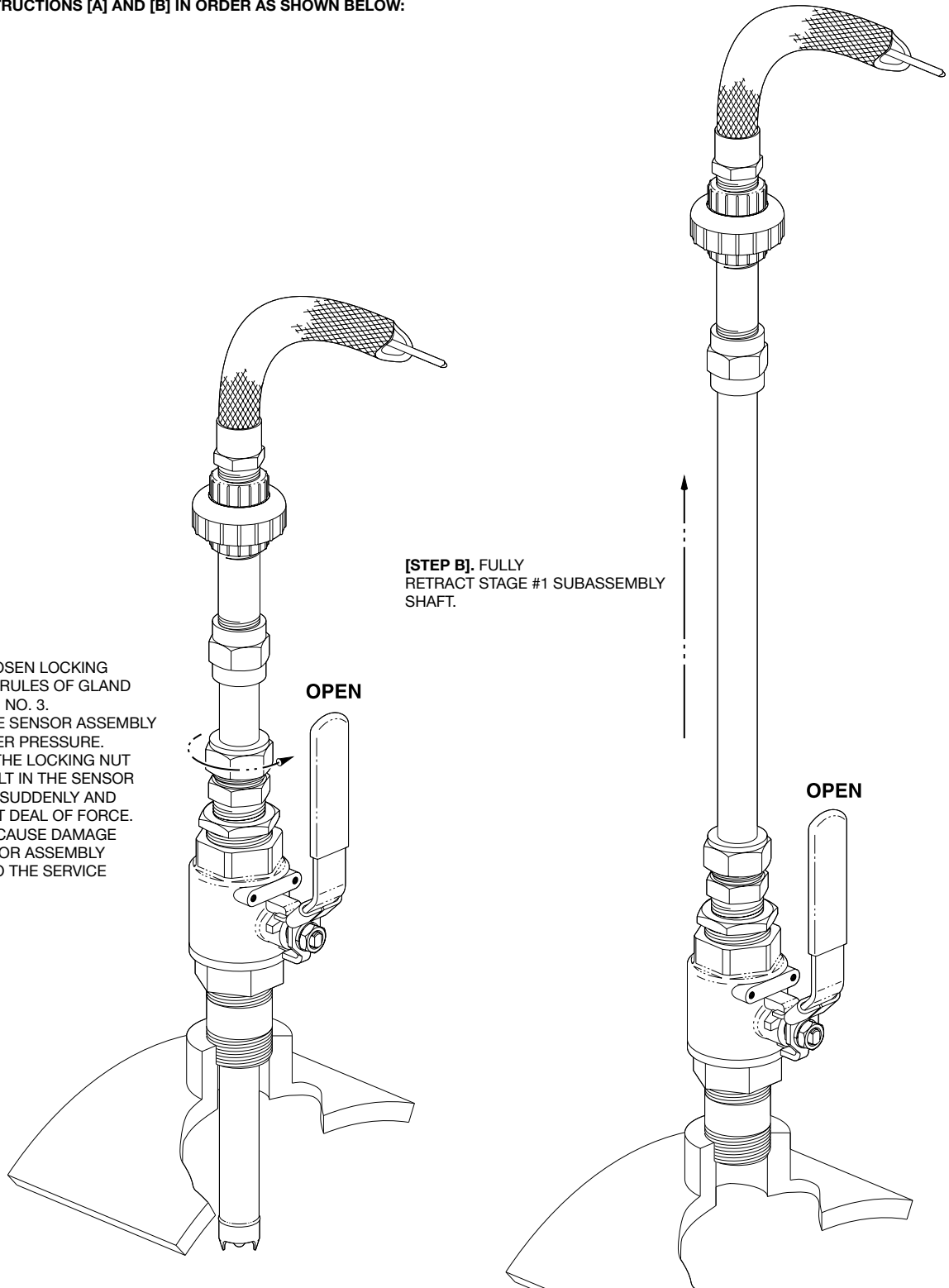
Sensor Assembly In-Service Instructions-/B Ball Valve Option



Sensor Service Instructions

BEFORE SERVICING REMOVE THE MODEL PH97 SENSOR FROM SERVICE FOLLOWING THE STEP-BY-STEP INSTRUCTIONS [A] AND [B] IN ORDER AS SHOWN BELOW:

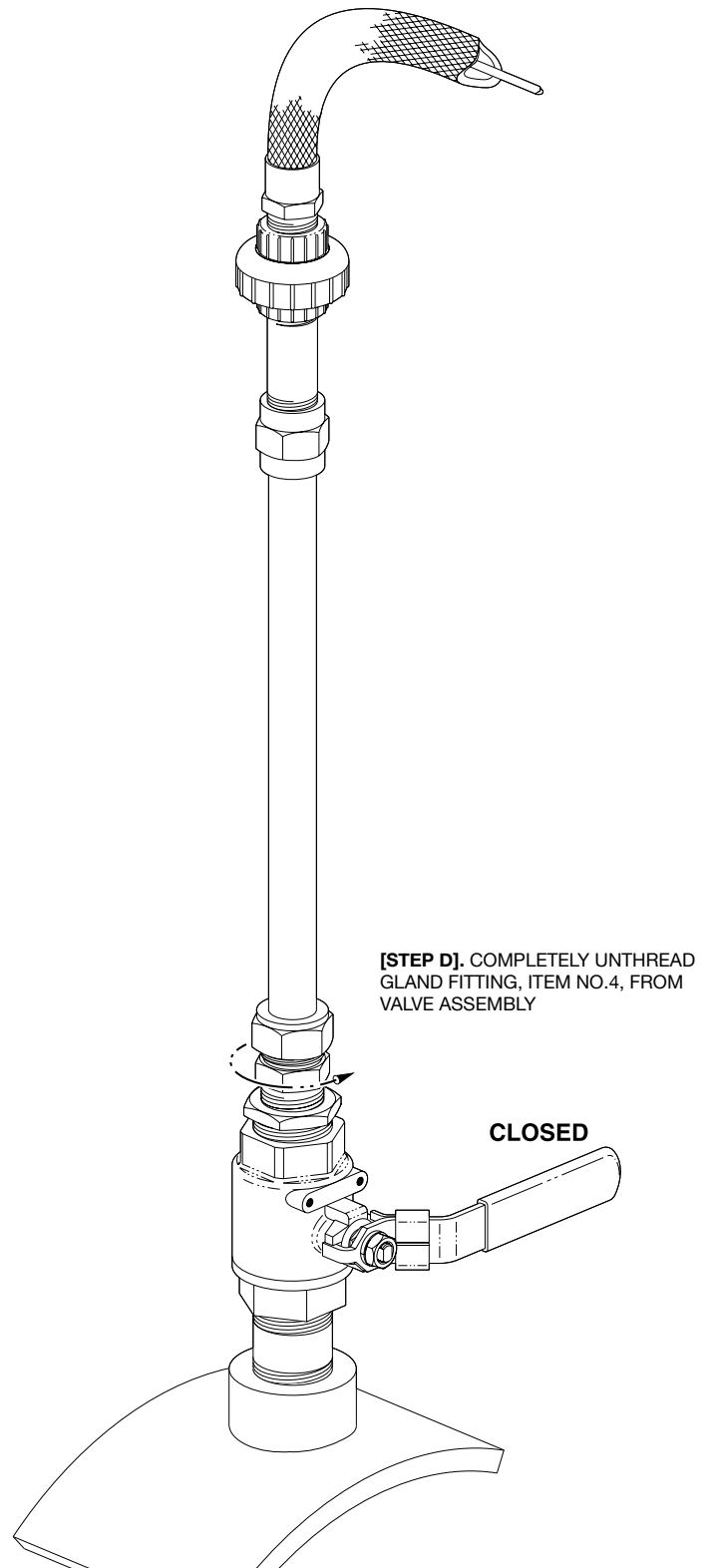
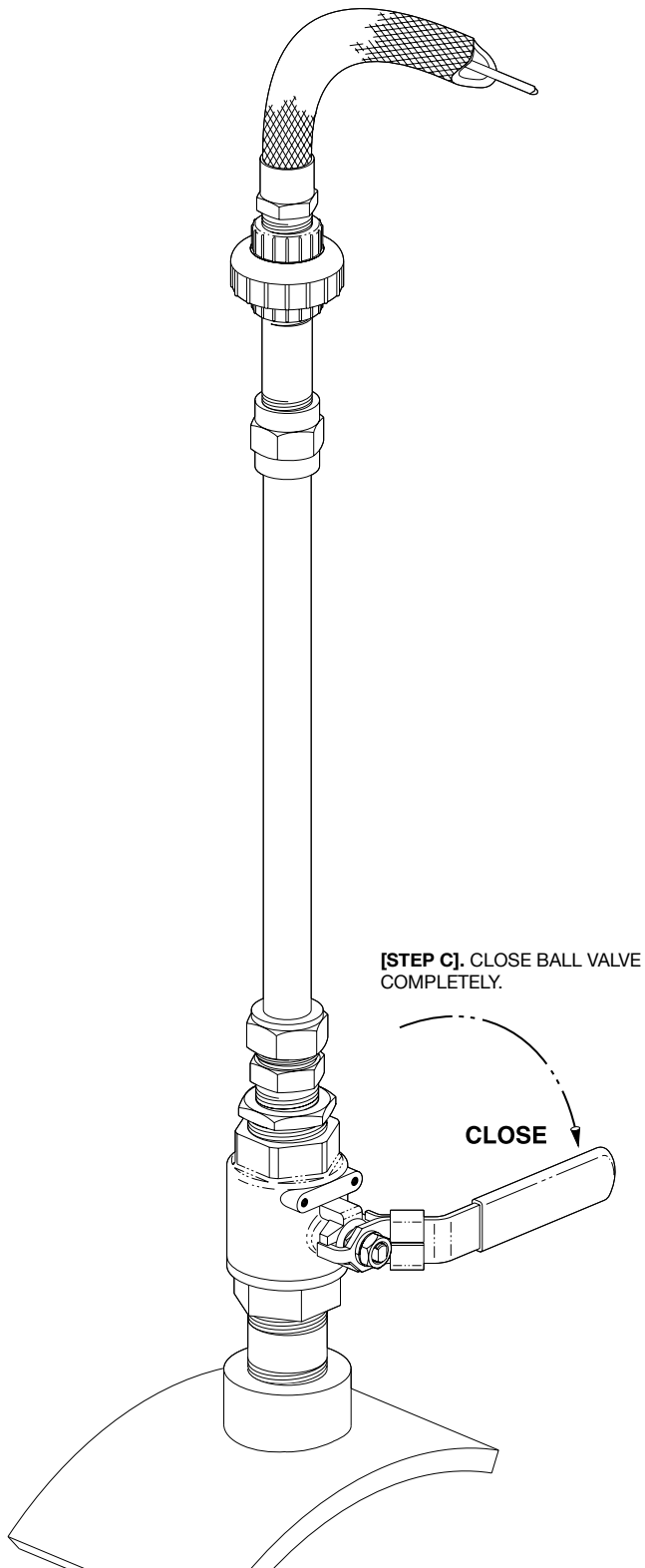
[STEP A]. LOOSEN LOCKING NUT AND FERRULES OF GLAND FITTING, ITEM NO. 3.
CAUTION: THE SENSOR ASSEMBLY IS STILL UNDER PRESSURE. LOOSENING THE LOCKING NUT COULD RESULT IN THE SENSOR RETRACTING SUDDENLY AND WITH A GREAT DEAL OF FORCE. THIS COULD CAUSE DAMAGE TO THE SENSOR ASSEMBLY OR INJURY TO THE SERVICE PERSON.



[STEP B]. FULLY RETRACT STAGE #1 SUBASSEMBLY SHAFT.

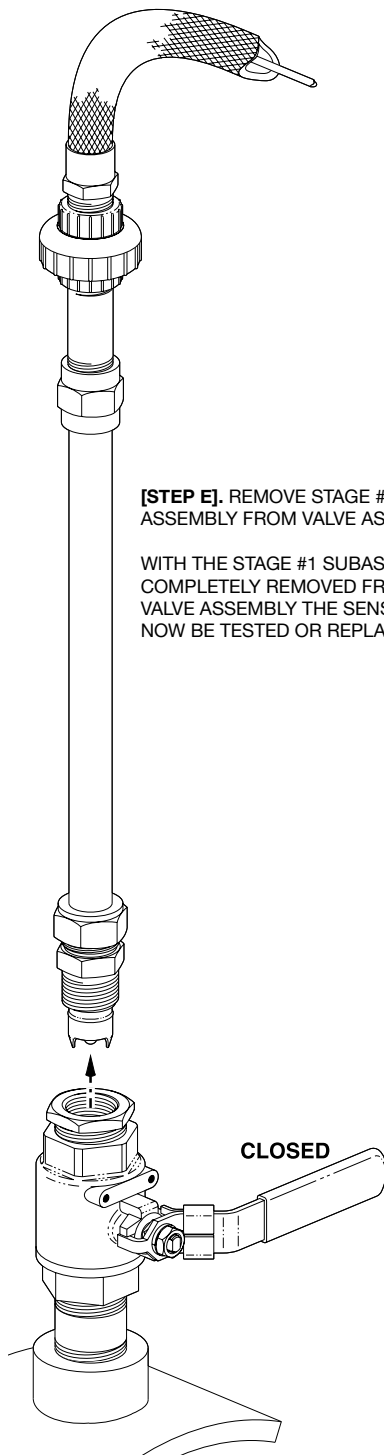
Sensor Service Instructions (Continued)

BEFORE SERVICING REMOVE THE MODEL PH97 SENSOR FROM SERVICE FOLLOWING THE STEP-BY-STEP INSTRUCTIONS [C] AND [D] IN ORDER AS SHOWN BELOW:



Sensor Service Instructions (Continued)

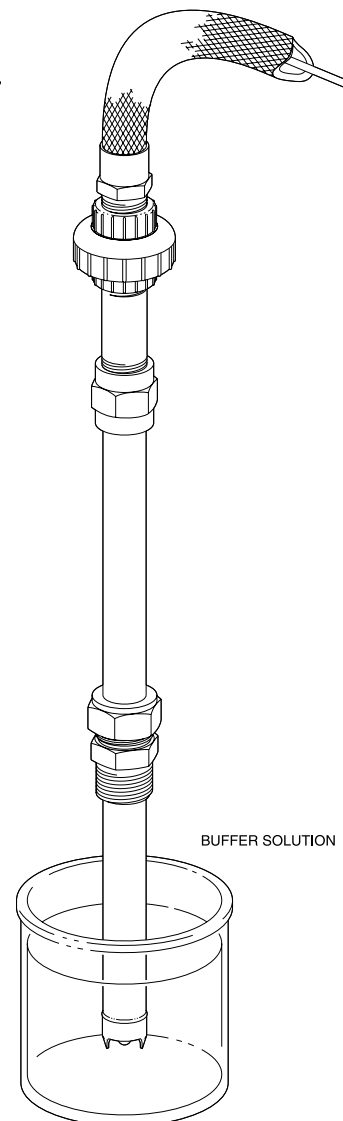
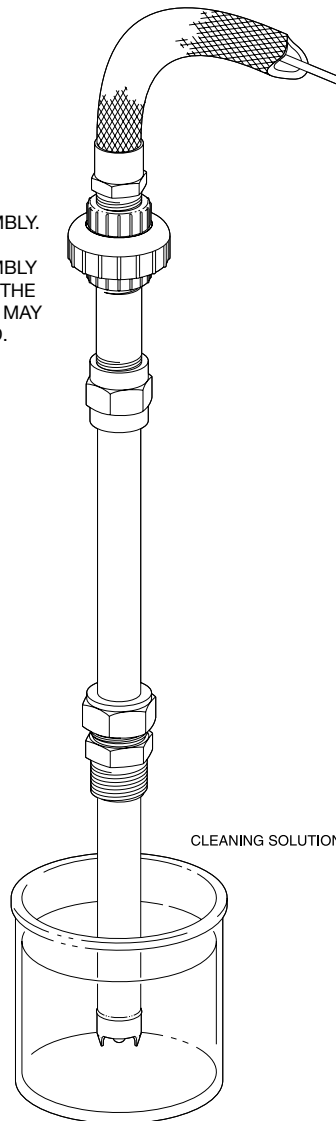
CONTINUE SERVICING OF THE MODEL PH97 SENSOR BY FOLLOWING THE STEP-BY-STEP INSTRUCTIONS [E] THROUGH [G] IN ORDER AS SHOWN BELOW:



[STEP E]. REMOVE STAGE #1 ASSEMBLY FROM VALVE ASSEMBLY.

WITH THE STAGE #1 SUBASSEMBLY COMPLETELY REMOVED FROM THE VALVE ASSEMBLY THE SENSOR MAY NOW BE TESTED OR REPLACED.

[STEP F]. BEFORE TESTING THE SENSOR BE SURE THAT IT IS CLEAN



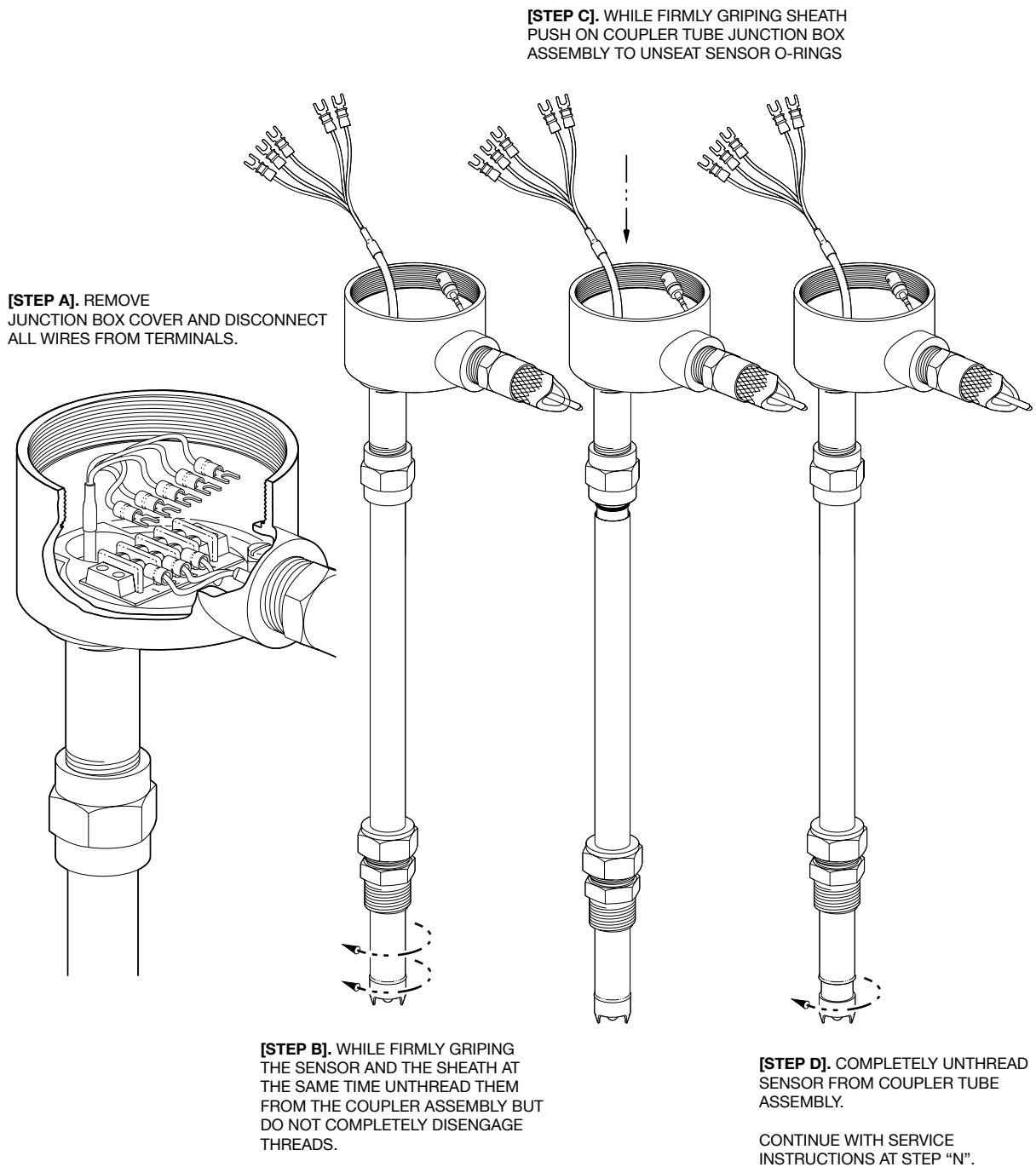
[STEP G]. TO TEST SENSOR PERFORM A 2-POINT CALIBRATION WITH PH BUFFER AS SHOWN BELOW.

IF THE SENSOR TESTS WITHIN ACCEPTABLE LIMITS REINSTALL AND PLACE SENSOR BACK IN SERVICE BY FOLLOWING ASSEMBLY INSTRUCTIONS.

IF TESTING PROVES SENSOR TO BE FAULTY CONTINUE WITH THE SERVICE INSTRUCTIONS FOR SENSOR REPLACEMENT.

Sensor Replacement Instructions

BEFORE SERVICING REMOVE THE MODEL PH87 SENSOR FROM SERVICE FOLLOWING THE STEP-BY-STEP INSTRUCTIONS [A] AND [D] IN ORDER AS SHOWN BELOW:



Sensor Replacement Instructions (Continued)

DISASSEMBLE THE ASSEMBLY INTO THE COMPONENT PARTS AS SHOWN IN ONE OF THE ILLUSTRATIONS BELOW. TO INSTALL A NEW SENSOR AND RETURN THE MODEL PH87 TO SERVICE FOLLOW THE ASSEMBLY INSTRUCTIONS STARTING FROM STAGE #1 STEP "D" (PAGE 4)

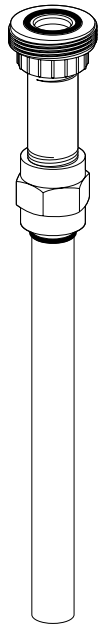


FIGURE 1: STANDARD ASSEMBLY READY FOR SENSOR REPLACEMENT

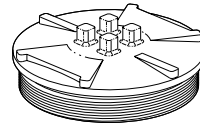
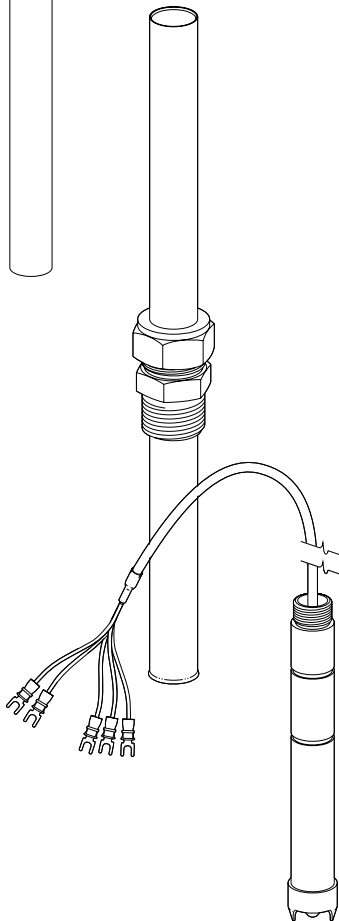
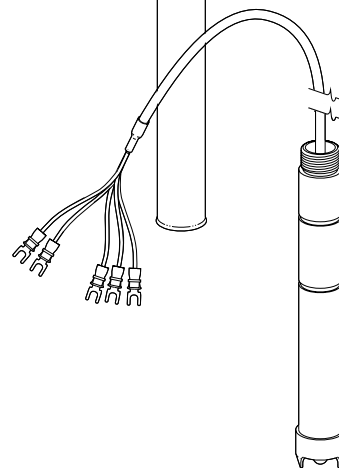
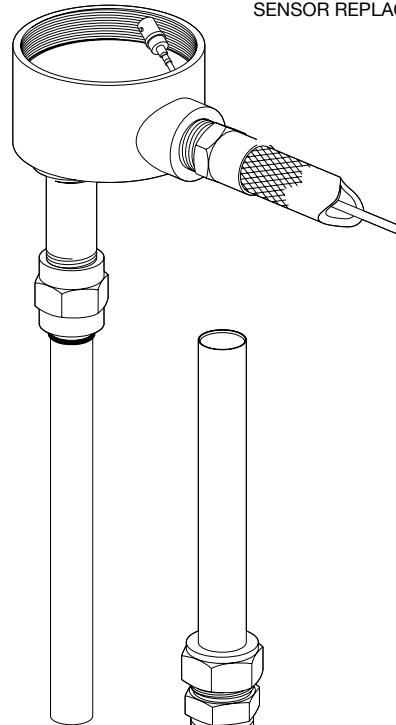
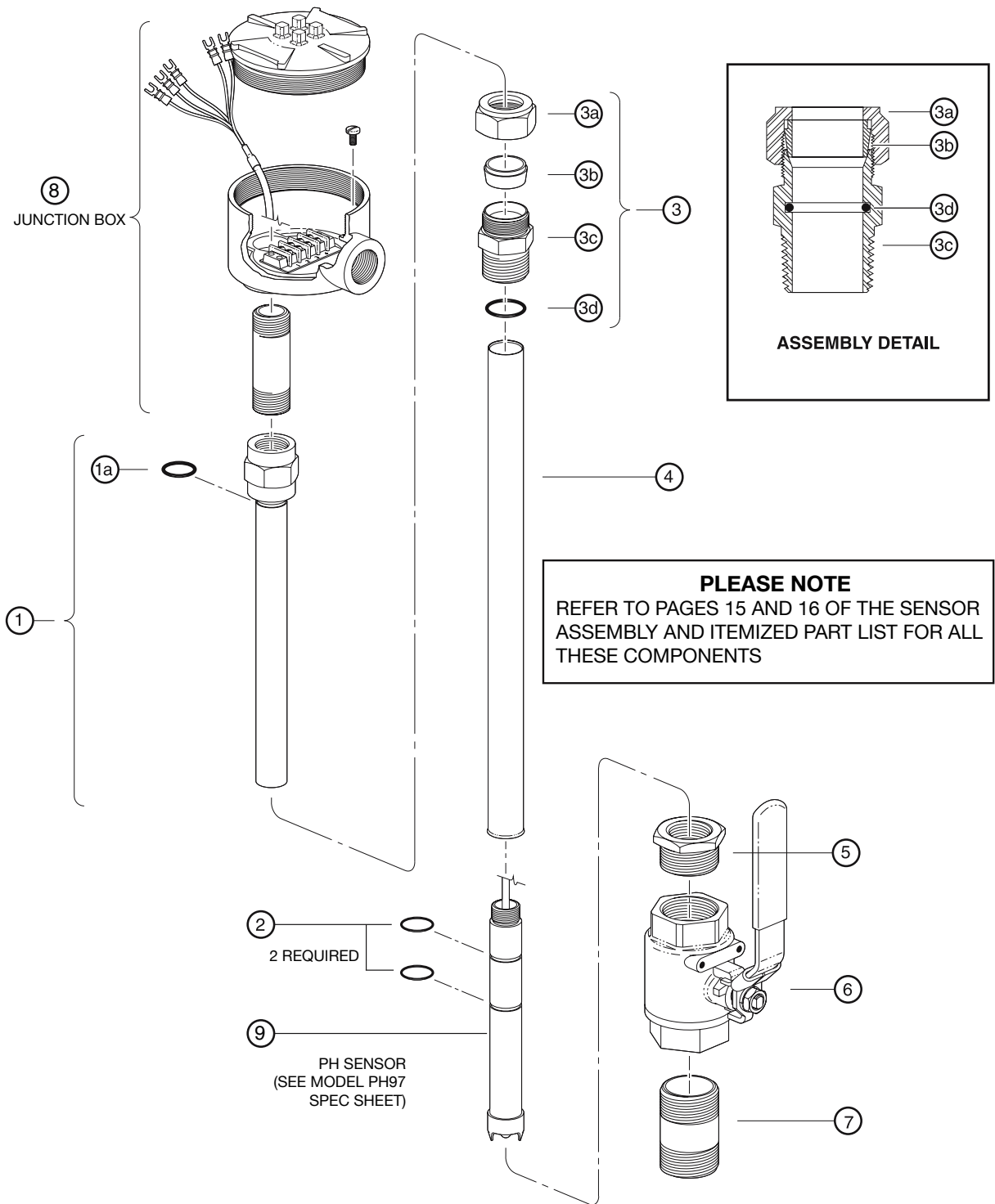


FIGURE 2: ASSEMBLY WITH SENSOR MOUNTED JUNCTION BOX READY FOR SENSOR REPLACEMENT



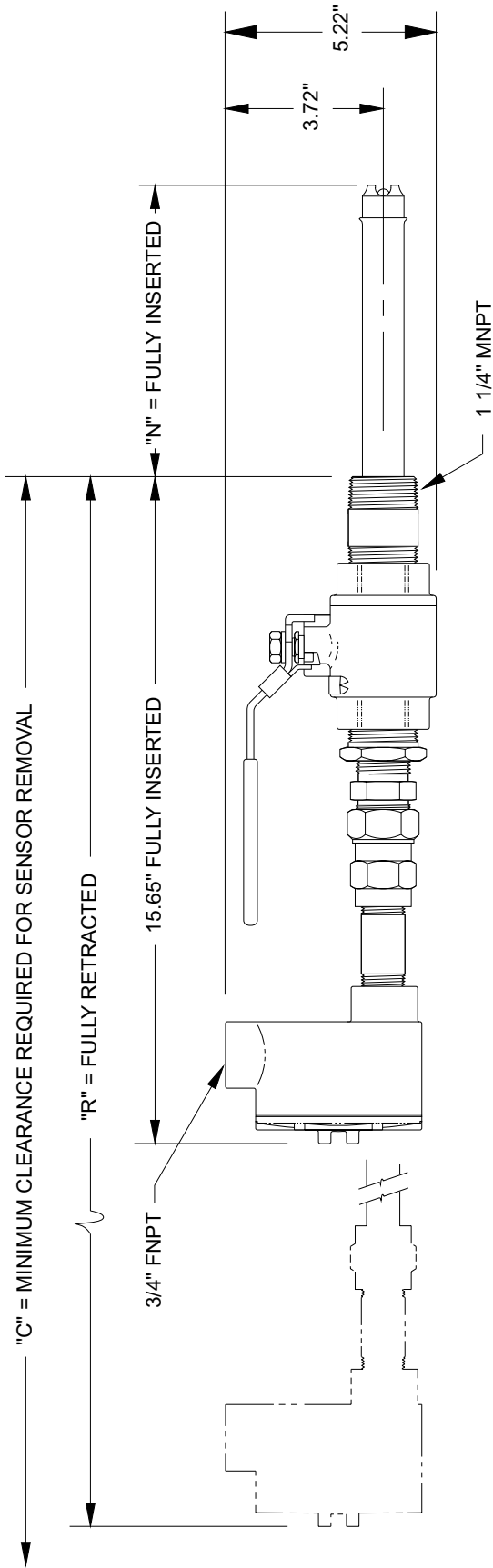
Sensor Housing Assembly



Sensor Housing Assembly

THESE ARE THE INDIVIDUAL PART NUMBERS FOR THE ITEMS SHOWN IN THE EXPLODED VIEW ON THE PREVIOUS PAGE. PART NUMBERS FOR A COMPLETE ASSEMBLY ARE LISTED ON NEXT TWO PAGES, ON THE SPECIFIC DRAWING.

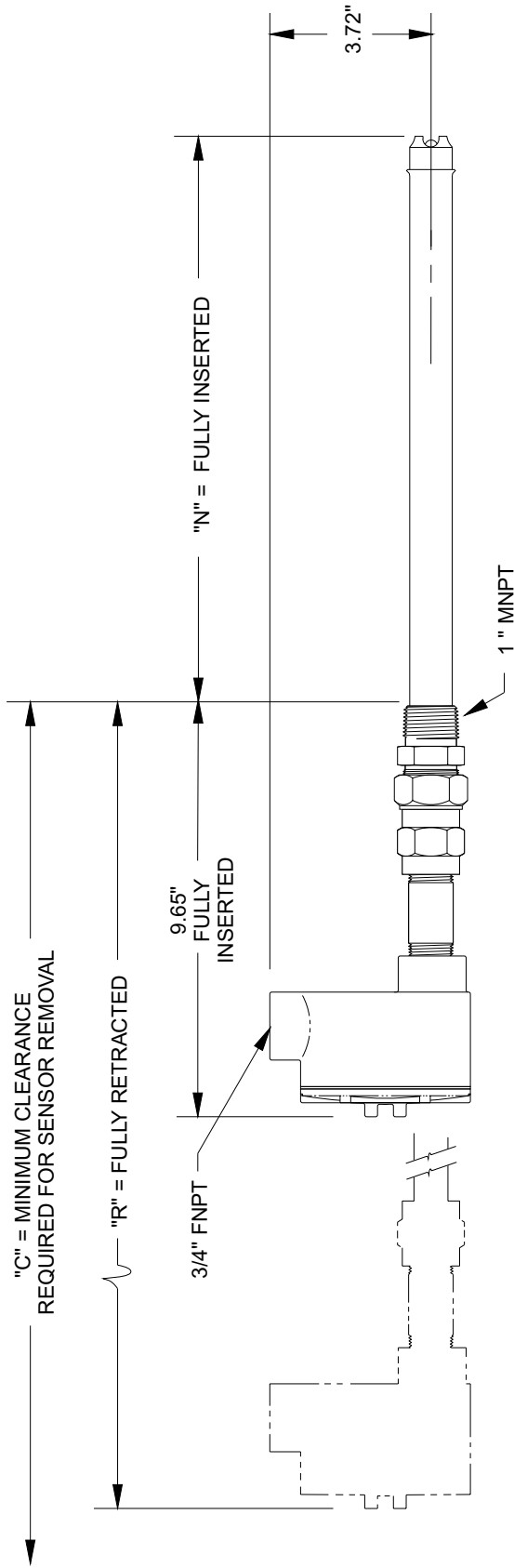
Item	Part Number	Description
1	M1234DQ	Coupler Assembly, Kynar (PVDF), N=7"
	M1234TV-A	Coupler Assembly, Kynai (PVDF), N=21" These part numbers includes the o-ring
1a, 2	M1234DS	O-rings, viton, sensor, size -019, quantity of 10
3	M1234DT	Compression Fitting, 1" Tube x 1" MNPT
3a	M1234DW	Compression Fitting, Nut
3b	M1234DX	Compression Fitting, Ferrule, Kynar (PVDF)
3c	M1234EJ	Compression Fitting, Body, Titanium
3d	M1234DZ	Compression Fitting, O-ring, viton, size -120
4	M1234EA	Sheath, Titanium, N=7"
	M1234JQ-A	Sheath, Titanium, N=21"
5	M1234WZ-A	Bushing, 1.25" MNPT x 1" FNPT
6	M1234WY-A	Ball Valve, Full Port, 1.25" NPT
7	M1234XA-A	Nipple, 1.25" NPT
8	M1234EE	Junction Box Assembly, Sensor Mount
9		See pH Sensor Specifications



MODEL NO.	"N" LENGTH Insertion Length	"R" DIMENSION Retraction Distance	"C" DIMENSION Minimum Clearance
PH87-07/B	7"	28.05"	29.40"
PH87-21/B	21"	40.05"	41.40"

YOKOGAWA ◆
 2 Dart Road, Newnan, GA 30265
 Tel.: 770-254-0400 Fax.: 770-251-6427

PH87 With /B Ball Valve Insertion Assembly:
 Dimensions & Clearance Requirements



MODEL NO.	"N" LENGTH Insertion Length	"R" DIMENSION Retraction Distance	"C" DIMENSION Minimum Clearance
PH87-07	13.25"	19.15"	22.90"
PH87-21	27.25"	33.15"	36.90"

YOKOGAWA
 2 Dart Road, Newnan, GA 30265
 Tel.: 770-254-0400 Fax.: 770-251-6427

PH87 Insertion Assembly:
 Dimensions & Clearance Requirements

YOKOGAWA HEADQUARTERS

**9-32, Nakacho 2-chome,
Musashinoshi
Tokyo 180
Japan**
Tel. (81)-422-52-5535
Fax (81)-422-55-1202
E-mail: webinfo@mls.yokogawa.co.jp
www.yokogawa.com/jp

YOKOGAWA EUROPE B.V.

**Euroweg 2
3825 HD Amersfoort
The Netherlands**
Tel. +31 (0)88-4641000
Fax +31 (0)88-4641111
E-mail: info@nl.yokogawa.com
www.yokogawa.com/eu

YOKOGAWA CORPORATION OF AMERICA

**2 Dart Road
Newnan GA 30265
United States**
Tel. (1)-770-253-7000
Fax (1)-770-251-2088
E-mail: info@yca.com
www.yokogawa.com/us

YOKOGAWA ELECTRIC ASIA Pte. Ltd.

**5 Bedok South Road
Singapore 469270
Singapore**
Tel. (65)-241-9933
Fax (65)-241-2606
E-mail: webinfo@yas.com.sg
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