

HOT-TAP Sensor Valve Retraction & Insertion Assemblies

1-1/4", 1-1/2" & 2" 316 Stainless Steel (316SS) Assemblies for 3/4" & 1" MNPT Threaded pH, ORP & Ion Selective Sensors -- Insertion & Removal directly into a process tanks or pipes at pressures up to 100 psig



HOT-TAP Sensor Valve Retraction & Insertion Assembly Schematics

1-1/4", 1-1/2" & 2" 316 Stainless Steel (316SS) Assemblies for 3/4" & 1" MNPT Threaded pH, ORP & Ion Selective Sensors

- Customers are encouraged to fabricate their own "HOT-TAP" Sensor Valve retraction and insertion assemblies as all components (except the welded insertion tubes) are commercially available
- Please use the schematics and bill of materials below as guides if you wish to fabricate these assemblies yourself. Due to a variety of reasons, no further assistance can be provided by ASTI if you wish to fabricate your own assemblies
- Customers can readily purchase these assemblies complete with support from ASTI from their local authorized distributor.

Close-Up Images to Assist in Fabrication of these Assemblies in your shop or to better understand our simple "HOT-TAP" sensor retraction design

Complete 2" Valve Retraction Assembly
(Without 1" Insertion Tube)



2" Full Port 316SS Ball Valve Assembly w 1/2" MNPT
Full Port Pressure Relief Purge Port & Vent Valve



2"X1" Reducer Coupling (Provides Blowout Protection)
and 1" Compression Fitting Assembly





HOT-TAP Valve Retraction & Insertion Assembly Specifications

1-1/4", 1-1/2" & 2" 316 Stainless Steel (316SS) Assemblies for 3/4" & 1" MNPT Threaded pH, ORP & Ion Selective Sensors

- Fast & Easy Insertion & Removal of robust standard 3/4" & 1" MNPT Threaded sensors for superior lifetime and performance in valve retractable installations
- Purge Port and Vent Valve for pressure relief of high pressure or dissolved gas containing process media

Specification	Value
Temperature Range	-30 to 150 Degrees Celsius (-22 to 302 Degrees Fahrenheit) NOTE: Do not use any sensor past its recommended Temperature Rating
Pressure Range	1 to 100 psi (6.9 to 690 kPa absolute) NOTE: Do not use any sensor past its recommended Pressure Rating
Operating pH range	-0.5 to 14.5 max range NOTE: Do not use any sensor past its recommended pH Rating
Dissolved Gasses Resistant	Chlorine, Chlorine Dioxide, NOx, Ozone, Hydrogen Sulfide, Hydrogen Cyanide (standard) Inquire about other gasses
Process Connection	316 SS: 1 1/4", 1 1/2" & 2" MNPT
Ball Valve For Process Isolation	Full Port 316 SS with Teflon Seats & Ferrules; 1 1/4", 1 1/2" & 2" FNPT
Connecting Nipple with purge port and vent valve	316 SS: 1 1/4", 1 1/2" & 2" MNPT X 6" Pipe Tee with 1/2" MNPT Ball Valve for Pressure Relief (Purge Port & Vent Valve)
1 1/4"-1", 1 1/2"-1", 2"-1" Reducer & 1" Compression Fitting	316 SS
Compression Fitting Ferrule	Teflon standard; Application Specific Ferrules available, Inquire to ASTI
Gas/Pressure Seal	O-Ring, Viton # 214 standard; Application Specific O-Rings available, Inquire to ASTI
Back End Blowout Protection (Optional - Not Required for Most Installations)	Wire Rope harness, to be threaded through 1/2" MNPT X 1 1/2" SS Nipple or Safety HOT TAP Piping Assembly
Front End Blowout Protection	1.16" Oversized Blowout Ring from Welded 3/4" MNPT 316SS Coupling on 316SS 1.0" Insertion Tube for 3/4" MNPT Sensors 1.41" Oversized Blowout Ring from Welded 1" MNPT 316SS Coupling on 316SS 1.0" Insertion Tube for 1" MNPT Sensors
Insertion Depth past Process Connection	20 inches Minimum (~ 50 cm) Inquire to ASTI for longer insertion depths; up to 60 inches maximum recommended in clean solutions
Overall Length of Double Ball Valve Assembly	22 inches Maximum (~ 55 cm)



HOT-TAP Sensor Valve Retraction & Insertion Assembly Compatible Sensor Selection Guide

The 1 ¼" Valve Retraction Assembly can only support the smaller ¾" rear-threaded MNPT sensors. These sensors are provided to legacy support purposes for existing users of the old double ball valve retraction assemblies. No new installation should use these smaller ¾" MNPT rear-threaded sensors as they cannot provide the lifetime and performance of the standard size 1" MNPT rear-threaded sensors.

Compatible ¾" MNPT Rear-Threaded Sensors (ONLY SUPPORTED FOR LEGACY INSTALLATIONS)

pH Sensors & ORP Sensors

Recommended Models - 6X12, 6X32 & 6X42 - See [Immersion Sensor Selection Guide](#) Webpage ¾"-¾" MNPT Section

Ion Selective Sensors

Recommended Models - 6XX0 & 8XX0 - See [Organic Membrane Sensor Selection Guide](#) & [Solid-State Ion Selective Sensor Selection Guide](#) Webpages See ¾"-¾" MNPT Column

The 1-½" & 2" Valve Retraction Assembly can support all of the standard 1" MNPT rear-threaded sensors. The 2" valve retraction assembly is recommended for slurry and viscous process media whereas the 1-½" valve retraction assembly should be sufficient most clean solution valve retraction installations.

Compatible 1" MNPT Rear-Threaded Sensors

pH Sensors & ORP Sensors

Recommended Models - 6X31, 6X41, 6X51 & 8X31, 8X41, 8X51 - See [Immersion Sensor Selection Guide](#) Webpage See ¾"-1" MNPT Section & [Twist Lock Sensor Selection Guide](#)

Ion Selective Sensors

Recommended Models - 6XX0 & 8XX0 - See [Organic Membrane Sensor Selection Guide](#) & [Solid-State Ion Selective Sensor Selection Guide](#) Webpages See ¾"-1" MNPT & 1" MNPT Twist Lock Columns

**ADVANCED SENSOR TECHNOLOGIES, INC.
VALVE RETRACTION / SENSOR INSERTION BILL OF MATERIALS & PART NUMBERING GUIDE
EFFECTIVE AUGUST 1ST, 2007**

Fittings Component List - ASSY

**316SS Full Port Ball Valve
(Connected to Process)**

1-1/4" for 3/4" NPT Sensors

1-1/4" 316SS Full Port Ball Valve with Teflon Seats, Washers, Gaskets & Packing; Rated to 1000 psig

1-1/2" for 3/4" & 1" NPT Sensors

1-1/2" 316SS Full Port Ball Valve with Teflon Seats, Washers, Gaskets & Packing; Rated to 1000 psig

2" for 3/4" & 1" NPT Sensors

2" 316SS Full Port Ball Valve with Teflon Seats, Washers, Gaskets & Packing; Rated to 1000 psig

**1/2" Full Port Ball Valve
For Vent & Purge Operation**

1/2" Full Port Ball Valve with close 316SS nipple connection for use as purge port and vent valve to support sensor insertion and removal

1/2" Full Port Ball Valve with close 316SS nipple connection for use as purge port and vent valve to support sensor insertion and removal

1/2" Full Port Ball Valve with close 316SS nipple connection for use as purge port and vent valve to support sensor insertion and removal

**1" MNPT X 1.0" O.D.
Compression Fitting**

1" MNPT X 1.0" O.D. 316SS Compression Fitting; Available with Teflon & Nylon Compression Ferrules SUPPORTS INSERTION TUBES FOR BOTH 3/4" & 1" MNPT SENSORS

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Stock 316SS Parts List - ASSY

Description of Part (1 each)
Description of Part (1 each)
Description of Part (2 each)
Description of Part (1 each)
Description of Part (1 each)
Description of Part (1 each)

1-1/4" Thread X Thread Pipe Tee
1-1/4" MNPT X 6" Long Nipple
1-1/4" Close Nipple
1-1/4" X 1/2" Reducer Bushing
1-1/4" X 1" Reducer Coupling Bell
1/2" Close Nipple

1-1/2" Thread X Thread Pipe Tee
1-1/2" MNPT X 6" Long Nipple
1-1/2" Close Nipple
1-1/2" X 1/2" Reducer Bushing
1-1/2" X 1" Reducer Coupling Bell
1/2" Close Nipple

2" Thread X Thread Pipe Tee
2" MNPT X 6" Long Nipple
2" Close Nipple
2" X 1/2" Reducer Bushing
2" X 1" Reducer Coupling Bell
1/2" Close Nipple

Valve Retraction Hardware with Teflon / Nylon Ferrules **
Approximate Ship Weight

HOTTAP-ASSY-1-1/4"-316SS-ZZZ****
10 pounds each

HOTTAP-ASSY-1-1/2"-316SS-ZZZ****
15 pounds each

HOTTAP-ASSY-2"-316SS-ZZZ****
20 pounds each

1" Compression Fitting Assy Only *** with Teflon / Nylon Ferrules
Approximate Ship Weight

HOTTAP-COMP-1"-316SS-ZZZ****
2 pounds each

HOTTAP-COMP-1"-316SS-ZZZ****
2 pounds each

HOTTAP-COMP-1"-316SS-ZZZ****
2 pounds each

1.0" O.D. 36" 316SS Insertion Tube for 3/4" MNPT Sensors
Approximate Ship Weight

HOTTAP-TUBE-3/4"NPT-316SS
2 pounds each

1.0" O.D. 36" 316SS Insertion Tube for 1" MNPT Sensors

HOTTAP-TUBE-1"NPT-316SS
2 pounds each

* 1" NPT Sensors not recommended for 1-1/2" Valve Assemblies except for low viscosity installations to avoid clogging during removal / insertion
** 1" Insertion Tube for 3/4" & 1" NPT Sensors NOT Included in Valve Retraction Hardware Price
*** This compression fitting assembly is only intended as a replacement part for existing customers!
**** IF TEFLON FERRULES REQUIRED, ZZZ = TEFLON, IF NYLON FERRULES REQUIRED, ZZZ = NYLON