

# Hot Tap Retractable

Installation and Operating Manual

*Probe  
Assembly*



High Pressure



Low Pressure

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## Read this Manual Before Using

This manual provides information on the Hot Tap Retractable Probe Assembly. It is important that all instructions are read carefully before insertion and removal. Detailed instructions are included in the General Instructions section of this manual.

## Conventions Used in this Manual

Certain conventions are used in this manual to convey specific types of information. General technical material, support data, and safety information are presented in narrative form. The following styles are used for notes, cautions, and warnings.

### Notes

Notes contain information that augments or clarifies an operating step. Notes do not normally contain actions. They follow the procedural steps to which they refer.

### Cautions

Cautions alert the technician to special conditions that could injure personnel, damage equipment, or reduce a component's mechanical integrity. Cautions are also used to alert the technician to unsafe practices or the need for special protective equipment or specific materials. In this manual, a caution box indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

### Warnings

Warnings identify potentially dangerous situations or serious hazards. In this manual, a warning indicates an imminently hazardous situation which, if not avoided, could result in serious injury or death.

## Safety Messages

Follow all standard industry procedures for servicing electrical equipment when working with or around high voltage. Always shut off the power supply before touching any components.

## Low Voltage Directive

For use in Installation Category II. If equipment is used in a manner not specified by the manufacturer, protection provided by the equipment may be impaired.

## Notice of Trademark, Copyright, and Limitations

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Performance specifications are effective with date of issue and are subject to change without notice. Magnetrol reserves the right to make changes to the product described in this manual at any time without notice. Magnetrol makes no warranty with respect to the accuracy of the information in this manual.

## Warranty

All Magnetrol/STI mechanical level and flow controls are warranted free of defects in materials or workmanship for five full years from the date of original factory shipment.

If returned within the warranty period; and, upon factory inspection of the control, the cause of the claim is determined to be covered under the warranty; then, Magnetrol/STI will repair or replace the control at no cost to the purchaser (or owner) other than transportation.

Magnetrol/STI shall not be liable for misapplication, labor claims, direct or consequential damage or expense arising from the installation or use of equipment. There are no other warranties expressed or implied, except special written warranties covering some Magnetrol/STI products.

## Quality Assurance

The quality assurance system in place at Magnetrol/STI guarantees the highest level of quality throughout the company. Magnetrol/STI is committed to providing full customer satisfaction both in quality products and quality service.

Magnetrol's quality assurance system is registered to ISO 9001 affirming its commitment to known international quality standards providing the strongest assurance of product/service quality available.



## 1.0 Description

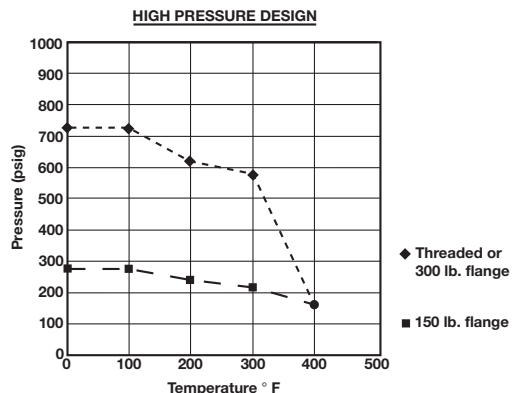
The Retractable Probe Assembly can be used with Magnetrol's full line of insertion probes, including Thermatel® thermal dispersion probes, Kotron® RF capacitance probes, and Echotel® ultrasonic contact transducers.

The Retractable Probe Assembly permits the probe or transducer to be installed in or removed from the vessel or pipe while the process is in operation. After initial installation, it is not necessary to drain or depressurize the tank or shut down the operation to install the instrument. The Retractable Probe Assembly is made from 316 stainless steel with optional carbon steel or stainless steel flanges and ball valves. Various designs permit operation up to ANSI Class 300 pound service.

## 1.1 Features

- Permits insertion or removal of the probe or transducer without shutting down the process or draining the tank.
- Suitable for use with stainless steel Thermatel probes, Echotel probes, and Kotron probes with inactive sheath. Probes must have a  $\frac{3}{4}$ " process connection.
- NPT or flange mounted
- Optional ball valve
- Teflon® compression rings
- Stainless steel gland assembly with choice of carbon steel or stainless steel process connections.
- Prevents unintentional removal of instrument.
- Standard pressure to 50 psig (80 psi for TA1/TA2 probes). High pressure design optional to class 300 pound service.
- Temperatures to +400° F (+204° C)

## 1.2 Pressure-Temperature Chart



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## 2.0 General Instructions

### 2.1 Probe Insertion

1. Ensure that the ball valve is closed.
2. Loosen the seal nut of the Retractable Probe Assembly and insert the probe.
3. Attach the safety cable to the retaining ring (low pressure) or connect the probe to the  $\frac{3}{4}$ " NPT connection on the retaining bar (high pressure).
4. Carefully slide the probe past the Teflon sealing rings ensuring that the probe tip does not hit the closed ball valve. Optionally, the Retractable Probe Assembly may be disassembled to slide the seal nut and Teflon v-rings over the probe before inserting into the gland nut.
5. Slightly tighten the seal nut to permit movement of the probe past the Teflon v-rings, but also to avoid leakage.
6. Open the isolation ball valve and insert the probe to the desired location in the vessel. For Echotel and Thermatel sensors, properly align the probe/transducer in the vessel.
7. Tighten the seal nut.

### 2.2 Probe Removal

1. Slightly loosen the seal nut to permit movement of the probe, but also to avoid leakage.
2. Withdraw the probe from the vessel to the length permitted by the safety chain or adjustment rods.
3. Close the isolation valve.
4. Remove the probe from the safety cable (low pressure) or disconnect the probe from the retaining bar (high pressure).

### 3.0 Reference Information

### 3.1 Dimensional Specifications

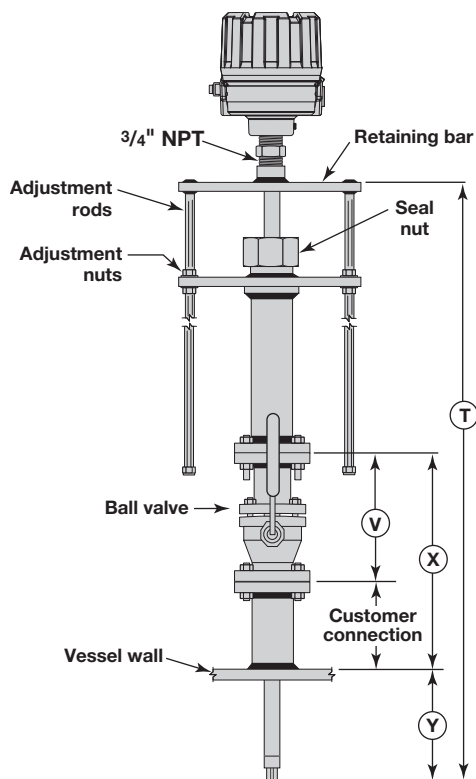


Figure 2

Echotel or ThermoTel High Pressure Design  
Minimum probe length  $T = 2 \times (X + Y)$

S Dimension (minimum)	
Threaded connection	4.00
Flanged connection	5.00

Ball Valve Dimensions*	
Size	V
1 1/2" NPT	4.4
1 1/2" 150# flange	6.5
1 1/2" 300# flange	7.5

\*Dimension of ball valve if supplied by Magnetrol.

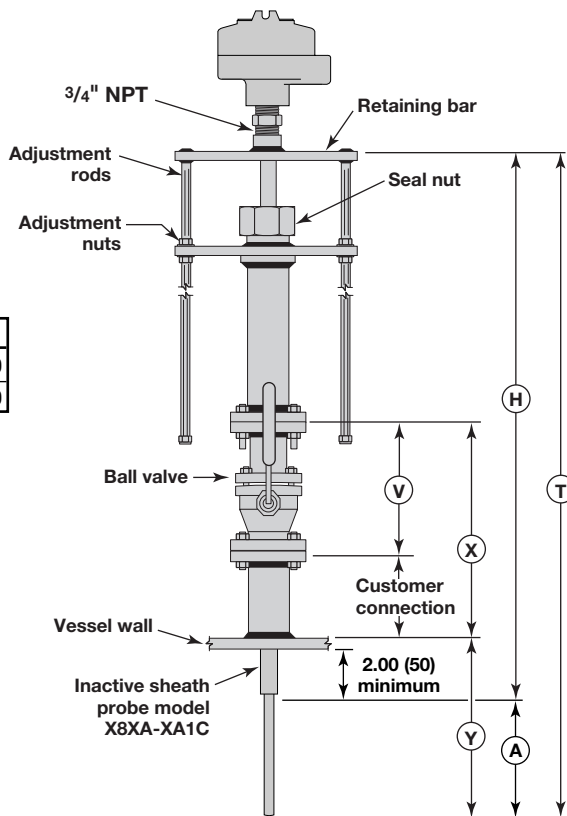


Figure 3

Kotron High Pressure Design  
Minimum probe length  $T = 2 \times (A + 2 + X)$

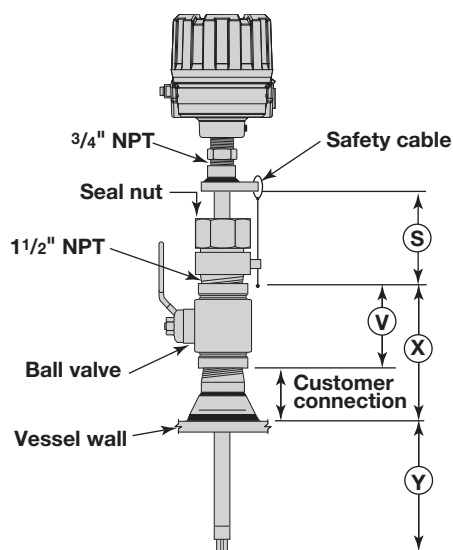


Figure 4

Echotel or ThermoTel Low Pressure Design  
Minimum probe length =  $S + X + Y$

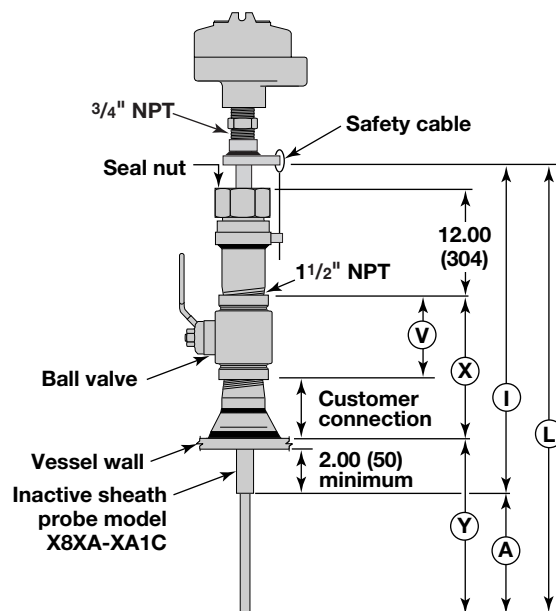


Figure 5

Kotron Low Pressure Design  
Minimum probe length  
 $L = A + 2 + X + 12$

**NOTES:**

A = Active length of Kotron probe (maximum 12.00 [305])  
H = Inactive length 2 times X + Y minus A  
I = Inactive length 12.00 + X + 2.00 [50] minimum

V = Ball valve dimension (see chart)  
X = Dimension from wall to top of ball valve  
Y = Insertion length into tank

## 3.2 Model Number

### 3.2.1 RPA assemblies for insertion probes other than TA1/TA2

#### BASIC MODEL NUMBER

RPA	Retractable probe assembly
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#### DESIGN TYPE

inches	cm	
1	A	Echotel ① or Thermatel ①, low pressure (up to 50 psi)
2	B	Echotel ① or Thermatel ①, high pressure
3	C	Kotron, low pressure ② (up to 50 psi)
4	D	Kotron, high pressure ②

① Thermatel and Echotel probes must be stainless steel construction. Not suitable with high temperature Thermatel probe.

② Kotron probes must be inactive sheath model X8XA-XA1C. Inactive sheath must clear tank wall by 2" (refer to Dimensional Specifications on page 3). Maximum Kotron probe active length is 12" (305 mm).

#### MATERIALS OF CONSTRUCTION

1	Carbon steel ③
4	316 stainless steel

③ Available with flange connection and high pressure design (seal nut is 316 stainless steel).

#### PROCESS CONNECTION

0	1½" NPT
1	1½" 150# flange
2	1½" 300# flange

#### BALL VALVE

0	No ball valve supplied
1	Carbon steel ④
2	316 Stainless steel ④

④ TFE seals standard.

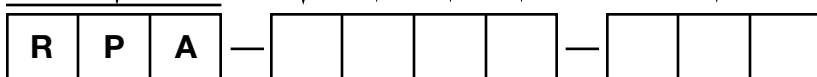
#### PROBE LENGTH

Refer to page 3 for calculation of probe length.  
Maximum length 72" (1.83 meters).

NOTE: The specified probe length is used to determine the length of the safety chain or retaining rods.

#### EXAMPLE:

If ordering a Thermal dispersion model TD2-7D01-030 with a 30" (76 cm) probe (model TEC-A110-030), the probe length designation of the Retractable Probe Assembly is 030.



## 3.2 Model Number

### 3.2.2 RPA assemblies for TA1/TA2 Insertion probes

#### BASIC MODEL NUMBER

RPA	Retractable probe assembly
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#### DESIGN TYPE

5	Low pressure (up to 80 psi, 5.5 bar), probe length in tenths of an inch
6	High pressure (up to 300# class service), probe length in tenths of an inch
E	Low pressure (up to 80 psi, 5.5 bar), probe length in centimeters
F	High pressure (up to 300# class service), probe length in centimeters

#### MATERIALS OF CONSTRUCTION

1	Carbon steel ①
4	316 stainless steel

① Available with flange connection and high pressure design (seal nut is 316 stainless steel).

#### PROCESS CONNECTION

0	1½" NPT
1	1½" 150# flange
2	1½" 300# flange

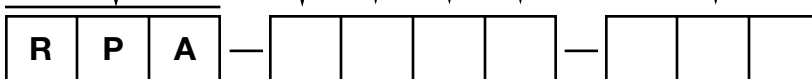
#### BALL VALVE

0	No ball valve supplied
1	Carbon steel ②
2	Stainless steel ②

② TFE seals standard.

#### PROBE LENGTH

10 to 99.9 inches (example: 12" = 120)
25 to 253 centimeters (example: 30 cm = 030)



### Service Policy

Owners of Magnetrol/STI controls may request the return of a control or any part of a control for complete rebuilding or replacement. They will be rebuilt or replaced promptly. Controls returned under our service policy must be returned by Prepaid transportation. Magnetrol will repair or replace the control at no cost to the purchaser (or owner) other than transportation if:

1. Returned within the warranty period; and
2. The factory inspection finds the cause of the claim to be covered under the warranty.

If the trouble is the result of conditions beyond our control; or, is NOT covered by the warranty, there will be charges for labor and the parts required to rebuild or replace the equipment.

In some cases it may be expedient to ship replacement parts; or, in extreme cases a complete new control, to replace the original equipment before it is returned. If this is desired, notify the factory of both the model and serial numbers of the control to be replaced. In such cases, credit for the materials returned will be determined on the basis of the applicability of our warranty.

No claims for misapplication, labor, direct or consequential damage will be allowed.

### Return Material Procedure

So that we may efficiently process any materials that are returned, it is essential that a "Return Material Authorization" (RMA) number be obtained from the factory, prior to the material's return. This is available through Magnetrol's local representative or by contacting the factory. Please supply the following information:

1. Company Name
2. Description of Material
3. Serial Number
4. Reason for Return
5. Application

Any unit that was used in a process must be properly cleaned in accordance with OSHA standards, before it is returned to the factory.

A Material Safety Data Sheet (MSDS) must accompany material that was used in any media.

All shipments returned to the factory must be by prepaid transportation.

All replacements will be shipped F.O.B. factory.



5300 Belmont Road • Downers Grove, Illinois 60515-4499 • 630-969-4000 • Fax 630-969-9489 • www.magnetrol.com  
145 Jardin Drive, Units 1 & 2 • Concord, Ontario Canada L4K 1X7 • 905-738-9600 • Fax 905-738-1306  
Heikensstraat 6 • B 9240 Zele, Belgium • 052 45.11.11 • Fax 052 45.09.93  
Regent Business Ctr., Jubilee Rd. • Burgess Hill, Sussex RH15 9TL U.K. • 01444-871313 • Fax 01444-871317



5300 Belmont Road • Downers Grove, Illinois 60515-4499 • 630-969-4028 • Fax 630-969-9489 • www.sticontrols.com

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