# Meriam's Accutube Flow Sensors

Meriam's Accutube Flow Sensors are lab-tested and field-proven flow elements perfect for gas, liquid or steam service. With thousands in use worldwide, the Accutube continues to be the right choice when ease of installation, cost effective operation and highly accurate performance is required.

The Accutube averaging Pitot tube is a head type device, which generates a differential pressure signal similar to the orifice, venturi, flow nozzle, and other head producing primary elements. It can be used for flow measurement only or with static pressure and temperature transmitters as the primary measurement source for a flow control loop. It has been proven that the Accutube's flow measurement accuracy is better than that of the orifice. The Accutube also generates considerable cost savings with its simple installation and wear-free, energy-efficient design, providing a viable alternative to traditional flow measurement devices.

## Principal of Operation

The Accutube is an annular averaging Pitot device, which is simply inserted into a pipe or duct through a weld coupling and packing. Based on pipe or duct size, the Accutube is constructed so that strategically located sensing ports continually sample the impact and static pressures produced by the Accutube's obstruction of the flow stream profile. Within the probe, the impact pressures sensed by the upstream ports are continually averaged in an isolated plenum chamber. Similarly, the static pressures sensed by the downstream ports are averaged in a second isolated plenum. A readout device is then used to indicate the differential between the two-plenum chambers.

Meriam Accutubes are provided in a wide variety of models enabling you to select the probe diameter and mounting configuration compatible with your application needs. Meriam also has available special mounting hardware, valves and materials for use in high temperature and pressure applications and corrosive environments.

For convenience in selecting and sizing Accutubes for your applications, please refer to the data form found on page 25 in this catalog. Complete the form and submit it to the factory for detailed analysis and configuration. For further assistance on Accutube sizing and selection, feel free to contact Meriam Instrument or your local Meriam representative. You can request the "Accutube Selection and Sizing Data Sheet" if you need detailed steps on selection and sizing.

# Accutube: Features

## Accuracy

True double averaging design
+1% of rate accuracy
+0.1% repeatability
Tested and certified by independent flow labs

## Confidence

Testing by the Utah Research Laboratory-Utah State University, the University of Michigan and testing against NIST traceable Meriam flow elements confirm typical accuracy of ±1% of rate
Material Certification and Certificate of Conformance per customer specification are available.
Certified welding fabrication to ASME Code, Section IX Procedures.
Dye penetrant and hydrostatic testing capability.
Canadian registration number.

## Convenience

Applicable to gases, liquids, steam
Simple installation and maintenance
Four standard models and probe sizes: Insertion, Flanged, Wet tap with socket or gear drive retraction, Integral three-valve manifold, optional Bi-directional flow sensing

## Efficiency

Low permanent head loss saves energy and cost
Multiple tube design offers superior strength and clog resistance
Unaffected by wear
No system shutdown with wet tap model
Ideal for flow system upgrades and expansions
Integral 3-Valve head option saves installation piping and transmitter mounting time.
Gear Drive wet tap reduces insertion and retraction time

# Accutube: Low-Cost Flow Measurement

## The Accutube reduces initial costs through low purchase price and reduced installation cost.

The purchase price of an Accutube will almost always be less expensive than other head producing primary elements. Meriam's simple and effective Accutube design allows us to pass fabrication savings on to you. When mounting hardware is considered, the Accutube will always be low in cost. No flanges are required, just the simple mounting hardware included with the Accutube. Choose the integral 3-valve manifold Accutube head to reduce your transmitter mounting and piping costs.

The Accutube's installation costs are also low. On an 8-inch pipe, for example, installation of the Accutube's mounting thredolet requires only 4 linear inches of welding while orifice flanges for the same size pipe require 50 linear inches. Orifice flanges also require pipe cutting, weld preparation and weld cleanup. With the Accutube, simply weld on the thredolet, bore a hole, install the Accutube and tighten the packing gland. You're ready to go!

## Operational savings continue with low-cost maintenance, wet tap flexibility and low permanent head loss.

The Accutube simplifies preventive maintenance with its clog-resistant and wear - free design. This combination brings downtime to a minimum and frees you to concentrate on the process itself.
If shutting down your process is too costly, then look to Meriam's Wet Tap Accutubes. These Accutubes can be inserted and retracted without process interruption, after being installed without process shutdown. This flexibility gives you the ability to spot check the process, inspect the Accutube and pig or flush the line without Accutube damage while eliminating the need for by-pass piping and valve systems. Choose from socket or gear drive retraction options to meet your needs.

Accutubes save you money by causing less permanent pressure loss. Permanent pressure loss (unrecoverable head loss) is the system energy lost due to the primary element's obstruction of the flow stream. This pressure drop is what your pump or fan has to overcome and is directly related to system operating costs. The Meriam Accutube is much less of a flow obstruction than other primary elements. Test results on the Accutube show typical unrecoverable head loss of 2 –10 % of the produced differential pressure. This means that there is much less permanent pressure loss, less work for the pump or fan to do and much lower operating costs. The difference in using Accutubes versus orifice plates can add up to hundreds of dollars per year in pump or fan horsepower per measurement point.

# Accutube: Installation Requirements

Meriam Accutubes perform best when installed in the proper orientation with respect to piping configuration. The following diagrams and tables show correct installation orientation and straight-run requirements both upstream and downstream of the Accutube location.

## Sensor Orientation

HORIZONTAL LINES
- Bottom Entry
- Side Entry
- Top Entry

VERTICAL LINES
- Special 90° Rotated Accutube Head

recommended for liquid and steam use.

# Accutube: Series 10A and 11A

- Inline for ease of installation and low cost
- Gas, liquid and steam applications
- Line sizes from ½″ - 3″
- Available in steel, stainless, brass, copper and PVC
- Pressure / temperature to: 1000 PSIG @ 750°F

## MODEL NUMBER

1 0 A
1 1 A _ _ _ _ _ _ F _ _ _ _ _ _ _

### MODEL CODE

| |
|---|
| 10A for Sch 40 Pipe and Type K Copper |
| 11A for Sch 80 Pipe and PVC |

### BODY MATERIAL

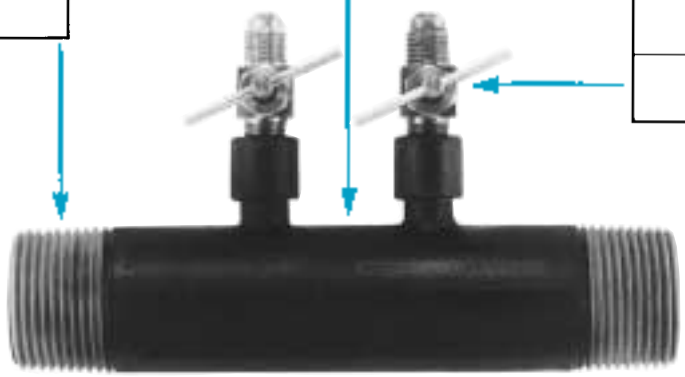
| BODY MATERIAL | ORDER CODE | RATING |
|---|---|---|
| Brass | 10 | 250 PSIG @ 250°F Max. |
| Steel | 02 | |
| Type K copper | 14 | |
| 316SS | 03 | 1000 PSIG @ 750°F Max. |
| PVC Threaded | 30 | 120 PSIG @ 100°F Max. |
| PVC plain end | 31 | |

### LINE SIZE AND PROBE DIAMETER

| LINE SIZE | ORDER CODE | PROBE DIAMETER |
|---|---|---|
| ½″<br>¾″<br>1″ | 0005 F<br>0007 F<br>0010 F | 3/16″<br>3/16″<br>¼″ |
| 1¼″<br>1½″<br>2″ | 0012 F<br>0015 F<br>0020 F | ¼″<br>¼″<br>¼″ |
| 2½″<br>3″ | 0025 F<br>0030 F | ¼″<br>¼″ |

### INSTRUMENT SHUTOFF VALVES

| ORDER CODE | MATERIAL | DESCRIPTION |
|---|---|---|
| XX | — | No valves required<br>Instr. connections are 1/8″ FNPT except PVC ½″ FNPT |
| 00 | Brass | 1/8″ MNPT x ¼″ SAE Flair rated for 150 PSIG @ 200°F Max. |
| 03 | 316SS | 1/8″ MNPT x 1/8″ MNPT 90° connection. Rated for 2000 PSI @ 450°F Max. |
| 32 | PVC | ½″ FNPT x ½″ FNPT BALL type. Rated for 120 PSIG @ 100°F Max. Series 11A only |



**SERIES 10A** inline sensors are supplied in threaded Schedule 40 pipe nipples (except for the type ''K'' Copper). The inline sensor is complete with factory-fitted probes and is supplied as a complete assembly providing for economical installation. Series 10A sensors are supplied with Steel, 316SS, Brass, and Type ''K'' copper. Available in line sizes ½″ through 3″.

Dimension Sheet: F/N 957-10 ALL: 420
Instruction Manual: F/N 957:440

**SERIES 11A** inline sensors are supplied in threaded Schedule 80 pipe nipples (except for the P.V.C. plain end type). The inline sensor is complete with factory-fitted probes and is supplied as a complete assembly providing for economical installation. Series 11A sensors are supplied with Steel, 316SS, Brass, and PVC. Available in line sizes ½″ through 3″.

Dimension Sheet: F/N 957-11 ALL: 420
Instruction Manual: F/N 957:440

# Accutube: Series 20T and 21T

- Insertion type flow sensor
- Gas, liquid and steam applications
- Standard sizes up to 42-inch pipe
- Pressures to 1500 PSIG, temperatures to 800°F

## MODEL NUMBER

2 0 T
2 1 T _ _ _ _ _ _ _ _ 0 0 _ _ _ _ X X _ _ _

### MODEL CODE

| |
|---|
| 20T — Single Mount |
| 21T — Double Mount |

### LINE SIZE AND PROBE DIAMETER

| | ORDER CODE | |
|---|---|---|
| LINE SIZE | 3/8" DIA PROBE | 3/4" DIA PROBE |
| 1"<br>1¼"<br>1½" | 0010D<br>0012D<br>0015D | |
| 2"<br>2½"<br>3" | 0020D<br>0025D<br>0030D | |
| 3½"<br>4"<br>5" | 0035D<br>0040D<br>0050D | |
| 6"<br>8"<br>10" | 0060D<br>0080D<br>0100D | 0060E<br>0080E<br>0100E |
| 12"<br>14"<br>16" | | 0120E<br>0140E<br>0160E |
| 18"<br>20"<br>22" | | 0180E<br>0200E<br>0220E |
| 24"<br>26"<br>28" | | 0240E<br>0260E<br>0280E |
| 30"<br>32"<br>34" | | 0300E<br>0320E<br>0340E |
| 36"<br>42" | | 0360E<br>0420E |

Above 42" use 22L, 23L or consult factory.

### BODY MATERIAL

| BODY MATERIAL | ORDER CODE |
|---|---|
| STD 316SS Probe with Brass Head | 00 |
| 316SS Probe with 316SS Head | 03 |

### INSTRUMENT SHUTOFF VALVES

| ORDER CODE | MATERIAL | DESCRIPTION |
|---|---|---|
| XX | — | No valves required<br>Connections are 1/8" FNPT |
| 00 | Brass | 1/8" MNPT x 1/4" SAE Flair rated for 150 PSIG @ 200°F Max. |
| 02 | Steel | 1/8" FNPT x 1/8" FNPT 90° connection rated for 6000 PSI @ 500°F Max. |
| 03 | 316SS | 1/8" MNPT x 1/8" MNPT 90° connection rated for 2000 PSI @ 450°F Max. |

### MOUNTING HARDWARE

| ORDER CODE | PACKING MATERIAL | MOUNTING MATERIAL | LINE SIZE | PRESSURE/TEMPERATURE RATINGS |
|---|---|---|---|---|
| 01 | Brass | C.I. Saddle Clamp<br>C.I. Saddle Clamp<br>Steel Strap Type<br>Steel Strap Type | 1"-5"<br>6"-10"<br>12"-18"<br>20"-30" | **Brass Packing**<br>1500 PSIG Max. @ 100°F<br>250 PSIG @ 400°F Max. |
| 02 | Brass | C.S. thredolet | All | |
| 03 | 316SS | C.S. thredolet | All | |
| 04 | 316SS | 316SS thredolet | All | **3/8" Stainless Steel Packing**<br>2500 PSIG Max. @ 100°F<br>2000 PSIG @ 800°F<br>**3/4" Stainless Steel Packing**<br>3100 PSIG Max. @ 100°F<br>2000 PSIG @ 800°F Max. |
| 06<br>07 | Brass | C.S. Duct Mount<br>06-Round<br>07=SQ or Rect. | 2"-24"<br>26"-42" | |
| S6<br>S7 | 316SS | 316SS Duct Mount<br>S6=Round<br>S7 = SQ or Rect. | 2"-24"<br>26"-42"<br>26"-42" | |
| 08 | Brass | PVC thredolet | 1"-24"<br>26"-42" | |

**SERIES 20T—ACCUTUBE—SINGLE MOUNT.** The Accutube Series 20T Standard Probe is constructed of stainless steel and brass. The Series 20T Probe has single-mounted support and installs through a single packing gland and thredolet. The Series 20T Accutube is factory-fitted with 1/8" FNPT connections and is shipped with mounting hardware complete. Series 20T Accutubes available for line sizes 1" through 30".

Series 20T, Dimension Sheet: F/N 957-20T: 420
Instruction Manual: 957:440

**SERIES 21T ACCUTUBE—DOUBLE MOUNT.** The Accutube Series 21T standard probe is constructed of stainless steel and brass and is double supported. This Accutube is provided complete with packing gland and two thredolets. The Series 21T Accutube is factory-fitted with 1/8" FNPT connections and is shipped with mounting hardware complete. Series 21T Accutubes are available for line sizes 3" through 42".

Series 21T, Dimension Sheet: F/N 957-21T: 420
Instruction Manual: 957:440

# Accutube: Series 22L and 23L

- High pressure / temperature insertion type flow sensor
- Gas, liquid and steam applications
- Standard sizes up to 72-inch pipe
- Pressure / temperature limit: 1500 PSIG Max. @ 800°F Max.

## MODEL NUMBER

2 2 L
2 3 L _ _ _ _ _ _ _ _ 0 3 _ _ _ _ X X _ _ _

### MODEL CODE

| |
|---|
| 22L — Single Mount |
| 23L — Double Mount |

### BODY MATERIAL

| BODY MATERIAL | ORDER CODE |
|---|---|
| 316SS Head and Probe | 03 |
| For Special Material Consult Factory | SP |

### LINE SIZE AND PROBE DIAMETER

| | ORDER CODE | | | |
|---|---|---|---|---|
| | 22L SINGLE | | 23L DOUBLE | |
| LINE SIZE | ½" DIA PROBE | 1" DIA PROBE | ½" DIA PROBE | 1" DIA PROBE |
| 2"<br>2½"<br>3" | 0020A<br>0025A<br>0030A | | 0020A<br>0025A<br>0030A | |
| 3½"<br>4"<br>5" | 0035A<br>0040A<br>0050A | | 0035A<br>0040A<br>0050A | |
| 6"<br>8"<br>10" | 0060A<br>0080A<br>0100A | 0060B<br>0080B<br>0100B | 0060A<br>0080A<br>0100A | 0060B<br>0080B<br>0100B |
| 12"<br>14"<br>16" | | 0120B<br>0140B<br>0160B | | 0120B<br>0140B<br>0160B |
| 18"<br>20"<br>22" | | 0180B<br>0200B<br>0220B | | 0180B<br>0200B<br>0220B |
| 24"<br>26"<br>28" | | 0240B<br>0260B<br>0280B | | 0240B<br>0260B<br>0280B |
| 30"<br>32"<br>34" | | 0300B<br>0320B<br>0340B | | 0300B<br>0320B<br>0340B |
| 36"<br>42"<br>48" | | 0360B<br>0420B | | 0360B<br>0420B<br>0480B |
| 60"<br>72" | | | | 0600B<br>0720B |

Above 72" consult factory.


### INSTRUMENT SHUTOFF VALVES

| ORDER CODE | DESCRIPTION | PRESSURE/TEMPERATURE RATING |
|---|---|---|
| XX | No instrument valves | Probe connections are ½" MNPT |
| 00 | Bronze gate valves, ½" FNPT x ½" FNPT | 300 PSI Steam Max. @ 550°F Max.<br>600 PSI liquid @ 200°F nonshock |
| 02 | Carbon steel block valve, ½" FNPT x ½" FNPT | 6000 PSI Max. @ 200°F<br>4000 PSI @ 500°F Max. |
| 03 | 316SS block valve, ½" FNPT x ½" FNPT | 6000 PSI Max. @ 200°F<br>4000 PSI @ 500° Max. |
| 04 | Carbon steel OS&Y valve ½" FNPT x ½" FNPT | 2000 PSI Max. @ 100° F<br>235 psi @ 1000°F Max. |
| 05 | 316SS OS&Y valve ½" FNPT x ½"FNPT | 1920 PSI Max. @ 100°F<br>550 PSI @ 1200°F Max. |
| SP | As required | For temp or press above those listed |

### MOUNTING HARDWARE

| ORDER CODE | PACKING MATERIAL | MOUNTING MATERIAL | LINE SIZE |
|---|---|---|---|
| 01 | 316SS | C.I. Saddle Clamp<br>C.I. Saddle Clamp<br>Steel Strap Type<br>Steel Strap Type | 2"-5"<br>6"-10"<br>12"-18"<br>20"-30" |
| 03 | 316SS | C.S. thredolet | All |
| 04 | 316SS | 316SS thredolet | All |
| 06<br>07 | 316SS | C.S. Duct Mount<br>06=Round<br>07=Sq or Rect. | 2"-24"<br>26"-42" |
| S6<br>S7 | 316SS | 316SS Duct Mount<br>S6 = Round<br>S7 = Sq or Rect. | 2"-24"<br>26"-42" |
| 08 | 316SS | PVC thredolet | 1"-24"<br>26"-42" |

**SERIES 22L—ACCUTUBE—SINGLE MOUNT.** The Accutube Series 22L Probe is constructed of 316LSS cast head and 316LSS probe. The Series 22L probe has single-mounted support and installs through a single packing gland and thredolet. The Series 22L Accutube is factory-fitted with ½" NPT connections and is shipped with mounting hardware complete. Series 22L Accutubes are available for line sizes 2" through 42".

Dimension Sheet: F/N 957-22L:420
Instruction Manual: F/N 957:440

**SERIES 23L—ACCUTUBE—DOUBLE MOUNT.** The Accutube Series 23L probe is constructed of 316LSS cast head and 316LSS probe and is double supported. The Accutube is provided complete with packing gland and two thredolets. The Series 23L Accutube is factory-fitted with ½" NPT connections and is shipped with mounting hardware complete. Series 23L Accutubes are available for line sizes 2" through 72"

Dimension Sheet: F/N 957-23L:420
Instruction Manual: F/N 957:440

# Accutube: Series 24D and 25D

- Flange-mounted insertion type flow sensor
- Gas, liquid and steam applications
- Standard sizes up to 72-inch pipe
- Pressure / temperature rating set by flange

## MODEL NUMBER

2 4 D
2 5 D _ _ _ _ _ _ _ _ 0 3 _ _ _ _ X X _ _ _

### MODEL CODE

| |
|---|
| 24D — Single Mount |
| 25D — Double Mount |

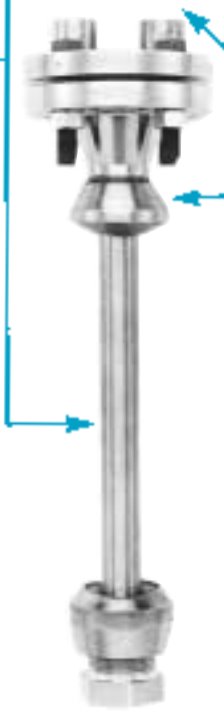
### BODY MATERIAL

| BODY MATERIAL | ORDER CODE |
|---|---|
| 316SS Head with 316LSS Probe | 03 |
| For Special Material Consult Factory | SP |

### LINE SIZE AND PROBE DIAMETER

| | ORDER CODE | | | | | |
|---|---|---|---|---|---|---|
| | 24D SINGLE | | | 25D DOUBLE | | |
| LINE | ½" DIA PROBE | 1" DIA PROBE | 2³/₈" DIA PROBE | ½" DIA PROBE | 1" DIA PROBE | 2³/₈" DIA PROBE |
| 2"<br>2½"<br>3" | 0020A<br>0025A<br>0030A | | | 0020A<br>0025A<br>0030A | | |
| 3½"<br>4"<br>5" | 0035A<br>0040A<br>0050A | | | 0035A<br>0040A<br>0050A | | |
| 6"<br>8"<br>10" | 0060A<br>0080A<br>0100A | 0060B<br>0080B<br>0100B | | 0060A<br>0080A<br>0100A | 0060B<br>0080B<br>0100B | |
| 12"<br>14"<br>16" | | 0120B<br>0140B<br>0160B | 0140C<br>0160C | | 0120B<br>0140B<br>0160B | |
| 18"<br>20"<br>22" | | 0180B<br>0200B<br>0220B | 0180C<br>0200C<br>0220C | | 0180B<br>0200B<br>0220B | |
| 24"<br>26"<br>28" | | 0240B<br>0260B<br>0280B | 0240C<br>0260C<br>0280C | | 0240B<br>0260B<br>0280B | 0240C<br>0260C<br>0280C |
| 30"<br>32"<br>34" | | 0300B<br>0320B<br>0340B | 0300C<br>0320C<br>0340C | | 0300B<br>0320B<br>0340B | 0300C<br>0320C<br>0340C |
| 36"<br>42"<br>48" | | 0360B<br>0420B | 0360C<br>0420C<br>0480C | | 0360B<br>0420B<br>0480B | 0360C<br>0420C<br>0480C |
| 60"<br>72" | | | 0600C<br>0720C | | 0600B<br>0720B | 0600C<br>0720C |

Above 72" Consult Factory.



### INSTRUMENT SHUTOFF VALVES

| ORDER CODE | DESCRIPTION | PRESSURE/TEMPERATURE RATING |
|---|---|---|
| XX | No instrument valves | Probe connections are ½" MNPT |
| 00 | Bronze gate valves, ½" FNPT x ½" FNPT | 300 PSI Steam Max. @ 550°F Max.<br>600 PSI liquid @ 200°F nonshock |
| 02 | Carbon steel block valve, ½" FNPT x ½" FNPT | 6000 PSI Max. @ 200°F<br>4000 PSI @ 500°F Max. |
| 03 | 316SS block valve, ½" FNPT x ½" FNPT | 6000 PSI Max. @ 200°F<br>4000 PSI @ 500°F Max. |
| 04 | Carbon steel OS&Y valve ½" FNPT x ½" FNPT | 2000 PSI Max. @ 100° F<br>235 psi @ 1000°F Max. |
| 05 | 316SS OS&Y valve ½" FNPT x ½" FNPT | 1920 PSI Max. @ 100°F<br>550 PSI @ 1200°F Max. |
| SP | As required | For temp or press above those listed |

### MOUNTING COMPONENTS

| ORDER CODE | *FLANGE RATING | MATERIAL-WELD NECK FLANGE WELDOLET, THREDOLET |
|---|---|---|
| 1C | 150# | Carbon steel |
| 3C | 300# | Carbon Steel |
| 6C | 600# | Carbon Steel |
| 9C | 900# | Carbon Steel |
| 1S | 150# | 316 Stainless Steel |
| 3S | 300# | 316 Stainless Steel |
| 6S | 600# | 316 Stainless Steel |
| 9S | 900# | 316 Stainless Steel |

*When the mounting flange rating is changed to one of the options above, the probe flange and hardware is automatically changed too.

**SERIES 24D—ACCUTUBE—SINGLE MOUNT.** The Accutube Series 24D Standard Probe is constructed of 316LSS probe and 316SS flange. The instrument flange is 1¼" 150# ANSI flange standard (2³/₈" probe has 2½" 150# flange.) The Series 24D probe is single-mount supported and installs through a carbon steel mounting flange and weldolet. The Series 24D Accutube is factory-fitted with ½" FNPT connections and is shipped with mounting hardware complete. Series 24D Accutubes are available for line sizes 2" through 72"

Dimension Sheet: F/N 957-24D ½-1:420
F/N 957-24D 2³/₈:420
Instruction Manual: F/N 957:440

**SERIES 25D—ACCUTUBE—DOUBLE MOUNT.** The Accutube Series 25D standard probe is constructed of a 316LSS probe and a 316SS instrument flange. The instrument flange is 1¼" 150# ANSI flange standard (2³/₈" probe has 2½" 150# flange). Series 25D probe is double mount-supported. This Accutube is provided complete with mounting flange and weldolet and a thredolet for double mounting. The Series 25D Accutube is factory fitted with ½" FNPT connections and is shipped with mounting hardware complete. Series 25D Accutubes are available for line sizes 2" through 72".

Dimension Sheet: F/N 957-25D ½-1:420
F/N 957-25D 2³/₈:420
Instruction Manual: F/N 957:440

# Accutube: Series 33T Low Pressure Wet Tap

- Insertion and removal without process shutdown
- Gas and liquid applications
- Standard sizes up to 30-inch pipe
- Operating pressure / temperature limit: 150 PSIG Max. @ 190°F max.
- Insertion / removal pressure / temperature limit: 100 PSIG @ 190°F

## MODEL NUMBER

3 3 T _ __ __ __ __ __ __ _ 0 0 _ __ __ _ __ __ _ __ __

### BODY MATERIAL

| BODY MATERIAL | ORDER CODE |
|---|---|
| STD 316SS Probe with Brass Head | 00 |
| 316SS Probe with 316SS Head | 03 |

### LINE SIZE AND PROBE DIAMETER

| | ORDER CODE | |
|---|---|---|
| LINE SIZE | 3/8" DIA PROBE | 3/4" DIA PROBE |
| 1" 1¼" 1½" | 0010D 0012D 0015D | |
| 2" 2½" 3" | 0020D 0025D 0030D | |
| 3½" 4" 5" | 0035D 0040D 0050D | |
| 6" 8" | 0060D 0080D | 0060E 0080E |
| 10" 12" 14" | 0100D | 0100E 0120E 0140E |
| 16" 18" 20" | | 0160E 0180E 0200E |
| 22" 24" 26" | | 0220E 0240E 0260E |
| 28" 30" | | 0280E 0300E |

Above 30" consult factory.

### INSTRUMENT SHUTOFF VALVES

| ORDER CODE | MATERIAL | DESCRIPTION |
|---|---|---|
| XX | — | No valves required. Connections are 1/8" FNPT |
| 00 | Brass | 1/8" MNPT x 1/4" SAE Flair rated for 150 PSIG @ 200°F Max. |
| 02 | Steel | 1/8" FNPT x 1/8" FNPT 90° connection rated for 6000 PSI @ 500°F Max. |
| 03 | 316SS | 1/8" MNPT x 1/8" MNPT 90° connection rated for 2000 PSI @ 450°F Max. |

### INSERTION VALVES

| WET TAP | DESCRIPTION | ORDER CODE |
|---|---|---|
| Series 53T | Brass valve and nylon packing | 00 |
| Series 54T | Brass valve and nylon packing | 00 |
| Series 55T | 316SS valve and nylon packing | 03 |

### MOUNTING HARDWARE

| WET TAP | Description | ORDER Code |
|---|---|---|
| Series 53T | CS thredolet and pipe nipples | 02 |
| Series 54T | CI or CS saddle clamp, CS pipe nipples | 01 |
| Series 55T | 316SS thredolet and pipe nipples | 04 |

**SERIES 33T ACCUTUBE PROBE AND WET TAP MOUNTING ASSEMBLIES.** Use of the 33T allows insertion and removal without process shutdown. The 33T probe consists of standard brass head and 316SS probe and installs through a wet tap assembly. The wet tap assembly consists of a packing gland, pipe nipple, insertion valve and thredolet or pipe saddle clamp. The 33T has 1/8" FNPT connections and is shipped with wet tap assembly and safety chain.

Dimension Sheet: F/N 957-33T 3/8:420
F/N 957-33T 3/4:420
Instruction Manual: F/N 957:440

# Accutube: Series 37L High Pressure Wet Tap

- Insertion and removal without process shutdown – Socket Drive or Gear Drive
- Gas, liquid and steam applications
- Standard sizes up to 72-inch pipe
- Operating pressure / temperature to: 1000 PSIG @ 800°F Max.

## MODEL NUMBER

3 7 L _ _ _ _ _ _ _ 0 3 _ _ _ _ _ _ _ _ _ _ _ _

## BODY MATERIAL

| BODY MATERIAL | ORDER |
|---|---|
| 316SS Head and Probe | 03 |
| For Special Material Consult Factory | SP |

| | |
|---|---|
| SD | Socket Drive |
| GD | Gear Drive |

## LINE SIZE AND PROBE DIAMETER

| LINE SIZE | ORDER CODE ½" DIA PROBE | 1" DIA PROBE | 2 3/8" DIA PROBE |
|---|---|---|---|
| 2" 2½" 3" | 0020A 0025A 0030A | | |
| 3½" 4" 5" | 0035A 0040A 0050A | | |
| 6" 8" 10" | 0060A 0080A 0100A | 0060B 0080B 0100B | |
| 12" 14" 16" | | 0120B 0140B 0160B | 0140C 0160C |
| 18" 20" 22" | | 0180B 0200B 0220B | 0180C 0200C 0220C |
| 24" 26" 28" | | 0240B 0260B 0280B | 0240C 0260C 0280C |
| 30" 32" 34" | | 0300B 0320B 0340B | 0300C 0320C 0340C |
| 36" 42" 48" | | 0360B 0420B | 0360C 0420C 0480C |
| 60" 72" | | | 0600C 0720C |

Above 72" consult factory.

## OPTIONAL INSTRUMENT SHUTOFF VALVES

| ORDER CODE | DESCRIPTION | PRESSURE/TEMPERATURE RATING |
|---|---|---|
| XX | No instrument valves | Probe connections are ½" MNPT |
| 00 | Bronze gate valves, ½" FNPT x ½" FNPT | 300 PSI Steam Max. @ 550°F Max. 600 PSI liquid @ 200°F nonshock |
| 02 | Carbon steel block valve, ½" FNPT x ½" FNPT | 6000 PSI Max. @ 200°F 4000 PSI @ 500°F Max. |
| 03 | 316SS block valve, ½" FNPT x ½" FNPT | 6000 PSI Max. @ 200°F 4000 PSI @ 500°F Max. |
| 04 | Carbon steel OS&Y valve, ½" FNPT x ½" FNPT | 2000 PSI Max. @ 100° F 235 PSI @ 1000°F Max. |
| 05 | 316SS OS&Y valve, ½" FNPT x ½" FNPT | 1920 PSI Max. @ 100°F 550 PSI @ 1200°F Max. |
| SP | As required | For temp or press above those listed consult factory |

## INSERTION VALVES

| ORDER CODE | ½" (A) DIAMETER / 1" (B) DIAMETER | 2 3/8" (C) DIAMETER |
|---|---|---|
| 02 | Carbon steel ball valve 1000 PSI @ 175°F Max. 75 PSI @ 400°F Max. | Carbon steel flanged 275 PSI Max. @ 445°F 200 PSI @ 500°F Max. |
| 03 | 316SS ball valve 800 PSI Max. @ 225°F 75 PSI @ 400°F Max. | 316SS flanged ball valve 275 PSI Max. @ 445°F 200 PSI @ 500°F Max. |
| 04 | Carbon steel OS&Y valve 2000 PSI Max. @ 100°F 1015 PSI @ 800°F Max. | C.S. OS&Y Valve 285 PSI Max. @ 100°F 140 PSI @ 800°F Max. |
| 05 | 316SS OS&Y Valve 1600 PSI Max. @ 100°F 875 PSI @ 800°F Max. | 316 OS&Y Valve 235 PSI Max. @ 100°F 140 PSI @ 800°F Max. |
| SP | As required. For press or temp above those listed, consult factory | As required. For press or temp above those listed, consult factory |

## MOUNTING HARDWARE AND PACKINGS

| ORDER CODE | DESCRIPTION |
|---|---|
| 03 | Carbon steel mounting hardware thredolet and trim with 316SS packing housing and Grafoil packing |
| 04 | All 316SS mounting hardware, thredolet and trim with 316SS packing housing and Grafoil packing |
| SP | For materials other than those listed, consult factory |

**SERIES 37L—ACCUTUBE.** The Series 37L Accutube probe and Wet-Tap assembly provides the ability to access the pipe without service interruption. This Accutube assembly is supplied complete with two or more threaded jacking screws to allow insertion, withdrawal, and / or retention of the probe under full system pressure.

The Series 37L Accutube and Wet-Tap Assembly is available for line sizes 2" through 72" and may be used in systems up to 1000 PSIG at 800°F Max.

Dimension Sheet: F/N 957-37L:0.5:420
F/N 957-37L:1.0:420
F/N 957-37L: 2.375:420
Instruction Manual: F/N 957:440

# Accutube: Series 40H thru 43H

- **High pressure / temperature insertion type flow sensor with integral 3-valve head for direct mount transmitters**
- **Integral RTD option with series 42H & 43H**
- **Gas, liquid and steam applications**
- **Standard sizes up to 72-inch pipe**
- **Pressure / temperature limit: 1500 PSIG maximum @ 800° F maximum**

## MODEL NUMBER

4 __ H – __ __ __ __ __ – 0 3 – __ __ – X X – __ __

### MODEL CODE

40H — Single Mount
41H — Double Mount
42H — Single Mount w/RTD
43H — Double Mount w/RTD

### LINE SIZE AND PROBE DIAMETER

| | ORDER CODE | |
|---|---|---|
| | 40H / 42H SINGLE | 41H / 43H DOUBLE |
| LINE SIZE | 1" DIA PROBE | 1" DIA PROBE |
| 6"<br>8"<br>10" | 0060B<br>0080B<br>0100B | 0060B<br>0080B<br>0100B |
| 12"<br>14"<br>16" | 0120B<br>0140B<br>0160B | 0120B<br>0140B<br>0160B |
| 18"<br>20"<br>22" | 0180B<br>0200B<br>0220B | 0180B<br>0200B<br>0220B |
| 24"<br>26"<br>28" | 0240B<br>0260B<br>0280B | 0240B<br>0260B<br>0280B |
| 30"<br>32"<br>34" | 0300B<br>0320B<br>0340B | 0300B<br>0320B<br>0340B |
| 36"<br>42"<br>48" | 0360B<br>0420B | 0360B<br>0420B<br>0480B |
| 60"<br>72" | | 0600B<br>0720B |

Above 72" consult factory

### BODY MATERIAL

| BODY MATERIAL | CODE |
|---|---|
| 316LSS Head & Probe | 03 |
| For Special Material Consult Factory | SP |

### INSTRUMENT VALVES

| INTEGRAL 3-VALVE INSTRUMENT HEAD | | |
|---|---|---|
| ORDER CODE | DESCRIPTION | PRESSURE/TEMPERATURE RATING |
| 03 | 316LSS instrument valves for bolt-on transmitter | 1500 PSIG @ 800° F |
| SP | For special materials consult factory | Consult factory |

### MOUNTING HARDWARE

| ORDER CODE | PACKING MATERIAL | MOUNTING MATERIAL | LINE SIZE |
|---|---|---|---|
| 01 | 316SS | C.I. Saddle Clamp<br>Steel Strap Type<br>Steel Strap Type<br>(SINGLE MOUNT ONLY) | 6" - 10"<br>12" - 18"<br>20" - 30" |
| 03 | 316SS | C.S. Thredolet | ALL |
| 04 | 316SS | 316SS Thredolet | ALL |
| 06<br>07 | 316SS | C.S. Duct Mount<br>06 = Round<br>07 = Sq. or Rect. | 6" - 24"<br>26" - 42" |
| S6<br>S7 | 316SS | S.S. Duct Mount<br>S6 = Round<br>S7 = Sq. or Rect. | 6" - 24"<br>26" - 42" |

**SERIES 40H / 42H ACCUTUBE — SINGLE MOUNT**

These accutubes have a probe constructed of 316LSS, with a 316LSS integral 3-valve head. Both have a single-mount support and are installed through a compression fitting and thredolet (included). The 40H and 42H are designed to mount a 2 1/8" center-to-center DP transmitter using o-rings. ¼" FNPT connections are also included in the design. The 42H model incorporates an integral RTD for temperature measurements. Series 40H & 42H Accutubes are available for sizes 6" through 42".

40H Dimensions Sheet: F/N 957-40H:420
42H Dimensions Sheet: F/N 957-42H:420
Instruction Manual: F/N 957:440

**SERIES 41H / 43H ACCUTUBE — DOUBLE MOUNT**

These accutubes have a probe constructed of 316LSS, with a 316LSS integral 3-valve head. Both are double supported, and come with compression fittting, opposite side support and two thredolets. The 41H and 43H are designed to mount a 2 1/8" center-to-center DP transmitter using o-rings. ¼" FNPT connections are also included in the design. The 43H model incorporates an integral RTD for temperature measurements. Series 41H & 43H Accutubes are available for sizes 6" through 72".

41H Dimensions Sheet: F/N 957-41H:420
43H Dimensions Sheet: F/N 957-43H:420
Instruction Manual: F/N 957:440

# Accutube: Series 70H & 72H(with RTD)

- **High pressure / temperature wet tap flow sensor with integral 3-valve head for direct mount DP or Multi-variable transmitters**
- **Series 72H includes integral RTD**
- **Gas, liquid and steam applications**
- **Standard sizes up to 42-inch pipe**
- **Pressure / temperature limit: 1000 PSIG maximum @ 800° F maximum**

## MODEL NUMBER

7 _ H – _ _ _ _ _ – 0 3 – _ _ – X X – _ _ – _ _

### MODEL CODE

| |
|---|
| 70H — Single Mount |
| 72H — Single Mount w/RTD |

### LINE SIZE AND PROBE DIAMETER

| | ORDER CODE | |
|---|---|---|
| | 70H SINGLE | 72H SINGLE |
| LINE SIZE | 1" DIA PROBE | 1" DIA PROBE |
| 6" | 0060B | 0060B |
| 8" | 0080B | 0080B |
| 10" | 0100B | 0100B |
| 12" | 0120B | 0120B |
| 14" | 0140B | 0140B |
| 16" | 0160B | 0160B |
| 18" | 0180B | 0180B |
| 20" | 0200B | 0200B |
| 22" | 0220B | 0220B |
| 24" | 0240B | 0240B |
| 26" | 0260B | 0260B |
| 28" | 0280B | 0280B |
| 30" | 0300B | 0300B |
| 32" | 0320B | 0320B |
| 34" | 0340B | 0340B |
| 36" | 0360B | 0360B |
| 42" | 0420B | 0420B |

Above 42" consult factory

### BODY MATERIAL

| BODY MATERIAL | CODE |
|---|---|
| 316LSS Head & Probe | 03 |
| For Special Material Consult Factory | SP |

### INSTRUMENT VALVES

| INTEGRAL 3-VALVE INSTRUMENT HEAD | | |
|---|---|---|
| ORDER CODE | DESCRIPTION | PRESSURE/TEMPERATURE RATING |
| 03 | 316LSS instrument valves for bolt-on transmitter | 1000 PSIG @ 800° F |
| SP | For special materials consult factory | Consult factory |

### INSERTION VALVES

| ORDER CODE | DESCRIPTION |
|---|---|
| 02 | Carbon Steel ball valve<br>1000 PSI Max. @ 175°F<br>75 PSI @ 400°F Max. |
| 03 | 316SS ball valve<br>800 PSI Max. @ 225°F<br>75 PSI @ 400°F Max. |
| 04 | Carbon Steel OS&Y valve<br>2000 PSI Max. @ 100°F<br>1015 PSI @ 800°F Max. |
| 05 | 316SS OS&Y valve<br>1600 PSI Max. @ 100°F<br>875 PSI @ 800°F Max. |
| SP | Special pressure, temperature or process connections - consult factory for details |

### MOUNTING HARDWARE AND PACKING

| ORDER CODE | DESCRIPTION |
|---|---|
| 03 | Carbon Steel mounting hardware, thredolet and trim with 316SS packing housing and Grafoil packing |
| 04 | All 316SS mounting hardware, thredolet and trim with 316SS packing housing and Grafoil packing |
| SP | For materials other than those listed, consult factory |

### INSERTION STYLE

| | |
|---|---|
| SD | Socket Drive |
| GD | Gear Drive |

### SERIES 70H & 72H ACCUTUBE — WET TAP

These Wet Tap style Accutubes provide the ability to access a pipe without service interruption. The integral 3-valve manifold head enables direct mounting of any DP or Multivariable transmitter having 2 1/8" center-to-center dimensions. The model 72H incorporates an integral RTD for temperature measurements. The RTD can be serviced without process shutdown or removal of the transmitter. The probe and head are constructed of 316LSS. Gear Drive or Socket Drive mechanisms are available. The 70H & 72H Accutubes are available for sizes 6" through 42". Consult factory for larger pipe diameters or optional process connections.

70H Dimensions Sheet: F/N 957-70H:420
72H Dimensions Sheet: F/N 957-72H:420

# INSTRUMENT SPECIFICATION

| | | | | | |
|---|---|---|---|---|---|
| COMPANY: | | | MUTIPORT AVERAGING | | SPEC. NO. |
| PROJECT: | | | PITOT TUBE FLOW ELEMENT | | SHEET NO. OF |
| CLIENT: | | | | | JOB NO. |
| Specification Description | | | Individual Requirement | | Individual Requirement |
| 1 Item No. | Tag No. | | | | |
| 2 P&ID No. | | | | | |
| | | | | | |
| 4 Service | | | | | |
| 5 Pipe Material | | | | | |
| 6 Pipe Size | Sch. No. | | | | |
| Element | | | | | |
| 7 Sensor Type | | | AVERAGING PITOT | | AVERAGING PITOT |
| 8 Sensor Material | | | | | |
| 9 Packing Material | | | | | |
| 10 | Type | | | | |
| 11 Instrument Valve | Connection & Size | | | | |
| 12 | Material | | | | |
| Option | | | | | |
| 13 | Connection Type | | | | |
| 14 Mounting Hardware | Connection Size | | | | |
| 15 | Material | | | | |
| 16 Opposite Side Support | Required? | | | | |
| 17 Insert / Retract | Required? | | | | |
| 18 | Rod Material | | | | |
| 19 | Connection Type | | | | |
| 20 Isolating Valve | Connection Size | | | | |
| 21 | Material | | | | |
| Service Condition | | | | | |
| 22 Fluid | Phase(vap.,liq.,gas) | | | | |
| 23 Flow Unit | | | | | |
| 24 Flow Range | | | | | |
| 25 Differential Pressure, Units= | | | | | |
| 26 Flow Rate | Max. | Nor. | | | |
| 27 Temp., Units= | Max. | Nor. | | | |
| 28 Press., Units= | Max. | Nor. | | | |
| 29 SpGr / Mol. Wt. | Viscosity @ OP.(cP) | | | | |
| 30 Supercompressibility | Cp/Cv | | | | |
| 31 Density @ Base | Density @ Op. | | | | |
| 32 Manufacturer | | | Meriam Instrument | | Meriam Instrument |
| 33 Model No. | | | | | |
| | | | | | |

Note:

| Rev. No. | Date | Spec'd By | Checked by | Project No. | Spec No. | REQ. No. |
|---|---|---|---|---|---|---|
| | | | | | | |