FAST TRACK SETUP PROCEDURE

Switch on and press ENTER.
Select Quick Start- Press ENTER.
Dimension Units?- Scroll to select units required, press ENTER.
Pipe OD- Enter data, press ENTER.
Pipe Wall Thickness- Enter data, press ENTER.
Pipe Lining Thickness- Enter data, press ENTER. Enter Zero if there is no lining on the application.
Select Wall Material- Select using scroll keys, press ENTER.
Select Lining Material- This will only be displayed if a lining thickness has been entered. Select using scroll keys, press ENTER.
Select Fluid Type- Select using scroll keys, press ENTER.

This instrument selects the mode of operation using the data entered and will display the following:

Attach Sensor set in XXXX mode
Approx. max. flow: XXX m/s
Press ENTER to continue
Or SCROLL to change mode

Fluid Temp? Press Enter to input the application temperature in the units required °C or °F then press ENTER.

Now retract the sensor blocks back into the guide rail by turning the locking nuts clockwise.
Apply grease to both sensor blocks as shown in (Figure 1), attach to the pipe using the appropriate mounting hardware in either Reflex or Diagonal Mode. Ensure the Guide rail itself is free of grease.

For Reflex Mode attach the guide rail (Figure 3) to the pipe as shown below. Turn the locking nut on the fixed transducer anti-clockwise, screwing it down on to the pipe surface. No not overtighten, causing the guide rail to lift off the pipe.
Set the separation distance (Figure 3) by sliding the floating transducer along the scale until the front edge of the block is at the recommended distance displayed by the electronics. Now turn the locking nuts on both the floating and the fixed transducers anti-clockwise, until they make finger tight contact with the pipe surface. To mount the transducers in Diagonal Mode, refer to (Figure 4).

Now press ENTER to read flow. Pressing the appropriate key on the keypad can change flow units. An additional key press will change the time scale of the reading- hr/min/sec.
Diagonal Mode Operation

For Diagonal beam mounting, follow the sensor mounting instructions in this manual.

PARTS AND ACCESSORIES

Connectors

There are four sockets on the electronic housing. Two for the transducer cable assemblies (Blue down/Red up), one for the pulse output, one for the PSU/charger unit, and one for the optional 4-20mA output. Please specify 4-20mA output in your order so that it can be configured prior to dispatch.

Pulse Cable Connections

Pulse output- Centre (White) positive, Screen (Silver) negative.

Charger (Use only the charger supplied).

The charger is supplied with universal plug-in adapters. When the instrument is charging, but switched off, the display reads 'CHARGING'. It also displays a battery and plug symbol. CHRG is displayed next to the word ‘Batt’ when in flow mode and the battery charger is connected. When the battery charger is disconnected, the display will show a % battery level in the flow mode.

Battery Circuit

A battery management circuit controls the battery recharge. The circuit helps to prevent the batteries from being damaged through overcharging. The circuit automatically cuts off the high-level charge current after 4hrs, after which it will provide only a trickle charge. In operating mode a fully charged battery can maintain functionality for up to 8hrs depending on the demand. A large percentage of the demand is taken by the ‘Backlighting’. and whilst it is continuously enabled the operating life will drop to 4hrs from a fully charged battery.

When in flow measurement mode the battery charge level is continually displayed as a percentage of full charge. When this indication reads approximately 40%, a warning message will appear on the screen. This indicates that there are only 30 minutes of use left in the battery. The battery can be charged when the instrument is switched to the ON or OFF state. See full instructions on charging and discharging the batteries further in this manual.

Keypad

Programming is via a key tactile membrane keypad.

When measuring flow it is possible, by selecting keys 4, 7, 8, and 9, to change from one unit to another without the need to re-program. Additional key presses will adjust the time scale of the measurements.

Example:

- Press 4 for m/s, press 4 again for ft/s
- Press 7 for l/s, press 7 again for l/m
- Press 8 for g/min, press 8 again for USG/min
- Press 9 for m³/min, press 9 again for m³/sec

There are some facilities that require the cursor to be moved from left to right. This can be done using keys 5 (left) and 6 (right). The pulse output can only be activated in the flow mode.

Transducers

The UF35 is supplied with one (matched) pair of transducers and a single guide-rail to measure flow. The instrument selects the mode of operation (Reflex or Diagonal) dependent on the pipe size and flow velocity. The instrument can be used over a range from 50 mm to 400 mm. In Reflex Mode the transducers are positioned in the guide rail to assist correct alignment along the pipe axis, (Figure 3). In Diagonal mode (Figure 4) the transducers are removed from the rail and attached to the pipe using the gullwings and chains. The pipe is then measured and marked up and the transducer blocks are clipped to the pipe wall using a suitable amount of grease applied to the face of each transducer.

Separation Distance

The instrument calculates the separation distance when all parameters have been entered via the keypad. Also the instrument calculates the maximum flow velocity allowed with the standard sensors and indicates whether Reflex or Diagonal mode should be used.

Ultrasonic Couplant

Ultrasonic couplant/grease must be used on the transducer face to interface with the pipe wall.

Fluid Types

UF35 is capable of measuring clean liquids or oils that have less than 2% by volume of particulate content and air bubbles. During the set up procedure the user is prompted to select from a list of liquids, which include water and oils. Applications include- river water, seawater, potable water, demin water, treated water, effluent, water/glycol mixes, hydraulic oil, diesel oil and most chemicals.

PROGRAMMING MAIN MENU

Main Menu

Press SCROLL up or down to move the cursor to the required option and press ENTER to select.

Main Menu- Quick Start

Selecting quick start offers the user the easiest and quickest option to achieve a flow measurement. If the instrument has already been used, it stores the last application data entered. This allows the user to read flow on the same application without spending time entering new data. Go to ‘Read Flow’ on the main menu.

If QUICK START is selected, proceed with the following routine. Use the scroll keys to select, then press ENTER.
When scrolling up/down the menu press ENTER to select at each prompt.

Note:
• Site Zero is always the QUICK START data and cannot be changed.
• Changing the data in any site is automatically saved when leaving this menu. Data will have to be re-entered to override the old data.

List Sites
Selecting LIST SITES allows the user to view the names of up to 20 sites, numbers 1-5 appear first. Pressing ENTER will display sites from 6-10. Pressing again will display 11-15, and again to display 15-20.

Site Number
Site number allows the user to enter the number of the site data wished to be displayed. If the site has not been used, then no data will be stored. New application data can now be entered.

Site Name
Site name allows the user to edit or enter a site name. Use the scroll keys to move the cursor to the letter/figure required and press ENTER to select. Press zero to return the instrument to VIEW/EDIT SITE DATA. The new site name will appear on the display.

Dimension Units
Dimension units allow the user to switch between millimeters and inches. The electronics converts all the application data in a particular site.

Pipe wall/lining thickness and Pipe wall/lining material can now be changed as required. Lining material is ignored if a lining thickness has not been entered. A selection of pipe wall/lining materials will be displayed when these options are selected.

Fluid Type
Fluid type allows the user to scroll through a selection of fluid types. Select OTHER in the menu if a liquid is not mentioned.

Select fluid type. When Other (m/s) is selected, the user must enter the liquid sound speed in m/s.

Read Flow
Selecting Read flow informs the user of the mode of operation and the approximate maximum flow rate. Pressing the appropriate key can change the units required. Pressing ENTER asks the user to enter a temperature in °C. Now press scroll (up). The instrument will display the separation distance before displaying flow.

Main Menu- Select Sensor mode

When the application information is programmed into the instrument it selects and defaults to the most suitable mode of operation i.e. REFLEX or DIAGONAL.

Sensor Mode
Selecting Sensor Mode allows the user to choose the appropriate method for clamping the sensors to the pipe. The default would have been displayed on the previous screen and Sensor Mode can be selected to give the user a choice between Reflex and Diagonal.
This option is available for two main reasons. First, lets assume that the instrument has selected “mount sensors in DIAGONAL MODE”. Your application may not allow you to achieve this mode. Providing the velocity is low enough, it is possible to force the sensors into REFLEX mode. Changing the sensor mode from Diagonal to Reflex would allow the user to measure the flow. The display may also read “sensor mode invalid for this pipe size”.

Read Flow
Moving the cursor to Read flow and pressing ENTER informs the user of the mode of operation and the maximum flow capable. Should the actual flow be higher than the one specified on the instrument, another mode of operation can be selected. Selecting EXIT will take you back to MAIN MENU.

Main Menu- Set Up Instrument

Pulse Output Key
This can only be operated in flow mode. Use the scroll key to move the cursor up or down the display. To change the flow units, press the key required. This will also change the flow units when returning to the flow mode. Changing the flow units will also re-scale the liters per pulse. Outputs allow the user to select from the following:
- Selecting Off switches the pulse off and returns to the PULSE OUTPUT display.
- Selecting the Forward total counts the pulses of the forward flow only.
- Selecting Net total counts the pulses of the sum of the forward total less the reverse total.

Max Pulse Rate
This option allows the user to select between fast/slow pulses or large/small pulse width. Select 1 per second for slow pulses and 100 for a fast pulse. The pulse width for 1 per second is 100 ms and 5 ms for 100 per second.

XXXX per pulse
This will change when the flow units are changed above. When the correct flow units are selected this allows the user to scale the pulses to his own requirements or it can be left in the default setting.

Display Backlight
Use the scroll key to select Application Options and press ENTER. This allows the user to enable or disable the backlight. Enable means the backlight will stay on for 15 seconds with every key press. It will stay on permanently with the mains plugged in. Use the scroll key to select and press ENTER. The backlight will draw power from the batteries and reduce the operating life of the battery cell.

Application Options
Use the scroll key to select Application Options and press ENTER. Please enter the following password:

39502600
It is a facility that could enhance signal levels on difficult applications, primarily very small or large pipes. Use enhanced mode when signals are below 800. Below 800 the system may generate noise and therefore the accuracy of the measurement cannot be guaranteed.

Sensor Parameters
This facility is password protected. It stores sensor information used by Dwyer and is not available for the user.

Factory Settings
The facility is used by Dwyer in the process of instrument calibration. Pressing ENTER takes the user back to SETUP INSTRUMENT MENU.

EXIT
Means EXIT and will take you back to the Main Menu.

Main Menu- Read Flow
When choosing the Read flow option from the MAIN MENU, the instrument reverts directly back to the data that was last entered. The instrument will have to be reprogrammed if it is to be used on a new application.

KEYPAD OPTIONS

The output options can only be adjusted/operated in flow mode.

Delete Key
If anything is entered in error, press the DELETE key and re-enter the information required.

Options Key
This can only be used in flow mode. Scroll down the options then press ENTER to select.

Cut Off
The instrument has an automatic CUTOFF that is calculated to 0.05 m/s. The maximum flow is calculated when the sensor set and mode of operation are displayed. Dwyer cannot guarantee measuring flows below this range because of instabilities in the measuring system, but it is possible for the user to cancel any cut-off altogether.

Reducing the cutoff to Zero allows the user to see or record any flow that they may not want. For example, it may be that the user may not want to measure flows below 50 LPM in a 50 mm pipe that is equivalent to 0.42 m/sec, in which case 0.42 m/sec would be entered into the instrument and nothing would be recorded below that level. The maximum cutoff is 1 m/sec.

Set Zero Flow
On some applications and in some conditions it may be that although there is no flow, the instrument may show a small offset due to system noise. The offset can be cancelled out and will increase the accuracy of the instrument. Selecting this option and pressing ENTER on the display will show the following:

Stop the flow COMPLETELY and press ENTER or SCROLL to cancel.

Pressing ENTER before the flow has stopped will result in an error message asking if you are sure that the flow has stopped. This occurs when the flow is still above 0.25 m/sec.

When this facility has already been selected, press ENTER to cancel the previous instruction, then it is possible to reset the Zero balance. The option is not available when error messages E1 and E2 (found further in this manual) are being displayed.

Total
This option allows the user to disable the positive and negative
important and will vary between applications. It should, however, this value will be between 0 and 15. The exact value is not

**Phase offset**
This value will be between 0 and 15. The exact value is not important and will vary between applications. It should, however, be stable when the flow condition is good and velocity is within the range of the transducers being used. As the flow rate increases toward and beyond the maximum, this figure will continuously change. In flow mode the instrument will read unstable or high flow.

**Flow (m/s)**
This displays flow velocity in m/sec to 3 decimal places.

**Signal**
This is the average value of Signal up/dn and is a value between 800 and 2400 which displays the signal's strength as a percentage (800=0%, 2400=86%).

**Signal up/dn**
This value is internal to the electronics and must be greater than 800. There is an option in the SETUP INSTRUMENT menu to allow this value to be taken down to 400 in extreme circumstances and is useful on some applications when the signal levels are poor.

**Sensor separation**
This is a reminder for the user to check for correct sensor separation and sensor mode.

**DIAGNOSTICS**

**Calculated µs**
This is a valve the instrument predicts will be the time in µsecs that it should take for the transmitted signal to go across a particular pipe size. This value is ascertained from the data entered by the user, i.e. Pipe size, material, sensor set, etc.

**Up µs, Dn µs**
This is the actual transit time measured by the instrument and will be slightly (5-10 µs depending on the pipe size and signal condition) less than the calculated value above.

**Measurement µs**
A point in the signal is transmitted where the flow is taken from. It is used to see if the signal is being taken from the burst at the correct time to get the strongest signal. It is normally used on smaller pipes when the instrument is being used in double or triple bounce as signals can sometimes interfere with each other. This value is normally a few µs below the Up µs, Dn µs value.

**Phase up/dn µs**
Only valid if Calculated µs and Up µs, Dn µs are correct. If the reading is zero, then there is no signal, which could mean the pipe is empty or the liquid is contaminated with particles or air.

**Phase offset**
This value will be between 0 and 15. The exact value is not important and will vary between applications. It should, however, be stable when the flow condition is good and velocity is within the range of the transducers being used. As the flow rate increases toward and beyond the maximum, this figure will continuously change. In flow mode the instrument will read unstable or high flow.

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**Sensor separation**
This is a reminder for the user to check for correct sensor separation and sensor mode.

**STATUS/ERROR/WARNING MESSAGES**
There are three types of messages that will appear: Status, Error, and Warning. These messages appear under the time and date on the display when in flow mode.

**Status Messages**
S1: initializing
Appears when first entering flow mode to show that the instrument is starting up.

**Error Messages**
E1: UNSTABLE OR HIGH FLOW
This error message occurs when either the sensors have been positioned too near an obstruction or bend, causing turbulence, or the instrument is being used outside its normal flow range.

When the instrument is programmed, the user is informed of the maximum flow rate that is possible to measure, and if this is exceeded the high flow message occurs.

It may be possible to get around these problems by moving the sensors to a straighter length of pipe, or, in the case of high flows, another set of transducers may be used.

E2: NO FLOW SIGNAL
This message appears when the two transducers cannot send or receive signals, which could happen for various reasons. First, check that all cables are connected and transducers are on the pipe correctly with grease on the face.

The no flow signal will show if the pipe is empty or partially filled. when the liquid is aerated, when the particulate content of that liquid is too high, or if the grease has not been applied to the transducers and the condition of the pipe being measured is poor.

**Warning Messages**
W1: CHECK SITE DATA
This message occurs when the application information has been entered incorrectly and the wrong sensors have been attached to the wrong pipe size, causing the system timing to be in error. The site data needs to be checked and the instrument reprogrammed.

W2: SIGNAL TIMING POOR
Unstable signal timing or differing up/down stream times indicate that the liquid is aerated or pipe surface is of poor quality.

W3: FLOW SIGNALS POOR
This warning appears when there is a signal lower than 25%. This could be due to the application, a poor quality pipe, etc.

W4: mA OUT OVER-RANGE
The mA output is over-range when the flow is higher than the maximum mA range. Once the 4-20 mA has been set up and the flow goes above the range set, this message will appear. It is possible to re-scale the 4-20 mA to be able to cope with the higher flow.

W5: BATTERY LOW
The battery low warning occurs when battery indication is on 40%. The instrument has approximately 30 minutes usage before it needs recharging.

W6: mA LOAD TOO HIGH
The 4-20 mA Output is designed to work with a load up to 750Ω. When the load is too high or not connected, the above warning message will be displayed.

Other Messages
The messages below appear mainly when data has been entered incorrectly or the UF35 is trying to be used on an application that it is not capable of working on.

Pipe OD out of range
The outside diameter of the pipe has been entered and is out of range of the instrument.

Wall thickness out of range
The wall thickness that has been entered is out of range of the instrument.

Lining thickness out of range
The pipe lining thickness has been incorrectly entered.

Site range is 0 - 20
There are only 20 storage sites available with 0 being the QUICK START site.

• CANNOT READ FLOW BECAUSE...
  ...Pipe dimensions are invalid
• CANNOT READ FLOW BECAUSE...
  ...Materials are invalid
• CANNOT READ FLOW BECAUSE...
  ...Pipe is too large for sensor set
• CANNOT READ FLOW BECAUSE...
  ...Pipe is too small for sensor set
• CANNOT READ FLOW BECAUSE...
  ...Sensor mode is invalid for this pipe size

Temperature range is -20°C to +125°C
The temperature range of the transducers is -20 to 125°C.

Enter a lining thickness first
This message appears when in VIEW/EDIT SITE DATA the user has tried to enter a pipe lining material before entering a thickness.

APPLICATION INFORMATION

The UF35 is a Transit Time ultrasonic flow meter. It has been designed to work with Clamp On transducers, thus enabling flowing liquid within a closed pipe to be measured accurately without the need for any mechanical parts to be inserted either through the pipe wall or protrude into the flow system. The meter is controlled by a micro-processor containing a wide range of data, which enables the instrument to measure flow in any pipe diameter from 50mm bore up to 400mm, made from any pipe material, over a wide range of operating temperatures.

The system operates as follows:

Figure 6: Reflex Mode

Figure 7: Diagonal Mode

When ultrasound is transmitted from Transducer ‘A’ to Transducer ‘B’ (REFLEX MODE- Figure 6) or Transducer ‘A’ to Transducer ‘B’ (DIAGONAL MODE- Figure 7), the speed at which sound travels through the liquid is accelerated slightly by the velocity of the liquid. If sound is transmitted in the opposite direction from ‘B’ to ‘A’, it is decelerated against the flow of the liquid. The differences in time taken to travel the same distance in opposite directions are directly proportional to the flow velocity of the liquid.

Having measured the flow velocity and knowing the pipe cross-sectional area, the volumetric flow can be easily calculated. The Microprocessor will determine the correct alignment of each transducer.

To measure flow, it is first necessary to obtain detailed information about each application, which is then programmed into the processor via the Key Pad. This information must be accurate otherwise flow measurement errors will occur.

Further, having calculated the precise position at which the transducers must be clamped onto the pipe wall, it is equally important to align and separate the transducers accurately with
respect to one another, as failing to do so will again cause errors in measurement.

Finally, to ensure accurate flow measurement, it is imperative that the liquid is flowing uniformly within the pipe and that the flow profile has not been distorted by any upstream or downstream obstructions.

To obtain the best results from the UF35, it is absolutely necessary that the following rules for positioning the transducers are followed, and that the condition of the liquid and the pipe wall are suitable to allow transmission of the sound along its predetermined path.

**TRANSUDER POSITIONING**

As the transducers for the UF35 are clamped to the outside surface of the pipe, the meter has no way of determining exactly what is happening to the liquid. The assumption therefore has to be made that the liquid is flowing uniformly along the pipe either under fully turbulent conditions or under laminar flow conditions. Further, it is assumed that the flow velocity profile is uniform for 360° around the pipe axis.

The minimum length of upstream straight pipe is 20 diameters and 10 diameters downstream that ensure accurate results will be achieved.

Flow measurements can be made on shorter lengths of straight pipe down to 10 diameters upstream and 5 diameters downstream, but when the transducers are sighted this close to any obstruction, errors can be considerable.

It is not possible to predict the amount of error, as this depends entirely upon the type of obstruction and the configuration of the pipe work and flow profile.

The message therefore is clear: Do not expect to obtain accurate results if the transducers are positioned closer than allowed to any obstruction that distorts the uniformity of the flow profile.

**MOUNTING THE TRANSUDERS**

It will be impossible to achieve the accuracy of measurement specified for the UF35 if the transducers are not clamped to the pipe correctly and if the data—I.D. O.D., Pipe Material—are not accurate.

Apart from the correct positioning and alignment of the transducers, of equal importance is the condition of the pipe surface in the area under each of the transducers.

An uneven surface that prevents the transducers from sitting flat on the surface of the pipe can cause Signal Level and Zero Offset problems. The following procedure is offered as a guide to good practice with respect to positioning and mounting the transducers.

1) Select the site following the rules laid down under Transducer Positioning.

2) Inspect the surface of the pipe to ensure it is free from rust or is not uneven for any reason. Transducers can be mounted directly on painted surfaces as long as the surface is smooth and that the underlying metal surface is free from rust bubbles. On bitumen or rubber coated pipes the coating must be removed in the area under the transducer as it is preferable that the transducers are mounted directly on to the base metal.

3) Transducers can be mounted on both Vertical and Horizontal Pipe Runs.

4) Apply interface grease to the face of the transducers. The amount of grease used is extremely important, particularly on pipes of less than 89mm bore.

On stainless steel pipes, the amount of couplant applied should
never exceed the amount indicated in the example earlier in this manual. For large plastic and steel pipes, the amount of grease applied is less critical, however, do not use more than absolutely necessary.

5) Strap the guide rail assembly to the pipe so that it is perfectly parallel to the pipe axis.
6) When screwing the transducers on to the pipe surface, use only enough force to ensure that the transducer is flat against the pipe surface, then lock in position.
7) Clamping the transducers in exactly the correct position is extremely important. The separation distance is calculated by the UF35 electronics and the transducers must be positioned and clamped at exactly the distance specified.
8) Always use the sensor grease provided.

**LIQUID CONDITIONS**

Transit time ultrasonic meters perform best on liquids that are totally free from entrained air and solids. With sufficient air in the system, the ultrasound beam can be attenuated totally, and therefore prevent the instrument from working.

Often it is possible to tell whether there is air in the system or not. If a flow signal cannot be obtained, a simple test determines whether the flow is aerated. This test involves stopping the flow for a period of 10 - 15 minutes. During this time, the air bubbles will rise to the top of the pipe, and the flow signal should return. If the flow signal does return, switch on the flow, and if sufficient, entrained air is locked in the system it will very quickly disperse and kill the signal.

To correct the UF35 for operation in the laminar flow region, calculate the Reynolds number and adjust the correction factor.

**PROPAGATION VELOCITY or SOUND SPEED**

To make flow measurement using the UF35 on any liquid, it is necessary to know the propagation velocity in meters/second. There is a short list of fluids that appear on the display when programming, showing water and various other liquids. However, if the liquid you wish to measure is not on this list, please revert to the table at the back of this manual or contact Dwyer for advice.

**REYNOLDS NUMBER**

The UF35 has been calibrated to operate on turbulent flows with a Reynolds Number of approximately 100,000. The calibration of the unit will not be valid if the Reynolds No. is below 4000.

If the UF35 is to be used on laminar flow applications it will be necessary to calculate the Reynolds No. for each application. To calculate the Reynolds No. it is necessary to know the Kinematic viscosity in Centistokes; the flow velocity and pipe inside diameter. Please follow the table below:

\[
Re = \frac{dv}{U_1} (7730) \quad \text{or} \quad Re = \frac{d_1v_1}{U_1} (1000)
\]

Where
- \(d\) = inside pipe diameter in inches
- \(d_1\) = inside pipe diameter in millimeters
- \(v\) = velocity in feet/second
- \(v_1\) = velocity in meters/second
- \(U_1\) = Kinematic viscosity in centistokes

**MAXIMUM FLOW**

The maximum flow is dependent on the velocity and pipe size.

**APPLICATION TEMPERATURE**

On any application whose operating temperature is either above or below ambient temperature, ensure that the transducers reach and are maintained at the application temperature before undertaking a measurement.

When applying the transducers to low temperature applications, do not allow the pipe surface to ice up between the transducer and pipe wall. The ice will force the block away from the pipe wall and consequently the signal will be lost.

**DIAGONAL MODE SETUP**

Figure 11: Diagonal Mode Parts Supplied

The UF35 kit contains two stainless steel gull wings, two springs, and two lengths of chain. Take the transducers from the reflex guide-rail. Attach the gull-wing to each transducer using the washer & wing nut provided.

Apply grease to the bottom of the transducer. Wrap the chain around the pipe as shown. Expand the spring and carefully slide the chain into the slot on the gull-wing. Plug the red connector into the socket on the upstream sensor. The sensor with the red cable must be positioned upstream. The stem of the sensor must point towards the downstream sensor.

Figure 12: Attaching the Sensor to the Pipe

Program the electronics with the application data to obtain the calculated separation distance. Measure the circumference of the pipe and mark a position at the halfway point \((\pi d/2)\) where \(d=\) outside diameter of the pipe). Apply grease to the second sensor and plug the blue connector into the top of the sensor.
Using a marker pen or a strip of ticket paper, mark around the pipe from the front edge of the first sensor “A” till you reach the halfway point of the pipe. From “B”, measure the separation distance calculated by the electronics. Mount the second transducer as per the first with the stem facing the other transducer. Press ENTER to view the flow. The signal strength should be greater than 50%. Should there be difficulty getting a signal, remove the sensor from the gull-wing, reapply the grease and try to find a signal by moving it by hand.

Position the RED sensor cable upstream and the BLUE sensor cable downstream. The electronics will display a positive flow reading with cables in this orientation. If the unit displays a negative reading, the cables have been connected to the wrong sensors.

MAINTENANCE

Following installation, the UF35 requires no routine maintenance. Aside from methods described in this manual, units are not field serviceable and should be returned to the factory if repair is necessary.