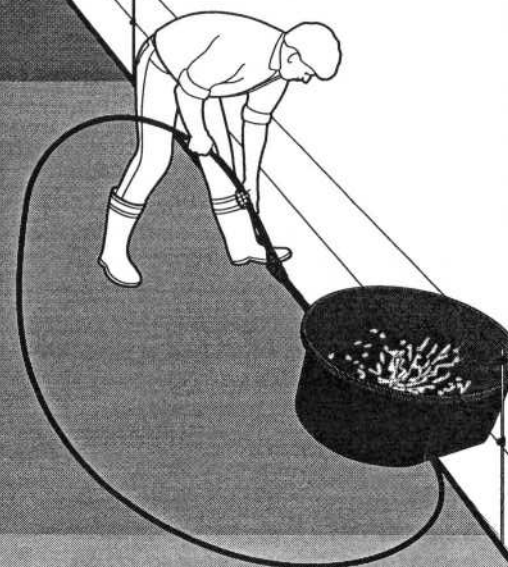
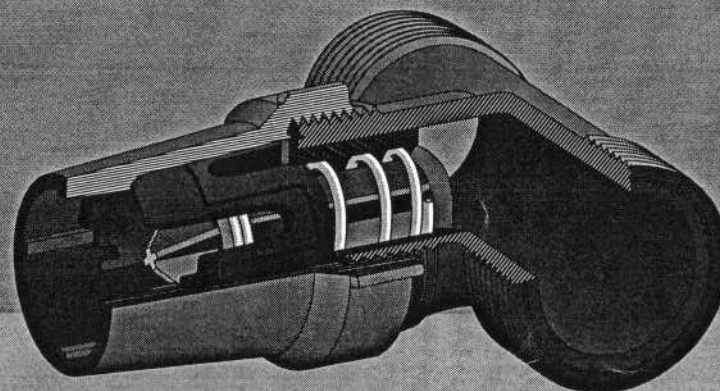


KIWITECH

How to use the Python System

Table of Contents

<i>Introduction.....</i>	<i>1</i>
<i>Parts and Systems.....</i>	<i>1</i>
<i>The Python Collet and Valve.....</i>	<i>3</i>
<i>Using the O-ring Option.....</i>	<i>5</i>
<i>Installing Hydrants.....</i>	<i>6</i>
<i>Assembling the Python Trough.....</i>	<i>6</i>
<i>Shifting the Python Trough.....</i>	<i>7</i>
<i>Maintenance and Trouble Shooting.....</i>	<i>8</i>



Introduction

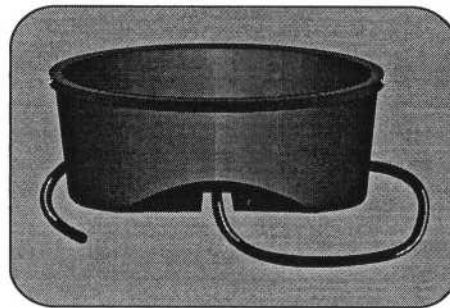
The *Python Livestock Watering System* is the ideal way to water your livestock if you are using temporary electric fencing to divide up areas in a flexible way (when the size and position of fenced areas vary according to season and livestock needs). The basic idea is that you should have an above ground pipe layout with Python Hydrants spaced at intervals along the pipe so that you can provide water to virtually any subdivided *cell* or *break*. The Python System has been specifically developed for this sort of setup and offers you the key advantages of portability, ease of use, unrestricted water flow, reliable sealing, economy, toughness and durability.

The Python System is a key member of the Kiwitech range of products which work really well together as part of an intensive grazing system. If you haven't already done so you should check out these other systems including the *Spider Permanent Electric Fence System* and the *Spiderpac Temporary Electric Fence System*. Kiwitech expects to add many new titles to its technical literature so keep your eye out for the following titles which are most relevant to this manual: "Design Your Own Intensive Livestock Watering System" and "Design Your Own Composite Grid Layout".

The first part of this manual shows the detail of how the Python System works. If you simply want to get on with the job go straight to the section on "Assembling the Python Trough" on Page 7.

Parts and Systems

The standard Python Trough holds 120 litres (35 gallons) and weighs 10 Kilograms (22lbs). The Trough comes with a 8 metre (25ft) low density Polyethylene *Lead* and is equipped with a revolutionary *Python Float Valve*. At the recommended line pressure water will flow into the Trough at around 45 litres per minute (10 gallons per minute).



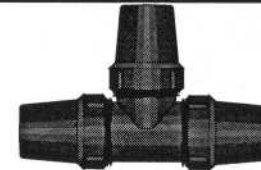
The *Python Hydrant Tee* is available in configurations which allow you to fit it into 25mm, 32mm, or 40mm (ISO metric) polyethylene lines; as well as 3/4" 1" or 1 1/4" imperial polythene pipe sizes. The commonest use is in 25mm and 3/4" lines (which have virtually the same outside diameter). In these sizes you use the full Python range of parts, whereas on the larger pipe sizes you screw third party threaded adapter fittings onto the Python Tee Body.

Refer to the later section on "Using the O-Ring Option" for a full explanation of the use of *O-ring Seals*, but the basic message is to use O-Rings on *High and Medium Density Polyethylene Pipe* and forget them for *Low Density*.

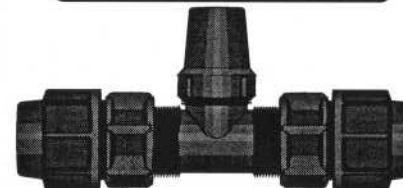
25mm Python Tee
O-rings optional



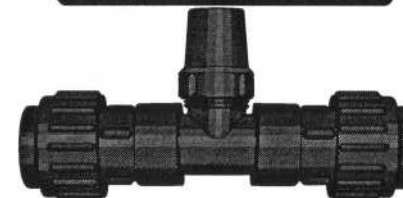
25mm Python Hydrant
(Valve, O-rings
optional on Ends)



32mm Python Hydrant
(Third Party Ends)



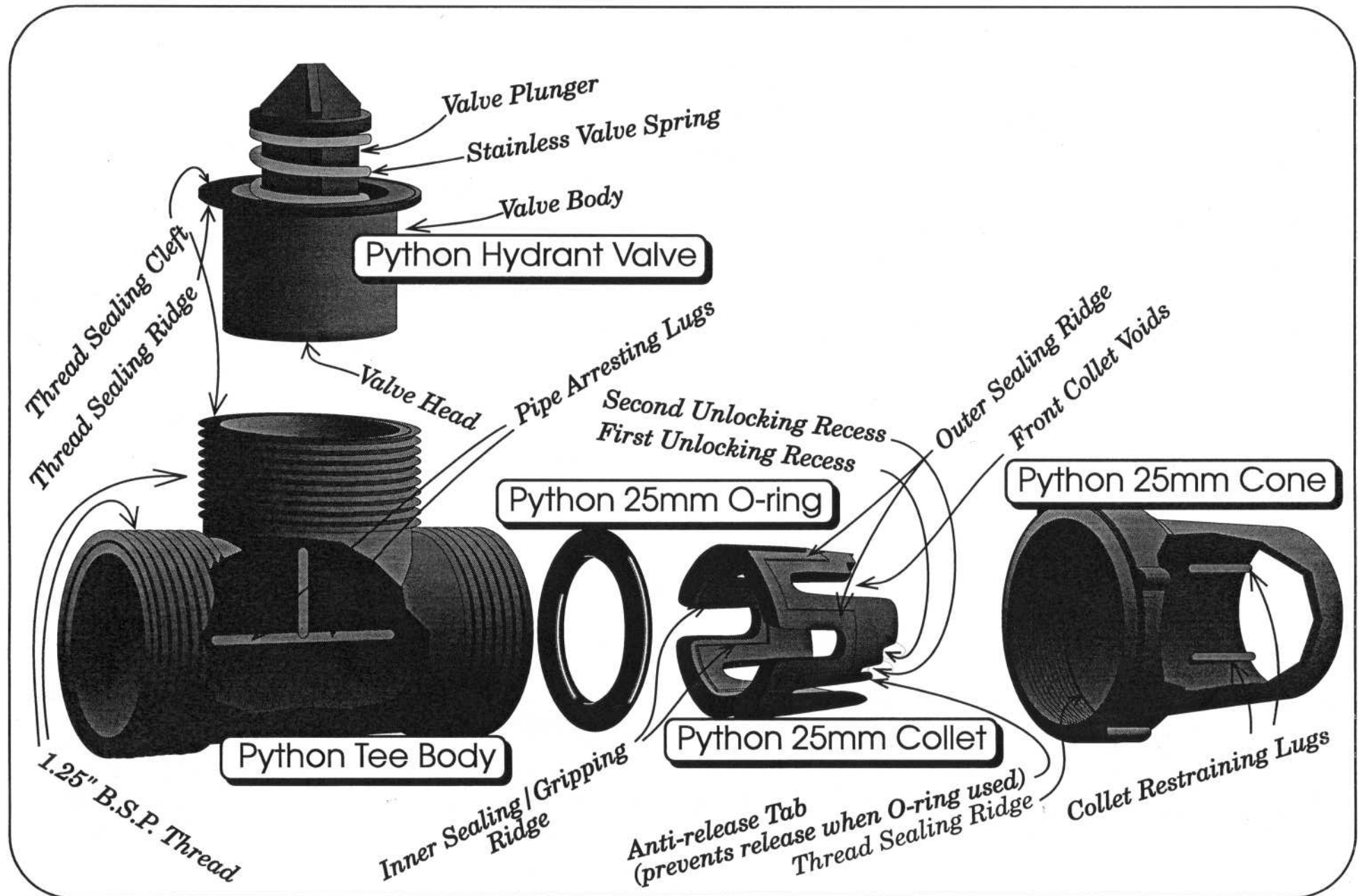
40mm Python Hydrant
(Third Party Ends)



The *Python Collet* doubles as a "grip ring" and "seal". The Collet seals by pressing against the *Cone* on its *Outer Sealing Ridge* and against the pipe with its *Inner Sealing/Gripping Ridge*. In order to get the collet to seal you have to pull on the Pipe so that the Collet is wedged tightly against the *Cone* and Pipe along the entire length of both Sealing Ridges. You will find this quite easy to achieve with Low Density Pipe, but you may need an O-Ring for sealing with the harder pipe.

Under pressure the *Collet Restraining Lugs* sit in the *Front Voids* on the Collet and stop it from pulling right out the end of the Cone. When you use the bayonet action to disconnect the Pipe from the Hydrant the Restraining Lugs catch on the *Unlocking Recesses* to prevent the Collet from moving forward to wedge onto and grip the Pipe. The *Pipe Arresting Lugs* on the inner surface of the *Tee Body* are simply stops which prevent you from pushing the Pipe too far into the fitting.

Note: The Python Hydrant works best at pressures between 1 and 4 Bar (15 to 60 psi). If you are strong and quick it is possible to work the system at pressures up to 6 Bar (90 psi)



The Python Collet and Valve

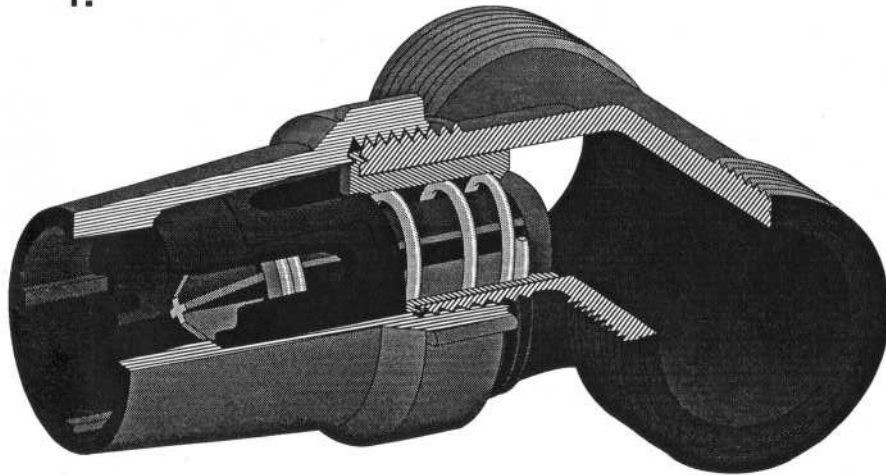
1. Assuming the Hydrant has been already been used, the Collet will be sitting in the *unlock* position, as shown.
2. Push the Pipe in as far as it will go—this opens the Valve and gets the Pipe through the Collet.
3. Turn the pipe clockwise (think of a light bulb socket). The Collet turns with the pipe so that the Collet Restraining Lugs are free to pass up the Front Voids as the Collet is pulled forward.
4. Water pressure will assist as you pull on the pipe to make the Collet seal.

5. Removing the Pipe from the Hydrant is almost the exact reversal of the fitting process. You must push hard on the pipe to overcome the water pressure and friction between the Collet and Cone (wiggle the pipe from side to side as you push).

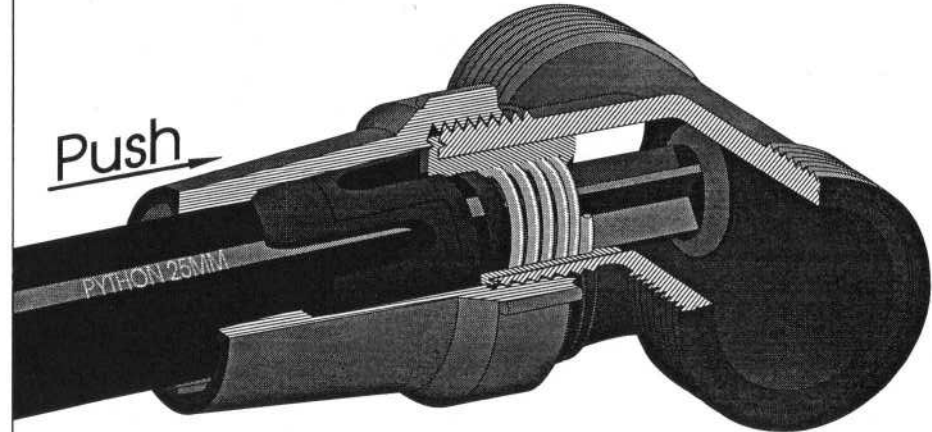
Note: You must reduce the line pressure by allowing the water to flow freely through the Hydrant (normally by emptying the trough to activate the float Valve).

6. The pipe will jump forward once the seal is broken, your next step is to turn the pipe anti-clockwise (remember the light bulb) so that the Collet turns to the *unlock position*.
7. It helps to keep turning the Pipe as you withdraw it from the fitting.

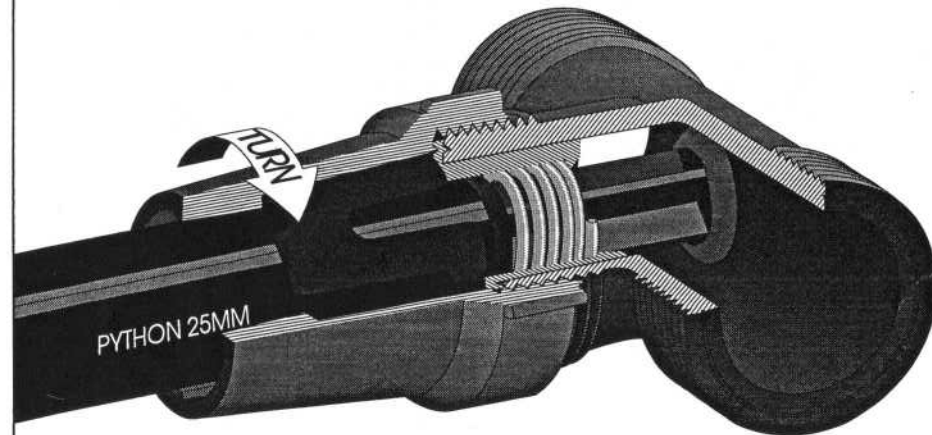
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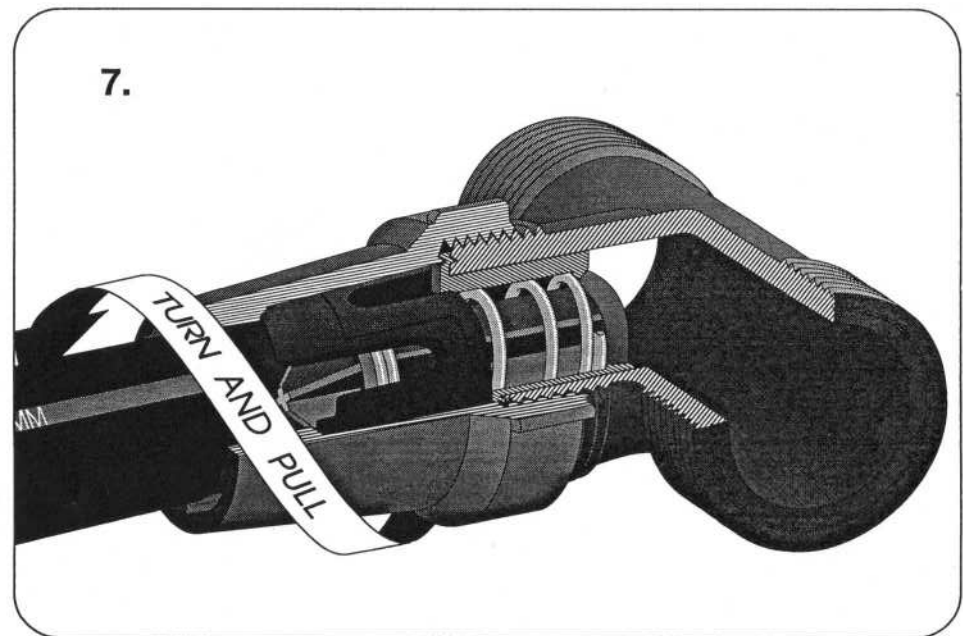
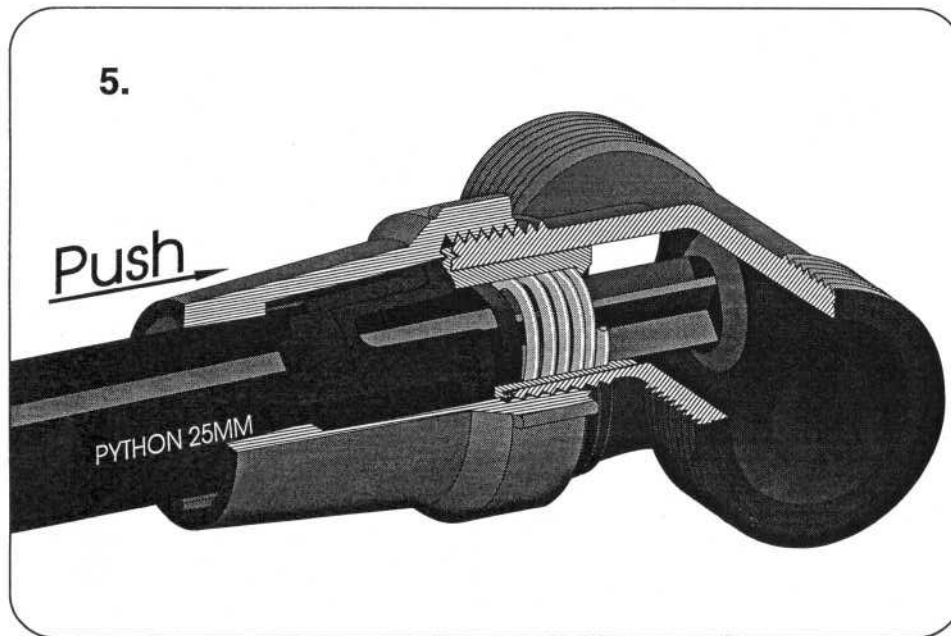
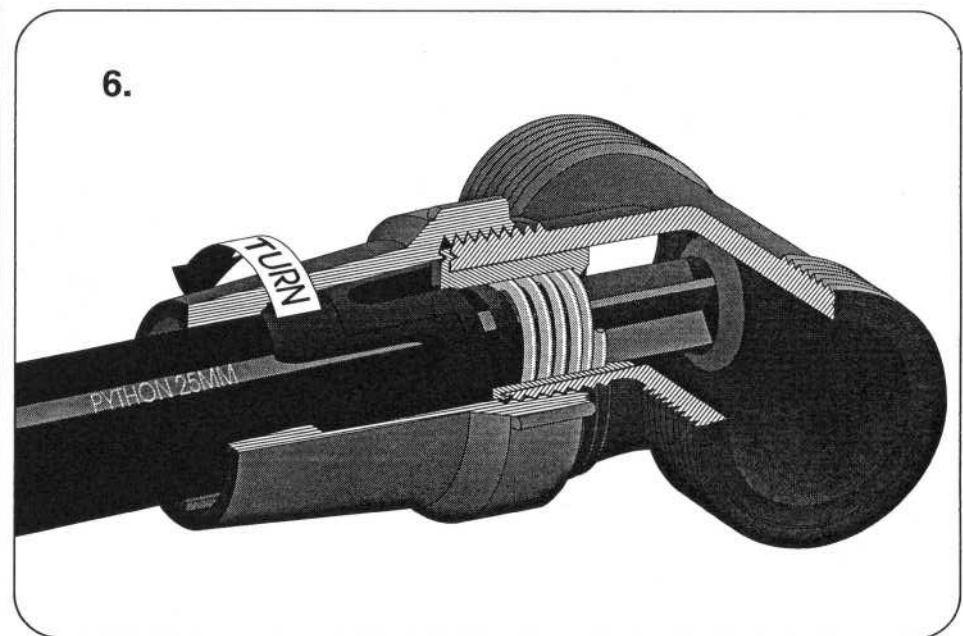
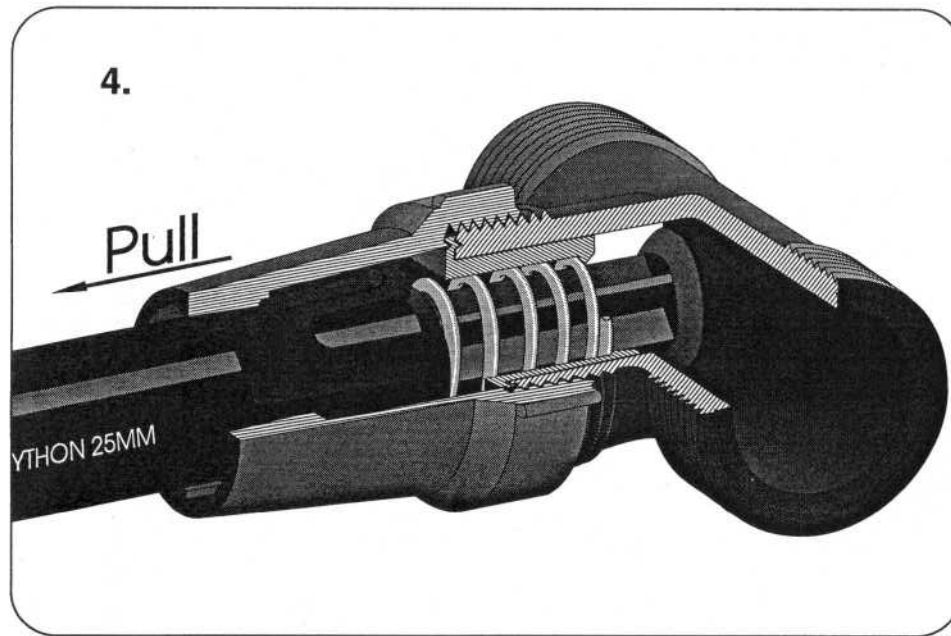


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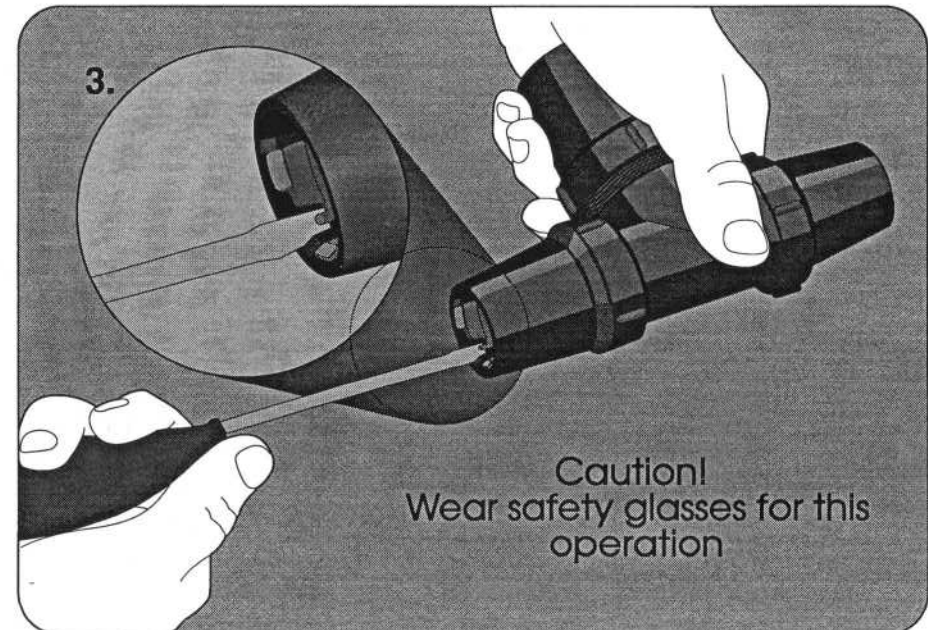
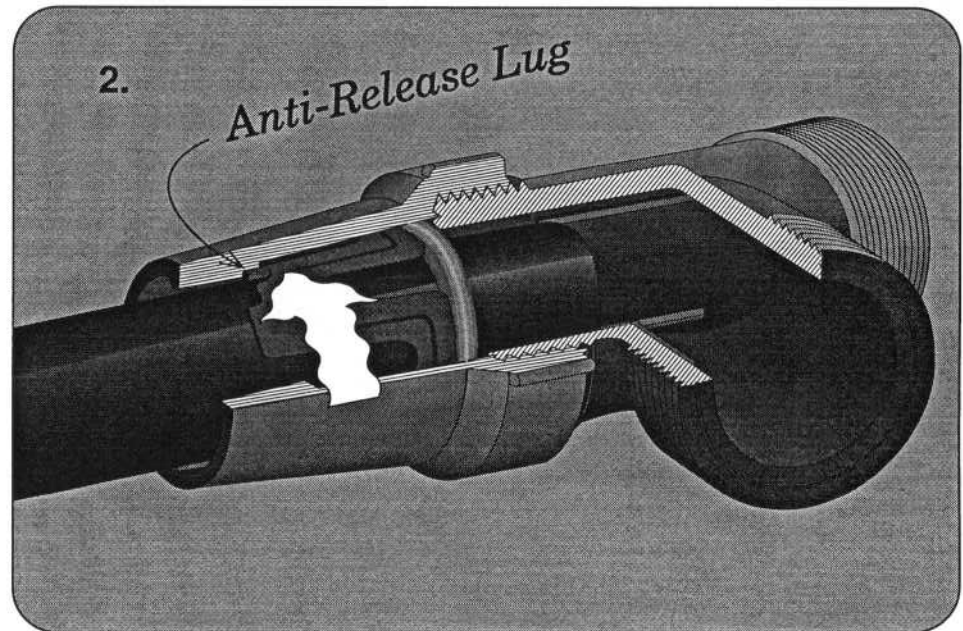
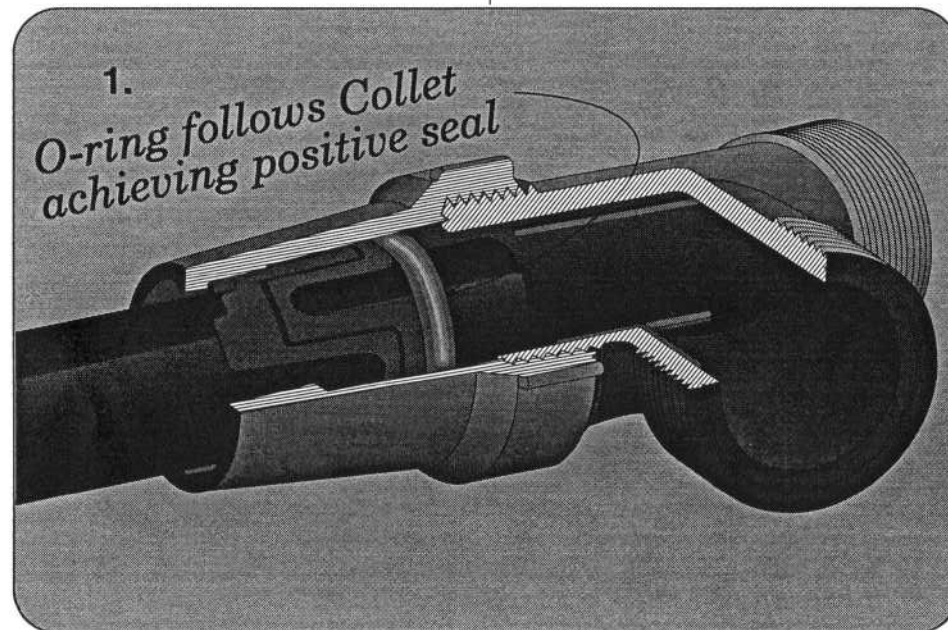
Using the O-ring Option

The O-Ring sits behind the Collet and works as a passive seal activated by the water pressure. Making a connection is simply a matter of pushing the Pipe into the fitting and letting water pressure do the rest. Using the O-Ring reduces clearances (firmer fit) so it helps to turn the Pipe as you slide it into the fitting.

When you buy a Python Hydrant with O-Rings fitted it is set to work in a *non-releasable mode*, i.e., once fitted you can't use the push, turn, pull technique to get the pipe out of the fitting. When you try to turn the Collet to the unlock position the *Anti-Release Lug* bangs into the Collet Arresting Lugs.

If you know that you will be wanting to use the Hydrant in its releasable mode you should break off the Anti-Release Lug with a screwdriver before using the fitting (it can also be broken off after the Pipe has been fitted). The Anti-Release Lug tends to ping off when broken so you must wear safety glasses. If you do break the lug off, make sure the pipe doesn't twist into the unlocking position during installation.

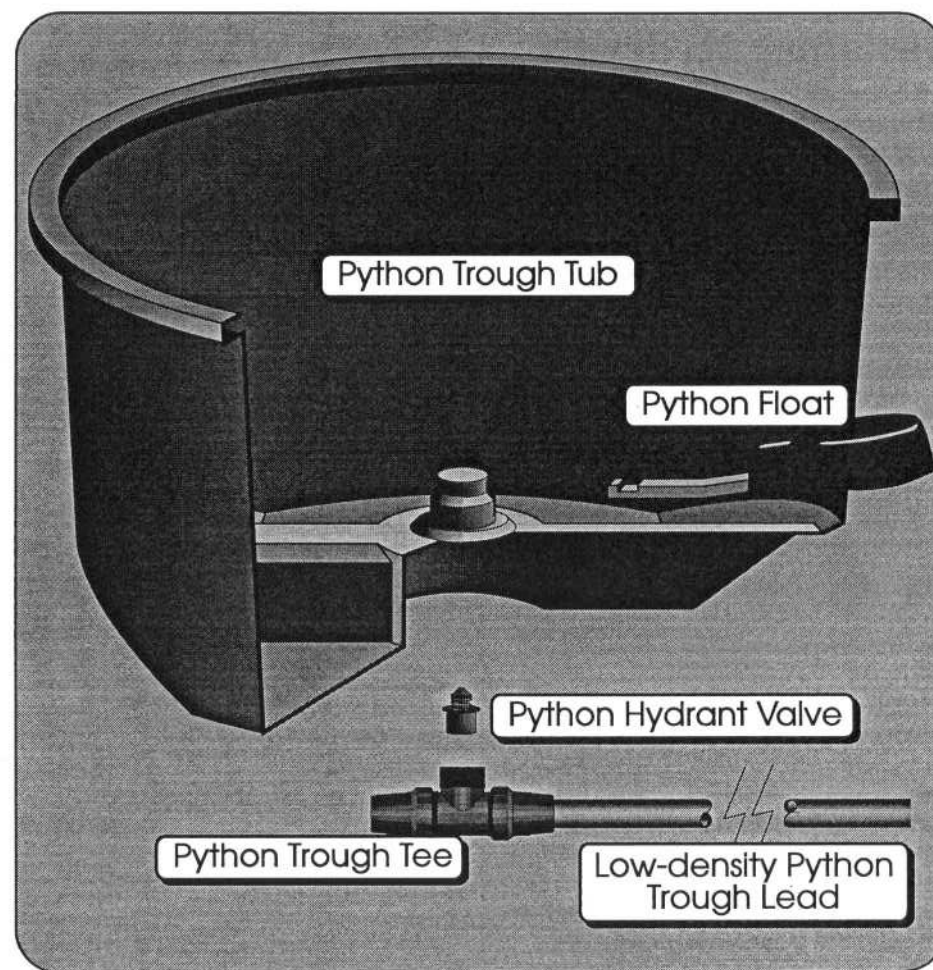
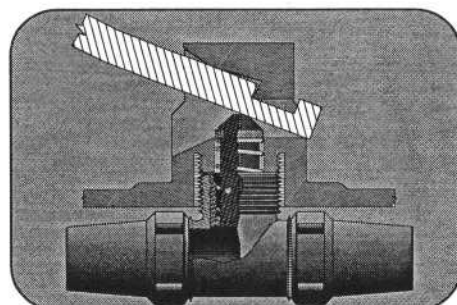
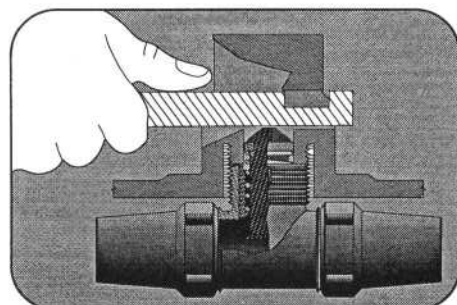
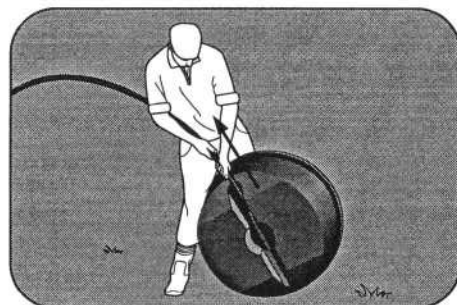
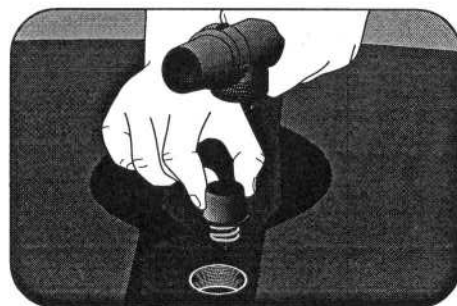
Note: O-rings are never used on the Valve Leg of the Hydrant.



Assembling the Python Trough

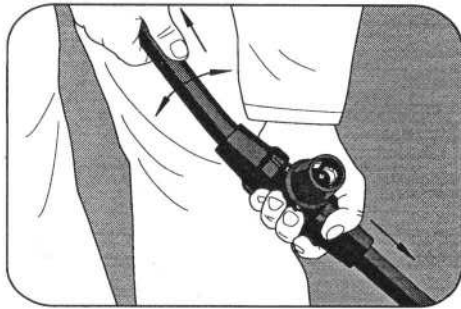
1. Turn the Trough upside down, press the Python Valve into position and screw the *Python Trough Tee* into place so that it is firmly tight and aligns with the axis of the Tunnel.
2. Push the *Low Density Trough Lead* firmly into the Trough Tee. It helps to use a twisting action as you do this and although the O-ring in the fitting is pre-lubricated extra lubrication will ease fitting. Once the lead is home turn the Lead clockwise and pull back firmly as indicated.
3. Turn the Trough right side up and insert the *Float Arm* into the *Central Valve Housing*. Do this by inserting the end into the larger aperture and press downward to deflect the Valve as the arm is installed.
4. Check that the Float Arm moves freely up and down and is properly indexed into the Central Valve Housing.

Note: It is a good idea to fully lock the Trough Union by giving the lead a firm pull with the trough full of water and the pressure on.



Installing Hydrants

The sequence of actions for fitting the Hydrant is covered fairly well in the following section on Shifting the Python Trough and the illustrations on Pages 3, 4 and 5. About the only difference with the in-line fitting is that you can't put your foot on the Hydrant.



If you are using O-rings with the Anti Release Lug intact then you simply push the pipe into the Hydrant as far as the stops. If you are using the O-rings but have removed the Anti Locking Lug it pays to pull the Collet up firmly in case the pipe twists into the unlocking position. If you are not using O-rings then you will need to pull firmly on the pipe with a strong wiggling action to ensure a positive seal.

Note: If you don't object to getting a little wet, it's a good idea to install the Hydrants in a line which is already pressurized—the water pressure helps to achieve a seal and you can tell when you've pulled back firmly enough.

Shifting the Python Trough

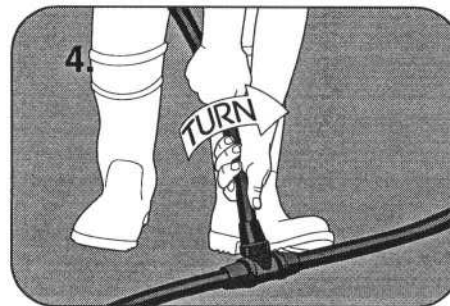
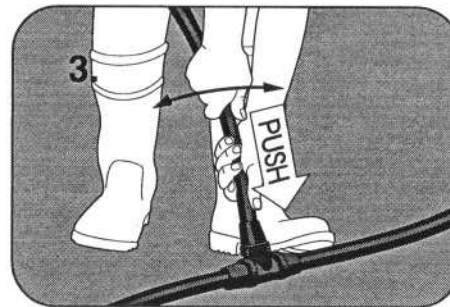
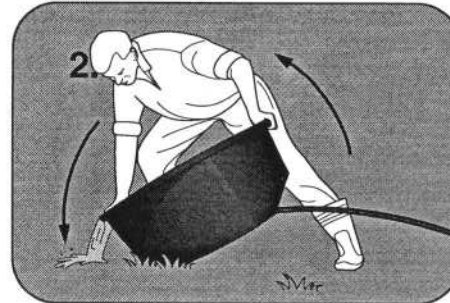
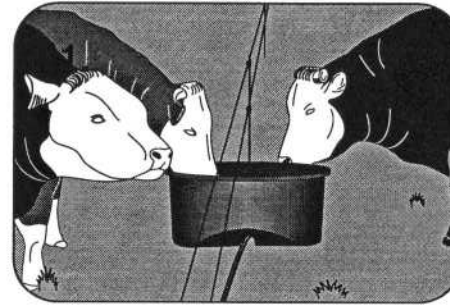
1. We assume the Trough is already in use and the pressure is on.

2. Tip the water out of the Trough (you must reduce water pressure to work the Hydrant and you will need the Trough to be empty for shifting).

Note: By pressing down with your left hand you need much less effort to empty the trough and the strain will be taken off your back.

3. Place your left boot firmly on the Hydrant, wiggle the Pipe from side to side and push firmly.

4. As soon as the seal is broken turn the Pipe anti-clockwise.



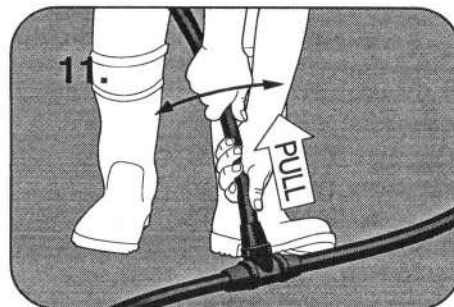
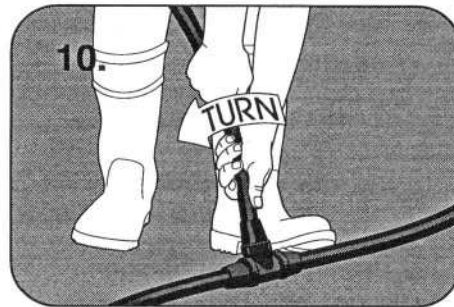
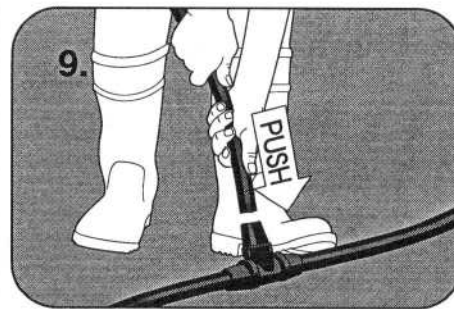
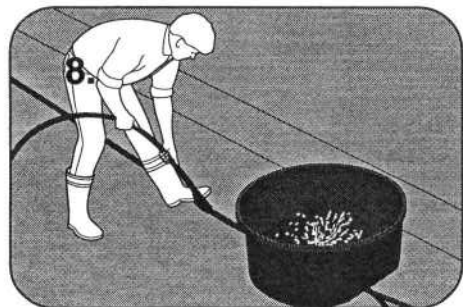
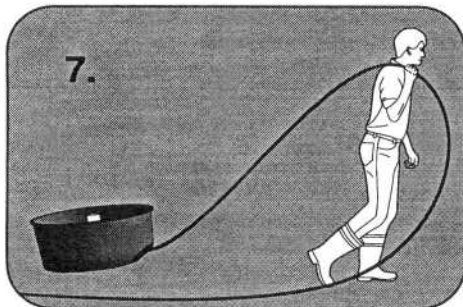
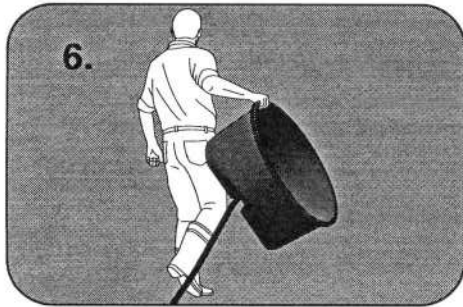
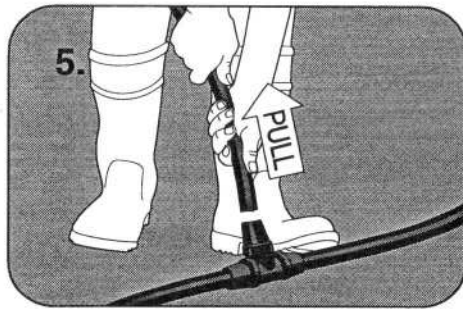
5. Pull the Lead out of the Hydrant.

6. Move the Trough to the next Hydrant.

7. The easiest way to shift the Trough is to drag it by the lead. Be careful that you don't kink the Lead. You can even drag the Trough behind a Motorbike or Four-Wheeler.

8. The best place to locate the Trough is under an electric fence. If you place the Trough carefully, livestock can drink from either side of the fence.

Note: The *Tunnel* under the Trough is designed to straddle an above-ground pipeline.



9. With your foot firmly on the Hydrant position the Lead squarely in the mouth of the Hydrant and give a quick firm push.

10. Turn the Lead clockwise quickly.

11. Pull and give a few wiggles to make the Collet seal.

Note: Don't pull the Collet out more than necessary—stop as soon as the leaks stop. If you overdo the job it simply makes it harder to disconnect and harder to seal the next time.

Maintenance and Trouble Shooting

Collet fails to grip pipe

The Collet is quite capable of gripping the Pipe in all recommended situations, but there are some avoidable conditions which will result in the Collet failing to bite into the Pipe:

Undersized Pipe will reduce the pre-tension which gives the Collet its initial grip. You will occasionally find pipe with outside diameters which lie outside the tolerance band specified in the standard. There is not much you can do about this except to take care to buy pipe with an average outside pipe diameter between 25 and 25.4mm diameter (a certain amount of ovality is OK —measure the average of the largest and smallest diameters).

After a lot of use the tip of the Trough Lead may erode away to the point where it is undersize—cut the tip off to expose fresh pipe.

Note: Make sure you cut the Trough Lead off square to ensure that it operates the Valve correctly and grips properly.

If you replace a Trough Lead **it is vital that you use Low Density Polyethylene**. The Collet in the Hydrant Outlet gets a lot of use and eventually loses sharpness on

its teeth—this is not a problem for Low Density but High Density is harder to penetrate and there comes a point where it fails to get its initial bite.

The gripping power of the Collet can also be affected if it is left for a long time in a stretched position (Pipe inserted into fitting but not pulled up or pressurized for a long time).

Note: It is good policy to pressurize your entire system with at least 4 bar (60psi) as soon as it is installed.

After you have inserted the Lead into the Hydrant and turned it clockwise, relax your grip briefly before pulling back.

Note: Don't turn the Trough Lead as you pull back to seal the Collet or you will interfere with its gripping action. Remember the phrase:

“PUSH, TURN, RELAX, PULL”

Unable to Push Lead into Hydrant

The Python Hydrant works comfortably at pressures up to 4 Bar (60psi). If pressures are higher than this you may have difficulty, especially with large diameter pipelines or close to the pressure source.

Occasionally, you might push too hard on the Pipe when installing the Hydrant in the Lateral line—the Pipe will be forced past the Pipe Arresting Lugs and when you come to use the Hydrant the Valve will bang into the lateral pipe inside the Tee Body.

Fitting won't Seal

If the Pipe has deep grooves or cuts it may not seal, especially at high pressures. Trim the Pipe to expose a better surface.

If you are relying on the Collet for sealing (no O-Rings) you may simply have to pull the Collet further out. Wiggling the Pipe and using the water pressure to assist should give sealing even on High Density Pipe.

Very occasionally, the *Inner Gripping/Sealing Ridge* on the Collet will become damaged and you will have to replace the Collet.

Very rarely, the Collet may fracture and you will have to replace it. To detect the fracture you may have to prise the Collet open.

Trough overflows

The first thing to check if the trough is overflowing is whether the problem lies with the Float or the Valve. With the water pressure onto the Trough, remove the Float Arm by the reverse action of installation, tip all the water out of the trough and see if there is any water leaking through the fitting.

If there is a significant leak with the Float Arm removed, it is possible the Valve is caught or has a large particle trapped in the Valve. Depress the Valve Plunger with your finger to open it fully and joggle it back into position to make sure it is seating properly. If leakage is still occurring the problem is either that the Trough Tee is not sealing (not screwed up firmly), or that the Python Hydrant Valve is damaged. Either way, you should disconnect the Lead from the Trough with the bayonet action, unscrew the Trough Tee (note if it seems loose), pull the Valve out and inspect the sealing edge of the Valve Head. It is the very edge of the Valve Head which is important and even slight damage to this part will affect sealing. If there is any doubt about the Python Valve you can substitute a Valve from a Hydrant to recommision the Trough.