# Cocky Valve Trough Install Data Sheet.

Many customers call us asking what arms they need, what float size etc. I realise to configure our valves does take some time, BUT IT IS WORTH THE EFFORT. I designed a valve that would supply FULL FLOW at virtually ANY PRESSURE in ANY TROUGH. To be honest I think we have a tremendous product and was acknowledged as the best valve in the market by the Kondinin Group (WA) back in 2014. We currently have valves operating in probably 100 different trough designs in pressures up to 1250 kpa (180 psi) and regularly at pressures of 750 kpa (110 psi) while delivering a FULL FLOW volume of water to the trough. Surely, getting the maximum amount of water to the stock should be goal?

While there are 100's of different trough designs nationally, generally there are three main categories of troughs with slight variations within each category.

1. There are round troughs generally used for cattle,
2. Long "coffin" type troughs with a small cover at one end generally used for sheep
3. and then a hybrid of the two that's best described as a rectangular trough with an inlet cavity at either end but sometimes in the middle.

From these basic categories we then have troughs made from concrete, plastic, galvanised steel and then in almost an endless variety of combinations. So, to put one valve setup into the market to suit all trough types and pressures is possible but only by limiting the in-flow rate and /or limiting the pressure by which the valve will close.

I really didn't wish to do either. So, what we need to do is individualise the valve as much as is possible to suit the actual install conditions of the particular customer and trough.

While this sounds daunting it is not as bad as it may appear. The area in which you operate generally has a small variety of troughs because your customers generally farm the same stock.

So, let's look at the three categories and the basic configurations to suit each of these.

1. **Round Concrete troughs generally used for cattle.**

This is what the Cocky Valves were first designed for. I designed the first valves while living on my own farm in Arawata, in Sth Gippsland Victoria. The area is rather hilly with most troughs running from dams utilising a gravity fed system. It was specifically designed for LARGE dairy herds as most of my neighbours were dairy farmers or ran large beef herds.

The valve was designed to deliver a full flow of water, but the water is discharged out sideways from our valve. This is deliberate so that the in-fill flows do not stir up all the muck in the bottom of the trough. It allows the CLEAN FRESH water to travel around the outside of the trough delivering this in-flow directly to where the cattle are drinking. It is amazing how quickly the cattle, (especially the dairy cows) realised where the clean fresh water was flowing and would drink from the outside 150mm (6") of the trough!

Because these troughs are generally open there is little restriction on the length of arm. In these installs I would adopt the longest arm possible. If you can fit a 600mm arm (**0649**) then do so! This gets the float right out in the middle of the trough…..away from the stock! It also allows for the maximum in-flow pressure. If not possible, then try to use the 400mm arm (**0632**). In most instances you will only require a 1" valve (**0014**) if you have any sort of reasonable pressure. [250 kpa – (35 psi]. The various arm lengths / pressure ratings are shown on the configuration tables on our website. The general rule however should be use the longest arm possible. **They wont break!** The worst that could happen if stock get into the trough would be the split pin "might" get bent but even that is a rarity.

Over the years these round troughs have changed from strictly a cattle trough to some hybrid design that suits both cattle and sheep, with the side walls decreasing in height. This has resulted in the height of the inlet being placed about mid-level on the side walls with a reduced distance between the inlet height and the finished water level.

While we make a 300mm long chain kit (**0229**) we have found that many farmers only required a few links of the chain when setting the float height. So, in response to the grumbles about "throwing away most of the chain", we developed "the Short Kit".

The 300mm M10 chain kit (**0229**) has a shackle for fixing to the float arm, 300mm of SS316 Jack Link Chain and a SS316 Nipple that screws into the float. This allows the customer to adjust the length of the chain and therefore the water level. (Approx. length 350mm)

The Short Kit (**0298**) has two shackles and a SS316 Nipple that screws into the float. (Approx. length 80mm). This is a fixed length solution that we have found works perfectly with the majority of these "hybrid" type of round troughs.


If the height of the finished water level is too low using the short kit, then the arm can be bent up slightly to achieve the desired finished water level. Bending of the arm however should be done in a vice and NOT while the arm is connected to the valve and not where the arm has an existing bend.

As far as the float is concerned the recommended go to size is simply a 200mm (8”) float (**0359**). It provides excellent buoyancy at an affordable price. You may have instances where a 250mm (10”) float (**0366**) is required but these are generally only on EXTREMELY high pressure installs or in tanks. (refer Cocky Valve Tank Install Data Sheet). We do not recommend a 150mm (6”) floats in these installs.

**<u>So generally speaking in an open round concrete trough the configuration is as follows:</u>**

1” Valve body (**0014**),

600mm arm (**0649**) preferred or a 400mm arm (**0632**),

short kit (**0298**) or 300mm M10 Float Kit (**0229**) if vertical adjustment required.

200mm (8”) float (**0359**) or a 250mm (10”) float (**0366**) when req’d.

## Round Plastic troughs generally used for cattle or when cell grazing.

There is an incredible number of different designs of these troughs. Some have small short cavities with covers for the float valves, others have long thin cavities while some have no covers at all.

In these installs all you can do is use the LONGEST arm possible. Generally, you only need to use a 19mm (3/4”) valve (**0007**) as the number of cattle these troughs can physically water at any one time is low due to the small diameters of the trough itself. We therefore suggest you use a 150mm arm (**0687**) or we also make a 300mm arm with 100mm thread (**0694**) specifically for these installs. It allows your customer to cut back the arm to allow the longest arm possible to suit the cavity and float used.

When fitted with a 150mm (6”) float (**0342**) directly to the end of the arm the valve will still handle inlet pressures of approx. 600 kpa (90 psi) and up to 1050 kpa (150 psi) with a 200mm (8”) float (**0359**) when arm is on the Hi Pivot point. In most plastic round troughs, we can configure a valve that will deliver the required flow at virtually any pressure.

2. **Long "coffin" type troughs with a small cover at one end generally used for sheep.**

These are a VERY popular trough style and I have seen a large range of different designs. The one thing that they all have in common is a limited cover length. These covers can be as short as 480mm with the longest I have seen at around 630mm. So, lets adopt 550mm as the average and configure the trough valve accordingly.

In many instances the inlet of these troughs is at the end wall and well above the top edge of the trough.

The inlet sizes can vary significantly from 25mm (1") up to 50mm (2").

From the outset I have to state WE DO NOT RECOMMEND 2" VALVES for stock troughs except in VERY LOW PRSSURE installs such as when the trough is directly adjacent a tank. (refer Cocky Valve Tank Install Data Sheet.).

If the install is at any sort of reasonable pressure [250 kpa – (35 psi)] and above, then anything larger than a 1" (or possibly 1 ¼") is simply unnecessary. If the customer is installing a larger valve because of the water quality, low flow volume or because he gets water beetles etc then of course that is a different matter. However, for a standard style trough capable of watering say 8 beasts at a time with inlet pressures at 250 kpa or above, with good flow volume, then our FULL FLOW 1" Cocky Valve will keep up with the demand all day long.

If the customer doubts this statement, then ask them to bush down the existing installation to a 1" inlet but **DON'T FIT A VALVE**. Measure the inlet flow by filling a bucket of a known volume, measure the time required and then extend this to get litres per minute / hr / day.

The following is a table from the Victorian Government Agriculture Website.
http://agriculture.vic.gov.au/agriculture/farm-management/managing-dams/water-supply-for-stock-containment-areas

## Stock Water Requirements (litres/head/day)

| | Peak Demand | Long term Demand |
|---|---|---|
| Dry Sheep | 10 | 6 |
| Nursing ewes | 14 | 10 |
| Lambs (Weaners) | 6 | 4 |
| Dry cattle | 100 | 80 |
| Lactating Cattle (350 – 400 kg) | 120 | 100 |
| Calves (Weaners) (250 – 300 kg) | 70 | 55 |

***Note: These quantities are for water of a low salt content and where shade and shelter are available and should be used as a guide only.***

In order to estimate in-flows when the trough is under ***extreme pressure*** I would suggest adopting say 25% of the peak demand litres / head / day but consumed in just a two minute period per beast. This will give you good guide as to the maximum flow rate required. If the inflow to the trough does not quite meet this figure the customer should understand that the trough has a "reserve" of water available that can be used to buffer any shortfall over the timeframe when the stock is at their highest consumption.

Example: Based on 8 Dry cattle drinking 25 litres every two minutes ongoing.

The flow rate would need to be (25l x 8 cattle) / 2 = 100 litres /min = 6000 lph.

At that rate you should water 6000l / 25l = 240 beasts per hour.

**The Kondinin Group measured a 1" Cocky Valve at 200kpa (30psi) delivering 235 lpm.**

## The configuration for Long "coffin" type troughs with a small cover at one end.

Given that these troughs have a cover which will limit the arm length and the inlet is above the water line the following is what we suggest:

1" Valve body (**0014**) or 1 ¼" Valve body (**0021**),

300mm bent arm (**0663**)

200mm (8") float (**0359**) or if space is an issue 2 x 150mm (6") floats (**0342**) fitted by way of a TEE Piece (**0168**).

In virtually ALL Cases, despite the trough having a cover we would recommend the fitting of our Deflector (**0113**) to prevent the water spraying up under the lid.

The two 1” configurations detailed above will deliver a FULL FLOW of water at 900 kpa (130 psi) on the low pivot point and over 1050 kpa (150 psi) when the arm is fitted into the high-pressure pivot point. The in-flow rates at this pressure is extraordinary!

When a 32mm 1 ¼” valve (**0021**) is used you can still achieve 850 kpa (125 psi) when the arm is fitted into the high-pressure pivot point.

## 3. Rectangular trough with an inlet cavity at either end but sometimes in the middle.

These are also a VERY popular trough. The difficulty we face with these is once again the lack of room for the float arm. Generally, the inlet is on the side of the trough which only allows the width of the trough for the valve arm.

In these installs we recommend the following:

| |
|---|
| 1” Valve body (**0014**) or 1 ¼” Valve body (**0021**), |
| 300mm bent arm (**0663**) or a Standard 300mm arm (**0625**) or our 400mm BENT Arm (**0670**) |
| 200mm (8”) float (**0359**) or if space is an issue 2 x 150mm (6”) floats (**0342**) fitted by way of a TEE Piece (**0168**) or depending on the height of the inlet a 300mm chain (**0229**) may be required. |

If the customer requests a 38mm (1 ½") valve body (**0038**) or a 50mm (2") valve body (**0380**) these can be fitted provided that they are LOW PRESSURE INSTALLS. I state again:

If the install is at any sort of reasonable pressure [250 kpa – (35 psi)] and above, then anything larger than a 1" (or possibly 1 ¼") is simply unnecessary.

In the case of the 400mm BENT arm (**0670**) the float can be fitted DIRECTLY onto the end of the arm but once again this depends on the height of the inlet compared to the finished water level.

Generally, these inlets are just BELOW the required water line and therefore there is no requirement for the deflectors.

I would like to be more specific but there are so many types of these troughs it's almost impossible to give just one solution without limiting the performance of what our valves can provide.

There are three different arms that can be used and basically two different float options both giving the same buoyancy.

Two 150mm (6") floats (**0342**) give about the same as one 200mm (8") float (**0359**)