

How to choose the right size of PD Valves



Measuring the OD

of a Damperrod.

Option 1)

Measure the OD of your Damperrod as shown in the picture and choose the **next PD Valve Size down**.

Example:

Rod OD **28.91** => PD OD 26.5 mm

Available PD Valve Sizes:

PD Valve OD 17.5 mm

PD Valve OD 24.8 mm

PD Valve OD 26.5 mm

PD Valve OD 29.0 mm

PD Valve OD 31.0 mm

PD Valve OD 33.0 mm

PD Valve OD 36.0 mm

PD Valve OD 43.0 mm



Measuring the OD

of a Forkspring.

Option 2)

Measure the OD of your existing Forkspring as shown and choose the **next PD Valve Size down**.

Example:

Spring OD **43.47** => PD OD 43.0 mm

Available PD Valve Sizes:

PD Valve OD 17.5 mm

PD Valve OD 24.8 mm

PD Valve OD 26.5 mm

PD Valve OD 29.0 mm

PD Valve OD 31.0 mm

PD Valve OD 33.0 mm

PD Valve OD 36.0 mm

PD Valve OD 43.0 mm

Tool Requirements for PD Fork Valve Assembly

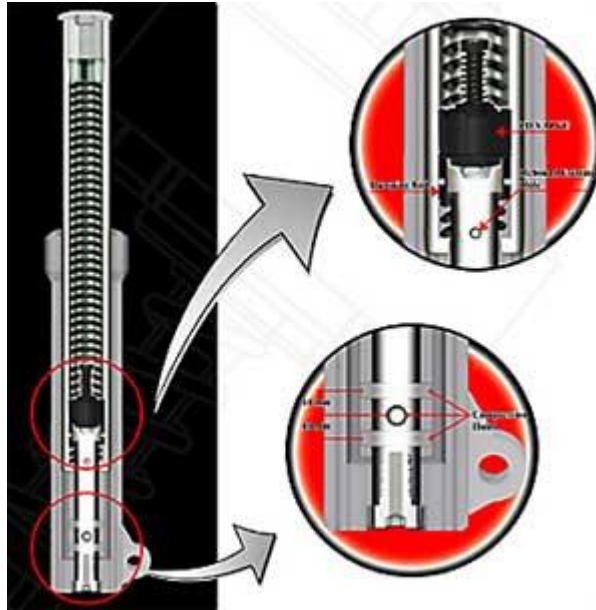
Required Tools

Diagram for PD Fork Valve Assembly

1. Drill Motor and 6 or 8 mm Drill
2. Allen Socket 8, 10, 12 or 14 mm
3. Tape Measure
4. Tubing Cutter
5. PROMAX Fork Oil



PROMAX PD Fork Valves



Fork Valve Assembly Diagram

PD

Step-by-Step Guide for PD Fork Valve Assembly

NOTE: All these steps should be done by a qualified suspension mechanic - or Suspension Shop is NOT responsible for any damage to shock absorbers, vehicles or injury to persons, if the instructions are not exactly followed. The warranty will also be void.

Note

PD Fork Valves are available in the following sizes for Motorcycles with Conventional Forks:

- OD 17.5 mm
- OD 24.8 mm
- OD 26.5 mm
- OD 29.0 mm
- OD 31.0 mm
- OD 33.0 mm
- OD 36.0 mm
- OD 43.0 mm

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Assembly Steps for PD Fork Valve Installation

1. Take off the fork from the motorbike.
2. Disassemble the fork (don't remove the seal)
3. Take the fork spring and damping rod out.
4. Place PROMAX PD Valve on the top of damping rod.
5. Put the step on PROMAX PD Valve into the large hole. You must cover it completely (as shown in Picture 1).
6. The inner diameter of fork spring must be at least 3-4 mm larger than the PD Valve plate (less than 3 mm - use with some models of PD Valves which have side flow space).
7. Drill two 8 mm holes in addition.
8. Chamfer and deburr in and out of the compression holes.
9. Assemble the forks as in your manual or do the reverse of reassembling.
10. Drop PROMAX PD Valve down the tube to sit on the damping rod with the PD Valve spring facing up.
11. Insert the fork spring into the inner tube on the top of PROMAX PD Valve.

NOTE: All these steps should be done by a qualified suspension mechanic - or Suspension Shop is NOT responsible for any damage to shock absorbers, vehicles or injury to persons, if the instructions are not exactly followed. The warranty will also be void.

12. Add the fork spring spacer (cut them for 14-17 mm - same as the thickness of PD Valve, more or less depends on the fork spring preload requirement).
13. Install the fork fluid by removing the fork spring and PD Valve, use the oil viscosity as recommended by PROMAX manual or manufacturer (10W for standard or 15, 20 and 30W for optional).
14. Pump the fork for bleeding.
15. Install PROMAX PD Valve and check the oil level.
16. Install the spring and spacer.
17. Re-check the spring preload.
18. Install the fork caps and push on them.
19. Tighten all bolts.
20. Assemble the forks back to the motorbike completely.

Tuning Options for PD Fork Valves

Tuning	Standard	Optional	Advantage
(1.) Oil Viscosity	10W	15W, 20W, 30W	More or less rebound depends on viscosity to make stability
(2.) Valve Spring Preload	(3.) Two (2) Turns 7 N for 175, 235, 265, 290	0 to 7 12 N	Overall firmness, controlling the speed of front end dives under braking
Valve Spring Rate	12 N for 310, 335, 360, 425	7 N	Overall firmness and smooth ride on square shaped bumps

1. Use oil viscosity to set the amount of rebound damping, then adjust the compression with the PD-Valve settings. The PD Valve does not affect rebound, however oil viscosity does. The primary compression adjustment is the amount of preload on Valve Spring.

2. Measured from no tension on the Valve Spring.

3. Two (2) turns of Valve Spring Preload for lighter riders.

Fork Valves - Why and How ? - (Words by Ken Smith)

Practically all the dirt bikes from the '70s and early '80s that we ride still utilise holes in the damper rods to control the compression and rebound damping action. Cheap to make initially

and they sort of did the trick, even though they were no further advanced than forks from decades earlier.

Why change to fork valves?

For those of us who did want to get all 'techno' with our forks in the '70s, we had basically two options to alter fork damping - change oil weight or change the size of the holes in the forks. Just to refresh your memory, oil gets forced up through those holes in the bottom of your damper rod, to control the compression damping. So, changing the fork oil weight and/or the size of the holes will have an effect.

However, the basic problem with that design is that it is not producing a progressive damping curve. That is because TOO MUCH oil goes through the holes to produce adequate low speed damping and TOO LITTLE oil is able to pass through the holes to provide enough high speed damping. The forks dive too much over small bumps or because of braking AND suffer hydraulic lock when they get a really big hit - you got it, neither actuality is catered for sufficiently and if you try to fix one end of the spectrum (say, making the holes bigger to improve high speed damping) then you compound the problem at the other end (i.e. make low speed damping even worse).

So along comes the cartridge fork, except, it's a wee bit difficult to just rip out the innards of a cartridge fork assembly and shove it in your tiny 35mm forks. Hence, the introduction of fork valves such as the PD units, which we've used for our installation example that follows. What do these fork valves achieve that's similar in operation to cartridge forks?

While a set of fork valves will never work as well as a proper cartridge system, they will provide a progressive damping response, utilizing a single, spring-loaded shim to control the compression damping. Low oil velocity past the shim opens it a little and provides more damping - high oil velocity opens the shim more and provides less damping. Fork valves will not have any effect on the rebound damping, that will still be controlled by the existing holes towards the top of your damper rod, and, will still be 'tunable' by way of differing oil weights. Different oil weights will still have an effect on compression damping but not as much as it will affect rebound damping. Compression damping, once fork valves are installed, will be primarily controlled by the spring preload you set on the valve.

Before we get on to the installation process, we'll just explain the other basics. The fork valve sits on top of the damper rod (between the top of the damper rod and the spring) and is "fed" oil that is forced up the centre of the damper rod. Therefore, extra holes must be drilled in the vicinity of the existing compression damping holes at the bottom of the damper rod. In essence, you don't want the lower holes performing ANY restrictive function, and consequently, the area of the lower holes must be at least equal to or greater than the area of the hole down the centre of the damping rod. The valve on top of the damper rod will now control compression damping exclusively. Finally, because you have added what is effectively a 'spacer' between the top of the damper rod and spring, you will need to shorten any existing spacers in the forks by a corresponding amount (as in the height of the fork valve you're installing). Assuming of course that you're happy with your existing spring rate, static sag and so on - make those measurements and decisions before you start... ...speaking of which, let's get this show on the road.

Installation

- 1. a and b.** Take the forks out of the bike and disassemble forks on the bench. An impact/rattle gun is a handy item to get those bottom fork bolts undone, or, in the situation where they still won't come undone, a combination of impact wrench and a special tool that holds the damper rod in place.
- 2.** Once apart, you can do a simple check for any bends in the fork tubes. Just hold them against one another, roll them both around and check for any gaps between the two. Simple.
- 3.** You will have already chosen what size fork valves you require, based on the internal diameter of your fork tubes (measure in a smooth section, not a threaded portion, where the fork top nuts thread in for example). However, you need to check that the valve fits properly on the top of the damper rod. There is a small step in the underside of the valve and this must fit neatly in the recess in the top of the damper rod to 'locate' it properly. If it doesn't sit properly, or, you have a valve size that may not be entirely correct, you will end up with a valve that sits skew, like in the photo. This will render the valve ineffective, as oil will escape around the outside of the valve. All the oil that is forced up the inside of the damper rod must flow THROUGH the valve. This photo shows a valve that is not sitting correctly.
- 4.** Your valve should sit 'square' on top of the damper rod as per the photo. In some cases, you may need to machine a ring, which fits between the top of the damper rod and the valve, for it sit properly. If this is the case, then it may be time to take the whole box and dice to a suspension expert! You will also need to check that the inner diameter of your fork spring is 3-4mm larger than the diameter of the raised 'plate', or step, on the top side of the fork valve. And yes, all these points are outlined in the instructions.
- 5. a and b.** Time for some drilling. The instructions provide you with some guidance, for example, if your damper rod is 17.5mm diameter (ours was 17mm) then you'll need four holes of 6mm diameter. Our damper rod already had four holes of 5mm so we enlarged those to 6mm and added two additional holes for good measure. Do not go overboard though as you will weaken the rod. Standard rod on left, modified rod on right. Don't forget to chamfer and deburr holes.

Re-assemble forks and enjoy the ride.