



BILLABONG HYDRAULIC RAMS

Product Brochure

Manufactured & distributed in Australia by:
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BILLABONG HYDRAULIC RAMS

Features, installation & working principles

If you have a spring or creek on your property you can harness *your own hydraulic power* and pump water with the Billabong Hydraulic Ram. It's the nearest thing to perpetual motion.

Billabong Hydraulic Rams are manufactured and distributed in Australia and have been supplied to Australian and overseas markets for over 150 years. Our pumps are world-renown and field-proven for their superior quality, excellent reliability and affordability by our satisfied customers.

FEATURES:

Billabong Hydraulic Rams are Australian-made and pollution-free. They provide long-lasting service and don't require any electricity, steam or oil fuel motors. Needing minimal maintenance and being self-lubricating these pumps can lift water up to 200 feet / 61 metres. Complete RAM units and spare parts are available.

INSTALLATION INSTRUCTIONS & WORKING PRINCIPLES:

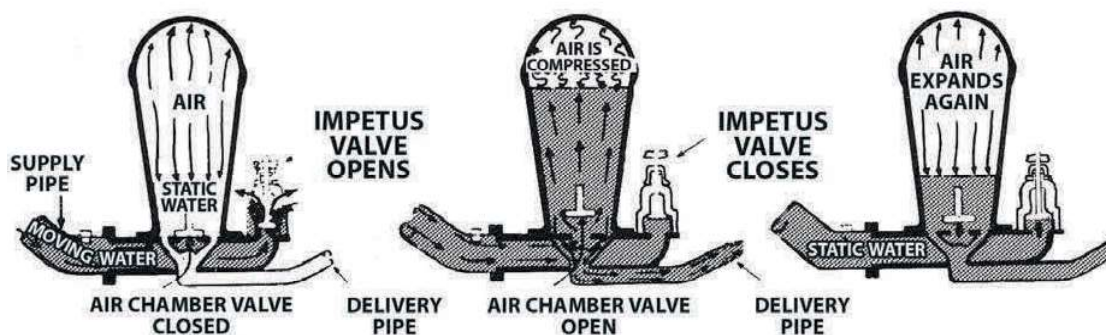
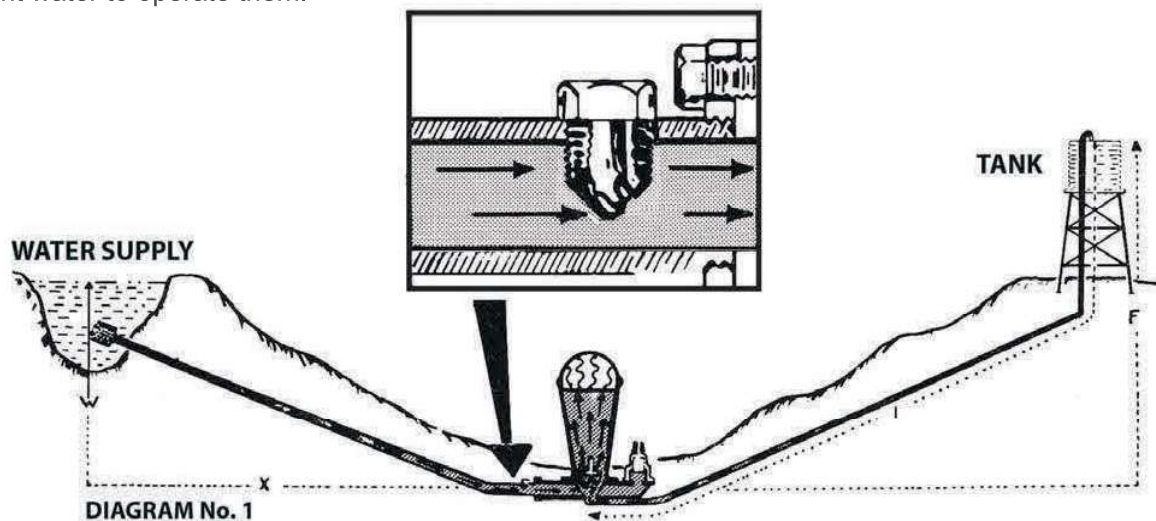
It is essential to have a fall / head of water to produce the power to operate a ram. Therefore, the drive or intake pipe must be set at a suitable angle and sufficiently long enough to produce the desired power.

The water falls from the source of supply down the drive pipe and runs to waste through the impetus valve until the increasing velocity is sufficient to lift this valve and close it. The moving column of water is then directed upwards through the air chamber valve and compresses the air in the dome until its pressure is equal to that of the water in the drive pipe.

The air chamber valve then closes and the expansion of the air in the chamber forces the water up the delivery pipe. Simultaneously with this operation, the impetus valve is released and the water flows to waste again until the increasing velocity is sufficient to close it as before. The process continues so long as supply is maintained and the pipes are clear.

It is evident the air chamber must be air-tight and that proper relations must exist between the drive and discharge pipe. This will enable the weight and velocity of the water in the drive pipe to be sufficient enough to generate the power required to successfully perform the work. Too great a fall will cause excessive wear on the impetus valve. Generally speaking, a ram should not be used to lift water over 200 feet / 61 metres vertically.

A gate valve is recommended on both the drive and the discharge pipes to avoid the necessity of emptying them when cleaning or making repairs. The hydraulic ram is most efficient when the volume of the air chamber is equal to the volume of the discharge pipe. Therefore, larger ram sizes are best suited for long discharge pipes when there is sufficient water to operate them.



OVER 150 YEARS IN EXISTENCE

Australian-made and environmentally friendly

FOUNDATIONS:

A solid concrete block is essential to withstand the vibration caused by the movement of the impetus valve. The ram must be below the source of its supply at all times—refer Diagram #1.

DRIVE PIPE:

Use the correct size pipe specified in our Hydraulic Ram Table relevant to the size ram being installed. Avoid any bends or curves in the drive pipe. Metal or rigid PVC pipe is recommended. This line must be direct from the source of supply to the ram. Under no circumstances must the velocity of the water flowing down this pipe be restricted. The length of the drive pipe must be at least 3/4 of the height of the elevation of the delivery pipe—refer Hydraulic Ram Table. A good type of strainer is essential on the end of the drive pipe at the source of supply, eliminating any possible risk of foreign matter entering the ram.

The delivery pipe should be installed in a manner similar to the delivery pipe from a pump. Should this pipe be over 1000 feet / 307 metres long, use a larger size pipe than that shown in the table below.

It is advisable to fit the Sniffing Plug—supplied with each ram—into the drive pipe as closely as possible to the ram. This prevents the air dome from becoming water-logged and maintains a constant air volume in the dome—refer Diagram #1 for installation method.

STARTING HYDRAULIC RAM IN MOTION:

After the installation has been completed, set the impetus valve to the longest stroke then adjust to suit the local conditions. The stroke of the valve is regulated by the Adjusting Nut #30. Loosen the Adjusting Nut Lock Nut #31 and by either screwing the adjusting nut up or down, the length of the stroke is altered. Also, the impetus valve is designed so that provision is made on the stem by means of two Flanged Nuts: #28 and #29. These flanged nuts locate lead washers used as counter-weights to compensate for the varying conditions encountered in the installation process. For example, the head height and drive height vary in each and every installation. As the valve compensation cannot be pre-set at the factory, this is left to the person responsible for the installation of the hydraulic ram. With the addition of these lead washers, the valve is then balanced to operate at maximum efficiency under its specific condition(s).

Any hydraulic ram working to almost maximum capacity should be balanced by the above method to prevent any undue knocking, which at all times is injurious to the valve.

To put the ram in motion it is necessary to hold the impetus valve down for a few seconds, allowing the water to run to waste and then allowing the valve to rise shutting off the flow of water. Possibly, it may be necessary to repeat this operation several times before the ram will automatically take over.

HYDRAULIC RAM TABLE—VOLUMES & WEIGHTS APPROX.

RAM NO.	PIPES				GALLONS/LITRES PER MINUTE REQUIRED TO OPERATE RAM		DISCHARGE CAPACITY PER HOUR		WEIGHT WHEN CRATED	
	Drive		Discharge		Gallons	Litres	Gallons	Litres	lbs.	kgs.
3	1"	25mm	1/2"	15mm	1 1/4 - 4	6 - 18	10 - 20	45 - 91	55	25
4	1 1/4"	32mm	1/2"	15mm	3 - 7	14 - 32	15 - 35	68 - 159	79	35
5	2"	50mm	3/4"	20mm	6 - 14	27 - 64	30 - 70	136 - 318	119	54
6	2 1/2"	65mm	1"	25mm	12 - 25	55 - 114	60 - 125	273 - 568	198	90
7	3"	80mm	1 1/2"	40mm	20 - 40	91 - 182	100 - 200	455 - 909	377	171
10	4"	100mm	2"	50mm	25 - 100	114 - 455	125 - 500	568 - 2273	851	386

MINIMUM FALL FROM SUPPLY TO RAM		HEIGHT WATER MAY BE ELEVATED		LENGTH OF DRIVE PIPE	
Feet	Metres (approx.)	Feet	Metres (approx.)	Feet	Metres (approx.)
2	0.6	4	1.2	12	3.6
3	0.9	15	4.5	15	4.5
4	1.2	25	7.6	20	6.0
5	1.5	35	10.6	30	9.1
6	1.8	48	14.6	40	12.1
7	2.1	63	19.2	50	15.2
8	2.4	80	24.3	60	18.2
10	3.0	100	30.4	75	22.8
12	3.6	120	36.4	95	28.9
14	4.2	140	42.4	110	33.5
16	4.8	160	48.5	125	38.0
18	5.4	180	54.5	146	44.4
20	6.0	200	60.8	160	48.5