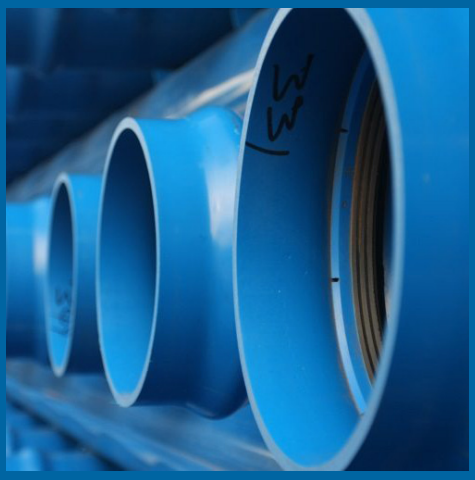
PYD ELECTROBOMBAS

SERIES

uPVC PYD PIPES

PIPE RANGE > PYD SERIES UPVC


TECHNICAL CATALOGUE

V1.0 C. 050722 M. 050722

Proindecsa has been relentless in its commitment to quality and service since 1975. Over the years we have expanded and improved our product lines in order to satisfy our customers' requirements better. PYD uPVC pipe is ISO 9001-2008 certified with a constant effort towards higher level of customer satisfaction.

PYD uPVC pipe is a pioneering product in design, development and manufacturing, which is being successfully used in well construction with submersible pump up to the depth of 300 meters. More than 1,400,000 successful installations have already been carried out worldwide.

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PYD uPVC pipe has a unique locking mechanism, the wirelock system, in which a stainless steel wire is wound between the coupler and the pipe to secure the pipe system and the fitting to prevent both from accidentally coming loose. This wi-relock system is a patented technology.

COMPARISON TABLE
types of pipes

PYD ELECTROBOMBAS

IDEAL SITUATION	UPVC PYD PIPE	METAL PIPE	FLEXIBLE PIPE
Optimum rigidity in the standpipe for correct actuation of non-return valves.	The pipe is rigid with a degree of flexibility that allows for slight variations without compromising performance or the overall condition of the installation.	The pipe is completely rough, vulnerable to landslides.	The pipe is completely flexible, so the weight causes it to stretch and bury the engine, further deteriorating the fibres and causing breakages.
Strongly threaded to support the total weight of the installation and the axial force of the submersible electric pump.	Specially designed trapezoidal thread so that each thread is capable of withstanding a high load. Free of corrosion by electrolysis.	Corrosion-prone threads, with a service life of 2-3 years between maintenance.	Even if the ends are threaded, they always depend on the fitting being attached to the pipe with a press-fit system, which is vulnerable to dropping.
Leak-proof with a connection system that guarantees maximum utilisation of the flow rate provided.	Each section is fitted with a proven O-ring system on a machined housing to guarantee total watertightness.	They do not have any kind of seals, so they are vulnerable to small leaks in each section, which in total represent a large loss of flow.	The press-fit joints are weak and tend to leak due to overstressing after a short period of time.
Minimal pressure drop.	Due to the zero porosity of the inner side, water friction is minimal and up to 20% higher performance is achieved.	The inner side is rough and a very high correction factor has to be applied in the usual friction loss calculations.	The inner side is rough and uneven adding frictional load losses.
Light weight of the pipe and simplicity in the installation process.	The pipe is supplied in very light 3 metre lengths and is very quick to install and dismantle.	Long and very heavy pipes that require the use of machinery for their handling.	Very difficult during the disassembly process, no possibility to roll up during removal.
Long durability.	The pipe does not corrode due to conductivity and does not react in salty or alkaline water. Long durability.	Piping very prone to corrosion and rust, requiring periodic maintenance with replacement of the most affected sections.	It stretches and loses its properties, requiring periodic trimming to avoid burying the engine and decreasing in diameter over time.

The design of the Wirelock system is designed to ensure the safety of your submersible electric pump. All pipe sections are fitted with the Wirelock system located at the junction with the fitting. The fitting is locked to the pipe by a stainless steel pin running around the perimeter of the fitting, ensuring that even during the dismantling process, the fitting is fully secured.
completely fixed.
The patented Wirelock system is unique to uPVC PYD pipe.

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- UNLIMITED LIFETIME: NO CORROSION OR ELECTROLYSIS
- LIGHT: LOWER CRANE COSTS
- EASY TO INSTALL: REDUCED LABOUR COSTS
- THE CREATION OF LIMESCALE DEPOSITS IS PREVENTED
- HIGH RESISTANCE TO PRESSURE AND TENSION
- SMOOTH INTERIOR: LESS PRESSURE DROP
- EASY ASSEMBLY: NO JOINTS, NO SCREWS
- LOW COST OF THE TUBE COMPARED TO METAL TUBES

PRODUCTION PROCESS

PYD uPVC pipe uses the latest extrusion technology and quality control procedures, ensuring the best pipe quality and perfect outside/inside dimensions. During production, CNC machines are used to thread the pipes and couplings with high precision tooling to ensure exact dimensions. All threads are thoroughly checked to ensure a defect-free system for the user.
to ensure a defect free system for the end user.
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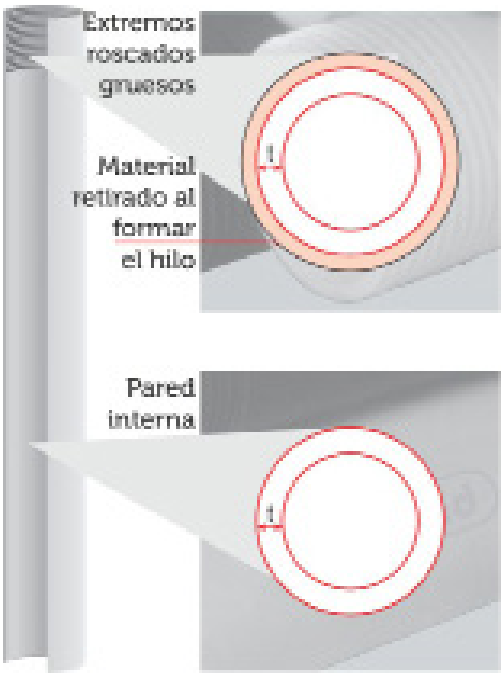
SPECIAL COMPOSITION

PYD uPVC pipes are made with the specially designed formulation, so the pipes are able to handle both the internal static hydropressure and the vertical tensile load due to the water column and the weight of the electric pump. The special formulation ensures that the threads do not become brittle and break, even after tightening and loosening several times during their lifetime. Special raw materials are used and processed with the latest extrusion technology.

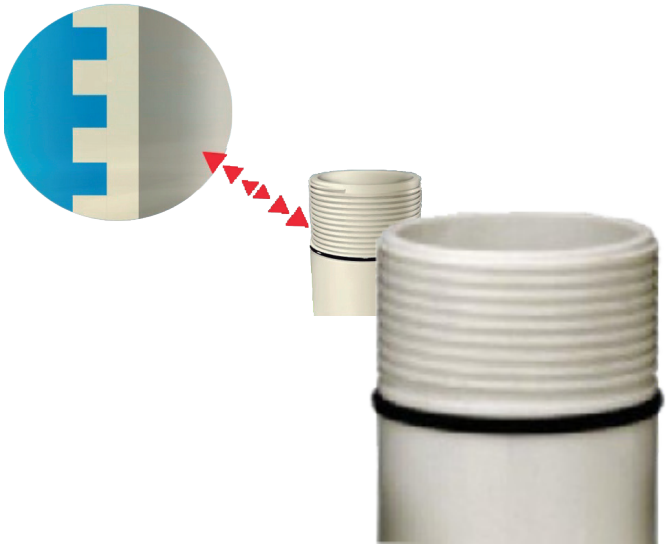
FUNCTIONALITY

PYD uPVC pipes have a double function to perform. On the one hand, it has to support the flow and pressure of the electric pump, which is maximum in the first pipe connected to the pump and can be as high as 35 Kg/cm2 and, on the other hand, the upper pipe carries the load of the entire column full of water and the pump, which can be up to 2 tons. This double type of load application requires special manufacturing techniques, guaranteed thanks to our production processes.



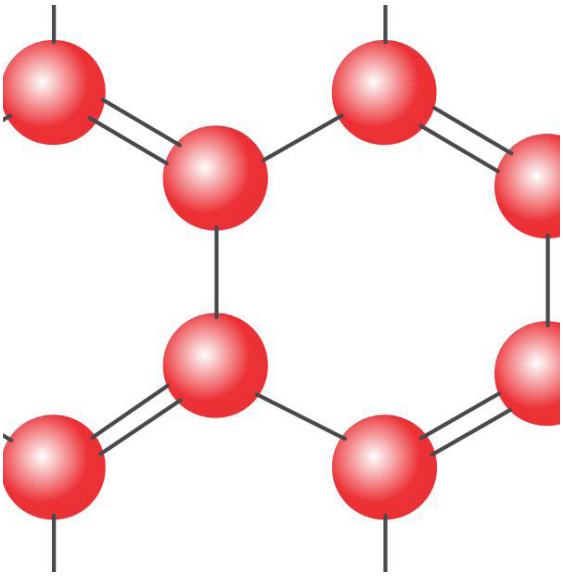
Unique slim and sturdy pipe construction

This innovative technique for manufacturing thicker pipes at the threaded end to compensate for material removal during the threading process is an innovation made only in PYD pipes.
The residual thickness (t) at the end part after thread removal is the same as the pipe thickness (t), therefore the pipe strength remains the same.
This technique saves on raw material consumption and at the same time provides much higher pipe strength.



Trapezoidal thread

The pipe connection has been specially designed with square threads to ensure a proper grip and no possibility of slippage.
These threads offer high friction during loading, preventing openings even at constant start and stop, supporting the torque generated by the engine.
An outer rubber ring is housed on the T (temporary) side of the pipe and a rubber ring is provided on the P (permanent) side of the pipe which ensures a 100% leak-proof joint.



Biaxial Orientation

PYD upvc pipe has developed a unique orientation technique that is used during pipe extrusion, which gives it greater resistance to impacts and falls.

This orientation technique is the result of constant research and development.

Biaxial orientation during installation or dismantling of the pipe.

TYPE OF PIPE OD: Outlet diameter ND: Nominal diameter	Load breaking load [Kg]	Cargo safe [Kg]	Pressure maximum [Kg/cm2]	Depth maximum [m]
OD: 33 mm ND: 25 mm (1")				
Standard	1.900	1.100	30	300
OD: 42 mm ND: 32 mm (1¼")				
Standard	2.550	1.500	25	250
Heavy	3.100	1.800	35	350
OD: 48 mm ND: 40 mm (1½")				
Standard	2.950	1.700	26	260
Heavy	4.050	2.400	35	350
OD: 60 mm ND: 50 mm (2")				
Standard	3.600	2.100	20	200
Heavy	4.700	2.800	27	270
OD: 75 mm ND: 65 mm (2½")				
Standard	4.650	2.700	16	160
Standard Plus	5.900	3.500	21	210
Heavy	7.000	4.200	26	260
OD: 88 mm ND: 80mm (3")				
Standard	6.800	4.000	17	170
Standard Plus	8.200	4.850	21	210
Heavy	9.600	5.650	26	260
OD: 113 mm ND: 100 mm (4")				
Standard	10.000	5.900	15	150
Standard Plus	13.000	7.650	21	210
Heavy	16.000	9.350	26	260
OD: 140 mm ND: 125 mm (5")				
Standard	16.400	9.650	16	160
Heavy	24.000	14.600	26	260

Technical comparison of total load in the upper pipe and ultimate breaking load of PYD pipe in uPVC.
Data shown in the STANDARD version only.

This is only an indication of the loads to explain that a safety factor has been considered in the design of the appropriate pipes.

TYPE OF PIPE OD: Outlet diameter ND: Nominal diameter	Pipe weight in 150 m [kg]	Water weight at 150m [Kg]	Maximum pump weight [kg]	Total weight of the installation [kg]	Pipe burst weight [kg]
OD: 33 mm ND: 25 mm (1")	105	75	100	280	1.900
OD: 42 mm ND: 32 mm (1¼")	129	135	100	364	2.550
OD: 48 mm ND: 40 mm (1½")	154	190	125	469	2.950
OD: 60 mm ND: 50 mm (2")	199	320	150	669	3.600
OD: 75 mm ND: 65 mm (2½")	254	530	200	984	4.650
OD: 88 mm ND: 80mm (3")	350	720	250	1.320	6.800
OD: 113 mm ND: 100 mm (4")	527	1.225	300	2.052	10.000
OD: 140 mm ND: 125 mm (5")	865	1.850	500	3.215	16.400

SERVICE CONDITIONS

PYD upvc pipes provide the best service in wells that are drilled and cased in their entirety, free of loose rocks and stones. In these areas, where loose boulders and stones are frequent, a thicker casing is usually installed so that the pump does not clog.

Slippage in boreholes is common if the boreholes are not fully cased, and can even occur if the ground is excessively silty or sandy.

Care should also be taken when drilling boreholes, drilling completely vertically and without any curvature.

NOTE: Any design and specifications are subject to change without notice.

TYPE OF PIPE OD: Outlet diameter ND: Nominal diameter	Wall thickness [mm]		Diameter diameter [mm]	Length effective length [mm]	Thickness external [mm]
	Raccord min/max	Tube min/max			
OD: 33 mm ND: 25 mm (1")					
Standard	5,45/6,35	3,1/4,0	32,6/33,2	3.000±10	200-200
OD: 42 mm ND: 32 mm (1¼")					
Standard	5,65/6,55	3,55/4,15	41,5/42,2	3.000±10	200-200
Heavy	6,85/7,95	4,55/5,35	41,5/42,2	3.000±10	200-200
OD: 48 mm ND: 40 mm (1½")					
Standard	6,25/7,15	3,95/4,85	47,5/48,2	3.000±10	200-200
Heavy	7,50/8,30	5,20/6,10	47,5/48,2	3.000±10	200-200
OD: 60 mm ND: 50 mm (2")					
Standard	6,40/7,50	3,90/5,00	59,5/60,2	3.000±10	200-200
Heavy	7,80/8,70	5,30/6,60	59,5/60,2	3.000±10	250-250
OD: 75 mm ND: 65 mm (2½")					
Standard	6,60/7,60	4,00/5,10	74,5/75,2	3.000±10	200-200
Standard Plus	7,90/8,80	5,20/6,20	74,5/75,2	3.000±10	250-250
Heavy	9,00/10,10	6,30/7,60	74,5/75,2	3.000±10	250-250
OD: 88 mm ND: 80mm (3")					
Standard	7,80/9,20	5,00/6,40	87,5/88,2	3.000±10	200-200
Standard Plus	9,00/10,20	6,20/7,30	87,5/88,2	3.000±10	250-250
Heavy	10,10/11,20	7,30/9,00	87,5/88,2	3.000±10	250-250
OD: 113 mm ND: 100 mm (4")					
Standard	9,00/10,30	5,70/7,20	112,5/113,2	3.000±10	200-200
Standard Plus	10,90/12,10	7,60/9,10	112,5/113,2	3.000±10	250-250
Heavy	12,70/13,90	9,40/11,50	112,5/113,2	3.000±10	250-250
OD: 140 mm ND: 125 mm (5")					
Standard	10,90/12,20	7,60/9,10	139,5/140,2	3.000±10	250-250
Heavy	13,20/14,40	9,80/11,70	139,5/140,2	3.000±10	250-250

The height to which the water is pumped has to be estimated with pressure. This is very important especially on long uphill slopes.

The length of the pipeline and the height at which the water is pumped together with the depth to the low water level and the friction loss in the pipelines add up to the total head of the pump unit.

Losses in m.c.a. per 100 metres of pipeline

PIPING	Flow rate in litres per minute											
	40	60	80	100	120	150	180	240	300	360	400	500
1" DN 25												
Standard	6,48	13,73	23,39	35,37	49,56							
1¼" DN 32												
Standard	1,47	3,13	5,33	8,06	11,30	17,08	23,90	40,79				
Heavy	2,07	4,39	7,47	11,30	15,84	23,95	33,15	57,20				
1½" DN 40												
Standard	0,66	1,40	2,39	3,61	5,06	7,66	10,04	18,29	27,65	38,77	47,05	
Heavy	1,07	2,24	3,81	5,77	8,09	12,23	17,15	29,21	44,16			
2" DN 50												
Standard	0,18	0,39	0,66	1,00	1,41	2,13	2,99	5,10	7,71	10,82	13,15	19,88
Heavy	0,24	0,50	0,88	1,33	1,87	2,83	3,97	6,77	10,24	14,36	17,45	26,38
2½" DN 65												
Standard	0,05	0,11	0,20	0,29	0,41	0,62	0,80	1,48	2,24	3,14	3,81	5,77
Standard+	0,06	0,13	0,23	0,35	0,49	0,75	1,04	1,78	2,70	3,78	4,60	6,95
Heavy	0,07	0,16	0,27	0,41	0,58	0,88	1,24	2,12	3,20	4,49	5,46	8,25
3" DN 80												
Standard	0,02	0,05	0,09	0,13	0,19	0,29	0,40	0,70	1,05	1,47	1,79	2,70
Standard+	0,02	0,06	0,10	0,16	0,22	0,33	0,47	0,80	1,22	1,71	2,08	3,14
Heavy	0,03	0,07	0,12	0,18	0,26	0,40	0,55	0,94	1,42	1,99	2,43	3,67
4" DN 100												
Standard	0,01	0,02	0,02	0,03	0,05	0,07	0,11	0,18	0,28	0,41	0,48	0,73
Standard+	0,01	0,02	0,02	0,04	0,06	0,09	0,13	0,22	0,34	0,48	0,58	0,88
Heavy	0,01	0,02	0,03	0,05	0,07	0,11	0,16	0,27	0,41	0,58	0,71	1,06
5" DN 125												
Standard	0,01	0,01	0,01	0,01	0,02	0,03	0,04	0,06	0,10	0,14	0,17	0,26
Standard+	0,01	0,01	0,01	0,01	0,02	0,03	0,04	0,06	0,10	0,17	0,19	0,35
Heavy	0,01	0,01	0,01	0,01	0,02	0,03	0,04	0,06	0,10	0,21	0,35	0,45

Although the piping is self-supporting, it is necessary to support the pump by means of a safety rope to prevent it from falling off. The use of check valves is also necessary.

The installation of pump guards can prevent the pump from falling in the event of inclement weather in the well.

Thread lower adaptor to pump outlet.

Screw in the first PYD pipe section.

Attachment of the motor guard to the lower adapter.

Detail of the pin in the engine guard brace.

Insert lower adaptor at pump outlet.

Lower the pump by screwing in the pipe sections.

Finish by screwing on the top adaptor.

Attach the suspension system and let it rest in the well.

You can watch the video of the complete process on our website.

Grease or oil should not be used to lubricate the rocks during assembly, as this could chemically attack the joints. The joints should simply be cleaned with water to avoid the presence of foreign bodies.

PUMP AND PIPE SAFETY AGAINST DRY RUNNING

- In wells with very low output it is normal for the pump to run out of supply and sometimes start up dry, this can overheat the pipe sections closest to the electric pump. A correct evaluation of the drilling performance must be carried out. Start-ups should be scheduled on a timed basis, controlling well recovery times. These measures ensure that the pump never runs dry.

- During dry running it is common to cause damage to the pipes closest to the electric pump drive, another way to avoid damage to the pipes is to install an extension or spool immediately to the electric pump drive, so that it dissipates most of the temperature generated by the dry friction.

- Another way to control start-up times is to install a valve at the outlet of the well and keep it partially open, thus limiting the flow rate and extending the operating period.

- Whenever there is a dry running problem, there is always the possibility of deforming the pipe sections closest to the electric pump.

In any case of deformation of pipes other than those closest to the electric pump, it is clearly an erroneous selection of pipes that have suffered excess pressure.

ACTIONS AGAINST OVERHEATING

In extreme cases where dry running is common, with the possibility of damaging the pipes or any part of the installation, or if the water to be pumped is above the recommended temperature, it is necessary to contact our technical assistance department to assess the situation and look for specific solutions for each case.

WATER HAMMER PREVENTION

A non-return valve should always be installed on the discharge side of the electric pump and, in the case of deep piping installations, it is recommended that non-return valves be installed every 100 metres of piping.

A single non-return valve should not be installed in the highest part of the installation. If it is necessary to install a non-return valve in the highest part of the installation, the non-return valve installed in the impulsion of the electric pump must be eliminated, as the vacuum created by the falling weight of the water column can break the highest sections of pipe, leaving the whole installation exposed to detachment.

Intertek

Certificate of Registration

The following organization's quality management system has been assessed and registered by Intertek Systems Certification as conforming to the requirements of:

ISO 9001:2008

Certificate Number
07Q0751

Certificate Issue Date
June 08, 2012

Certificate Expiry Date
June 07, 2015

Organization:

Ashirvad Pipes Pvt. Ltd.

Plot No. 4B, Attibele Industrial Area, Hosur Road, Bangalore - 562 107, Karnataka, India

The Quality Management System is applicable to:

Manufacture of unplasticised PVC pipes upto 280 mm diameter for submersible pump/bore wells.
Manufacture of lead free unplasticised
PVC pipes and fittings for plumbing applications as below:
Pipes:
Schedule 40 as per ASTM D 1785 for ½" to 4" sizes
Schedule 80 as per ASTM D 1785 for ½" to 4" sizes
Pipe fittings:
Schedule 40 as per ASTM D 2466 for 2½" to 4" sizes
Schedule 80 as per ASTM D 2467 for ½" to 4" sizes
Manufacture of CPVC pipes and fittings upto 100 mm (NB) for use in hot and cold water plumbing applications as below:
Pipes:
SDR 11 and SDR 13.5 as per IS 15778 for ½" to 2" sizes.
SDR 17 pipes as per IS 15778 for ½" to 4" sizes.
Pipe Fittings:
SDR 11 as per ASTM D 2846 for ½" to 2" sizes.
Schedule 40 as per ASTM F 438 for 2 ½" to 4" sizes.
Schedule 80 as per ASTM F 439 for 2 ½" to 4" sizes.

MGMT. SYS. RvA C 216

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The validity of the certificate is subject to regular surveillance audits. For the current status of the certificate please visit "Certificate Validation" on our website http://www.intertek.com/systems-certification

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