FLEXIBILITY IS OUR STRENGTH

RAKSHA

SHAND GROUP

SINCE 1977

YOUR TRUST

RAKSHA®

OUR GUARANTEE

Jeevan bhar ki suraksha

COLUMN / RISER / DROP PIPES TECHNICAL MANUAL

ISO 9001: 2008 Certified Company

M.R.O. Technology Resists high Impact

SHAND GROUP

Manufacturing Plant, Roorkee

The Legacy

Established during the year 1977 by Group Chairman Mr. Shantilal Shand. He is a humble entrepreneur who has been all along a trendsetter and visionary in the PVC Pipe Industry. Under his vision & philosophy SHAND GROUP with core brand name "RAKSHA" has grown leaps & bounds in the subsequent years.The group owes its growth to the remarkable leadership & business acumen of the chairman, who has been a fastidious achiever and is involved in the company's strategic planning. He is fully dedicated to accomplish the Group's long-term mission. He is mentor to the group and leads by example. Today, he is involved in many philanthropic activities and is associated with number of social welfare organizations across the country.

In the process to take the organization to newer horizons, the chairman is very well supported by the core team of ambitious, enthusiastic & visionary directors Mr. Sanjay Shand and Mr. Ajay Shand. They have been leading dedicated team of professionals who work relentlessly to achieve the milestones in the fast growing organization.

Based at Bangalore, southern part of India, the organization has always been pioneer in bringing the right technology with upgradations to cater to constantly evolving global scenario in terms of applications and requirements of PVC Pipes. The vision of the management with focus and commitment towards "Quality at its best" have been the building blocks of the organization

Corporate Office, Bangalore

Former Vice President of India with the Chairman

Strength

The Group consists of six manufacturing units located at Bangalore, Daman and Roorkee. It has a vast distribution network spread throughout the country which ensures quick availability of the products to the customers. Together with manufacturing experience of more than three decades, the latest technology and state-of-art machinery, Raksha product's ensures the highest standards of consistent quality.

All the products of the Group undergo stringent quality control and testing parameters. The R&D department constantly endeavors to develop new products and innovate continuously. The improvement in the products with better features and characteristics enable the group to compete at a global stage.

The customer care department ensures quick response to customers and provide significant resources for better services from experienced team of professionals.

An ISO Company

Our organization is ISO 9001 : 2008 certified and many of our products are approved by Bureau of Indian Standards (BIS). The hallmark of excellence and passion to rise & serve, excel & grow, perform & prove has placed the organisation on the path of tremendous success & growth.

The company manufactures premium quality products under the popular brand names of:

RAKSHA, AaSAaN FIT, DUROFLEX, SONAFLEX, SUPER SANFLEX, SANJAYFLEX, DUROLON, SUPERLON & DAYLON.

YOUR TRUST

RAKSHA

OUR GUARANTEE

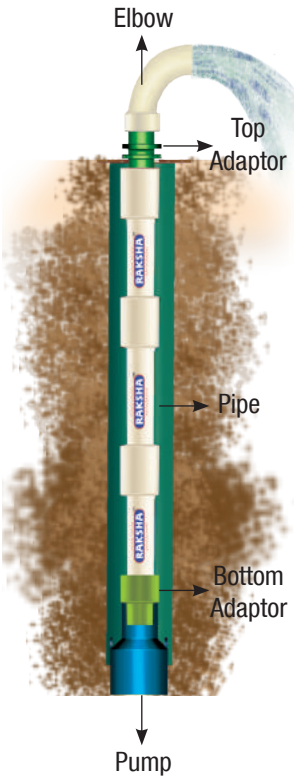
Raksha uPVC Column/ Riser/ Drop Pipes are meticulously designed for bore well submersible pumps. The properties and advantages of these products have enabled them to replace the galvanized steel pipes for column/riser/drop applications. Our high performance Pipes are most preferred amongst the widely used uPVC Column Pipes application.

Raksha pipes blend the combination of technology and quality that guarantees trouble free performance. Stringent quality check is done at every stage of production that ensures the highest standard which forms the hall mark of Raksha uPVC Column Pipes quality.

Raksha brings best-in-class expertise and an unrivalled passion for customer satisfaction. Raksha's portfolio represent one of the most extensive and diverse product range.

ADVANTAGES

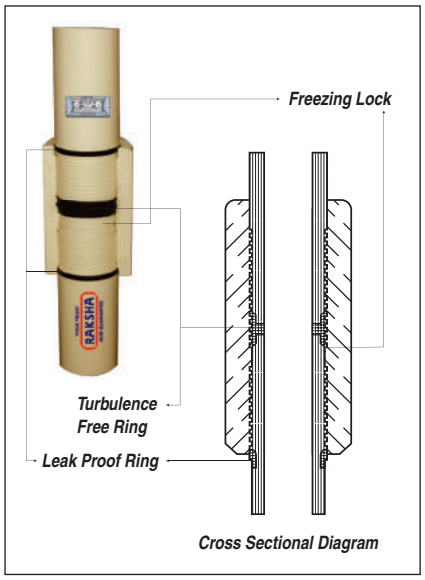
1. Long Life : Durable
2. Cost Saver : Cost economics/effective
3. Non Toxic: Purity to water is guaranteed
4. Power Saver : Energy Efficient
5. Moisture Proof : Weather resistant
6. Tough & Strong : Reliable
7. Termite Proof : Long life
8. Impact Resistant : Non breakable
9. Light Weight, thus easy handling & installation
10. Self-Extinguishing
11. Wear & abrasion resistant
12. Smooth internal surface and hence reduced frictional loss leading to higher discharge
13. No electrolytic/ galvanic deposition/ erosion since made of inert material
14. High thermal & electrical insulation
15. Quick & Easy coupling between pipes



APPLICATIONS

1. Water rising for submersible pumps used for irrigation, domestic, industrial and chemical applications
2. Water supplies for domestic usage
3. As being scratch and corrosion resistant, best suited for sandy, salty & chemically aggressive water
4. Best substitute for ERW, HDPE, MS, GI & SS Column pipes
5. Gas & Oil pipe lines
6. Industrial effluent disposal lines

SALIENT FEATURES



Freezing Lock System

Raksha uPVC Column Pipes have a unique 'Freezing Lock' type of locking system between the pipe and the coupler. This is specially designed for extra safety and versatility which does not allow the coupler to get detached from the pipe during installation and removal of pumps. It also avoids column slippage during the operation of the system. This system is applicable for all sizes ranging from 33mm (1") to 140mm (5") Outer Diameter.

Turbulence Free & Leak Proof Ring

Raksha Pipes are incorporated with specially designed Turbulence Free Ring in between the pipes inside the coupler, which fills the gap and prevent it from sudden expansion. It also absorbs the vibration caused due to high pump pressure. Therefore resulting in a smooth flow and more discharge of water with less energy consumption. The Ring is provided at the end of the threads which arrests total leakage. Combination of the above Turbulence Free Ring & Leak Proof Ring provides a 100% leak proof system and also enhances the thrust bearing & bush life of the pump set.

M.R.O. Technology

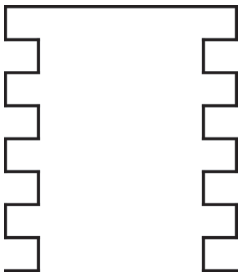
Raksha uses the highly acclaimed world class M.R.O. (Molecular Reorientation) technology for its column pipes manufacturing process. This highly proven technology produces the best quality pipes which resist fracture due to impact and survive in adverse operating conditions. Raksha combines this technology with its state of the art tool design which gives a perfect blend of product advantage wherein the pipes are produced to withstand the maximum high tensile load.

- PVC Pipe expanded in this manner becomes oriented, with enhanced mechanical property levels in the circumferential direction.
- The pipe is thus capable of sustaining greater hoop tensile stress without failure.
- The extrusion and orientation processes have been combined into a single operation.
- With this process theoretical strength is retained and have no shrinkage.

Quality & Manufacturing Technology

Raksha's commitment to Quality and continual improvement is demonstrated by the investment in advanced processes / technology and systems. The systems are designed by incorporating strict quality checks right from the procurement, receipt inspection, various stages of process , final dispatch inspection including care during transportation by trained and experienced personnel. The state of the art, fully equipped laboratory supports the purpose of achieving high standards of Quality. The systems backed by modern and updated technology extrusion machines have resulted in best in class column pipes delivering trouble-free performance of the pipes in the field. Attention to detail spans not only to the pipe manufacturing process but is extended to the threads which are machined using high precision CNC machines to give high load carrying and leak proof joints under harsh operating conditions and always remain intact even in higher depths.

Raksha's modern production facilities, uncompromising quality with highly experienced and skilled personnel ensure that the best quality column pipes are produced and cater to global markets.



Square Threads

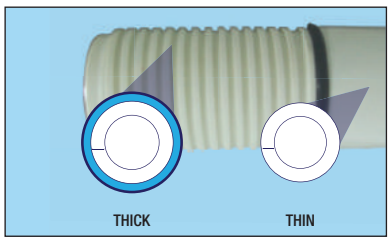
The coupler and pipe have square threads which are capable of taking high load with no slippage of threads. They can withstand the forward and reverse torque conditions created by the starting / stoppage of the motor.They are machined using special tools on CNC machine to maintain accurate dimensions for easy fitment.

Special Compound

Special Compound is used to manufacture the pipes which always ensure that the pipes and the threads do not turn brittle, break or chip during the usage of its entire life span. The pipes have high tensile strength and the capacity to withstand higher hydrostatic pressure. These pipes have smoother inner surface which results in minimum frictional loss giving better discharge during usage.

Special Features

Raksha column pipes have some special features to meet the performance requirements during operation. The pipe at the bottom level which is connected to the pump has the capability to withstand the high hydrostatic pressure. Apart from this, the top most pipe has the capability to withstand the entire load of the column filled with water and also the weight of the pump.



Retention of pipe strength :

Raksha ensures that pipe strength is not compromised due to the loss of material on account of threads. To compensate for loss of material due to threads the thickness of the pipe in the way of threads has been increased. Such a small increase for a limited length is provided to ensure not only smooth flow but also very negligible head loss.

Reliability

The key to reliability is in the process of manufacturing. The pipe must be free from material and manufacturing defects that will be revealed during its performance. Applying high standards of quality control and stringent quality assurance procedures at all stages of manufacturing processes make Raksha Column Pipes most durable and reliable.

The basic attributes of Raksha Column Pipes are quite simple - Performance Capability and Long -Term Reliability. Raksha has the best load carrying capacity for which they are designed to excel.

Display of Design Duty

Raksha is the only column pipe in india which displays the designed duty in terms of safe flow (LPS) and Head Load capacity on each and every pipe.

Thread Caps

Raksha provides thread caps for each and every pipe to protect thread damage during transportation and handling.

COMPARATIVE CHART

Comparative chart of characteristics of Raksha Column pipes with Galvanised Steel pipes and HDPE pipes

Sr.	Characteristic Features required for Drop/ Riser Pipes	Raksha Pipes	Galvanized Steel Pipes	HDPE PIPES
1	Rigidity	Pipes are rigid	Pipes are rigid	Not rigid as compared to Column Pipe. Not right choice for Drop/Riser application as they tend to elongate & possibility of breakage is high
2	Load Carrying Capacity	High Load Carrying Capacity due to inherent strength	High Load Carrying Capacity due to heavy strength	Less Load Carrying Capacity due to its flexibility. In the long run, with the heavy weight of the pump it elongates & breakage chances are more.
3	More reliable threading joints. Anti rust and anti corrosion.	CNC machine cut square threads which are superior than any other to hold the weight without slippage. It is totally anti rust and anti corrosion for its entire life span.	The threads have to be reworked after few years due to corrosion & rusting problem. The pipe length is reduced during this process as the customer has to cut the corroded portion of thread area. It involves additional expenses for the customer.	Here it is only a normal & simple push type fitment with any fixture as the threading formulation is not possible due to its softness character. So the connection between the pipe & the pump is weak.
4	Turbulence Free & Totally Leak Proof.	Special design Turbulence Free Ring is provided to absorb the turbulence caused by pump pressure. Also high quality leak proof profile ring is provided to arrest total leakage.	There is no total leak proof system provided. The threads are not pressure tight and does not have any rubber profile ring sealing.	There is no selective method provided to absorb the turbulence. So wherever the pipe is weak in the entire column, cracks will occur and leakage is caused. Due to push type fitment between the fixture and the pipe it is prone to leak in the due course of time in that portion also.
5	Low Frictional Loss	Water discharge is more (10 to 30%) due to its special feature of smooth internal surface. Due to smooth internal surface the friction is low which results in low head loss.	More head loss due to high friction and so discharge is affected. Friction is high due to rough Internal surface	Over all discharge is less because the inner surface is not as smooth when compared to uPVC Column Pipes.
6	Ease of Handling, Installation & Transportation.	Pipes are of light weight which results in easy transportation, installation & removal. The length of each pipe is only 3 metres standard length and so that handling & fitment is easy	Pipes are of heavy weight which requires tedious efforts and more cautiousness for transportation, installation & removal even for lower depth bore wells.	Comes in full length coil for the entire borewell length upto which it has to be installed. More chances of pipe damage during errection & lifting process. Rolling back after removal from bore well is also a very tedious job as it will become hard once used.
7	Non Conductivity & Long Life Cycle.	Pipes do not react with any acidic or alkaline substance in water. Hence replacement of pipes not required. Raksha Pipes have long life span up to 50 years	Replacement of pipes required at regular intervals since it is prone to electro chemical reactions. Pipes are reactive to acidic and alkaline substances which reduces the life of the pipes.	Thin walled HDPE pipes cannot be used for high pressure application in bore wells. They break away easily. When high thickness pipes are used for higher depth the discharge is reduced.

Chart 1

Measurement of pressure drop in Column Pipe with couplers

(for M/s Shand Pipe Industry Pvt.Ltd, 209/394, Chandapura village, Attibele, Anekal, Bangalore.)

Aim:

To evaluate the pressure drop in three different types of pipe column (including couplers). The three different types given to us by M/s Shand Pipe Industry Pvt Ltd are:

1. "Raksha uPVC Column Pipe with turbulence free ring"
2. "uPVC Column Pipe without turbulence free ring"
3. "New Galvanized Metal Pipe column (GI)"

Experimental setup and procedure:

The experiment was carried out 23rd November 2011 in the department of mechanical Engineering, Fluid mechanics laboratory. To evaluate the pressure drop the pipes (including couplers) were arranged horizontally and the delivery line of submersible pump (supplied by M/s Shand Pipe Industry Pvt Ltd) was connected to pipe column as shown in Figure 1. The length of each pipe column supplied was 6.0 m and length of pipe between two pressure taps was 6.280 m. Flow measurement was carried out to measure the volumetric flow rate and the pressure drop was measured using a mercury manometer and readings were recorded. Figure 2a, 2b & 2c show the pipe column with coupler joints for the three cases: (1) "RAKSHA uPVC Column pipe with turbulence free ring" (2) "uPVC column pipe without turbulence free ring" (3) " New Galvanized Metal Pipe column (GI) " Figure 3a & 3b show the coupler assembly view for (1) "RAKSHA uPVC column pipe with turbulence free ring" (2) "uPVC column pipe without turbulence free ring"

Details of submersible Pump:

Table 1

Sl No	Make	KW	Amp	HP	LPS
1	CRI	5.5	16.8	7.5	5.0

Details of Pipe columns including coupler joints

Table 2

Sl No	Pipe Details	Raksha uPVC Column pipe with turbulence free ring	uPVC Column pipe without turbulence free ring	New GI Pipe Column
1	Length	6.000 m	6.000 m	6.000 m
2	Length between two pressure taps	6.280 m	6.280 m	6.280 m
3	Average inner Diameter	51.25 mm	51.25 mm	51.8 mm
4	No of Coupler used between two pressure taps	2	2	0

Results:

Based on the above experimental setup we measured the result for three different types of pipe columns as presented below. These result are in horizontal condition and show the pressure difference measured between two pressure taps.

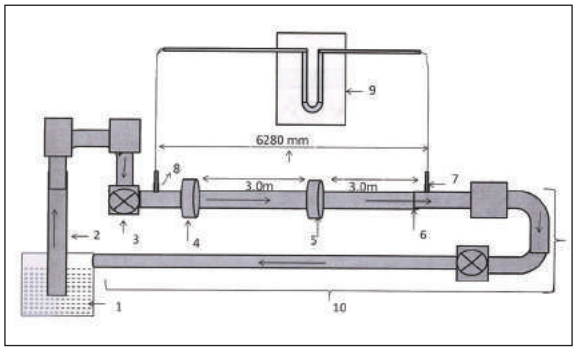
Horizontal condition:

Table 3

SI No	Parameters	Raksha uPVC Column pipe with turbulence free ring	uPVC Column pipe without turbulence free ring	New GI Pipe Column
1	Flow rate Q (lps)	4.768	4.731	4.733
2	Average velocity, U (m/s)	2.311	2.293	2.245
3	U tube manometer reading (cm of Hg)	5.1	5.6	5.3
4	Pressure difference ▲p (Pa)	6799	7466	7066
	Loss factor (K=▲p/0.5 pU)	2.55	2.84	2.80
5	Estimated power obtained from pressure difference Q.▲p (w)	32.42	35.32	33.44
6	Reynolds numbers	1,28,936	1,27,926	1,26,625
7	Kinematic viscosity of water at 25°C = 0.91875 X 10^{-6} m^2/s			

Conclusions

- It can observed from table 3 corresponding to the horizontal condition that the loss factor (K) for the "RAKSHA uPVC Column Pipe with turbulence free ring" is about 10% lower than for the "uPVC column pipe without turbulence free ring".
- The loss factor for the GI pipe in table 3 is similar to the "uPVC Column pipe without turbulence free ring" but there were no couplers in the GI pipe case, as shown in figure 2(c)
- The estimated power obtained from pressure difference for the "RAKSHA uPVC Column pipe with turbulence free ring" is about 8 to 9% lower than for the "uPVC Column pipe without turbulence free ring".



1.Tank, 2.Submersible pump unit, 3. Control valve, 4,5. PVC coupler, 6. Collar joints 7.& 8. pressure taps, 9. Diff. Manometer 10. Flexible pipe

Figure 1 flow measurement layout

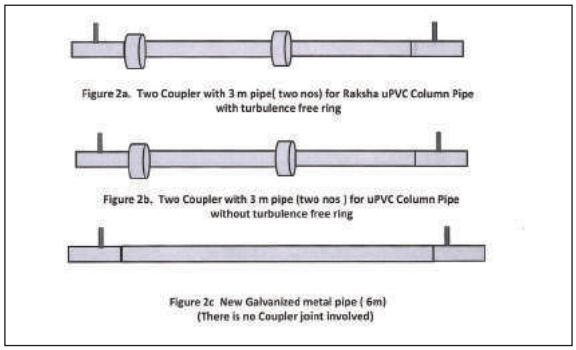


Figure 2a. Two Coupler with 3 m pipe(two nos) for Raksha uPVC Column Pipe with turbulence free ring

Figure 2b. Two Coupler with 3 m pipe (two nos) for uPVC Column Pipe without turbulence free ring

Figure 2c New Galvanized metal pipe (6m) (There is no Coupler joint involved)

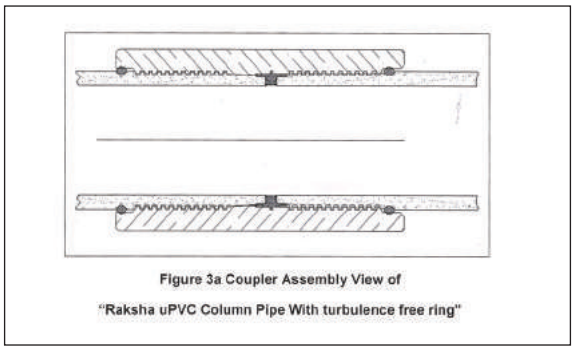


Figure 3a Coupler Assembly View of "Raksha uPVC Column Pipe With turbulence free ring"

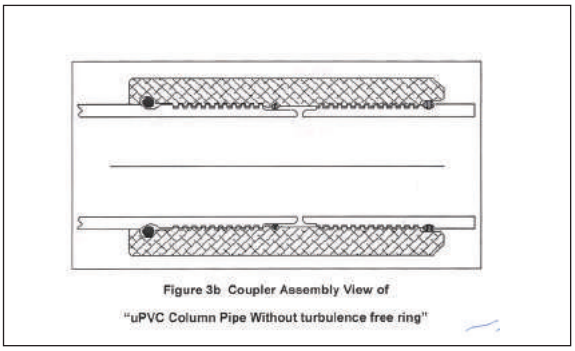


Figure 3b Coupler Assembly View of "uPVC Column Pipe Without turbulence free ring"

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Comparative Study of Equivalent Pressure Drop in Pipe and Couplers

(for M/s Shand Pipe Industry Pvt.Ltd, 209/394, Chandapura village, Attibele, Anekal, Bangalore.)

Experimental setup:

The pipe and coupler supplied by M/s Shand Group of Industries. 209/394. Chandapura village, Attibele, Anekal Taluk, Bangalore were taken for experimental setup in hydraulics laboratory of civil Engineering department. UVCE. Jnanabharathi. Bangalore university . Bangalore as shown in figure 1 the observation carried out and result were arrived are as given below.

Experimental procedure:

The given pipe and coupler experimental setup were arranged in the hydraulies Laboratory and pressure differences were observed using differential U-tube mercury manometer as shown in Figure I . The experiment was carried out to note the delivery pressure head of submersible pump and discharge using water meter.

The observation were taken under steady condition for 60 minutes with intermittent readings at every 10 minutes. Totally 6 readings were taken with usual precautions.

Raksha coupler pipe assembly:

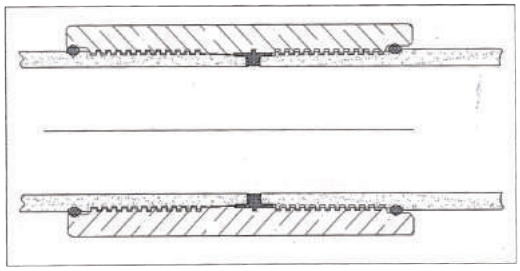

Fig. 2: Freezing view of RAKSHA coupler pipe assembly

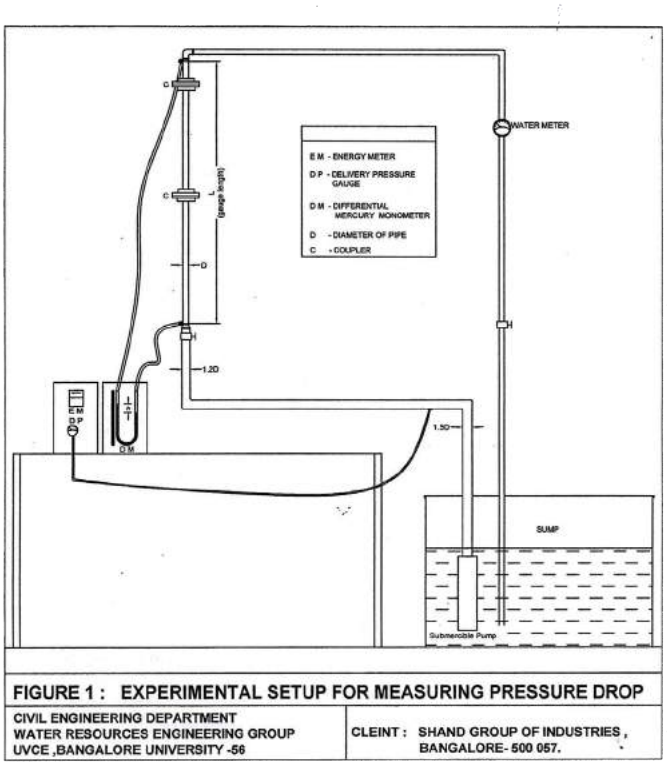

FIGURE 1 : EXPERIMENTAL SETUP FOR MEASURING PRESSURE DROP

CIVIL ENGINEERING DEPARTMENT WATER RESOURCES ENGINEERING GROUP UVCE ,BANGALORE UNIVERSITY -56	CLEINT : SHAND GROUP OF INDUSTRIES , BANGALORE- 500 057.

Date of testing 15th - 16th September 2011

"Comparative study of Equivalent pressure drop in pipe and coupler" result relates only for materials supplied by M/s Shand Pipe Industry Pvt.Ltd.. 209/394, Chandapura Village, Attibele, Anekal Taluk, Bangalore.

Observations statement:

Basic information:

Submersible pump details:

Make : CRI
SL No : 10211815877
Size : 50 mm internal diameter
H.P : 7.5

KW : 5.5
Amp : 16.8
Head : 60 meters
LPS : 5 Litre/second

Sl No	Parameters	Units	Raksha Brand	Other Brand
1	Delivery Head	KSC	0.85	0.75 to 0.91 Fluctuating during experimentation
2	Length of pipe and coupler (combined) i.e. 3m x 2 nos	m	6.0	6.0
3	Pipe Details: Internal diameter :Threading end Internal diameter :unthreading end outer diameter	 mm mm mm	 47.8 51.8 60	 47.8 51 8 60
4	Average drop of pressure between the pressure tappings	cm of Hg	4.183	4.433
5	**Water discharged in one hour**	**Litres**	**17772**	**17585**
6	**Discharge**	**Litres/second**	**4.94**	**4.88**
7	**Power required (estimated based on pressure drop using U-tube diffrencial manometer)**	**kw/hour**	**2.553**	**2.677**
8	Velocity of flow	m/s	2.751	2.722
9	Kinematic viscocity of water @30 degree temp	Sq meter/sec	8.04E-47	8.04E-07
10	Reynolds Number		163532	161812

Results:

It is observed that, the power consumption for indentical setup

- Raksha pipe and coupler consumes 2.553 kW/hour
- Competitor's pipe and coupler consumes 2.677 kW/hour

It is observed that, quantum of water extracted from submersible pump under identical setup.

- Raksha pipe and coupler discharges 4.94 litres /second
- Competitor's pipe and coupler discharges 4.88 litres/second

Reynolds number for the identical setup

- Raksha pipe and coupler setup 163532
- Competitor's pipe and coupler setup 161812

Date of testing 15th - 16th September 2011 "Comparative study of Equivalent pressure drop in pipe and coupler" result relates only for materials supplied by M/s Shand Pipe Industry Pvt.Ltd. 209/394, Chandapura Village, Attibele, Anekal Taluk, Bangalore

(TESTED BY)
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Department of Civil Engineering
UVCE, Bangalore University,
Jnanabharathi, Bangalore-560 056

(Dr. Shivkumar J. Nyamathi)

WHY ONLY RAKSHA?

- Raksha Column Pipes are made with world class M.R.O. (Molecular Re-orientation) technology.
- It has a specially designed turbulence free leak proof profile ring which enhances the life of thrust bearing bush of submersible motor and prevent from sudden expansion due to the gap in between the pipes.
- High quality, consistent and durable.
- Free from corrosion and electrolytic effect even after years of usage.
- Best suited for deep bore well (up to 400 metres) and can bear extra load in comparison to other pipes.
- The coupler and pipes are specially designed with Freezing Lock which provides extra safety.
- Specially designed adaptor for smooth functioning which helps in restoring bore well.
- The recommended safe installation head in metres is displayed on every pipe.
- Trained technician team at every distribution point helps to choose the right pipes and guide for installation procedures. And also helps in load/ head calculation and rescue operation required, if any at critical times.
- Wide range of products in sizes 33mm (1") to 140mm (5") in outer diameter.

Types & Sizes

Raksha manufactures various sizes of Column Pipes - 1", 11/4", 11/2", 2", 21/2", 3", 4" and 5".Types of pipes are V-4, Medium, Standard, Standard Gold, Heavy and Super Heavy in different head load capacities from 75 to 400 metres.

SAVE WATER METAL

FOR A BETTER NATION

TECHNICAL SPECIFICATIONS

LOAD & PRESSURE CHART

TYPE & SIZE OD - Outside Dia ND - Nominal Dia	ULIMATE BREAKING LOAD (Kgs)	SAFE PULLING LOAD WITH CHAIN PULLEY (Kgs)	SAFE ALLOWABLE HYDROSTATIC PRESSURE (Kg/cm^2)	SAFE TOTAL PUMP DELIVERY HEAD (metres)
OD: 33 mm ND: 25 mm (1")				
V4 - 12.5 Kg/cm^2	850	500	12.5	125
V4 - 15 Kg/cm^2	1000	600	15	150
Medium	1350	800	21	210
Standard	2000	1300	30	300
OD: 42 mm ND: 32 mm (1¼")				
V4 - 12.5 Kg/cm^2	1300	800	12.5	125
V4 - 15 Kg/cm^2	1600	1000	15	150
Medium	1900	1100	20	200
Standard	2650	1600	25	250
Heavy	3200	1850	35	350
Super Heavy	3950	2350	40	400
OD: 48 mm ND: 40 mm (1½")				
V4 - 12.5 Kg/cm^2	1700	1000	12.5	125
V4 - 15 Kg/cm^2	2000	1200	15	150
Medium	2500	1450	18	180
Standard	3050	1800	26	260
Heavy	4100	2400	35	350
Super Heavy	5300	3100	40	400
OD: 60 mm ND: 50 mm (2")				
Medium	2600	1500	13	130
Standard	3750	2150	20	200
Standard Gold	4250	2400	23	230
Heavy	4800	2850	27	270
Super Heavy	5700	3450	35	350
OD: 75 mm ND: 65 mm (2½")				
Medium	3100	1900	10	100
Standard	4800	2750	16	160
Standard Gold	6000	3550	21	210
Heavy	7100	4300	26	260
Super Heavy - 35 Kg/cm^2	9100	5350	35	350
Super Heavy - 40 Kg/cm^2	10400	6200	40	400
OD: 88 mm ND: 80 mm (3")				
Medium	4600	2750	11	110
Standard	6850	4000	17	170
Standard Gold	8250	4900	21	210
Heavy	9700	5750	26	260
Super Heavy	12500	7400	35	350
OD: 113 mm ND: 100 mm (4")				
Medium	7000	4100	10	100
Standard	10100	6000	15	150
Standard Gold	13150	7700	21	210
Heavy	16100	9500	26	260
Super Heavy	20800	12250	35	350
OD: 140 mm ND: 125 mm (5")				
Standard	16500	9800	16	160
Standard Gold	20850	12350	21	210
Heavy	24300	14750	26	260
Super Heavy	30600	18650	35	350

Chart 2

Note

- Other pressure rating pipes can be supplied upon specific request.
- Total Delivery Head is the point at which the discharge of the pump becomes zero.
- Refer the pump manufacturer's performance chart for total capacity of the pump.
- Any designs & specification are subject to change without any prior notice.

TECHNICAL SPECIFICATIONS

WALL THICKNESS CHART

TYPE & SIZE OD - Outside Dia ND - Nominal Dia	END THICKNESS (mm)		BARREL THICKNESS (mm)		SIZE Outer Dia (OD)		NORMAL EFFECTIVE LENGTH (mm)	THICK PORTION OF BOTH SIDES (mm)
	Min	Max	Min	Max	Min	Max		
OD: 33 mm ND: 25 mm (1")								
V4 - 12.5 Kg/cm²(Socket Type)	3.90	4.70	1.60	2.50	32.70	33.20	3000 +/- 10	120-120
V4 - 12.5 Kg/cm²(Belling Type)	3.90	4.70	1.60	2.50	32.70	33.20	3000 +/- 10	120-120
V4 - 15 Kg/cm² (Socket Type)	3.00	4.00	1.90	2.90	32.70	33.20	3000 +/- 10	200-200
V4 - 15 Kg/cm² (Belling Type)	3.00	4.00	1.90	2.90	32.70	33.20	3000 +/- 10	200-200
Medium (Socket Type)	3.80	4.60	2.50	3.30	32.70	33.20	3000 +/- 10	200-200
Medium (Belling Type)	3.80	4.60	2.50	3.30	32.70	33.20	3000 +/- 10	200-200
Standard (Socket Type)	5.20	6.00	3.30	4.00	32.70	33.20	3000 +/- 10	200-200
Standard (Belling Type)	5.20	6.00	3.30	4.00	32.70	33.20	3000 +/- 10	200-200
OD: 42 mm ND: 32 mm (1¼")								
V4 - 12.5 Kg/cm²(Socket Type)	4.20	5.20	2.00	3.00	41.60	42.20	3000 +/- 10	130-130
V4 - 12.5 Kg/cm²(Belling Type)	4.20	5.20	2.00	3.00	41.60	42.20	3000 +/- 10	130-130
V4 - 15 Kg/cm² (Socket Type)	3.70	4.80	2.50	3.20	41.60	42.20	3000 +/- 10	200-200
V4 - 15 Kg/cm² (Belling Type)	3.70	4.80	2.50	3.20	41.60	42.20	3000 +/- 10	200-200
Medium (Socket Type)	4.20	5.10	2.70	3.60	41.60	42.00	3000 +/- 10	200.200
Medium (Belling Type)	4.20	5.10	2.70	3.60	41.60	42.20	3000 +/- 10	200-200
Standard (Socket Type)	5.40	6.40	3.50	4.30	41.60	42.20	3000 +/- 10	200-200
Standard (Belling Type)	5.40	6.40	3.50	4.30	41.60	42.20	3000 +/- 10	200-200
Heavy(Socket Type)	6.50	7.40	4.70	5.40	41.60	42.20	3000 +/- 10	200-200
Heavy (Belling Type)	6.50	7.40	4.70	5.40	41.60	42.20	3000 +/- 10	200-200
Super Heavy (Socket Type)	7.70	8.60	5.40	6.20	41.60	42.20	3000 +/- 10	200-200
OD: 48 mm ND: 40 mm (1½")								
V4 - 12.5 Kg/cm²(Socket Type)	4.70	5.60	2.40	3.20	47.60	48.20	3000 +/- 10	130-130
V4 - 12.5 Kg/cm²(Belling Type)	4.70	5.60	2.40	3.20	47.60	48.20	3000 +/- 10	130-130
V4 - 15 Kg/cm² (Socket Type)	4.10	5.10	2.80	3.80	47.60	48.20	3000 +/- 10	200-200
V4 - 15 Kg/cm² (Belling Type)	4.40	5.10	2.80	3.80	47.60	48.20	3000 +/- 10	200.200
Medium (Socket Type)	5.00	5.90	3.10	3.90	47.60	48.20	3000 +/- 10	200-200
Medium (Belling Type)	5.00	5.90	3.10	3.90	47.60	48.20	3000 +/- 10	200-200
Standard (Socket Type)	5.50	6.60	4.20	5.10	47.60	48.20	3000 +/- 10	200-200
Standard (Belling Type)	5.50	6.60	4.20	5.10	47.60	48.20	3000 +/- 10	200-200
Heavy(Socket Type)	7.70	8.40	5.50	6.40	47.60	48.20	3000 +/- 10	200-200
Heavy (Belling Type)	7.70	8.40	5.50	6.40	47.60	48.20	3000 +/- 10	200-200
Super Heavy (Socket Type)	8.30	9.20	6.10	7.00	47.60	48.20	3000 +/- 10	200-200
OD: 60 mm ND: 50 mm (2")								
Medium (Socket Type)	5.10	6.20	2.60	3.40	59.60	60.20	3000 +/- 10	200-200
Medium (Belling Type)	5.10	6.20	2.60	3.40	59.60	60.20	3000 +/- 10	200-200
Standard (Socket Type)	6.20	7.70	4.00	5.00	59.60	60.20	3000 +/- 10	200-200
Standard (Belling Type)	6.20	7.70	4.00	5.00	59.60	60.20	3000 +/- 10	200-200
Standard Gold (Socket Type)	7.00	8.30	4.90	6.00	59.60	60.20	3000 +/- 10	200-200
Heavy (Socket Type)	7.90	9.80	5.50	6.80	59.60	60.20	3000 +/- 10	200-200
Super Heavy (Socket Type)	8.80	10.40	6.80	8.00	59.60	60.20	3000 +/- 10	200-200
OD: 75 mm ND: 65 mm (2½")								
Medium (Socket Type)	5.20	6.40	2.60	3.40	74.60	75.20	3000 +/- 10	200-200
Standard (Socket Type)	6.80	8.30	4.10	5.20	74.60	75.20	3000 +/- 10	200-200
Standard Gold (Socket Type)	8.30	9.60	5.60	6.60	74.60	75.20	3000 +/- 10	200-200
Heavy (Socket Type)	9.50	11.00	6.50	7.80	74.60	75.20	3000 +/- 10	200-200
Super Heavy - 35 Kg/Cm²	10.80	12.50	8.30	9.60	74.60	75.20	3000 +/- 10	200-200
Super Heavy - 40 Kg/Cm²	12.50	14.60	9.90	11.50	74.60	75.20	3000 +/- 10	200-200
OD: 88 mm ND: 80 mm (3")								
Medium (Socket Type)	5.90	7.20	3.30	4.10	87.60	88.20	3000 +/- 10	200-200
Standard (Socket Type)	7.40	8.80	5.20	6.50	87.60	88.20	3000 +/- 10	200-200
Standard Gold (Socket Type)	8.90	10.40	6.50	7.50	87.60	88.20	3000 +/- 10	200-200
Heavy (Socket Type)	10.00	11.90	7.20	8.80	87.60	88.20	3000 +/- 10	200-200
Super Heavy (Socket Type)	12.60	14.90	9.90	11.80	87.60	88.20	3000 +/- 10	200-200
OD: 113 mm ND: 100 mm (4")								
Medium (Socket Type)	6.40	7.60	4.20	5.20	112.60	113.30	3000 +/- 10	200-200
Standard (Socket Type)	8.20	9.60	5.60	7.10	112.60	113.30	3000 +/- 10	200-200
Standard Gold (Socket Type)	10.20	12.00	7.80	9.20	112.60	113.30	3000 +/- 10	200-200
Heavy (Socket Type)	12.00	14.00	9.40	11.40	112.60	113.30	3000 +/- 10	200-200
Super Heavy (Socket Type)	16.20	18.20	13.00	15.30	112.60	113.30	3000 +/- 10	200-200
OD: 140 mm ND: 125 mm (5")								
Standard (Socket Type)	10.50	12.80	7.80	9.20	139.60	140.20	3000 +/- 10	250-250
Standard Gold (Socket Type)	13.40	15.80	9.90	11.80	139.60	140.20	3000 +/- 10	250-250
Heavy (Socket Type)	15.50	19.00	12.00	14.50	139.60	140.20	3000 +/- 10	250-250
Super Heavy (Socket Type)	19.50	23.00	15.80	19.00	139.60	140.20	3000 +/- 10	250-250

Chart 3

Note: Any design & specification are subject to change without any prior notice.

TECHNICAL SPECIFICATIONS

FRICTIONAL HEAD LOSS

Approximate Frictional Head Loss chart for Raksha Column/Drop/Riser pipes in (m) per 100 m

SIZE	TYPE	Discharge in LPM											
		40	60	80	100	120	150	180	240	300	360	400	500
	V4 - 12.5	3.0264	6.4129	10.9255	16.5165	23.1506	34.9978	49.0551	83.5740	126.3422	177.0892	215.2460	325.3961
1"	V4 - 15	3.0202	6.4043	10.9031	16.4898	23.1034	34.9312	48.9663	83.4033	126.1018	176.7688	214.8516	325.0531
	Medium	3.4269	7.2666	12.3843	18.7258	26.2510	39.6902	55.6375	94.7993	143.3220	200.8985	244.1397	369.1070
	Standard	6.0700	12.6126	21.4952	32.5020	45.5633	68.8896	96.5690	164.5414	248.7615	348.6961	423.7490	640.6526
	V4 - 12.5	0.8727	1.8491	3.1503	4.7625	6.6753	10.0914	14.1448	24.0982	36.4302	51.0629	62.0652	93.8265
11/4"	V4 - 15	0.9115	1.9330	3.2910	4.9772	6.9734	10.5436	14.7799	25.1744	38.0625	53.3558	64.8507	98.0250
	Medium	0.9310	1.9741	3.3644	5.0871	7.1314	10.7824	15.1146	25.7534	38.9353	54.5767	66.3237	100.2726
	Standard	1.3712	2.9076	4.9554	7.4928	10.5038	15.8813	22.2623	37.9322	57.3477	80.3859	97.6881	147.6915
	Heavy	1.7896	3.7947	6.4671	9.7787	13.7084	20.7264	29.0541	49.5046	74.8433	104.9100	127.4907	192.7492
	Super Heavy	2.0245	4.2929	7.3163	11.0626	15.5083	23.4478	32.8689	56.0045	84.6703	118.6848	144.2303	218.0572
	V4 - 12.5	0.4472	0.9477	1.6147	2.4409	3.4214	5.1723	7.2499	12.3515	18.6723	26.1722	31.8114	48.0907
11/2"	V4 - 15	0.4677	0.9918	1.6886	2.5538	3.5781	5.4099	7.5836	12.9178	19.5300	27.3770	33.2751	50.2970
	Medium	0.4878	1.0343	1.7627	2.6654	3.7365	5.6493	7.9192	13.4933	20.3999	28.5951	34.7498	52.5371
	Standard	0.6192	1.3130	2.2376	3.3783	4.7431	7.1713	10.0527	17.1286	25.8958	36.2989	44.1118	66.6912
	Heavy	0.8830	1.8724	3.1910	4.8251	6.7641	10.2269	14.3361	24.4268	36.9296	51.7653	62.9072	95.1074
	Super Heavy	1.1570	2.4533	4.1810	6.3220	8.8625	13.3997	18.7836	32.0049	48.3866	67.8248	82.4234	124.6132
2"	Medium	0.1306	0.2770	0.4720	0.7138	1.0060	1.5128	2.1207	3.6134	5.4629	7.6575	9.3057	14.0690
	Standard	0.1686	0.3575	0.6093	0.9212	1.2915	1.9526	2.7372	4.6638	7.0509	9.8835	12.0108	18.1587
	Standard Gold	0.2001	0.4243	0.7231	1.0934	1.5328	2.3176	3.2488	5.5355	8.3688	11.7308	14.2557	21.5527
	Heavy	0.2251	0.4773	0.8135	1.2301	1.7244	2.6072	3.6548	6.2274	9.4148	13.1970	16.0375	24.2466
	Super Heavy	0.2935	0.6223	1.0606	1.6037	2.2481	3.3990	4.7647	8.1185	12.2739	17.2047	20.9079	31.6099
21/2"	Medium	0.0403	0.0853	0.1455	0.2199	0.3083	0.4662	0.6535	1.1135	1.6834	2.3596	2.8675	4.3353
	Standard	0.0506	0.1072	0.1828	0.2764	0.3874	0.5858	0.8211	1.3991	2.1152	2.9649	3.6031	5.4474
	Standard Gold	0.0596	0.1263	0.2152	0.3254	0.4562	0.6898	0.9670	1.6476	2.4909	3.4915	4.2431	6.4149
	Heavy	0.0716	0.1519	0.2589	0.3915	0.5488	0.8298	1.1631	1.9818	2.9963	4.1999	5.1039	7.7165
	Super Heavy 35Kg	0.0958	0.2032	0.3464	0.5237	0.7342	1.1101	1.5561	2.6514	4.0085	5.6188	6.8282	10.3233
	Super Heavy 40Kg	0.1261	0.2674	0.4557	0.6890	0.9659	1.4603	2.0471	3.4880	5.2733	7.3917	8.9827	13.5807
3"	Medium	0.0191	0.0404	0.0688	0.1041	0.1459	0.2206	0.3093	0.5270	0.7967	1.1168	1.3572	2.0519
	Standard	0.0232	0.0491	0.0837	0.1265	0.1774	0.2682	0.3759	0.6406	0.9684	1.3575	1.6496	2.4940
	Standard Gold	0.0284	0.0602	0.1025	0.1550	0.2173	0.3286	0.4607	0.7849	1.1866	1.6633	2.0214	3.0560
	Heavy	0.0311	0.0659	0.1124	0.1699	0.2382	0.3602	0.5049	0.8603	1.3007	1.8232	2.2156	3.3497
	Super Heavy	0.0451	0.0956	0.1628	0.2462	0.3452	0.5219	0.7316	1.2465	1.8846	2.6417	3.2103	4.8535
4"	Medium	0.0051	0.0108	0.0186	0.0280	0.0394	0.0597	0.0834	0.1422	0.2150	0.3023	0.3663	0.5535
	Standard	0.0064	0.0136	0.0232	0.0351	0.0492	0.0743	0.1042	0.1775	0.2684	0.3762	0.4572	0.6912
	Standard Gold	0.0080	0.0169	0.0288	0.0435	0.0610	0.0922	0.1292	0.2201	0.3328	0.4665	0.5669	0.8570
	Heavy	0.0094	0.0198	0.0338	0.0511	0.0717	0.1084	0.1520	0.2589	0.3915	0.5488	0.6669	1.0082
	Super Heavy	0.0133	0.0283	0.0482	0.0728	0.1021	0.1544	0.2164	0.3687	0.5575	0.7814	0.9496	1.4357
5"	Standard	0.0022	0.0047	0.0081	0.0123	0.0172	0.0266	0.0366	0.0622	0.0942	0.1321	0.1605	0.2426
	Standard Gold	0.0028	0.0059	0.0100	0.0151	0.0212	0.0321	0.0449	0.0766	0.1158	0.1623	0.1972	0.2982
	Heavy	0.0034	0.0072	0.0123	0.0186	0.0260	0.0394	0.0552	0.0940	0.1422	0.1993	0.2422	0.3662
	Super Heavy	0.0047	0.0100	0.0171	0.0258	0.0362	0.0548	0.0768	0.1308	0.1977	0.2771	0.3368	0.5092

Note: Any design & specification are subject to change without any prior notice.

Chart 4

Approximate Frictional Head Loss chart for Steel Pipes in metres per 100 metres

SIZE ND	Discharge in LPM											
	40	60	80	100	120	150	180	240	300	360	400	500
1½"(40mm)	1.15	2.57	4.58	7.16	10.30	16.10	23.20	41.25	64.45			
2"(50mm)	0.38	0.84	1.50	2.36	3.38	5.30	7.60	13.52	21.12	30.41	37.55	
2½"(65mm)	0.10	0.22	0.40	0.63	0.91	1.42	2.05	3.64	5.69	8.19	10.11	15.80
3"(80mm)	0.03	0.08	0.14	0.22	0.32	0.50	0.72	1.29	2.01	2.90	3.58	5.59
4"(100mm)	0.01	0.03	0.05	0.07	0.11	0.17	0.24	0.42	0.66	0.95	1.17	1.83

Chart 5

Chart No. 4 & 5 show the approximate frictional head loss chart for Raksha uPVC Column Pipes and Steel Pipes respectively.

The calculations are mentioned for 100 meters length. It can be observed from the tables that the higher diameter pipes have lesser frictional head loss. Hence the load of pump is decreased which results in longer life of pump.

Illustrates calculation of head loss and the pump capacity. following example:

Considering for 2" (60 mm OD) Raksha Standard type Column Pipe for an installation at 137 metres depth (up to ground level), the Head Loss Calculation will be as follows:

a) Head loss due to depth (i.e. the level up to installation) = 137m

b) Head loss due to friction in Raksha Column Pipe as per chart no.4, for 300 LPM discharge in 2" pipe is 7.05 metres/100m

For 137m the frictional head loss is 137/100 x 7.05 = 9.65 m

So the total head load on pump with Raksha Column Pipe = 137 + 9.65 = 146.65 m

Considering the same condition for Steel Pipe the Head Loss Calculation will be as below:

a) Head loss due to depth (i.e. the level up to installation) = 137 m

b) Head loss due to friction in Steel Pipe as per chart no.5, for 300 LPM discharge in 2" pipe is 21.12 metres/100m

For 137m the frictional head loss is 137/100 x 21.12 = 28.93 m

So the total head load on pump with Steel Pipe = 137 + 28.93 = 165.93 m

From the above example it is clear that for the same parameters Raksha Column Pipes give more water than Steel pipes. The excess water discharge will vary from 10% to 30% depending upon the depth and the pump discharge.

Due to the steady flow of water and lower head loss our customers can save on utility expenses and prolong the lifespan of pump.

ACCESSORIES

Shand Group also supplies Raksha marked bottom and top adaptors for fitment with Column/ Riser/ Drop Pipes. Bottom adaptors are available in cast iron or stainless steel which connects the bottom pipe with the submersible pump. Our bottom thread of the bottom adaptor & Top thread of the Top adaptor are 11 TPI. We also supply customised threads to meet customer's specific needs.

Note: Different length accessories is required for 1¼" to 5" Standard Gold, Heavy and Super Heavy as compared to standard pipes due to longer thread lengths.

Top Adaptors/ Connectors

Bottom Adaptors/ Connectors

Without flange

Sizes:

1", 1¼", 1½", 2", 2½", 3", 4", 5"

Length - 170mm to 205mm

With flange

Sizes:

1", 1¼", 1½", 2", 2½", 3", 4", 5"

Length - 225mm to 280mm

Expander

Sizes:

1"x1¼", 1¼"x 1½", 1½"x 2",
2"x 2½", 2½"x 3", 3"x 4", 4"x 5"

Length - 158mm to 213mm

Jigs

Inner Jig

Sizes:

1¼", 1½", 2", 2½", 3", 4", 5"

Outer Jig

Sizes:

1", 1¼", 1½", 2", 2½",3",4",5

Lowering Jig

Sizes:

1", 1¼", 1½", 2", 2½",3",4",5

Pump Guard

PIPE SELECTION

Pump Delivery Pressure

Pump Delivery Pressure is the maximum delivery head (also known as cut off head) of the pump. The maximum delivery head of the pump is nothing but the highest head of the pump (in metres) at which the water flow becomes nil.10 metres of water head is equal to pressure of 1Kg/cm^2. The maximum delivery head of the pump should not exceed the safe allowable hydrostatic pressure of the pipes as mentioned in chart no.2.

Selection Of Pipes

The Column Pipes must be selected from the various types available as per chart no.2, not exceeding the safe allowable hydrostatic pressure. Also refer chart no.6 to get an idea of suitable sizes of pipes for various Submersible Pumps. The available types of pipes are V4, Medium, Standard, Standard Gold, Heavy and Super Heavy.

Example for selection of pipes

For a total pump delivery head of 250 mtr with the pipe size of 2", we have to select Heavy type pipe and not the Standard type. Heavy type's safe total pump delivery head is 270 mtr whereas Standard type pipe's safe allowable total pump delivery head is only 200 mtr which is lesser than the pump delivery head.

Point to be noted here is that the pump delivery pressure of 250 head in meter will remain the same even if it is installed at a low delivery head. So Heavy type pipes only should be selected for this application.



TYPE	RAKSHA PIPE SIZE	SUBMERSIBLE PUMP SIZE UP TO
V4	1" 1¼" 1½"	100 mm
Medium	1" 1¼" 1½"	100 mm
	2" 2½" 3"	150 mm
	3" & 4"	200 mm
	4"	250 mm
Standard	1" 1¼" 1½"	100 mm
	2" 2½" 3"	150 mm
	3" 4" 5"	200 mm
	4" & 5"	250 mm
Standard Gold	2" 21/2" 3"	150 mm
	4"& 5"	250 mm
Heavy	1¼" 1½" 2" 2½"	100 mm
&	3" 4" 5"	200 mm
Super Heavy	4" & 5"	250 mm

Chart 6

Pipe Screen Colour	Blue	Black	Green	Maroon	Orange	Blue	Black
Types of pipe	V4	Eco Medium	Medium	Standard	Standard Gold	Heavy	Super Heavy

Chart 7

Note: Any design & specification are subject to change without any prior notice.

HANDLING & STORAGE

Raksha uPVC pipes are strong, yet reasonable care should be taken during their handling & storage to avoid damage. While loading pipes on vehicles, care must be taken to avoid contact with sharp corners, loose nail-heads etc., as the pipes may get damaged. The pipes must be loaded parallel to each other with sockets aligned at alternate ends. Heavier and larger pipes should always be loaded first with proper side supports. While in transit the pipes shall be well secured over their entire length and should not be unsecured over the tailboard of the vehicle.While off-loading, they must be lowered safely, not dropped, not dragged or pushed. Verify physically for any damages caused during transportation.Thoroughly check the pipes for any cracks or structural damages. Do not off-load on uneven surfaces.

For Storage of Pipes

a) The surface should be flat, dry and free from loose stones & sharp objects.
b) Pipes should be given adequate support at all times.
c) Pipe should not be stacked in large piles.
d) The maximum height of stacking should not be more than seven feet.
e) The pipes should be stored in indoors. If stored in open area, the pipes have to be properly covered so that the effect of UV degradation is reduced and direct exposure to sun light is avoided.
f) With the first layer of pipes placed in a square shape, the alternate layers are placed perpendicular to each other so that stacking is perfect without any slippage.
g) For the pipes of same diameter with difference in types, always Heavy type pipes are to be stacked below the Standard type pipes. The Medium type pipes should be stacked above the Standard type.

Packing Standard

Size	Type	No. of pipes in Bundle
1"	V4, Medium, Standard	25
1¼"	V4, Medium, Standard	25
	Heavy, Super heavy	15
1½"	V4, Medium	25
	Standard ,Heavy, Super heavy	15
2"	Eco Medium, Medium, Standard, Standard Gold, Heavy	15
	Super heavy	10
2½"	"Medium, Standard, Standard Gold, Heavy, Super heavy"	10
3"	"Medium, Standard, Standard Gold, Heavy, Super Heavy"	5
4"	"Medium, Standard, Standard Gold, Heavy, Super Heavy"	5
5"	Standard, Standard Gold	3
	Heavy, Super Heavy	2

Chart 8

IMPORTANT NOTES

Bore Well Conditions

- Proper care should be taken by the bore well driller to ensure that the bore well is drilled vertically straight through.
- Casing Pipes are recommended for the entire depth of loose boulder bore well where chances of bore collapses are more.
- When the pump set is stuck in the bore well due to silt or mud and casing pipes are not installed for entire depth, proper flushing of the bore well has to be done before removing the pipe.

Pump And Pipe Safety

High quality NRV can be used on the top end of the delivery side & bottom end of the pump side to prevent water & static hammer, up thrust and back spin in the pumping system which will prevent it from damaging critical parts of the motor & the pump.

Ensure that water is always present in the bore well during pumping operation. Dry run operation will cause problem to the pump and the column/ riser/ drop pipe. Heat produced and transferred to the pipes, especially the first pipe fitted above the pump can lead to its deformation. In order to avoid such cases, 3 metres steel pipe can be connected as the first pipe above the pump. This steel pipe will dissipate the heat by the time it heat reaches the next connected column pipe.

Dry run protector/sensor can be incorporated in the pumping system to avoid the dry run. Timer switches can also be fitted to start and stop depending upon the availability of water in the bore well. Consult the pump supplier/ authorized system engineers for such latest equipment that are used as preventive mechanisms.

The pump delivery pressure has to be taken into account while selection of the types of Raksha column/ riser/ drop pipes as this is manufactured based on pressure rating. For this refer to the Load & Pressure Chart provided by the company.

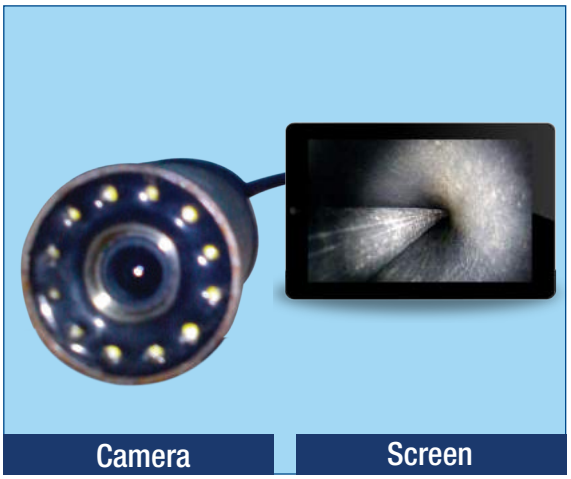
Always operate the pump in the 'head range' which is recommended by the pump manufacturer. That is, neither operate below the minimum head load nor operate more than the 'maximum head' load of that particular model of pump.

For any case to case basis clarification on some extreme operating conditions, it is advised to contact the company/ authorized agent for proper solution.

Borewell Endoscopy

Raksha has developed a bore well endoscopy system which can be provided on request that helps in finding out the cause of pump & pipe blocked inside the bore well. This system consists of a portable camera that is lowered in to the bore well to view and identify the conditions prevailing inside the bore well in the eventuality of a bore collapse. The inside view of the bore well is displayed on the monitor screen kept at the ground level. One can decide on the techniques to be adopted for retrieval of the pump accordingly on viewing the conditions of the bore well displayed on the screen.

This service can also be used for periodic inspections of bore wells to determine the existing bore well conditions and perform preventive maintenance.



Water Hammer

Water hammer is an inevitable loop where pump is stopped by virtue of NRV/Foot valve. We suggest that you can choose a pump for high heads with a small hole in NRV to avoid this phenomenon. Without NRV the pump & motor set will have reverses direction rotation due to high head therefore NRV is a must.

INSTALLATION PROCEDURE

1. Join the metal connector i.e. the bottom adaptor to the discharge outlet of the submersible pump with the help of a pipe wrench.

2. As a next step, we recommend fixing the Raksha Pump Guard set to the bottom adaptor.

3. Start connecting the pipes one by one. Before connecting remove the protective cap at the male end & clean both the ends of the pipes with clean water.

4. Ensure that all the rubber profile rings in the pipes are free of damage and they are fixed in their respective grooves. If damaged, replace it with the new one without fail.

5. The pipes can be tightened by hand at the first instance until the half rubber ring is seen and then the last jerk with the strap wrench for better grip. Strictly do not use any oil or grease as lubricants. Do not over-tighten the pipes as it will lead to crushing of rubber ring and possible leakage.

6. The rubber profile ring, if damaged or worn out has to be replaced.

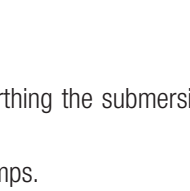
7. While tightening / loosening the pipes during installation / removal process, hold the coupler by hand or pipe wrench and fit / remove the immediate upper pipe. Do not apply any mechanism or disturb the other end of the coupler which is locked safely.

8. Start lowering the pump with the pipes connected as explained above. While lowering or removing the pump the clamp must be fastened to the portion below and close to the coupler where clamp marking instruction is shown in the pipe. Pipe wrench should not be used as support on the pipe.

9. Cushioning with some rubber sheet between the column pipe surface and the clamp can be used just to avoid any minor scratches to the pipe.

10. The submersible pump cable should be tied to the column pipes at regular intervals in order to keep it along with the column pipe for protecting the cable from free fall and other damages.

11. Do not combine Galvanized Steel or Iron pipes with Raksha uPVC Column pipe for bore well application.



12. Once the lowering is finished up to the required level, fix the top adaptor with male end connection and can go ahead with the fixing of other regular plumbing accessories for pumping out the water.

Note:

As Raksha uPVC Column Pipes are non-conductors, separate earth conductor should be used for earthing the submersible motor & pump.

Raksha advises to engage only with skilled professionals for installation and removal of submersible pumps.

The company is not responsible for any type of damages arising out of improper use and / or inappropriate handling and / or faulty workmanship during installation / removal of the submersible pump set.

LABORATORY

FREQUENTLY ASKED QUESTIONS

Why prefer Raksha over other column pipes available in the market?

With Shand Group's legacy worth 37 years and consistent presence in the market since the year 1977 in pipe products segment, one can always bank upon the Brand and the company . The management has non-compromising approach to quality. It believes in dedicated service and consistent quality of the products. The Group has marketing network all over India.

How superior is Raksha's quality?

Raksha uses highly acclaimed world class M.R.O. (Molecular Reorientation) Technology for the production of its Column Pipes. M.R.O. Technology combined with Raksha's state of the art tool design produces high quality, high tensile & heavy load carrying capacity pipes, which are the best among others available in the market.

How unique are the features of Raksha Column Pipes compared to Steel Pipes?

Raksha Column Pipes are manufactured with a mirror smooth finish on the inner side of the pipes which create very low frictional head loss compared to steel Pipes. This leads upto 30% higher discharge than that in steel pipes. Moreover due to non-corrosion and non-deposit characteristic features, this discharge is maintained throughout its life time. The water quality is not affected at all, whereas in Steel pipes, due to its rusting property, the discharge gets reduced in due course of time because of corrosion / rust deposits /friction inside the wall of pipes leading to deterioration of water quality. It can be said that RAKSHA column pipe has many better features compare to steel pipes but at lower cost.

Are Raksha uPVC Column Pipes Reliable?

The important reliability & durability factor of Raksha is the process of manufacturing clubbed with high standards of quality control and stringent quality assurance procedures at all stages of manufacturing processes. Raksha's proven quality reputation and long market standing give peace of mind to customers/end users.

Are Raksha uPVC Column Pipes sturdy enough to carry such a huge weight?

Yes, definitely they are sturdy enough to do the job of carrying the entire column weight. They come in different types of pipes like V4, Medium, Standard, Standard Gold, Heavy and Super Heavy. However these pipes have to be selected correctly depending on pump used, depth of the borewell and other local conditions Raksha uPVC column pipes are designed with special formulation to withstand the pressure of the total head involved in the operation of the entire system.

Any suggestion on deciding bore well diameter & mode of selection of pipe?

Borewell size depends on the kind of the soil and the depth of water availability. In cases where the boulders are present in the soil, borewell size should be 2" more then the pump outer diameter. In order to select correct pipe for the pump sets suitable for a particular borewell, the company is having computerized pipe selection chart w.r.t. head and discharge, enabling customers to select accurate pipe suitable to a particular borewell.

Is the tightening procedure cumbersome or any solvent/adhesive need to be used for joining the pipes?

The tightening is simple screw type system, which is done by hand at the first instance until the half rubber ring is seen and then the last jerk with the strap wrench for better grip. While tightening, hold the coupler by hand or pipe wrench. Hence, no adhesive or solvents are required for joining the pipes.

Is Raksha pipe 100% leak proof?

Raksha Pipes are built in with specially designed Turbulence Free Ring in between the pipes inside the coupler. Also special Leak Proof Profile Ring is provided at the end of the threads which arrest total leakage. Combination of Turbulence Free Ring & Leak Proof Ring provides 100% leak proof system and also enhances thrust bearing & bush life of the pump set.

Can any other metal adapters be used instead of Raksha?

It is always suggested that Raksha metal adaptors are used due to its high reliability and special threading suitable to pipes. It is thoroughly quality checked for casting grade supremacy & hardness value. Raksha adaptors are free from blow holes and other casting defects.

Why use Pump Guard?

Sometimes pipe breakage occurs near the adaptor because of high vibration at the bottom due to pump mechanism fault or excessive foreign particles / silt pumping. If Pump Guard is used in those conditions, the pump can be retrieved successfully and safely.

What is bottom adaptor and top adaptor?

The bottom adaptor is a metal pipe that is connected to the submersible pump out let which is installed in the bore well. This connects the pump and the first column pipe from below. They are available in Stainless Steel (SS) and Cast Iron (CI).The top adaptor is a metal pipe that is connected at the top end of the column pipe at the ground level. The holding clamp is fixed to this accessory to hold the column from top. They are available in Mild Steel (MS) and Cast Iron (CI).

What is Borewell Endoscopy and how it is useful?

Raksha has developed a bore well endoscopy system where a camera is attached with a cable that goes into the borewell to scan the borewell & identify the cause of pump & pipe breakage, which can be seen on a LCD monitor.

For feedback / Suggestions / complaints write to : customercare@shandgroup.com

PIPE STRENGTH

रक्षा ರಕ್ಷ ரக்ஷ

ರಕ್ಷಾ ರಕ್ಷಾ രക്ഷ

রক্ষা રક્ષા ਰਕ੍ਸ਼ਾ

حفاظت રક્ષા دفاع

APPRECIATIONS

YOUR TRUST

RAKSHA®

OUR GUARANTEE

Jeevan bhar ki suraksha

OUR PRODUCTS

uPVC Column Pipes | CPVC Pipes & Fittings | uPVC ASTM-D Pipes & Fittings | uPVC SWR Pipes & Fittings | PVC Casing Pipes | HDPE Pipes | PVC Suction Pipes | PVC Braided Pipes | Power Spray Pipes | PVC Tubing | PVC Garden & Water Pipes | PVC & Steel Wire Duct Pipes | Flexible Corrugated Pipes | Lay Flat Tubes | PVC Water Stopper |

FLEXIBILITY IS OUR STRENGTH

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