



Enriching Lives

INSTRUCTIONS ON INSTALLATION, OPERATION AND MAINTENANCE FOR KIRLOSKAR SUCTION DIFFUSERS



KIRLOSKAR BROTHERS LIMITED

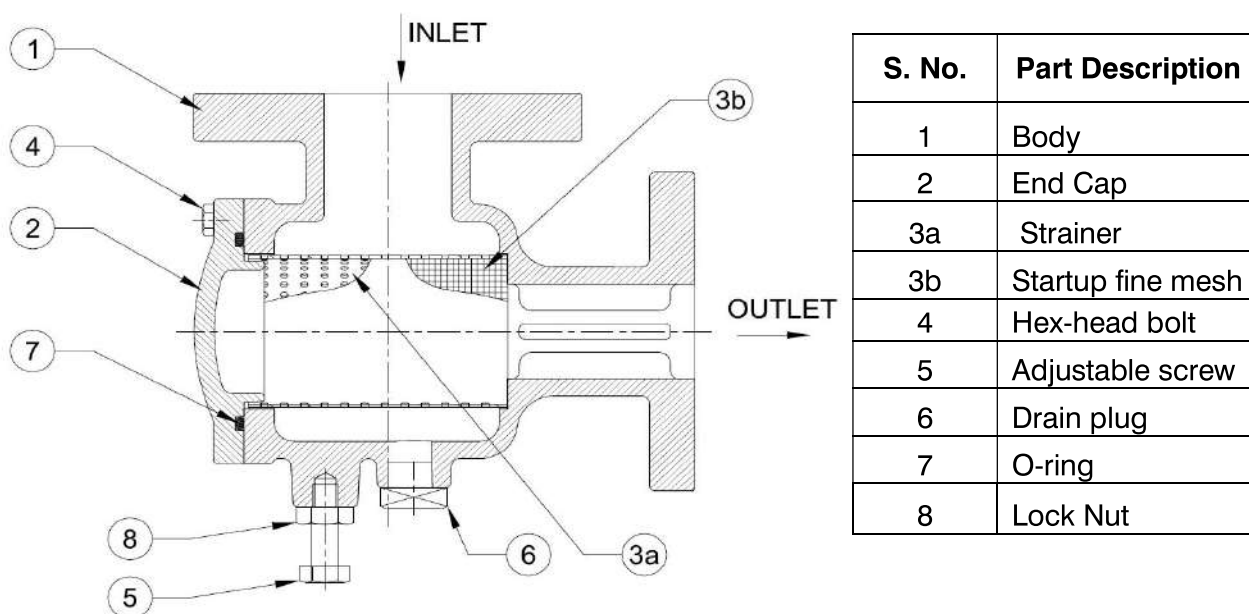
Established 1888

A Kirloskar Group Company

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KIRLOSKAR SUCTION DIFFUSER



1 INTRODUCTION

Kirloskar Suction Diffuser incorporates numerous features in to one device that simplifies and reduces installation, maintenance costs. Suction Diffuser is a device which provides a means of mechanically removing solids from flowing media by utilizing a perforated or mesh lined straining element (screen). In addition to removing unwanted debris, Suction Diffusers utilizes flow straightening vanes that reduce turbulence and provide a smooth, even flow into the pump. Suction Diffusers are designed to be economical, efficient and can be used to replace the 90° elbow, strainer and flow stabilizer which are conventional accessories installed on the suction side of pump.

Suction Diffusers are available in wide variety of sizes and pressure class.

2 INSPECTION ON RECEIPT, HANDLING, STORAGE & PRESERVATION

2.1.1 INSPECTION ON RECEIPT AND HANDLING

- a. At receipt of the product, ensure that there is no transit damages to the product received, especially on flanges, body. Any damage if found, should be reported to carrier and noted on the freight bill.
- b. Also ensure that Parts and Accessories are received as per ordered scope of supply as applicable.
- c. While unloading the product, please handle with care.

- d. Use the safe lifting devices (e.g. Belts, slings, hoists, hooks etc.) of adequate capacity.



Caution: Handle the product carefully – do not push, drag, drop from height.

In case of any short supply or wrong supply is observed then, report the same immediately to the contact person mentioned in this manual.

2.2 STORAGE & PRESERVATION

If the Suction Diffuser has to be stored or stocked at site before installation, please follow below instructions-

- a. Store it on vertical condition with delivery flange resting on the floor surface in dry and clean atmosphere.
- b. Store the products in well-covered sheds, protected from sun, rain and dust.
- c. In the instance if the Suction Diffuser is required to be stored for long duration, ensure that rust preventive should be applied on the machined corrodible surfaces, and both the suction and delivery sides should be blinded to avoid entry of any foreign particles in the Suction Diffuser.

In the instance if, spares supplied along with valve need to store for long duration, ensure that the shelf life of all elastomers is marked on each spare item. For shelf life of elastomer, refer below table-

Sr. No	Component	Shelf Life
01	Rubber sheets	a) Shelf Life or Expiry date specified on product or b) 08 Months from date of supply.
02	Rubber cords/Gaskets / Seals/ O Rings /U cup seal etc	a) Shelf Life or Expiry date specified on product or b) 18 Months from date of supply.

Note: All rubber, elastomer components shall be kept in covered area away from sunlight or rain at room temperature. It shall be kept protected from sharp metal corners to avoid any damage.

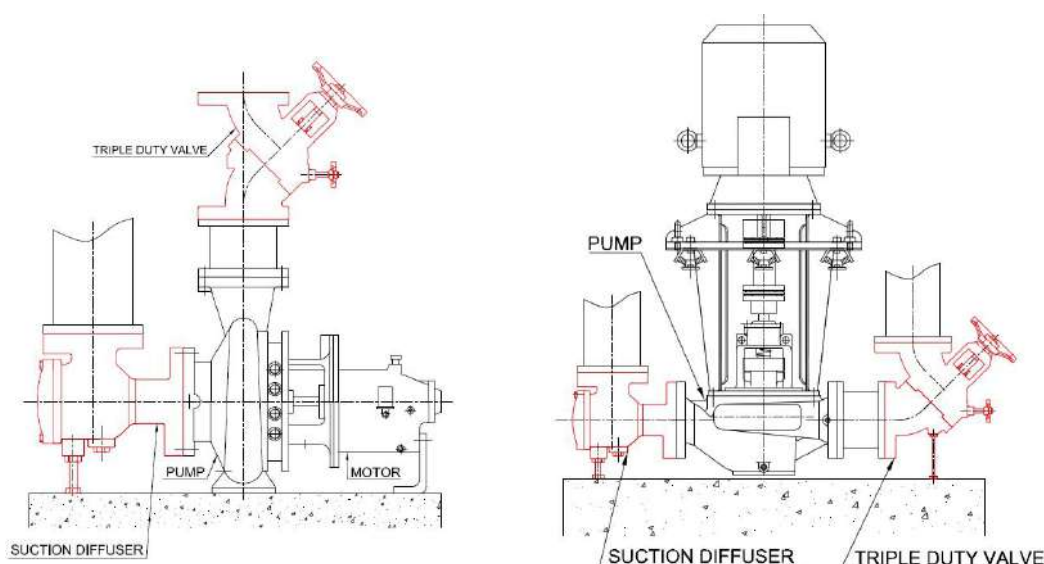
3 INSTRUCTIONS FOR INSTALLATION

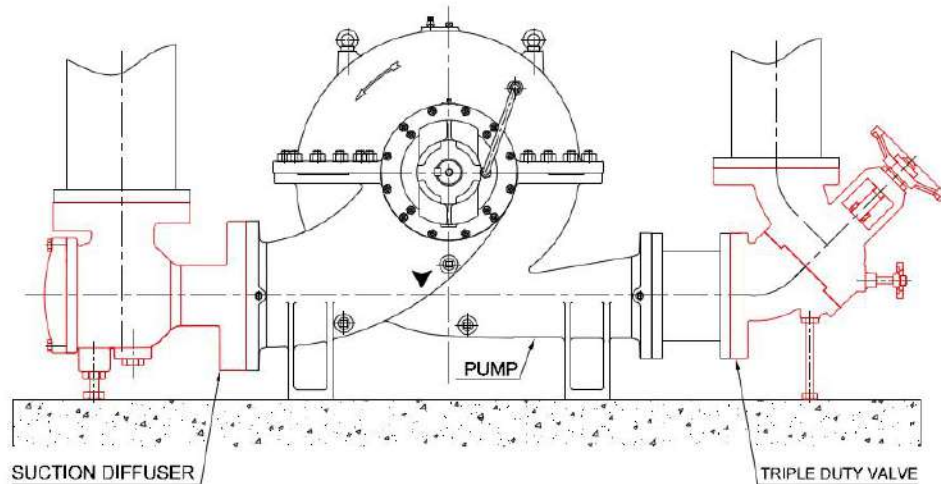
3.1 CHECKS ON THE SUCTION DIFFUSER ASSEMBLY BEFORE INSTALLATION

- Make sure that Suction Diffuser will have enough space to remove strainer without dismantling device from the system.
- Before taking the Suction Diffuser for pipe installation, make sure that it is cleaned from inside and outside and there are no foreign or metallic objects sticking on to its flange surface. Also clean the interior passages to remove any foreign matter & rust preventive on machined surfaces.
- Ensure that the entire rust preventive on the machined surface is removed, before the device is put in pipe-line.
- Check pressure rating adequacy with respect to operating pressure. Also check direction of flow in the pipe-line and align the suction diffuser as per flow direction arrow marked on the body.

	Class 125	Class 250
Pressure	150psi / 10.3 bar	250psi / 17.2 bar
Temperature	80°C	80°C

- Before connecting Suction diffuser & pipeline flanges, ensure that they do not have parallel, angular and radial gaps. While fitting the Suction Diffuser in pipeline, ensure that diagonally opposite bolts are simultaneously & uniformly tightened.





Installation for different types of pumps

3.2 CHECKS FOR THE PIPE-LINE BEFORE INSTALLATION

- Clean the pipeline thoroughly so that it does not contain any solid matters which may damage the Suction Diffuser internals.
- Avoid parallel, radial and angular mismatch between connecting flanges of suction diffuser and the pipeline.
- Provide suitable support for the Suction Diffuser. Jack bolt should be used to support and adjust for precise leveling with pump axis.
- The Suction Diffusers are mainly designed for handling clear water with maximum impurities of 5000 PPM.



Caution: The Suction Diffuser must not be used to support the suction pipe. Pipes should be supported independently.

4 PRODUCT COMMISSIONING

4.1 PRE-COMMISSIONING CHECKS

- Ensure the fitting are as explained above.
- Flow Direction of the suction diffuser matches with that of the pipeline.
- The entire pipe flange bolting is properly tightened.

4.2 COMMISSIONING

- Charge the pipe-line with water.
- Ensure that there is no leakage through flange gaskets.
- Procedure to remove Temporary strainer following system cleanup.
 - After removing debris from the system and run the system for 24 running hours. Stop the pump and close the pump isolation valves in the suction pipe.

- Drain the Suction Diffuser by removing the drain plug or opening the blow-down valve, if installed.
- Unscrew the Suction Diffuser cover and remove the strainer assembly from body. Detach the temporary fine-mesh (start-up strainer) which is tag welded to the permanent stainless steel strainer. The fine mesh strainer is intended to filter finer particulate from new piping system. This will help to prevent the damage of pump sealing component.
- Replace the permanent Strainer into the Body after removing temporary strainer. Inspect the cover 'O' Ring and replace if necessary. Box up the cover back into the body. Ensure the strainer is seated properly; tightened the cover bolts diagonally, even and firm.



Caution: Before removing suction diffuser cover, ensure pressure inside is the device is equal to atmospheric pressure. Check O rings and replace if damaged before re-assemble.

Now the Suction Diffuser is commissioned for its Operation.

5 MAINTENANCE INSTRUCTIONS

- a. It is recommended that the pressure gauges should be installed on Suction Diffuser inlet and outlet to indicate when cleaning is required. Suction Diffuser to be taken for maintenance when the pressure drops to two times the specified pressure drop.
- b. Inlet cleaning can be done by blow down operation just by unscrew NPT plugs with the system in running condition. This operation will flush out all accumulated rudiments from Suction Diffuser. This procedure is recommended on scheduled maintenance of the system.

Maintenance Check Points:

Sr. No	Parameter to Check	Method of Checking	Weekly	During Overhaul
01	Leakage through End cap & Body	Visual	•	
02	Condition of Strainer / Mesh	Visual		•

Kirloskar Suction Diffuser requires very little maintenance if maintenance check point are attended during periodic inspection & during overhaul.

6 TROUBLE SHOOTING OF KIRLOSKAR SUCTION DIFFUSER

Sr. No	Problem	Probable Reason	Action Required
01	Leakage through End cover & Body	Worn out / Deformation of 'O' Ring / Gasket	Replace the 'O' Ring / Gasket
02	Condition of Strainer	a) Damaged/Deformed b) Blocked	a) Replace Strainer b) Remove strainer and clean.

7 RECOMMENDED SPARES FOR SUCTION DIFFUSERS

Following are the recommended spares for Suction Diffuser

- 'O' Ring / gasket
- Strainer

We strongly recommend stocking the spares handy all the time to ensure smooth and uninterrupted operation and scheduled replacements / overhauls

8 SAFETY INSTRUCTIONS FOR "KIRLOSKAR" MAKE PRODUCTS TO BE FOLLOWED BY USER, AT SITE



[These Safety Instructions are the integral part of "Instruction Manual for Installation, Operation and Maintenance of Kirloskar Make PRODUCTS"]

PART – A: GENERAL INFORMATION & SAFETY REQUIREMENTS

- The Products supplied by KBL has been designed with safety in mind. Where hazards can not be eliminated, the risk has been minimized by the use of guards and other design features. Some hazards can not be guarded against and the instructions below **MUST BE COMPLIED WITH** for safe operations. These instructions can not cover all circumstances; USER of the product is responsible for using safe-working practices at all times.
- KBL product are designed for installation in designated area, which are to be kept clean and free of obstructions that may restrict safe access to the controls and maintenance access points.
- Access to the equipment should be kept restricted to the personnel responsible for installation, operation and maintenance and they must be trained, adequately qualified and supplied with adequate tools for their respective tasks.
- KBL requires that, all personnel who are responsible for installation, operation or maintenance of the equipment, have access to study the product instruction manual

BEFORE any work is done and they will comply with all local and industry based safety instructions and regulations.

5. Personnel protection safety equipment must be worn where local rules apply.
6. Read the instruction manual before installation, operation and maintenance of the equipment.
7. Note that the limit of product application and permissible use of the product is according to the respective product design & testing standard and product pressure and temperature rating. Operation of the equipment beyond these limits will increase risk from hazards and may lead to premature and hazardous failure of the Suction Diffuser / accessories.
8. Clear and easy access to all controls etc. must be maintained at all times. Hazardous or flammable materials must not be stored near Suction Diffusers unless safe areas or racking and suitable containers have been provided.
9. Improper installation, operation or maintenance of the KBL product could result in injury or death.

PART – B: SAFETY INSTRUCTIONS WHILE HANDLING, STORAGE AND USAGE

1. For handling / lifting the Suction Diffusers, use devices of adequate capacities certified by competent authorities. Use lifting provisions e.g. lifting eyebolts, lifting lugs etc. wherever provided on the Suction Diffusers.
2. Before fitting the Suction Diffuser in pipeline, ensure that Pressure Rating of the Suction Diffuser is suitable for maximum working pressure / surge pressure that may arise in the pipeline.
3. User shall prevent any unauthorized person to mount, dismantle or remount, operate and repair the Suction Diffuser.
4. While using the device, ensure that approved technical rules & regulations e.g. trading regulations, regulations for prevention of accidents, steam boiler regulations, regulations of gas mains under high pressure, regulations for combustible fluids, local safety regulations etc. are followed.
5. During repairs / maintenance of the device at site, the user shall take minimum following precautions:
6. Provide adequate working platform for the device.
7. Make pipelines pressure less and harmless i.e. switch off the pumps, empty the pipelines.
8. If work is carried-out in vicinity of the Suction Diffuser, which leads to dusty atmosphere (e.g. concrete work, masonry, painting, sandblasting etc.) the device must be covered effectively.

9. ORDERING INFORMATION

(To be sent to the Contact Person mentioned in this manual)

Details required to be furnished while ordering Spares:

- a. KBL Order Acceptance Number (O/A No. or Sale Order No.)
- b. Product Description – Type, Size, Pressure Rating etc.
- c. Product Serial No. (This is hard punch marked on Body Flange)
- d. KBL SAP Product Code – This code is mentioned in the Invoice through which the product has been dispatched.
- e. KBL Cross Sectional Assembly Drawing No. for the product (if provided)
- f. Required Part Name & Part No. as shown in the Cross Sectional Assembly drawing/catalogue.
- g. Material of construction of the required part, as that appears in the Cross Sectional Assembly drawing/catalogue.

10. WARRANTY CLAUSE

Kirloskar Brothers Limited (KBL) warrants that the valve manufactured and supplied by KBL to be free from defects in material, workmanship and construction, when used in accordance with installation and technical instructions provided, for a period of twelve months from the date of commissioning of the equipment or 18 months from the date of dispatch of valve from its factory, whichever is earlier.

THIS WARRANTY DOES NOT APPLY TO VALVES WHICH ARE MISUSED, OR ABUSED, OR DAMAGED FROM INSTALLATION, OR NOT USED IN ACCORDANCE WITH KBL'S INSTRUCTIONS. NORMAL WEAR OF VALVES IS NOT INCLUDED IN THIS WARRANTY.

Any parts or other accessories not manufactured by Kirloskar Brothers Limited but supplied through KBL shall carry the warranty of the original manufacturer.

KBL'S SOLE LIABILITY UNDER THIS WARRANTY SHALL BE LIMITED TO EITHER REPLACING OR REPAIRING WITHOUT CHARGE, AT ITS FACTORY OR ELSEWHERE AT ITS DISCRETION, ANY VALVE NOT MEETING THIS WARRANTY, OR AT KBL'S OPTION, REFUNDING THE PURCHASE PRICE. KIRLOSKAR BROTHERS LIMITED SHALL IN NO EVENT BE LIABLE FOR ANY OTHER DIRECT OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND UNDER THIS CONTRACT OR OTHERWISE.

Kirloskar Brothers Limited warranty does not cover and KBL makes no warranty with respect to any defects, failures, deficiencies, or errors which include but are not limited to: (a) Not timely reported to KBL; or (b) Due to misapplication, modification, disassembly or abnormal conditions or corrosive matters; or (c) Due

to operation, either intentional or otherwise, in an improper manner; (d) damage during transit.

In case of delay of delivery due to lack of instructions from a customer or delay in accepting delivery by a customer, the period of 18 months shall be considered from the date of notification from Kirloskar Brothers Limited to customer that the valves are ready for dispatch.

The foregoing warranty constitutes KBL's sole liability.

THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

For Installation , Operation & Maintenance Manuals pl. refer following link :
www.kirloskarpumps.com → DOWNLOAD CENTRE → Product IOM Manual → Product Category → Valve

11. ENVIRONMENTAL ASPECT

Our products are designed and manufactured considering all environmental aspects to minimize impact on the environment. We ensure that the product supplied by us utilizes less energy during their life cycle and it does not emit any hazardous gas or cause any harm to any living being or to the environment. User of this product is recommended to follow the operating instructions and maintain the product in periodic manner, in order to ensure that it always functions with optimum energy efficiency.

12. PRODUCT RECYCLE PROGRAM

As a commitment towards a greener future, conservation of natural resources and reduction of carbon foot print, Kirloskar Brothers Limited offers to take back/replace its used products once it has reached the end-of-life and ensure that it is recycled/ disposed in an environment friendly manner with the following objective.

- To facilitate our customers for recycling / safe disposal of 'end-of-life' product in environment friendly through a recycle program.
- To minimize the impact caused by product disposal on society / environment.
- To reuse the recyclable components as secondary source of raw material.
- To ensure implementation of control mechanism over third part for recycle/safe disposal of the waste generated.
- To offer or replace customer's existing product with more efficient and environment friendly product.

End of life of Kirloskar Brothers Limited product shall be considered, when a customer has declared that the product has become redundant (the product has become obsolete/unfit for use/non-functional and cannot be refurbished in consultation with Kirloskar Brothers Limited personnel) Or the customer wishes to replace the existing



product for a shift in technology/for replacement of product by latest/advanced technology of more energy efficient friendly product.

As the product reaches its End-of-Life, the customer shall communicate the same through the Kirloskar Brothers Limited mail ID, cusotmercare.recycle@kbl.co.in or approach the nearest Customer Support Service/Regional Offices/ Authorized Dealer/Authorized Service Dealers who in turn shall communicate the same to Zonal Customer Support Service representative.

13. INTIMATING PRODUCT / PERFORMANCE COMPLAINT

(Information to be sent to the Contact Person mentioned in this manual)

While communicating product complaint, furnish following information to help us to resolve the problem promptly.

- a. KBL Order Acceptance Number (O/A No. or Sale Order No.)
- b. Product Description – Type, Size, Pressure Rating etc.
- c. Product Serial No. (This is hard punch marked on Valve Flange)
- d. KBL SAP Product Code – This code is mentioned in the Invoice though which the product has been dispatched.
- e. KBL Cross Sectional Assembly Drawing No. for the product (if provided)
- f. Exact nature of complaint

If the complaint is related to Short Supply, Wrong Supply, Transit Damage, it is necessary to communicate the Invoice Number which will help in tracking the cause of the problem.

In case if you need additional information or help, please contact:

Customer Support Cell

Kirloskar Brothers Limited
"Yamuna", Survey No.98/ 3 to 7,
Baner,
Pune- 411045
Toll free no: 1800-10-34443
e-mail: kirloskarvalves@kbl.co.in



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KIRLOSKAR BROTHERS LIMITED

A Kirloskar Group Company
Established 1888

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Email: marketing@kbl.co.in, **Website:** www.kirloskarpumps.com **CIN No.:** L29113PN1920PLC000670

OUR COMPANIES



United Kingdom



U.S.A.



South Africa



India



The Netherlands