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**INSTALLATION, OPERATION  
AND  
MAINTENANCE MANUAL**

**FOR PUMP "MODEL-VSP"**

**VENUS PUMP & ENGINEERING WORKS (Pump Unit)**

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**Installation, Operation and Maintenance Manual.  
Including Manufacturer's Recommended list of spares.**

**OF**

**"Skid Mounted Single Stage, horizontal Spindle  
Self Priming Non Clogging CENTRIFUGAL PUMP  
Model VSP - 4 Capacity 30 LPS at 18 Mtrs.  
Total head powered by "EICHER" MODEL  
323ES Air Cooled Diesel Engine 26 HP at 1500 RPM."**

**S/O NO. :- 51023-GeM/05 x Centrifugal Water Pump /22HP/  
IMB/GS2025-26/ SO-42/DGBR/E3ES Date. 03.02.2026**

**GEM Contract No. :- GEMC-511687711969192 Date. 03.02.2026**

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**WARRANTY**

THE PUMP IS GUARANTEED AGAINST DEFECT IN MATERIAL AND  
WORKMANSHIP, UNDER NORMAL USE AND SERVICE  
FOR THE GUARANTEE PERIOD.

**SPECIAL INSTRUCTION**

Please go through carefully the detailed instructions given for proper installation, use and servicing of the product and use of genuine spare parts as detailed here in. Any deviations, made by the customers will void the warranty obligations. Use of trained mechanics will get better results.

Our Pumps, if properly used as per instructions given in this manual, do not have any adverse effect on environment.

Customers are requested to dispose off unusable components which must not be re-used.

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## 1. INTRODUCTION

"VENUS" VSP - Model pumps are centrifugal with an added feature of self-priming mechanism. The pump is always ready for use, once the pump casing is filled initially with the pumping liquid after its installation. The design speciality of the pump allows pumping out certain amount of mud, dirt and suspended solids. These pumps are suitable for handling water and non-corrosive liquids.

## 2. PRINCIPLE OF OPERATION

The Self-priming action of the pump works on the diffusion principle. Initially, the complete pump casing is filled with the liquid to be pumped, which is retained by its flap valve assembly. When the pump is started, due to centrifugal action, flap assembly opens and the air from suction bench is mixed up with the liquid. Then mixture of air and liquid is transferred into large casing outside the pumping chamber and air escapes through delivery branch. De-aired liquid again diffuses with the pumping chamber and air escapes through delivery branch. No sooner all the air is eliminated, diffusion of the liquid stops and the pump works as a centrifugal pump with its full efficiency.

## 3. APPLICATIONS AND FEATURES WHERE SELF-PRIMING ACTION IS REQUIRED.

- Marine-Pumping water from docks, ports, vessels.
  - Industrial - Pumping petroleum products , Chemicals, effluents, ash Water etc.
  - Civil construction - De-watering foundations, trenches and pits.
  - Mobile Machinery - Cooling water for marine engines and shovels.
  - Public utilities - Sewage pumping .
  - Withstand wide voltage fluctuations. Voltage range from 300 volt to 440 volt (Three Phase)
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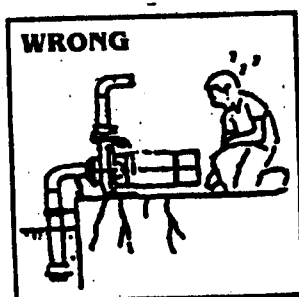
- **Efficiency at par with internationally available pumps.**
  - **Top flat efficiency curve : minimum variation in efficiency over the entire operating range.**
  - **Long life : Due to replaceable wearing rings and plates.**
  - **Dynamically balanced rotating parts.**
  - **Easy maintenance and spares availability.**
  - **Grease lubricated deep groove ball bearings.**
  - **Quick automatic self-priming action.**
  - **Designed for automatic air release during priming.**
  - **Repairs possible without disturbing the pipe connections**
  - **Non-clogging impeller to handle suspended solids.**
  - **Portable when fitted on trolley/trailer.**
  - **Suitable for engine / elect. Motor.**
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## **INSTALLATION**

**LOCATION :** The pump should be located as near the water source as possible. This will minimise the suction lift and pump will give better performance. Ample space should be provided on all sides for easy inspection, operation and maintenance.

**GROUTING :** After the installation is completed, the foundation bolts should be tightened evenly and grouting may be completed. Allow about 48 hours for setting and seasoning of the foundation. For coupled pumpsets, base plates should be used.

**ALIGNMENT :** Check alignment of the pump and drive (motor or Engine) After grouting.





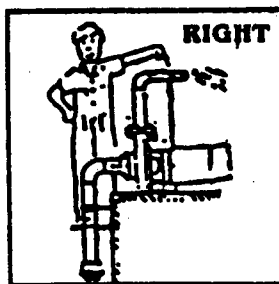
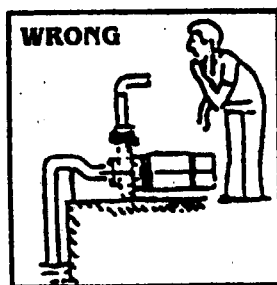
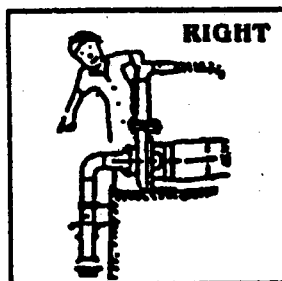
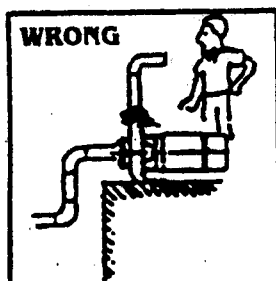
## PIPING :

Pipe size should be as per the flange size to get higher discharge. It is not recommended to reduce the pipe size. If length of delivery pipe is more than 3m. use higher pipe size.

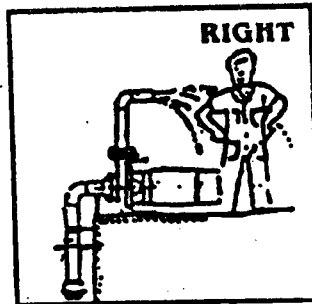
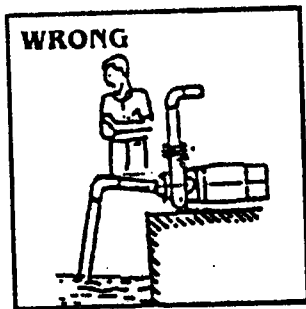
The piping should be airtight. Any leakage in suction pipe may drastically affect the performance of the pump.

The suction pipe should be as short as possible for getting better discharge.

Number of bends and other fittings should be as minimum as possible to reduce frictional losses.



Adequate supports should be provided to pipes so that its dead weight does not fall on delivery casing completely.



The horizontal length of the suction pipe should be straight to avoid air trapping in pipe. It should not be inclined towards the pump.

For delivery pressure more than 20 meters, it is recommended to install a check (non-return) valve in the discharge line. The check valve placed near the pump is to protect the pump from excessive back pressure to prevent the water running back through the pump in case of sudden failure of prime water.

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## **OPERATION PROCEDURE :**

**After the pump set is installed, the following should be checked before starting the pump.**

- ☐ The shaft rotates freely by hand.
  - ☐ The stuffing box (gland) is properly tightened (in case of gland packed pump.)
  - ☐ If there is any valve in delivery branch same to be open.
  - ☐ The pump casing is filled with clear water/pumping liquid through the priming plug provided on the top of the body. Close the plug after filling.
  - ☐ Asbestos grease graphite packing should be turned 2 to 3 times. This should be repeated weekly or as per need.
  - ☐ If the pump is idle for sometime, it may get stuck or locked in place. this sticking is usually due to film of dust or dirt developed between the impeller and pump body. Give jerk at the free end of the shaft to ensure free rotation.
  - ☐ If the pump is used to handle water containing solids and silt, it is necessary to wash out the same with clean water, before restarting. The restarting of the pump should be done after filling clean water.
  - ☐ The bearing should be lubricated once a month.
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**Check the following running condition:**

- ☐ The direction of rotation of pump is correct.
- ☐ The pump is running smoothly, without any undue noise or vibration.
- ☐ Leakage through stuffing box is normal, i.e. 8 to 10 drops per minute in gland packed pumps.
- ☐ See that the Prime Mover is not overloaded.
- ☐ There is no leakage from mechanical seal. (If used)
- ☐ The ball bearings do not get excessively hot, body temp. should not rise more than 30° degree centigrade over ambient.
- ☐ Avoid idle running against closed discharge valve for a longer period of time.

**NOTE :**

1. When dirty water is handled by the pump of diesel engine set, do not use discharged water for engine cooling.
2. Use correct grade of grease in grease cups and in the bearings, recommended grease servo Gem-2 Indian Oil make or equivalent.

## TROUBLE SHOOTING

| TYPE OF THE FAILURE                                       | Failure to Deliver Water | Pump does not deliver rated discharge | Pump does not deliver rated head | Pump loses water after start | Pump overloads Primemover | Vibration | Stuffing Box Overheats | Bearing Overheat | Bearing wear rapidly | Motor Heating up | Seized pump | Irregular delivery | Pump does not prime | Noisy pump |
|-----------------------------------------------------------|--------------------------|---------------------------------------|----------------------------------|------------------------------|---------------------------|-----------|------------------------|------------------|----------------------|------------------|-------------|--------------------|---------------------|------------|
| REASON OF FAILURE                                         |                          |                                       |                                  |                              |                           |           |                        |                  |                      |                  |             |                    |                     |            |
| 1. Wrong direction of rotation                            | <                        |                                       | <                                |                              |                           |           |                        |                  |                      |                  | <           |                    | <                   | <          |
| 2. Pump not primed or filled with liquid                  | <                        |                                       |                                  |                              |                           | <         |                        |                  |                      |                  | <           |                    | <                   | <          |
| 3. Inlet or suction pipe insufficiently submerge          | <                        | <                                     |                                  | <                            |                           | <         |                        |                  |                      |                  |             | <                  |                     | <          |
| 4. NPSH available too low                                 | <                        | <                                     |                                  | <                            |                           | <         |                        |                  |                      |                  |             | <                  |                     | <          |
| 5. Pump not upto rated speed                              | <                        | <                                     | <                                |                              |                           |           |                        |                  |                      |                  |             |                    |                     |            |
| 6. Air leaks in suction line or stuffing box              | <                        | <                                     |                                  | <                            |                           |           |                        |                  |                      |                  |             | <                  | <                   | <          |
| 7. Viscosity greater than rated                           |                          | <                                     | <                                |                              |                           |           |                        |                  |                      |                  |             |                    |                     | <          |
| 8. Impeller damaged                                       |                          | <                                     | <                                |                              | <                         |           |                        |                  |                      |                  |             |                    |                     |            |
| 9. Internal leakage (gasket)                              |                          | <                                     | <                                |                              | <                         |           |                        |                  |                      |                  |             |                    |                     |            |
| 10. Priming air/vent valves open                          |                          | <                                     | <                                | <                            | <                         |           |                        |                  |                      |                  |             |                    |                     |            |
| 11. Speed too high                                        |                          |                                       |                                  |                              | <                         |           |                        |                  |                      |                  |             |                    |                     |            |
| 12. Total head lower than recommended                     |                          |                                       |                                  |                              | <                         |           |                        |                  |                      |                  |             |                    |                     |            |
| 13. Viscosity and / or specific gravity higher than rated |                          |                                       |                                  |                              | <                         |           |                        |                  |                      |                  |             | <                  |                     | <          |
| 14. Starved suction                                       |                          |                                       |                                  | <                            |                           | <         |                        |                  |                      |                  |             |                    |                     | <          |
| 15. WORN or loose bearings                                |                          |                                       |                                  |                              |                           | <         |                        |                  |                      |                  |             |                    |                     | <          |
| 16. Rotor cut of balance                                  |                          |                                       |                                  |                              |                           | <         |                        |                  |                      |                  |             |                    |                     | <          |

**TRUBLE SHOOTING (Contd.)**

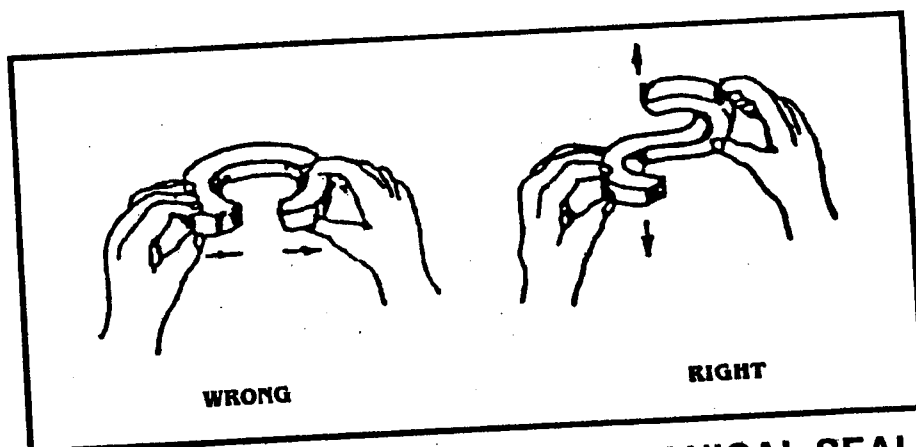
| TYPE OF THE FAILURE                      | Failure to Deliver Water | Pump does not deliver rated discharge | Pump does not deliver rated head | Pump loses water after start | Pump overloads | Vibration | Stuffing Box Overheats | Bearing Overheat | Bearing wear rapidly | Motor Heating up | Seized pump | Irregular delivery | Pump does not prime | Noisy pump |
|------------------------------------------|--------------------------|---------------------------------------|----------------------------------|------------------------------|----------------|-----------|------------------------|------------------|----------------------|------------------|-------------|--------------------|---------------------|------------|
|                                          |                          |                                       |                                  |                              |                |           |                        |                  |                      |                  |             |                    |                     |            |
| <b>REASON OF FAILURE</b>                 |                          |                                       |                                  |                              |                |           |                        |                  |                      |                  |             |                    |                     |            |
| 17. Impeller blocked or damaged          |                          |                                       |                                  |                              |                |           |                        |                  | <                    |                  |             |                    |                     | <          |
| 18. Bent shaft                           |                          |                                       |                                  |                              |                | <         |                        |                  |                      |                  |             |                    |                     | <          |
| 19. Foundation not rigid or poor mixture |                          |                                       |                                  |                              |                |           | <                      |                  |                      |                  |             |                    |                     |            |
| 20. Gland packing too tight              |                          |                                       |                                  | <                            |                |           | <                      |                  |                      |                  |             |                    |                     |            |
| 21. Gland packing not Lubricated         |                          |                                       |                                  |                              |                |           | <                      |                  |                      |                  |             |                    |                     |            |
| 22. Wrong grade of gland packing         |                          |                                       |                                  |                              |                |           | <                      | <                |                      |                  |             |                    | <                   |            |
| 23. Insufficient cooling water           |                          |                                       |                                  |                              |                |           | <                      | <                |                      |                  |             |                    |                     |            |
| 24. Stuffing box badly packed            |                          |                                       |                                  | <                            |                |           |                        | <                |                      |                  |             |                    |                     |            |
| 25. Wrong grade of Grease                |                          |                                       |                                  |                              |                |           |                        | <                | <                    |                  |             |                    |                     |            |
| 26. Dirt in bearings                     |                          |                                       |                                  |                              |                |           |                        | <                | <                    |                  |             |                    |                     |            |
| 27. Moisture in lubricant                |                          |                                       |                                  |                              |                |           |                        | <                | <                    |                  |             |                    |                     |            |
| 28. Failure of lubricating system        |                          |                                       |                                  |                              |                |           |                        | <                | <                    |                  |             |                    |                     |            |
| 29. Bearings too tight                   |                          |                                       |                                  | <                            |                |           |                        | <                | <                    |                  |             |                    |                     |            |
| 30. Excessive thrust                     |                          |                                       |                                  |                              |                |           |                        | <                | <                    |                  |             |                    |                     |            |
| 31. Lack of lubrication                  |                          |                                       |                                  |                              |                |           |                        |                  | <                    |                  |             |                    |                     |            |
| 32. Bearings badly installed             |                          |                                       |                                  |                              | <              |           |                        |                  | <                    |                  |             |                    |                     |            |

**TRUBLE SHOOTING (Contd.)**

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## MAINTENANCE PROCEDURE FOR FILLING GLAND PACKING IN CASE OF GLAND PACKED STUFFING BOX

- ☐ Spin the shaft by hand to see that there is no jamming. Rub a thin film of oil on the shaft and in the stuffing box.
- ☐ Insert the required number of gland packing before the lantern ring, staggering the joints by 180° degree.
- ☐ While inserting the lantern ring, see that it matches with the hole of water/grease sealing. Insert the remaining packing staggering the joint. Tighten the gland plate and then loosen a little so that while in operation water to leak at the rate of 8 to 10 drops per minute.



## PROCEDURE FOR FITTING THE MECHANICAL SEAL IN CASE OF MECHANICAL SEAL ARRANGEMENT:

- ☐ Apply soap solution on rubber cap of stationary part.
- ☐ Insert the stationary part of mechanical seal and press it upto the bore face of the mounting casing.
- ☐ Insert upper part of mechanical seal (i.e. rotating part) on the shaft.
- ☐ Insert the spacer.



**RECOMMENDED SPARES :**

- Impeller.
- Ball Bearings
- Gland packing.
- Shaft Sleeve.
- Water deflector.
- Leatheroid Paper packing.

**MAINTENANCE TIME TABLE :**

● **MONTHLY :**

- 1) Priming time
- 2) Pump noise
- 3) All pipe connections

● **SIX MONTHLY**

- 1) Open the pump, check and clean interior parts.

**YEARLY:**

- 1) Remove impeller, replace if vanes are worn out seriously. Clearance between impeller face and wearing plate non-drive-end. should be in the range of 0.2 to 0.3 mm.
- 2) Replace shaft sleeve, gland packing & wear plates if worn out.

**A. DISMANTLING PROCEDURE ( Ref. Drawing on page - 20)**

- a) First remove suction and delivery pipe connections. Drain water from the pump by unscrewing Drain plug (36). Remove grease cups, pipe nipples etc. then separate pump from engine/motor and base plate. remove suction flange (17) and delivery flange (18) and Flap valve assembly from pump casing (1)
- b) All nuts to be removed from the studs fixing casing cover with pump casing.
- c) Pull the bracket (8) for taking out the impeller. shaft, bracket casing cover assembly from the pump casing.
- d) Impeller lock nut (15) & M.S. Washer, bearing cover (5), Bearing lock nut. (6). The Grease Cup with fittings (21) & Grease nipple to be removed
- e) Add the stuffing box area, gland nuts to be removed from gland. Gland to be pulled out towards bearing side to release pressure on gland packing as well as to ensure proper clearance for removing internal packing & lantern ring.

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- f) The gland packing (11), lantern rings (22) to be removed.
- g) Puller legs to be placed on the outside of the pump casing cover & pressure to be exerted through the puller spindle to the impeller shaft & as a result of which Impeller shaft will travel towards the driving side of the shaft & the impeller will come out with the key. After taking out the impeller (13) shaft sleeve (12) should be removed.
- h) After dismantling the impeller, the wearing plate to be removed by unscrewing the counter shank screws from the casing cover.
- i) The casing cover to be removed by opening the nuts from the bracket. Now the bracket will consist of Shaft (7), bearings (4 & 9) water deflector (37) etc. after pulling out the shaft, the bearings, water deflector to be opened one after the other.
- j) The suction side wearing plate will be taken out by unscrewing the counter shank screw fitted with pump casing.
- k) After dismantling the suction side flange the check valve (flapper) to be taken out.
- l) For routine checkup the hole cover at Pump suction casing may be opened by opening the bolts fitted with pump casing for checking the entrapment of foreign particles/debris, if any.
- m) After dismantling all the parts, it is necessary to clean and inspect them. The following parts are to be checked for wear and damage and are to be replaced, if necessary

|                                         |       |
|-----------------------------------------|-------|
| 1) Impeller                             | 13    |
| 2) Pump Shaft                           | 7     |
| 3) Ball Bearings                        | 4/9   |
| 4) Gland                                | 38    |
| 5) Lantern Ring                         | 22    |
| 6) Water Deflector                      | 37    |
| 7) Stuffing Box Packing (Gland packing) | 11    |
| 8) Rubber Flapper                       | 19    |
| 9) keys                                 | 24/30 |
| 10) Shaft Sleeve                        | 12    |
| 11) Wearing Plates non-drive-end        | 3     |
| 12) Wearing Plates Driving End (Front)  | 14    |

**B. ASSEMBLY PROCEDURE :**

- a) Apply a thin layer of grease to all surfaces that have to be airtight.
- b) Clean re-circulating port in delivery casing (1)
- c) Complete the check valve flapper assembly (19) and fix it with pump Suction Flange (17), fix wearing plate front (14) with casing (1) and Wearing plate driving end side (3) with casing cover. (2)
- d) Fit Bearing inner (9) Bearing outer (4) with shaft (7) so that the bearing rest against the steps provided on the shaft. Apply grease between the two races of the bearings. Ball bearings should be press fitted, if it is not possible, then hammer gradually the inner recess of the ball bearings by putting suitable spacer on it.
- e) Insert the shaft (7) into the bracket (8) from driving end.
- f) Insert the bearing cap Non Driving End (10) water deflector (37) and gland (38) and washer for stuffing box packing, on the shaft (7) from non-driving end side.
- g) Fit sub-assembly of Casing covers (2) on bracket (8).
- h) Insert the shaft sleeve (12) over the shaft (7). Take care that shaft sleeve slot/keyway matches with shaft-keyway.
- i) Fit bearing cover Driving End (5) to bearing housing.
- j) Insert impeller key (30) into the shaft and shaft sleeves and mount impeller (13) on the shaft. Lock it by impeller nut (15) alongwith its washer. Tighten the left hand threaded bearing Lock nut (6) on the shaft. Check clearance between impeller and wearing plate Driving End (3). It should be 0.2 to 0.3 mm.
- k) Fit the sub-assembly of casing cover comprising bracket. bearing, shaft, impeller etc. to the pump casing (1) putting gasket between the machined mating parts and tighten it with nuts. The clearance between impeller and wearing plate (Front) (14) should be 0.2 to 0.3 mm. This should be adjusted by inserting required thickness of Leatheroid paper packing, between Casing cover (2) and Casing (1). After fitting the driving unit, check that impeller rotates freely.

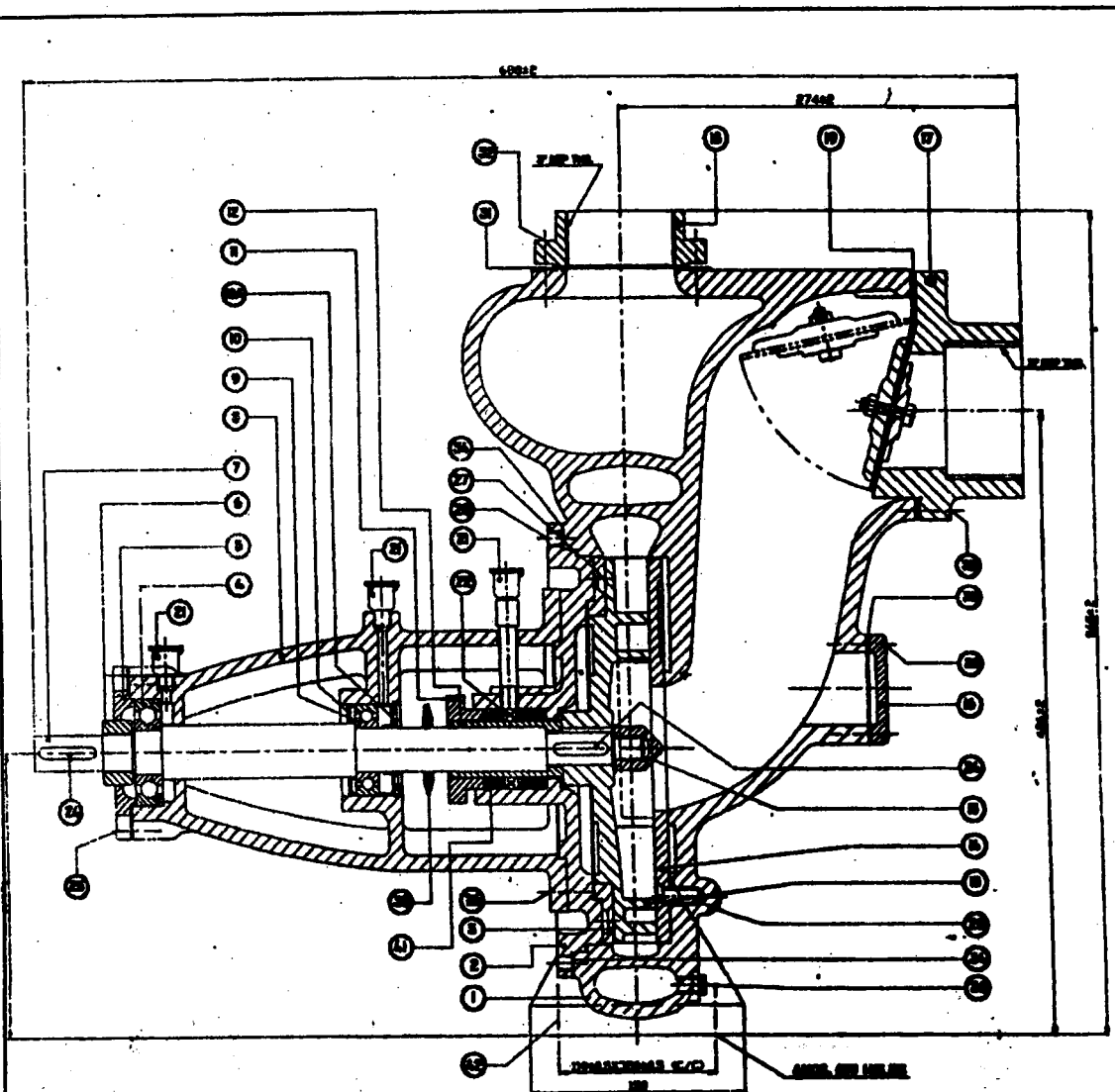
- l) Insert Stuffing Box gland packing (11), Lantern Ring (22) duly filled with grease and again two Stuffing Box packing.**
- m) Insert coupling key (24) on the Shaft and mount the pump coupling on the shaft (7) and tighten it by Grub Screw.**
- n) Fix up Grease Cups in the (21) for Bearing Driving End., Non Driving End and Stuffing Box .**
- o) Tighten Sub-assembly of Suction Flange (17) and Flap Valve (19) with pump casing (1) and then tighten the Delivery Flange (18) and Suction Flange (17). Tighten the Plug (36) with pump casing.**

### **LUBRICATION**

- 1) Lubricate the two antifriction bearings, two grease cups(red painted)once every month.**
  - 2) Lubricate the stuffing box Lantern ring by Screwing the Grease cup(red painted)once every week before starting the pump.**
  - 3) Use grease type Servo Gem-II, Indian oil make or equivalent.**
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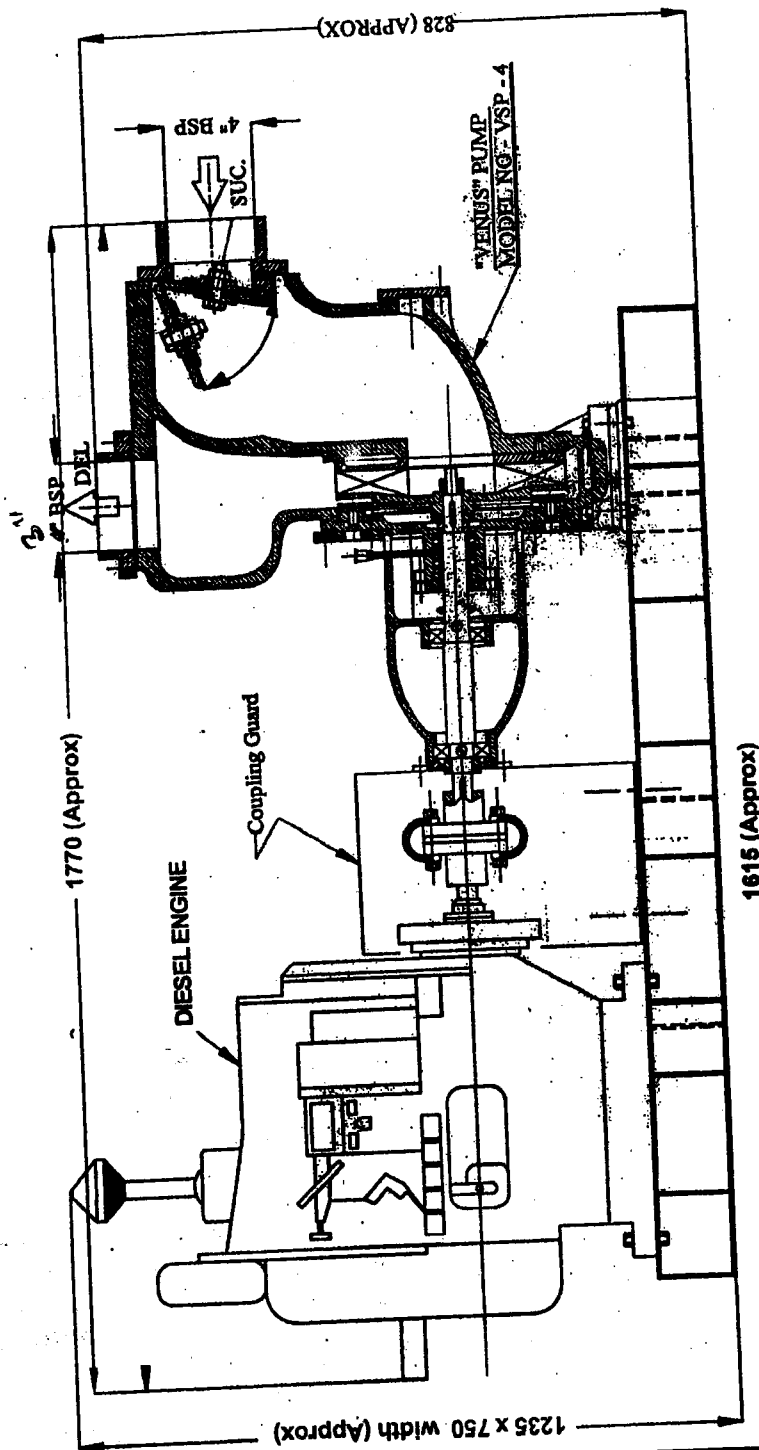
**PARTS IDENTIFICATION LIST**  
**VENUS PUMP & ENGINEERING WORKS(Pump Unit)**  
**ICHAPUR ROAD, DASNAGAR, HOWRAH-5**  
**CENTRIFUGAL SELF PRIMING NON CLOG PUMP MODEL VSP 4**  
**( REF.: SECT. ASSY. DRAWING )**

| ITEM NO. | DESCRIPTION                    | MATERIAL WITH IS SPECIFICATIONS | QUANTITY | RECOMMENDED SPARES | PRICE EACH NETT (Rs.) |
|----------|--------------------------------|---------------------------------|----------|--------------------|-----------------------|
| 1        | CASING                         | C.I. (IS: 210 FG 200)           | 1        | See                |                       |
| 2        | CASING COVER                   | C.I. (IS: 210 FG 200)           | 1        | Page-25            |                       |
| 3        | WEARING PLATE                  | C.I. (IS: 210 FG 200)           | 1        | for MRLS           |                       |
| 4        | BRG. OUTER                     | BRG. SKF/NBC STEEL              | 1        |                    |                       |
| 5        | BRG. COVER                     | C.I. (IS: 210 FG 200)           | 1        |                    |                       |
| 6        | LOCK NUT (BEARING)             | M.S. (IS: 2062)                 | 1        |                    |                       |
| 7        | SHAFT                          | EN8 (BS: 970)                   | 1        |                    |                       |
| 8        | BRACKET                        | C.I. (IS: 210 FG 200)           | 1        |                    |                       |
| 9        | BRG. INNER                     | BRG. SKF/NBC STEEL              | 1        |                    |                       |
| 10       | CAP (BEARING)                  | M.S. (IS: 2062)                 | 1        |                    |                       |
| 11       | PACKING (GLAND)                | GRAPHITED ASBESTOS              | 1        |                    |                       |
| 12       | SLEEVE SHAFT                   | S.S. AISI 410                   | 1        |                    |                       |
| 13       | IMPELLER                       | C.I. (IS: 210 FG 200)           | 1        |                    |                       |
| 14       | WEARING PLATE (FRONT)          | C.I. (IS: 210 FG 200)           | 1        |                    |                       |
| 15       | NUT NYLOCK (L.H.)              | M.S. (IS: 2062)                 | 1        |                    |                       |
| 16       | HOLE COVER                     | C.I. (IS: 210 FG 200)           | 1        |                    |                       |
| 17       | FLANGE (SUCTION)               | C.I. (IS: 210 FG 200)           | 1        |                    |                       |
| 18       | FLANGE (DELIVERY)              | C.I. (IS: 210 FG 200)           | 1        |                    |                       |
| 19       | CHECK VALVE (FLAPPER)          | NEOPRENE, C.I. & C.S.           | 1 SET    |                    |                       |
| 20       | BOLT                           | C.S. (IS: 1363 CL 4.6)          | 3        |                    |                       |
| 21       | GREASE CUP WITH FITTING        | M.S. (IS: 2062)                 | 3 SET    |                    |                       |
| 22       | LANTERN RING                   | G.M. LTB2 (IS: 318)             | 1        |                    |                       |
| 23       | STUD & NUT FOR GLAND           | C.S. (IS: 1363 CL 4.6 & 4.0)    | 2        |                    |                       |
| 24       | KEY (FOR COUPLING)             | EN-8 (BS: 970)                  | 1        |                    |                       |
| 25       | HEX BOLTS FOR BEARING COVER    | C.S. (IS: 1363 CL 4.6)          | 4        |                    |                       |
| 26       | STUD & NUT FOR COVER & BRACKET | C.S. (IS: 1363 CL 4.6 & 4.0)    | 8        |                    |                       |
| 27       | C.S.K. SCREW                   | SS (AISI-316)                   | 4        |                    |                       |
| 28       | STUD & NUT FOR BODY & COVER    | C.S. (IS: 1363 CL 4.6 & 4.0)    | 8        |                    |                       |
| 29       | CSK SCREW FOR WEARING PLATE    | SS (AISI-316)                   | 3        |                    |                       |
| 30       | KEY (FOR IMPELLER)             | EN-8 (BS: 970)                  | 1        |                    |                       |
| 31       | GASKET (FLANGE)                | RUBBER                          | 1        |                    |                       |
| 32       | STUDS FOR SUCTION              | C.S. (IS: 1363 CL 4.6)          | 4        |                    |                       |
| 33       | GASKET FOR CASING              | LEATHEROID PAPER                | 1        |                    |                       |
| 34       | GASKET FOR COVER               | LEATHEROID PAPER                | 1        |                    |                       |
| 35       | BOLTS & NUTS                   |                                 | 4        |                    |                       |
| 36       | DRAIN PLUG                     | MS                              | 1        |                    |                       |
| 37       | WATER DEFLECTOR                | NEOPRENE                        | 1        |                    |                       |
| 38       | GLAND                          | C.I. (IS: 210 FG 200)           | 1        |                    |                       |



VENUS PUMP & ENGINEERING WORKS. (Pump Unit)

TITLE SEC. ASSEMBLY DRG OF SELF PRIMING  
CENTRIFUGAL PUMP.  
(MODEL NO. : VSP)



|                                                                                             |
|---------------------------------------------------------------------------------------------|
| <b>VENUS PUMP &amp; ENGINEERING WORKS. (Pump Unit)</b><br>1 CHAPUR ROAD, DASNAGAR, HOWRAH-5 |
| <b>GENERAL ARRANGEMENT OF PUMP WITH ENGINE</b>                                              |



**INSPECTION STANDARD**  
(Quality Assurance Plan)  
"C.F. Self Priming non Clog Pumps"  
Model : VSP

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| SL.NO. | COMPONENTS OPERATION                                                 | CHARACTERISTICS                      | CLASSIFICATION | QUANTUM FOR CHECKUP | ACCEPTANCE NORMS                        | FORMAT OF RECORD | CHECK TESTS BE WITNESSED BY |
|--------|----------------------------------------------------------------------|--------------------------------------|----------------|---------------------|-----------------------------------------|------------------|-----------------------------|
| 1.0.   | <b>RAW MATERIALS :</b>                                               |                                      |                |                     |                                         |                  |                             |
| 1.1    | Casing, Top Cover, Bracket, Flanges, Covers, Wearing Plate, Impeller | Tensile Strength                     | Major          | One Per Lot         | IS: 210 Gr. FG 200                      |                  |                             |
| 1.2    | Shaft                                                                | Chemical Composition<br>Tensile Test | Major          | One Per Lot         | IS : 2043 C 40                          |                  |                             |
| 1.3.   | Shaft Sleeve                                                         | Chemical Composition<br>Tensile Test | Major          | One Per Lot         | IS: 2043 C 40<br>AISI : 410             |                  |                             |
| 2.0.   | <b>MACHINING :</b><br>All Components                                 | Surface                              | Major          | 100%                | No Harmful Defects                      |                  |                             |
| 3.0.   | <b>ASSEMBLY</b>                                                      | Dimensions :                         | Major          | One per Lot         | As per Drawing                          |                  |                             |
| 4.0.   | <b>TESTING</b>                                                       | Hydraulic Test                       | Critical       | 100%                | No Leakage as per Specified Requirement |                  |                             |
|        |                                                                      | Performance Test                     | Critical       | 100%                | Approved QAP                            |                  |                             |

## MANUFACTURER'S RECOMMENDED LIST OF SPARE PARTS

**VENUS PUMP & ENGINEERING WORKS (Pump Unit)**  
**ICHAPUR ROAD, DASNAGAR, HOWRAH-5**  
**PUMP MODEL "VSP"**

| Sl. No. | Parts Name and Item No. (See Sect. Assly Drg. and Bill of Mat'L Page 1 and 2) | List of spare parts recommended |                              | Remarks |
|---------|-------------------------------------------------------------------------------|---------------------------------|------------------------------|---------|
|         |                                                                               | After 1000Hrs. of operation.    | After 2000Hrs. of operation. |         |
| 1.      | Wearing Plate (3)                                                             | —                               | Required                     |         |
| 2.      | Bearing outer (4)                                                             | —                               | Required                     |         |
| 3.      | Shaft (7)                                                                     | —                               | Required                     |         |
| 4.      | Bearing inner (9)                                                             | —                               | Required                     |         |
| 5.      | Packing Gland (11)                                                            | Required                        | Required                     |         |
| 6.      | Shaft Sleeve (12)                                                             | Required                        | Required                     |         |
| 7.      | Impeller (13)                                                                 | Required                        | Required                     |         |
| 8.      | Wearing Plate (Front) (14)                                                    | Required                        | Required                     |         |
| 9.      | Nut Nylock (L.H.) (15)                                                        | Required                        | Required                     |         |
| 10.     | Check Valve (Flapper) (19)                                                    | Required                        | Required                     |         |
| 11.     | Gasket Flange (31)                                                            | Required                        | Required                     |         |
| 12.     | Gasket Casing (33)                                                            | Required                        | Required                     |         |
| 13.     | Gasket Cover (34)                                                             | Required                        | Required                     |         |

