

# Instructions on Installation, Operation and Maintenance Manual for Kirloskar Non Clog Submersible series



Enriching Lives



# WARRANTY

We warrant that the pump supplied by us is free from defective material and faulty Workmanship. This warranty holds good for a period of 12 months from the date of commissioning the equipment or 18 months from the date of dispatch from our factory, whichever is earlier. Our liability in respect of any complaint is limited to replacing part/parts free of Charge ex-works or repairs of the defective Part/parts only to the extent that such replacement/repairs are attributable to or arise solely from faulty workmanship or Defective material.

This warranty holds good only for the products manufactured by us.

**- KIRLOSKAR BROTHERS LIMITED –**

 **CAUTION**

1. DO NOT LOWER OR LIFT THE PUMP WITH THE HELP OF CABLES.
2. DO NOT FILL ANY LIQUID INSIDE THE MOTOR.
3. DO NOT MEGGER CONTROL PANEL CONTROL CIRCUIT TERMINALS.
4. DO NOT RUN THE PUMP DRY OR IN REVERSE DIRECTION.
5. DO NOT RUN THE PUMP WITHOUT CONTROL PANEL.
6. DO NOT RUN THE PUMP WITH CONTROL UNIT IN BYPASSED CONDITION.
7. DO NOT MEGGER CONTROL CABLE OF THE PUMP WITHOUT DISCONNECTING FROM THE CONTROL PANEL.

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**NOTE:**

- Please ensure these instructions are read fully before installation and operation of the pump.
- Please furnish complete nameplate details, name of parts, part nos. And material of construction while ordering spare parts for the pump

## 1. GENERAL :

1.1 KIRLOSKAR submersible sewage pumps type "NS" is available in the following types.

1. High speed NS series

Motor rating 1.1kW/2P to 22kW/2P;

Unit Size I: 1.1kW/2P

Unit Size II: 1.5kW/2P to 2.2kW/2P

Unit Size III: 3.7kW/2P to 5.5kW/2P

Unit Size IV: 7.5kW/2P

Unit Size V: 9.3kW/2P to 18.5kW/2P

Unit Size VI: 22kW/2P

2. iNS series

Motor rating 2.2 kW 4 pole to 22 kW 4 pole also 2.2kW 6 pole to 5.5kw 6 pole

Unit Size I: 2.2kW/4P to 5.5kW/4P

Unit Size II: 7.5kW/4P to 11kW/4P

Unit Size III: 15kW/4P to 22kW/4P

Unit Size IV: 2.2kW/6P to 5.5kW/6P

3. NS Series

Motor rating 30 kW 4 pole and above also 7.5 kW 6 pole and above.

Unit Size I: 7.5kW/6P to 9.3kW/6P

Unit Size II: 11kW/6P

Unit Size III: 30kW/4P to 37kW/4P 18.5kW/6P to 22kW/6P

Unit Size IV: 45kW/4P, 30kW/6P

Unit Size V: 55kW/4P, 37kW/4P

Unit Size VI: 65kW/4P to 90kW/4P, 45kW/6P to 55kW/6P

Unit Size VII: 110kW/4P to 150kW/4P, 65kW/6P to 110kW/6P

Unit Size VIII: 160kW/4P to 225kW/4P 125kW/6P to 180kW/6P

The following charts can be referred to know the pumps available in type of impellers ratings.

A. High speed NS series.

Sr. No.	IMPELLER TYPE		Kw Rating in 2 pole											
	PUMP	QT	0.8	1.1	1.5	2.2	3.7	5.5	7.5	9.3	11	15	19	22
1	20/13	*	*	*	*	*								
2	20/16	*					#	#	#					
3	20/20	*					*	*	*	*				
4	32/13	*			*	*	*							
5	32/16	*					*	*	*					
6	30/20	*								#	#	#		
7	40/13	*			*	*	*	*						
8	40/16	*					*	*	*	*				
9	40/20	*							*	*	*			
10	50/13	*					*	*	*					
11	50/16	*							#	#	#	#	#	
12	50/20	*							*	*	*	*	*	#
13	65/13	*						#	#	#	#	#		
14	65/16	*							*	*	*	*	*	#

\* DEVELOPED MODELS  
# TO BE DEVELOPED AGAINST ORDER

Nomenclature:

E.g.: Pump 20/13 is available in QT type of impeller & ratings from 0.75 kW to 2.2 kW in 2 pole.

Pump can be selected as:

- NS20/13QT 0.75/2
- NS20/13QT 1.5/2

B. iNS series

Sr. No.	IMPELLER TYPE									Rating in 4 pole								
	PUMP	N	QM	Q	QT	NB	QMB	NM	QNM	2.2	3.7	5.5	7.5	9.3	11	15	18.5	22
1	NS40/20				*					*	*							
2	NS40/32				*					*	*	*						
4	NS50/20				*					*	*	*						
5	NS50/26	*	*	*	*	*	*				*	*		*	*			
6	NS50/32	*	*		*								*	*	*	*	*	*
7	NS50/36		*												*	*	*	*
8	NS65/32	*	*	*	*	*	*						*	*	*	*	*	*
9	NS80/26	*	*	*	*								*	*	*	*	*	*
10	NS100/26	*	*	*	*								*	*	*	*	*	*
11	NS100/32	*	*	*	*										*	*	*	*
12	NS150/26	*	*	*	*	*	*	*	*						*	*	*	*
13	NS150/32	*	*	*	*												*	*
16	NS80/40	*	*	*	*			*	*								*	*

Sr. No.	IMPELLER TYPE									Rating in 6 pole		
	PUMP	N	QM	Q	QT	NB	QMB	NM	QNM	2.2	3.7	5.5
1	NS40/32				*					*		
2	NS50/26	*	*	*	*	*	*			*	*	
3	NS50/32	*	*		*					*	*	*
4	NS50/36		*							*	*	
5	NS65/32	*	*	*	*	*	*			*	*	
6	NS80/26	*	*	*	*					*	*	
7	NS100/26	*	*	*	*					*		
8	NS150/26	*	*	*	*	*	*	*	*	*		*

C. NS Series

Sr. No.	IMPELLER TYPE										RATING IN 4 POLE														
	PUMP	N	QM	Q	QT	NB	QMB	NM	X		30	37	45	55	65	75	90	110	125	150	180	200	225	250	
1	100/26	*	*	*	*						*														
2	100/32	*	*	*	*						*	*	*												
3	150/26	*	*	*	*	*	*	*			*														
4	150/32	*	*	*	*						*	*	*	*											
5	200/32	*	*	*	*						*	*	*	*	*	*									
6	150/34	*	*	#	#						*	*	*	*											
7	80/40	*	*	*	*						*	*													
8	100/40	*	*	*	*						*	*	*	*	*	*									
9	150/40	*	*	*	*								*	*	*	*	*	*	*						
10	200/40	*	#	#	#								*	*	*	*	*	*	*	*					
11	250/40	*	*	*	*								*	*	*	*	*	*	*	*					
12	150/50	*	*	*	*								*	*	*	*	*	*	*	*	*	*	*	*	#
13	250/34								*		*	*	*	*	*	*									
14	250/50	#	*	#	#						*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Sr. No.	IMPELLER TYPE										RATING IN 6 POLE																				
	PUMP	N	QM	Q	QT	NB	QMB	NM	X		8	9	11	15	18.5	22	30	37	45	55	65	75	90	110	125	150	180	200	225	250	280
1	50/32	*	*		*						*																				
2	50/36		*								*																				
3	65/32	*	*	*	*	*	*				*																				
4	80/40	*	*	*	*		*	*			*	*	*																		
5	100/26	*	*	*	*						*																				
6	100/32	*	*	*	*						*	*																			
7	100/40	*	*	*	*						*	*	*																		
8	150/26	*	*	*	*	*	*	*	*	*	*	*																			
9	150/32	*	*	*	*						*	*																			
10	150/40	*	*	*	*						*	*	*	*	*	*															
11	150/50	*	*	*	*						*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12	200/32	*	*	*	*						*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13	200/40	*	*	*	*						*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14	250/34							*			*	*																			
15	250/50	*	*	#	#						*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16	300/55	#	#	*	*						*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17	350/65	#	#	#	#						*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18	350/40							*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19	350/47							*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20	400/54							#			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21	450/54							#			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

## 1.2 The pump comprises of three units :

- I. **Pump unit** – It comprises of a delivery casing having wide volute opening and non-clog type of impeller. The casing is connected with connector unit or stand as per order.
- II. **Stuffing box unit** – It comprises double mechanical seal and mechanical seal housing filled with oil for lubricating the seals. The seal behind the impeller is having seat ring of silicon carbide V/s silicon carbide and second seal comprises of carbon ring V/s stainless steel ring.
- III. **Electrical motor unit** – These pumps are provided with submersible three phase squirrel cage induction motors in watertight housing. The entire motor unit is air tested to ensure the leak tightness of the joints. Moisture sensor is provided in the mechanical seal housing to give the indication to control panel which in turn trips the motor, when the seal near impeller fails. The pump is provided with high and low liquid level controllers which avoids dry running of pump.

1.3 The iNS pump can be supplied in portable or with fixed arrangement. When the pump is supplied with portable type, hose, connection should be provided to avoid weight of pipe line on the pump casing. The casing is provided with stand for support. For stationary application, the pump is mounted on the support bracket and is connected to the delivery bend through a rubber diaphragm and connector unit. The pump is slides over the guide pipes without disconnecting/disturbing the delivery pipe line.

1.4 iNS pump is supplied with wall mounted control panel. These control panels are supplied either with **DIRECT ON LINE, STAR DELTA, SOFT STARTER or ATS** type starters. These panels are designed for smooth running of pump-set. The pump gets switched off automatically and is protected against the following.

- a. Contamination of oil with pumped liquid.
- b. Dry running of pump.
- c. Single phasing/reverse phasing.
- d. Over load.
- e. Over heating of winding [against order].

The coding of leads of the cables is clearly marked on each lead and the connections to the control panel should be made as per connections diagram of control panel and below shown figure (1) & (2).

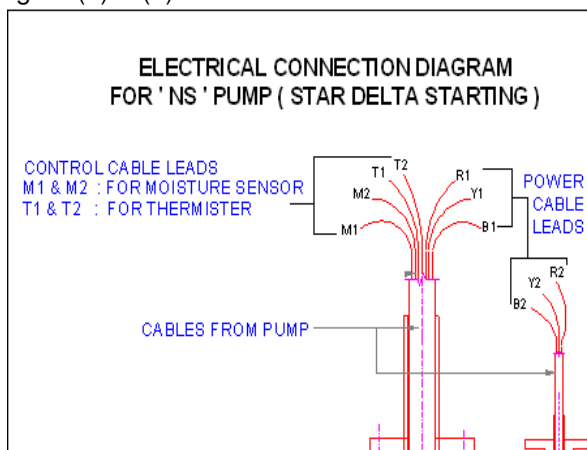


Figure (1): SDS-connection

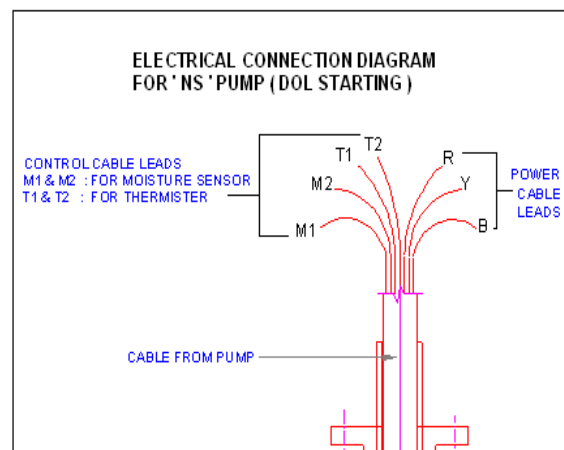


Figure (2): DOL-connection

1.5 As a standard scope of supply, NS pumps are supplied with 5 or 10 m long cable. This cable consists of **power cable** having 4 and 3 core for Star Delta starting (for rating from 11kW to 22kW) and 4 core cables for DOL (for rating upto 9.3kW) starting suitably designed for the voltage and current. The **control cable** of 4 cores 1.5 sq.mm is used for thermistor and moisture sensor 2 wires each.

## 2. Safety Instructions:



### 2.1: General Information

Before performing any actions detailed within this instruction, the Site Health and Safety instructions shall be read and fully understood. The instructions in this document shall also be read and fully understood.

Whenever the equipment is operated, maintained or used in any way, the procedures detailed within the Health and Safety Dossier (DHS) and any procedures detailed within these instructions shall be followed. The pump supplied by Kirloskar Brothers Limited (KBL) has been designed with safety in mind; where hazards cannot be eliminated, the risk has been minimized by the use of guards and other design features. Some hazards cannot be guarded against and the instructions below **MUST BE COMPLIED WITH** for safe operation. These instructions cannot cover all circumstances. It is the responsibility of the user of the equipment for maintaining safe working practices at all times. The pumps are supplied with stickers for hazard, caution and safety wherever these are applicable.

2.1.1 Within the manual, safety instructions are marked with safety symbols.

Hazard.



Hazard.

This symbol refers to general mechanical aspects of safety.



This symbol refers to electrical safety.



This symbol is used to introduce safety instructions whose non-observance may lead to damage to the machine and its functions.



This symbol refers to magnetic field safety.



This symbol refers to restrict person with having heart pacemaker to avoid contact with magnetic components while pump is in running condition or while carrying out maintenance work of pump.

2.1.2 KBL products are designed for installation in designated areas, which are to be kept clean and free of obstructions that may restrict safe access to the controls and maintenance access points. Pump nameplate is fitted to each unit and must not be removed. Loss of this plate could make identification impossible. This in turn could affect safety and cause difficulty in obtaining spare parts. Should accidental loss or damage occur, contact KBL immediately.

2.1.3 Access to the equipment should be restricted to the personnel responsible for installation, operation and maintenance and they must be trained, adequately qualified and supplied with the appropriate tools for their respective tasks.

2.1.4 KBL firmly insists that all personnel responsible for installation, operation and maintenance of the equipment must read the manual before any work is done.

2.1.5 Ear defenders should be worn where the specified equipment noise level exceeds locally defined safe levels. Safety glasses or goggles should be worn where working with pressurized systems



and hazardous substances. Other personal protection equipment must be worn where local rules apply.

**Caution**

2.2 *DO NOT* wear loose or frayed clothing or jewelry, which could catch on the controls or becomes trapped in the equipment.

2.3 Operation of the equipment for the application other than for which it is supplied can increase the risk from hazards. Please consult KBL before making such change in the application of the equipment.

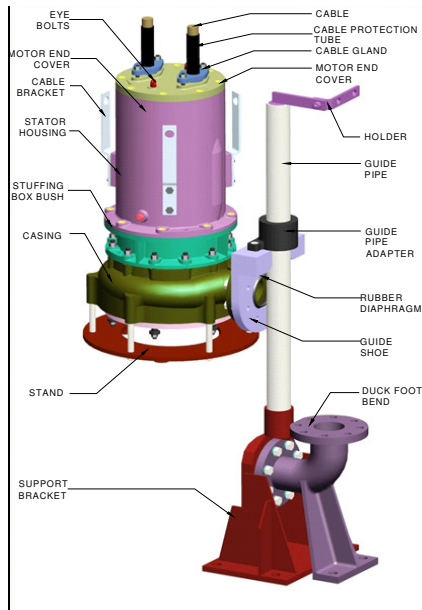
2.4 Improper installation, operation and maintenance of the product supplied by KBL could result in injury or death.

**Caution**

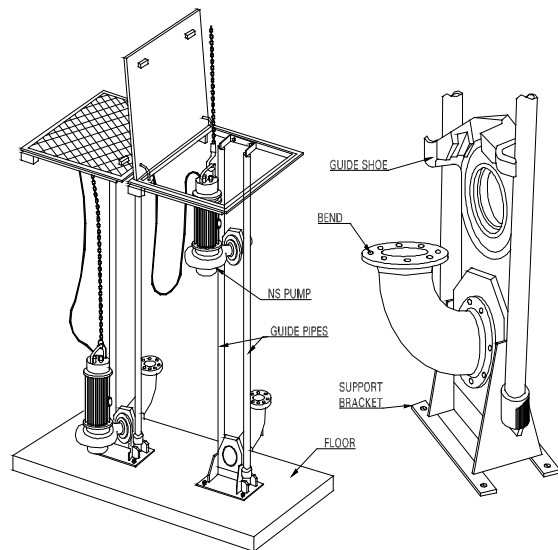
2.5 In case of NS pumps which are handling fluid at high temperature, the operator should avoid touching the pump in running condition. Use safety equipments like hand gloves and safety shoes while operating NS pumps in such applications.

### 3. INSTALLATION :

3.1 The NS pumps of **stationary arrangement** are supplied with pump connector unit and this connector unit is connected to pump support bracket with guide shoe & rubber diaphragm to make it leak proof joint.



Single guide pipe arrangement (iNS)



Double guide pipe arrangement

Stationary Installation view.

#### 3.1.1 Installation of support bracket & bend –

Before installing the pump, ensure that sump bottom is flat and leveled. The support bracket & bend should be attached and fixed to the sump bottom with foundation bolts, so that the guide pipe shall be exactly vertical.

Ensure that support bracket and bend are located correctly relative to descending pump vertical guide pipe and discharge pipe.

3.1.2 **Lowering the pump** - Attach the guide shoe & guide pipe adapter to the pump. The unsupported length of guide pipe should not exceed 6 m.

- 3.1.3 Fix the guide pipe in the support bracket and locate the vertical position of guide pipe holder at the top of the pit. Now the grout the guide pipe holder.
- 3.1.4 Insert the above assembly in the guide pipe by dismantling the guide pipe holder & refit the holder in the guide pipe.
- 3.1.5 **Check-** Lower the pump with the help of chain. While sliding over the guide pipe into the sump, check that the cable is not slapping and is not under tension.
- 3.1.6 Ensure that the pump position is exactly vertical on the support bracket. Check by giving a jerk.
- 3.1.7 Before taking the pumping station into use, check that there are no loose solid pieces or other material on bottom of sump that would damage the pump.

3.1.8 DO NOT LIFT THE PUMP WITH THE HELP OF CABLES.



- 3.2 The NS pumps supplied for **portable installation** requires no foundation. Only ensure that the delivery pipe line is well supported and its weight is not acting on pump casing directly.
- 3.3 Use chain with intermediate hooks for holding to lower or lift the pump. This type of chain is specially design to avoid the tendency of the operator to lift the pump with the help of cable causing damage & replacement of the cable unit. While selecting size of the chain, refer weight of the pump given in chart (6). and chain capacity as per below chart (2) We recommend use of non-return valve in delivery pipe line located before sluice valve.

3.1.1 As per IS: 2429 the following sizes of chains can be used upto the weight as mentioned in the below chart.

Nom. Chain Size (mm)	Lifting capacity (Tonnes)
6.3	0.5
8.0	0.8
10.0	1.25
12.5	2.0

#### 4. OPERATION :

4.1 Prior to commissioning of the pump, check the following.  
 FILL THE OIL INSIDE THE MECHANICAL SEAL HOUSING WITH PROPER GRADE REFER CHART (5) OF CLEAN OIL FREE FROM MOISTURE. ENSURE THE MECHANICAL SEAL HOUSING OF THE PUMP IS DULY FILLED AS PER CHART NO. (6). CHECK THE OIL PLUG OF THE MECHANICAL SEAL HOUSING IS INTACT.



4.1.1 Check the insulation resistance of winding by using 500 V megger. The insulation resistance of winding should not be less than 10 mega-ohms for motor rating upto 45kW and 50 mega-ohms beyond 45kW at phase to phase and phase to Earth. This test should be carried out at free end of the cable. If the insulation resistance is found less than mentioned above then please consult our service personnel.

For continuity test, connect the two wires of megger between the two ends of the same phase of motor. It should show zero resistance. This test should be carried out for the phases.

The resistance across two moisture sensing wires M1 and M2 should be above 5 MΩ. Make sure to remove control cable connections from terminal board [M1 and M2] before testing this. If the resistance found less, please consult our service department. The megger test for phase to phase and phase to Earth should be conducted serially. The megger test should show insulation resistance above 10 MΩ for motor rating upto 45kW and 50 MΩ beyond 45kW.

- 4.1.2 The control panel is provided with auto/manual switch. When the switch is on "Manual" position the pump set can be started manually by the start push button provided the liquid level is above the low level electrode. If the switch is on "Auto" position it will start automatically if liquid level in the sump, is above the high level electrode. The pump set get switched off automatically for any position of Auto Manual switch if liquid level goes down just below the low level electrode. This is indicated by glowing of red lamp on control panel.

When the pumped liquid gets mixed up with the oil in the casing cover, it is indicated by glowing of red lamp under name plate contamination. After rectification of the fault, resetting switch is to be pressed first and then the pump set will get started by pressing "Starting switch" if it is operated on "Manual position" or automatically if control panel is operating on "Auto position". Before change over from star to delta connection, time delay should be sufficient to allow the motor to attain its normal running speed. The same depends upon the load of the motor and it is generally around 10 second.

- 4.1.3 LIQUID LEVEL CONTROLLERS ARE INCORPORATED IN THE PANEL TO PROTECT THE PUMP FROM DRY RUNNING. THE LOW LEVEL ELECTRODE SHOULD BE POSITIONED IN SUCH A MANNER THAT LOWEST END OF ELECTRODE REMAINS ABOVE MOTOR BODY. IF LOW LEVEL ELECTRODE IS NOT INSTALLED PROPERLY THE MOTOR BODY IS LIKELY TO BE HEATED UP AS COOLING OF MOTOR IS DONE BY LIQUID IN THE SUMP AROUND THE STATOR HOUSING. HENCE SUBMERGENCE UPTO FULL CORE LENGTH OF MOTOR IS REQUIRED.

- 4.1.4 Before starting the pump, check the direction of rotation is as outline below. Hoist up the pump and momentarily switch on the power. If the connections are correctly made the pump should jerk in anticlockwise direction when viewed from top. If the pump jerks in opposite direction, change two phases of the incoming leads to the control panel. In no case the direction of rotation should be changed by changing the leads of motor terminals. Do not run the pump dry. Just check in which direction the pump jerks.

4.2 **While putting the pump in operation, follow the procedure outlined below.**

- 4.2.1 Start the pump. Let the motor pick-up its full speed.  
4.2.2 Open the discharge valve slowly.

4.3 **Check during running that –**

- 4.3.1 The pump is running smooth.  
4.3.2 Power consumption is within limit.  
4.3.3 Head and capacity developed by the pump is as specified.  
4.3.4 Stop the pump immediately if any defects are detected and must not be started unless they are rectified. Report immediately to the supplier if it is not possible to rectify the defect.

4.4 **STOPPING THE PUMP:**

- 4.4.1 Pump should be switched off only after closing the delivery sluice valve.

5. **MAINTENANCE:**

Preventive maintenance schedule is the periodical checks and precautions by which possibilities of failure and break-downs are minimized.

5.1 **Daily checks –**

- 5.1.1 An hourly record of the delivery pressure and power input to the pump should be maintained.  
5.1.2 Noise and vibrations is the first sign of impending troubles like bearing failure, choking of impeller or casing and such other operating troubles. The pump performance should be checked for noise and vibration.

## 5.2 Periodical checks –

- 5.2.1 The lubrication of mechanical seals should be checked. The lubricant might get contaminated with foreign material or get blackened due to overheating. In such cases, oil chamber should be flushed and filled with fresh oil. Before filling, heat the oil [Servo system 317] to 140°C. This is required to remove moisture present in the oil.
- 5.2.2 THE ELECTRODES/FLOAT SWITCHES SHOULD BE CLEANED WHENEVER POSSIBLE BUT NOT LATER THAN 15 DAYS FOR SMOOTH WORKING OF PUMP.
- 5.2.3 Clean the sump if there are chances of deposition of the contents of liquid handled.
- 5.2.4 Replace the Oil from pump periodically after 2000 hrs.

## 5.3 Annual checks [after one year minimum] –

- 5.3.1 The pump portion of the motor pump set should be overhauled completely to check the clearance and to replace the worn-out parts. Clearance between impeller and casing ring and casing cover are very important.
- 5.3.2 The effect of liquid handled on pump components should be checked. If abnormal corrosion, erosion is observed then the components should be replaced with that of suitable material.

## 6. TECHNICAL DATA

- 6.1 NS pumps are supplied at maximum speed 1450 rpm having 4 pole motors. However the same pump can be offer at 980 rpm having 6 pole motor if fits in duty points. The direction of rotation is clockwise when viewed from the motor top.

### 6.2 SPECIFICATIONS OF BEARINGS:

The shaft is supplied with antifriction ball bearings at both ends. The bearing specifications are given below. The designations of bearings are as per SKF catalogue. However, equivalent bearing in type, capacity and dimensions are also can be used.

#### LUBRICATION:

Bearings of NS pumps are grease sealed for life. Re-lubrication of these bearings is not required.

Sr. No.	Motor rating in kW	Lower bearing	Qty.	Upper bearing	Qty.	Series
1	1.5,2.2	6305-2RS1	1	6303 2RSH	1	High speed NS (2900 rpm)
2	3.7,5.5	6306 2RS1	1	6304 2RS1	1	
3	7.5	6307 2RS1	1	6305 2RS1	1	
4	9.3 to 18.5	6307 2RS1	1	6306 2RS1	1	
5	22	6309 2RS1	1	6306 2RS1	1	
6	UNIT-I	6307-2RS1F	1	6305-2RS1	1	iNS
7	UNIT-II	6309-2RS1	1	6306-2RS1	1	
8	UNIT- II	6309-2RS1	1	6306-2RS1	1	
9	UNIT-I	6309-2RS1	1	6306-2RS1	1	NS
10	UNIT- II	6309-2RS1	1	6306-2RS1	1	
11	UNIT - III & IV	7312 BG Back to Back	2	6309-2RS1	1	
12	UNIT-V & VI	7315 BG Back to Back	2	6311-2RS1	1	
13	UNIT-VI to VIII	7318 BG Back to Back	2	6313-2RS1	1	

### 6.3 EBXL CABLE CURRENT CARRYING CAPACITY

Cable size (sq.mm)	Approx. Current carrying capacity (amp)
8C X 1.5	20
8C X 2.5	39
4C X 25	174
4C X 35	191
4C X 50	239
3C X 4	53
3C X 10	96
3C X 16	133
3C X 25	174
3C X 35	191
3C X 50	239
3C X 70	295/22
3C X 95	355/22
3C X 120	414/22
4C X 4 + 4C X 1.5	53/22
4C X 10 + 4C X 1.5	96/22
4C X 16 + 4C X 1.5	133/22
4C X 25 + 4C X 1.5	174/22
4C X 35 + 4C X 1.5	191/22
4C X 50 + 4C X 1.5	239/22
4C X 70 + 4C X 1.5	295/22
4C X 120 + 4C X 1.5	414/22
4C X 95 + 4C X 1.5	355/22

Note: These values are for reference only.

### 6.4 MECHANICAL SEALS:

Sr. No.	Motor ratings in kW	Seal size in mm	Mechanical seal type		Series
			Inboard	Outboard	
1	Unit I to Unit V	22	SiC Face Vs SiC	Carbon Vs St. Steel	High speed NS(2900rpm)
2	Unit VI	40	SiC Face Vs SiC	Carbon Vs St. Steel	
3	UNIT-I	22	SiC. Face Vs SiC.	Carbon Vs Ceramic	iNS
4	UNIT-II	40			
5	UNIT-III	40	SiC Face Vs SiC	Carbon Vs St. Steel	NS
6	UNIT-I	40			
7	UNIT-II	40			
8	UNIT-III	55			
9	UNIT – IV	65			
10	UNIT – V	80			
11	UNIT – VI	80			
12	UNIT – VII	90			

### 6.5 LUBRICATION FOR MECHANICAL SEALS:

The outboard mechanical seal is lubricated by oil provided in casing cover. The lubricating oil should confirm the following grades of oil available in the market.

Note :The oil used should be highly refined straight mineral product of high demulsibility free from running and acid forming tendencies. Detergent Oil may cause foaming and should not be used

NAME	OIL SPECIFICATION	NAME	OIL SPECIFICATION
ELF	ACANTIS HM 68	VEEDOL	ATLINE 68
IOC	SERVOSYSTEM 57/68/317	PENNZOIL	PENNZBELL AW 68
HPCL	ENKLO 57	BPCL	HYDRO 68
CASTROL	HYSPIN EP 68	ESSO	AW68
GULF	HARMONY 68	MOBIL	AW68
SHELL	TELLUS 68		

## 6.6 WEIGHTS OF PUMPS AND OIL QUANTITY:

Sr. No.	Pump Model (High speed NS)	kW (2pole)	Approx. Oil Qty. (Liters)	Approx. Pump Weight (Kg.)	Approx. Connector unit Weight (Kg.) Double guide pipe	Approx. Connector unit Weight (Kg.) Single guide pipe
1	20/13QT	0.75	1	50	35	25
2	20/13QT	1.1	1	50	35	25
3	20/13QT	1.5	1	55	35	25
4	20/13QT	2.2	1	55	35	25
5	20/20QT	3.7	1.2	90	35	25
6	20/20QT	5.5	1.2	100	35	25
7	20/20QT	7.5	2	155	35	25
8	20/20QT	9.3	2	185	35	25
9	32/13QT	1.5	1.2	100	45	30
10	32/13QT	2.2	1.2	100	45	30
11	32/13QT	3.7	1.2	110	45	30
12	32/16QT	3.7	1.2	110	45	30
13	32/16QT	5.5	1.2	110	45	30
14	32/16QT	7.5	2	160	45	30
15	40/13QT	2.2	1	100	90	75
16	40/13QT	3.7	1.2	120	90	75
17	40/13QT	5.5	1.2	120	90	75
18	40/16QT	3.7	1	100	90	75
19	40/16QT	5.5	1.2	120	90	75
20	40/16QT	7.5	1.2	155	90	75
21	40/16QT	9.3	2	190	90	75
22	40/20QT	9.3	2	190	90	75
23	40/20QT	11	2	190	90	75
24	40/20QT	15	2	205	90	75
25	50/13QT	3.7	2	110	90	75
26	50/13QT	5.5	2	110	90	75
27	50/13QT	7.5	2	155	90	75
28	50/20QT	9.3	2	205	90	75
29	50/20QT	11	2	205	90	75
30	50/20QT	15	2	230	90	75
31	50/20QT	18.5	2	230	90	75
32	65/16QT	9.3	2	190	110	90
33	65/16QT	11	2	190	110	90
34	65/16QT	15	2	205	110	90
35	65/16QT	18.5	2	205	110	90

Sr. No.	Pump Model (i-NS)	kW (4pole)	Approx. Oil Qty. (Liters)	Approx. Pump Weight (Kg.)	Approx. Connector unit Weight (Kg.) single guide pipe	Approx. Connector unit Weight (Kg.) Single guide pipe
1	40/20QT	3.7	1.2	130	90	75
2	40/20QT	2.2	1.2	130	90	75
3	50/20QT	2.2	1.2	134	90	75
4	50/20QT	3.7	1.2	134	90	75
5	50/20QT	5.5	1.2	139	90	75
6	50/26N	3.7	1.6	150	90	75

Sr. No.	Pump Model (i-NS)	kW (4pole)	Approx. Oil Qty. (Liters)	Approx. Pump Weight (Kg.)	Approx. Connector unit Weight (Kg.) single guide pipe	Approx. Connector unit Weight (Kg.) Single guide pipe
7	50/26N	5.5	1.6	155	90	75
8	50/26N	7.5	4	174	90	75
9	50/26N	9.3	4	174	90	75
10	50/26QM	3.7	1.6	150	90	75
11	50/26QM	5.5	1.6	155	90	75
12	50/26QM	7.5	4	174	90	75
13	50/26QM	9.3	4	174	90	75
14	50/26Q	3.7	1.6	153	90	75
15	50/26Q	5.5	1.6	158	90	75
16	50/26Q	7.5	4	177	90	75
17	50/26Q	9.3	4	177	90	75
18	50/26QT	3.7	1.6	153	90	75
19	50/26QT	5.5	1.6	158	90	75
20	50/26QT	7.5	4	177	90	75
21	50/26QT	9.3	4	177	90	75
22	50/26NB	3.7	1.6	150	90	75
23	50/26NB	5.5	1.6	155	90	75
24	50/26NB	7.5	4	174	90	75
25	50/26NB	9.3	4	174	90	75
26	50/26QMB	3.7	1.6	150	90	75
27	50/26QMB	5.5	1.6	155	90	75
28	50/26QMB	7.5	4	174	90	75
29	50/26QMB	9.3	4	174	90	75
30	80/26N	7.5	4	194	120	105
31	80/26N	9.3	4	194	120	105
32	80/26N	11	4	200	120	105
33	80/26N	15	4.5	240	120	105
34	80/26N	18.5	4.5	240	120	105
35	80/26N	22	4.5	250	120	105
36	80/26QM	7.5	4	194	120	105
37	80/26QM	9.3	4	194	120	105
38	80/26QM	11	4	200	120	105
39	80/26QM	15	4.5	240	120	105
40	80/26QM	18.5	4.5	240	120	105
41	80/26QM	22	4.5	250	120	105
42	80/26Q	7.5	4	197	120	105
43	80/26Q	9.3	4	197	120	105
44	80/26Q	11	4	203	120	105
45	80/26Q	15	4.5	245	120	105
46	80/26Q	18.5	4.5	245	120	105
47	80/26Q	22	4.5	255	120	105
48	80/26QT	9.3	4	197	120	105
49	80/26QT	11	4	203	120	105
50	80/26QT	15	4.5	245	120	105
51	80/26QT	18.5	4.5	245	120	105
52	80/26QT	22	4.5	255	120	105
53	100/26N	7.5	4	214	140	125
54	100/26N	9.3	4	214	140	125
55	100/26N	11	4	220	140	125
56	100/26N	15	4.5	263	140	125

Sr. No.	Pump Model (i-NS)	kW (4pole)	Approx. Oil Qty. (Liters)	Approx. Pump Weight (Kg.)	Approx. Connector unit Weight (Kg.) single guide pipe	Approx. Connector unit Weight (Kg.) Single guide pipe
57	100/26N	18.5	4.5	263	140	125
58	100/26N	22	4.5	273	140	125
59	100/26QM	7.5	4	214	140	125
60	100/26QM	9.3	4	214	140	125
61	100/26QM	11	4	220	140	125
62	100/26QM	15	4.5	263	140	125
63	100/26QM	18.5	4.5	263	140	125
64	100/26QM	22	4.5	273	140	125
65	100/26Q	7.5	4	217	140	125
66	100/26Q	9.3	4	217	140	125
67	100/26Q	11	4	223	140	125
68	100/26Q	15	4.5	267	140	125
69	100/26Q	18.5	4.5	267	140	125
70	100/26Q	22	4.5	277	140	125
71	100/26QT	7.5	4	217	140	125
72	100/26QT	9.3	4	217	140	125
73	100/26QT	11	4	223	140	125
74	100/26QT	15	4.5	267	140	125
75	100/26QT	18.5	4.5	267	140	125
76	100/26QT	22	4.5	277	140	125
77	150/26N	11	4	250	180	160
78	150/26N	15	4.5	287	180	160
79	150/26N	18.5	4.5	287	180	160
80	150/26N	22	4.5	297	180	160
81	150/26QM	11	4	250	180	160
82	150/26QM	15	4.5	287	180	160
83	150/26QM	18.5	4.5	287	180	160
84	150/26QM	22	4.5	297	180	160
85	150/26Q	11	4	255	180	160
86	150/26Q	15	4.5	292	180	160
87	150/26Q	18.5	4.5	292	180	160
88	150/26Q	22	4.5	302	180	160
89	150/26QT	11	4	255	180	160
90	150/26QT	15	4.5	292	180	160
91	150/26QT	18.5	4.5	292	180	160
92	150/26QT	22	4.5	302	180	160
93	150/26NB	11	4	245	180	160
94	150/26NB	15	4.5	287	180	160
95	150/26NB	18.5	4.5	287	180	160
96	150/26NB	22	4.5	297	180	160
97	150/26QMB	11	4	245	180	160
98	150/26QMB	15	4.5	287	180	160
99	150/26QMB	18.5	4.5	287	180	160
100	150/26QMB	22	4.5	297	180	160
101	150/26NM	11	4	255	180	160
102	150/26NM	15	4.5	290	180	160
103	150/26NM	18.5	4.5	290	180	160
104	150/26NM	22	4.5	300	180	160
105	150/26QNM	11	4	255	180	160
106	150/26QNM	15	4.5	290	180	160



Sr. No.	Pump Model (i-NS)	kW (4pole)	Approx. Oil Qty. (Liters)	Approx. Pump Weight (Kg.)	Approx. Connector unit Weight (Kg.) single guide pipe	Approx. Connector unit Weight (Kg.) Single guide pipe
107	150/26QNM	18.5	4.5	290	180	160
108	150/26QNM	22	4.5	300	180	160
109	40/32QT	2.2	2	150	90	75
110	40/32QT	3.7	2	150	90	75
111	40/32QT	5.5	2	155	90	75
112	50/32N	7.5	5.5	194	90	75
113	50/32N	9.3	5.5	194	90	75
114	50/32N	11	5.5	200	90	75
115	50/32N	15	6	234	90	75
116	50/32N	18.5	6	234	90	75
117	50/32N	22	6	244	90	75
118	50/32QM	7.5	5.5	194	90	75
119	50/32QM	9.3	5.5	194	90	75
120	50/32QM	11	5.5	200	90	75
121	50/32QM	15	6	234	90	75
122	50/32QM	18.5	6	234	90	75
123	50/32QM	22	6	244	90	75
124	50/32QT	7.5	5.5	199	90	75
125	50/32QT	9.3	5.5	199	90	75
126	50/32QT	11	5.5	205	90	75
127	50/32QT	15	6	239	90	75
128	50/32QT	18.5	6	239	90	75
129	50/32QT	22	6	249	90	75
130	65/32N	7.5	5.5	204	110	90
131	65/32N	9.3	5.5	204	110	90
132	65/32N	11	5.5	210	110	90
133	65/32N	15	6	244	110	90
134	65/32N	18.5	6	244	110	90
135	65/32N	22	6	254	110	90
136	65/32QM	7.5	5.5	204	110	90
137	65/32QM	9.3	5.5	204	110	90
138	65/32QM	11	5.5	210	110	90
139	65/32QM	15	6	244	110	90
140	65/32QM	18.5	6	244	110	90
141	65/32QM	22	6	254	110	90
142	65/32Q	7.5	5.5	209	110	90
143	65/32Q	9.3	5.5	209	110	90
144	65/32Q	11	5.5	215	110	90
145	65/32Q	15	6	250	110	90
146	65/32Q	18.5	6	250	110	90
147	65/32Q	22	6	260	110	90
148	65/32QT	7.5	5.5	209	110	90
149	65/32QT	9.3	5.5	209	110	90
150	65/32QT	11	5.5	215	110	90
151	65/32QT	15	6	250	110	90
152	65/32QT	18.5	6	250	110	90
153	65/32QT	22	6	260	110	90
154	65/32NB	7.5	5.5	202	110	90
155	65/32NB	9.3	5.5	202	110	90
156	65/32NB	11	5.5	208	110	90

Sr. No.	Pump Model (i-NS)	kW (4pole)	Approx. Oil Qty. (Liters)	Approx. Pump Weight (Kg.)	Approx. Connector unit Weight (Kg.) single guide pipe	Approx. Connector unit Weight (Kg.) Single guide pipe
157	65/32NB	15	6	242	110	90
158	65/32NB	18.5	6	242	110	90
159	65/32NB	22	6	252	110	90
160	65/32QMB	7.5	5.5	202	110	90
161	65/32QMB	9.3	5.5	202	110	90
162	65/32QMB	11	5.5	208	110	90
163	65/32QMB	15	6	242	110	90
164	65/32QMB	18.5	6	242	110	90
165	65/32QMB	22	6	252	110	90
166	100/32N	11	5.5	245	140	125
167	100/32N	15	6	284	140	125
168	100/32N	18.5	6	284	140	125
169	100/32N	22	6	294	140	125
170	100/32QM	11	5.5	245	140	125
171	100/32QM	15	6	284	140	125
172	100/32QM	18.5	6	284	140	125
173	100/32QM	22	6	294	140	125
174	100/32Q	11	5.5	250	140	125
175	100/32Q	15	6	289	140	125
176	100/32Q	18.5	6	289	140	125
177	100/32Q	22	6	299	140	125
178	100/32QT	11	5.5	250	140	125
179	100/32QT	15	6	289	140	125
180	100/32QT	18.5	6	289	140	125
181	100/32QT	22	6	299	140	125
182	150/32N	18.5	6	298	180	160
183	150/32N	22	6	308	180	160
184	150/32QM	18.5	6	298	180	160
185	150/32QM	22	6	308	180	160
186	150/32Q	18.5	6	303	180	160
187	150/32Q	22	6	313	180	160
188	150/32QT	18.5	6	303	180	160
189	150/32QT	22	6	313	180	160
190	50/36QM	11	6.5	215	90	75
191	50/36QM	15	7	249	90	75
192	50/36QM	18.5	7	249	90	75
193	50/36QM	22	7	259	90	75
194	80/40N	18.5	9	287	120	105
195	80/40N	22	9	297	120	105
196	80/40QM	18.5	9	287	120	105
197	80/40QM	22	9	294	120	105
198	80/40Q	22	9	300	120	105
199	80/40Q	18.5	9	292	120	105
200	80/40QT	18.5	9	292	120	105
201	80/40QT	22	9	300	120	105
202	80/40NM	18.5	9	290	120	105
203	80/40NM	22	9	300	120	105
204	80/40QNM	18.5	9	290	120	105
205	80/40QNM	22	9	300	120	105

Sr. No.	Pump Model (NS)	kW (4pole)	Approx. Oil Quantity (Liters)	Approx. Pump Weight (Kg.)	Approx. Connector unit Weight (Kg.) Double guide pipe
1	100/32QM	30	6	550	95
2	100/32Q	30	6	540	95
3	100/32QT	30	6	550	95
4	100/32N	37	6	540	95
5	100/32QM	37	6	555	95
6	100/32Q	37	6	545	95
7	100/32QT	37	6	555	95
8	100/32N	45	6	550	95
9	100/32QM	45	6	555	95
10	100/32Q	45	6	550	95
11	100/32QT	45	6	555	95
12	150/26N	30	6	545	165
13	150/26QM	30	6	550	165
14	150/26Q	30	6	545	165
15	150/26QT	30	6	550	165
16	150/26NB	30	6	545	165
17	150/26QMB	30	6	550	165
18	150/26NM	30	6	545	165
19	150/32N	37	6	560	165
20	150/32QM	37	6	565	165
21	150/32Q	37	6	560	165
22	150/32QT	37	6	565	165
23	150/32N	45	6	620	165
24	150/32QM	45	6	625	165
25	150/32Q	45	6	620	165
26	150/32QT	45	6	625	165
27	200/32N	30	6	625	185
28	200/32QM	30	6	630	185
29	200/32Q	30	6	625	185
30	200/32QT	30	6	630	185
31	200/32N	37	6	630	185
32	200/32QM	37	6	635	185
33	200/32Q	37	6	630	185
34	200/32QT	37	6	635	185
35	200/32N	45	6	750	210
36	200/32QM	45	6	760	210
37	200/32Q	45	6	750	210
38	200/32QT	45	6	760	210
39	200/32N	55	6	1030	210
40	200/32QM	55	6	1040	210
41	200/32Q	55	6	1030	210
42	200/32QT	55	6	1040	210
43	200/32N	75	6	1570	210
44	200/32QM	75	6	1580	210
45	200/32Q	75	6	1570	210
46	200/32QT	75	6	1580	210
47	150/34N	37	6	620	165
48	150/34QM	37	6	625	165
49	80/40N	30	6	555	75
50	80/40QM	30	6	560	75
51	80/40Q	30	6	555	75
52	80/40QT	30	6	560	75
53	80/40N	37	6	565	75
54	80/40QM	37	6	570	75
55	80/40Q	37	6	565	75
56	80/40QT	37	6	570	75
57	80/40N	45	6	575	75
58	80/40QM	45	6	575	75
59	80/40Q	45	6	575	75

Sr. No.	Pump Model (NS)	kW (4pole)	Approx. Oil Quantity (Liters)	Approx. Pump Weight (Kg.)	Approx. Connector unit Weight (Kg.) Double guide pipe
60	80/40QT	45	6	575	75
61	100/40N	30	6	400	140
62	100/40N	37	6	575	140
63	100/40N	55	6	1145	180
64	150/40N	55	6	1250	180
65	150/40N	90	6	1400	180
66	150/50N	90	6	1450	180
67	200/32N	30	6	625	215
68	200/32N	37	6	630	215
69	200/32N	45	6	750	215
70	200/32N	55	6	1030	215
71	200/40Q	30	6	950	215
72	200/40Q	37	6	1000	215
73	200/40Q	45	6	1050	215
74	250/34	30	6	700	400
75	250/34	37	6	720	400
76	250/34	45	6	900	460
77	250/34	55	6	1250	460
78	250/34	75	6	1570	460
79	250/34	90	6	1600	460
80	250/50	55	6	2590	460
81	250/50	75	6	2650	460
82	250/50	90	6	2700	460
83	250/50	110	6	2800	460
84	250/50	125	6	2820	460
85	250/50	150	6	2830	460
86	300/55	150	6	2900	630
87	300/55	180	6	2950	630
88	300/55	225	6	3000	630
89	350/40	30	6	1750	1030
90	350/40	37	6	1800	1030
91	350/40	45	6	2150	1030
92	350/40	55	6	2220	1030
93	350/40	75	6	2300	1030
94	350/47	90	6	2500	1030
95	350/47	110	6	2550	1030
96	350/47	125	6	2600	1030
97	350/47	150	6	2650	1030

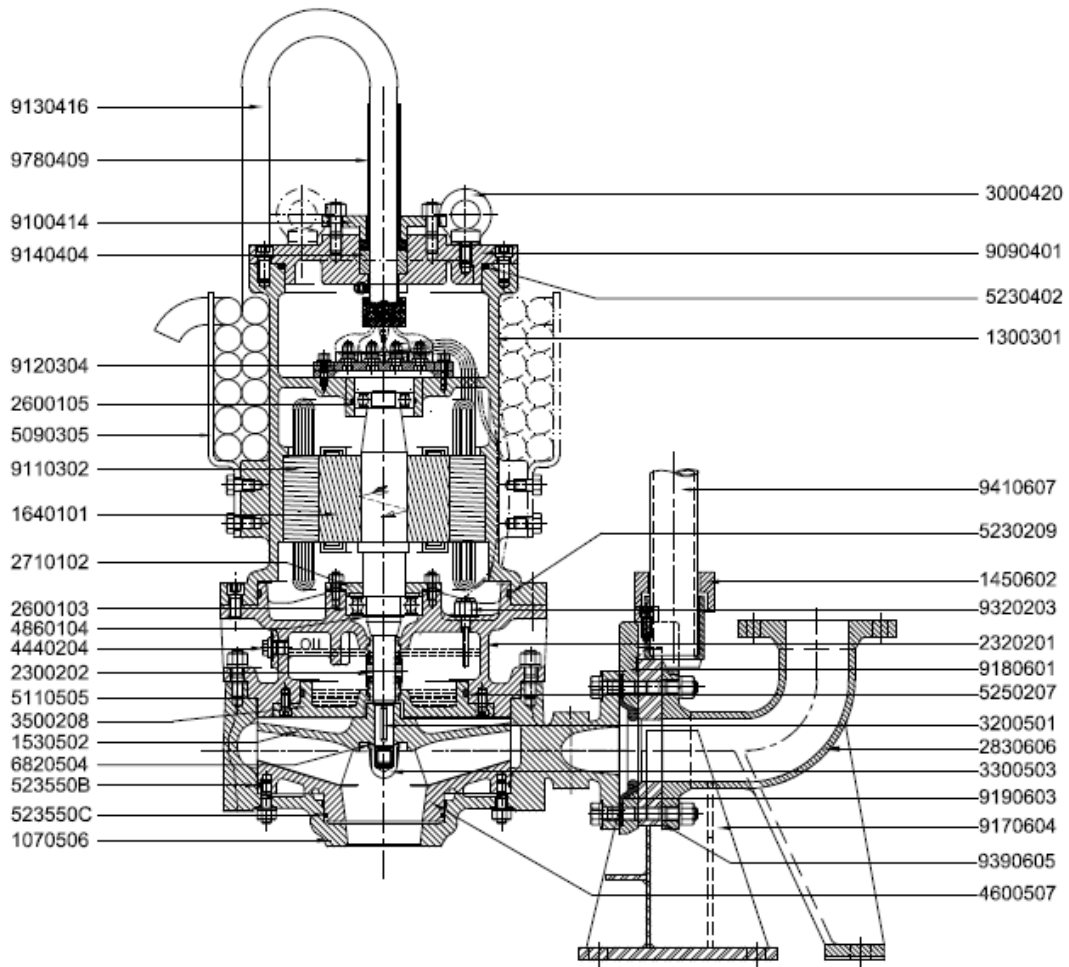
NOTE: change oil after every 5000 hrs of pump operation.

## 6.7 OVERHAULING:

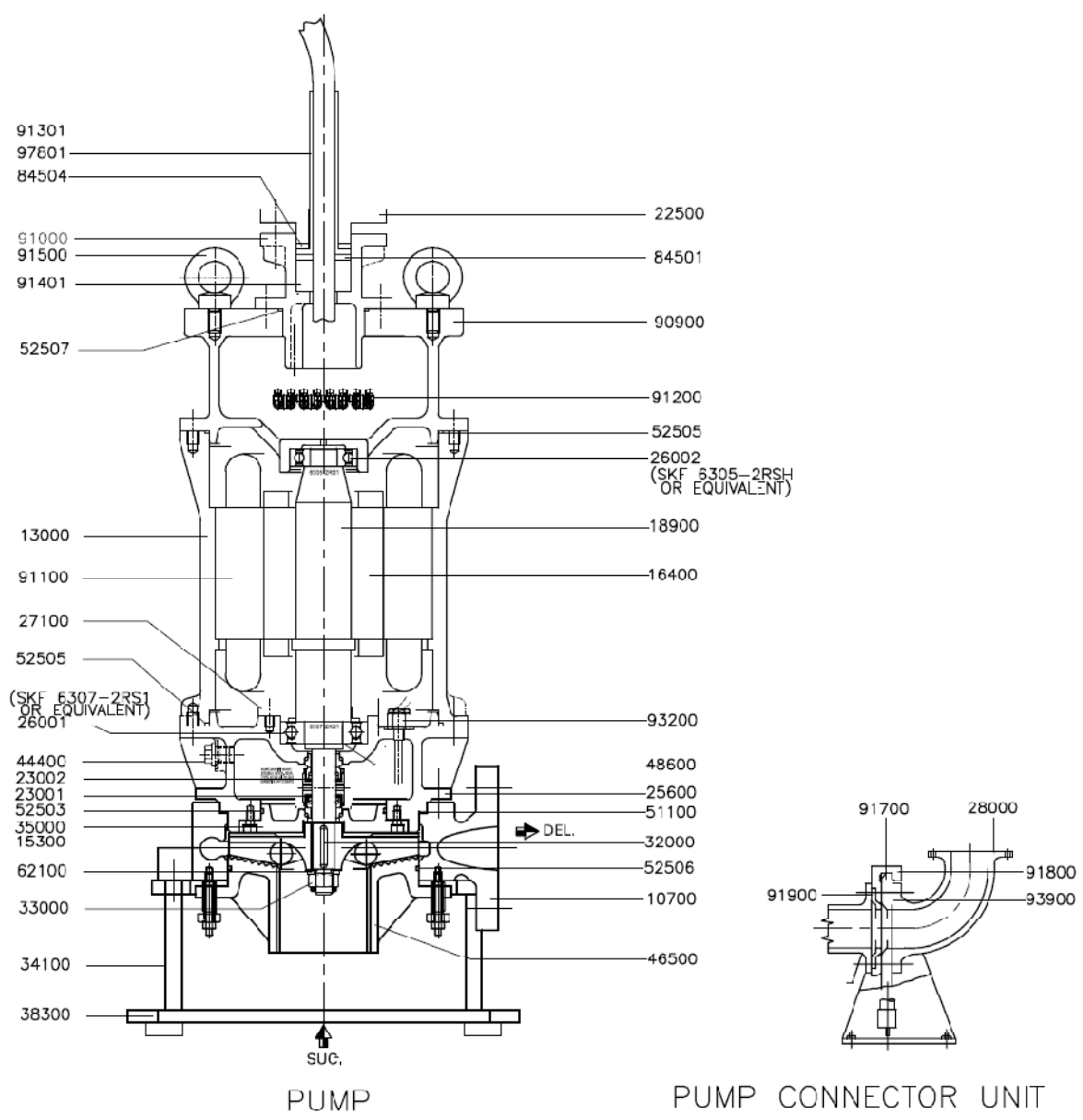
Overhauling of the pump or any part of it, at site, is not permitted. In case of doubt, please consult our service division.

Do not handle the pump with the use of cable.

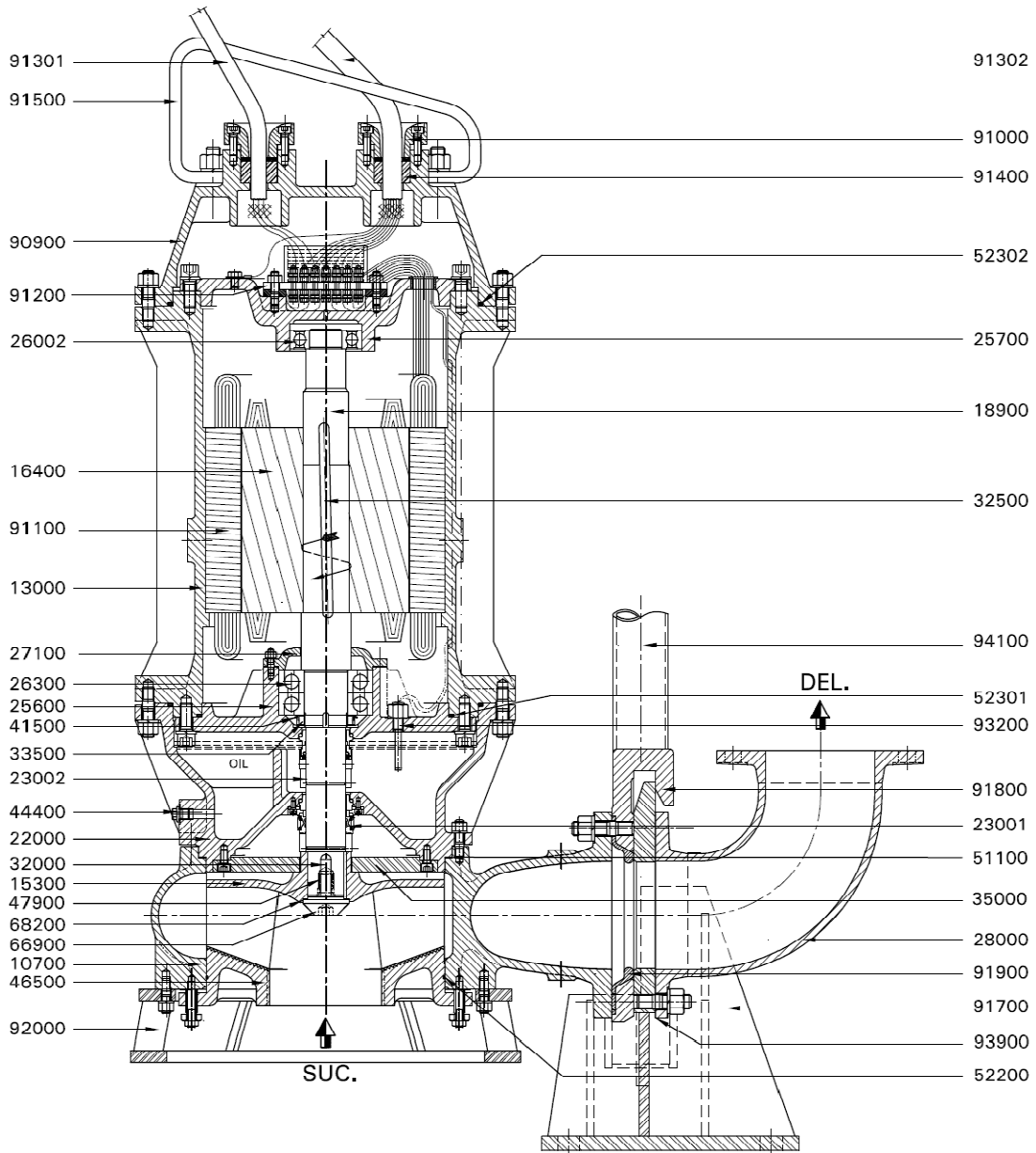
## 6 CROSS SECTIONAL DRAWING



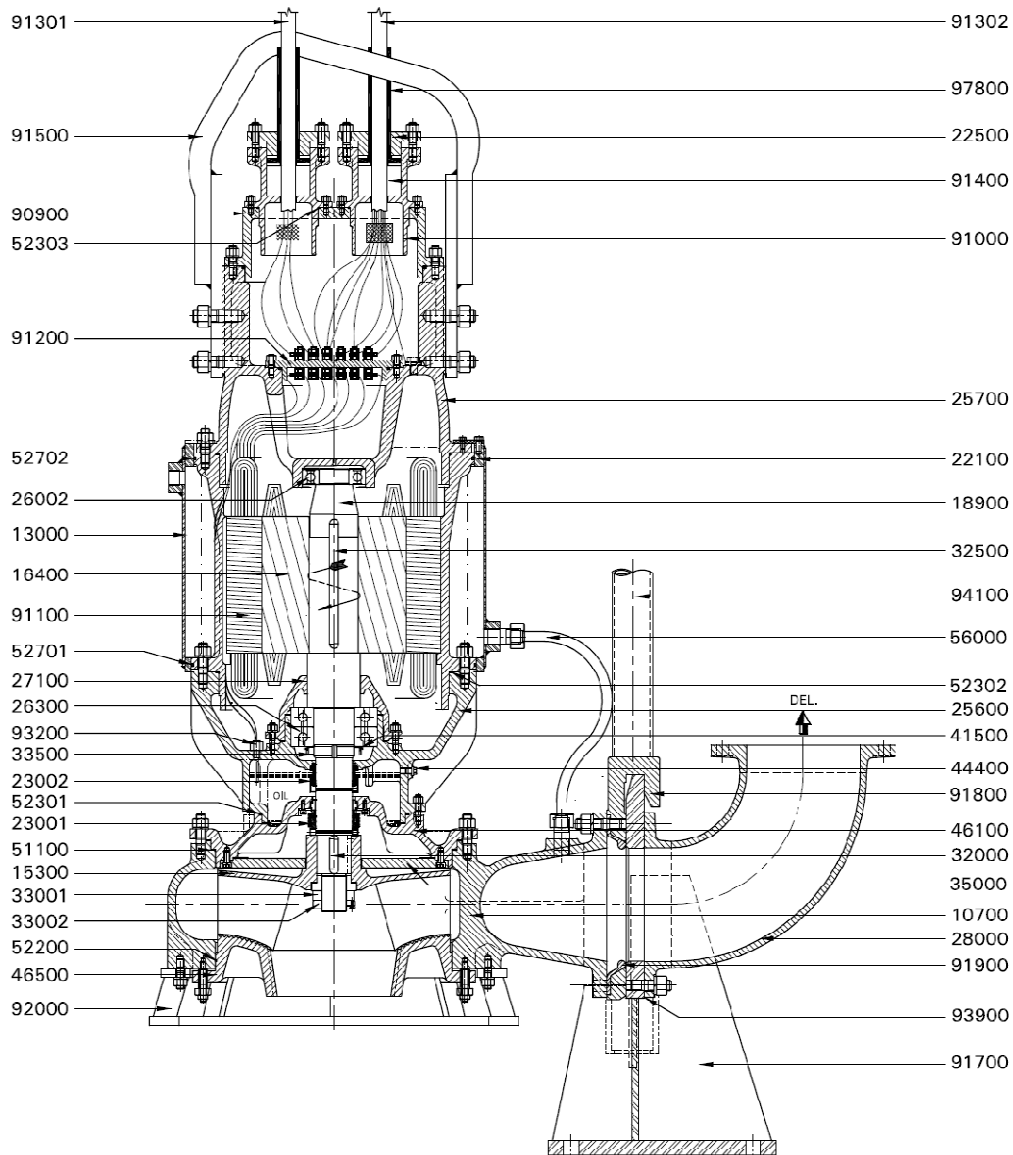
CROSS SECTIONAL VIEW OF INS PUMP



CROSS SECTIONAL VIEW OF NS HIGH SPEED PUMP



CROSS SECTIONAL VIEW OF NS PUMP UNIT III (SDS)



CROSS SECTIONAL VIEW OF NS PUMP UNIT IV & ABOVE (SDS)

### High speed NS Pump Part list

PART	PART DESCRIPTION	QTY / PUMP
1070001	PUMP CASING	1
1300001	STATOR HSG	1
1530001*	SEMI OPEN IMPELLER	1
1640001	ROTOR ASSEMBLY	1
2300101*	MECHANICAL SEAL	1
2560001	LOWER BEARING HOLDER	1
2600101*	BRG-6306 2RS1 SKF/EQUIVALENT	1
2600201*	BRG-6304 2RS1 SKF/EQUIVALENT	1
2710010	BEARING COVER	1
3200001*	KEY FOR IMPELLER 6 x 4 x 33L	1
4440001	PLUG 1/4 INCH	3
4860001	EXTERNAL CIRCLIP-30D	1
5110001*	GASKET-FOR PUMP CASING	1
5230201*	O-RING-FOR STATOR HOUSING	2
5250001*	O-RING-FOR PLUGS	3
5880401	HEX NUT-FOR BRG. COVER	4
5820001	HEX NUT-FOR UPEER BRG. HOLDER AND STATOR HOUSING	8
5820101	HEX NUT-FOR BUSH FOR GLAND	8
5940001	STUD-FOR PUMP CASING AND LOER BRG. HOLDER	8
5900201	STUD-FOR LOWER BRG. HOLDER AND STATOR HOUSING	8



7310001	STUD-FOR BUSH FOR GLAND	8
8290001	STUD-FOR CABLE GLAND	12
5940201	STUD FOR SUCTION PLATE	4
6400101	RIVET- FOR OIL NAME PLATE	2
6400201	RIVET-FOR DUTY NAME PLATE	4
6700001	DUTY NAME PLATE	1
6730001	OIL NAME PLATE	1
5820201	HEX NUT-FOR CABLE GLAND	12
7090601	SPRING WASHER-FOR BRG. COVER	4
7090301	SPRING WASHER-FOR CABLE GLAND	12
8450101*	WASHER- FOR PROTECTION TUBE	1
8840001	TIE-CABLE-NS PUMP	2
9110001	STATOR	1
9120001	TERMINAL BOARD	2
9320001	MOISTURE SENSOR 1/8 INCH B.S.P.	1
9890101	HEX SOC CAP SCREW-M6X12L	6
2090101	SPACER FOR SUCTION PLATE	4
3500001	STUFFING BOX BUSH	1
4650001	SUCTION PLATE	1
5220001*	O-RING-FOR SUCTION PLATE	1
5230301*	O-RING-FOR CABLE GLAND	2
5250501*	O-RING-FOR STUFFING BOX BUSH	1
7090401	SPRING WASHER-M10	8
3300001*	NYLON SELF LOCK NUT FOR IMPELLER	1
6210001	WASHER- FOR NYLON SELF LOCK NUT FOR IMPELLER	1
5860301	HEX NUT-FOR SUCTION PLATE	4
9090001	MOTOR END COVER	1
3000001	EYE BOLT FOR MOTOR END COVER	2
5930201	STUD-FOR BRG. COVER	4
5930401	STUD-FOR MOTOR END COVER AND STATOR HOUSING	8
5820301	HEX NUT-FOR PUMP CASING AND LOWER BRG. HOLDER	8
7090701	SPRING WASHER-FOR PUMP CASING AND LOWER BRG. HOLDER	8
9890201	HEX SOC CAP SCREW- FOR EARTHING	1
8850301	PIN TYPE LUG -FOR TERMINAL BOARD	7
8450501*	MACHINED WASHER-FOR CABLE	1
9100101	CABLE GLAND	1
9130101	REPUTED MAKE CABLE	5M
9780401*	TUBE-CABLE PROTECTION	1
9140201*	CABLE SEAL- FOR CABLE	1
2250201	BUSH-GLAND	1
3410001	TIE BAR FOR STAND	4
3830001	PUMP STAND	1
5810201	HEX NUT- FOR PUMP STAND	4
7090201	SPRING WASHER- FOR PUMP STAND	4
6300101	HEX SCREW- RELEASE SCREW FOR STATOR HOUSING AND LOWER BRG. HOLDER	4
6300201	HEX SCREW- RELEASE SCREW FOR CABLE GLAND	4
6300301	HEX SCREW- RELEASE SCREW FOR SUCTION PLATE	2
5820401	HEX NUT- FOR MOTOR END COVER AND STATOR HOUSING	8
7090501	SPRING WASHER- FOR LOWER BRG. HOLDER AND STATOR HOUSING	8
3030801	CHAIN WITH BOW SHACKLE	1
9180001	GUIDE SHOE	1
1450001	GUIDE PIPE ADAPTER	1
9190001	RUBBER DIAPHRAGM	1
9400001	STUD- FOR GUIDE SHOE	4
8550001	HEX NUT- FOR GUIDE SHOE	4
9800001	SPRING WASHER- FOR GUIDE SHOE	4
6660101	HEX SOC CAP SCREW- FOR GUIDE PIPE ADAPTER	2
9130201	REPUTED MAKE CABLE	5M
9100201	CABLE GLAND	1
2250301	BUSH FOR POWER CABLE GLAND	1
9140301*	CABLE SEAL- FOR CABLE	1
9780201*	CABLE PROTECTION TUBE	1
8450301*	MACHINED WASHER- FOR POWER AND CONTROL CABLE	1
8450401*	MACHINED WASHER- FOR POWER CABLE	1
8850201	PIN TYPE LUG- FOR TERMINAL BOARD	4
8850101	CRIMPING RING TERMINAL- FOR EARTHING	1
9400101	GUIDE PIPE 3 METER	1

## iNS Pump Part List

PART CODE	PART DESCRIPTION	QTY / PUMP	SUB ASSEMBLY	SUB UNIT
1640101	ROTOR WITH SHAFT & SPACER	1	SHAFT UNIT	MOTOR UNIT
2710102	BEARING COVER	1		
2600103*	LOWER BEARING	1		
4860104	CIRCLIP FOR BEARING	1		
2600105*	UPPER BEARING	1		
5900151	STUD FOR BEARING COVER	4		
5860161	NUT FOR BEARING COVER	4		
7500171	SPRING WASHER FOR BEARING COVER	4		
2320201	MECHANICAL SEAL HOUSING	1	MECHANICAL SEAL HOUSING	
2300202*	MECHANICAL SEAL	1		
9320203*	MOISTURE SENSOR	1		
4440204	PLUG	1		
5250205*	O-RING FOR PLUG	1		
5250206*	O-RING FOR MOISTURE SENSOR	1		
5250207*	O RING FOR STUFFING BOX BUSH	1		
3500208*	STUFFING BOX BUSH	1		
5230209*	O-RING FOR MECHANICAL SEAL HOUSING	1		
5900251	STUD FOR MECH. SEAL HOUSING & STATOR HOUSING	8		
5900252	STUD FOR MECH. SEAL HOUSING & PUMP CASING	12		
6660253	HEX SOC CAP SCREW FOR STUFFING BOX BUSH-M8	6		
6300254	RELEASE FOR MECH. SEAL HOUSING & STATOR HOUSING	2		
6300255	RELEASE FOR MECH. SEAL HOUSING & PUMP CASING	2		
5860261	NUT FOR MECH. SEAL HOUSING & STATOR HOUSING	8		
5860262	NUT FOR MECH. SEAL HOUSING & PUMP CASING	12		
7500271	SPRING WASHER FOR MECH. SEAL HSG. & STATOR HSG.	8		
7500272	SPRING WASHER FOR MECH. SEAL HOUSING & PUMP CASING	12		
1300301	STATOR HOUSING	1	STATOR HOUSING	
9110302	STATOR	1		
5230303*	O-RING STATOR HOUSING	1		
9120304	TERMINAL BOARD	1		
5090305	CABLE BRACKET	3		
6660351	HEX SOC CAP SCREW FOR TERMINAL BOARD	11		
5900352	STUD FOR TERMINAL BOARD & STATOR HSG.	2		
6660353	HEX SOC CAP SCREW FOR STATOR HSG & MOTOR END COVER	8		
6300354	RELEASE FOR STATOR HSG. & MOTOR END COVER	2		
7140355	HEX SCREW FOR CABLE BRACKET	6		
5860361	NUT FOR TERMINAL BOARD	11		
5860362	NUT FOR TERMINAL BOARD & STATOR HSG.	2		
8450371	WASHER FOR TERMINAL BOARD	22		
8450372	WASHER FOR TERMINAL BOARD & STATOR HSG.	2		
9090401	MOTOR END COVER	1		MOTOR END COVER
5230402*	O RING MOTOR END COVER	1		
9140403*	CABLE SEAL FOR POWER	1		
9140404*	CABLE SEAL FOR POWER & CONTROL	1		
8450406*	WASHER FOR CABLE SEAL POWER	1		
8450407*	WASHER FOR CABLE SEAL POWER & CONTROL	1		
9780408*	CABLE PROT TUBE POWER	1		
9780409*	CABLE PROT TUBE POWER & CONTROL	1		
8450411*	WASHER FOR PROTECTION TUBE POWER	1		
8450412*	WASHER FOR PROTECTION TUBE POWER & CONTROL	1		
9100413	CABLE GLAND FOR POWER	1		
9100414	CABLE GLAND FOR POWER & CONTROL	1		
9130415	POWER CABLE	1		
9130416	POWER & CONTROL CABLE	1		
4930417*	HOSE CLIP	2		
4400418	POTTING CUP POWER	1		

4400419	POTTING CUP FOR POWER & CONTROL	1		
3000420	EYE BOLT	2		
5900451	STUD FOR CABLE GLAND	4		
5860461	NUT CABLE GLAND	4		
8850481	CRIMPING RING - PIN TYPE	4		
8850482	CRIMPING RING - RING TYPE	11		
3200501	KEY	1		
1510502	IMPELLER	1		
3300503*	IMPELLER NUT WITH INSERT/IMPELLER SCREW WITHOUT INSERT	1		
6820504*	GASKET FOR IMPELLER	1		
5110505*	GASKET FOR PUMP CASING	1		
1070506	PUMP CASING	1		
1900507	SUCTION PLATE/WEAR PLATE/CASING RING*	1		
3410508	TIE BAR FOR STAND	6		
3830509	SUPPORT PLATE FOR STAND	1	PUMP	PUMP UNIT
209050A*	SPACER-SUC PLATE	6		
523050B*	O-RING FOR SUCTION PLATE/WEAR PLATE	1		
523050B*	O-RING FOR WEAR PLATE	1		
5900551	STUD FOR SUCTION / WEAR PLATE/ CASING RING	6		
5860562	NUT FOR SUCTION PLATE/ WEAR PLATE	6		
5860561	NUT FOR STAND	6		
7500571	SPRING WASHER FOR STAND	6		
4790581	HELICOIL INSERT	1		
9180601	GUIDE SHOE	1		
1450602	GUIDE PIPE ADAPTER	1		
9190603*	RUBBER DIAPHRAGM	1		
9170604	SUPPORT BRACKET	1		
9390605*	GASKET FOR BEND	1		
2830606	DUCK FOOT BEND	1		
9410607	GUIDE PIPE	2		
9210608	GUIDE PIPE HOLDER	1		
5590609	ADAPTER PIECE	1		
3040651	FOUNDATION BOLTS	6		
5860061	NUT FOR FOUNDATION BOLTS	6		
8450071	WASHER FOR FOUNDATION BOLTS	6		
5900052	STUD FOR BEND & CASING	6		
5860062	NUT FOR BEND & CASING	6		
7500072	SPRING WASHER FOR BEND & CASING	6		
5900053	STUD FOR SUPPORT BRACKET & GUIDE SHOE	6		
5860063	NUT FOR SUPPORT BRACKET & GUIDE SHOE	6		
7500073	SPRING WASHER FOR SUPPORT BRACKET & GUIDE SHOE	6		
6660281	HEX SOC CAP SCREW FOR GUIDE PIPE ADAPTER	6		
			CONNECTOR UNIT FOR STATIONARY INSTALLATION	

### NS Pump Part List

PART	PART DESCRIPTION	QTY. / PUMP
10700	PUMP CASING	1
13000	STATOR HOUSING	1
15100*	ENCLOSED IMPELLER	1
15300*	SEMIOPEN IMPELLER	1
16400	ROTOR	1
18900	ROTOR SHAFT	1
19000	CASING RING	1
20900*	SPACER FOR UPPER BRG.	1
22000	CASING COVER	1
22501	BUSH FOR CONTROL CABLE GLAND	1
22502	BUSH FOR POWER CABLE GLAND	1
23001*	MECHANICAL SEAL (IN-BOARD)	1
23002*	MECHANICAL SEAL (OUT-BOARD)	1
23200	MECHANICAL SEAL HOUSING	1
23300	HOLDING PLATE FOR MECHANICAL SEAL	1
25600	LOWER BEARING HOLDER	1

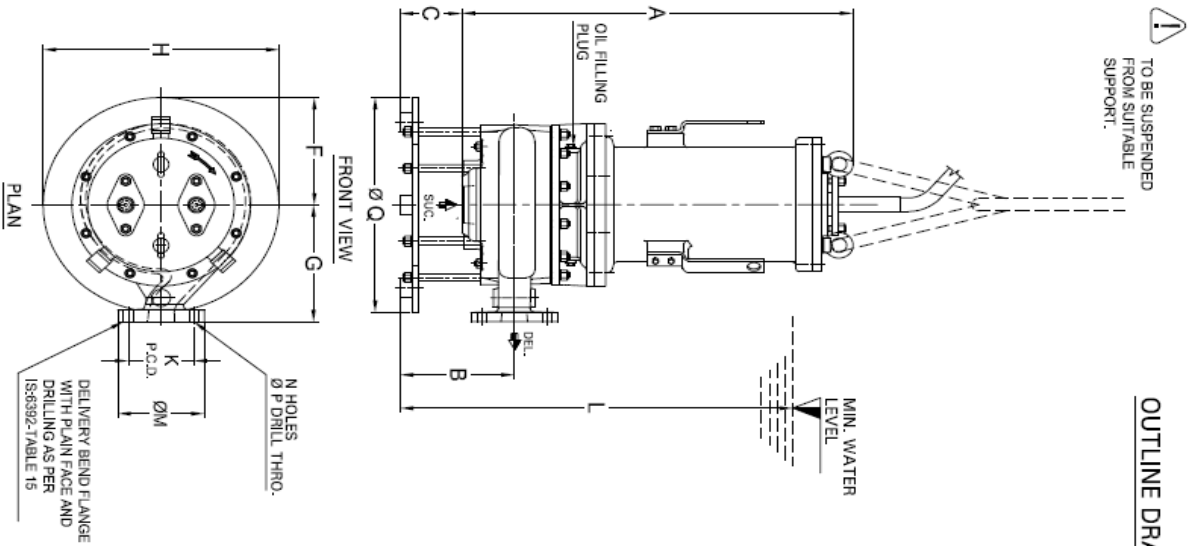
25700	UPPER BEARING HOLDER	1
26001*	DEEP GROOVE BALL BEARING LOWER	1
26002*	DEEP GROOVE BALL BEARING UPPER	1
26300*	ANGULAR CONTACT BALL BEARING	1
27100	BEARING COVER FOR LOWER BEARING	1
28000	BEND	1
30000	'D' TYPE SHACKLE	1
32000*	KEY FOR IMPELLER	1
32500	KEY FOR ROTOR	1
33000*	IMPELLER NUT	1
33500	ROUND LOCK NUT FOR LOWER BEARING	1
33701	ACCORN NUT FOR STUD OF WEAR PLATE	1
35000	STUFFING BOX BUSH	1
41500	LOCK WASHER FOR ROUND LOCK NUT	1
44400	PLUG FOR OIL FILLING	1
46000	WEAR PLATE	1
46100	ADAPTER PLATE	1
46500	SUCTION PLATE	1
47900*	HELICOIL LOCK INSERT FOR IMPELLER SCREW	1
48500	INTERNAL CIRCLIP FOR BEARING COVER	1
48600	EXTERNAL CIRCLIP FOR LOWER BEARING	1
50200	FELT RING FOR BEARING COVER	1
51100*	GASKET FOR PUMP CASING & ADAPTER PLATE	1
52201*	'O' RING FOR WEAR PLATE SUCTION SIDE	1
52202*	'O' RING FOR WEAR PLATE DELIVERY SIDE	1
52301*	O-RING FOR BEARING HOLDER	1
52302*	O-RING FOR STATOR HOUSING	1
52303*	O-RING FOR CABLE GLAND	1
52500*	O-RING FOR OIL FILLING PLUG	1
56000	FLEXIBLE HOSE PIPE FOR COOLING CHAMBER	1
62600	WASHER FOR ACCORN NUT	1
66900*	SCREW FOR IMPELLER	1
67000	DUTY NAME PLATE	1
67300	OIL NAME PLATE	1
68200*	GASKET FOR IMPELLER SCREW	1
68400*	GASKET FOR ACCORN NUT	1
84509	BONDED WASHER FOR ACCORN NUT	1
88400	TIE FOR CABLE	1
90900	MOTOR END COVER	1
91001	CABLE GLAND FOR POWER CABLE	1
91002	CABLE GLAND FOR CONTRTOL CABLE	1
91100*	STATOR	1
91200	TERMINAL BOARD	1
91201	TERMINAL BOARD(PLASTIC-VE PUMP)	1
91301	POWER+CONTROL CABLE	1
91302	POWER CABLE	1
91401	CABLE SEAL FOR POWER+CONTROL CABLE	1
91402	CABLE SEAL FOR POWER CABLE	1
91500	HANDLE	1
91700	SUPPORT BRACKET	1
91800	GUIDE SHOE	1
91900	RUBBER DIAPHRGAM	1
92000	STAND	1
92800	GUIDE PIPE HOLDER	1
93200	MOISTURE SENSOR	1
93300	BUSH FOR TERMINAL BOARD	1
93800	THERMISTOR	1
94100	GUIDE PIPE	1
97801	TUBE FOR CABLE PROTECTION	1
97802	TUBE FOR CABLE PROTECTION	1

\* Marked part code nos. is recommended spares.

# 9 OUTLINE DRAWING & DIMENSIONS SHEET (iNS)

PREPARED BY : RYK/4.10.2014  
 CHECKED BY : SDP/4.10.2014  
 APPROVED BY: JBK/4.10.2014

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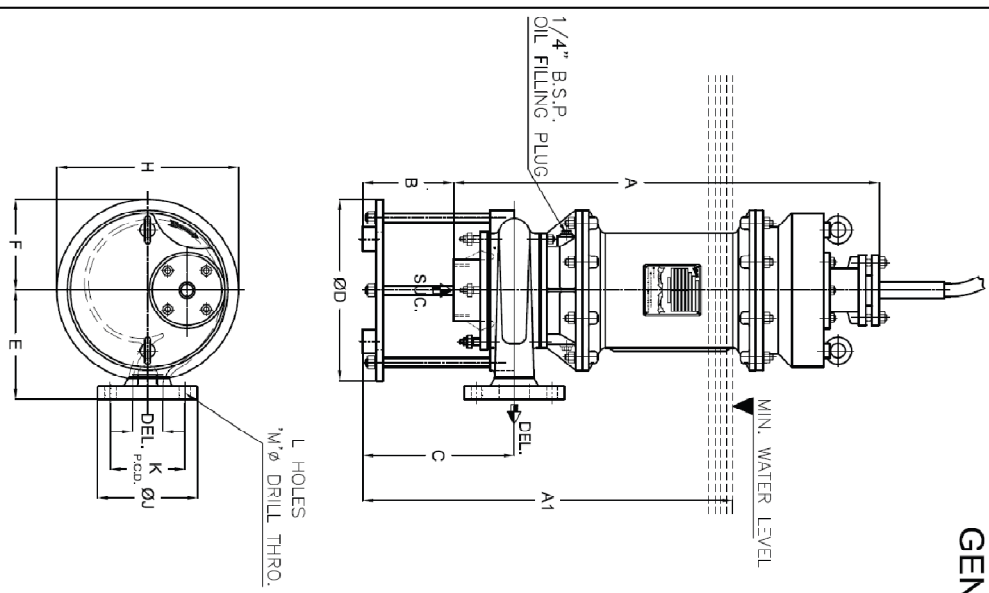
OUTLINE DRAWING FOR iNS PUMP (PORTABLE INSTALLATION)

PUMP	A	B	C	F	G	H	K	M	N	P	Q	L	
40/20QT	633	150	76	213	200	425	110	150	4	18	400	550	portable
40/32QT	681	149	49	260	275	520	110	150	4	18	500	550	
50/20QT	634	250	180	213	230	425	125	165	4	18	400	600	unit I
50/26N/NB/Q	686	250	170	230	245	460	125	165	4	18	450	600	
50/26QM/QMB/QT	671	250	170	250	245	500	125	165	4	18	450	600	
100/26N/Q	799	290	215	230	275	460	180	220	8	18	450	750	
100/26QM/QT	793	290	180	275	275	550	180	220	8	18	450	750	
100/32N/Q	799	290	255	250	310	500	180	220	8	18	500	750	
100/32QM/QT	821	290	185	288	310	575	180	220	8	18	500	750	
150/26N/NB/NM/Q	829	325	295	230	350	460	240	285	8	23	475	800	
150/26QM/QMB/QN	820	325	190	288	350	575	240	285	8	23	475	800	
50/26N/NB/Q	764	250	215	230	245	460	125	165	4	18	450	700	
50/26QM/QMB/QT	749	250	170	250	245	500	125	165	4	18	450	700	
50/32N/Q	774	250	225	250	280	500	125	165	4	18	500	700	
50/32QM/QT	763	250	155	270	280	540	125	165	4	18	500	700	
50/36QM	780	250	135	308	330	615	125	165	4	18	625	700	
65/32N/NB/Q	774	250	210	250	275	500	145	185	4	18	500	700	
65/32QM/QMB/QT	764	250	150	270	275	540	145	185	4	18	500	700	
80/26N/Q	779	265	235	230	245	460	160	200	8	18	450	700	
80/26QM/QT	801	265	160	250	245	500	160	200	8	18	450	700	
100/26N/Q	900	250	265	230	275	460	180	220	8	18	450	850	
100/26QM/QT	894	250	180	275	275	550	180	220	8	18	450	850	
100/32N/Q	900	250	260	250	310	500	180	220	8	18	500	850	
100/32QM/QT	900	250	185	288	310	575	180	220	8	18	500	850	
150/26N/NB/NM/Q	930	325	295	230	350	460	240	285	8	23	475	900	
150/26QM/QMB/QN	921	325	190	275	350	550	240	285	8	23	475	900	
150/32N/Q	925	325	293	250	395	500	240	285	8	23	500	900	
150/32QM/QT	931	325	200	288	395	575	240	285	8	23	500	900	
50/32N	875	250	225	250	280	500	125	165	4	18	500	800	unit III
50/32QM/QT	864	250	155	270	280	540	125	165	4	18	500	800	
50/36QM	881	250	135	308	330	615	125	165	4	18	625	800	
65/32N/NB/Q	875	250	210	250	275	500	145	185	4	18	500	800	
65/32QM/QMB/QT	865	250	150	270	275	540	145	185	4	18	500	800	
80/26N/Q	880	265	235	230	245	460	160	200	8	18	450	800	
80/26QM/QT	902	265	160	250	245	500	160	200	8	18	450	800	
80/40N/NM/Q	880	265	490	275	350	550	160	200	8	18	550	800	
80/40QM/QNM/QT	907	265	490	325	350	650	160	200	8	18	650	800	

NOTE:- ALL DIMENSIONS ARE IN mm EXCEPT SPECIFIED

PREPARED BY-R.Y.K-3,10.2013  
 CHECKED BY-S.D.P-3,10.2013  
 APPROVED BY-J.B.K-3,10.2013

## GENERAL ARRANGEMENT DIMENSIONS OF PORTABLE NS HIGH SPEED PUMP SERIES (2900RPM)

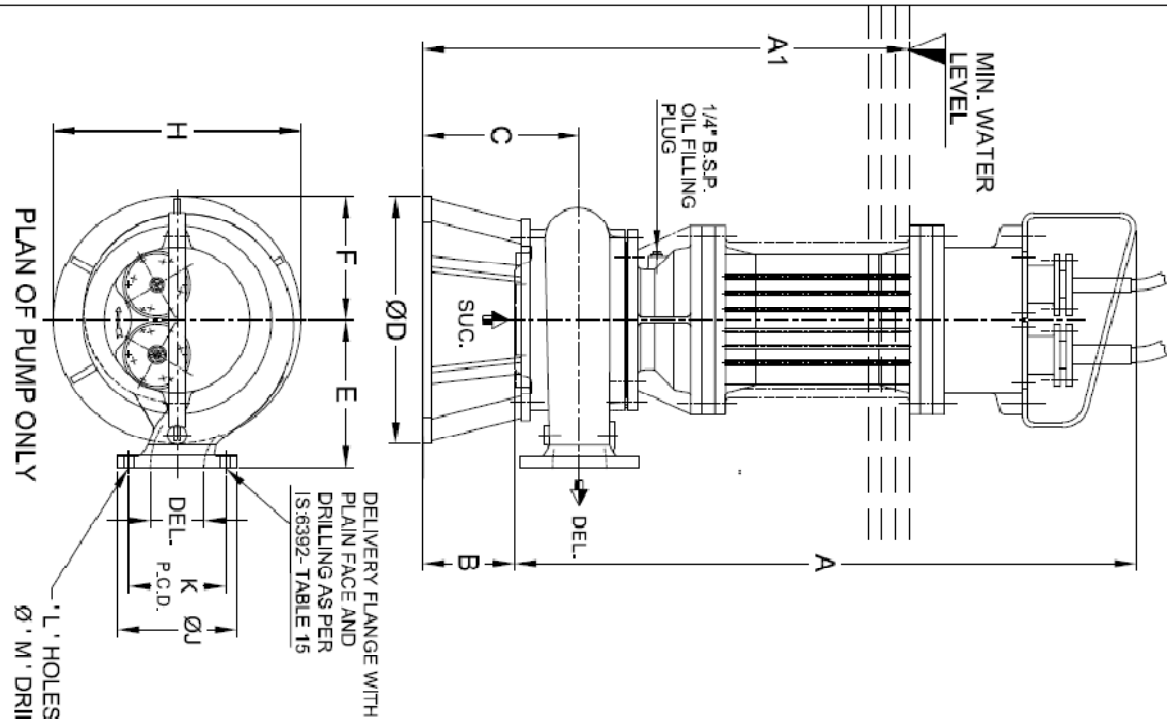


SR. NO.	PUMP TYPE	MOTOR RATING	SUCTION & DELIVERY NOMINAL SIZE		A	B	C	D	E	F	H	J DIA.	K P.C.D.	L M	A1
			NWS	NWD											
01	NS 20/20QT	3.7 5.5	60	20	682	60	125	350	180	175	360	105	75	4/14	500
02	NS 20/13QT	0.75 1.1	50	20	495	130	125	275	150	137.5	275	105	75	4/14	400
03	NS 20/13QT	1.5 2.2	50	20	486	130	125	275	150	137.5	275	105	75	4/14	400
04	NS 32/13QT	1.5 2.2	50	32	510	80	150	350	150	175	350	140	100	4/18	450
05	NS 32/13QT	3.7 5.5	50	32	672	80	150	350	150	175	350	140	100	4/18	500
06	NS 32/16QT	3.7 5.5	50	32	697	80	150	360	180	180	360	140	100	4/18	550
07	NS 32/16QT	7.5	50	32	680	80	150	360	180	180	360	140	100	4/18	550
08	NS 40/16QT	3.7 5.5	80	40	694	75	150	360	170	180	360	150	110	4/18	550
09	NS 40/16QT	7.5	80	40	682	75	150	360	170	180	360	150	110	4/18	550
10	NS 40/20QT	7.5	65	40	675	76	150	400	200	200	400	150	110	4/18	550
11	NS 50/13QT	3.7 5.5	80	50	662	90	150	350	180	175	350	165	125	4/18	550
12	NS 50/13QT	7.5	80	50	650	90	150	350	180	175	350	165	125	4/18	550
13	NS 50/16QT	7.5	90	50	750	85	150	400	200	200	400	165	125	4/18	550
14	NS 65/13QT	7.5	90	65	690	105	250	400	200	175	350	185	145	4/18	600

NOTES - 1) ALL DIMENSIONS ARE IN MM EXCEPT SPECIFIED  
 2) DO NOT SCALE THE DRAWING

KIRLOSKAR BROTHERS LIMITED  
 GENERAL DIMENSIONS / MOUNTING DETAILS  
 TRANSPORTABLE INSTALLATION NS - QT (n - 2900)  
 TL19214047-0

**GENERAL DIMENSIONS  
TRANSPORTABLE INSTALLATION II**



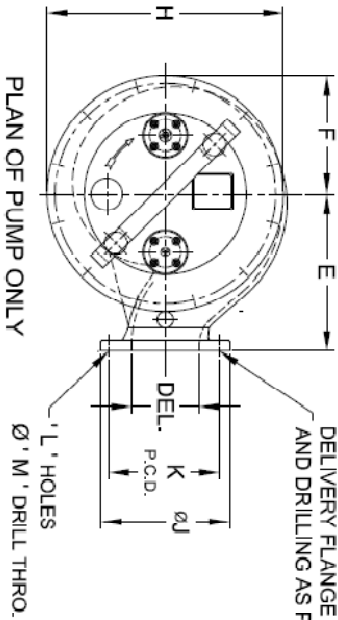
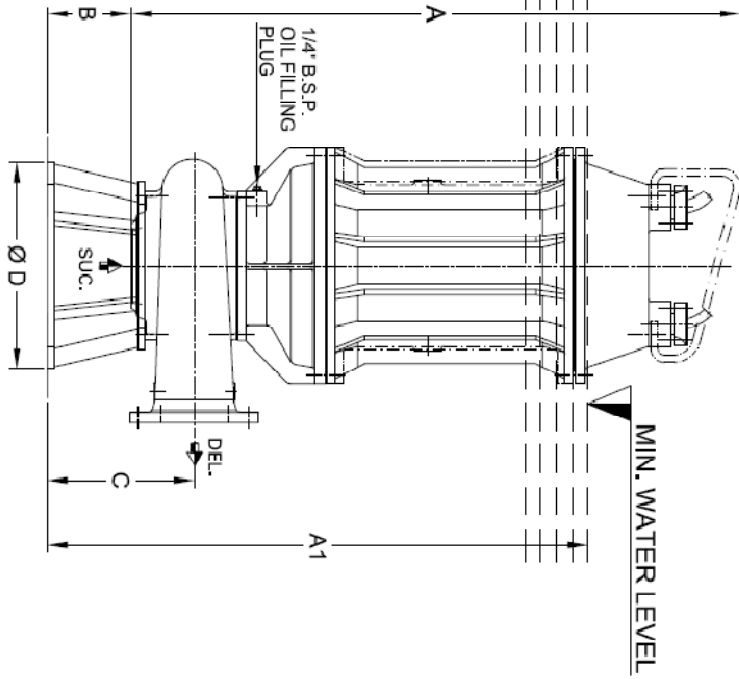
SR. NO.	PUMP TYPE	MOTOR UNIT	SUCTION & DELIVERY NOMINAL SIZE		A	B	C	D	E	F	H	J DIA.	K P.C.D.	L M	A1
			NWS	NWD											
01	NS 50/26	I	65	50	1035	150	250	400	245	225	460	165	125	4	900
02	NS 50/32	II	65	50	1125	140	250	500	280	250	500	165	125	4	900
03	NS 50/36	II	65	50	1140	125	250	550	330	275	550	165	125	4	900
04	NS 65/32	I	80	65	1045	140	250	500	275	250	500	185	145	4	900
05	NS 65/32	II	80	65	1125	140	250	500	275	250	500	185	145	4	900
06	NS 80/26	I	100	80	1050	150	265	500	245	250	500	200	160	8	900
07	NS 80/26	II	100	80	1130	150	265	500	245	250	500	200	160	8	900
08	NS 80/40	II	100	80	1135	165	265	550	350	275	550	200	160	8	900
09	NS 100/26	I	125	100	1070	170	290	460	275	230	460	220	180	8	1000
10	NS 100/26	II	125	100	1150	170	290	460	275	230	460	220	180	8	1000
11	NS 100/32	II	125	100	1150	170	290	500	310	250	500	220	180	8	1000
12	NS 150/26	II	150	150	1180	185	325	460	350	230	460	285	240	8	1000
13	NS 150/32	II	150	150	1175	190	325	500	395	250	500	285	240	8	1000

NOTES :- 1) ALL DIMENSIONS ARE IN mm EXCEPT SPECIFIED  
2) DO NOT SCALE THE DRAWING



**KIRLOSKAR BROTHERS LIMITED**

### GENERAL DIMENSIONS TRANSPORTABLE INSTALLATION III



SR. NO.	PUMP TYPE	SUCTION & DELIVERY NOMINAL SIZE		A	B	C	D	E	F	H	J DIA.	K P.C.D.	L M	A1
		NWS	NWD											
01	NS 80 / 40	100	80	1305	165	265	550	350	265	530	200	160	8 18	1100
02	NS 100 / 32	125	100	1325	170	290	500	310	265	530	220	180	8 18	1130
03	NS 100 / 40	125	100	1335	170	290	500	350	265	530	220	180	8 18	1135
04	NS 150 / 26	150	150	1355	185	325	480	350	265	530	285	240	8 23	1170
05	NS 150 / 32	150	150	1350	190	325	500	395	265	530	285	240	8 23	1170
06	NS 150 / 40	150	150	1355	190	325	600	395	280	560	285	240	8 23	1170
07	NS 200 / 32	200	200	1360	215	360	500	395	275	550	340	295	12 23	1200
08	NS 200 / 40	200	200	1375	205	360	650	395	325	560	340	295	12 23	1200

DELIVERY FLANGE WITH PLAIN FACE AND DRILLING AS PER IS:6392 - TABLE 15

NOTES :- 1) ALL DIMENSIONS ARE IN mm EXCEPT SPECIFIED  
2) DO NOT SCALE THE DRAWING

KIRLOSKAR BROTHERS LIMITED

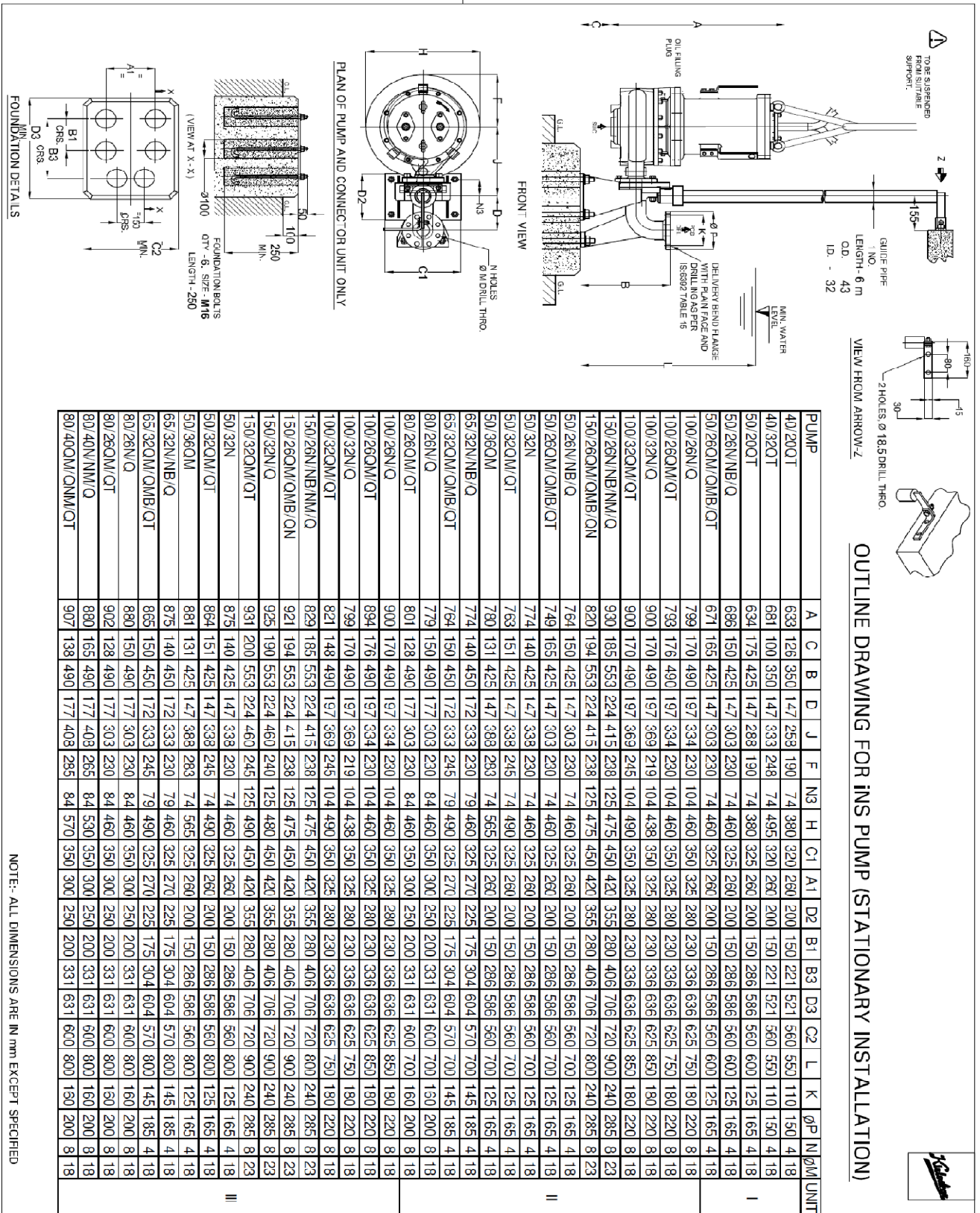




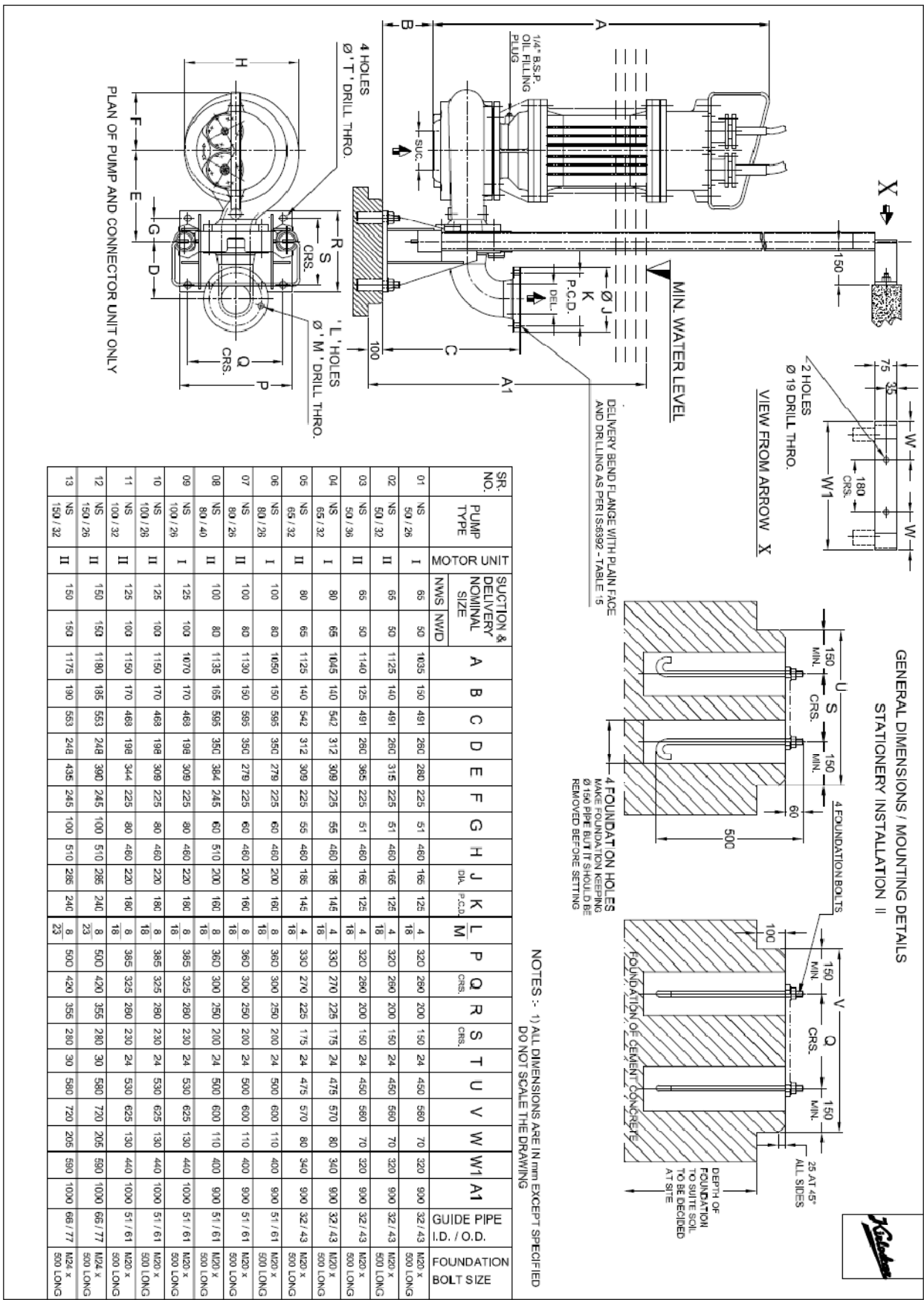
# 10 GENERAL ARRANGEMENT DRAWING & DIMENSIONS SHEET

PREPARED BY : RYK/4.10.2014  
 CHECKED BY : SDP/4.10.2014  
 APPROVED BY : JBK/4.10.2014

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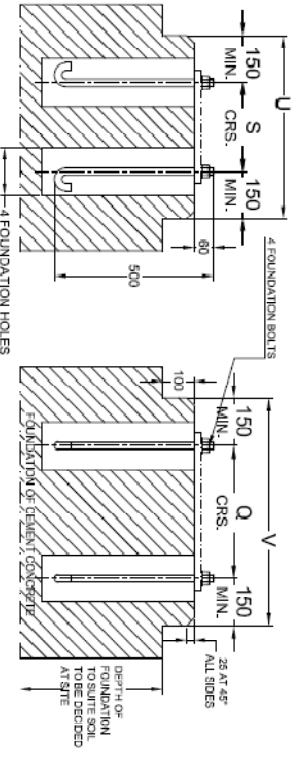
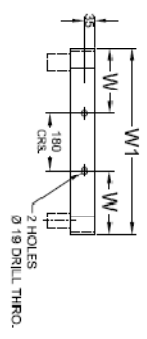


SR. NO.	PUMP TYPE	MOTOR UNIT		GENERAL DIMENSIONS / MOUNTING DETAILS																	GUIDE PIPE I.D. / O.D.	FOUNDATION BOLT SIZE				
		DELIVERY NOMINAL SIZE	SUCTION NWS	A	B	C	D	E	F	G	H	J	K	L	M	P	Q	R	S	T			U	V	W	W1
01	NS	50	65	1035	150	491	260	280	225	51	460	166	125	4	320	290	200	150	24	450	560	70	320	900	32/43	M20 x 500 LONG
02	NS	50	65	1125	140	491	260	315	225	51	460	166	125	4	320	290	200	150	24	450	560	70	320	900	32/43	M20 x 500 LONG
03	NS	50	65	1140	125	491	260	365	225	51	460	166	125	4	320	290	200	150	24	450	560	70	320	900	32/43	M20 x 500 LONG
04	NS	65	80	1045	140	542	312	309	225	55	460	186	145	4	330	270	225	175	24	475	570	80	340	900	32/43	M20 x 500 LONG
05	NS	65	80	1125	140	542	312	309	225	55	460	186	145	4	330	270	225	175	24	475	570	80	340	900	32/43	M20 x 500 LONG
06	NS	80	100	1050	150	595	350	279	225	60	460	200	160	8	350	300	250	200	24	500	600	110	400	900	51/61	M20 x 500 LONG
07	NS	80	100	1130	150	595	350	279	225	60	460	200	160	8	350	300	250	200	24	500	600	110	400	900	51/61	M20 x 500 LONG
08	NS	80	100	1135	165	595	350	384	245	60	510	200	160	8	350	300	250	200	24	500	600	110	400	900	51/61	M20 x 500 LONG
09	NS	100	125	1070	170	469	198	309	225	60	460	220	190	16	385	325	290	230	24	530	625	130	440	1000	51/61	M20 x 500 LONG
10	NS	100	125	1150	170	469	198	309	225	60	460	220	190	16	385	325	290	230	24	530	625	130	440	1000	51/61	M20 x 500 LONG
11	NS	100	125	1150	170	469	198	344	225	60	460	220	190	16	385	325	290	230	24	530	625	130	440	1000	51/61	M20 x 500 LONG
12	NS	150	150	1180	185	553	248	390	245	100	510	266	240	23	500	420	355	280	30	580	720	205	590	1000	66/77	M24 x 500 LONG
13	NS	150	150	1175	190	553	248	435	245	100	510	266	240	23	500	420	355	280	30	580	720	205	590	1000	66/77	M24 x 500 LONG

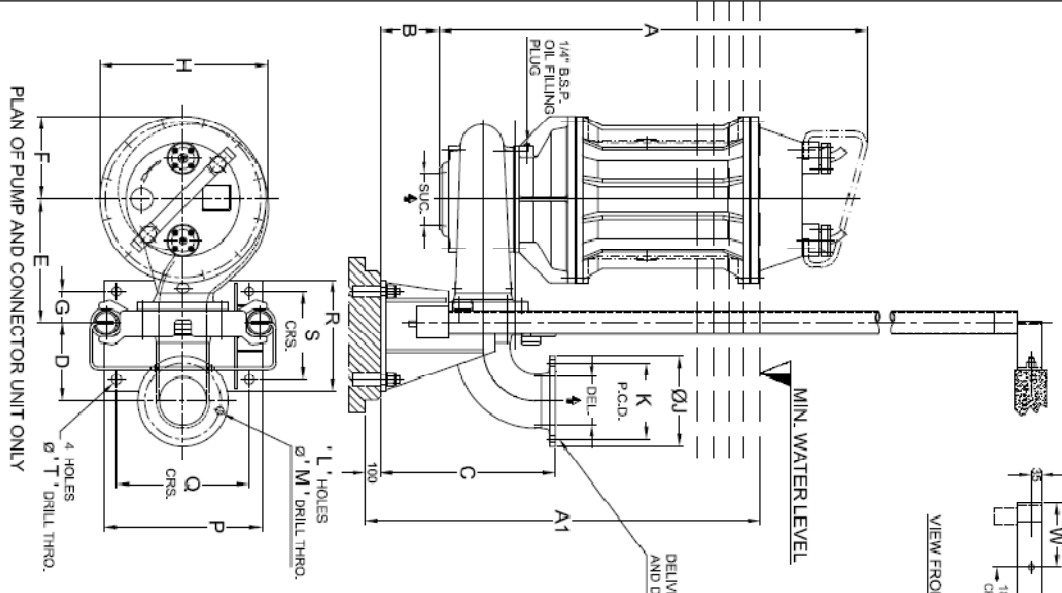
NOTES :- 1) ALL DIMENSIONS ARE IN MM EXCEPT SPECIFIED DO NOT SCALE THE DRAWING



GENERAL DIMENSIONS / MOUNTING DETAILS  
STATIONERY INSTALLATION III



DELIVERY BEND FLANGE WITH PLAIN FACE AND DRILLING AS PER ISS392 - TABLE 15

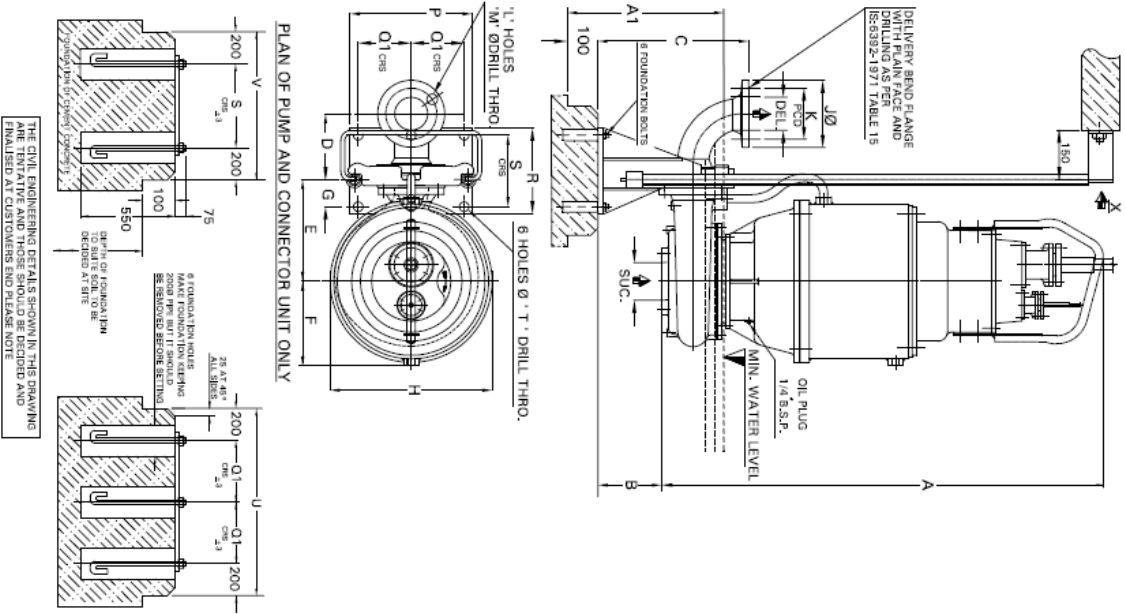
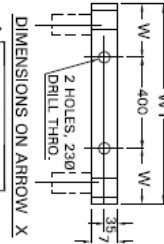
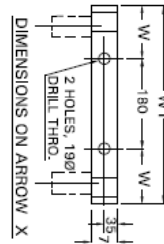


SR. NO.	PUMP TYPE	SUCTION & DELIVERY NOMINAL SIZE	DIMENSIONS (mm)													GUIDE PIPE I.D. / O.D.	FOUNDATION BOLT SIZE									
			A	B	C	D	E	F	G	H	J	K	L	M	P			Q	R	S	T	U	V	W	W1	A1
01	NS	100	1385	165	595	350	384	265	60	530	200	160	8	360	300	230	200	24	500	600	110	400	1200	51/61	M20 x 500 LONG	
02	NS	125	1325	170	468	198	344	265	90	530	220	180	8	385	325	290	230	24	530	625	130	440	1230	51/61	M20 x 500 LONG	
03	NS	125	1335	170	468	198	384	265	80	530	220	180	8	385	325	290	230	24	530	625	130	440	1235	51/61	M20 x 500 LONG	
04	NS	150	1385	185	553	248	390	265	100	530	285	240	8	500	420	355	290	30	580	720	205	590	1270	66/77	M24 x 500 LONG	
05	NS	150	1390	190	553	248	435	265	100	530	285	240	8	500	420	355	290	30	580	720	205	590	1270	66/77	M24 x 500 LONG	
06	NS	150	1355	190	553	248	435	280	100	560	285	240	8	500	420	355	290	30	580	720	205	590	1270	66/77	M24 x 500 LONG	
07	NS	200	1380	215	640	300	435	290	110	550	340	295	12	560	480	390	300	30	600	780	225	630	1300	66/77	M24 x 500 LONG	
08	NS	200 / 40	200	200	1375	205	640	300	435	285	110	580	340	295	12	560	480	390	300	30	600	780	225	630	1300	M24 x 500 LONG

NOTES :- 1) ALL DIMENSIONS ARE IN mm EXCEPT SPECIFIED DO NOT SCALE THE DRAWING



## GENERAL DIMENSIONS STATIONARY INSTALLATION IV, V & VI



SR. No.	PUMP TYPE	MOTOR UNIT		SUC. AND DEL. SIZE																GUIDE PIPE I.D./O. D.	FOUNDATION BOLT SIZE				
		NOMINAL SIZE	NWS/NWD	A	B	C	D	E	F	G	H	J	K	L/M	P	Q1	R	S	T			U	V	W	W1
01	NS 100/40	IV	125	100	1600	170	468	198	384	350	80	660	220	180	8/18	550	225	360	280	30	950	680	130	440	500
02	NS 100/40	V	125	100	1710	170	468	198	384	350	80	660	220	180	8/18	550	225	360	280	30	950	680	130	440	500
03	NS 150/40	IV	150	150	1825	190	553	248	435	350	135	660	285	240	8/23	650	275	450	350	30	950	750	205	590	600
04	NS 150/40	V	150	150	1955	190	553	248	435	350	135	660	285	240	8/23	650	275	450	350	30	950	750	205	590	600
05	NS 150/40	VI	150	150	2065	190	553	248	435	365	135	680	285	240	8/23	650	275	450	350	30	950	750	205	590	600
06	NS 150/50	V	150	150	2335	170	553	248	490	365	135	685	285	240	8/23	650	275	450	350	30	950	750	205	590	600
07	NS 150/50	VI	150	150	2445	170	553	248	490	420	135	790	285	240	8/23	650	275	450	350	30	950	750	205	590	600
08	NS 200/40	IV	200	200	1995	195	640	300	435	350	110	660	340	285	12/23	650	285	430	350	30	950	750	225	630	600
09	NS 200/40	V	200	200	2190	195	640	300	435	365	110	680	340	285	12/23	650	285	430	350	30	950	750	225	630	600
10	NS 200/40	VI	200	200	2250	195	640	300	435	420	110	790	340	285	12/23	650	285	430	350	30	950	750	225	630	600
11	NS 250/40	IV	250	250	1950	342	900	375	505	350	135	690	405	355	12/26	800	350	500	400	33	1100	800	210	820	800
12	NS 250/40	V	250	250	2080	342	900	375	505	365	135	695	405	355	12/26	800	350	500	400	33	1100	800	210	820	800
13	NS 250/40	VI	250	250	2140	342	900	375	505	420	135	750	405	355	12/26	800	350	500	400	33	1100	800	210	820	800
14	NS 250/50	V	250	250	2195	330	900	375	655	370	135	790	405	355	12/26	800	350	500	400	33	1100	800	210	820	800
15	NS 250/50	VI	250	250	2305	330	900	375	655	420	135	840	405	355	12/26	800	350	500	400	33	1100	800	210	820	800
16	NS 250/50	VII	250	250	2390	330	900	375	655	480	135	860	405	355	12/26	800	350	500	400	33	1100	800	210	820	800
17	NS 300/55	V	300	300	2185	370	981	406	655	370	175	790	480	410	12/26	850	375	650	550	33	1150	950	250	900	800
18	NS 300/55	VI	300	300	2285	370	981	406	655	420	175	860	480	410	12/26	850	375	650	550	33	1150	950	250	900	800
19	NS 300/55	VII	300	300	2390	370	981	406	655	480	175	860	480	410	12/26	850	375	650	550	33	1150	950	250	900	800

As we are constantly endeavoring to improve the performance our products/ equipment, we reserve the right to make alterations from time to time and as such our products/ equipment may differ from that detailed in this publication. For latest information you may get in touch with our Regional Sales Office.

## 11 ANNEXURE: CONTROL PANEL SPECIFICATIONS

KBL insists NS pumps to be started with control panel equipped with below mentioned protecting features. KBL will not be responsible for failure of pumps if control panel is not used.

Control panel shall consist of following.

1. Starter : Direct on line (DOL); Star delta starting (SDS)
2. Switch : Three phase with neutral switch
3. Fuse : High rupturing capacity fuses (HRC)
4. Safety features:
  - a) Tripping of motor in case of single phasing and Reverse phasing.
  - b) Moisture sensing circuit for detecting ingress of moisture or water into oil of the oil chamber and tripping of motor in case of contamination of oil.
  - c) Tripping of motor by detecting High winding temperature with the help of Thermister relay.
  - d) Liquid level controllers with probes of High & Low levels to avoid dry running of the pump.
  - e) Thermal Overload Relay for overload protection.
5. Automatic operation of pump on Liquid level controllers.
6. Mountings on front door of the control panel.
  - a. Analog Ammeter for Current display
  - b. LED for indications of following.
    - i) Oil contamination.
    - ii) low liquid level.
    - iii) High temperature of the motor winding.
    - iv) Low/High Voltage / Rev. Phasing / single phasing.
    - v) Over loading of motor.
    - vi) Pump On.
  - c. Push buttons for Start, Stop and Reset for Moisture Contamination
  - d. Auto / Off / Manual selector switch

B) Control panel shall be equipped with fully automatic starters designed to operate pump motors of following specifications.

Voltage:	415 V $\pm$ 10 %
Frequency:	50 Hertz $\pm$ 5 %
Phase:	3 Phases + Neutral
Class of duty:	Continuous
Class of insulation:	F
Ingress Protection	IP 54

### **13. SPARE PARTS**

A set of ball bearings, a set of casing rings must always be kept at hand to ensure uninterrupted service from the pump while ordering for spare parts, always give type, size and serial number of the pumps as stamped on the name plate.

### **14. ENVIRONMENTAL ASPECTS:**

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.

#### **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, [customercare.recycle@kbl.co.in](mailto:customercare.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.