



MODEL: G 1002T

**OPERATING INSTRUCTIONS, INSTALLATION & MAINTENANCE
MANUAL INCLUDING SPARE PARTS LIST**



PERFECTIVA

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INTRODUCTION

THE **“mody”** ELECTRIC DRIVEN PORTABLE SUBMERSIBLE PUMPS HAVE BEEN DEVELOPED DUE TO A LONG FELT NEED OF HAVING A TRULY MAINTENANCE FREE PUMPSET FOR VARIOUS APPLICATIONS. THE PUMP IS A LIGHTWEIGHT, COMPACT UNIT ENABLING IT TO BE USED IN MOST SEA-CRAFT AND DIFFICULT LAND INSTALLATIONS. THE UNIT CONSISTS OF A VERTICAL CENTRIFUGAL PUMP WITH AN IN-BUILT SQUIRREL CAGE, INDUCTION ELECTRIC MOTOR WHICH IS AVAILABLE FOR VARIOUS ELECTRIC SUPPLY CONFIGURATIONS. THE PUMPED WATER IS USED AS A COOLING MEDIUM WHICH COOLS THE ELECTRIC MOTOR. THE PUMPSET CAN ALSO BE USED IN ANY POSITION THUS MAKING IT IDEAL FOR DEWATERING IN DIFFICULT LOCATIONS.

THE SERVICE LIFE OF A SUBMERSIBLE PUMP DEPENDS MAINLY ON TWO THINGS: THE DEPENDABILITY OF THE SEALING SYSTEM AND THE WEAR RESISTANCE OF THE PUMP WEAR PARTS.

ALL **“mody”** SUBMERSIBLE SUMP PUMPS INCORPORATE A UNIQUE SEALING SYSTEM. THE CONSTRUCTION CONSISTS OF TWO MECHANICAL SEALS, ARRANGED IN TANDEM, IMMERSSED IN AN OIL BATH. THE COMPLETE PACKAGE IS A PRESSURE COMPENSATED SEALING DEVICE WHICH ENSURES A MINIMAL PRESSURE DIFFERENTIAL ACROSS THE SEAL FACES, IRRESPECTIVE OF THE DEPTH SETTING OF THE PUMP OR THE HEAD AGAINST WHICH THE PUMP IS OPERATING.

IN **“mody”** SUBMERSIBLE SUMP PUMPS, ALL WEAR PARTS ARE RUBBER LINED/COVERED AND ARE READILY REPLACEABLE AS NEEDED. BOTH WEAR AND ELECTRICITY CONSUMPTION ARE STILL FURTHER REDUCED WHEN THE PUMPS ARE FITTED WITH LEVEL CONTROLS FOR AUTOMATIC STARTING AND STOPPING.

IT IS RECOMMENDED THAT IRRESPECTIVE OF TYPE OF PUMP, ADEQUATE MOTOR PROTECTION SWITCHGEAR SHOULD BE USED AT THE INSTALLATION. WE STRONGLY RECOMMEND THE USE OF SUITABLE CONTROL BOXES WHICH ARE AVAILABLE FROM US INCORPORATING ALL REQUIRED PROTECTION.

IT IS IN THE INTEREST OF THE USER THAT HE GO THROUGH THIS MANUAL IN DETAIL PRIOR TO USING THE PUMP. THE MANUAL WILL HELP HIM UNDERSTAND THE CONSTRUCTIONAL FEATURES AND TO OBTAIN TROUBLE FREE SERVICE FROM THE PUMP.

PLEASE NOTE THAT ALL PART NOS. REFERRED TO IN DISMANTLING AND RE-ASSEMBLY ARE PERTAINING TO MODEL G1002T.

PURPOSE:

THE PUMP HAS BASICALLY BEEN DESIGNED AS A DEWATERING UNIT TO PUMP OUT FLOODED INSTALLATIONS OR ANY CONDITIONS THAT NEED DEWATERING OF UNWANTED FLUIDS. THE PUMP HAS BEEN DESIGNED TO HANDLE WATER CONTAMINATED WITH OIL AS WELL AS ABRASIVE PARTICLES NORMALLY ASSOCIATED WITH RAW WATER. THE MAXIMUM SIZE OF PARTICLES THAT CAN BE HANDLED IS APPROX. 0.4”

MAINS VOLTAGE AT SITE**HRC FUSE RECOMMENDED**

380 VOLTS / 3 PHASE
 415 VOLTS / 3 PHASE
 460 VOLTS / 3 PHASE
 575 VOLTS / 3 PHASE

115 AMPERES
 110 AMPERES
 103 AMPERES
 103 AMPERES

FAULT FINDING IN THE UNIT.

TROUBLE GUIDE	CAUSE	REMEDY
<u>PUMP DOES NOT START.</u>	1.FUSES BLOWN. 2.CABLE DAMAGED 3.NO POWER. 4.BLOCKED IMPELLER. 5.STATOR WINDING BURNT.	1.REPLACE FUSES 2.SHORTEN/REPLACE CABLE 3.CHECK POWER SUPPLY. 4.CLEAN BOTTOM PARTS. 6.REPLACE STATOR/REWIND
<u>PUMP STARTS BUT STOPS.</u>	1.BLOCKED IMPELLER. 2.IMPELLER ROT.WRONG 3.CONNECTED FOR WRONG VOLTAGE. 4.VOLTAGE LOW/HIGH 5.CLOGGED STRAINER 6.PUMP RUNNING DRY 7.WATER TOO WARM (ABOVE 60 DEGREES C)	1.CLEAN BOTTOM PARTS. 2.SHIFT TWO PHASE CONN. 3.CHECK & RECONNECT. 4.CONTACT POWER CO. 5.CLEAN STRAINER 6.SWITCH OFF POWER 7.SWITCH OFF POWER
<u>PUMP GIVES TOO LITTLE OUTPUT</u>	1.IMPELLER ROT.BACKWARD. 2.PUMP WORN DOWN. 3.LONG HOSE AND DIAMETER TOO SMALL. 4.PRESSURE HEAD TOO HIGH 5.DISCHARGE HOSE TORN 6.LEAKING/CRACKED OUTLET	1.SHIFT TWO PHASE CONN. 2.REPLACE WEAR PARTS 3.CHECK PRESSURE LOSSES 4.USE PUMPS IN TANDEM. 5.USE NEW HOSE 6.REPL.OUTLET/GASKET.

OPTIONAL FEATURES INCLUDE START/DELTA START, SEAL PROBE SENSOR OR THERMAL OVERLOAD PROTECTION. EXTERNAL CONTROL BOXES ARE AVAILABLE FOR THE ABOVE FEATURES. PLEASE CONTACT MODY.

TECHNICAL DESCRIPTION.

THE MODY SUBMERSIBLE PUMP IS IN ITSELF A COMPLETE PUMPING STATION. BESIDES A POWER SUPPLY, CONTROL BOX AND A DISCHARGE HOSE NO EXTRA EQUIPMENT IS REQUIRED. THE COMPLETE PUMPSET IS IN A MODULAR CONSTRUCTION ENSURING GOOD AND SIMPLE SERVICEABILITY. MAJOR DESIGN FEATURES ARE AS UNDER:

THE MOTOR

A RUGGED ALUMINUM DIE CAST ROTOR DYNAMICALLY BALANCED TO GRADE 2.5 ACCURACY OF ISO 942. A STAINLESS STEEL SHAFT RUNNING IN TWO BALL BEARINGS. INSULATION CLASS "H" (180 DEGREES CELSIUS). END WINDINGS DULY EPOXY COATED TO PREVENT DETERIORATION OF INSULATION EVEN IN EXTREMELY HUMID CONDITIONS. WINDING WIRE IS DUAL COATED SUITABLE FOR "H" CLASS INSULATION.

THE SEAL CHAMBER

THE HEART OF THE MODY PUMP. TANDEM MECHANICAL, TUNGSTEN CARBIDE V/S TUNGSTEN CARBIDE SEAL FACES (LOWER SEAL) AND TUNGSTEN CARBIDE V/S TUNGSTEN CARBIDE (UPPER SEAL), SECONDARY SEALS OF HNBR RUBBER AND METAL PARTS IN STAINLESS STEEL, RUNNING IN AN OIL BATH, ENCLOSED IN A PRESSURE COMPENSATING RUBBER OIL BAG - CREATES THE ULTIMATE SEAL SOLUTION. THE DESIGN OPTIMIZES SEAL LIFE AND ALLOWS FOR SIX MONTHLY (2500 HOURS) SERVICE INTERVALS.

BEARINGS.

TWO ANGULAR CONTACT BALL BEARINGS (IMPELLER SIDE), ARRANGED BACK TO BACK, FILLED WITH A SPECIAL HIGH TEMPERATURE BEARING GREASE REQUIRING NO PERIODIC MAINTENANCE WHATSOEVER. THE TOP BEARING IS A SINGLE ROW DEEP GROOVE BALL BEARING, GREASE FILLED AND SEALED FOR LIFE.

THE HYDRAULIC ELEMENTS.

THE HARDENED STAINLESS STEEL IMPELLER RUNNING AGAINST A RUBBER LINED DIFFUSER AND WEAR PLATE, CONSTITUTE THE HYDRAULIC ELEMENTS OF THE PUMP. THE IMPELLER/DIFFUSER CAN BE ADJUSTED TO MAINTAIN MAXIMUM OUTPUT AFTER USAGE WITHOUT PARTS REPLACEMENT. IT IS IMPORTANT, HOWEVER, TO MAINTAIN CLEARANCES BETWEEN THE WEAR PARTS.

CABLE GLAND ASSEMBLY. (REFER DRG.)

THE PUMP IS SUPPLIED WITH 50 FEET CABLE AS STANDARD. THE CABLE IS A 4 CORE EPR SHEATHED AND INSULATED CABLE CONFORMING TO INT'L STD. THE CABLE IS WATERPROOF AND CAN BE COMPLETELY SUBMERGED IN WATER. THE CABLE IS TERMINATED IN THE PUMP AT THE CABLE GLAND. THE GLAND ASSEMBLY SEALS THE CABLE ON THE OUTSIDE SHEATH AS WELL AS A WATER DAM ARRANGEMENT IS PROVIDED WHICH SEALS THE INDIVIDUAL CORES OF THE CABLE. THIS FEATURE IS UNIQUE AND IS ESSENTIAL TO PREVENT WATER SEEPING THROUGH THE CORES OF THE CABLE INTO THE MOTOR CHAMBER IN THE EVENT OF A CUT CABLE. THE CABLE IS ALSO SHEATHED FOR THE FIRST ONE METER BY MEANS OF A CABLE GRIP MADE OF STAINLESS STEEL. THIS IS ESSENTIAL TO ENSURE THAT THERE IS NO UNDUE STRAIN ON THE CABLE IF THE PUMP IS PULLED OR LOWERED INADVERTENTLY BY MEANS OF THE CABLE. COMPLETE DETAILS OF THE CABLE GLAND ASSEMBLY ARE SHOWN IN THE DRAWING.

GALVANIC CORROSION PROTECTION (FOR SEA-WATER DUTY PUMPS ONLY)

THE PARTS OF THE "MODY" SUBMERSIBLE PUMP THAT ARE IN CONTACT WITH SEA- WATER ARE PRIMARILY OF STAINLESS STEEL AND ALUMINUM. AS SEA-WATER IS AN ELECTROLYTE THE PROBLEM OF GALVANIC CORROSION EXISTS DUE TO THE DIFFERENT ELECTRIC POTENTIALS OF THE MATERIALS IN FLOWING SEA-WATER. TO PREVENT THIS, THE PUMPS ARE EQUIPPED WITH ZINC ANODES FIXED ON THE OUTER CASING AND DIFFUSER. ZINC, BEING THE LESS "NOBLE" METAL (MORE NEGATIVE POTENTIAL) GETS CORRODED THUS PREVENTING CORROSION OF ALUMINUM AND STEEL. IT IS HOWEVER NECESSARY TO INSPECT THE CONDITION OF THE REPLACEABLE ANODES PERIODICALLY AND REPLACE WHENEVER NECESSARY. (TYPICALLY INSPECTION ONCE A YEAR SHOULD SUFFICE)

NON REPAIRABLE ITEMS

1. ALL "O" RINGS TO BE REPLACED WHENEVER PARTS ARE DISMANTLED.
2. SEAL ELASTOMER PARTS SHOULD NEVER BE RE-USED AFTER DIS-ASSEMBLY.
3. DO NOT REFILL BEARING GREASE. NEW BEARINGS MUST BE INSTALLED WITH SPECIAL HIGH TEMPERATURE GREASE.

ELECTRICAL INFORMATION.

MOTORS ARE DESIGNED TO OPERATE ON SINGLE VOLTAGE AND FREQUENCY. MAXIMUM DEVIATION IN VOLTAGE ALLOWED IS +/-6% AND FREQUENCY +/-3%. CHECK NAME PLATE FOR OPERATING VOLTAGE AND FREQUENCY.

DISMANTLING AND OVERHAULING.

GENERAL OVERHAUL AND OIL CHECK. (REF. DRGS. NO.DW/888/00 (SHEET 1 & 2)

1. ALWAYS REPLACE O-RINGS WITH NEW ONES WHENEVER DISMANTLING AND RE-ASSEMBLING A PUMP. NEVER RE-USE OLD O-RINGS.
2. ALWAYS ISOLATE THE UNIT BEFORE REMOVING THE CABLE GLAND (52). BE CAREFUL WITH O-RINGS (61,62,63) AND SEALING SURFACES. PROTECT THE CHAMBER AGAINST RAIN AND MOISTURE.
3. DISCONNECT STATOR LEADS. SNIP OFF LEAD WIRE CONNECTORS AND UNSCREW EARTHING SCREW (45). LOOSEN SCREWS (47), REMOVE CABLE GROMMET (54) AND CABLE LEAD GROMMET (64). CLEAN THE SEALING SURFACES CAREFULLY AND GREASE THE NEW O-RINGS BEFORE FITTING THE SAME. DO NOT USE THE OLD O-RINGS.
4. LOOSEN HEX BOLTS AND LOCK WASHERS (30,31) AND REMOVE BASE PLATE (29), STRAINER (28), DIFFUSER CENTER (25), AND DIFFUSER HOLDER (24). PRY OUT DIFFUSER RING (23) FROM OUTER CASING (14). THE DRAWING SHOWS THESE DETAILS. CHECK BY HAND THAT THE ROTOR SHAFT IS NOT JAMMED.
5. PLACE THE PUMP ON THE BOTTOM STUDS (22). TAP THE OUTER CASING (14) WITH NYLON HAMMERS/MALLET TILL IT LOOSENS FROM THE TOP BRACKET (7). SEPARATE THE OUTER CASING FROM THE TOP BRACKET BY EMPLOYING TWO SCREW DRIVERS AS LEVERS AND PUSH THE OUTER CASING DOWNWARDS TILL IT STANDS ON THE FLOOR. LIFT THE UNIT BY THE EYEBOLTS (3) CLEAR OFF THE OUTER CASING.

6. THE SEAL CHAMBER CONTAINS APPROX. 5 LITERS OF OIL. THE LEVEL AND CONDITION OF THE OIL SHOULD BE CHECKED EVERY SIX MONTHS. UNSCREW THE OIL PLUGS (76) AND POUR OUT SOME OIL. NOTE THAT THE OIL GETS A SLIGHTLY DARKER SHADE, BUT THIS IS NORMAL AND IS NO CAUSE FOR WORRY. IF THE OIL IS EMULSIFIED BY WATER, THE SEALS HAVE WORN OUT AND MUST BE REMOVED FROM THE ROTOR FOR FURTHER ACTION.

7. LAY DOWN THE PUMP AND REMOVE THE REMAINING PARTS. UNSCREW NUT (35) AND REMOVE LOCK WASHER (36) (USE IMPELLER SPANNER (T7009) TO HOLD IMPELLER WHILE UNSCREWING NUTS) AND SLIDE OFF IMPELLER (38) FROM SHAFT. THEN REMOVE TRIMMING SPACERS (39) AND SAND GUARD (72). THE SAND GUARD IS LIGHTLY PRESS FITTED IN THE SEAL HOUSING (40). THIS CAN BE REMOVED BY MEANS OF A SCREWDRIVER.

8. UNSCREW NUTS (26,27) AND FOUR STUDS (22) AND REMOVE WEAR PLATE (41). THIS CAN BE EASILY DONE BY INSERTING TWO SCREWDRIVERS BETWEEN THE WEAR PLATE AND LOWER BRACKET (19) - PRYING THE WEAR PLATE LOOSE. ALL THE PUMP PARTS HAVE BEEN DISMANTLED. REPLACE WORN PARTS.

9. THE OIL DIAPHRAGM (67) IS NOW IN VIEW. UNSCREW BOTH THE OIL PLUGS (76) AND DRAIN OUT THE OIL FROM THE OIL CHAMBER. UNSCREW SOCKET HEAD SCREW (20) AND REMOVE OIL BAG RING (21). TURN OIL DIAPHRAGM INSIDE OUT AND REMOVE SMALL OIL CLAMP BY UNSCREWING SCREW (80). REMOVE OIL DIAPHRAGM. SLIDE OFF CAP FOR CIRCLIP (73), OUTER CIRCLIP (79) FROM ROTOR SHAFT AND REMOVE LOWER MECHANICAL SEAL. BE VERY CAREFUL IN HANDLING THE TUNGSTEN CARBIDE SEAL FACE. LEAVE STATIONARY TUNGSTEN CARBIDE SEAT IN THE SEAL HOUSING (40). UNSCREW FOUR NUTS (59) AND PULL OUT SEAL HOUSING. THE STATIONARY TUNGSTEN CARBIDE SEAL FACE WILL COME OUT WITH THE SEAL HOUSING. HANDLE THE FACE CAREFULLY. THE UPPER MECHANICAL SEAL IS NOW IN VIEW. REMOVE THE UPPER SEAL IN THE SAME WAY AS THE LOWER SEAL.

10. REMOVE THE FOUR NOS. DEEP SEATED CAP SCREWS (20) THAT HOLD THE LOWER BEARING BRACKET AGAINST THE INNER CASING. THERE ARE FOUR NOS. TAPPED THROUGH HOLES IN THE LOWER BEARING BRACKET. BY USING THE TOOLS (T9504 -- 2 NOS.) THE LOWER BRACKET COMPLETE WITH THE ROTOR (11), BEARING (78), BEARING COVER (16) AND TUNGSTEN CARBIDE SEAT WILL COME OUT WITH THE LOWER BEARING BRACKET. REMOVE BOLTS (15) AND REMOVE BEARING COVER. PULL OUT ROTOR WITH BEARING FROM LOWER BEARING BRACKET. (IF THIS IS DIFFICULT USE A HAND PRESS TO REMOVE ROTOR FROM BEARING BRACKET. ENSURE NO DAMAGE TO THE TUNGSTEN CARBIDE SEAT IN BEARING BRACKET). THE TC SEAT WITH CUP SEAL HOLDER CAN NOW BE PUSHED OUT FROM THE BEARING SIDE BY GENTLY TAPPING THE SAME. (USE FINGERS OR A NYLON TIPPED LIGHT HAMMER ONLY).

11. CHECK BOTH UPPER AND LOWER BEARINGS (10 & 78) FOR ANY RADIAL OR AXIAL PLAY OR ANY ABNORMAL NOISE WHILE SPINNING THE SAME. CHECK FOR ANY LEAKAGE OF GREASE THROUGH THE SHIELD OF THE UPPER BEARING. IF BEARING SEEMS WORN OUT OR ANY GREASE LEAKAGE IS OBSERVED, REPLACE BEARING. (DO NOT USE ANY STANDARD BEARING PROCURED FROM THE MARKET. THE PUMPS USE BEARINGS WHICH ARE PRE-FILLED WITH A SPECIAL HIGH TEMPERATURE GREASE AVAILABLE FROM US READILY).

12. THE TOP BRACKET (7) IS HELD IN POSITION BY FOUR STUDS WITH HEX NUTS (4,5,6) ON THE STATOR CASING. UNSCREW THE NUTS AND REMOVE THE INNER CASING WITH THE HELP OF PULLER FOR STATOR (T8006). ALTERNATIVELY TWO SCREWDRIVERS MAY BE USED TO PRY THE TOP BRACKET FROM THE STATOR.

13. THE STATOR IS SHRINK-FITTED IN THE INNER CASING. THE STATOR CAN NOW BE CHECKED FOR ANY ELECTRICAL FAULTS.

RE-ASSEMBLY OF THE PUMPSET.

THE PUMP CAN BE RE-ASSEMBLED AS PER PROCEDURE GIVEN BELOW. PLEASE HOWEVER NOTE THE FOLLOWING:

- A) ALWAYS REPLACE NEW O-RINGS AND DISCARD OLD ONES.
- B) REPLACE NEW LOCK WASHER WHEN RE-ASSEMBLING.

1. THE CHECKED/REPAIRED STATOR IS KEPT UPRIGHT AND THE TOP BRACKET IS AFFIXED THROUGH THE FOUR NUTS (6).

2. ALL THE ELECTRICAL CONNECTIONS OF THE STATOR LEAD WIRES AND EARTHING WIRE SHOULD BE SECURE AND INSULATED.

3. SLIDE BEARING COVER (16) ON ROTOR SHAFT.

4. FIT BEARINGS (IF REMOVED OR REPLACED) ON ROTOR SHAFT (USE EITHER A HAND PRESS OR SHRINK THE SAME -- DO NOT HAMMER THE BEARINGS ON THE SHAFT-- YOU MAY SCORE/BEND THE SHAFT AND ALSO DAMAGE THE BEARINGS) AND FIT CIRCLIPS ON TOP AND BOTTOM GROOVES ON SHAFT. (IF THE BEARINGS ARE SHRINK FITTED ON THE SHAFT, HEAT THE BEARINGS IN OIL TO A MAXIMUM TEMPERATURE OF 120 DEGREES CELSIUS AS A HIGHER TEMPERATURE WILL LIQUEFY THE GREASE IN THE BEARING AND RENDER THE SAME UNUSABLE). DO NOT REUSE OLD BEARINGS THAT HAVE BEEN PULLED OFF.

5. SLIDE LOWER BEARING BRACKET (19) ON TO LOWER BEARING AND ALIGN FOUR NOS. HOLES ON BEARING COVER WITH THE TAPPED HOLES ON LOWER BEARING BRACKET. FIT THE BOLTS (15) AND TIGHTEN BEARING COVER.

6. FIT COMPLETE ROTOR ASSEMBLY IN STATOR HOUSING GUIDING UPPER BEARING IN TOP BEARING BRACKET SEAT. TIGHTEN BOLTS. FIT UPPER TC SEAT IN LOWER BEARING BRACKET (LIGHTLY OIL THE RUBBER SEAT CUP -- ENSURE THE SEAT SITS SQUARE IN THE BRACKET) AND SLIDE ON UPPER SEAL ASSEMBLY ON ROTOR SHAFT. (USE SEAL ASSEMBLY MANDREL (T9004) TO ASSIST IN SLIDING BELLOWS ON TO THE SHAFT). LIGHTLY OIL THE ROTOR SHAFT BEFORE PUSHING BELLOWS ON SHAFT. USE EXTREME CARE SO THAT THE SEAL FACES ARE NOT DAMAGED. SLIDE ON CIRCLIP (79) AND FIT IN GROOVE ON SHAFT.

7. PRESS HOME BY HAND LOWER SEAL TUNGSTEN CARBIDE SEAT INTO SEAL HOUSING (40). LIGHTLY OIL THE RUBBER SEAT CUP BEFORE PRESSING IN CAVITY. THE SEAT MUST SIT SQUARE IN THE HOUSING.

8. FIT SEAL HOUSING INTO LOWER BRACKET AND TIGHTEN NUTS (59).

9. SLIDE ON LOWER SEAL ASSEMBLY ON SHAFT. APPLY LIGHT COAT OF OIL ON SHAFT BEFORE SLIDING BELLOWS ON THE SAME. (USE SAME SEAL MANDREL AS USED FOR THE UPPER SEAL TO SLIDE BELLOWS ON SHAFT). FIT CIRCLIP (85) AS FOR THE UPPER SEAL ASSEMBLY AND INSTALL CAP FOR CIRCLIP (73)

10. PRESS SAND GUARD (72) INTO SEAL HOUSING (USE A HAND PRESS OR USE A NYLON HAMMER)

11. TURN OIL BAG INSIDE OUT AND FIT OIL BAG "VEE" SECTION INTO GROOVE IN SEAL HOUSING. USING SMALL OIL BAG CLAMPS AND SCREWS & NUTS, CLAMP THE OIL BAG TO THE SEAL HOLDER. TURN OIL BAG TO CLAMP THE LARGER SIDE "O" SECTION INTO THE GROOVE IN THE LOWER BEARING BRACKET IN THE SAME WAY. COMPRESS THE OIL BAG AND SLIDE THE OIL BAG RING OVER THE OIL BAG TILL IT SEATS AGAINST THE LOWER BEARING BRACKET. ALIGN THE FOUR HOLES IN THE OIL BAG RING WITH THE TAPPED HOLES IN THE LOWER BEARING BRACKET AND TIGHTEN THE OIL BAG RING WITH THE HELP OF THE SOCKET HEAD CAP SCREWS.

12. FIT ONE DRAIN PLUG WITH "O" RING IN LOWER BEARING BRACKET AND FILL OIL IN THE OIL BAG. PERIODICALLY PRESS THE OIL BAG TO LET AIR ESCAPE SO THAT FILLING IS PROPER AND NO AIR IS ENTRAPPED IN THE OIL BAG. REPLACE PLUG WITH "O" RING.

13. SLIDE ON WEAR PLATE AGAINST LOWER BEARING BRACKET AND TIGHTEN THE SAME. FIT KEY (37) ON THE SHAFT AND SLIDE ON IMPELLER. CLEARANCES BETWEEN IMPELLER AND WEAR PLATE CAN BE ADJUSTED BY MEANS OF THE TRIMMING SPACERS (39). SLIDE ON LOCK WASHER (36) ENSURING THAT TONGUE OF LOCK WASHER IS IN GROOVE OF THREADING AND TIGHTEN NUT (35). BEND LOCK WASHER OVER ANY SIDE OF THE HEX NUT. ENSURE THAT ROTOR SHAFT IS ROTATING FREE.

14. FIT OUTER CASING ON TOP BRACKET WITH "O" RING. FIT DIFFUSER RING AND DIFFUSER HOLDER AND TIGHTEN NUTS. FIT DIFFUSER CENTER AND ADJUST CLEARANCE BETWEEN IMPELLER AND DIFFUSER CENTER TO THE MINIMUM BY USING TRIMMING WASHERS (32). FIX STRAINER, BASE PLATE AND TIGHTEN BOLTS (30)

OIL SPECIFICATIONS

- A) SHELL TELLUS 29.
- B) EXXON UNIVOLT 61
- C) CHEVRON SUPERLA FDA APPROVED # 10

USE NON-CONDUCTING, NON-FOAMING, NON-DETERGENT OIL ONLY

PARTS CATALOG

1. COMPONENTS LIST : AS PER DRAWING NO. DW/888/00 (SHEET 1 & 2)

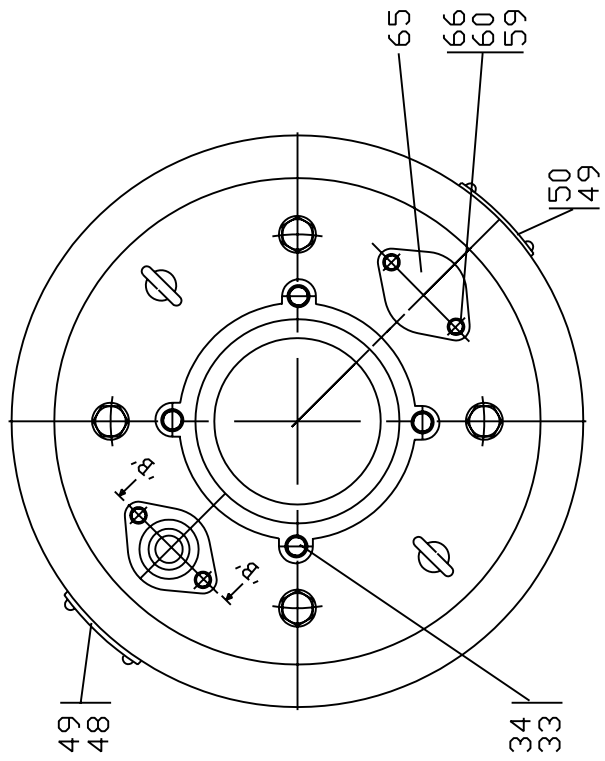
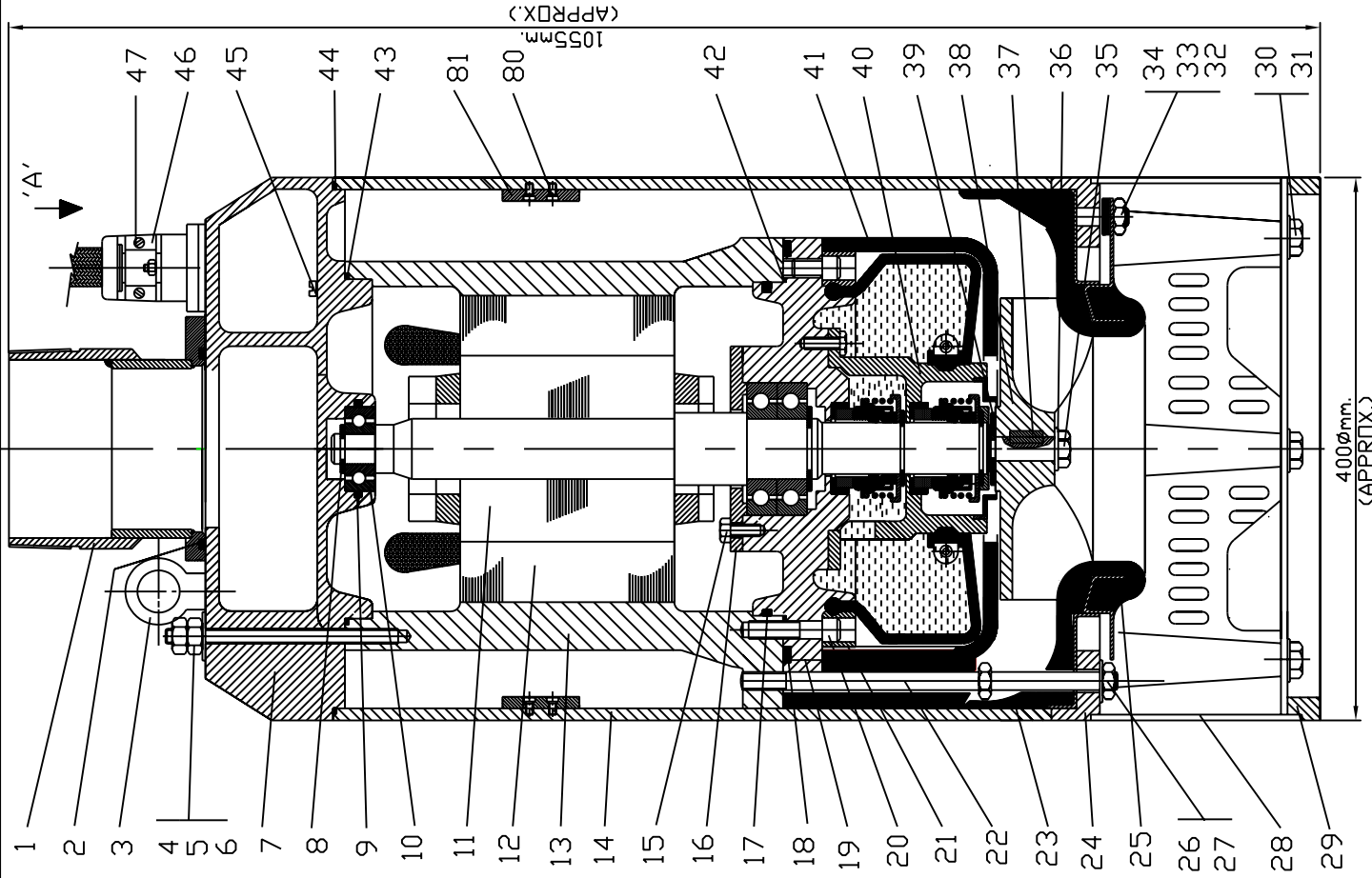
DRAWINGS :

1. SECTIONAL ASSEMBLY (DW/888/00)(SHEET 1)
2. SEALING ARRANGEMENT (DW/888/00)(SHEET 2)

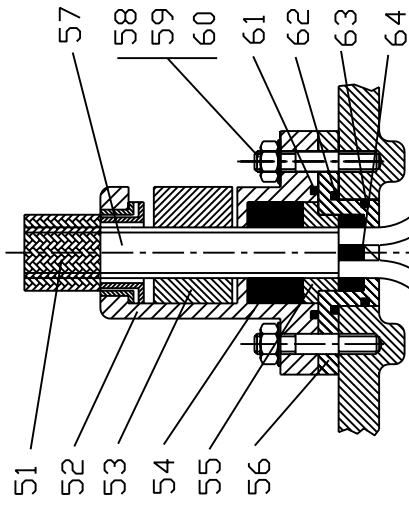
R: RECOMMENDED SPARES FOR TWO YEARS OPERATION

<u>SR. NO.</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>	<u>QUANTITY.</u>
1.	MECHANICAL SEAL	535-021-00	2
2.	"O" RING SET	375-021-66	1
3.	CABLE GROMMET	260-023-66	1
4.	CABLE LEAD GROMMET	260-105-66	1
5.	UPPER BEARING	020-011-07	1
6.	LOWER BEARING	020-010-07	2
7A.	IMPELLER(60HZ)	300-110-22	1
7B.	IMPELLER (50HZ)	300-109-22	1
8.	DIFFUSER CENTER	155-014-80	1
9.	DIFFUSER RING	170-004-80	1
10.	WEAR PLATE	715-014-80	1
11.	LOCK WASHER	695-006-21	2
12.	C. CABLE GROMMET	260-062-66	1 (OPTIONAL)
13.	C. CABLE LEAD GROMMET	260-063-66	1 (OPTIONAL)

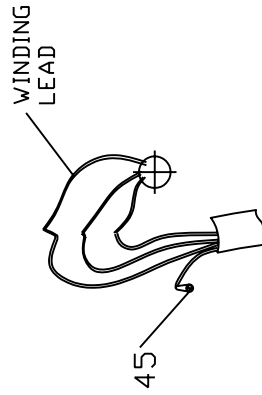
REFER TO PARTS LIST AT END OF MANUAL FOR CORRECT CABLE GROMMETS



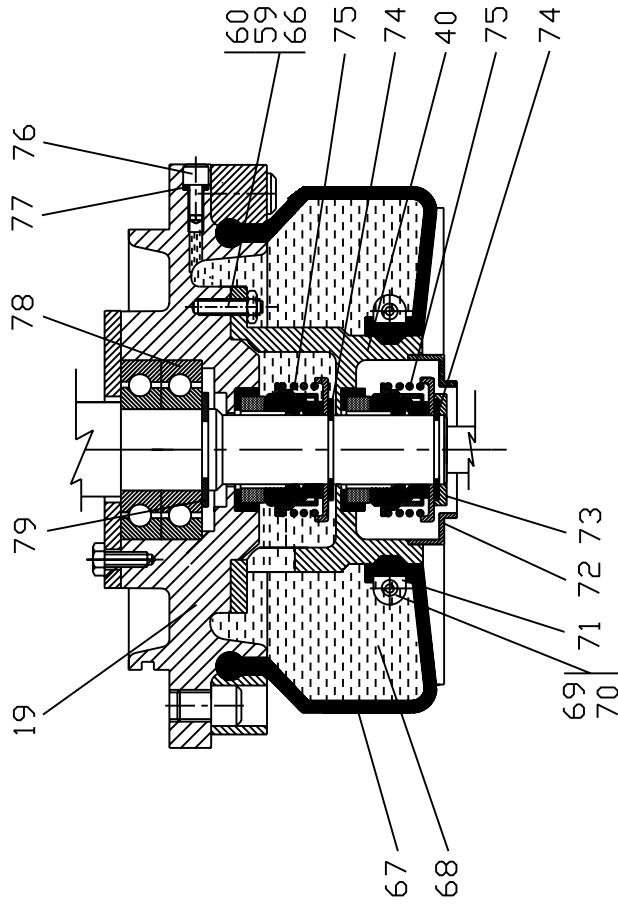
NAME	DATE
DRN. D.M.GUJAL	30-6-2003
CHD.	
APPD.	
DRAWING No.	VER REV.
DW/888/00	1.1 01



CABLE GLAND ASSY.
(SECT. B-B)



(CABLE CNNT.)
(SECT. B-B)



SEALING ARRANGEMENT

TOTAL WEIGHT : 225 Kg. (WITHOUT CABLE)

NAME	DATE
D.M.GUTAL	30-6-2003
SECTIONAL ASSY. DRG. OF	VER.
MODY SUBMERSIBLE PUMP	DW/888/00 1.1 01

G1002TE

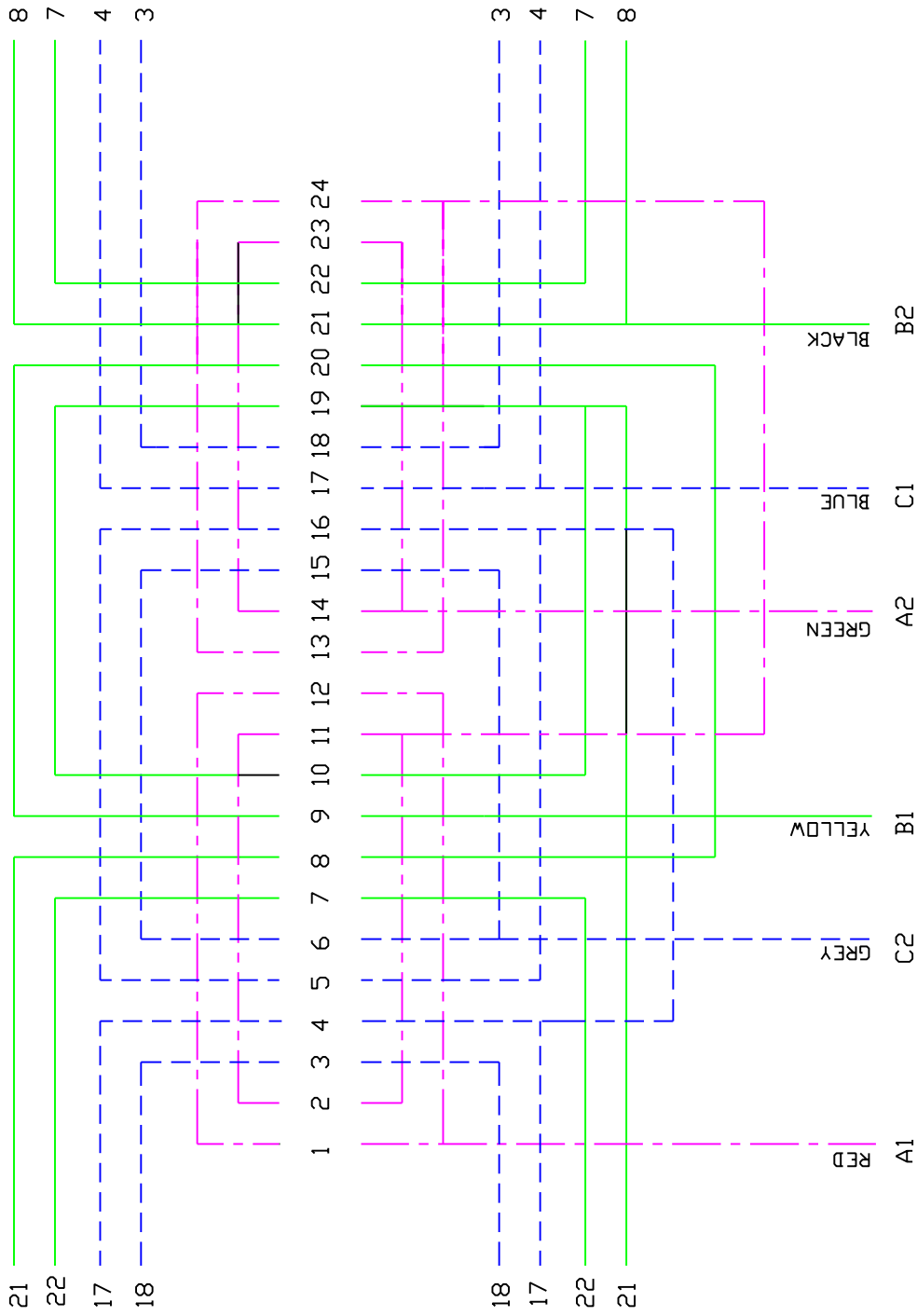
PUMP MODEL G 1002TE - VER 1.1, Revision 3

D.NO.	PART NO.	DESCRIPTION	QTY
1a	405-058-21	DISCHARGE OUTLET (8"NPT)	1
1b	405-052-21	DISCHARGE OUTLET (8"HOSE)	1
1c	405-115-21	DISCHARGE OUTLET (8"BSP)	1
2	380-060-66	"O" RING	1
3	270-014-21	LIFTING HOOK	2
4	650-066-21	STUD	4
5	700-014-21	WASHER	4
6	370-016-21	HEX NUT	8
7	035-066-30	TOP BRACKET	1
8	080-006-08	CIRCLIP	1
9	380-016-66	"O" RING	1
10	020-011-07	UPPER BEARING	1
11	480-063-00	ROTOR COMPLETE	1
12a	619-029-00	BARE STATOR 380v@50Hz/460v@ 60Hz	1
12b	619-110-00	BARE STATOR 575v/1000v	1
13	625-041-30	STATOR CASING	1
14	400-036-04	OUTER CASING	1
15	045-009-21	HEX HD.BOLT	4
16	037-005-30	BEARING COVER	1
17	380-034-66	"O" RING	1
18	380-040-66	"O" RING	1
19	035-053-30	LOWER BEARING BRACKET	1
20	520-006-21	SOCKET HEAD SCREW	8
21	385-004-30	OIL BAG RING	1
22	650-102-21	STUD	4
23	170-004-80	DIFFUSER RING	1
24	160-006-01	DIFFUSER HOLDER	1
25	155-014-80	DIFFUSER CENTRE	1
26	700-010-21	WASHER	4
27	370-015-21	HEX NUT	12
28	640-015-21	STRAINER	1
29	030-010-04	BASE PLATE	1
30	045-019-21	HEX HD.BOLT	6
31	705-005-21	SPRING WASHER	6
32	600-027-21	TRIMMING SPACER	AS REQD
33	650-025-21	STUD	8
34	370-009-21	HEX NUT	8
35	365-042-21	DOME LOCK NUT	1
36	695-006-21	LOCK WASHER	1
37	320-013-22	KEY	1
38a	300-110-22	IMPELLER 60 Hz	1
38b	300-109-22	IMPELLER 50 Hz	1
39	600-058-21	TRIMMING SPACER	AS REQD.
40	545-005-21	SEAL HOUSING	1
41	715-014-80	WEAR PLATE	1
42	380-035-66	"O" RING	1
43	380-037-66	"O" RING	1
44	380-042-66	"O" RING	1
45	525-019-21	EARTHING SCREW	1
46	085-027-21	CABLE CLAMP	1
47	525-012-21	CH.HD.SCREW	2
48	350-027-21	NAME PLATE	1

PUMP MODEL G 1002TE - VER 1.1, Revision 3

49	465-006-11	RIVET	6
50	635-009-21	ROTATION ARROW	1
51	227-017-21	CABLE GRIP (Order with gland)	1
52	230-011-45	CABLE GLAND (Order with grip)	1
	660-109-21	CABLE GRIP WITH GLAND	1
53	662-003-66	CABLE SUPPORT	1
54a	260-023-66	CABLE GROMMET 4 CORE	1
54b	260-053-66	CABLE GROMMET 6 CORE	1
55a	600-101-40	GLAND SPACER 4 CORE	1
55b	600-102-40	GLAND SPACER 6 CORE	1
56a	235-014-21	CABLE GLAND BASE 4 CORE	1
56b	235-012-21	CABLE GLAND BASE 6 CORE	1
57a	065-031-79	CABLE TYPE 'W' AWG # 8/4	50'
57b	065-030-79	CABLE 16 SQ.MM x 6 CORE (DESINA)	50'
58	650-014-21	STUD	2
59	370-006-21	HEX NUT	8
60	700-004-21	WASHER	8
61	380-812-66	"O" RING	1
62	380-012-66	"O" RING	2
63	380-009-66	"O" RING	2
64a	260-105-66	CABLE LEAD GROMMET 4 CORE	1
64b	260-114-66	CABLE LEAD GROMMET 6 CORE	1
65	430-019-21	BLANK CAP	1
66	650-011-21	STUD	6
67	150-006-66	OIL DIAPHRAGM	1
68	395-005-93	OIL	5L
69	525-022-21	PH.PAN HD.SCREW	2
70	370-002-21	HEX NUT	4
71	085-007-21	OIL BAG CLAMP SMALL	2
72	515-007-21	SAND GUARD	1
73	600-037-21	CAP FOR CIRCLIP	1
74	080-008-21	CIRCLIP	2
75	535-021-00	MECHANICAL SEAL	2
76	520-002-21	OIL PLUG	2
77	380-001-66	"O" RING	2
78	020-010-07	LOWER BEARING	1 SET
79	080-011-08	CIRCLIP	1
80	010-005-26	ZINC ANODE	4
81	520-011-21	CAP SCREW	8
82	375-021-66	"O" RING SET	1

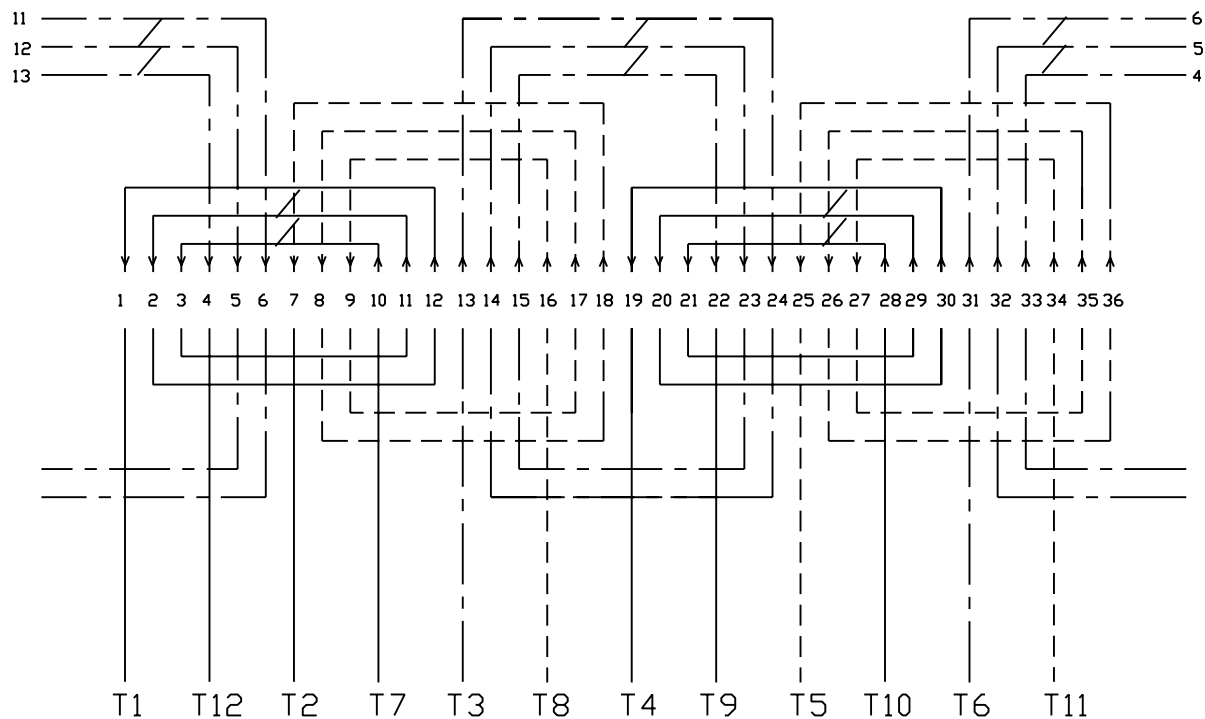
460 V , 3Ph. 6 LEAD WINDING DIAGRAM. (DELTA CONN.)



460 VOLT CONNECTION

- JOIN A1 B2 - RED AND BLACK
- B1 C2 - YELLOW AND GRAY
- C1 A2 - BLUE AND GREEN

WINDING DIAGRAM FOR 2 POLE DUAL VOLTAGE MOTOR DEWATERING PUMPS (12 LEADS)



CONNECT AND SOLDER

T1	RED	T7	WHITE (RED)
T2	YELLOW	T8	WHITE (YELLOW)
T3	BLUE	T9	WHITE (BLUE)
T4	GREEN	T10	WHITE (GREEN)
T5	BLACK	T11	WHITE (BLACK)
T6	GREY	T12	WHITE (GREY)

460 VOLTS CONN.
JOIN PERMANENTLY

T7 & T10
T8 & T11
T9 & T12

LINE

L1 = T1 T6
L2 = T2 T4
L3 = T3 T5

230 VOLTS CONN.

L1 = T1 T6 T9 T10
L2 = T2 T4 T7 T11
L3 = T3 T5 T8 T12



MODEL: G 1006T

**OPERATING INSTRUCTIONS, INSTALLATION & MAINTENANCE
MANUAL INCLUDING SPARE PARTS LIST**



PERFECTIVA

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INTRODUCTION

THE *“mody”* ELECTRIC DRIVEN PORTABLE SUBMERSIBLE PUMPS HAVE BEEN DEVELOPED DUE TO A LONG FELT NEED OF HAVING A TRULY MAINTENANCE FREE PUMPSET FOR VARIOUS APPLICATIONS. THE PUMP IS A LIGHTWEIGHT, COMPACT UNIT ENABLING IT TO BE USED IN MOST SEA-CRAFT AND DIFFICULT LAND INSTALLATIONS. THE UNIT CONSISTS OF A VERTICAL CENTRIFUGAL PUMP WITH AN IN-BUILT SQUIRREL CAGE, INDUCTION ELECTRIC MOTOR WHICH IS AVAILABLE FOR VARIOUS ELECTRIC SUPPLY CONFIGURATIONS. THE PUMPED WATER IS USED AS A COOLING MEDIUM WHICH COOLS THE ELECTRIC MOTOR. THE PUMPSET CAN ALSO BE USED IN ANY POSITION THUS MAKING IT IDEAL FOR DEWATERING IN DIFFICULT LOCATIONS.

THE SERVICE LIFE OF A SUBMERSIBLE PUMP DEPENDS MAINLY ON TWO THINGS: THE DEPENDABILITY OF THE SEALING SYSTEM AND THE WEAR RESISTANCE OF THE PUMP WEAR PARTS.

ALL *“mody”* SUBMERSIBLE SUMP PUMPS INCORPORATE A UNIQUE SEALING SYSTEM. THE CONSTRUCTION CONSISTS OF TWO MECHANICAL SEALS, ARRANGED IN TANDEM, IMMERSSED IN AN OIL BATH. THE COMPLETE PACKAGE IS A PRESSURE COMPENSATED SEALING DEVICE WHICH ENSURES A MINIMAL PRESSURE DIFFERENTIAL ACROSS THE SEAL FACES, IRRESPECTIVE OF THE DEPTH SETTING OF THE PUMP OR THE HEAD AGAINST WHICH THE PUMP IS OPERATING.

IN *“mody”* SUBMERSIBLE SUMP PUMPS, ALL WEAR PARTS ARE RUBBER LINED/COVERED AND ARE READILY REPLACEABLE AS NEEDED. BOTH WEAR AND ELECTRICITY CONSUMPTION ARE STILL FURTHER REDUCED WHEN THE PUMPS ARE FITTED WITH LEVEL CONTROLS FOR AUTOMATIC STARTING AND STOPPING.

IT IS RECOMMENDED THAT IRRESPECTIVE OF TYPE OF PUMP, ADEQUATE MOTOR PROTECTION SWITCHGEAR SHOULD BE USED AT THE INSTALLATION. WE STRONGLY RECOMMEND THE USE OF SUITABLE CONTROL BOXES WHICH ARE AVAILABLE FROM US INCORPORATING ALL REQUIRED PROTECTION.

IT IS IN THE INTEREST OF THE USER THAT HE GO THROUGH THIS MANUAL IN DETAIL PRIOR TO USING THE PUMP. THE MANUAL WILL HELP HIM UNDERSTAND THE CONSTRUCTIONAL FEATURES AND TO OBTAIN TROUBLE FREE SERVICE FROM THE PUMP.

PURPOSE:

THE PUMP HAS BASICALLY BEEN DESIGNED AS A DEWATERING UNIT TO PUMP OUT FLOODED INSTALLATIONS OR ANY CONDITIONS THAT NEED DEWATERING OF UNWANTED FLUIDS. THE PUMP HAS BEEN DESIGNED TO HANDLE WATER CONTAMINATED WITH OIL AS WELL AS ABRASIVE PARTICLES NORMALLY ASSOCIATED WITH RAW WATER. THE MAXIMUM SIZE OF PARTICLES THAT CAN BE HANDLED IS APPROX. 0.5"

OVERALL DIMENSIONS AND WEIGHT.

OVERALL HEIGHT 43.00"/1100MM (APPROX.)
MAX. DIAMETER 17.1"/435MM (APPROX.)
MAX. WEIGHT (EXCL. CABLE) 825 lbs.

MAINTENANCE SERVICES REQUIRED.

THE FOLLOWING CHECKS TO BE DONE AT INTERVALS INDICATED BELOW:

1. CONDITION OF SEALS TO BE CHECKED AT EVERY 2500 HOURS OF OPERATION BY ASCERTAINING THE CONDITION OF OIL IN THE SEAL CHAMBER.
2. MONTHLY RUNNING OF PUMP FOR AT LEAST 5/10 MINUTES AND CHECKING OF AMPERES DRAWN AND INSULATION RESISTANCE. (MIN. INSULATION RES. 1 MEG. OHM. AND MAX. CURRENT DRAWN AS PER NAME PLATE)

SAFETY PRECAUTIONS.

1. ENSURE THAT THE INSULATION RESISTANCE OF THE MOTOR IS AT LEAST 1 MEG. OHM BEFORE ENERGIZING THE UNIT.
2. CHECK THAT THE AVAILABLE POWER SUPPLY (VOLTAGE, PHASE, FREQUENCY) MATCHES WITH THE DETAILS ON THE PUMP NAMEPLATE.
3. ENSURE THAT THE GROUND WIRE IN THE 4 CORE CABLE SUPPLIED WITH THE PUMP IS SECURELY EARTHED.
4. ENSURE DISCHARGE CONNECTION IS CORRECTLY AND SECURELY FITTED
5. ENSURE DELIVERY HOSE IS FREE FROM KINKS AND SHARP BENDS.
6. **DO NOT LIFT OR PULL THE PUMP UNDER ANY CIRCUMSTANCES BY MEANS OF THE CABLE.** THE PUMP MUST BE LOWERED/LIFTED FROM THE AREA TO BE PUMPED BY USING A LIFTING ROPE ATTACHED TO THE EYEBOLTS PROVIDED ON THE TOP OF THE PUMP.
7. WHEN THE PUMP IS ENERGIZED IT WILL KICK WHICH IS OPPOSITE TO THE DIRECTION OF ROTATION OF THE IMPELLER. ENSURE THE KICK IS IN THE CORRECT DIRECTION (SEE THE ARROW MARKED ON THE PUMP). SHIFT ANY TWO PHASES IN POWER SUPPLY IF THE KICK IS WRONG.
8. DRY RUNNING OF THE PUMP IS NOT DESIRABLE. HOWEVER THE PUMP WILL NOT BE DAMAGED OR SUFFER ANY ILL EFFECTS IF IT IS RUN DRY FOR SHORT PERIODS (UPTO APPROX. 10 MINUTES).
9. **THE MAXIMUM PUMP SUBMERGENCE RECOMMENDED IS 50 FEET.**
10. ENSURE CORRECT RATING H.R.C. BACK UP PROTECTION FUSES ARE INSTALLED IN POWER CIRCUIT BEFORE STARTING THE PUMP. (REFER TABLE BELOW).
11. **THE MAXIMUM SPECIFIC GRAVITY OF PUMPED FLUID SHOULD NOT EXCEED 1.1.** PUMP IS DESIGNED TO OPERATE IN FLUIDS WITH pH from 6 - 11.
12. **IF PUMP IS NOT USED AND LYING IN STORAGE FOR MORE THAN 30 DAYS PLEASE ENSURE THAT THE SEAL FACES ARE NOT GAUGE LOCKED - ROTATE THE IMPELLER/KICK START THE UNIT ONCE A MONTH. REFER TO INSTRUCTIONS ON DISASSEMBLY/REASSEMBLY OF MECH. SEALS IN THE EVENT THE FACES HAVE LOCKED.**
13. **58HP @ 60HZ/460V, 63FLA; 50HP @ 50HZ/400V, 63FLA**

MAINS VOLTAGE AT SITE

380 VOLTS / 3 PHASE
 460 VOLTS / 3 PHASE

HRC FUSE RECOMMENDED

121 AMPERES
 100 AMPERES

FAULT FINDING IN THE UNIT.

TROUBLE GUIDE	CAUSE	REMEDY
<u>PUMP DOES NOT START.</u>	1.FUSES BLOWN. 2.CABLE DAMAGED 3.NO POWER. 4.BLOCKED IMPELLER. 5.STATOR WINDING BURNT.	1.REPLACE FUSES 2.SHORTEN/REPLACE CABLE 3.CHECK POWER SUPPLY. 4.CLEAN BOTTOM PARTS. 6.REPLACE STATOR/REWIND
<u>PUMP STARTS BUT STOPS.</u>	1.BLOCKED IMPELLER. 2.IMPELLER ROT.WRONG 3.CONNECTED FOR WRONG VOLTAGE. 4.VOLTAGE LOW/HIGH 5.CLOGGED STRAINER 6.PUMP RUNNING DRY 7.WATER TOO WARM (ABOVE 60 DEGREES C)	1.CLEAN BOTTOM PARTS. 2.SHIFT TWO PHASE CONN. 3.CHECK & RECONNECT. 4.CONTACT POWER CO. 5.CLEAN STRAINER 6.SWITCH OFF POWER 7.SWITCH OFF POWER
<u>PUMP GIVES TOO LITTLE OUTPUT</u>	1.IMPELLER ROT.BACKWARD. 2.PUMP WORN DOWN. 3.LONG HOSE AND DIAMETER TOO SMALL. 4.PRESSURE HEAD TOO HIGH 5.DISCHARGE HOSE TORN 6.LEAKING/CRACKED OUTLET	1.SHIFT TWO PHASE CONN. 2.REPLACE WEAR PARTS 3.CHECK PRESSURE LOSSES 4.USE PUMPS IN TANDEM. 5.USE NEW HOSE 6.REPL.OUTLET/GASKET.

OPTIONAL FEATURES INCLUDE START/DELTA START, SEAL PROBE SENSOR OR THERMAL OVERLOAD PROTECTION. EXTERNAL CONTROL BOXES ARE AVAILABLE FOR THE ABOVE FEATURES. PLEASE CONTACT MODY.

TECHNICAL DESCRIPTION.

THE MODY SUBMERSIBLE PUMP IS IN ITSELF A COMPLETE PUMPING STATION. BESIDES A POWER SUPPLY, CONTROL BOX AND A DISCHARGE HOSE NO EXTRA EQUIPMENT IS REQUIRED. THE COMPLETE PUMPSET IS IN A MODULAR CONSTRUCTION ENSURING GOOD AND SIMPLE SERVICEABILITY. MAJOR DESIGN FEATURES ARE AS UNDER:

THE MOTOR

A RUGGED ALUMINUM DIE CAST ROTOR DYNAMICALLY BALANCED TO GRADE 2.5 ACCURACY OF ISO 942. A STAINLESS STEEL SHAFT RUNNING IN TWO BALL BEARINGS. INSULATION CLASS "H" (180 DEGREES CELSIUS). END WINDINGS DULY EPOXY COATED TO PREVENT DETERIORATION OF INSULATION EVEN IN EXTREMELY HUMID CONDITIONS. WINDING WIRE IS DUAL COATED SUITABLE FOR "H" CLASS INSULATION.

THE SEAL CHAMBER

THE HEART OF THE MODY PUMP. TANDEM MECHANICAL, TUNGSTEN CARBIDE V/S TUNGSTEN CARBIDE SEAL FACES (LOWER SEAL) AND TUNGSTEN CARBIDE V/S TUNGSTEN CARBIDE (UPPER SEAL), SECONDARY SEALS OF HNBR RUBBER AND METAL PARTS IN STAINLESS STEEL, RUNNING IN AN OIL BATH - CREATES THE ULTIMATE SEAL SOLUTION. THE DESIGN OPTIMIZES SEAL LIFE AND ALLOWS FOR SIX MONTHLY (2500 HOURS) SERVICE INTERVALS.

BEARINGS.

TWO ANGULAR CONTACT BALL BEARINGS (IMPELLER SIDE), ARRANGED BACK TO BACK, FILLED WITH A SPECIAL HIGH TEMPERATURE BEARING GREASE REQUIRING NO PERIODIC MAINTENANCE WHATSOEVER. THE TOP BEARING IS A SINGLE ROW DEEP GROOVE BALL BEARING, GREASE FILLED AND SEALED FOR LIFE.

THE HYDRAULIC ELEMENTS.

THE HARDENED STAINLESS STEEL IMPELLER RUNNING AGAINST A RUBBER LINED DIFFUSER AND WEAR PLATE, CONSTITUTE THE HYDRAULIC ELEMENTS OF THE PUMP. THE IMPELLER/DIFFUSER CAN BE ADJUSTED TO MAINTAIN MAXIMUM OUTPUT AFTER USAGE WITHOUT PARTS REPLACEMENT. IT IS IMPORTANT, HOWEVER, TO MAINTAIN CLEARANCES BETWEEN THE WEAR PARTS.

CABLE GLAND ASSEMBLY. (REFER DRG.)

THE PUMP IS SUPPLIED WITH 50 FEET CABLE AS STANDARD. THE CABLE IS A 4 CORE EPR SHEATHED AND INSULATED CABLE CONFORMING TO INT'L STD. THE CABLE IS WATERPROOF AND CAN BE COMPLETELY SUBMERGED IN WATER. THE CABLE IS TERMINATED IN THE PUMP AT THE CABLE GLAND. THE GLAND ASSEMBLY SEALS THE CABLE ON THE OUTSIDE SHEATH AS WELL AS A WATER DAM ARRANGEMENT IS PROVIDED WHICH SEALS THE INDIVIDUAL CORES OF THE CABLE. THIS FEATURE IS UNIQUE AND IS ESSENTIAL TO PREVENT WATER SEEPING THROUGH THE CORES OF THE CABLE INTO THE MOTOR CHAMBER IN THE EVENT OF A CUT CABLE. THE CABLE IS ALSO SHEATHED FOR THE FIRST ONE METER BY MEANS OF A CABLE GRIP MADE OF STAINLESS STEEL. THIS IS ESSENTIAL TO ENSURE THAT THERE IS NO UNDUE STRAIN ON THE CABLE IF THE PUMP IS PULLED OR LOWERED INADVERTENTLY BY MEANS OF THE CABLE. COMPLETE DETAILS OF THE CABLE GLAND ASSEMBLY ARE SHOWN IN THE DRAWING.

NON REPAIRABLE ITEMS

1. ALL "O" RINGS TO BE REPLACED WHENEVER PARTS ARE DISMANTLED.
2. SEAL ELASTOMER PARTS SHOULD NEVER BE RE-USED AFTER DIS-ASSEMBLY.
3. DO NOT REFILL BEARING GREASE. NEW BEARINGS MUST BE INSTALLED WITH SPECIAL HIGH TEMPERATURE GREASE.

ELECTRICAL INFORMATION.

MOTORS ARE DESIGNED TO OPERATE ON SINGLE VOLTAGE AND FREQUENCY. MAXIMUM DEVIATION IN VOLTAGE ALLOWED IS +/-6% AND FREQUENCY +/-3%. CHECK NAME PLATE FOR OPERATING VOLTAGE AND FREQUENCY.

DISMANTLING AND OVERHAULING.

GENERAL OVERHAUL AND OIL CHECK. (REF. DRGS. NO.DW/885/00 (SHEET 1 & 2)

1. ALWAYS REPLACE O-RINGS WITH NEW ONES WHENEVER DISMANTLING AND RE-ASSEMBLING A PUMP. NEVER RE-USE OLD O-RINGS.
2. ALWAYS ISOLATE THE UNIT BEFORE REMOVING THE CABLE GLAND (65). BE CAREFUL WITH O-RINGS (74,75,76) AND SEALING SURFACES. PROTECT THE CHAMBER AGAINST RAIN AND MOISTURE.
3. DISCONNECT STATOR LEADS. SNIP OFF LEAD WIRE CONNECTORS AND UNSCREW EARTHING SCREW (58). LOOSEN SCREWS (60), REMOVE CABLE GROMMET (67) AND CABLE LEAD GROMMET (77). CLEAN THE SEALING SURFACES CAREFULLY AND GREASE THE NEW O-RINGS BEFORE FITTING THE SAME. DO NOT USE THE OLD O-RINGS.
4. LOOSEN HEX. BOLTS AND LOCK WASHERS (38,39) AND REMOVE BASE PLATE (40), STRAINER (35), DIFFUSER CENTER (44), AND DIFFUSER HOLDER (33). PRY OUT DIFFUSER RING (32) FROM OUTER CASING (14). THE DRAWING SHOWS THESE DETAILS. CHECK BY HAND THAT THE ROTOR SHAFT IS NOT JAMMED.
5. PLACE THE PUMP ON THE BOTTOM STUDS (34). TAP THE OUTER CASING (14) WITH NYLON HAMMERS/MALLET TILL IT LOOSENS FROM THE TOP BRACKET (7). SEPARATE THE OUTER CASING FROM THE TOP BRACKET BY EMPLOYING TWO SCREW DRIVERS AS LEVERS AND PUSH THE OUTER CASING DOWNWARDS TILL IT STANDS ON THE FLOOR. LIFT THE UNIT BY THE EYEBOLTS (3) CLEAR OFF THE OUTER CASING.
6. THE SEAL CHAMBER CONTAINS APPROX. 6.5 LITERS OF OIL. THE LEVEL AND CONDITION OF THE OIL SHOULD BE CHECKED EVERY SIX MONTHS. UNSCREW THE OIL PLUGS (24) AND POUR OUT SOME OIL. NOTE THAT THE OIL GETS A SLIGHTLY DARKER SHADE, BUT THIS IS NORMAL AND IS NO CAUSE FOR WORRY. IF THE OIL IS EMULSIFIED BY WATER, THE SEALS HAVE WORN OUT AND MUST BE REMOVED FROM THE ROTOR FOR FURTHER ACTION.
7. LAY DOWN THE PUMP AND REMOVE THE REMAINING PARTS. UNSCREW NUT (37) AND REMOVE LOCK WASHER (36) (USE IMPELLER SPANNER (T7009) TO HOLD IMPELLER WHILE UNSCREWING NUTS) AND SLIDE OFF IMPELLER (48) FROM SHAFT. THEN REMOVE TRIMMING SPACERS (49) AND SAND GUARD (30). THE SAND GUARD IS SCREWED TO THE SEAL HOUSING (23) WITH FOUR CHEESE HEAD SCREWS (31).
8. UNSCREW BOLTS (27,28) AND REMOVE WEAR PLATE (26). THIS CAN BE EASILY DONE BY INSERTING TWO SCREWDRIVERS BETWEEN WEAR PLATE AND LOWER BRACKET(22) AND PRYING THE WEAR PLATE LOOSE. ALL THE PUMP PARTS HAVE BEEN DISMANTLED. REPLACE WORN PARTS.

9. UNSCREW BOTH THE OIL PLUGS (24) AND DRAIN OUT THE OIL FROM THE OIL CHAMBER. REMOVE OUTER CIRCLIP (50) FROM ROTOR SHAFT AND REMOVE LOWER MECHANICAL SEAL. BE VERY CAREFUL IN HANDLING THE TUNGSTEN CARBIDE SEAL FACE. LEAVE STATIONARY TUNGSTEN CARBIDE SEAT IN THE SEAL HOUSING. PULL OUT SEAL HOUSING (23). THE STATIONARY TUNGSTEN CARBIDE SEAL FACE WILL COME OUT WITH THE SEAL HOUSING. HANDLE THE FACE CAREFULLY. THE UPPER MECHANICAL SEAL IS NOW IN VIEW. REMOVE THE UPPER SEAL IN THE SAME WAY AS THE LOWER SEAL

10. THE LOWER BRACKET COMPLETE WITH THE ROTOR (11), BEARING (55), BEARING COVER (16) AND TUNGSTEN CARBIDE SEAT WILL COME OUT WITH THE LOWER BEARING BRACKET. REMOVE BOLTS (15) AND REMOVE BEARING COVER. PULL OUT ROTOR WITH BEARING FROM LOWER BEARING BRACKET. (IF THIS IS DIFFICULT USE A HAND PRESS TO REMOVE ROTOR FROM BEARING BRACKET. ENSURE NO DAMAGE TO THE TUNGSTEN CARBIDE SEAT IN BEARING BRACKET). THE TC SEAT WITH CUP SEAL HOLDER CAN NOW BE PUSHED OUT FROM THE BEARING SIDE BY GENTLY TAPPING THE SAME. (USE FINGERS OR A NYLON TIPPED LIGHT HAMMER ONLY).

11. CHECK BOTH UPPER AND LOWER BEARINGS (10 & 55) FOR ANY RADIAL OR AXIAL PLAY OR ANY ABNORMAL NOISE WHILE SPINNING THE SAME. CHECK FOR ANY LEAKAGE OF GREASE THROUGH THE SHIELD OF THE UPPER BEARING. IF BEARING SEEMS WORN OUT OR ANY GREASE LEAKAGE IS OBSERVED, REPLACE BEARING. (DO NOT USE ANY STANDARD BEARING PROCURED FROM THE MARKET. THE PUMPS USE BEARINGS WHICH ARE PRE-FILLED WITH A SPECIAL HIGH TEMPERATURE GREASE AVAILABLE FROM US READILY).

12. THE TOP BRACKET (7) IS HELD IN POSITION BY FOUR STUDS (4) ON THE INNER CASING. UNSCREW THE NUTS AND REMOVE THE INNER CASING WITH THE HELP OF PULLER FOR STATOR (T8006). ALTERNATIVELY TWO SCREWDRIVERS MAY BE USED TO PRY THE TOP BRACKET FROM THE STATOR.

13. THE STATOR IS SHRINK-FITTED IN THE INNER CASING. THE STATOR CAN NOW BE CHECKED FOR ANY ELECTRICAL FAULTS.

14. IF THE STATOR MEGS LOW BAKE IT IN AN OVEN FOR 3 HOURS AT 300F. MEG OHM TEST THE STATOR AND ALSO MEASURE LINE TO LINE RESISTANCE. THE RESISTANCE VALUE SHOULD BE APPROXIMATELY THE SAME BETWEEN THE THREE LEGS/PHASES OF THE WINDING. PERFORM A HI-POT TEST IF POSSIBLE.

RE-ASSEMBLY OF THE PUMPSET.

THE PUMP CAN BE RE-ASSEMBLED AS PER PROCEDURE GIVEN BELOW. PLEASE HOWEVER NOTE THE FOLLOWING:

- A) ALWAYS REPLACE NEW O-RINGS AND DISCARD OLD ONES.
- B) REPLACE LOCK WASHER WHEN RE-ASSEMBLING.

1. THE CHECKED/REPAIRED STATOR IS KEPT UPRIGHT AND THE TOP BRACKET IS AFFIXED THROUGH THE FOUR STUDS (4).

2. ALL THE ELECTRICAL CONNECTIONS OF THE STATOR LEAD WIRES AND EARTHING WIRE SHOULD BE SECURE AND INSULATED.

3. SLIDE BEARING COVER (16) ON ROTOR SHAFT.

4. FIT BEARINGS (IF REMOVED OR REPLACED) ON ROTOR SHAFT (USE EITHER A HAND PRESS OR SHRINK THE SAME -- DO NOT HAMMER THE BEARINGS ON THE SHAFT-- YOU MAY SCORE/BEND THE SHAFT AND ALSO DAMAGE THE BEARINGS) AND FIT CIRCLIPS ON TOP AND BOTTOM GROOVES ON SHAFT. (IF THE BEARINGS ARE SHRINK FITTED ON THE SHAFT, HEAT THE BEARINGS IN OIL TO A MAXIMUM TEMPERATURE OF 120 DEGREES CELSIUS AS A HIGHER TEMPERATURE WILL LIQUEFY THE GREASE IN THE BEARING AND RENDER THE SAME UNUSABLE). DO NOT REUSE OLD BEARINGS THAT HAVE BEEN PULLED OFF.

5. SLIDE LOWER BEARING BRACKET (22) ON TO LOWER BEARING AND ALIGN FOUR NOS. HOLES ON BEARING COVER WITH THE TAPPED HOLES ON LOWER BEARING BRACKET. FIT THE BOLTS (15) AND TIGHTEN BEARING COVER.

6. FIT COMPLETE ROTOR ASSEMBLY IN STATOR HOUSING GUIDING UPPER BEARING IN TOP BEARING BRACKET SEAT. TIGHTEN BOLTS. FIT UPPER TC SEAT IN LOWER BEARING BRACKET (LIGHTLY OIL THE RUBBER SEAT CUP -- ENSURE THE SEAT SITS SQUARE IN THE BRACKET) AND SLIDE ON UPPER SEAL ASSEMBLY ON ROTOR SHAFT. (USE SEAL ASSEMBLY MANDREL (T9004) TO ASSIST IN SLIDING BELLOWS ON TO THE SHAFT). LIGHTLY OIL THE ROTOR SHAFT BEFORE PUSHING BELLOWS ON SHAFT. USE EXTREME CARE SO THAT THE SEAL FACES ARE NOT DAMAGED. SLIDE ON CIRCLIP (50) AND FIT IN GROOVE ON SHAFT.

7. PRESS HOME BY HAND LOWER SEAL TUNGSTEN CARBIDE SEAT INTO SEAL HOUSING (22). LIGHTLY OIL THE RUBBER SEAT CUP BEFORE PRESSING IN CAVITY. THE SEAT MUST SIT SQUARE IN THE HOUSING.

8. FIT SEAL HOUSING (23) INTO LOWER BRACKET AND TIGHTEN BOLTS (52).

9. SLIDE ON LOWER SEAL ASSEMBLY ON SHAFT. APPLY LIGHT COAT OF OIL ON SHAFT BEFORE SLIDING BELLOWS ON THE SAME. (USE SAME SEAL MANDREL AS USED FOR THE UPPER SEAL TO SLIDE BELLOWS ON SHAFT). FIT CIRCLIP (50) AS FOR THE UPPER SEAL ASSEMBLY.

10. INSTALL SAND GUARD (30) INTO SEAL HOUSING USING THE FOUR CHEESE HEAD SCREWS.

11. FIT ONE DRAIN PLUG WITH "O" RING IN LOWER BEARING BRACKET AND FILL OIL IN THE OIL CHAMBER KEEPING THE THIRD OIL PLUG OPEN ENSURING NO AIR IS ENTRAPPED INSIDE. REPLACE PLUGS WITH "O" RINGS.

12. SLIDE ON WEAR PLATE AGAINST LOWER BEARING BRACKET AND TIGHTEN THE SAME. FIT KEY (47) ON THE SHAFT AND SLIDE ON IMPELLER. CLEARANCES BETWEEN IMPELLER AND WEAR PLATE CAN BE ADJUSTED BY MEANS OF THE TRIMMING SPACERS (49). SLIDE ON LOCK WASHER (36) ENSURING THAT TONGUE OF LOCK WASHER IS IN GROOVE OF THREADING AND TIGHTEN NUT (37). BEND LOCK WASHER OVER ANY SIDE OF THE HEX NUT. ENSURE THAT ROTOR SHAFT IS ROTATING FREE.

14. FIT OUTER CASING ON TOP BRACKET WITH "O" RING. FIT DIFFUSER RING AND DIFFUSER HOLDER AND TIGHTEN NUTS. FIT DIFFUSER CENTER AND ADJUST CLEARANCE BETWEEN IMPELLER AND DIFFUSER CENTER TO THE MINIMUM BY USING TRIMMING WASHERS (45). FIX STRAINER, BASE PLATE AND TIGHTEN BOLTS (38)

OIL SPECIFICATIONS

- A). SHELL TELLUS 29.
- B). EXXON UNIVOLT 61
- C) CHEVRON SUPERLA FDA APPROVED # 10

USE NON-CONDUCTING, NON-FOAMING, NON-DETERGENT OIL ONLY

PARTS CATALOG

1. COMPONENTS LIST : AS PER DRAWING NO. DW/885/00 (SHEET 1 & 2)

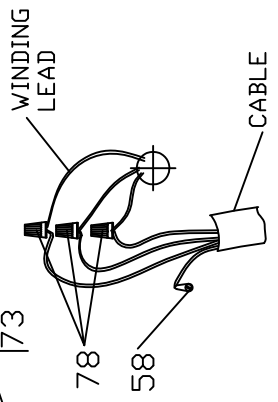
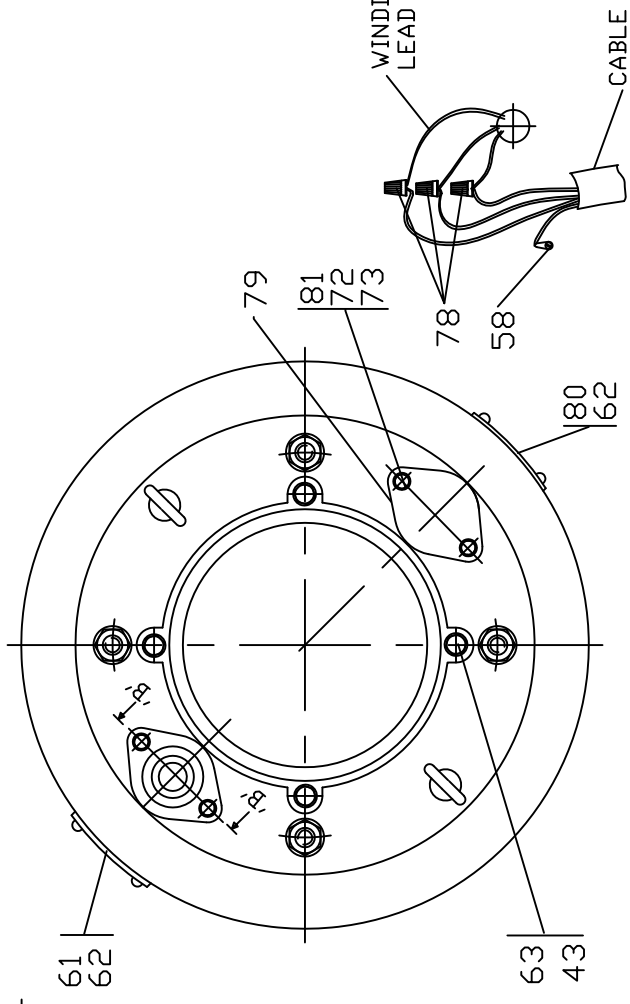
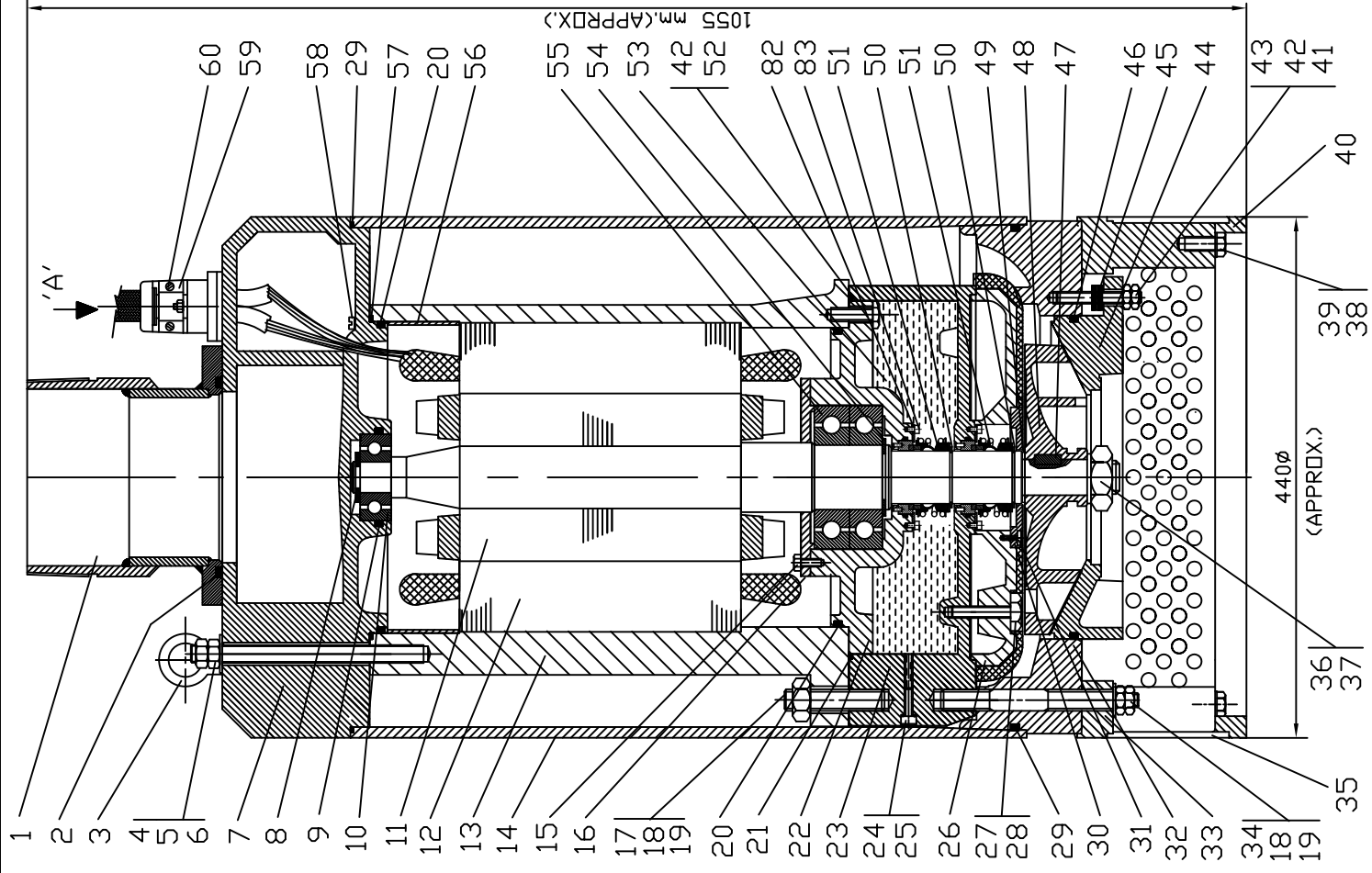
DRAWINGS :

- 1. SECTIONAL ASSEMBLY (DW/885/00)(SHEET 1 & 2)
- 2. MATERIAL PARTS LIST

R: RECOMMENDED SPARES FOR TWO YEARS OPERATION

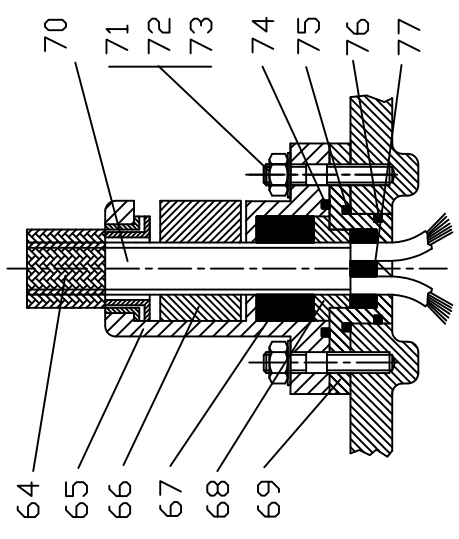
<u>SR. NO.</u>	<u>DESCRIPTION</u>	<u>PART NO.</u>	<u>RECOMMENDED QTY.</u>
1.	MECHANICAL SEAL	535-041-00	2 NOS.
2.	"O" RING SET	375-016-66	2 SETS.
3.	CABLE GROMMET	260-023-66	2 NOS.
4.	CABLE LEAD GROMMET	260-105-66	2 NOS.
5.	UPPER BEARING	020-011-07	1 NOS.
6.	LOWER BEARING	020-019-07	1 SET.
7A.	IMPELLER (60HZ)	300-108-22	1 NOS.
7B.	IMPELLER (50HZ)	300-098-22	1 NOS.
8.	DIFFUSER CENTER	155-009-80	1 NOS.
9.	DIFFUSER RING	170-006-80	1 NOS.
10.	WEAR PLATE	715-012-80	1 NOS.
11.	LOCK WASHER	695-012-21	2 NOS.

REFER TO PARTS LIST AT END OF MANUAL FOR CORRECT CABLE GROMMETS.



(4 CORE CABLE CONNT.)
(SECT.'B-B')

VIEW FROM 'A'



CABLE GLAND ASSY.
(SECT.'B-B')

PUMP MODEL G1006TE VER 1.1, Revision 7

D.NO.	PART NO.	DESCRIPTION	QTY
1a	405-076-21	DISCHARGE OUTLET (6" NPT)	1
1b	405-051-21	DISCHARGE OUTLET (6" HOSE)	1
1c	405-108-21	DISCHARGE OUTLET (6" BSP)	1
2	380-060-66	"O" RING	1
3	270-014-21	LIFTING HOOK	2
4	650-061-21	STUD	4
5	700-014-21	WASHER	4
6	370-016-21	HEX NUT	8
7	035-050-01	TOP BRACKET	1
8	080-006-08	CIRCLIP	1
9	380-016-66	"O" RING	1
10	020-011-07	UPPER BEARING	1
11	480-058-00	ROTOR COMPLETE	1
12a	619-029-00	BARE STATOR 380v@50Hz/460v@ 60Hz	1
12b	619-110-00	BARE STATOR 575v/1000v	1
13	625-036-01	STATOR CASING	1
14	400-028-04	OUTER CASING	1
15	045-009-21	HEX HD.BOLT	6
16	037-010-01	BEARING COVER	1
17	650-056-21	STUD	6
18	700-010-21	WASHER	18
19	370-015-21	HEX NUT	18
20	380-034-66	"O" RING	2
21	380-074-66	"O" RING	1
22	035-049-01	LOWER BEARING BRACKET	1
23	545-016-01	SEAL HOUSING	1
24	520-002-21	OIL PLUG	3
25	380-001-66	"O" RING	3
26	715-012-80	WEAR PLATE	1
27	045-041-21	HEX HD BOLT	6
28	710-025-21	WASHER	6
29	380-069-66	"O" RING	2
30	515-011-21	SAND GUARD	1
31	525-024-21	CH.HD.SCREW	4
32	170-006-80	DIFFUSER RING	1
33	160-005-01	DIFFUSER HOLDER	1
34	650-057-21	STUD	6
35	640-022-21	STRAINER	1
36	695-012-21	LOCK WASHER	1
37	365-031-21	LOCK NUT	1
38	045-019-21	HEX HD.BOLT	6
39	705-005-21	SPRING WASHER	6
40	030-027-04	PUMP BASE	1
41	650-059-21	STUD	6
42	700-008-21	WASHER	12
43	370-009-21	HEX NUT	16
44	155-009-80	DIFFUSER CENTRE	1
45	600-027-21	TRIMMING WASHERS	AS REQD
46	380-037-66	"O" RING	2
47	320-033-22	KEY	1
48a	300-108-22	IMPELLER 60HZ	1
48b	300-098-22	IMPELLER 50HZ	1

PUMP MODEL G1006TE VER 1.1, Revision 7

D.NO.	PART NO.	DESCRIPTION	QTY
49	600-058-21	TRIMMING SPACER	AS REQD
50	080-017-21	CIRCLIP	2
51	535-041-00	MECHANICAL SEAL	2
52	045-039-21	HEX HD BOLT	6
53	395-005-93	OIL	6.5L
54	080-018-08	CIRCLIP	1
55	020-019-07	LOWER BEARING	2
56	600-060-04	SPACER FOR STATOR OPTIONAL	1
57	380-068-66	"O" RING	1
58	525-019-21	EARTHING SCREW	1
59	085-027-21	CABLE CLAMP	1
60	525-012-21	CH.HD.SCREW	2
61	350-027-21	NAME PLATE (CD)	1
62	465-006-21	RIVET	6
63	650-044-21	STUD	4
64	227-016-21	CABLE GRIP (Order with Gland)	1
65	230-006-45	CABLE GLAND (Order with Grip)	1
	660-109-00	CABLE GLAND WITH GRIP	1
66	662-003-66	CABLE SUPPORT	1
67a	260-023-66	CABLE GROMMET 4 CORE	1
67b	260-053-66	CABLE GROMMET 6 CORE	1
68a	600-101-40	GLAND SPACER 4 CORE	1
68b	600-102-40	GLAND SPACER 6 CORE	1
69a	235-014-21	CABLE GLAND BASE 4 CORE	1
69a	235-012-21	CABLE GLAND BASE 6 CORE	1
70a	065-031-79	CABLE TYPE 'W' AWG # 8/4	50'
70b	065-030-79	CABLE 16 SQ.MM x 6 CORE (DESINA)	50'
71	650-014-21	STUD	2
72	370-006-21	HEX NUT	4
73	700-004-21	WASHER	4
74	380-080-66	"O" RING	1
75	380-012-66	"O" RING	1
76	380-009-66	"O" RING	1
77a	260-105-66	CABLE LEAD GROMMET 4 CORE	1
77b	260-114-66	CABLE LEAD GROMMET 6 CORE	1
78	365-035-00	WIRE NUT CONNECTOR	3
79	430-019-21	BLANK CAP	1
80	635-009-21	ROTATION ARROW	1
81	650-011-21	STUD	2
82	550-026-21	SEAL SEAT LOCK COVER	2
83	525-025-21	CH.HD.SCREW	6
84	375-016-66	"O" RING SET	1