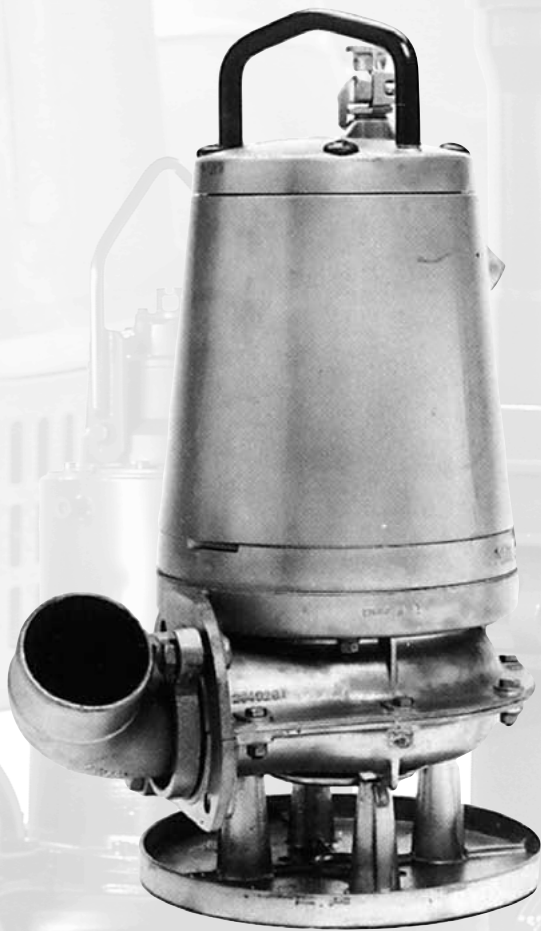




Installation, care and maintenance

3080.211/311, 3080.211/311-U, 3080.211/311-W



Flygt



ITT Industries

GUARANTEE

Flygt undertakes to remedy faults in products sold by Flygt provided

- that the fault is due to defects in design, materials or workman-ship;
- that the fault is reported to Flygt or Flygt's representative during the guarantee period;
- that the product is used only under conditions described in care and maintenance instructions and in applications for which it is intended;
- that the monitoring equipment incorporated in the product is correctly connected;
- that all service and repair work is done by a workshop authorized by Flygt;
- that genuine Flygt parts are used.

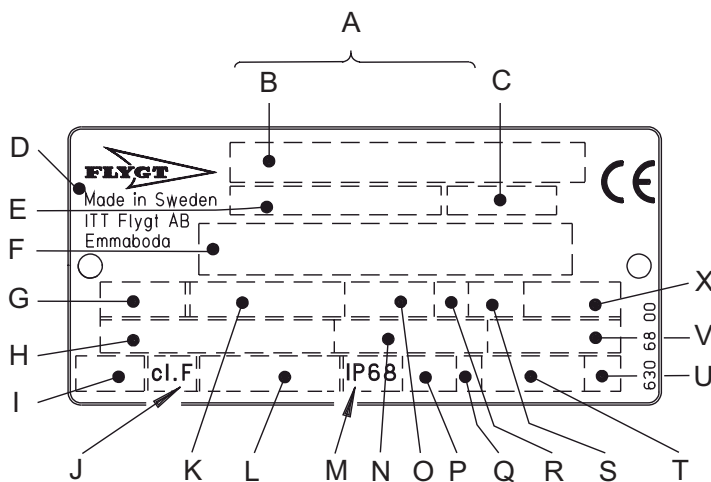
Hence, the guarantee does not cover faults caused by deficient maintenance, improper installation, incorrectly executed repair work or normal wear and tear.

Flygt assumes no liability for either bodily injuries, material damages or economic losses beyond what is stated above.

Flygt guarantees that a spare parts stock will be kept for 15 years after the manufacture of this product has been discontinued.

The manufacturer reserves the right to alter performance, specification or design without notice.

DATA PLATE INTERPRETATION



- A Serial number
- B Product code + Number
- C Curve code / Propeller code
- D Country of origin
- E Product number
- F Additional information
- G Phase; Type of current; Frequency
- H Rated voltage
- I Thermal protection
- J Thermal class
- K Rated shaft power
- L International standard
- M Degree of protection
- N Rated current
- O Rated speed
- P Max. submergence
- Q Direction of rotation: L=left, R=right
- R Duty class
- S Duty factor
- T Product weight
- U Locked rotor code letter
- V Power factor
- X Max. ambient temperature

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PRODUCT DESCRIPTION

Applications

3080.211/311 is intended to be used for:

- pumping of water which may contain abrasive particles
- pumping of sludge

The pump is available in the following versions:

DP = for permanent installation in a sump. The pump slides down along the guide arrangement and connects automatically to a discharge connection.

DS = portable, with hose connection, stand and strainer.

The following abbreviations are used:

MT = medium-head version

HT = high-head version

ST = super-head version

The pump is also available in a version (3080.211/311-W) for liquid temperatures up to 70°C (160°F) and in a version (3080.211/311-U) with POLY-LIFE wear parts for extra resistance.

3080.211/311-W has certain operational limitations, which are stated on a plate on the pump.

Liquid temperature (except 3080.211/311-W): max. 40°C (105°F).

Liquid density: max. 1100 kg/m³ (9.2 lb per US gal.).

The pH of the pumped liquid (211/311):

.211 = 5—8

.311 = 6—11

Depth of immersion: max. 20 m (65 ft).



WARNING!

The pump shall not be used in explosive or flammable environments or with flammable liquids.

For other applications, than the above, contact your nearest Flygt representative for information.

Weights

Weight in kg (lb) without motor cable.

211: 62 (137)

311: 100 (220)

Discharge connection for DP-version: 35 (77)

Motor data

**Rated output: 4.0 kW,
3 ~ 50 Hz 1400 r/min**

Voltage V	Rated Current A	Starting Current A
220	16	73.0
380	9.1	42.0
400	8.4	35.0
415	8.2	36.0
440	8.0	39.0
500	6.7	28.0
550	6.5	29.0

**Rated output: 5.5 kW,
3 ~ 50 Hz 2800 r/min**

Voltage V	Rated Current A	Starting Current A
220	21.0	107.0
380	12.0	59.0
400	12.0	50.0
415	11.0	53.0
440	11.0	56.0
500	9.4	46.0
550	8.4	55.0

**Rated output:
4.8 kW (6.5 hp),
3 ~ 60 Hz 1650 r/min**

Voltage V	Rated Current A	Starting Current A
220	18.0	84.0
460	9.1	49.0
575	7.0	28.0

**Rated output:
6.6 kW (9.0 hp),
3 ~ 60 Hz 3300 r/min**

Voltage V	Rated Current A	Starting Current A
220	26.0	123.0
460	12.0	60.0
575	10.0	45.0
600	9.4	51.0

Materials

		DIN	BS	AISI/ ASTM
Cast parts	Aluminium 211	1725 G-ALMg5	1490 LM5	—
	Cast iron 311	1691 GG 25	1452:1977 Grade 260	A-48-76 No.40B
Shaft	Stainless steel	X8CrNiMo 27 5	—	329
Impeller	Spring steel	17221 50 Cr V4	970:5 A 50	6150
Strainer	Stainless steel	X5CrNiMo 18 9	En 58E 304 S 15	304
O-rings	3080.211/311:	Nitrile rubber 70°IRH		
	3080.211/311-W:	Fluorinated rubber 70°IRH		
Wear parts	3080.211/311:	Nitrile rubber 60°IRH		
	3080.211/311-W:	Polyurethane		
Mechanical face seals	Inner:	Tungsten carbide—Carbon		
	Outer:	Tungsten carbide—Tungsten carbide		
Surface treatments	211:	One layer of aluminium enamel.		
	311:	Priming of casting and finishing coating of synthetic resin enamel.		

Design

1. Motor

Squirrel-cage 3-phase induction motor for 50 Hz or 60 Hz.

The motor is started by means of direct on-line start.

The motor can be run continuously or intermittently with a maximum of 15 evenly spaced starts per hour.

Flygt motors are tested in accordance with IEC 34-1.

The stator is insulated in accordance with class F (155°C, 310°F).

The motor is designed to supply its rated output at $\pm 5\%$ variation of the rated voltage. Without overheating the motor, $\pm 10\%$ variation of the rated voltage can be accepted provided that the motor does not run continuously at full load.

The motor is designed to operate with a voltage imbalance of up to 2% between the phases.

2. Bearings

The upper bearing of the rotor consists of a single row ball bearing.

The lower bearing of the rotor consists either of a single angular contact ball bearing (MT) or of two angular contact ball bearings in tandem (HT/ST).

3. Oil casing

The oil lubricates and cools the seals and acts as a buffer between the pump casing and the electric motor.

4. Shaft seals

The pump has two mechanical seals.

5. Shaft

The shaft is delivered with the rotor as an integral part.

6. Cooling

The stator is cooled by the circulation of a portion of the pumped liquid in the space between the stator casing and the outer casing.

Under severe operating conditions and/or at high temperatures of the pumped liquid, internal cooling can be replaced by external cooling. Special rules apply for connecting external cooling to fresh water systems.

7. Impeller

The pump is available with the following type of impeller:

— vortex multi-vane impeller.

8. Wear parts

The pumps easily replaceable wear parts are rubber covered. In the POLY-LIFE version, the wear parts are polyurethane covered.

9. Monitoring equipment

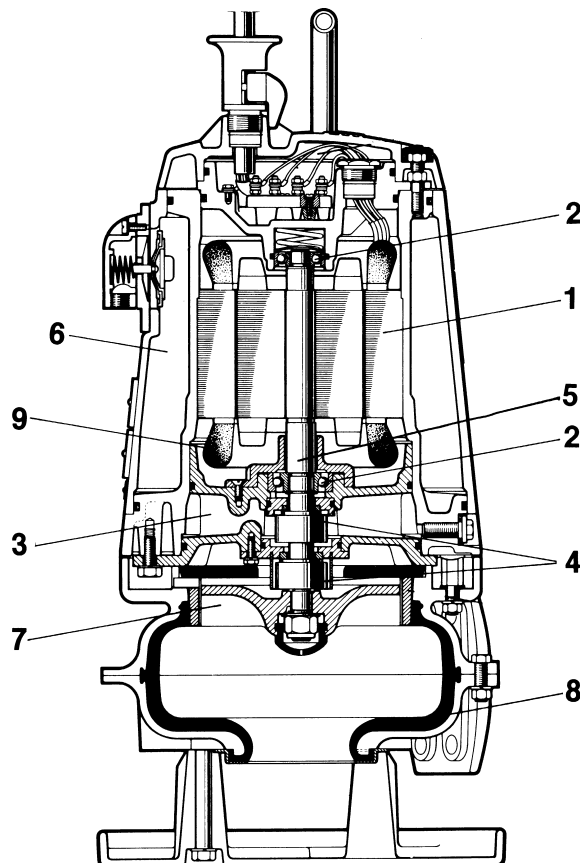
The stator incorporates two thermal switches connected in series.

The thermal protectors: open at 125°C (260°F).



NOTE!

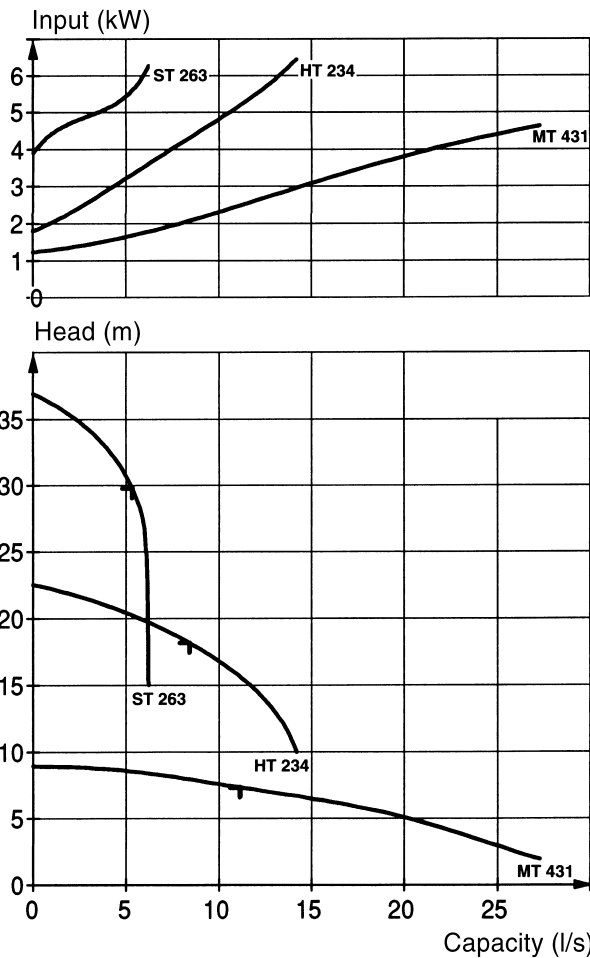
Make sure that the monitoring equipment incorporated in the product is correctly connected.



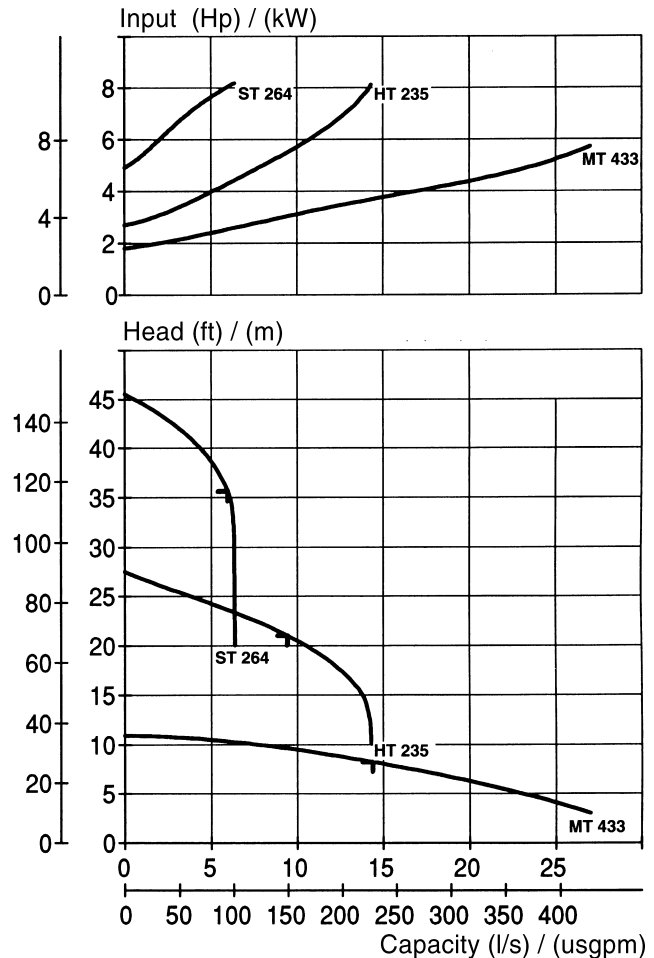
Performance curves

┌ = Best operating point

50 Hz 3~



60 Hz 3~



TRANSPORTATION AND STORAGE

The pump may be transported and stored in a vertical or horizontal position. Make sure that it cannot roll or fall over.



Warning!
Always lift the pump by its carrying handle or lifting eyes, never by the motor cable or the hose.

The pump is frostproof as long as it is operating or is immersed in the liquid. If the pump is taken up when the temperature is below freezing, the impeller may freeze. The pump shall be operated for a short period after being taken up in order to expel all remaining water.

A frozen impeller can be thawed by allowing the pump to stand immersed in the liquid for a short period before it is started. Never use a naked flame to thaw the pump.

For longer periods of storage, the pump must be protected against moisture and heat. The impeller should be rotated by hand occasionally (for example every other month) to prevent the seals from sticking together. If the pump is stored for more than 6 months, this rotation is mandatory.

After a long period of storage, the pump should be inspected before it is put into operation. Pay special attention to the seals and the cable entry.

Follow the instructions under the heading "Before starting".

INSTALLATION

Safety precautions

In order to minimize the risk of accidents in connection with the service and installation work, the following rules should be followed:

1. Make sure the lifting equipment is in good condition.
2. Be aware of the risk of electrical accidents.
3. Use a safety helmet, safety goggles and protective shoes.
4. Do not ignore the risk of drowning.
5. A firstaid kit must be available.

WARNING! Keep out from under suspended loads.

Follow all other health and safety rules and local codes and ordinances.



At certain installations and operation points on the pump curve the noise level 70 dB, or for the actual pump specified noise level, can be exceeded

Installation alternatives

Consult your nearest Flygt representative regarding:

- sizing of sump, pumping station and access frame.
- choice of ancillary equipment.
- other problems in connection with installation.

DP version

In the DP version, the pump is installed on a stationary discharge connection and operates completely or partially submerged in the pumped liquid.

In addition to the pump, the following items are required:

Guide bars or guide wire.

Guide bracket for attaching the guide equipment to the access frame or to the upper part of the sump.

Level sensors or other control equipment for start, stop and alarm.

Cable holder for holding the cable and regulating the height of the level sensors.

Access frame (with covers) to which the upper guide bar bracket and cable holder can be attached.

Discharge connection for connecting the pump to the discharge line. The discharge connection has a flange which fits the pump casing flange and a bracket for attaching the guide equipment.

Bushings for vibration damping between the guide bars and the discharge connection.

DP installation

Provide a barrier around the pump pit, for example a guard rail.

Arrange for a cable between the sump and the electric control box.

Make sure that the cables are not sharply bent or pinched.



NOTE! The end of the cable must not be submerged. Leads have to be above flood level, as water may penetrate through the cable into the junction box or the motor.

Place the access frame in position.

Align the frame so that it is horizontal and then grout it in place.

Grout the anchor bolts in place. Be careful when aligning and positioning the discharge connection in relation to the access frame.

See dimensional drawing.

Place the discharge connection in position and tighten it.

Secure the guide equipment in the brackets.

Check that the guide equipment is placed vertically by using a level or a plumb line.

Connect the discharge pipe to the discharge connection.

Bolt the cable holder to the access frame. Thread the level regulator cables through the holes in the cable holder and adjust the height of the sensors.

It is recommended that the level regulators be used with low voltage. The data sheet delivered with the regulators gives the permissible voltage. Local rules may specify otherwise.

Protect bolts and nuts with corrosion preventive compound.

Lower the pump along the guide rail or wire.

On reaching its bottom position, the pump will automatically connect to the discharge connection.

Fasten the lifting chain on the access frame and the cables on the cable holder. Make sure that the cables cannot be sucked into the inlet of the pump. Support straps are required for deep installations.

Run the cables up to the electric control box.

Clean out debris from the sump before starting up the station.

The pump can be hoisted up along the guide equipment for inspection without any connections having to be undone.

DS version

In the DS version, the pump is transportable and intended to operate completely or partially submerged in the pumped liquid.

The pump is equipped with a connection for hose or pipe, see "Parts list".

The pump stands on a base stand.

DS installation

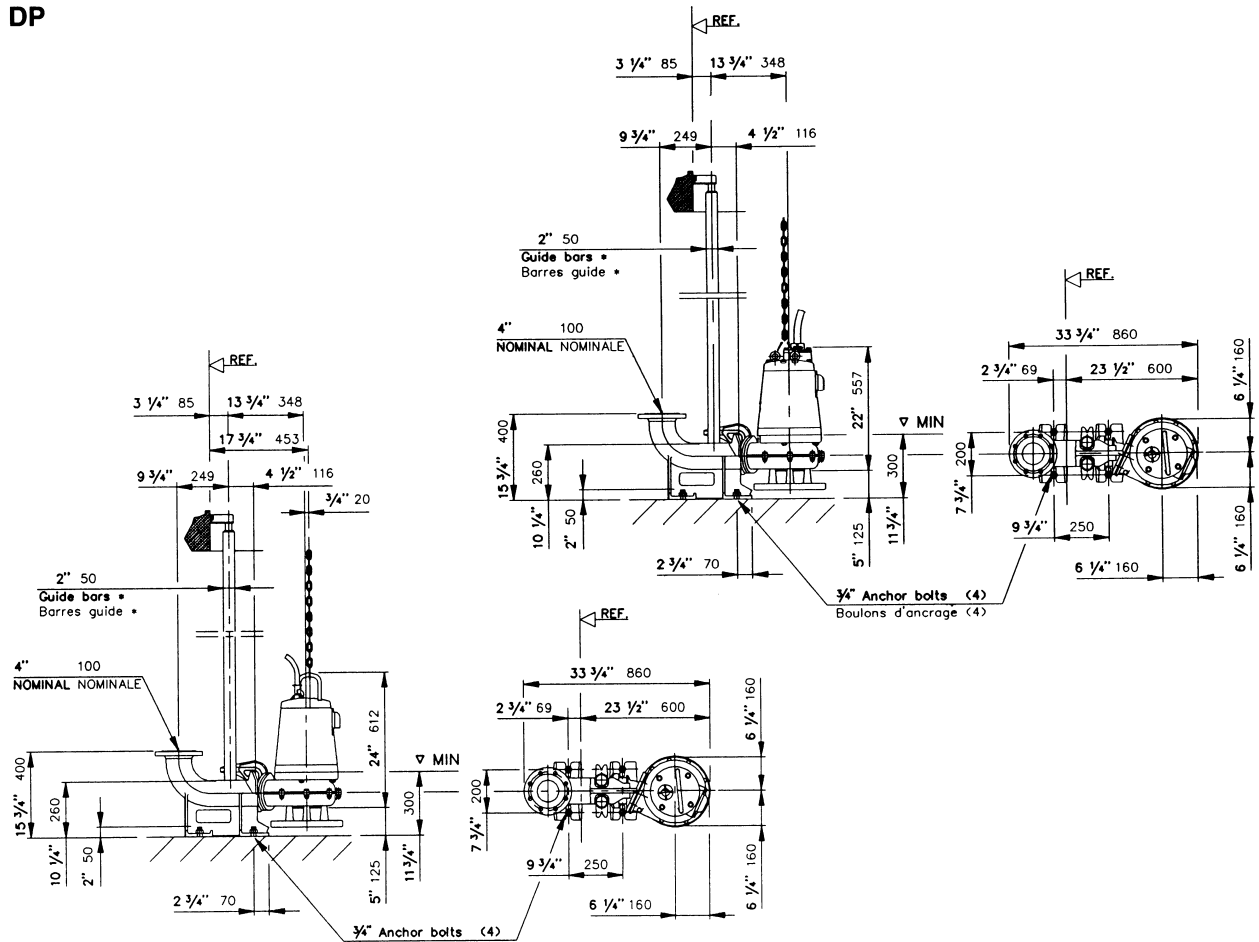
Run the cables so that they have no sharp bends, are not pinched and cannot be sucked into the pump inlet. Connect the discharge line and the motor cable. See "Electrical connections".

Lower the pump into the sump.

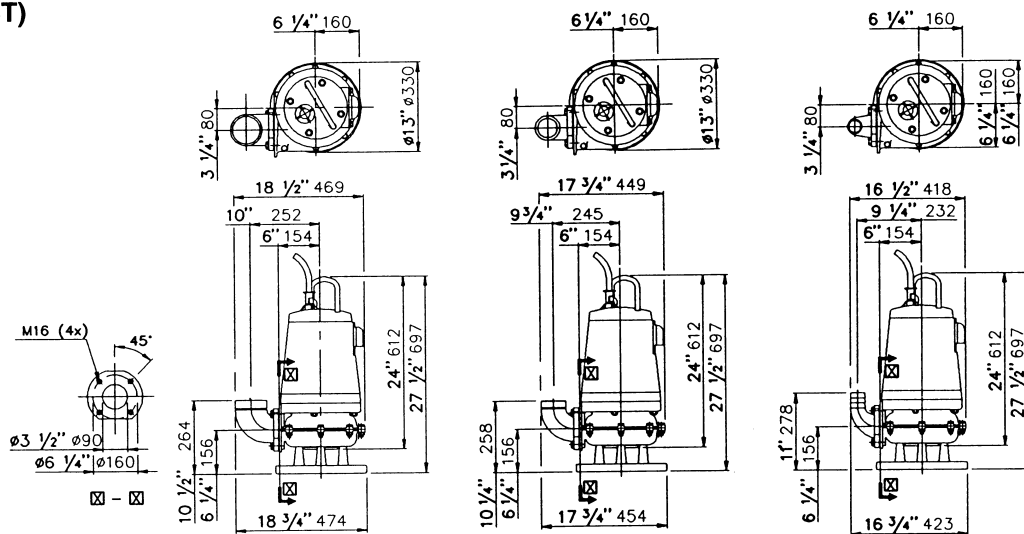
Place the pump on a base which prevents it from sinking into a soft sump bottom.

Alternatively, the pump can be suspended from above by its handle above the bottom of the sump.

DP



DS (MT/HT/ST)



All dimensions are in inches and millimeters

ELECTRICAL CONNECTIONS

All electrical work shall be carried out under the supervision of authorized electrician.

Local codes and regulations shall be complied with.



WARNING!

All electrical equipment must be earthed. This applies to both pump equipment and any monitoring equipment.

Failure to heed this warning may cause a lethal accident. Make sure that the earth lead is correctly connected by testing it.

Check that the mains voltage and frequency agree with the specifications on the pump data plate.

The motor can be connected for different voltages as shown on the data plate.

Under no circumstances may the starter equipment be installed in the pump pit.

To avoid leakage into the pump, check:

- that the cable entry seal sleeve and washers conform to the outside diameter of the cable. See the parts list.
- that the outer jacket on the cable is not damaged. When refitting a cable which has been used before, always cut off a short piece of the cable so that the cable entry seal sleeve does not close around the cable at the same point again.



WARNING!

For safety reasons, the earth lead should be approx. 90 mm (3½”) longer than the phase leads. If the motor cable is jerked loose by mistake, the earth lead should be the last lead to come loose from its terminal. This applies to both ends of the cable.

Connection of stator and motor leads

Check on the data plate which connection is valid for the voltage supply. Then, depending on voltage and starting method, arrange the connection on the terminal board, see the figures.

Connect the motor cable to the terminal board, see figures.

The stator leads are connected to the terminal board as illustrated in the figures.

Connect the leads from the motor control circuit to T1 and T2.

Make sure that the pump is correctly earthed (grounded). Install the cover (22).

Tighten the cable entry unit (26).

Connect the motor cable to the starter equipment. Check the direction of rotation, see “Before starting”.

If the direction of rotation is wrong, transpose two of the phase leads.

Remember that the starting surge with the direct-on line start can be up to six times higher than the rated current. Make sure that the fuses or circuit breakers are of the proper amperage.

The table (on page 3) gives rated current and starting current.

Fuse amperage and cable shall be selected in accordance with local rules and regulations. Note that with long cables, the voltage drop in the cable must be taken into consideration, since the motor’s rated voltage is the voltage that is measured at the terminal board in the pump.

The overload protection (motor protection breaker) shall, for direct-on-line start be set to the motor’s rated current as given on the data plate.



NOTE!

Make sure that the monitoring equipment incorporated in the product is correctly connected

Electrical connections

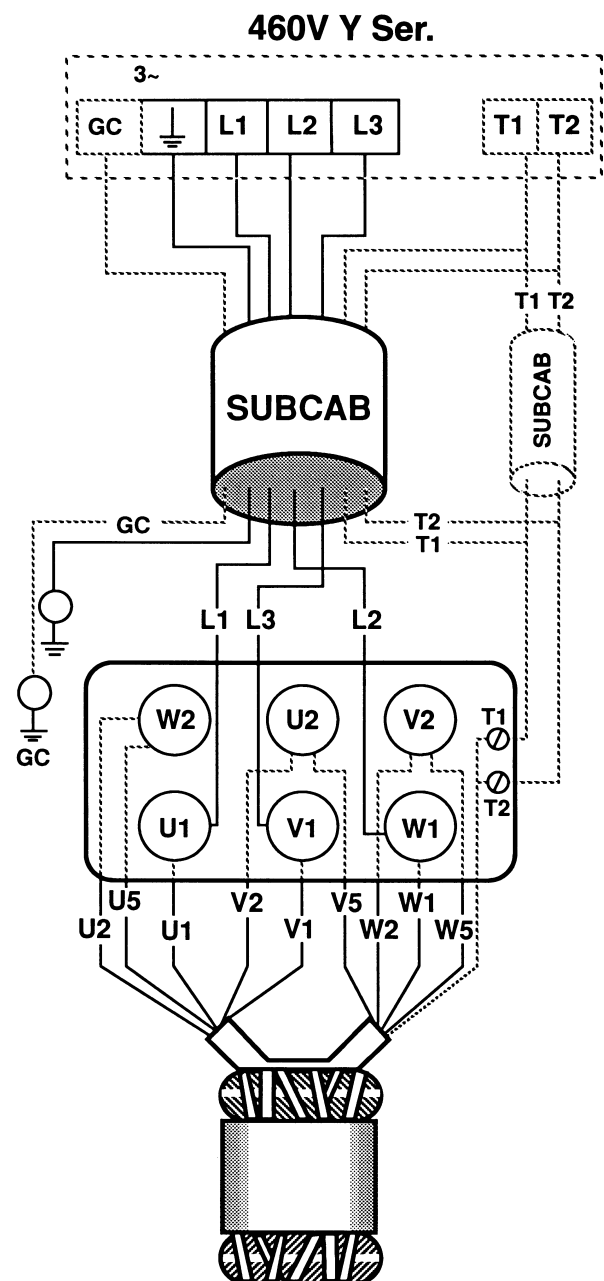
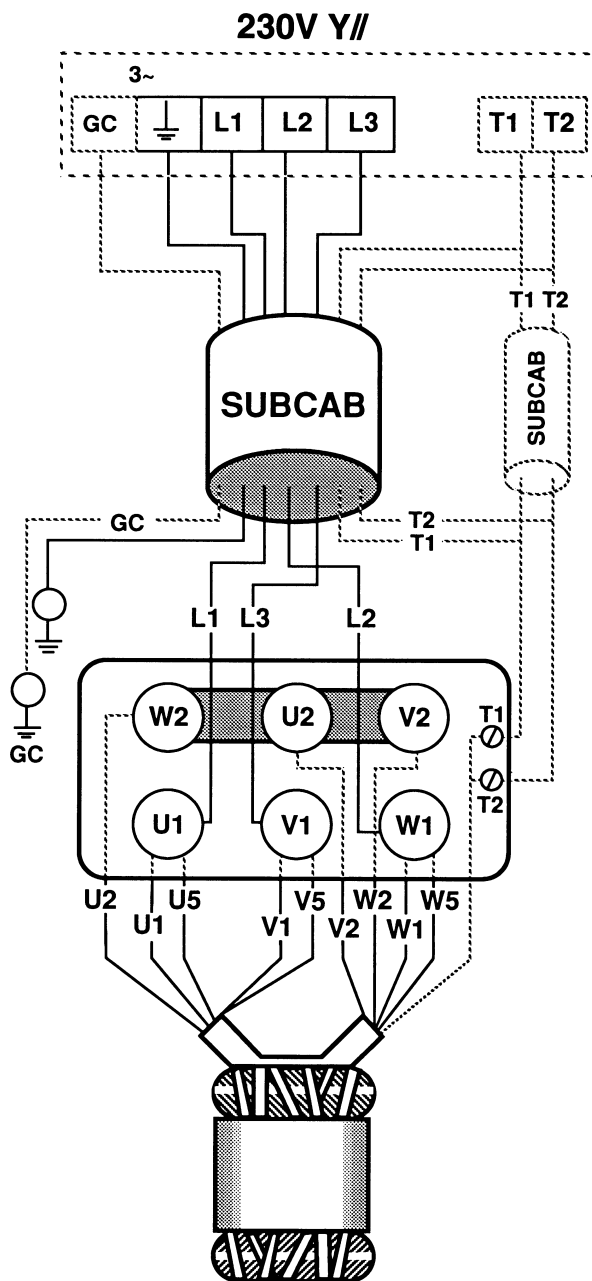
SUBCAB 4G/SUBCAB AWG*

Mains	Lead	Pump terminal board
L1	Brown (Red*)	U1
L2	Black (Black*)	W1
L3	Blue (White*)	W1
Earth (PE)	Yellow/green	⏚
Groundcheck	Yellow*	GC
T1	Black (Orange*)	T1
T2	Black (Blue*)	T2

Connect the control leads from the motor control circuit to T1 and T2.

The stator leads are color-marked as follows:

U1 (S1)	— red
V1 (S2)	— brown
W1 (S3)	— yellow
U2 (S4)	— green
V2 (S5)	— blue
W2 (S6)	— black
U5 (S7)	— red
V5 (S8)	— brown
W5 (S9)	— yellow



Electrical connections

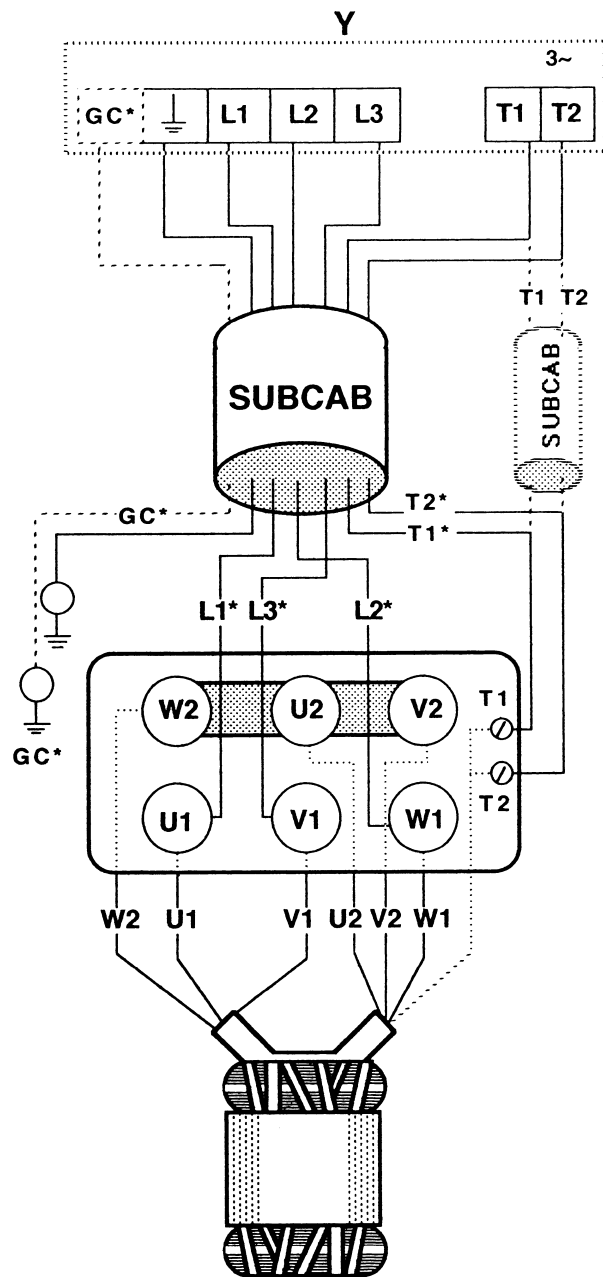
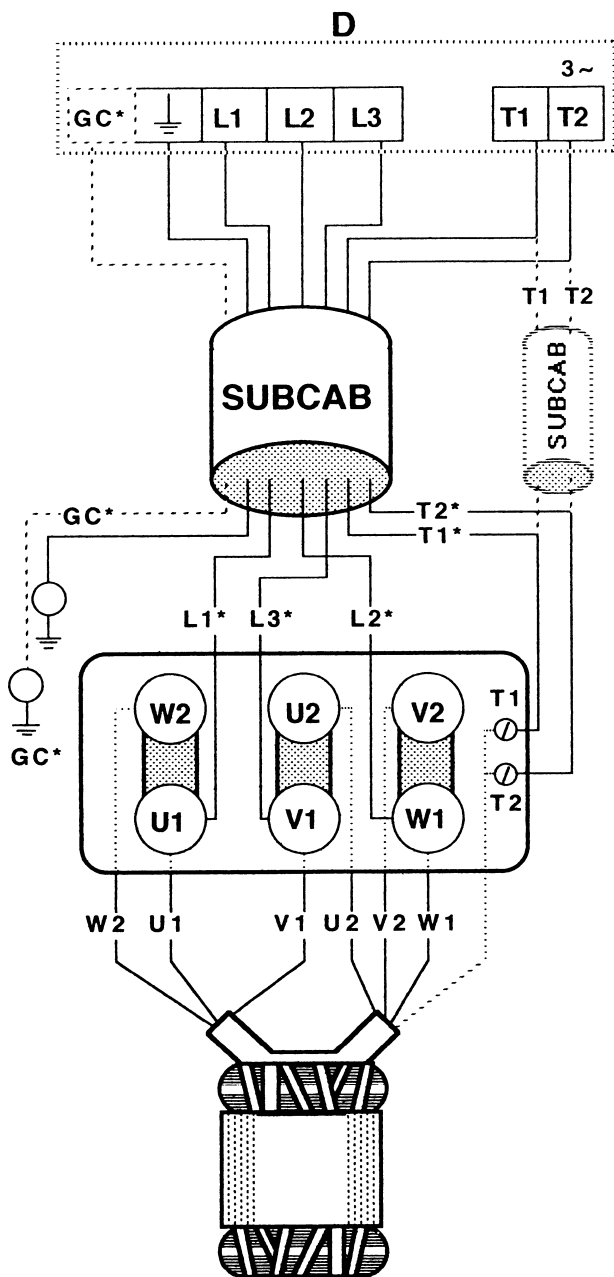
SUBCAB 4G/SUBCAB AWG*

Mains	Lead	Pump terminal board
L1	Brown (Red*)	U1 (S1)
L3	Black (Black*)	W1 (S3)
L2	Blue (White*)	W1 (S2)
Earth (PE)	Yellow/green	⏏
Groundcheck	Yellow*	GC
T1	Black (Orange*)	T1
T2	Black (Blue*)	T2

Connect the control leads from the motor control circuit to T1 and T2.

The stator leads are color-marked as follows:

- U1 (S1) — red
- V1 (S2) — brown
- W1 (S3) — yellow
- U2 (S4) — green
- V2 (S5) — blue
- W2 (S6) — black
- U5 (S7) — red
- V5 (S8) — brown
- W5 (S9) — yellow
- U6 (S10) — green
- V6 (S11) — blue
- W6 (S12) — black



Electrical connections

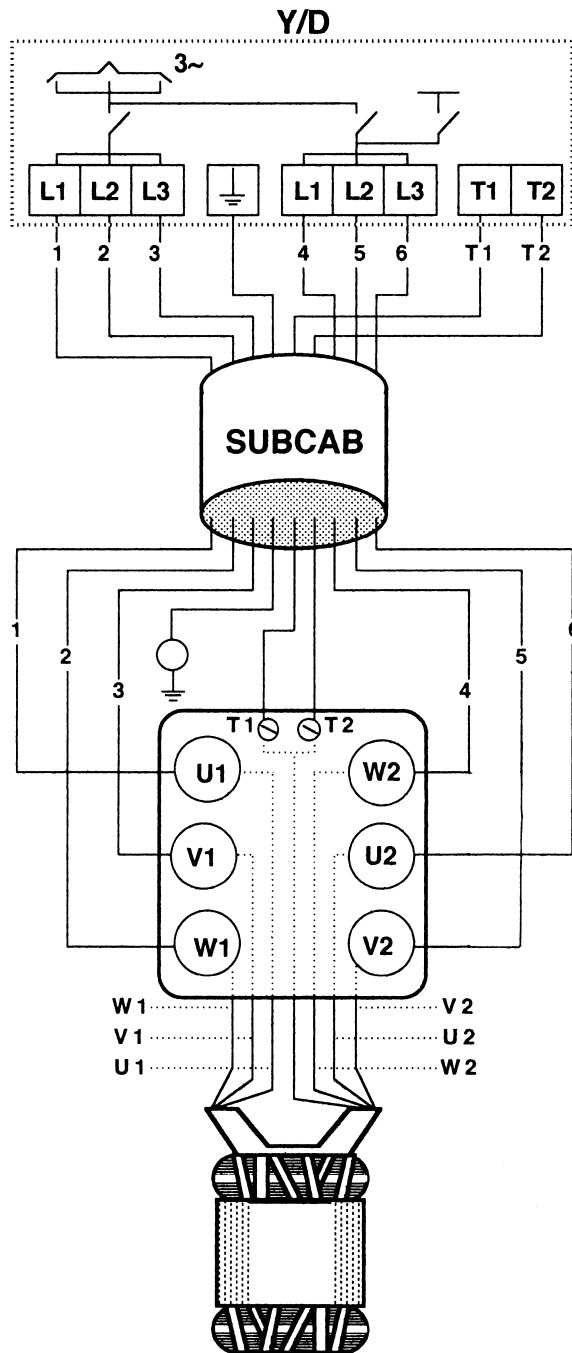
SUBCAB 7G

Mains	Lead	Pump terminal board
L1	Black 1	U1
L2	Black 2	W1
L3	Black 3	V1
L1	Black 4	W2
L2	Black 5	V2
L3	Black 6	U2
Earth (PE)	Yellow/green	⏏
T1	Black T1	T1
T2	Black T2	T2

Connect the control leads from the motor control circuit to T1 and T2.

The stator leads are color-marked as follows:

- U1 (S1) — red
- V1 (S2) — brown
- W1 (S3) — yellow
- U2 (S4) — green
- V2 (S5) — blue
- W2 (S6) — black



OPERATION

Before starting

Check the oil level in the oil casing.

Remove the fuses or open the circuit breaker and check that the impeller can be rotated by hand.

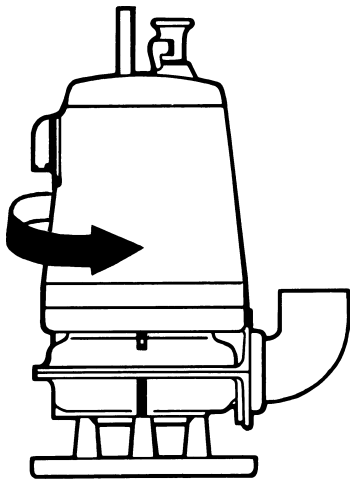
Check that the monitoring equipment (if any) works.

Check the direction of rotation. The impeller shall rotate clockwise, as viewed from above. When started, the pump will jerk in the opposite direction to the direction in which the impeller rotates.



WARNING!
Watch out for the starting jerk, which can be powerful.

Starting jerk



Avoidance of sedimentation

In order to avoid sedimentation when the pumped liquid contains solid particles, the velocity of the medium in the discharge line should be:

Mixture	Min. velocity in discharge line
1. Water + coarse gravel	4 m/s (13.2 ft/s)
2. Water + gravel	3.5 m/s (11.5 ft/s)
3. Water + sand	
Sand particles < 0,1 mm (0.004 in)	1.5 m/s (5.0 ft/s)
Sand particles < 0.6 mm (0.024 in)	2.5 m/s (8.2 ft/s)

Choose dimension of the discharge line to give the pumped liquid at least this velocity. The pump can be provided with level regulation in order to prevent unnecessary wear on the hydraulic components.

Cleaning

If the pump has been running in very dirty water, let it run for a while in clean water, or flush it through the discharge connection. If clay, cement or other similar dirt is left in the pump it may clog the impeller and seal, preventing the pump from working.

During a longer period out of operation, the pump must be test run every other month to prevent the mechanical seals from sticking together.

CARE AND MAINTENANCE

The figures in parentheses are item numbers and refer to the cutaway figure.

Safety precautions



WARNING!
Before starting work on the pump, make sure that the pump is isolated from the power supply and cannot be energized.

NOTE! This applies to the control circuit as well.

The following points are important in connection with work on the pump:

- make sure that the pump has been thoroughly cleaned.
- observe good personal hygiene.
- beware the risk of infection.
- follow local safety regulations.

Inspection

Regular inspection and preventive maintenance ensure more reliable operation.

The pump should be inspected at least twice a year, more frequently under severe operating conditions.

Under normal operating conditions, the pump should have a major overhaul in a service shop at least once a year.

This requires special tools and should be done by an authorized service shop.

When the pump is new or when the seals have been replaced, inspection is recommended after one week of operation.

Service contract

Flygt or its agent offers service agreements in accordance with a preventive maintenance plan. For further information, please contact your Flygt representative.

Inspection 3080.211/311-W

Pumps for hot water shall, depending on the time they have been submerged in the hot water, undergo overhaul at a service shop as follows:

Temp.	Installation	Overhaul interval
≤ 70°C (160°F)	Stationary	2000 hours
≤ 70°C (160°F)	Portable	1000 hours

Recommended inspections:

Inspection of	Action
Visible parts on pump and installation	Replace or fix worn and damaged parts. Make sure that all screws, bolts and nuts are tight. Check the condition of carrying handle/lifting eyes, chains and wire ropes. Check that the guide bars are vertical.
Pump casing and impeller	Replace worn parts if they impair function. Wear on the impeller and the parts around it necessitates fine adjustment of the impeller or replacement of worn parts. See "Replacing the impeller" and "Replacing the diffuser".
Oil quantity	<div data-bbox="512 1400 619 1496" data-label="Image"> </div> <p>WARNING. If the seal leaks, the oil casing may be under pressure. Hold a rag over the oil casing screw in order to prevent splatter. See "Safety precautions" for additional information.</p>
Condition of the oil	<p>Check that the oil reaches up to the oil hole. Add oil as needed. See "Changing the oil".</p> <p>A check of the condition of the oil can show whether there has been an increased leakage. Note! Air/oil mixture can be confused with water/oil mixture. Insert a tube (or hose) into the oil hole. Cover the top end of the tube and take up a little oil from the bottom.</p> <p>Change the oil if it contains too much water, i.e., is heavily emulsified (cream-like), or if the oil housing contains separated water. See "Changing the oil". Check again one week after changing the oil.</p> <p>If the oil contains too much water again, the fault may be:</p> <ul style="list-style-type: none"> — that an oil screw (2) is not sufficiently tight. — that an O-ring (81, 84) or its sealing surface is damaged — that the outer mechanical seal (3) is damaged. <p>Contact a Flygt service shop.</p>

Inspection of	Action
Cooling system	Rinse and clean if the flow through the system has been partly restricted.
Cable entry	Make sure that the cable clamps are tight. If the cable entry leaks: — check that the entry is firmly tightened into its bottom position. — cut a piece of the cable off so that the seal sleeve (6) closes around a new position on the cable. — replace the seal sleeve (6). — check that the seal sleeve (6) and the washers (1) conform to the outside diameter of the cables.
Cables	Replace the cable if the outer jacket is damaged. Make sure that the cable do not have any sharp bends and are not pinched.
Level sensors or other level equipment	Check function. Clean, adjust, replace or repair damaged level sensing equipment. Follow the instructions for the level sensing equipment in question. NOTE! The level sensor might contain a mercury switch. Damaged sensors should therefore be disposed of in a proper manner.
Starter equipment	If faulty, contact an electrician.
Rotation direction of pump (requires voltage)	Transpose two phase leads if the impeller does not rotate clockwise as viewed from above. Rotation in the wrong direction reduces the capacity of the pump and the motor may be overloaded. Check the direction of rotation, during non-load every time the pump is reconnected.
Pipes, valves and other peripheral equipment	Repair faults and notify supervisor of any faults or defects.
Insulation resistance in the stator	Use insulation tester. With a 1000 V-DC megger the insulation between the phases and between any phase and earth (ground) should be > 1 MΩ.

Changing the oil



WARNING!
If the seal leaks, the oil casing may be under pressure.

Hold a rag over the oil plug to prevent splatter.

Lay the pump on its side on a bench or over two supports.

Unscrew the oil casing screw (2).

Turn the pump so that the oil hole faces downwards. It is easier to drain the oil if the other oil hole screw also is removed.

Fill up with 0.6 litres (0.6 US quarts) of new oil.

A paraffin oil with viscosity close to ISO VG15 is recommended (e.g. Mobil Whiterex 309). The pump is delivered from factory with this type of oil.

In applications where poisonous properties are of less concern, a mineral oil with viscosity up to ISO VG32 can be used.

Always replace the gaskets under the oil casing screws. Place the screws back in.



Replacing the impeller

Removing the impeller



WARNING!
Worn impellers often have very sharp edges.

Lay the pump on its side.

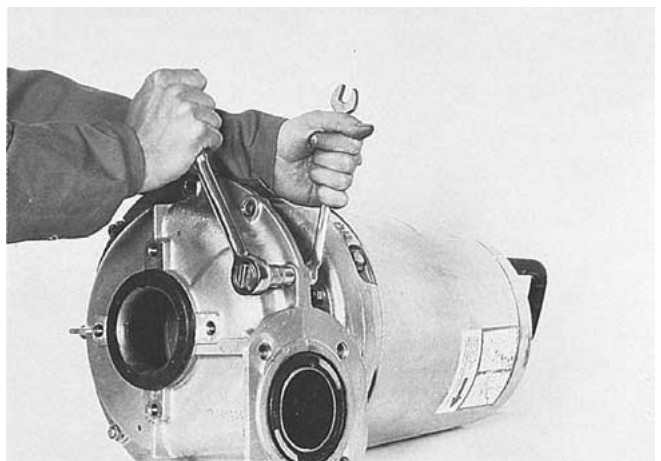
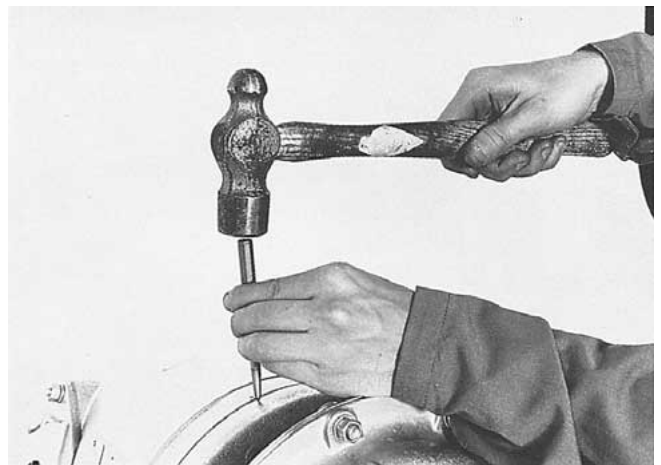
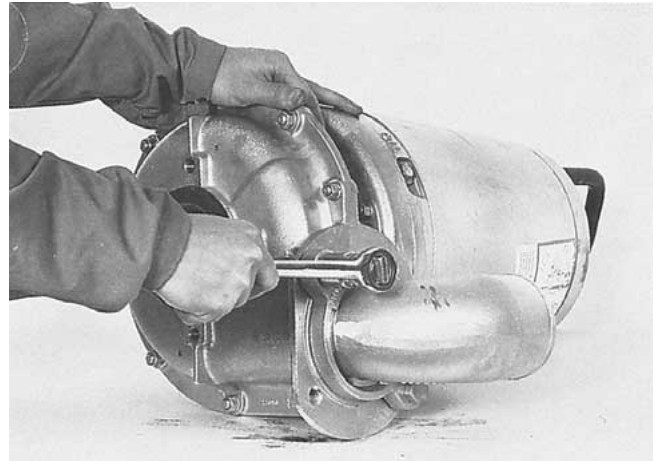
Remove the screws (52) and pull off the base stand (32).

Remove the screws (56), the clamp (37) and the hose connection (36).

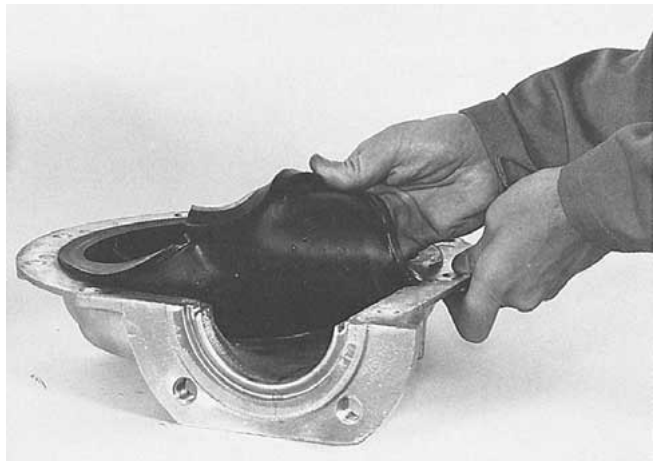
Make a mark with a centre punch to make it easy to reassembly the parts in the same position again.

Remove the nuts (65), the washers (70) and the screws (54).

Remove the lower part of the pump casing (17).



The lower rubber lining (19) can now be replaced.



Remove nuts (65).
Remove washers (70).



The rubber parts (46) can be prized off with a screwdriver.



The upper rubber lining (18) and the wear ring (45) can now be replaced.
Use a wooden block to protect the surface.



Remove the rubber cap (95). Lock the impeller (31) using a pliers, remove the impeller nut (89) and the lock washer (66).

Pull off the impeller.

Use impeller puller 386 32 00 or pry off carefully with two strong screwdrivers or bars.

Installing the impeller

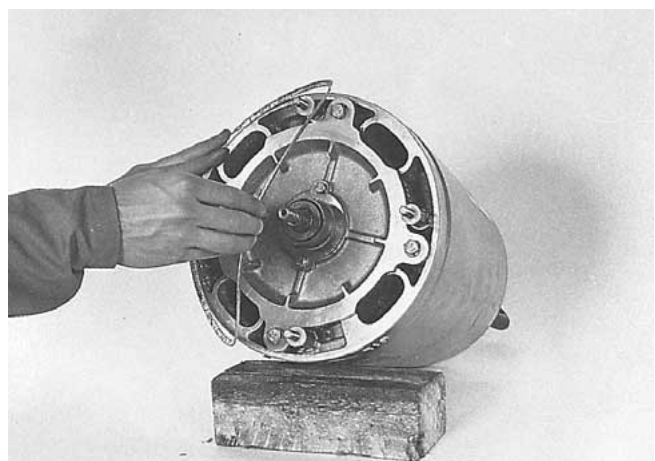
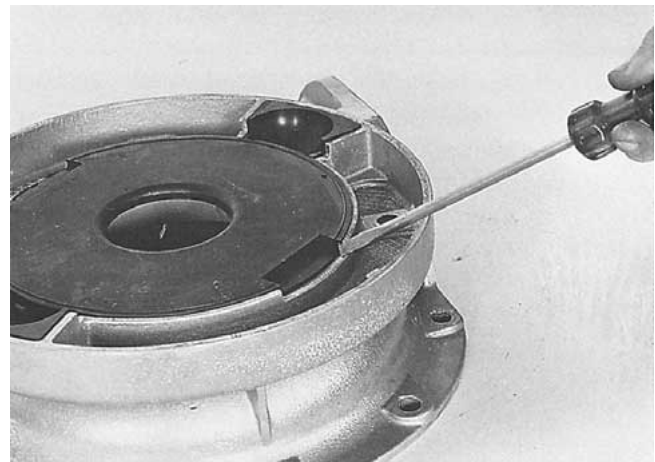
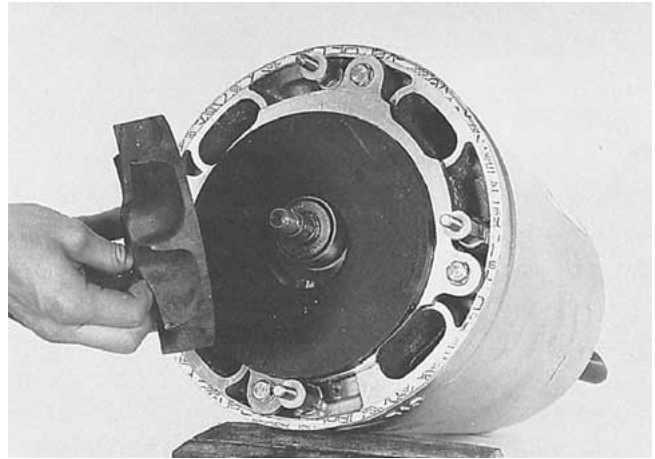
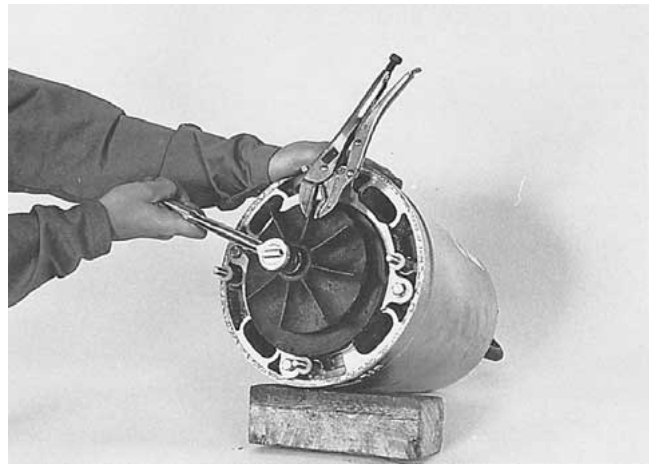
Make sure that the end of the shaft is clean and free of burrs.

Polish off any flaws with fine emery cloth.

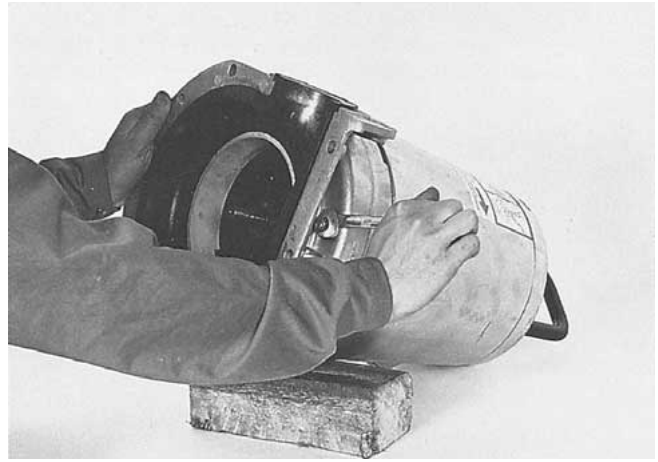
Check:

- that the key (48) is seated in the keyway on the shaft.
- that the cover plate (43) is seated in the upper pump casing (16).

- that a new gasket (41) is fitted on the outer pump casing (11).



Fit the upper pump casing.



Grease the end of the shaft (35).

Put on a lock washer (66). Press the impeller onto the shaft with the impeller nut (89). Put a screwdriver between the impeller and the wear ring (45) in order to lock impeller.

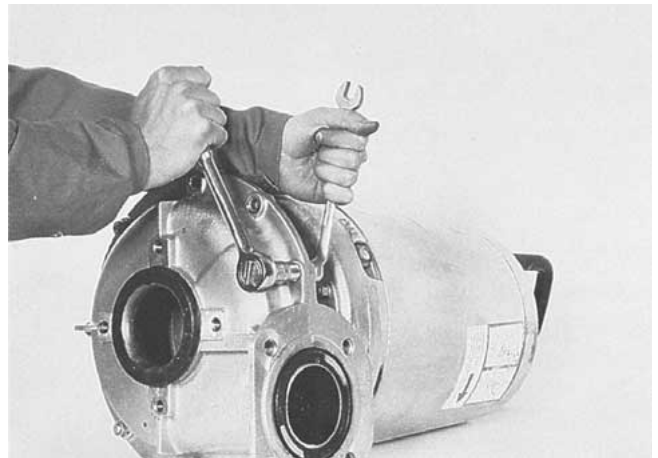
Tighten the impeller nut.

Fit the rubber cap (95).

Check that the impeller can be rotated by hand.



Assemble the remaining parts (see "removing impeller", but in reversed order).



More extensive repairs require special tools and should be carried out by an authorized service technician.

FAULT TRACING (TROUBLESHOOTING)

A universal instrument (VOM), a test lamp (continuity tester) and wiring diagram are required in order to carry out fault tracing on the electrical equipment.

Fault tracing shall be done with the power supply disconnected and locked off, except for those checks which cannot be performed without voltage.

Always make sure that there is no one near the pump when the power supply is turned on.

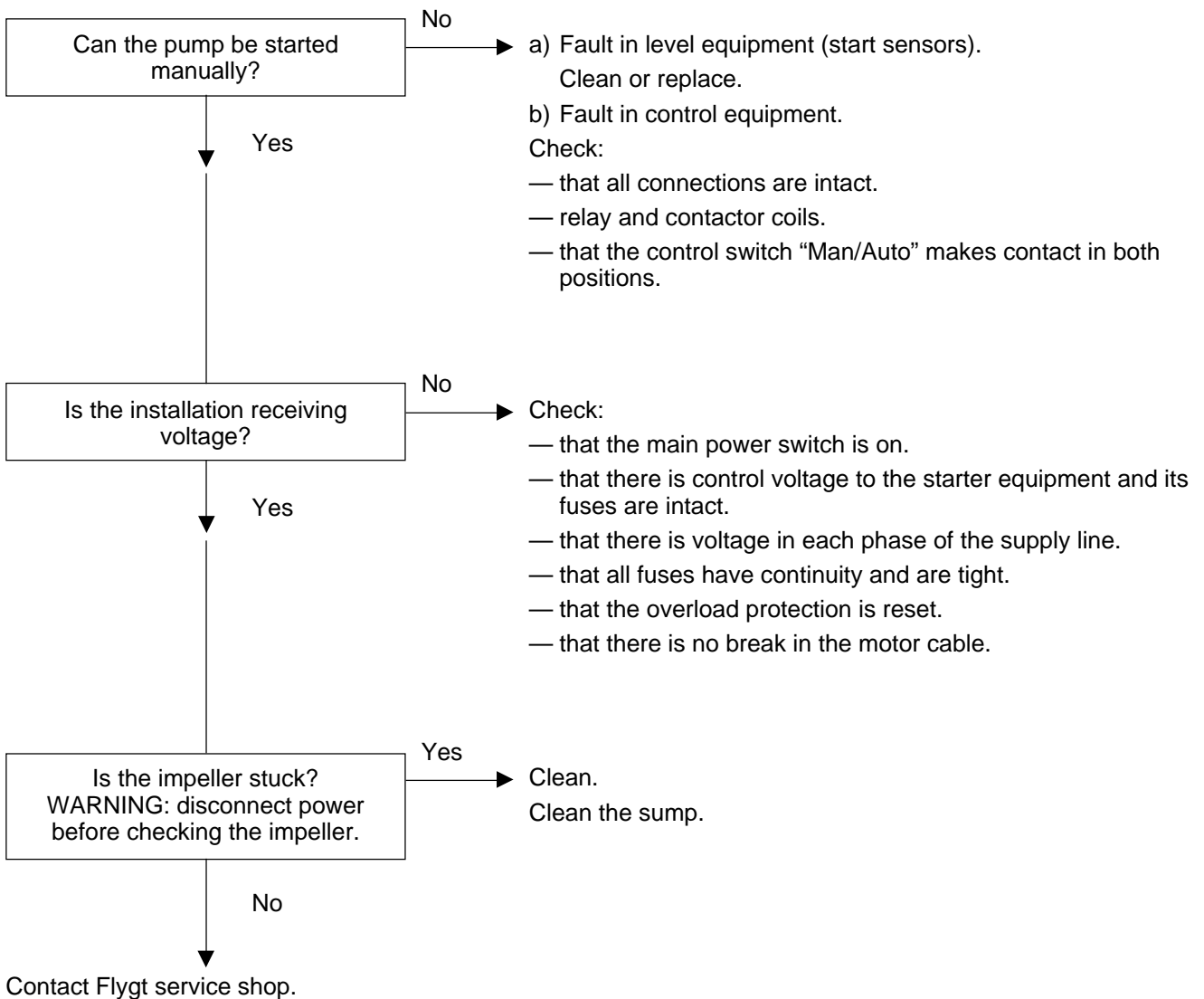
Use the following checklist as an aid to fault tracing. It is assumed that the pump and installation have formerly functioned satisfactorily.



Electrical work should be performed by an authorized electrician.

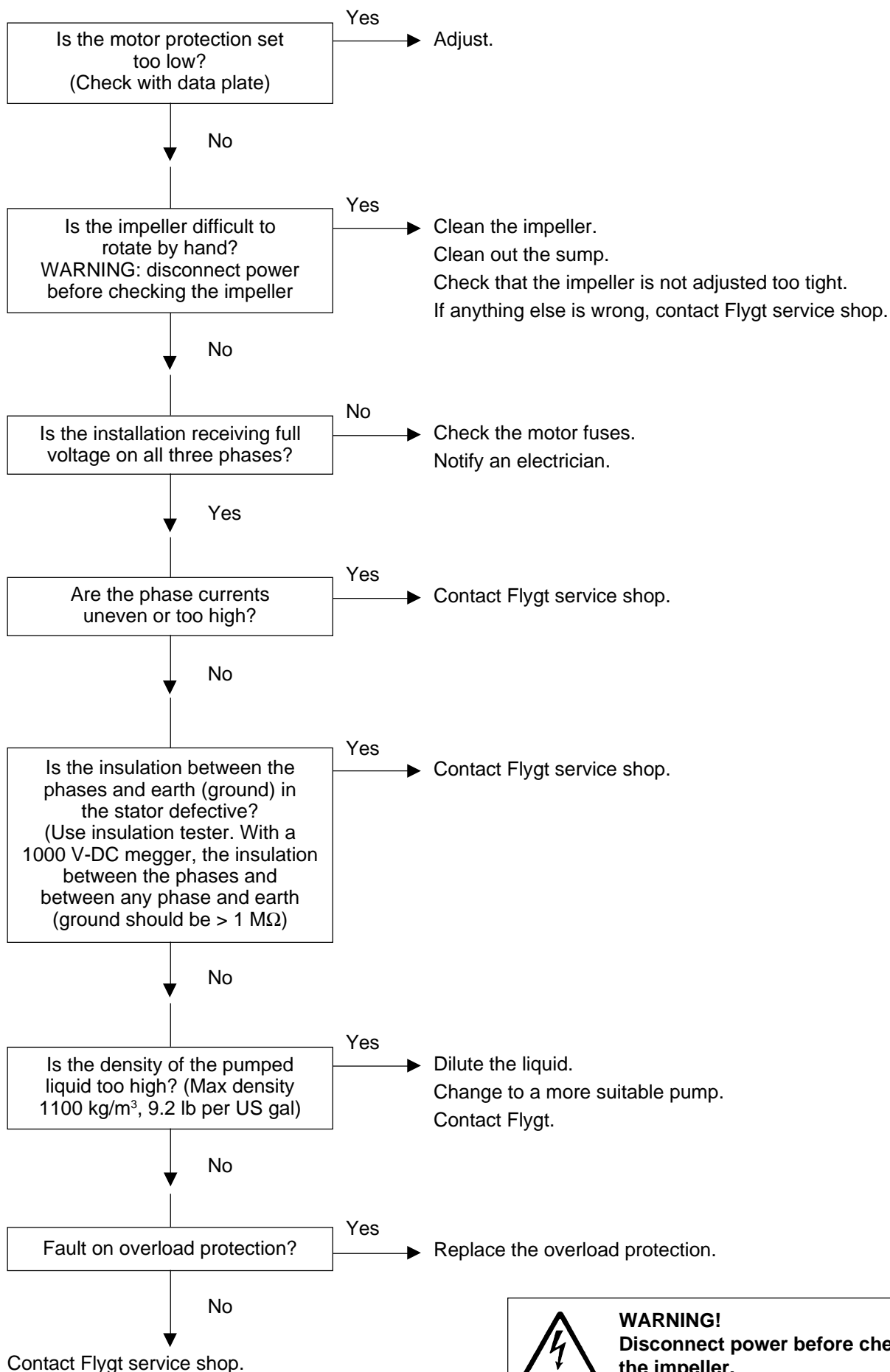
Follow local safety regulations and observe recommended safety precautions.

1. Pump fails to start



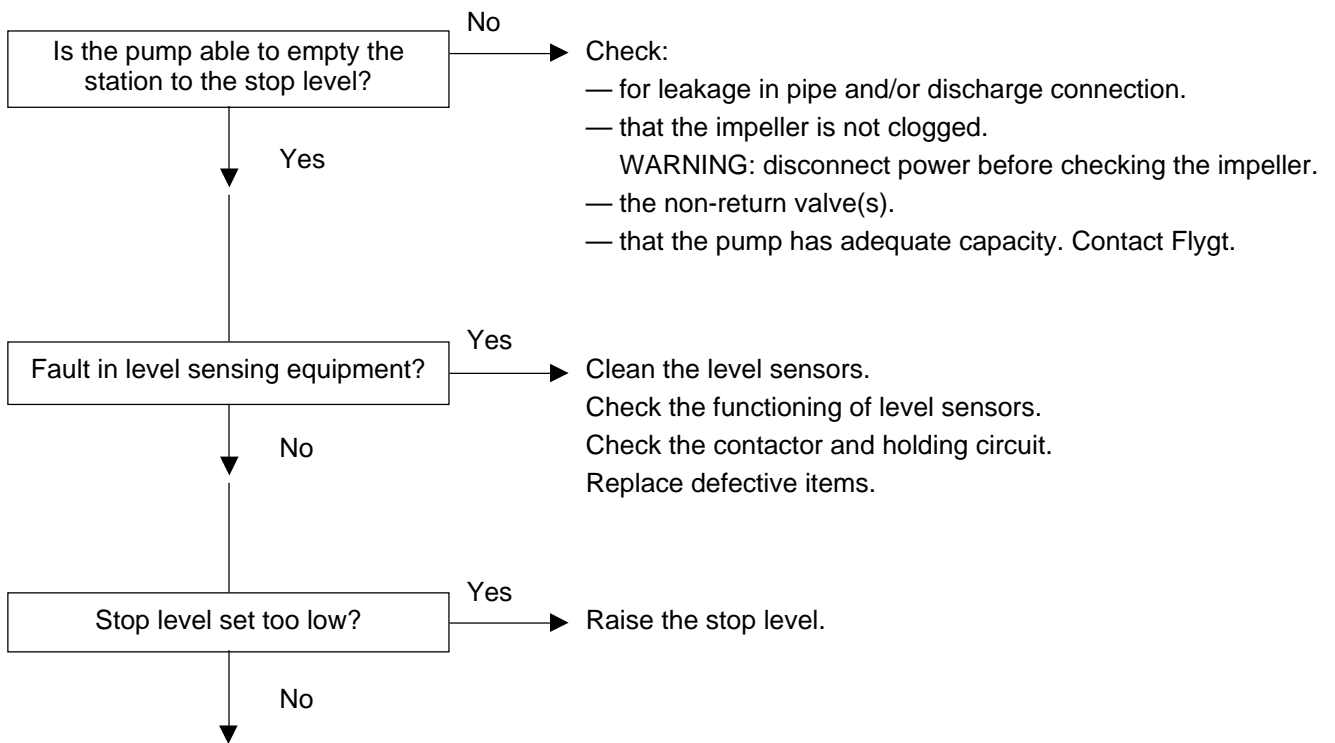
WARNING!
Disconnect power before checking the impeller.

2. Pump starts but motor protection trips



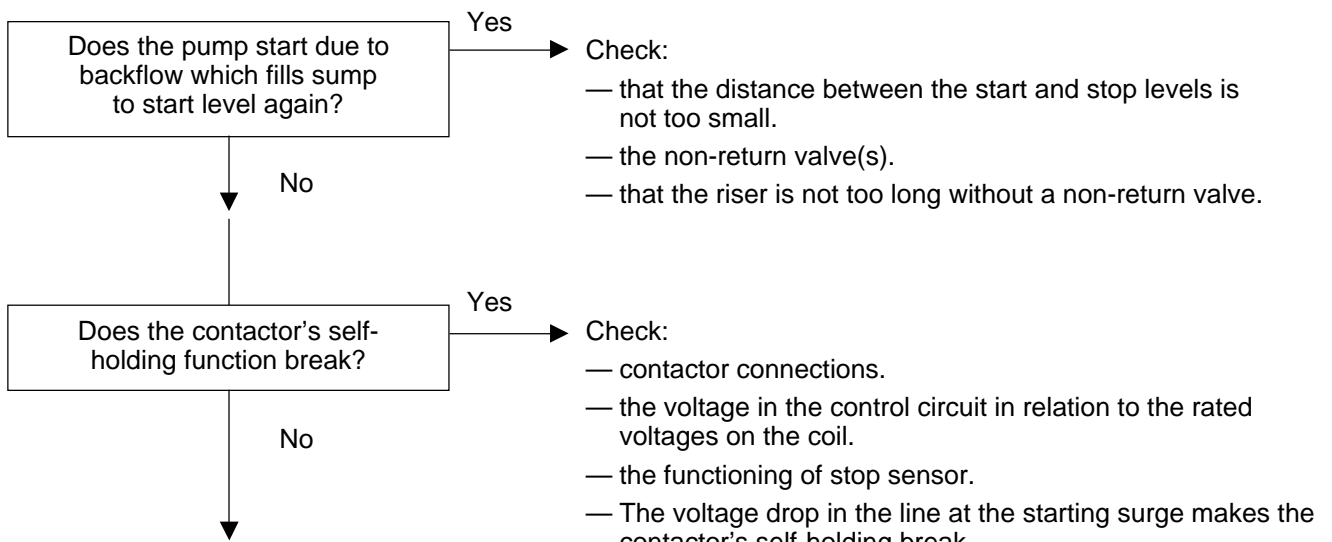
WARNING!
Disconnect power before checking the impeller.

3. The pump does not stop (when level control is used)




Contact Flygt service shop.

4. The pump starts-stops-starts in rapid sequence



Contact Flygt service shop.



WARNING!
Disconnect power before checking the impeller.

5. Pump runs but delivers too little or no water

Check:

- direction of rotation of pump, see "Before starting".
- that valves are open and intact.
- that pipes and impeller are not clogged.
- that the impeller rotates easily.
- that the suction lift has not been altered.
- for leakage in the pump installation.
- for wear on wear ring, impeller, pump casing, rubber linings.

See also under "Inspection".

Do not override the motor protection repeatedly if it has tripped.

ACCESSORIES AND TOOLS

Tandem operation

The delivery head can be increased by connecting two or three pumps in tandem.

Max. permissible operating pressure is 1 MPa (142 psi).

The vertical distances between the pumps should be approximately equal.

See special brochure that describes the procedure for tandem connection.

Zinc anode set

In order to reduce corrosion on the pump, it can be fitted with zinc anodes.

Order No. 443 01 00.

Level sensor

Flygt supplies level sensors suited for different liquid densities with different cable lengths. See separate brochure.

Start and control equipment

Flygt has suitable start and control equipment for the pump.

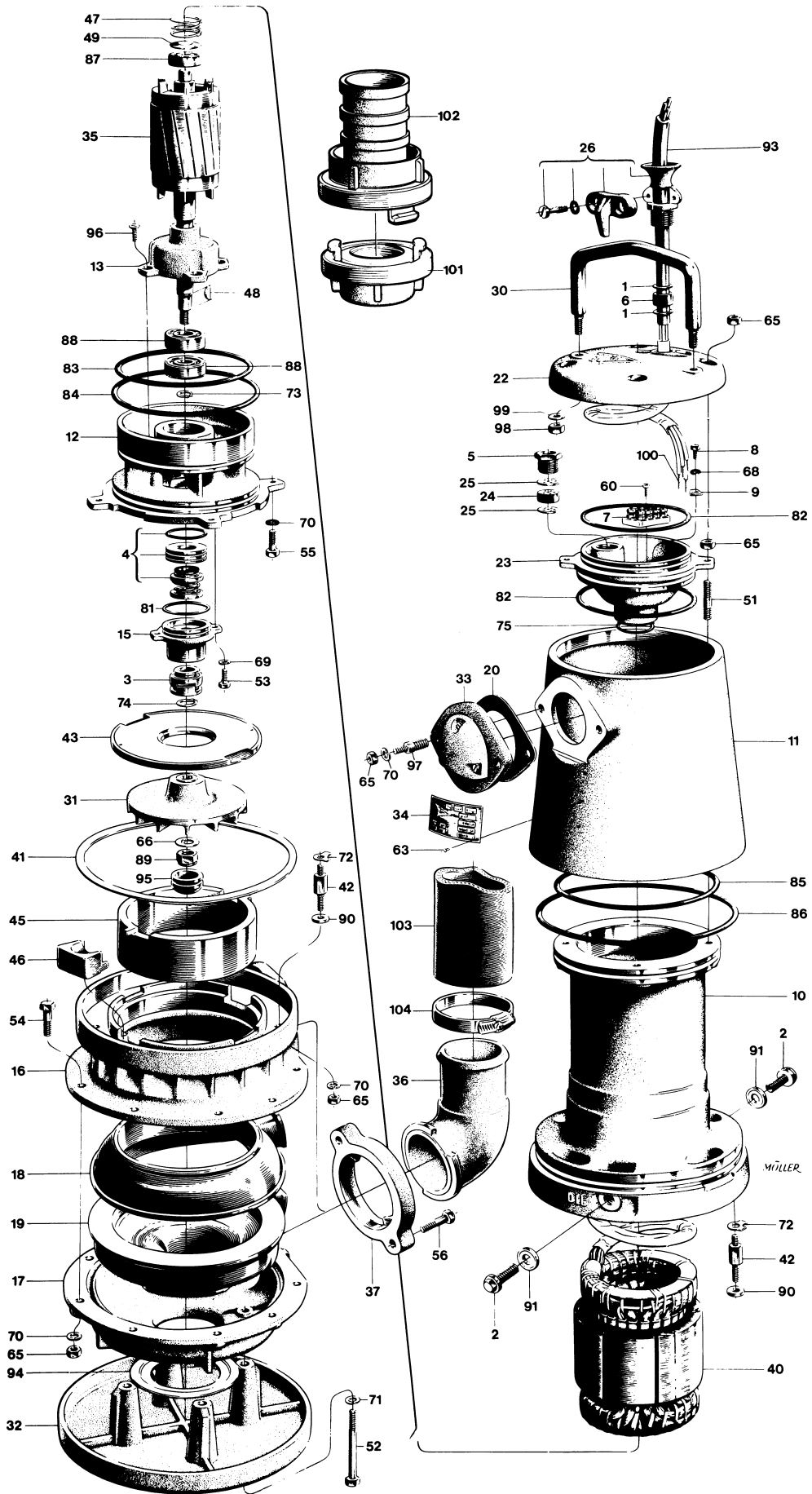
Contact Flygt for further information.

Tools

Besides ordinary standard tools, the following tools are required order to perform the necessary care and maintenance of the pump:

Order No.	Description
386 32 00	Impeller puller

For further information on tools, see Flygt's Tool Catalogue.



SERVICE LOG

Most recent service date	Pump No.	Hours of operation	Remarks	Sign.

SERVICE LOG

Most recent service date	Pump No.	Hours of operation	Remarks	Sign.

NOTES

A series of horizontal dotted lines for writing notes.



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