



# Installation, care and maintenance

2052, 2066, 2102, 2125, 2140



# Guarantee

Flygt undertakes to remedy faults in products sold by Flygt provided:

- that the fault is due to defects in design, materials or workmanship;
- 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 the 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.

### Official approval applies only providing:

- that the product is used under conditions described in the care and maintenance instructions and in applications for which it is intended;
- that all service and repair work is done by a workshop authorized by Flygt;
- that genuine Flygt parts are used.

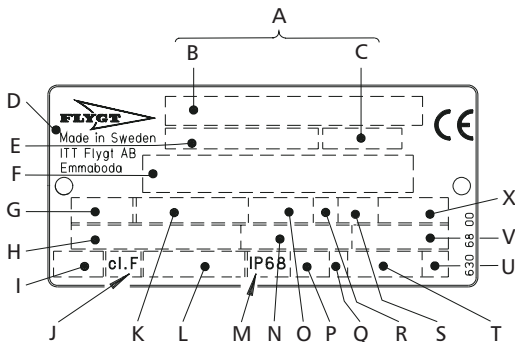
Flygt assumes no liability for either bodily injuries, material damages or economic losses beyond what is stated above.

Flygt guarantees that a spare parts stock will be kept for 10 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

## General data plate



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

## Approval plate

Always together with the general data plate

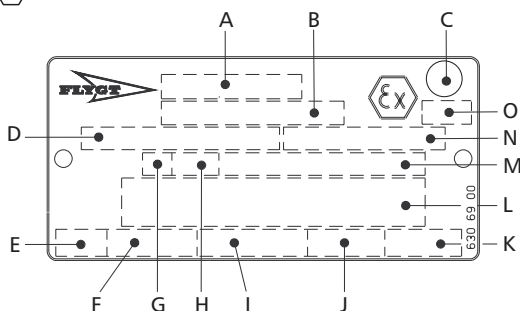
EN: Europeisk Norm

ATEX Directive

EN 50014, EN 50018, EN 1127-1

⊕ I M2 EEx dl

⊕ II 2 G EEx dII B T4



- |  |                                   |
|--|-----------------------------------|
| <b>A</b> Approval                                | <b>H</b> Duty factor              |
| <b>B</b> Approval authority +<br>Approval Number | <b>I</b> Input power              |
| <b>C</b> Approval for Class I                    | <b>J</b> Rated speed              |
| <b>D</b> Approved drive unit                     | <b>K</b> Controller               |
| <b>E</b> Stall time                              | <b>L</b> Additional information   |
| <b>F</b> Starting current /<br>Rated current     | <b>M</b> Max. ambient temperature |
| <b>G</b> Duty class                              | <b>N</b> Serial number            |
|  | <b>O</b> ATEX marking             |

# Contents

Product description _____	3	Electrical connections _____	7
Applications _____	3	Operation _____	21
Specific technical data _____	3	Care and maintenance _____	21
General technical data _____	3	Safety precautions _____	21
Caution statement for MSHA _____	4	Inspection _____	21
General design _____	5	Changing the oil _____	24
Transportation and storage _____	6	Replacing the impeller _____	24
Installation _____	6	Accessories and tools _____	29
Safety precautions _____	6	Service log _____	30
Pump installation _____	6		

# Product description

## Applications

This Installation, Care and Maintenance manual applies to a submersible Flygt pump. If You have bought an Ex-approved pump (please see approval plate on Your pump or Parts List) special handling instructions apply as described in this document.

2052-2140 are intended to be used for:


- pumping of water which may contain abrasive particles.

2125.690 is designed for use in explosive environments in accordance with the following approval:

I M2 EEx dl  
 II 2 G EEx dII B T4  
 Europeisk Norm: EN 50014  
 EN 50018

## Specific technical data

For specific data regarding Your pump, please see Parts List.



**WARNING!**  
*Only Ex-approved pumps may be used in an explosive or flammable environment.*

## General technical data

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


**The pH of the pumped liquid:** 5-8.

**Liquid density:** max. 1100 kg/m<sup>3</sup> (9.2 lb per US gal.).

The pumped liquid may contain particles up to a size which corresponds to the openings in the strainer.

**Liquid temperature:** max. 40°C (105°F).

The pumps 2052, 2066 and 2102 are available in a version (e.g. 2052.170-W) for liquid temperatures up to 90°C (195°F). The pumps have certain operational limitations which is stated on a plate on the pumps.



**WARNING!**  
*During operation the pump must be fully submerged.  
 The pump must never run dry or snore.*

# Caution statement for MSHA

## 2125.051

Federal Safety Regulations, as outlined in the applicable provisions of Title 30 of the Code of Federal Regulations, require that in order to maintain "permissibility" of this equipment the following conditions must be satisfied:

### 1. General Safety

Frequent inspections shall be made. All electrical parts, portable cable and wiring shall be kept in a safe condition. There shall be no openings into the casings of the electrical parts. The machine frame shall be effectively grounded. The power wires shall not be used for grounding. The operating voltage shall match the voltage rating of the motor.

### 2. Service and Repair

Inspections, service and repairs shall only be made when the portable cable is disconnected from the power supply. Work must be performed by trained personnel (preferably the manufacturer or his agent) to insure that the permissible pump is restored to its original state of safety in regard to all flame-arresting paths. Use replacement parts exactly as those furnished by the manufacturer. When cable entries are disturbed on pump or permissible control, they shall be reassembled in the approved manner and with parts identical to the parts of the original certification.

### 3. Fastenings

All bolts, nuts, screws and threaded covers shall be properly tightened and secured.

### 4. Cables

A flame-resistant portable cable, bearing a MSHA assigned identification number, adequately protected by an automatic circuit-interrupting device shall be used. Special care shall be taken in handling the cable to guard against mechanical injury and wear.



### **WARNING!**

*Failure to restore the permissible equipment to its original state of safety will void the MSHA APPROVAL. The creation of a safety hazard will subject the owner/operator of a mine to citations and penalties under the law.*

# General design of a Flygt drainage pump

## 1. Motor

Squirrel-cage 1-phase (2052, 50/60 Hz, 2066 and 2102, 60 Hz) or 3-phase induction motor for 50 Hz or 60 Hz.

The motor is started by means of direct-on-line (2052-2140) or Y/D start (2102-2140).

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. Oil casing

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

## 3. Shaft seals

The pump has a twin mechanical seal. One inner and one outer, with an intermediate oil housing.

## 4. Shaft

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

## 5. Cooling

The stator is cooled by the pumped liquid passing through the space between the stator housing and the outer casing.

## 6. Impeller

The pump is available with a wide range of impellers for different capacities.

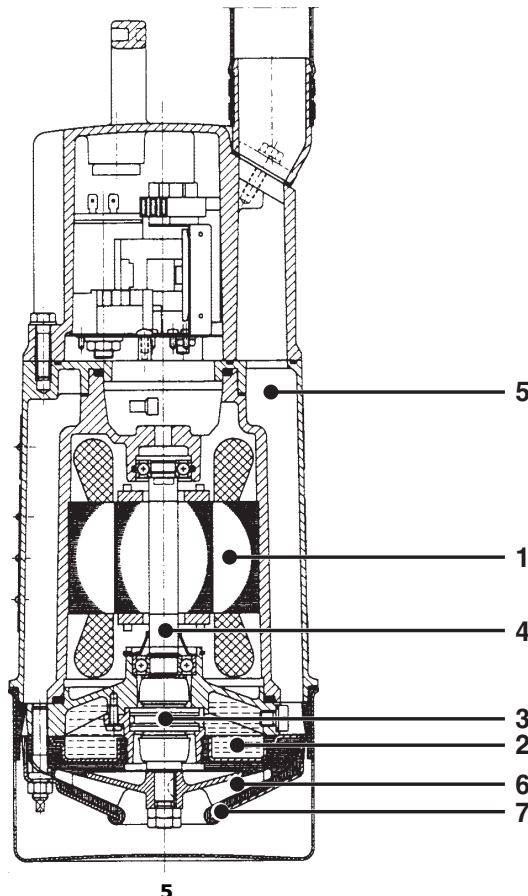
## 7. Wear parts

The wear parts are easily replaceable.




### **NOTE!**

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



# 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 first aid kit must be available.



*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.*



*Special rules apply to installation in explosive atmosphere. Intrinsically safe circuits are normally required (Ex) for the automatic level control system by level regulators.*

## Pump installation

Run the cables so that they do not have any sharp bends and are not pinched.

Connect the discharge connection and motor cable. See "Electrical connections".

Lower the pump into the sump.

Place the pump on a base which will prevent it from sinking into a soft sump bottom. Alternatively, the pump can be suspended by its handle just above the sump bottom.


Consult your nearest Flygt representative regarding:

- choice of peripheral equipment.
- other problems in connection with installation.

# Electrical connections

If the pump is delivered without an installed motor cable, or if there is need for any modifications or repairs, please note that all electrical work shall be carried out under the supervision of an 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.

Install the motor cable as illustrated in the figure.

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.

**NOTE!** For safety reasons, the earth lead should be approx.

70 mm (2¾")	2052
70 mm (2¾")	2066
70 mm (2¾")	2102
200 mm (8")	2125
200 mm (8")	2140

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.

Check on the data plate which connection, Y or Δ, is valid for the voltage supply. Then, depending on voltage, arrange the connection on the terminal board in accordance with Y or Δ, see figure.

Connect the motor cable to the terminal board connections U1, V1, W1 and earth.

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

Tighten the screws so that the cable entry unit bottoms out.

Install the cover.

Tighten the clamping screws.

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.

For 1-phase pumps going in wrong direction, please contact your nearest Flygt representative.

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 in the parts list 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 in the external starter (motor protection breaker) shall, for direct-on-line start be set not higher than 105% of the motor's rated current as shown on the data plate.



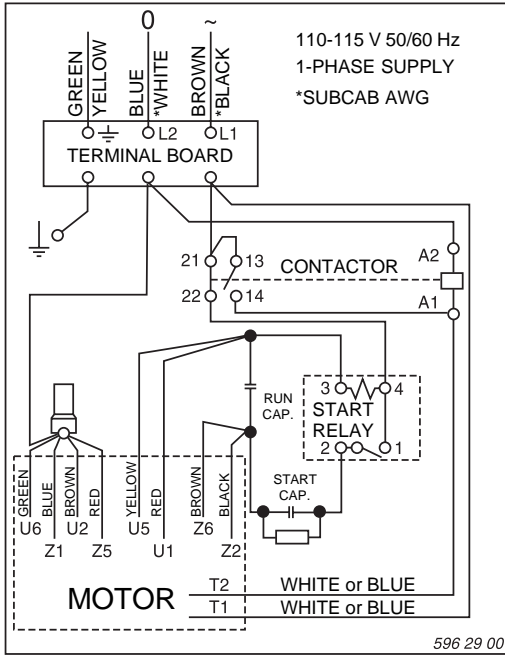
**NOTE!**  
*Make sure that the monitoring equipment incorporated in the product is correctly connected.*



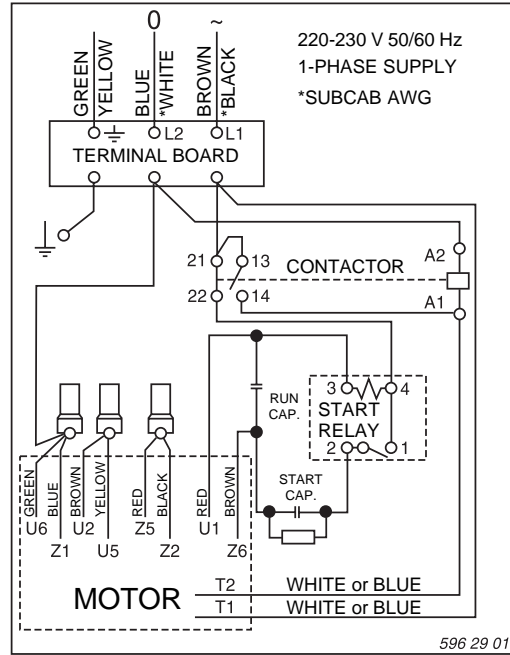
### 1~ operation with built-in starter

Connections valid for:  
2052 (0.75/0.8 kW)

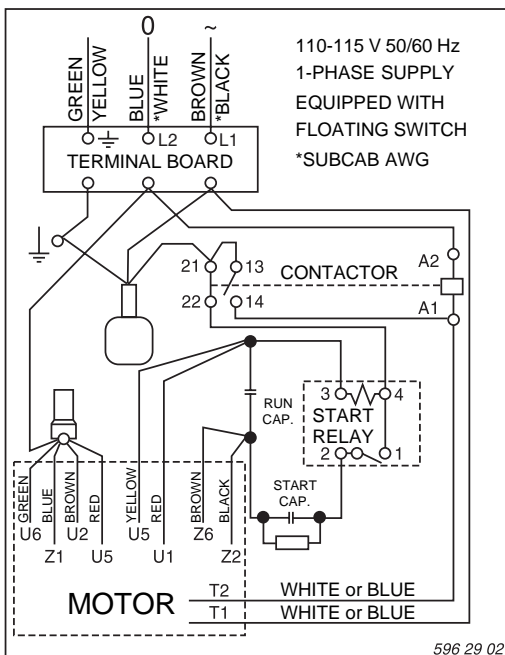
Without floating switch



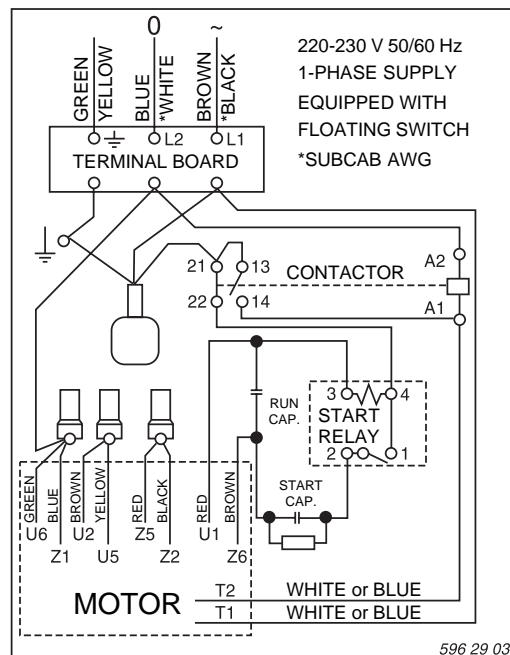
Without floating switch



With floating switch



With floating switch





### 1~ operation with external starter

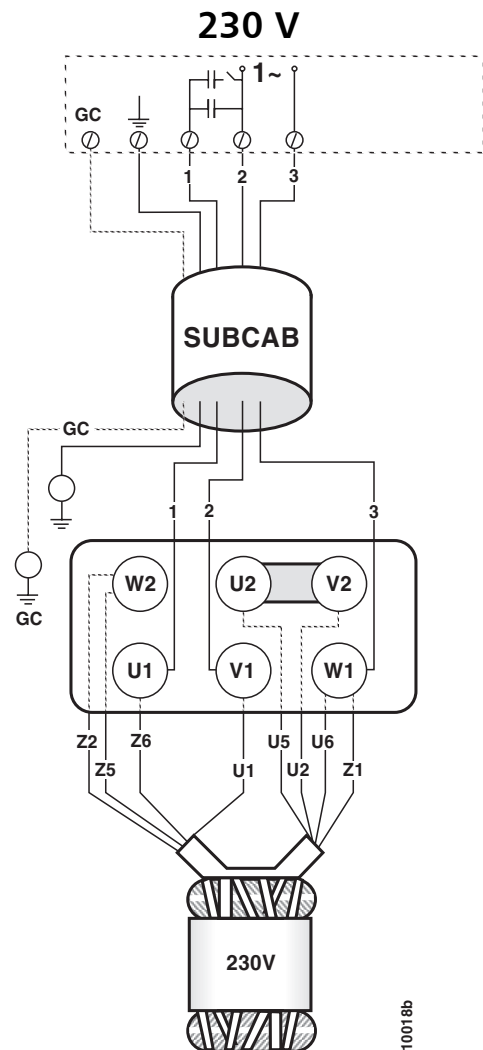
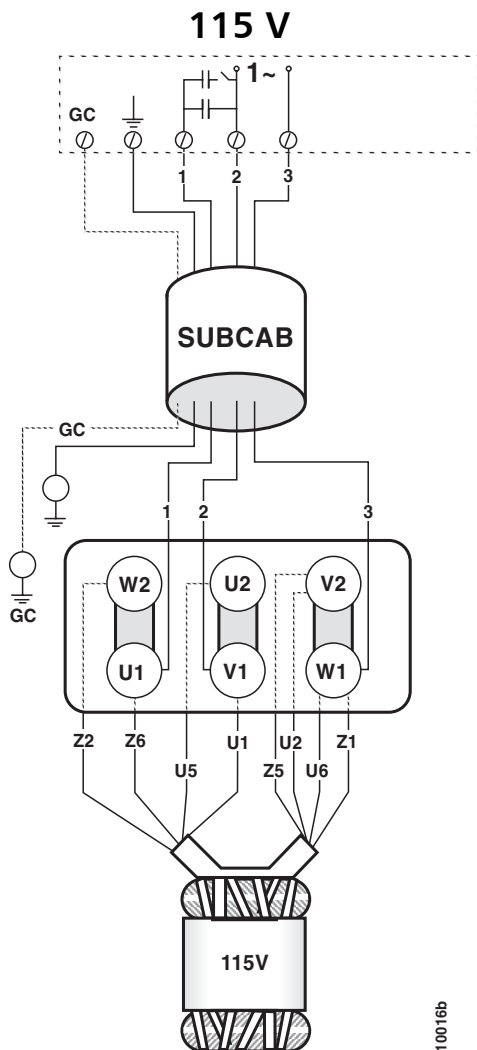
Connections valid for:  
2052 (1.0/1.3 kW)

SUBCAB/SUBCAB AWG:

No.	Lead	Pump terminal board
1	Brown (Red)	U1
2	Black (Black)	V1
3	Blue (White)	W1
Earth (PE)	Yellow/Green	PE

The stator leads are colour-marked as follows:

- U1 = Red
- U2 = Brown
- U5 = Yellow
- U6 = Green
- Z1 = Blue
- Z2 = Black
- Z5 = Red
- Z6 = Brown



### 50/60 Hz, 3~ with terminal board

Connections valid for:  
2052, 2066, 2102, 2125, 2140

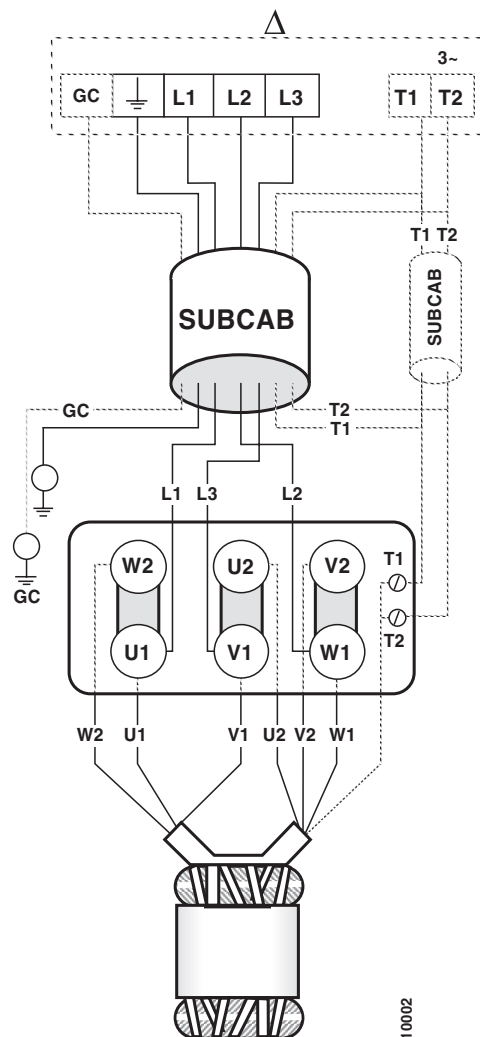
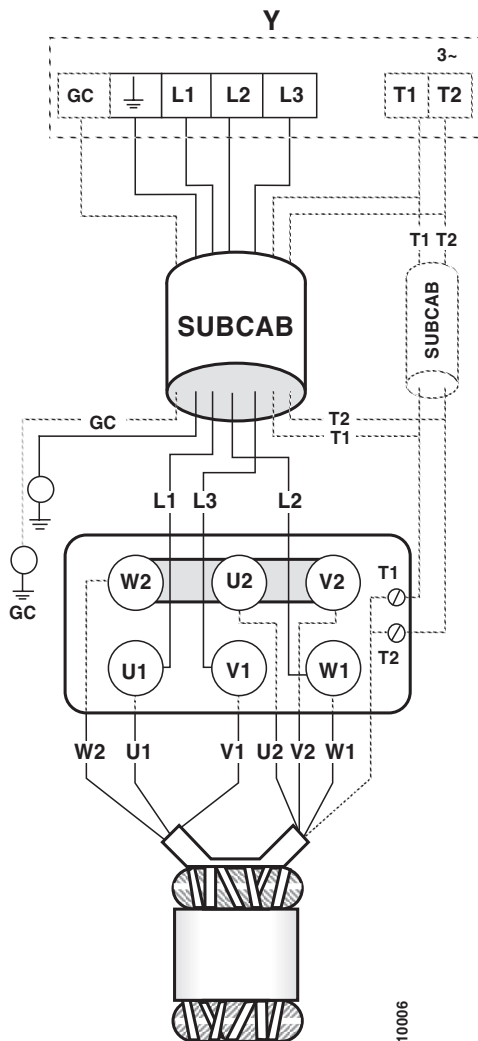
SUBCAB/SUBCAB AWG\*:

Mains	Lead	Pump terminal board
L1	Brown (Red*)	U1
L2	Blue (White*)	W1
L3	Black (Black*)	V1
Earth (PE)	Yellow/Green	PE
Groundcheck	Yellow*	GC
T1	Black (Orange*)	T1
T2	Black (Blue*)	T2

The stator leads are colour-marked as follows:

- U1 = Red
- V1 = Brown
- W1 = Yellow
- V2 = Blue
- W2 = Black
- U2 = Green

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



### 50/60 Hz, 3~ with contactor unit

Connections valid for:  
2052, 2066, 2102

SUBCAB/SUBCAB AWG\*:

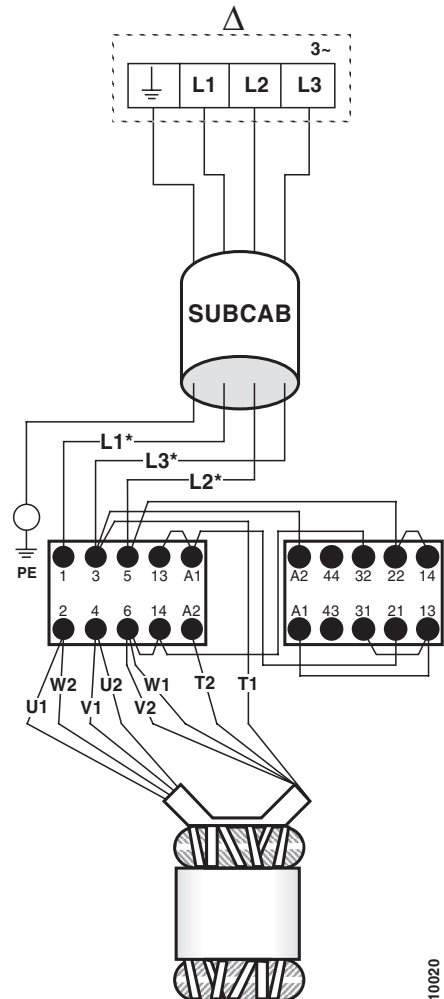
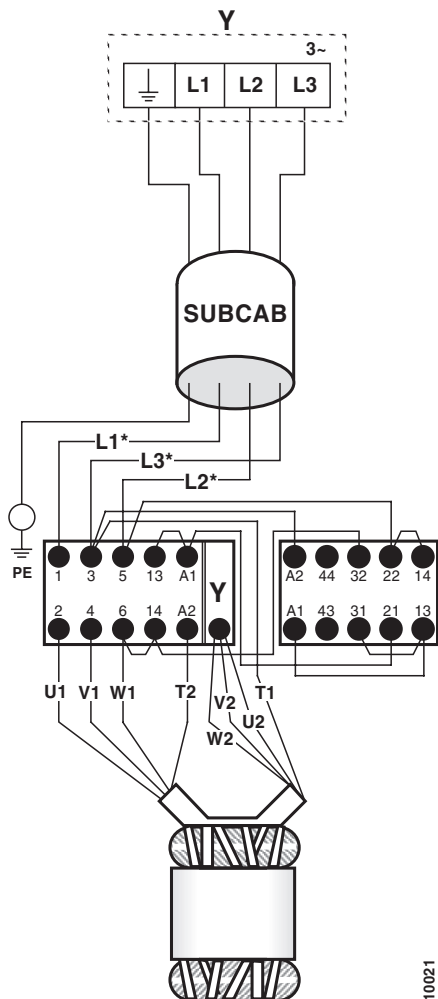
Mains	Lead	Pump contactor
L1	Brown (Red*)	1
L2	Blue (White*)	5
L3	Black (Black*)	3
Earth (PE)	Yellow/Green	PE

In the case of star connection (Y), the stator leads are connected to the contactor as follows:

Red	= 2	White	= 3
Brown	= 4	White	= A2
Yellow	= 6		
Green	} = separate Y-terminal		
Blue			
Black			

In the case of delta connection ( $\Delta$ ), the stator leads are connected to the contactor as follows:

Red	} = 2	Yellow	} = 6
Black		Blue	
Brown	} = 4	White	= 3
Green		White	= A2

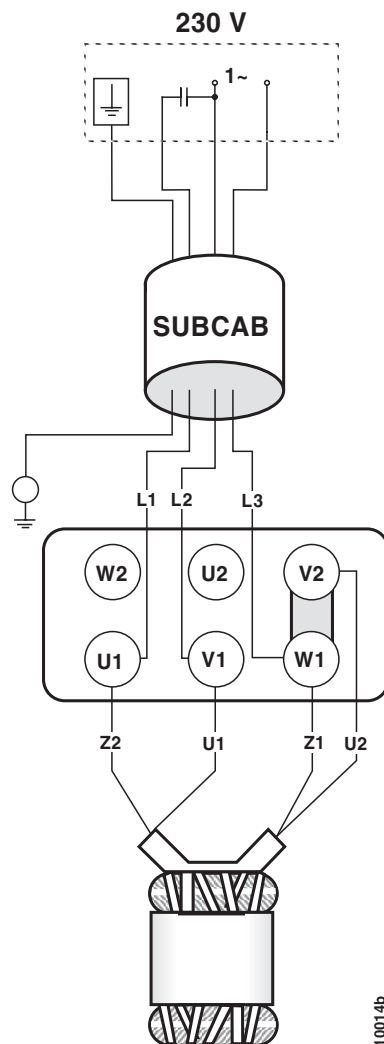


### 60 Hz, 1~ with terminal board

Connections valid for:  
2066

SUBCAB/SUBCAB AWG\*:

Mains	Lead	Pump terminal board	The stator leads are colour-marked as follows:
L1	Brown (Red*)	1	U1 = Red
L2	Blue (White*)	5	U2 = Brown
L3	Black (Black*)	3	Z1 = Yellow
Earth (PE)	Yellow/Green	PE	Z2 = Black



10014b

### 50/60 Hz, 3~ with terminal board

Connections valid for:  
2052, 2066, 2102, 2125, 2140

SUBCAB/SUBCAB AWG\*:

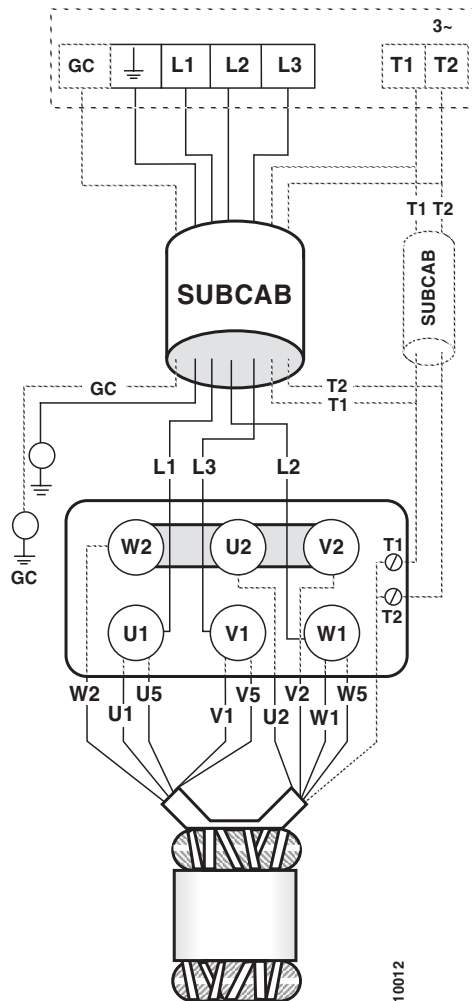
Mains	Lead	Pump terminal board
L1	Brown (Red*)	U1
L2	Blue (White*)	W1
L3	Black (Black*)	V1
Earth (PE)	Yellow/Green	PE
Groundcheck	Yellow*	GC
T1	Black (Orange*)	T1
T2	Black (Blue*)	T2

The stator leads are colour-marked as follows:

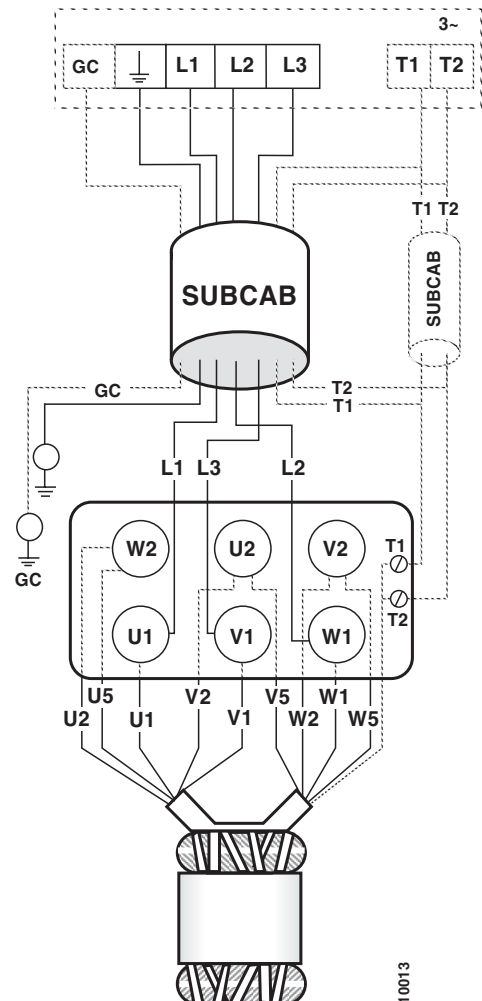
- U1 = Red
- V1 = Brown
- W1 = Yellow
- U2 = Green
- V2 = Blue
- W2 = Black
- U5 = Red
- V5 = Brown
- W5 = Yellow

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

**9-leads**  
**500V Y//**  
**230V Y//**



**9-leads**  
**1000V Yser.**  
**460V Yser.**



### 50/60 Hz, 3~ with terminal board

Connections valid for:  
2102

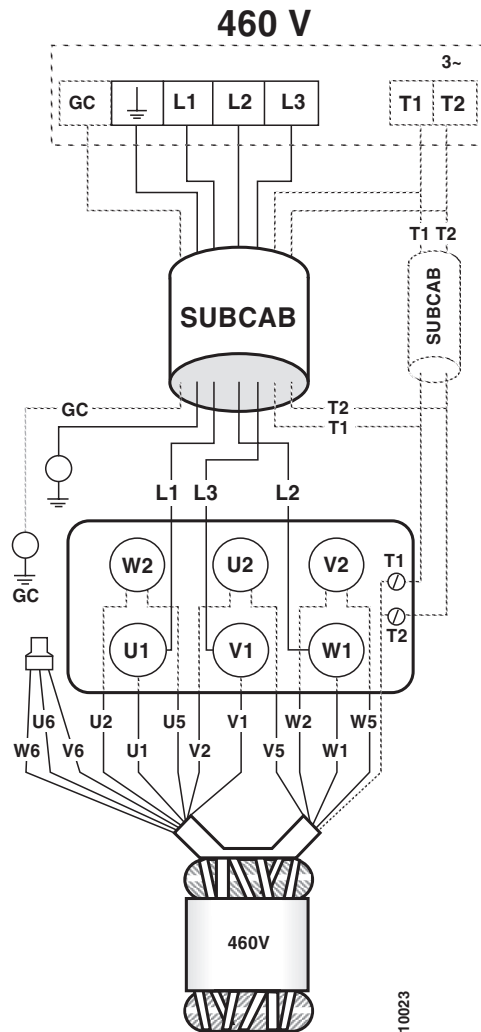
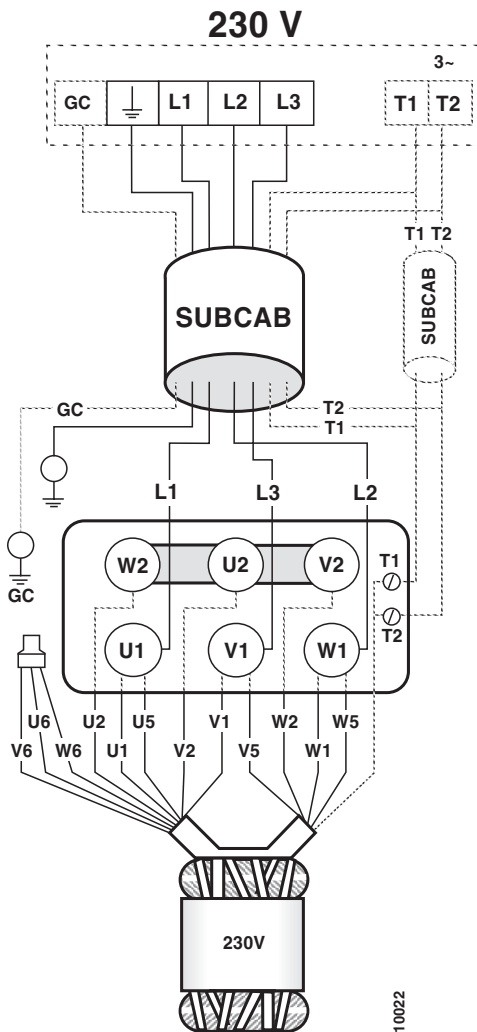
SUBCAB/SUBCAB AWG\*:

Mains	Lead	Pump terminal board
L1	Brown (Red*)	U1
L2	Blue (White*)	W1
L3	Black (Black*)	V1
Earth (PE)	Yellow/Green	PE
Groundcheck	Yellow*	GC
T1	Black (Orange*)	T1
T2	Black (Blue*)	T2

The stator leads are colour-marked as follows:

- U1 = Red
- V1 = Brown
- W1 = Yellow
- U2 = Green
- V2 = Blue
- W2 = Black
- U5 = Red
- V5 = Brown
- W5 = Yellow
- U6 = Green
- V6 = Blue
- W6 = Black

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



### 60 Hz, 1~ with terminal board

Connections valid for:  
2102

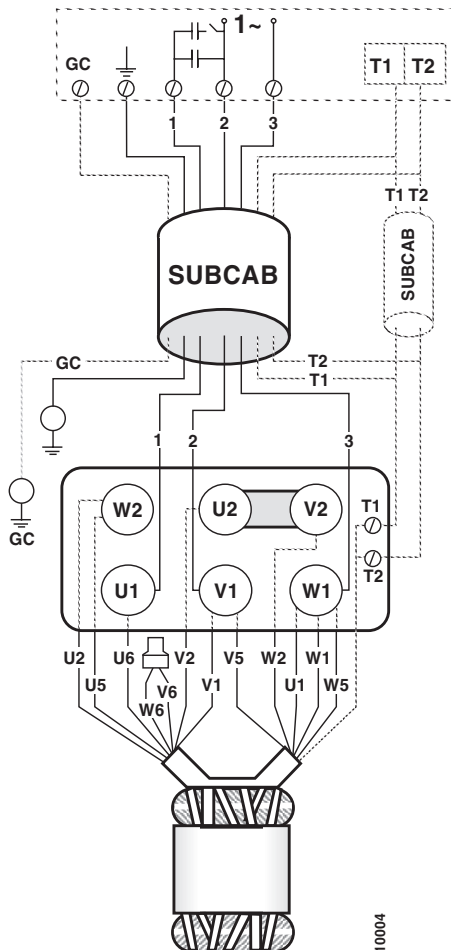
SUBCAB/SUBCAB AWG\*:

Mains	Lead	Pump terminal board
1	Brown (Red*)	U1
2	Black (Black*)	V1
3	Blue (White*)	W1
Earth (PE)	Yellow/Green	PE

The stator leads are colour-marked as follows:

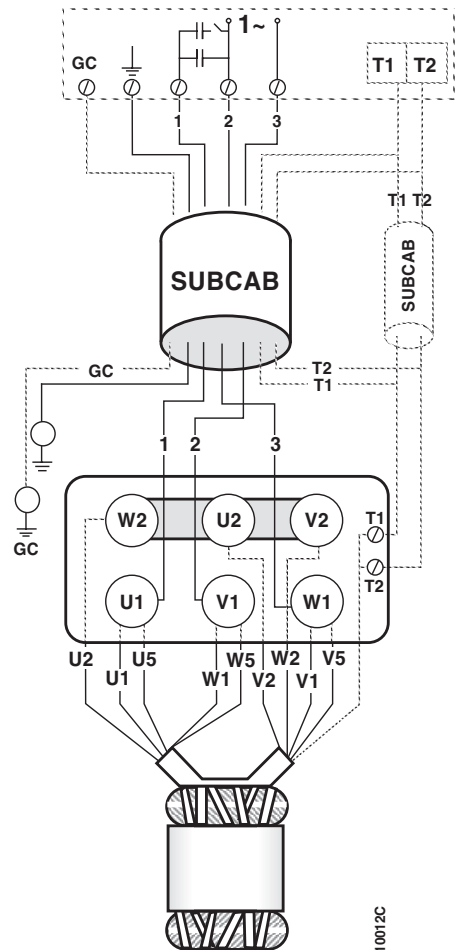
- U1 = Red
- V1 = Brown
- W1 = Yellow
- U2 = Green
- V2 = Blue
- W2 = Black
- U5 = Red
- V5 = Brown
- W5 = Yellow
- U6 = Green
- V6 = Blue
- W6 = Black

**12-leads  
230V**



10004

**9-leads  
230V**



10012C



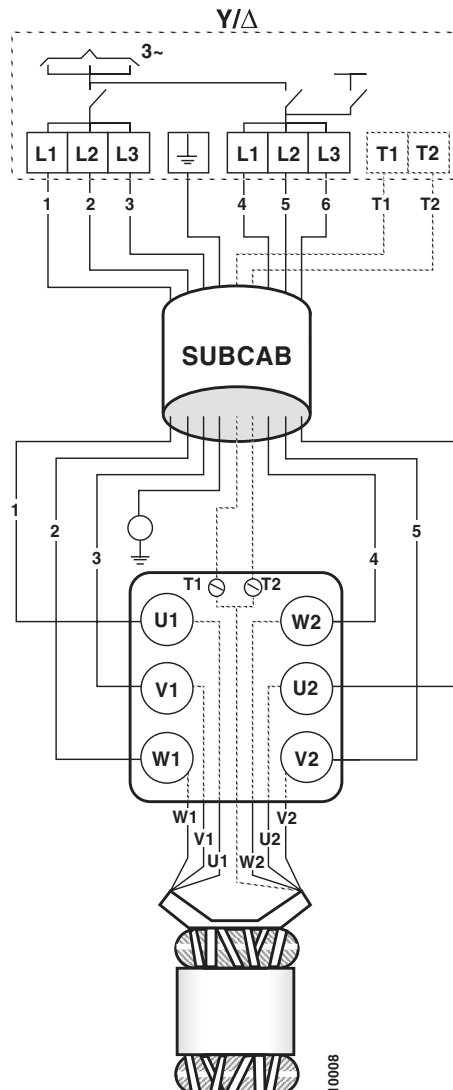
### 50/60 Hz, 3~ with terminal board

Connections valid for:  
2102, 2125, 2140

SUBCAB/SUBCAB AWG\*:

Mains	Lead	Pump terminal board	The stator leads are colour-marked as follows:
L1	Black	U1	U1 = Red
L2	Black	W1	V1 = Brown
L3	Black	V1	W1 = Yellow
L1	Black	W2	V2 = Blue
L2	Black	V2	W2 = Black
L3	Black	U2	U2 = Green
Earth (PE)	Yellow/Green	PE	
T1	Black	T1	
T2	Black	T2	

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



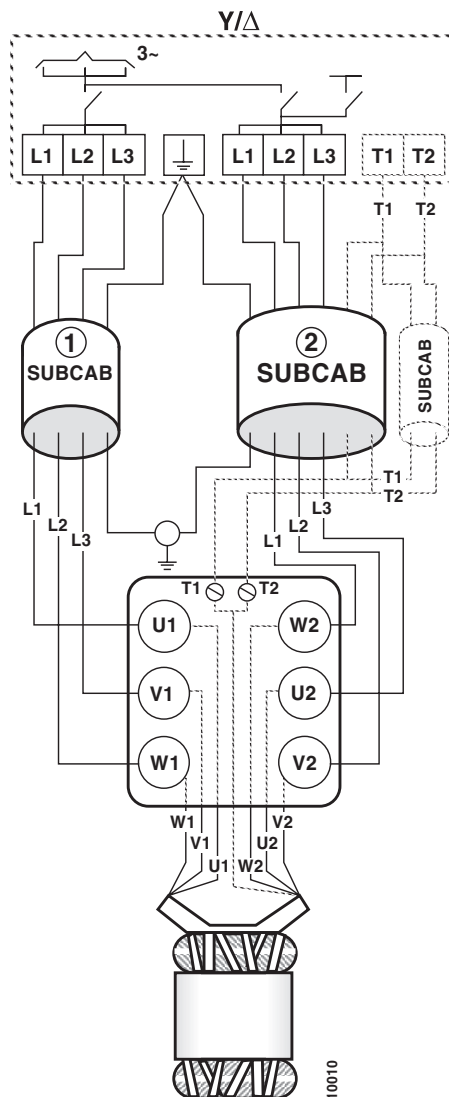
### 50/60 Hz, 3~ with terminal board

Connections valid for:  
2125

SUBCAB 4G 1+2

Mains	Lead	Pump terminal board	The stator leads are colour-marked as follows:
L1	Brown	U1	U1 = Red
L2	Black	W1	V1, = Brown
L3	Blue	V1	W1 = Yellow
L1	Brown	W2	V2 = Blue
L2	Black	V2	W2 = Black
L3	Blue	U2	U2 = Green
Earth (PE)	Yellow/Green	PE	
T1	Black	T1	
T2	Black	T2	

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



### 50/60 Hz, 3~ with contactor unit

Connections valid for:  
2125

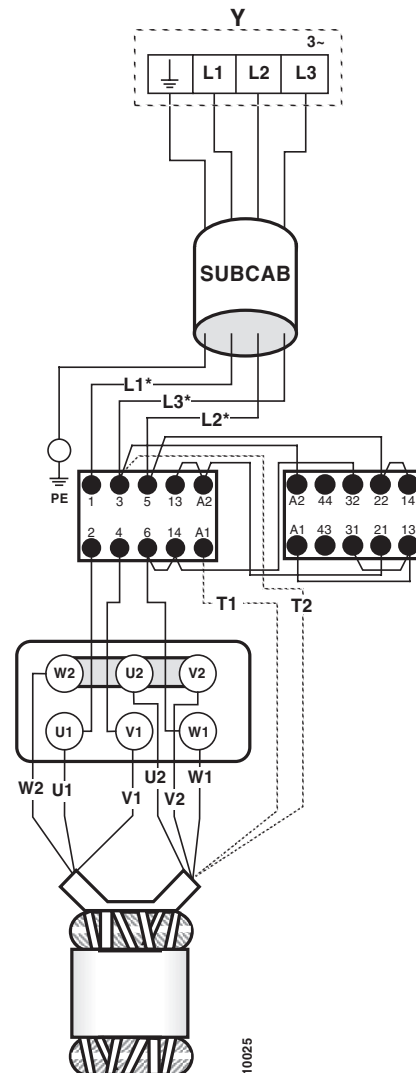
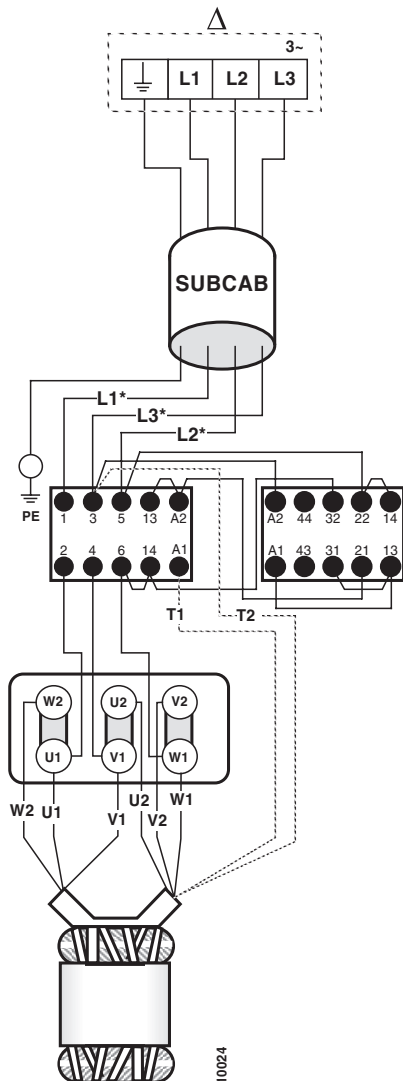
SUBCAB 4G/SUBCAB AWG\*:

Mains	Lead	Contactor unit
L1	Brown (Red*)	U1
L2	Black (White*)	W1
L3	Blue (Black*)	V1
Earth (PE)	Yellow/Green	PE
Groundcheck	Yellow*	GC

The stator leads are colour-marked as follows:

- U1 = Red
- V1, = Brown
- W1 = Yellow
- V2 = Blue
- W2 = Black
- U2 = Green

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



### 50/60 Hz, 3~ with contactor unit

Connections valid for:  
2125

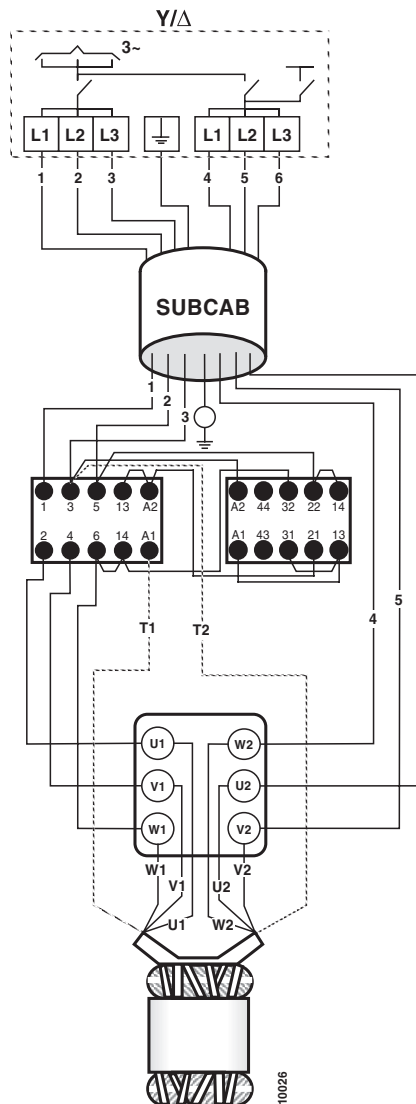
SUBCAB 7G:

Mains	Lead	Contactor unit	Pump terminal board
L1	Black	1	
L2	Black	3	
L3	Black	5	
L1	Black		W2
L2	Black		V2
L3	Black		U2
Earth (PE)	Yellow/Green		PE

The stator leads are colour-marked as follows:

- U1 = Red
- V1 = Brown
- W1 = Yellow
- V2 = Blue
- W2 = Black
- U2 = Green

Connect the white control leads from the motor control circuit to A1 and 3.



### 50/60 Hz, 3~ with contactor unit

Connections valid for:  
2125

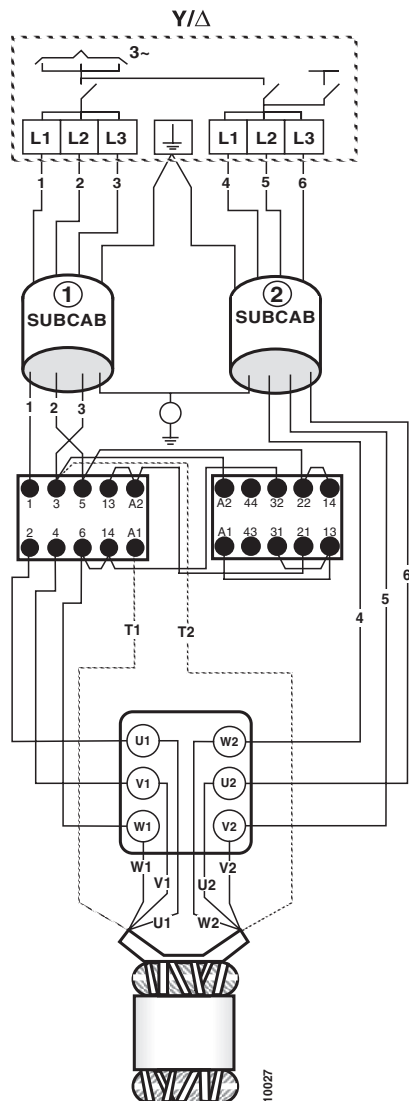
SUBCAB 2x4:

Mains	Lead	Contactor unit
L1	Brown	1
L2	Black	3
L3	Blue	5
Earth (PE)	Yellow/Green	PE

The stator leads are colour-marked as follows:

- U1 = Red
- V1, = Brown
- W1 = Yellow
- V2 = Blue
- W2 = Black
- U2 = Green

Connect the white control leads from the motor control circuit to A1 and 3.



# 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. See the figure.



### **WARNING!**

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

## 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

## 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 FOR EX VERSION**

*All work on the explosion-proof (permissible) motor section must be performed by authorized Flygt personnel. Flygt renounces all responsibility for work done by untrained, unauthorized personnel.*

## 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 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.

## 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.															
Pump casing and impeller	Replace worn parts if they impair function.															
Condition of the oil	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. 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. If the oil contains too much water again, the fault may be: <ul style="list-style-type: none"> <li>- that an oil screw is not sufficiently tight.</li> <li>- that the O-ring on an oil screw or its sealing surface is damaged.</li> <li>- that the mechanical seal is damaged. Contact a Flygt service shop.</li> </ul>															
Oil quantity	<table> <tbody> <tr> <td>2052</td> <td>0.2 litres</td> <td>(0.19 US quarts)</td> </tr> <tr> <td>2066</td> <td>0.75 litres</td> <td>(0.71 US quarts)</td> </tr> <tr> <td>2102</td> <td>1.4 litres</td> <td>(1.33 US quarts)</td> </tr> <tr> <td>2125</td> <td>1.8 - 2.0 litres</td> <td>(1.6 - 1.9 US quarts)</td> </tr> <tr> <td>2140</td> <td>2.0 litres</td> <td>(1.9 US quarts)</td> </tr> </tbody> </table>	2052	0.2 litres	(0.19 US quarts)	2066	0.75 litres	(0.71 US quarts)	2102	1.4 litres	(1.33 US quarts)	2125	1.8 - 2.0 litres	(1.6 - 1.9 US quarts)	2140	2.0 litres	(1.9 US quarts)
2052	0.2 litres	(0.19 US quarts)														
2066	0.75 litres	(0.71 US quarts)														
2102	1.4 litres	(1.33 US quarts)														
2125	1.8 - 2.0 litres	(1.6 - 1.9 US quarts)														
2140	2.0 litres	(1.9 US quarts)														



### **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.*

Liquid in the stator casing



### **WARNING!**

*If there has been leakage, the stator casing may be under pressure. Hold a rag over the inspection screw to prevent splatter. See "Safety precautions" for additional information.*

Lay the pump on its side.

Tilt the pump so that any liquid in the stator casing can run out through the hole.

If there is water in the stator casing, the cause may be:

- that the inspection screw is not sufficiently tight.
- that the O-ring on the inspection screw or its sealing surface is damaged.
- that an O-ring is damaged.
- that the cable entry is leaking.

If there is oil in the stator casing, the cause may be:

- that the inner mechanical seal is damaged. Contact a Flygt service shop.



---

## Recommended inspections:

---

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: <ul style="list-style-type: none"><li>– check that the entry is firmly tightened into its bottom-most position.</li><li>– cut a piece of the cable off so that the seal sleeve closes around a new position on the cable.</li><li>– replace the seal sleeve.</li><li>– check that the seal sleeve and the washers conform to the outside diameter of the cables.</li></ul>
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.
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 <b>non-load</b> 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	Contact a Flygt service shop.

## Changing the oil

### Oil casing



#### **WARNING!**

*If the seal leaks, the oil casing may be under pressure. Hold a rag over the oil screw to prevent splatter.*

Unscrew the nuts and remove the strainer (only 2052).

Unscrew the oil screw.

Turn the pump so that the oil hole faces downwards.

It is easier to drain the oil if another oil screw is also removed.

Fill up with new oil. (See page 21.)

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.

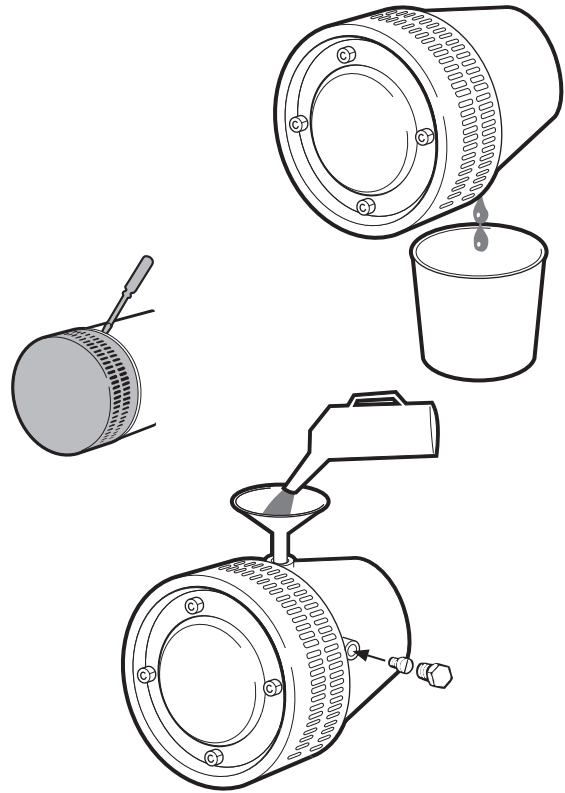
In applications where poisonous properties are of less concern, a mineral oil with viscosity up to ISO VG32 can be used.

Oil quantity: see page 22.

Always replace the O-rings on the oil screws. Put the screws back and tighten them.

#### **Tightening torque:**

2052	=	7 Nm	2125.181	=	17 Nm
2066	=	7 Nm	2125.320	=	17 Nm
2102	=	7 Nm	2140	=	6-9 Nm
2125.051	=	6-9 Nm			



## Replacing the impeller

The POLY-LIFE version of this pump has a product code ending with U (see the pump's data plate). Make sure that spare parts with part numbers marked (U) in the Parts List are used.

When fitting the new wear parts, a clearance must be provided between the impeller and the suction cover of at least 0.2 - 0.3 mm. Check after installation that the impeller rotates freely.

The wear parts in POLY-LIFE pumps are lined with polyurethane, a highly abrasion-resistant material. If the impeller does not rotate freely the friction will generate heat. This may result in deformation of the wear parts or jamming of the impeller, leading to pump damage.

### Removing the impeller



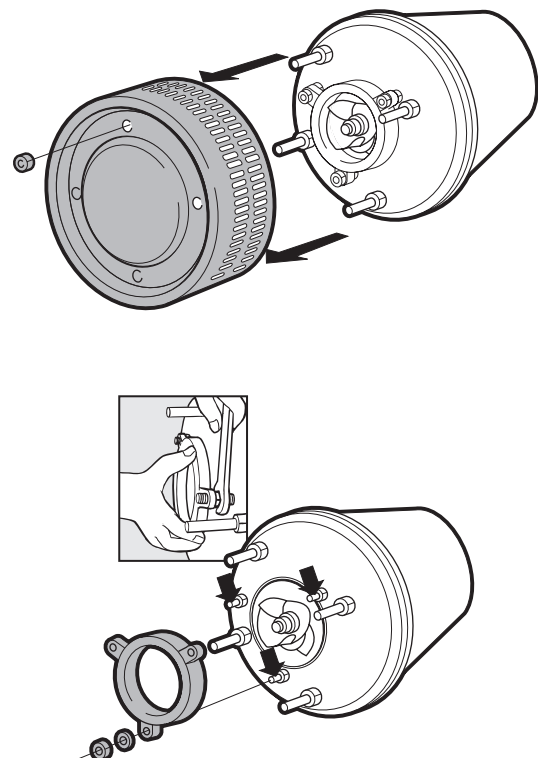
#### **WARNING!**

*Worn impellers often have very sharp edges.*

Lay the pump on its side.

Remove nuts, pull off the strainer. (Remove the wear protection on 2052.)

Remove nuts and the suction cover.



Remove the nuts.

Remove the lower diffuser.

Remove the impeller nut (the screw = 2102).

Pull off the impeller.

**Do not** pry off the impeller, since it can easily be damaged.

If it is necessary to change the diffuser, the oil has to be drained away.

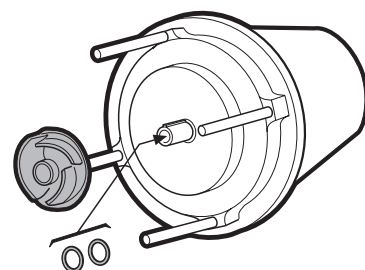
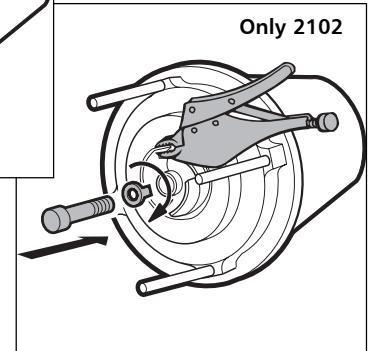
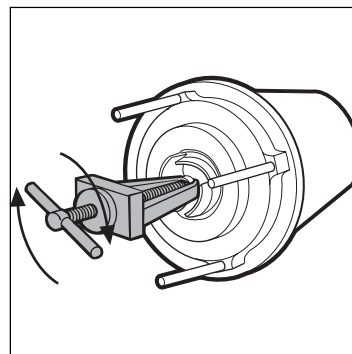
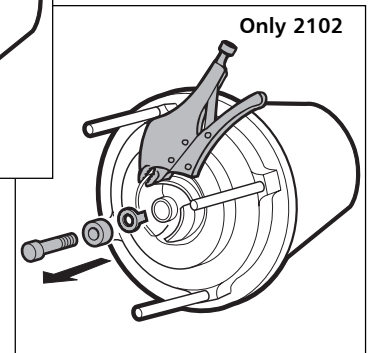
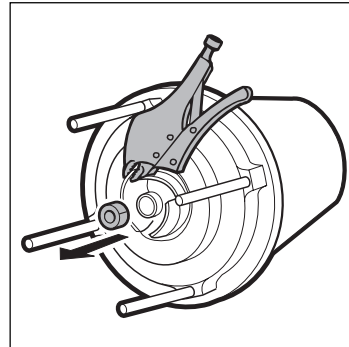
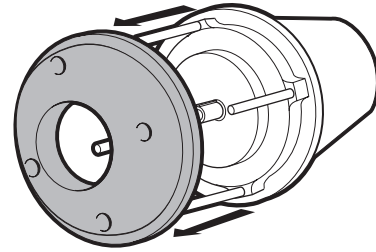
Then remove the studs and the diffuser.

### 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 diffuser is properly mounted.
- that the key is seated in the keyway on the shaft.
- that an appropriate number of adjusting washers are on the shaft (in the impeller = 2102).



Fit the adjusting studs properly.

Grease end of shaft.

Press the impeller onto the shaft with the impeller nut.

Tighten the impeller nut.

Tightening torque:	2052	30 Nm
	2066	30 Nm
	2102	30 Nm
	2125	60 Nm
	2140	60 Nm

Place the second impeller nut on the shaft and tighten it (= 2052).

The clearance between the impeller and the oil casing bottom should be 0.2 - 0.3 mm when the impeller is tightened. The clearance can be adjusted with the adjusting washers.

Check that the impeller can easily be rotated by hand.

Install the lower diffuser.

Press the suction cover against the impeller.

The clearance between the impeller and the suction cover shall be as little as possible.

Adjust the suction cover with the inner nuts (adjustment screws on 2052) so that there is a clearance between the suction cover and impeller. Clearance on Poly-Life version 0.2 to 0.3 mm.

Place the nuts on the adjusting studs in a fixed position.

Tighten the nuts evenly all around.

Check that the impeller can easily be rotated by hand.

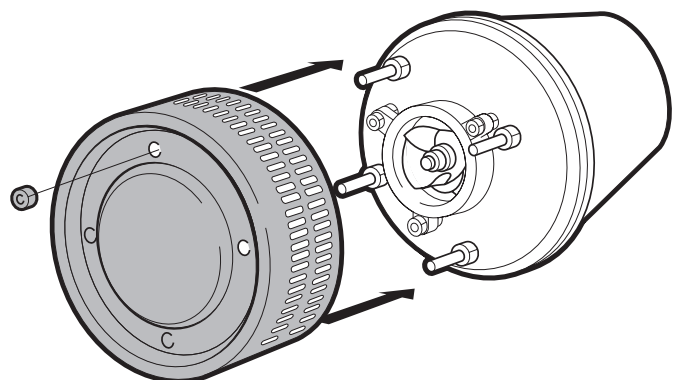
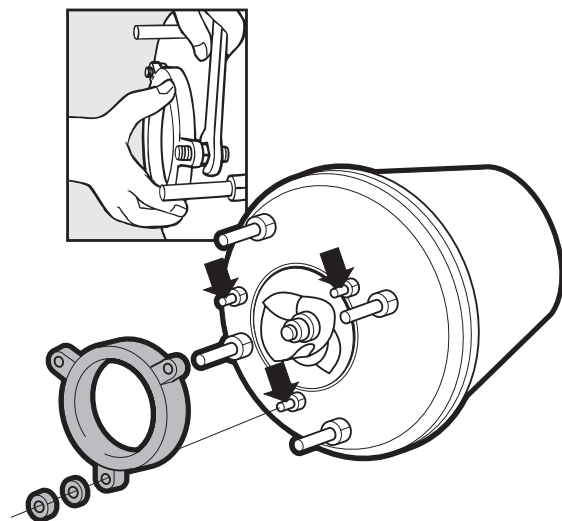
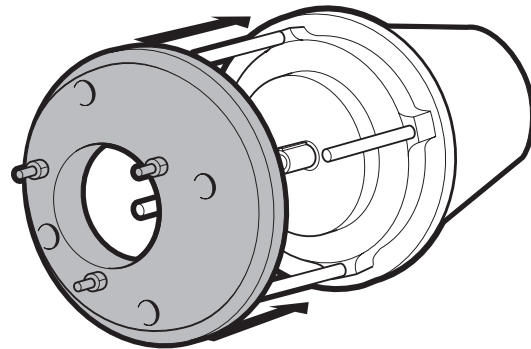
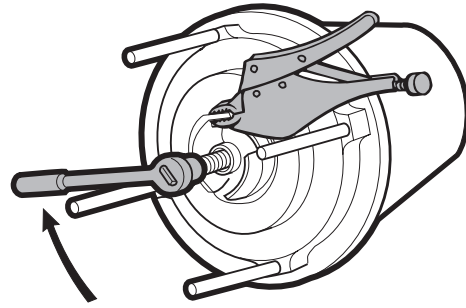
Install:

- Wear protection (2052 only)
- Strainer

In order for the pump to perform at maximum capacity, the impeller must be adjusted regularly.

It is particularly important that the clearance between the suction cover and the impeller is kept to a minimum.

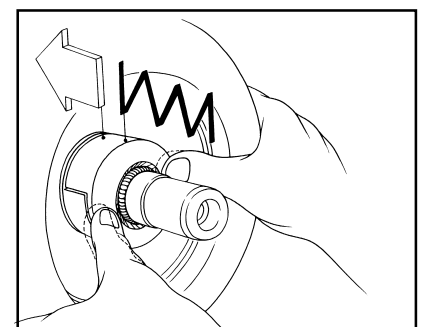
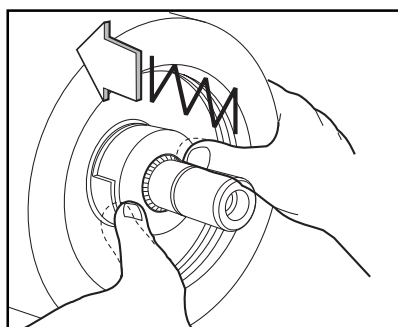
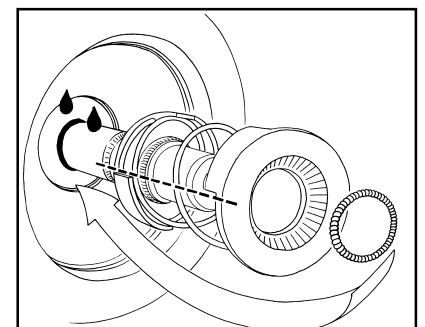
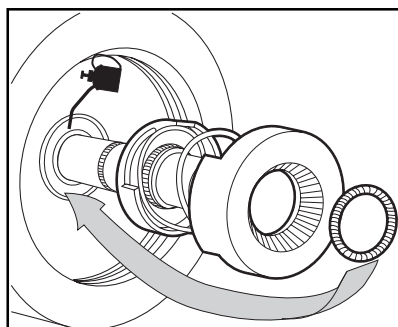
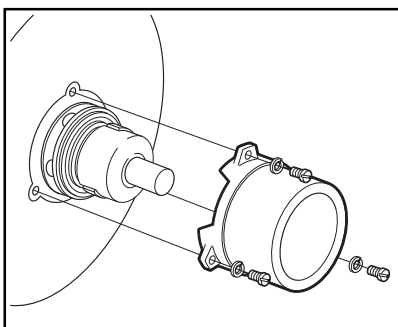
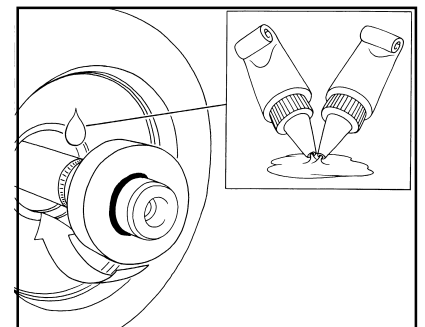
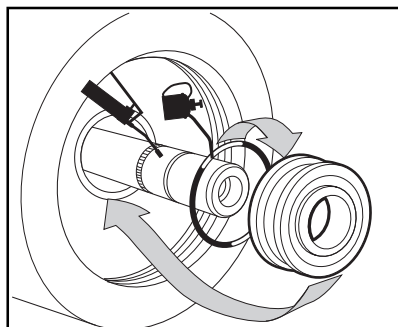
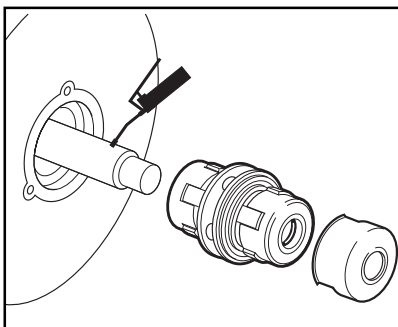
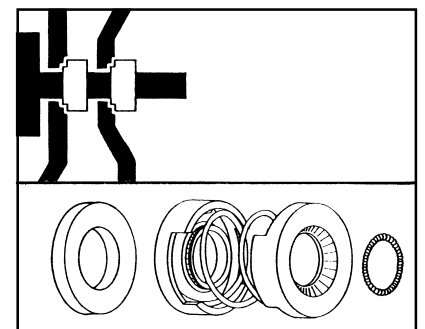
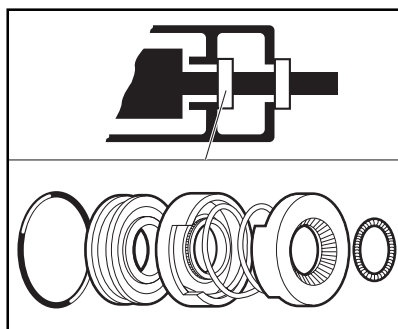
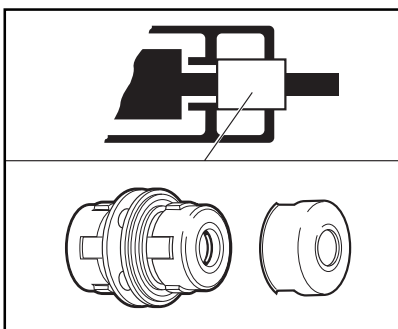
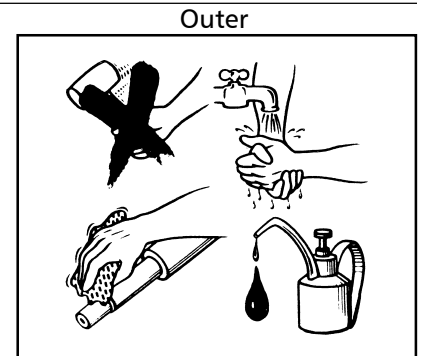
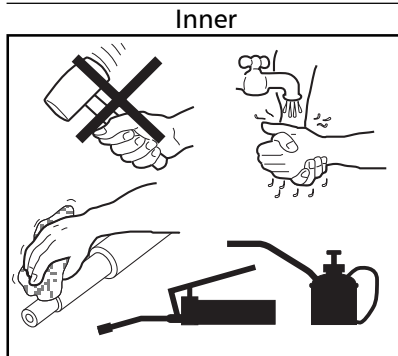
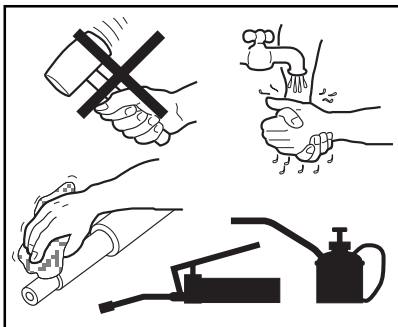
More extensive repairs require special tools and should be carried out by an authorized service technician.



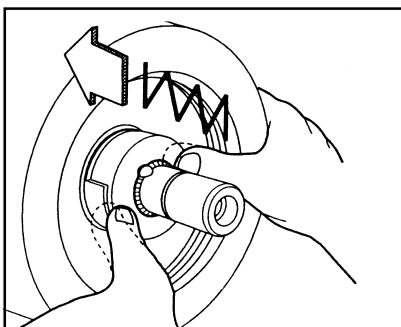
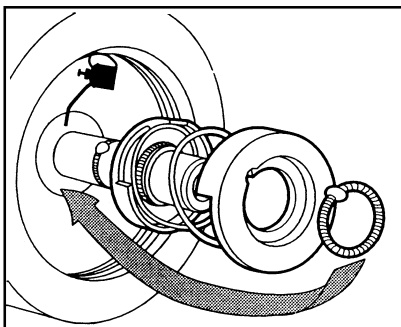
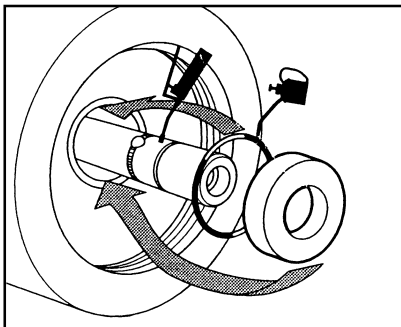
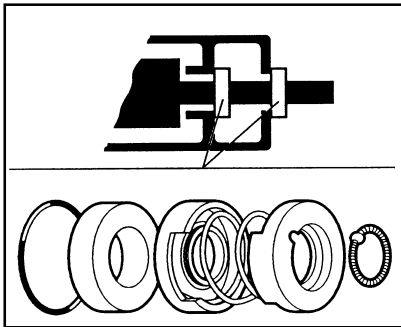
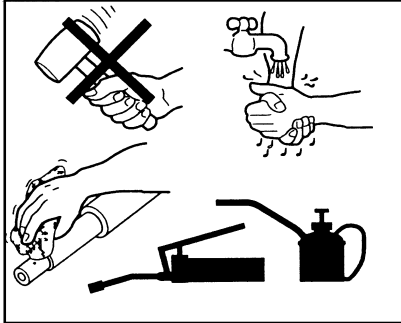
## Replacing the mechanical seal

Instructions valid for 2052

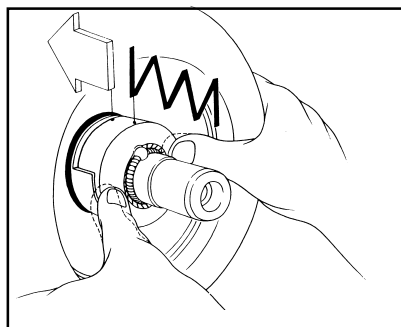
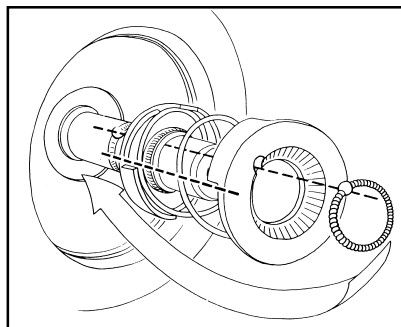
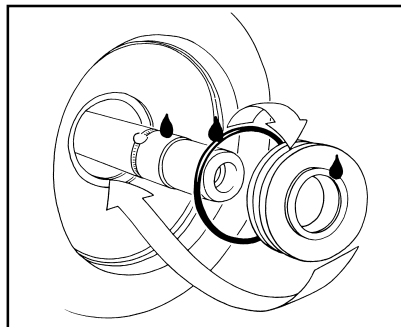
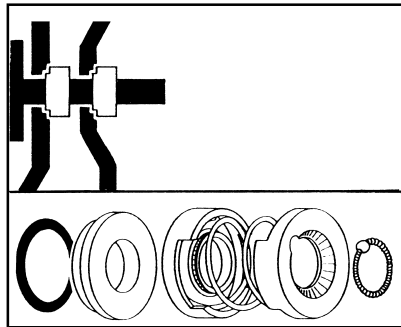
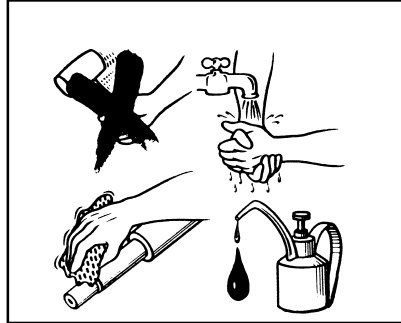
Instruktioner gällande för 2066



Instructions valid for 2102



Instructions valid for 2125 and 2140



# Accessories and tools

## Tandem operation

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

The vertical distances between the pumps should be approximately equal.

See special brochure that describes the procedure for tandem connection.

## Level sensor

Flygt supplies level sensors suited for different liquid densities and 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.

## Zinc anode set

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

Fit anodes on the outside and on the inside of the strainer bottom.

**IMPORTANT!** Brush off sand on paint, grease and dirt or other coatings that might impair the electrical conductivity between the anodes and the strainer.

## Tools

Besides ordinary standard tools, special tools are required in order to perform the necessary care and maintenance of the pump. Please see Parts List for order No.

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.



[www.flygt.com](http://www.flygt.com)