Installation, Care, and
Maintenance Manual

Flygt 2052, 2066, 2102

FLYGT
a xylem brand

Guarantee

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

- that the fault is due to defects in design, materials or workmanship;
- that the fault is reported to Xylem or Xylem´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 Xylem;
- 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 Xylem;**
- **that genuine Flygt parts are used.**

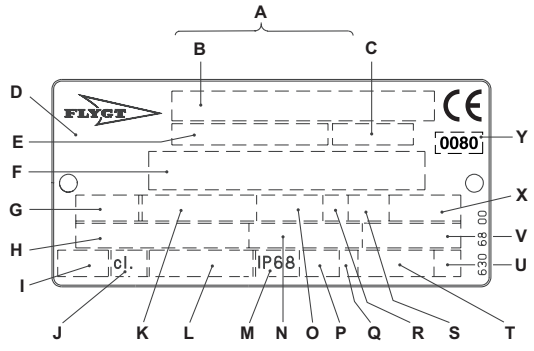
Xylem assumes no liability for either bodily injuries, material damages or economic losses beyond what is stated above.

Xylem 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



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
Y Notified body/Only for EN-approved Ex-products

Contents

Safety

Notes for EX-Products

- **Only Ex-approved pumps may be used in an explosive or flammable environment.**
- **Do not open the pump when an explosive gas atmosphere may be present.**
- **Before starting work on the pump, make sure that the pump and the control panel are isolated from the power supply and can not be energized. This applies to the control circuit as well.**
- **All mechanical work on the explosion-proof motor section must be performed by personnel authorized by Xylem.**
- **Electrical connection on the explosion-proof motor must be made by authorized personnel.**
- **Thermal contacts must be connected to protection circuit intended for that purpose according to the approval of the product.**
- **The pump may be used only in accordance with the approved motor data stated on the data plates.**
- **Intrinsically safe circuits are normally required (Ex i) for the automatic level control system by level regulator if mounted in zone 0.**
- **This equipment must be installed in conformity to prescriptions in international or national rules (IEC/EN 60079-14).**
- **The maintenance operation must be made in conformity to the international or national standards (IEC/EN 60079-17).**
- **The yield stress of fastener elements in the product must be in conformity with the value specified in the table for “Material of fastener” on the approval drawing or the parts specified in the part list for the product.**
- **According to the ATEX directive the Ex-pump must be fully submerged. The pump must never run dry or snore. Dry running at service and inspection is only permitted outside the Ex area.**
- **Besides, the user must know about the risks due the electric current and the chemical and physical characteristics of the gas and/or vapours present in hazardous areas.**
- **Flygt disclaims all responsibility for work done by untrained, unauthorized personnel.**

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.

The pumps are intended to be used for:

- pumping of water which may contain abrasive particles.

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.

EX-PRODUCT:
See also under chapter "SAFETY - Notes for EX-Products", page 4

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^3 (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. 40ºC (105ºF).

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

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) or Y/D start (2102).

The motor can be run continuously or intermittently with a maximum of 30 evenly spaced starts per hour.

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

The stator is insulated in accordance with class H (180ºC, 356ºF). The motor is designed to supply its rated output at ± 5 % variation of the rated voltage. Without overheating the motor, ± 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 motor.

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

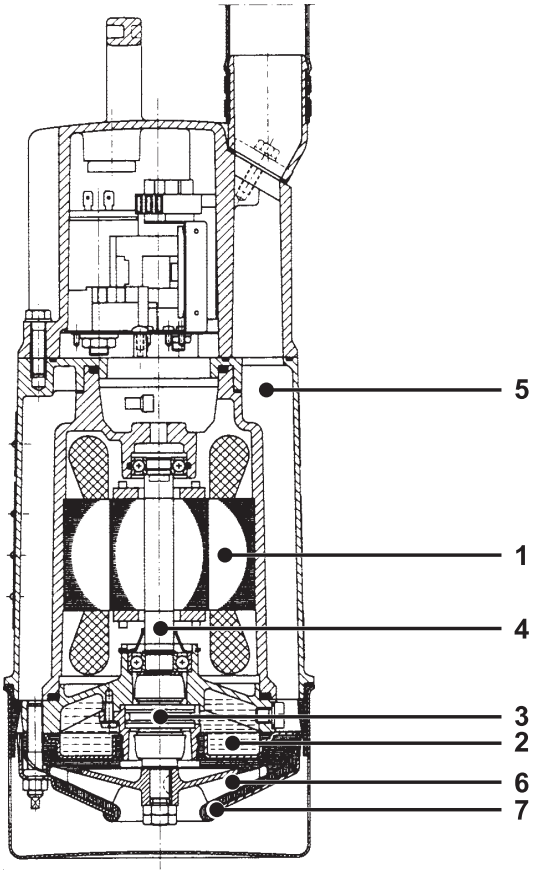
The pump is available with a wide range of impellers for different capacities.

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.***

> ***WARNING:***
> ***CRUSH HAZARD***
> ***Never put your hand into the pump housing.***

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 Xylem representative regarding:

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

> ***EX-PRODUCT:***
> ***See also under chapter "SAFETY - Notes for EX-Products", page 4***

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.

EX-PRODUCT:
See also under chapter "SAFETY - Notes for EX-Products", page 4

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

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 Xylem 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.

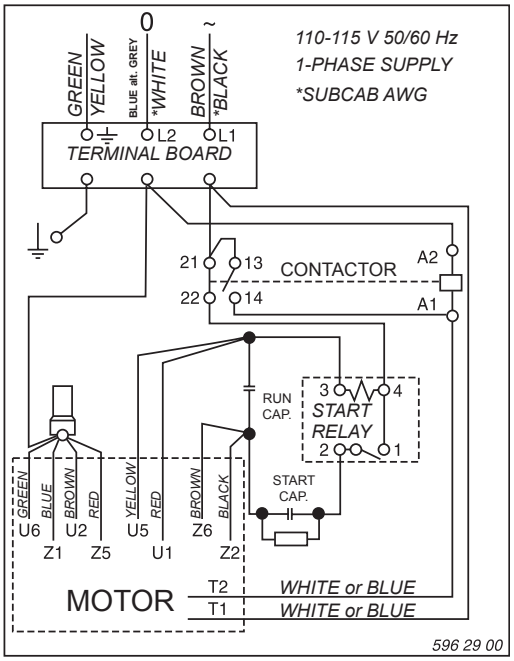
NOTE!
Make sure that the monitoring equipment incorporated in the product is correctly connected.

WARNING:
ELECTRICAL HAZARD
Risk of electrical shock or burn. You must connect an additional ground-(earth-) fault protection device to the grounded (earthed) connectors if persons are likely to come into contact with liquids that are also in contact with the pump or pumped liquid.

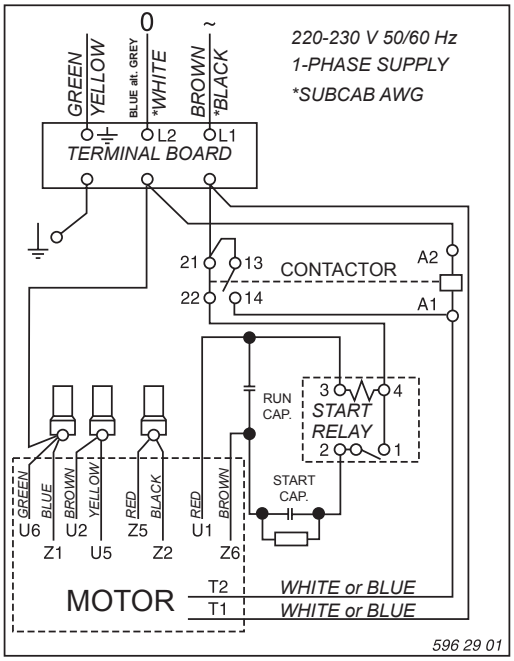
1~ operation with built-in starter

Connections valid for:
2052 (0.75/0.8 kW)

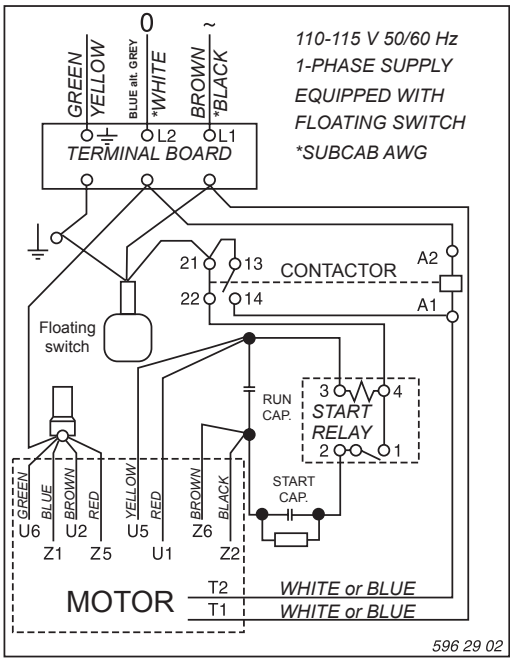
Without floating switch



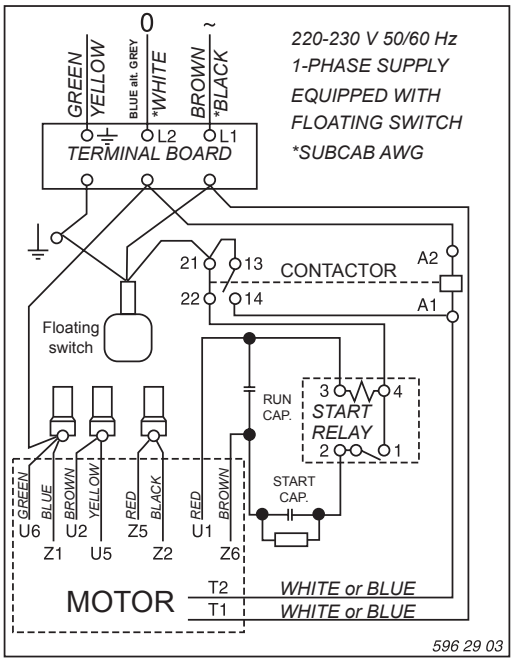
Without floating switch



With floating switch



With floating switch



1~ operation with external starter

Connections valid for:
2052 (1.0/1.3 kW)

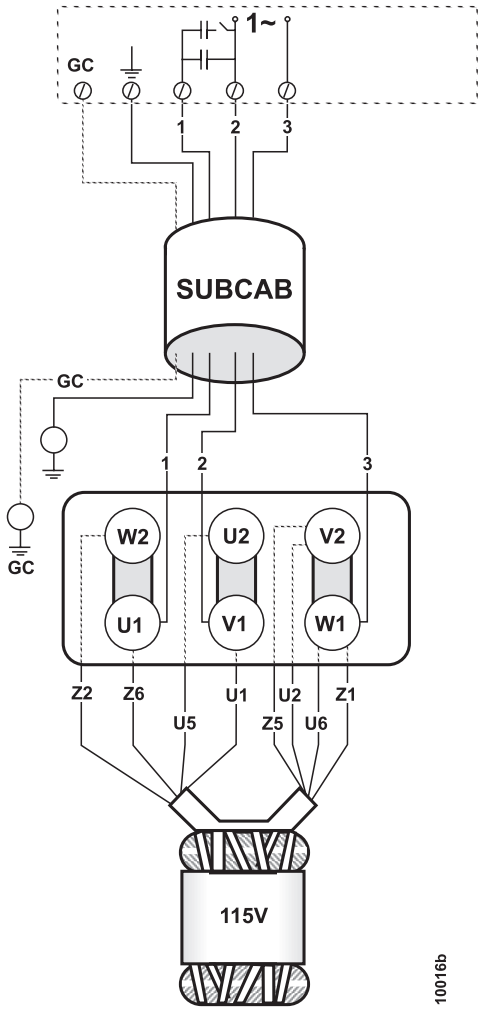
SUBCAB/SUBCAB AWG:

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

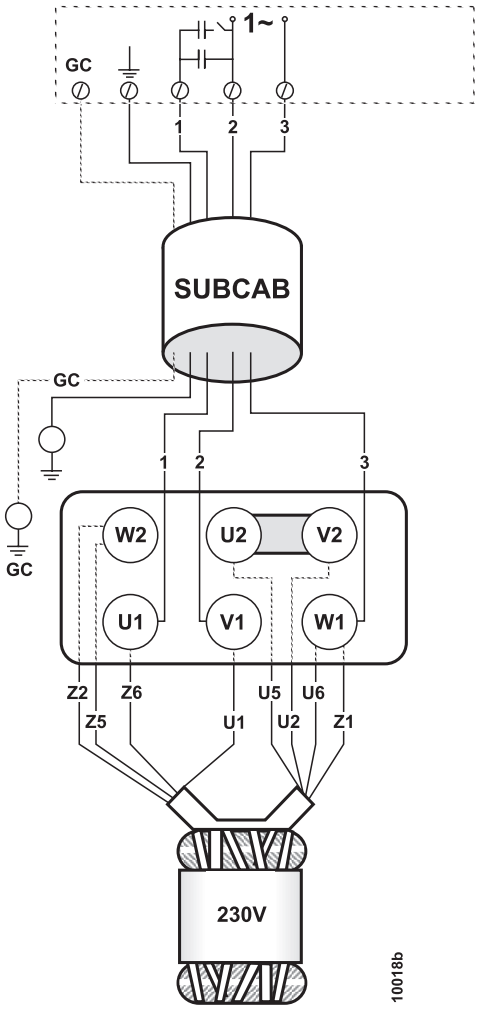
The stator leads are colour-marked as follows:

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

115 V



230 V



CABLE CHART

SUBCAB® 4GX/SUBCAB® AWG, 6-leads, Y

2052,2066,2102

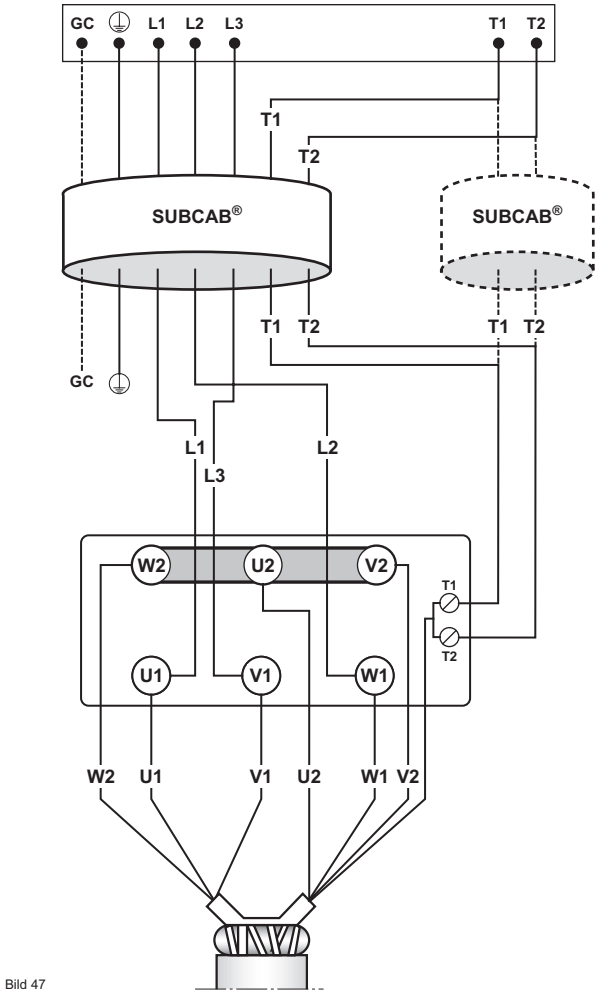


Bild 47

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Terminal board
L1	brown	red	U1
L2	black	black	W1
L3	grey	white	V1
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control	**SUBCAB© Cable lead**	**SUBCAB© AWG Cable lead**	**Terminal board**
T1	T1	orange	T1
T2	T2	blue	T2

Stator leads connection:

Stator lead	Terminal board
U1, red	U1
W2, black	W2
V1, brown	V1
U2, green	U2
W1, yellow	W1
V2, blue	V2

SUBCAB® 4GX/SUBCAB® AWG, 6-leads, Y

2052,2066,2102

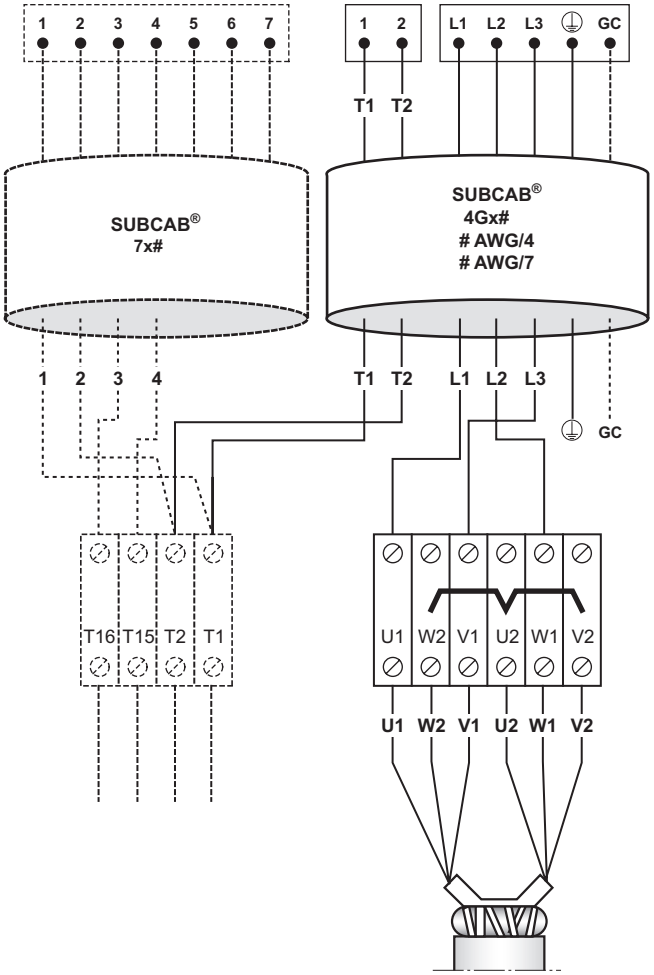


Bild 2

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Terminal board
L1	brown	red	U1
L2	black	black	W1
L3	grey	white	V1
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control	**SUBCAB© Cable lead**	**SUBCAB© AWG Cable lead**	**Terminal board**
T1	T1	orange	T1
T2	T2	blue	T2

Stator leads connection:

Stator lead	Terminal board
U1, red	U1
W2, black	W2
V1, brown	V1
U2, green	U2
W1, yellow	W1
V2, blue	V2

CABLE CHART

SUBCAB® 4GX/SUBCAB® AWG, 6-leads, D

2052,2066,2102

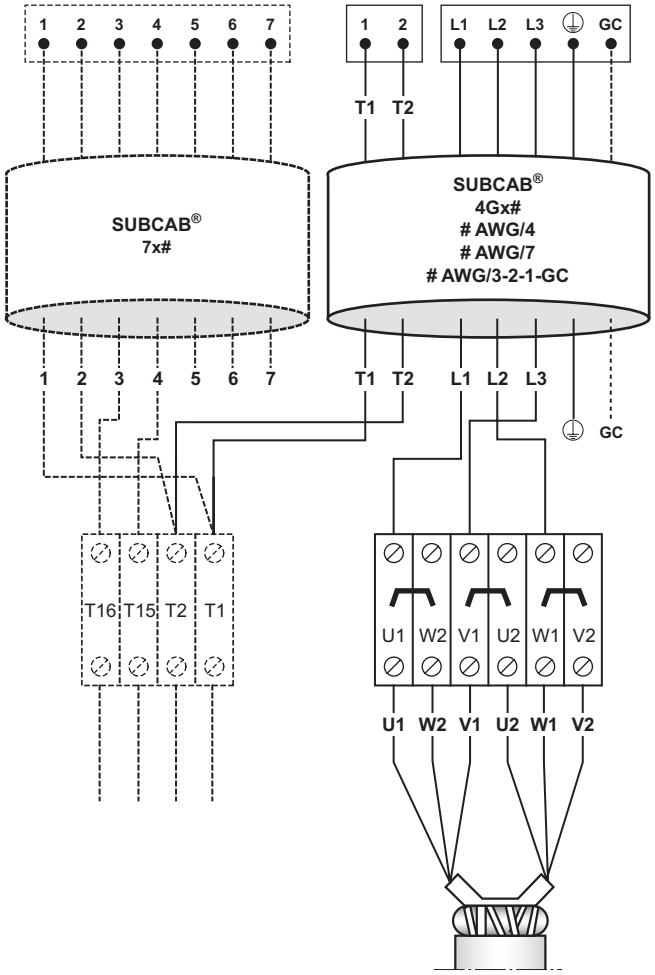


Bild 5

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Terminal board
L1	brown	red	U1
L2	black	black	W1
L3	grey	white	V1
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control	**SUBCAB© Cable lead**	**SUBCAB© AWG Cable lead**	**Terminal board**
T1	T1	orange	T1
T2	T2	blue	T2

Stator leads connection: Stator lead	Terminal board
U1, red	U1
W2, black	W2
V1, brown	V1
U2, green	U2
W1, yellow	W1
V2, blue	V2

SUBCAB® 4GX/SUBCAB® AWG, 6-leads, Y

2052,2066,2102

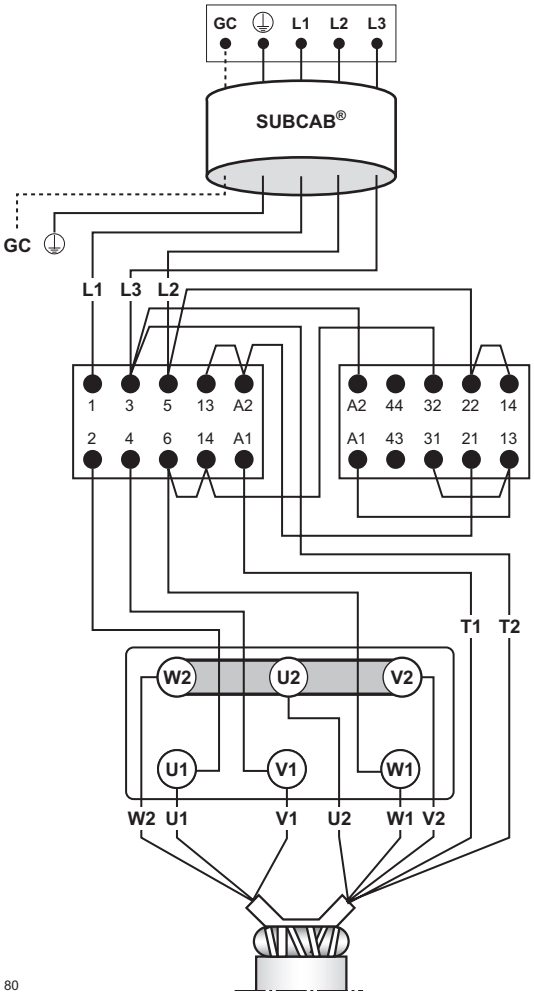


Bild 80

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Contactor
L1	brown	red	1
L2	black	black	5
L3	grey	white	3
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control		**Contactor**	
T1, white		A1	
T2, white		3	

Stator leads connection: Stator lead	Terminal board	Contactor
U1, red	U1	2
V1, brown	V1	4
W1, yellow	W1	6
U2, green	U2	
V2, blue	V2	
W2, black	W2	

50/60 Hz, 1~ with terminal board

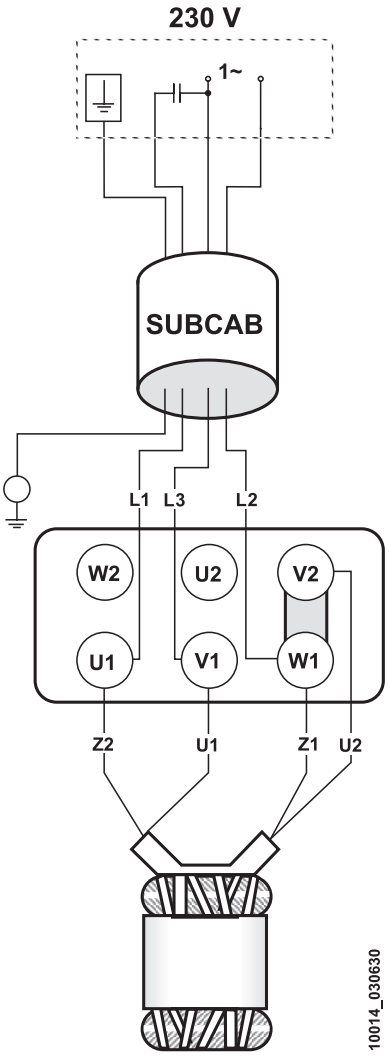
Connections valid for:
2066

SUBCAB/SUBCAB AWG*:

Mains	Lead	Pumpterminal board
L1	Brown (Red*)	1
L2	Blue alt. Grey (White*)	5
L3	Black (Black*)	3
Earth (PE)	Yellow/Green	PE

The stator leads are colour-marked as follows:

U1 = Red
U2 = Brown
Z1 = Yellow
Z2 = Black



CABLE CHART

SUBCAB® 4GX/SUBCAB® AWG, 6-leads, D

2052,2066,2102

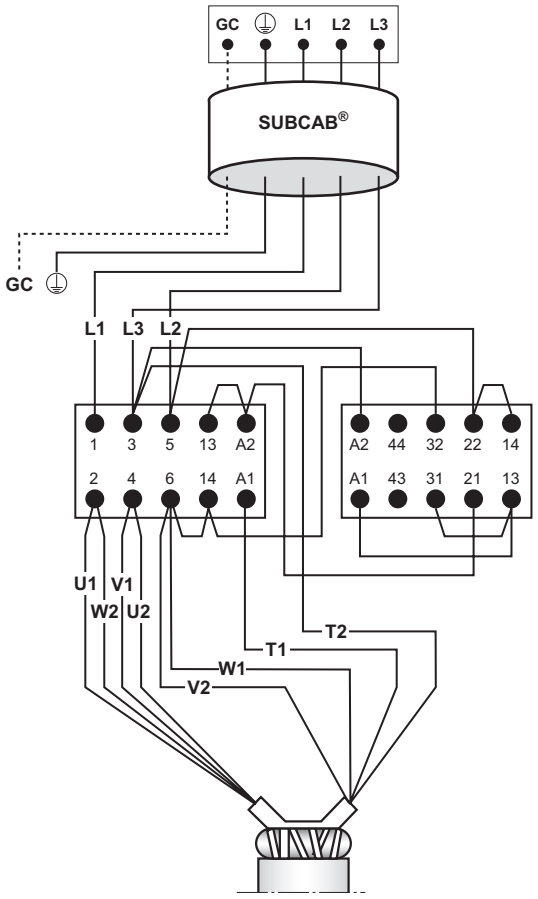


Bild 76

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Contactor
L1	brown	red	1
L2	black	black	5
L3	grey	white	3
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control		**Contactor**	
T1, white		A1	
T2, white		3	
Stator leads connection:			
Stator lead		**Contactor**	
U1, red		2	
W2, black		2	
V1, brown		4	
U2, green		4	
V2, blue		6	
W1, yellow		6	

SUBCAB® 4GX/SUBCAB® AWG, 6-leads, D

2052,2066,2102

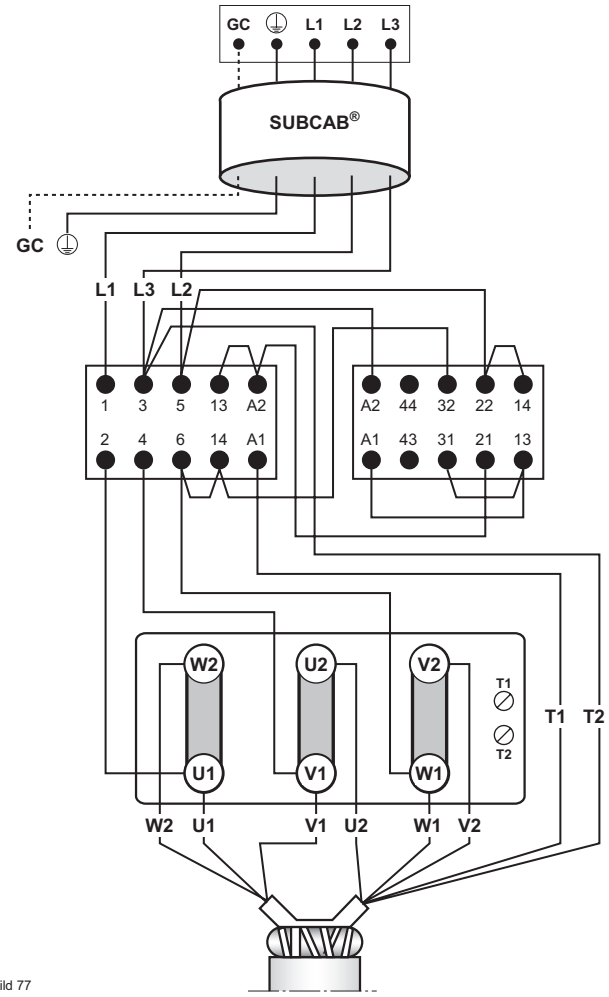


Bild 77

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Contactor
L1	brown	red	1
L2	black	black	5
L3	grey	white	3
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control		**Contactor**	
T1, white		A1	
T2, white		3	
Stator leads connection:			
Stator lead		**Terminal board**	**Contactor**
U1, red		U1	2
V1, brown		V1	4
W1, yellow		W1	6
U2, green		U2	
V2, blue		V2	
W2, black		W2	

CABLE CHART

SUBCAB® 4GX, 6-leads, Y/D

2052,2066,2102

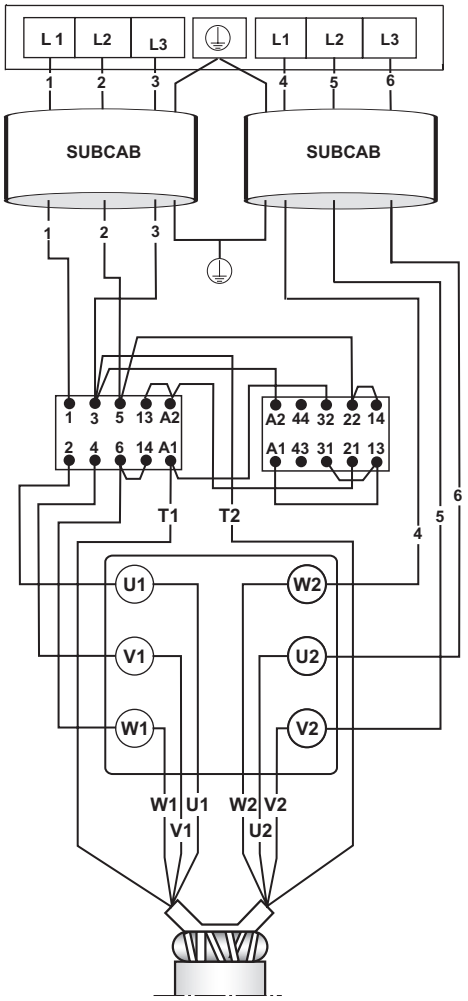


Bild 83

Mains	Lead	Contactor	Terminal board
L1	black	1	
L2	black	5	
L3	black	3	
L1	black		W2
L2	black		V2
L3	black		U2
⏚	yellow/green		⏚

Control	Contactor
T1, white	A1
T2, white	3

Stator leads connection: Stator lead	Terminal board	Contactor
U1, red	U1	2
V1, brown	V1	4
W1, yellow	W1	6
U2, green	U2	
V2, blue	V2	
W2, black	W2	

SUBCAB® 7GX, 6-leads, Y/D

2052,2066,2102

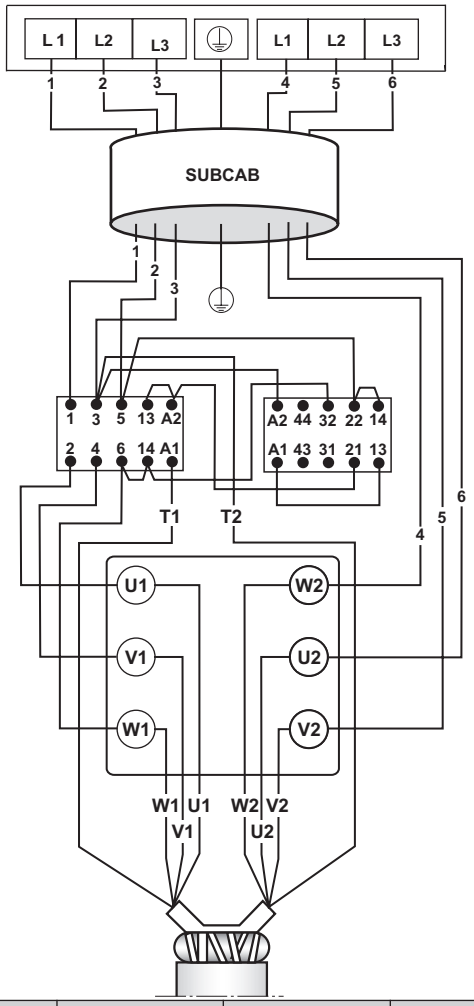


Bild 82

Mains	Lead	Contactor	Terminal board
L1	black	1	
L2	black	5	
L3	black	3	
L1	black		W2
L2	black		V2
L3	black		U2
⏚	yellow/green		⏚

Control	Contactor
T1, white	A1
T2, white	3

Stator leads connection: Stator lead	Terminal board	Contactor
U1, red	U1	2
V1, brown	V1	4
W1, yellow	W1	6
U2, green	U2	
V2, blue	V2	
W2, black	W2	

CABLE CHART

60 Hz, 1~ with terminal board

Connections valid for:
2102

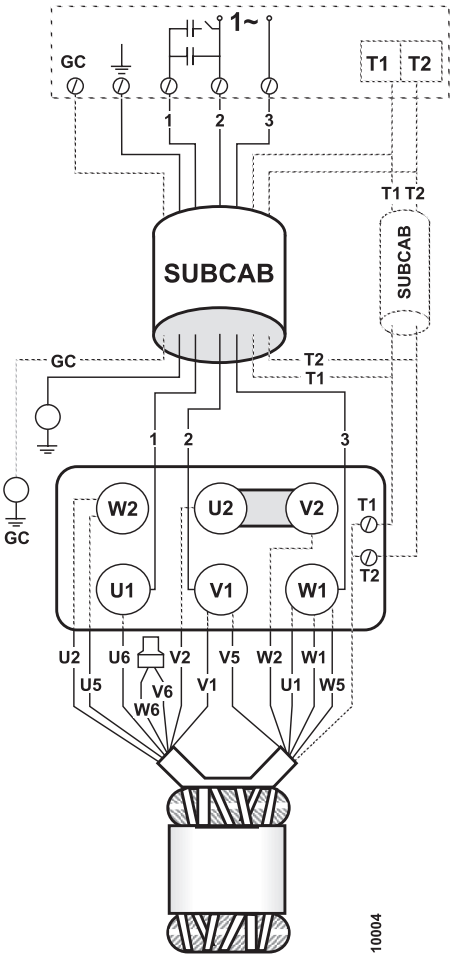
SUBCAB/SUBCAB AWG*:

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

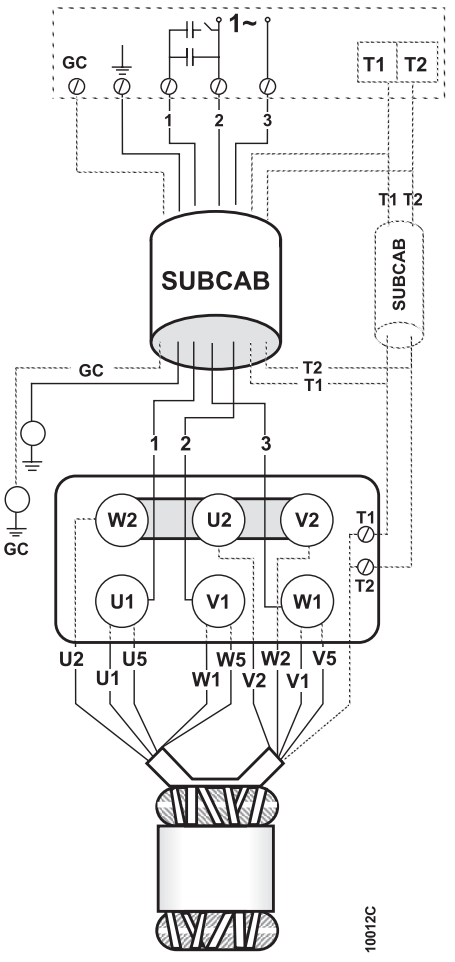
The stator leads are colour-marked as follows:

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



9-leads
230V



CABLE CHART

SUBCAB® 4GX/SUBCAB® AWG, 60 Hz only, 9-leads, 230 V, Y//

2052,2066,2102

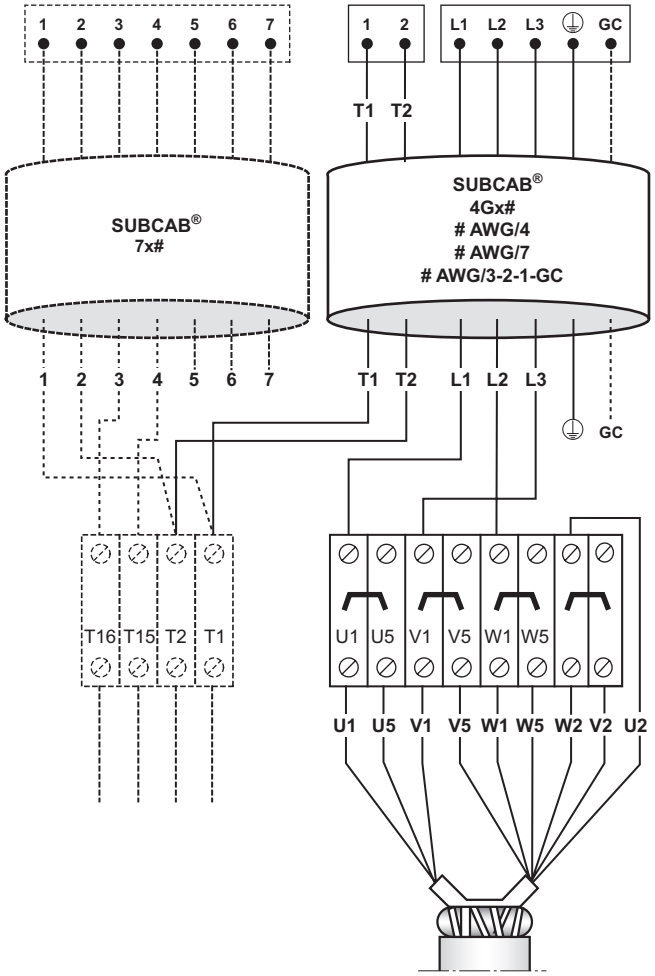


Bild 10

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Terminal board
L1	brown	red	U1
L2	black	black	W1
L3	grey	white	V1
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control	**SUBCAB© Cable lead**	**SUBCAB© AWG Cable lead**	**Terminal board**
T1	T1	orange	T1
T2	T2	blue	T2

Stator leads connection:

Stator lead	Terminal board
U1, red	U1
U5, red	U5
V1, brown	V1
V5, brown	V5
W1, yellow	W1
W5, yellow	W5
W2, black*	
V2, blue*	
U2, green*	

**Connected together at terminal*

SUBCAB® 4GX/SUBCAB® AWG, 60 Hz only, 9-leads, 230 V, Y//

2052,2066,2102

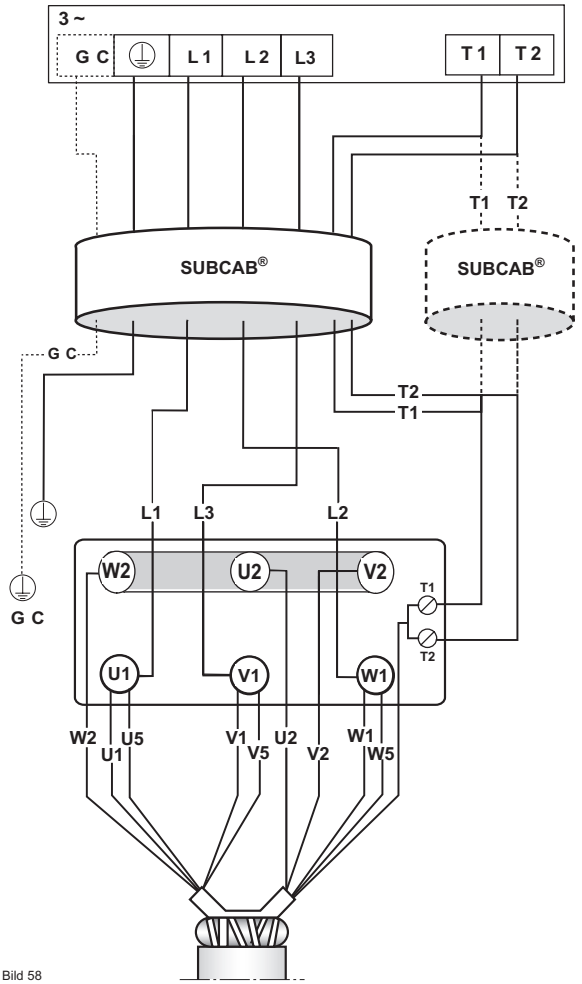


Bild 58

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Terminal board
L1	brown	red	U1
L2	black	black	W1
L3	grey	white	V1
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control	**SUBCAB© Cable lead**	**SUBCAB© AWG Cable lead**	**Terminal board**
T1	T1	orange	T1
T2	T2	blue	T2

Stator leads connection:

Stator lead	Terminal board
U1, red	U1
U5, red	U1
V1, brown	V1
V5, brown	V1
W1, yellow	W1
W5, yellow	W1
W2, black*	
U2, green*	
V2, blue*	

**Connected together at terminal*

CABLE CHART

SUBCAB® 4GX/SUBCAB® AWG, 60 Hz only, 9-leads, 460 V, Yser.

2052,2066,2102

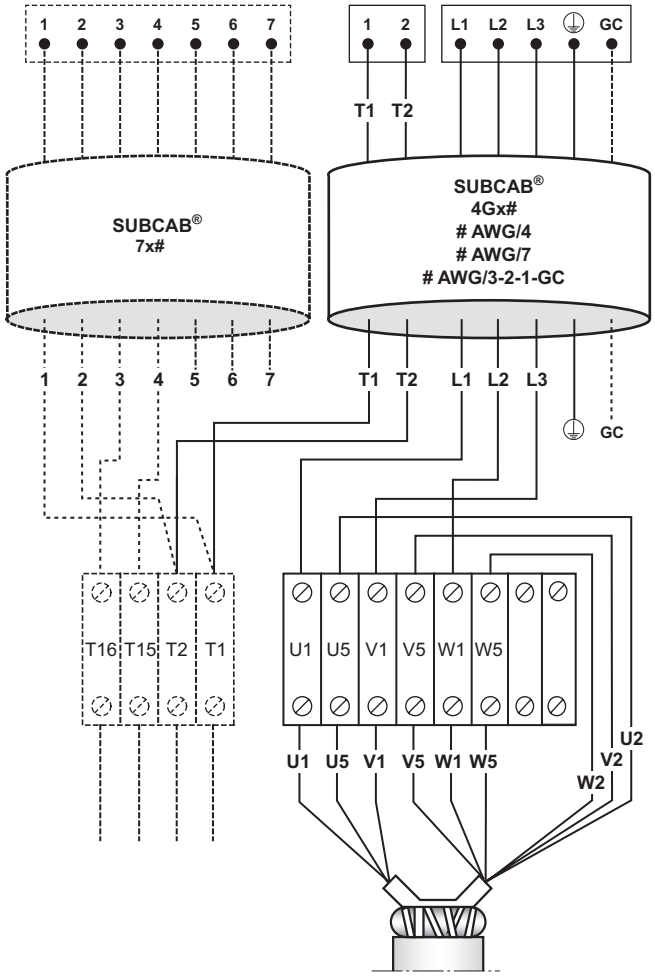


Bild 8

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Terminal board
L1	brown	red	U1
L2	black	black	W1
L3	grey	white	V1
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control	**SUBCAB© Cable lead**	**SUBCAB© AWG Cable lead**	**Terminal board**
T1	T1	orange	T1
T2	T2	blue	T2

Stator leads connection:

Stator lead	Terminal board
U1, red	U1
U5, red	U5
U2, green	U5
V1, brown	V1
V5, brown	V5
V2, blue	V5
W1, yellow	W1
W5, yellow	W5
W2, black	W5

SUBCAB® 4GX/SUBCAB® AWG, 60 Hz only, 9-leads, 460 V, Yser.

2052,2066,2102

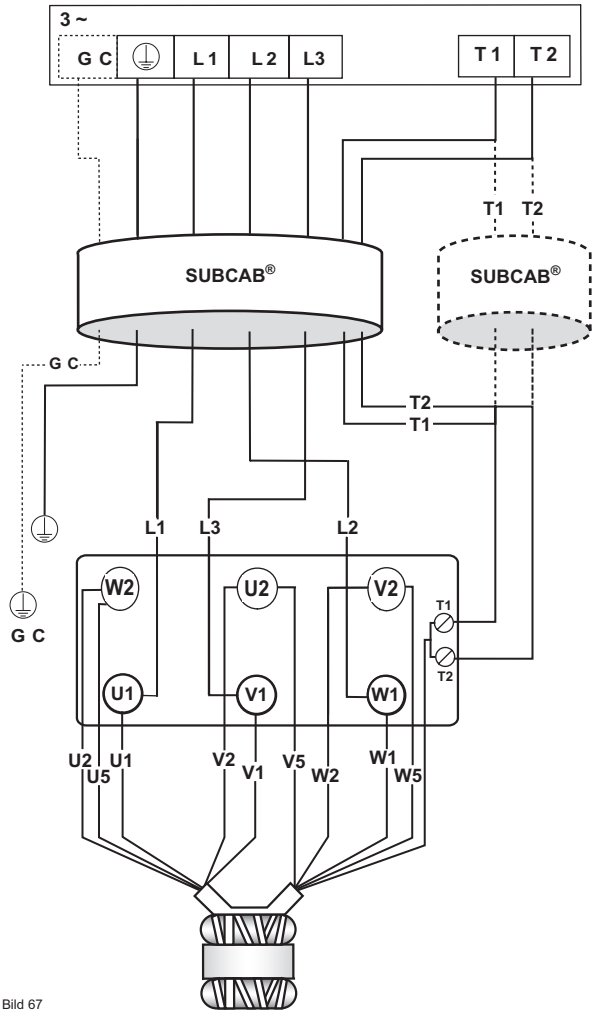


Bild 67

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Terminal board
L1	brown	red	U1
L2	black	black	W1
L3	grey	white	V1
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control	**SUBCAB© Cable lead**	**SUBCAB© AWG Cable lead**	**Terminal board**
T1	T1	orange	T1
T2	T2	blue	T2

Stator leads connection:

Stator lead	Terminal board
U1, red	U1
V1, brown	V1
W1, yellow	W1
U2, green	W2
U5, red	W2
V2, blue	U2
V5, brown	U2
W2, black	V2
W5, yellow	V2

CABLE CHART

SUBCAB® 4GX/SUBCAB® AWG, 60 Hz only, 12-leads, 230 V, Y//

2052,2066,2102

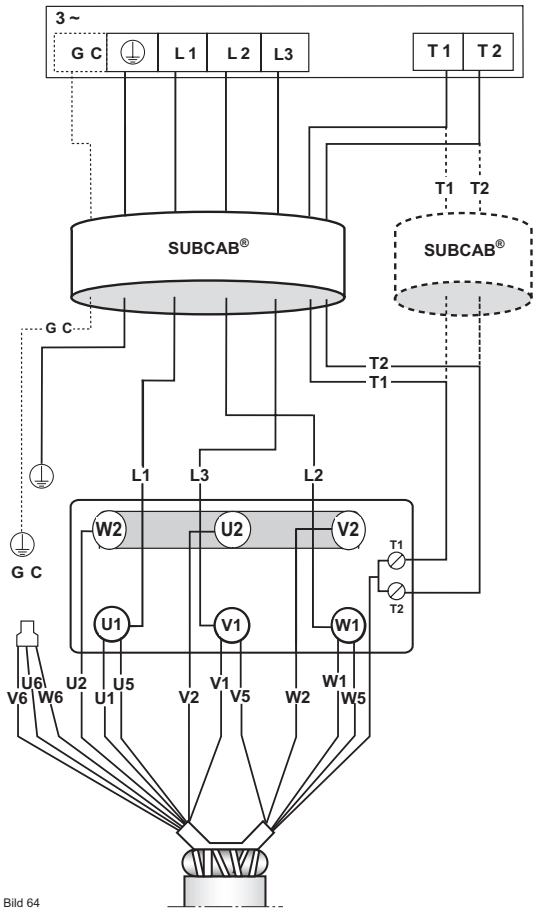


Bild 64

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Terminal board
L1	brown	red	U1
L2	black	black	W1
L3	grey	white	V1
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control	**SUBCAB© Cable lead**	**SUBCAB© AWG Cable lead**	**Terminal board**
T1	T1	orange	T1
T2	T2	blue	T2

Stator leads connection: Stator lead	Terminal board
U1, red	U1
U5, red	U1
V1, brown	V1
V5, brown	V1
W1, yellow	W1
W5, yellow	W1
U2, green	W2
V2, blue	U2
W2, black	V2
U6, green*	
V6, blue*	
W6, black*	

**Connected together separately in insulated closed end splice*

SUBCAB® 4GX/SUBCAB® AWG, 60 Hz only, 12-leads, 460 V, Yser.

2052,2066,2102

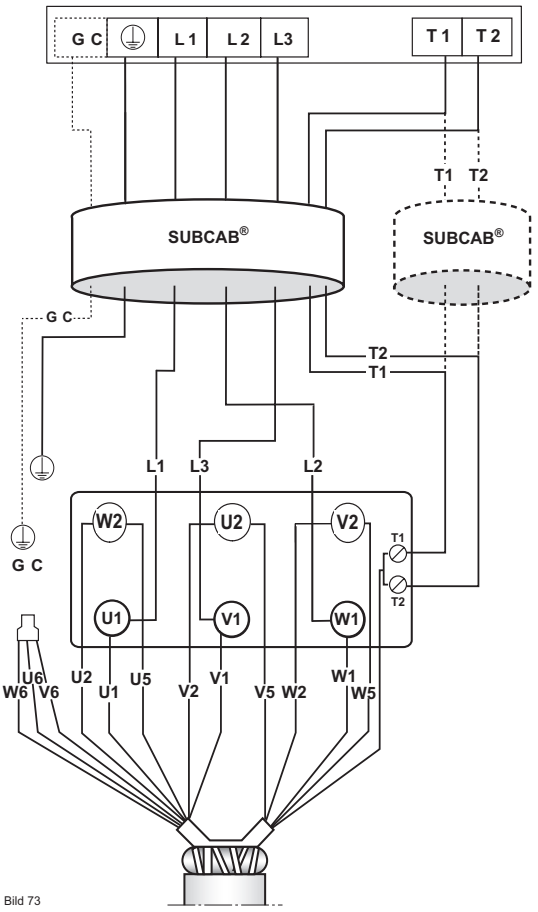


Bild 73

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Terminal board
L1	brown	red	U1
L2	black	black	W1
L3	grey	white	V1
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control	**SUBCAB© Cable lead**	**SUBCAB© AWG Cable lead**	**Terminal board**
T1	T1	orange	T1
T2	T2	blue	T2

Stator leads connection: Stator lead	Terminal board
U1, red	U1
V1, brown	V1
W1, yellow	W1
U2, green	W2
U5, red	W2
V2, blue	U2
V5, brown	U2
W2, black	V2
W5, yellow	V2
U6, green*	
V6, blue*	
W6, black*	

**Connected together separately in insulated closed end splice*

CABLE CHART

SUBCAB® 7GX, 6-leads, Y/D

2052,2066,2102

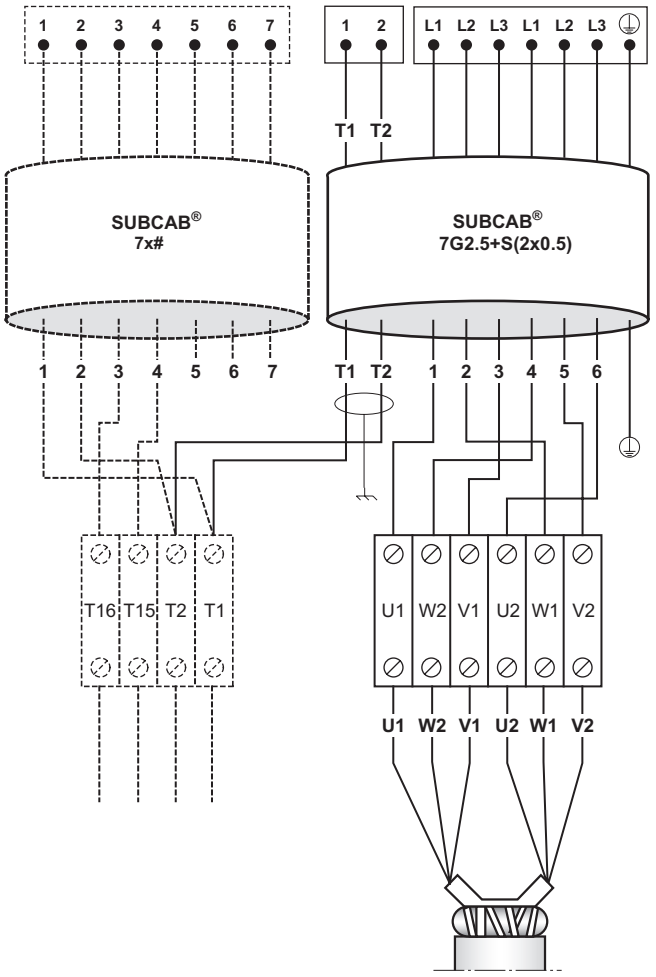


Bild 12B

Mains	Lead	Lead
L1	1	U1
L2	2	W1
L3	3	V1
L1	4	W2
L2	5	V2
L3	6	U2
⏚	yellow/green	⏚
Control	**Cable lead**	**Terminal board**
T1	T1	T1
T2	T2	T2

Stator leads connection:

Stator lead	Terminal board
U1, red	U1
W2, black	W2
V1, brown	V1
U2, green	U2
W1, yellow	W1
V2, blue	V2

SUBCAB® 7GX, 6-leads, Y/D

2052,2066,2102

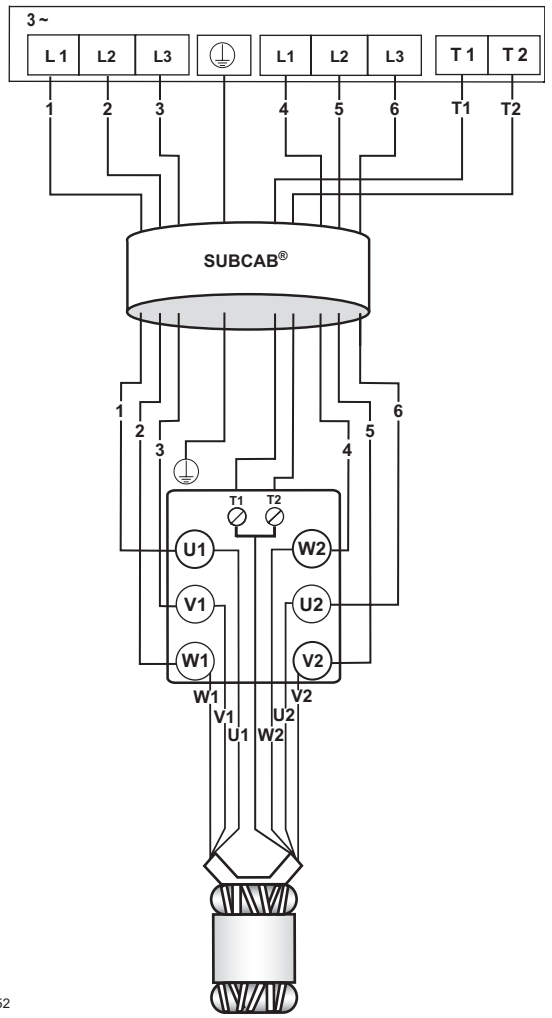


Bild 52

Mains	Lead	Lead
L1	1	U1
L2	2	W1
L3	3	V1
L1	4	W2
L2	5	V2
L3	6	U2
⏚	yellow/green	⏚
Control	**Cable lead**	**Terminal board**
T1	T1	T1
T2	T2	T2

Stator leads connection:

Stator lead	Terminal board
U1, red	U1
W2, black	W2
V1, brown	V1
U2, green	U2
W1, yellow	W1
V2, blue	V2

CABLE CHART

SUBCAB® 4GX/SUBCAB® AWG, 6-leads, D

2052,2066,2102

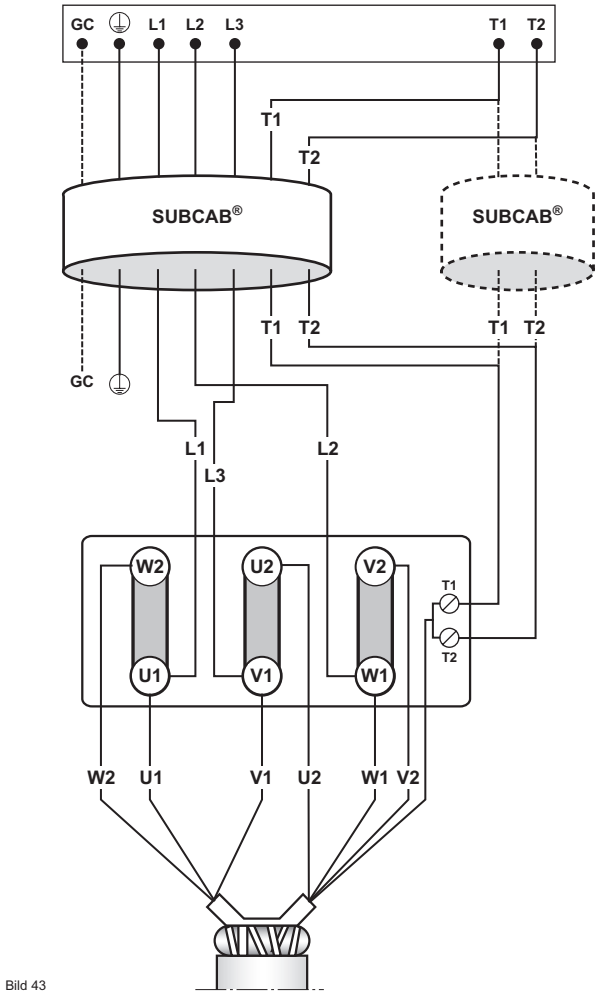


Bild 43

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Terminal board
L1	brown	red	U1
L2	black	black	W1
L3	grey	white	V1
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control	**SUBCAB© Cable lead**	**SUBCAB© AWG Cable lead**	**Terminal board**
T1	T1	orange	T1
T2	T2	blue	T2

Stator leads connection: Stator lead	Terminal board
U1, red	U1
W2, black	W2
V1, brown	V1
U2, green	U2
W1, yellow	W1
V2, blue	V2

SUBCAB® 4GX/SUBCAB® AWG, 6-leads, Y

2052,2066,2102

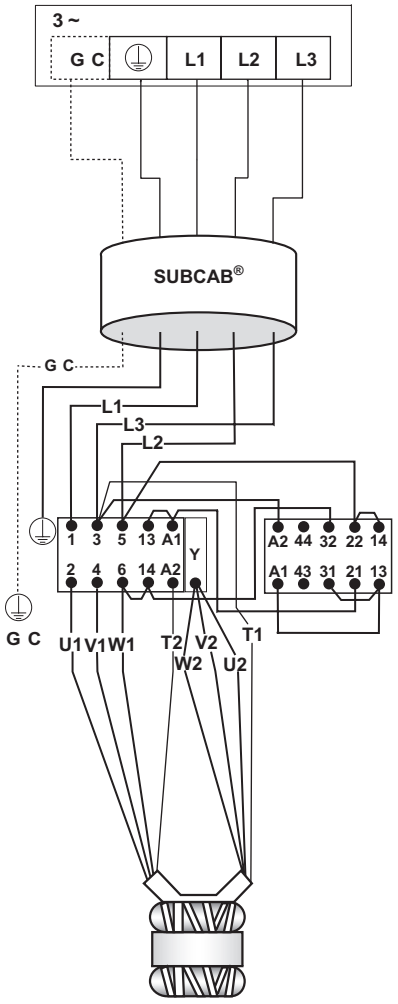


Bild 79

Mains	SUBCAB© Lead	SUBCAB© AWG Lead	Contactor
L1	brown	red	1
L2	black	black	5
L3	grey	white	3
⏚	yellow/green	yellow/green	⏚
Groundcheck GC		yellow	
Control		**Contactor**	
T1, white		3	
T2, white		A2	

Stator leads connection: Stator lead	Contactor
U1, red	2
V1, brown	4
W1, yellow	6
U2, green*	
V2, blue*	
W2, black*	

** Connected together at separate Y-terminal*

CABLE CHART

SUBCAB® 4GX, 6-leads, Y/D

2052,2066,2102

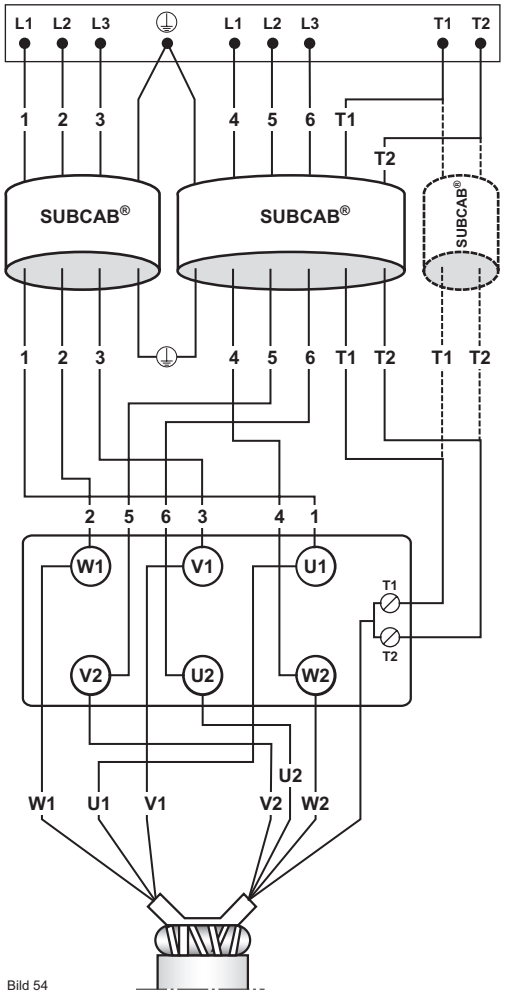


Bild 54

Mains	Lead	Terminal board
L1	brown	U1
L2	black	W1
L3	grey	V1
L1	brown	W2
L2	black	V2
L3	grey	U2
⏚	yellow/green	⏚
Control	**Cable lead**	**Terminal board**
T1	T1	T1
T2	T2	T2

Stator leads connection:

Stator lead	Terminal board
U1, red	U1
W2, black	W2
V1, brown	V1
U2, green	U2
W1, yellow	W1
V2, blue	V2

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.

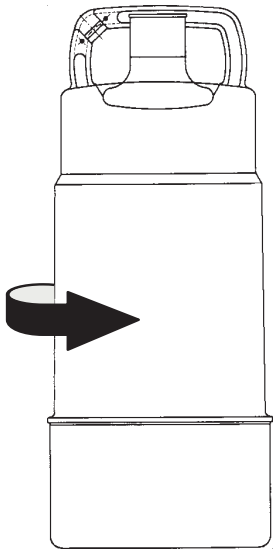
Check that the monitoring equipment (if any) works.

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.

EX-PRODUCT:
See also under chapter "SAFETY - Notes for EX-Products", page 4

Starting jerk



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.

CAUTION:
THERMAL HAZARD
Allow surfaces to cool before starting work, or wear heat-protective clothing.

CAUTION:
CRUSH HAZARD
Make sure that the unit cannot roll or fall over and injure people or damage property.

EX-PRODUCT:
See also under chapter "SAFETY - Notes for EX-Products", page 4

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.

NOTE FOR EX VERSION
All work on the explosion-proof (permissible) motor section must be performed by authorized Xylem personnel. Xylem renounces all responsibility for work done by untrained, unauthorized personnel.

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: - that an oil screw is not sufficiently tight. - that the O-ring on an oil screw or its sealing surface is damaged. - that the mechanical seal is damaged. Contact a Xylem service shop.
Oil quantity	2052 0.2 litres (0.21 US quarts) 2066 0.75 litres (0.79 US quarts) 2102 1.4 litres (1.48 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 Xylem 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: - check that the entry is firmly tightened into its bottom-most position. - cut a piece of the cable off so that the seal sleeve closes around a new position on the cable. - replace the seal sleeve. - check that the seal sleeve and the washers 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.
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	Contact a Xylem 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.

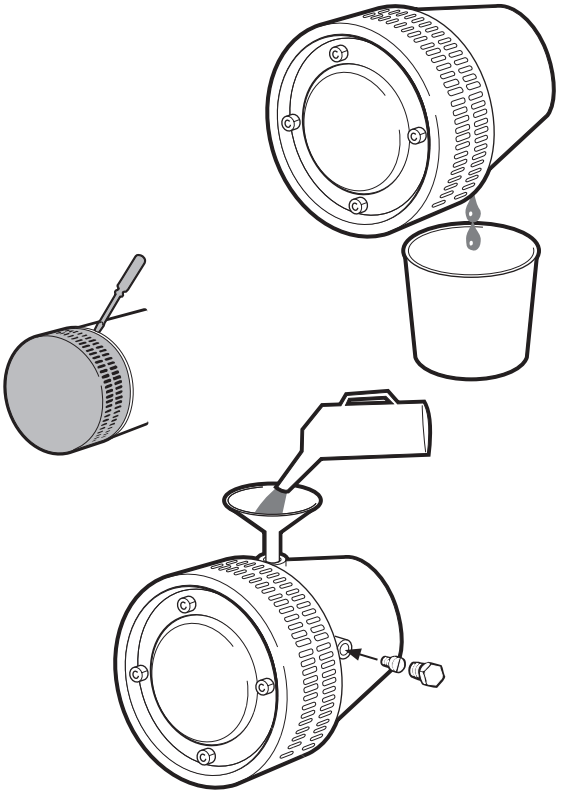
A paraffin oil with viscosity close to ISO VG32 is recommended. The pump is delivered from the factory with this type of oil. In applications where poisonous properties are of less concern, a mineral oil with viscosity up to ISO VG32 can be used.

Oil quantity: see page 24.

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

Tightening torque:

2052	=	7 Nm
2066	=	7 Nm
2102	=	7 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.

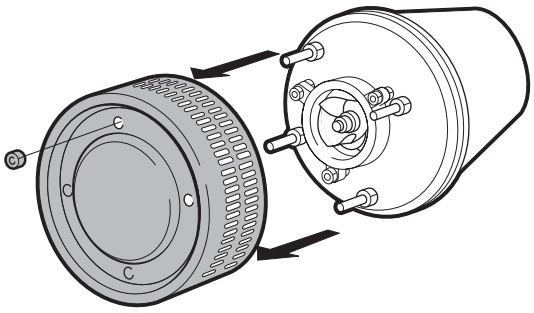
Removing the impeller

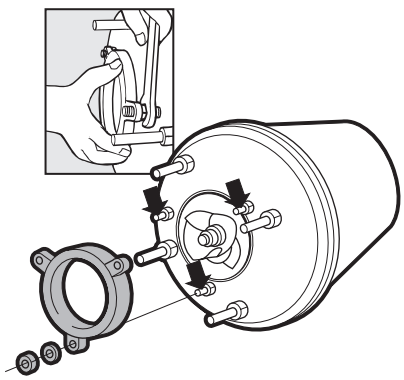
> ***WARNING!***
> ***Worn impellers often have very sharp edges.***

Lay the pump on its side.

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

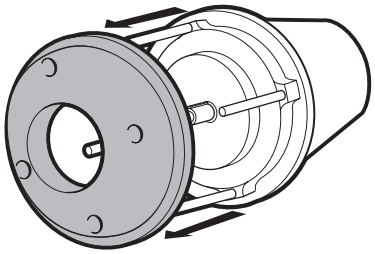
Remove nuts and the suction cover.



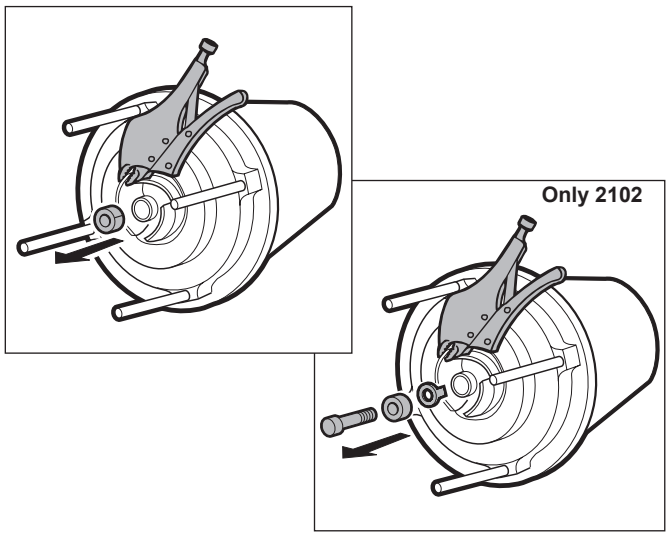


Remove the nuts.

Remove the lower diffuser.



Remove the impeller nut (the screw = 2102).

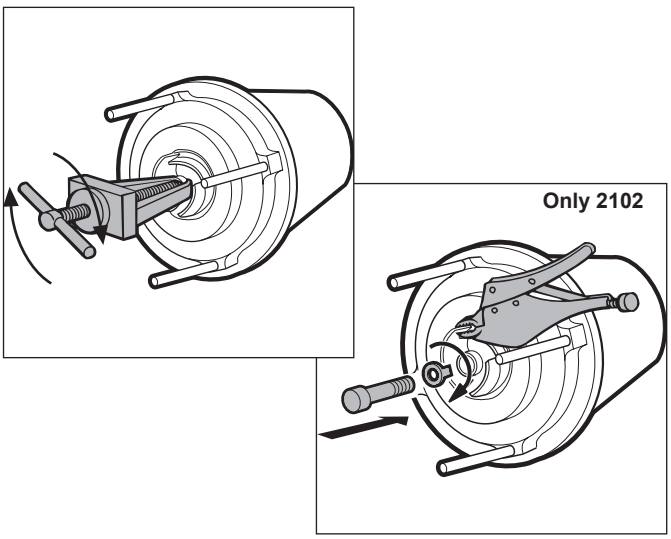


Pull off the impeller.

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

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

Then remove the studs and the diffuser.

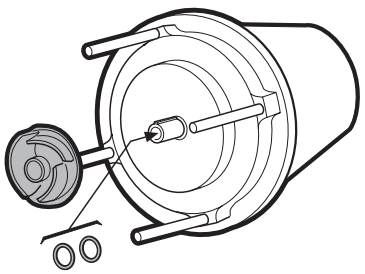


Installing the impeller

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).



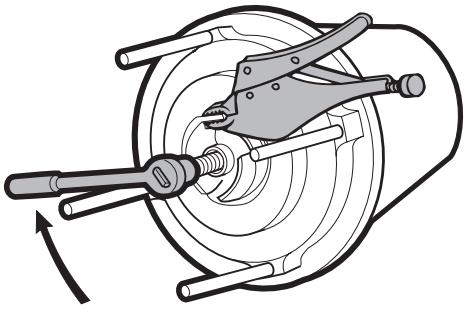
Fit the adjusting studs properly.

Grease end of shaft.

Press the impeller onto the shaft with the impeller nut.

Tighten the impeller nut.

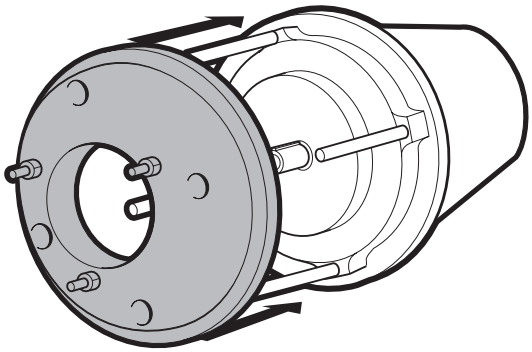
Tightening torque:	2052	30 Nm
	2066	30 Nm
	2102	30 Nm



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.

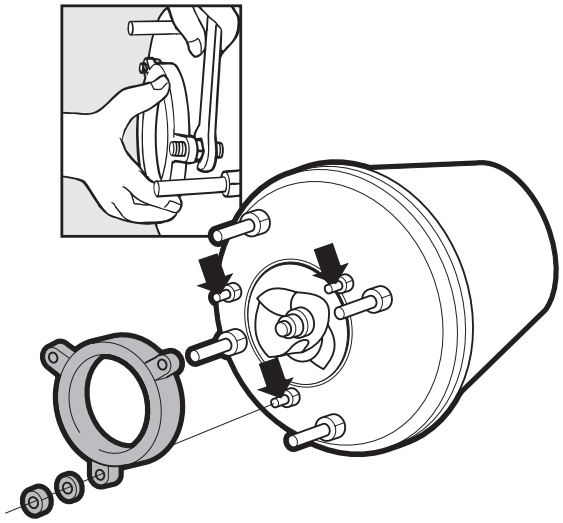
The clearance between the impeller and the suction cover shall be as little as possible.

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.

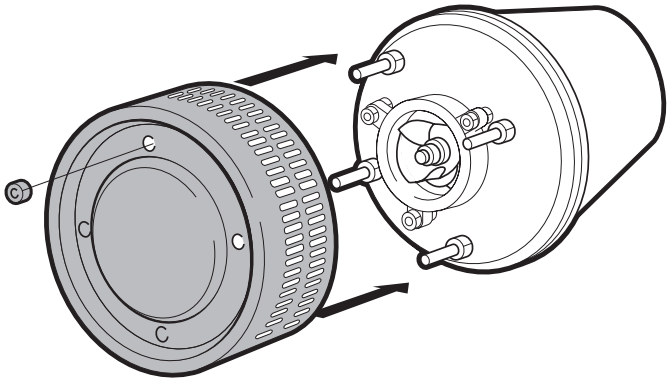
Tighten the nuts evenly all around.

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.

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

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

Start and control equipment

Xylem has suitable start and control equipment for the pump. Contact Xylem 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 Xylem's Tool Catalogue.

Service log

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

Xylem |'zīləm|

1) The tissue in plants that brings water upward from the roots
2) A leading global water technology company

We're a global team unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to www.xyleminc.com

Refer to www.xylemwatersolutions.com/contacts/ for contact details of your local sales and service representative.

xylem
Let's Solve Water

Xylem Water Solutions Global Services AB
361 80 Emmaboda
Sweden
Tel: +46-471-24 70 00
Fax: +46-471-24 47 01
http://tpi.xyleminc.com

Visit our Web site for the latest version of this document.

The original instruction is in English. All non-English instructions are translations of the original instruction.

892682_17.0_EN_GB_2015-09_ICM.2052, 2066, 2102