FLYGT

Workshop manual

4610, 4620

Flygt

ITT Industries

893542/03

PRODUCTS INCLUDED

Standard versions

4610.410
4620.410

Specially approved Versiones (Ex)

4610.490 EEx d IIB T4
4620.490

4610.490 FM: Class I Div.1 Grp. C and D
4620.490 Class II Div 1 Grp. E, F and G
Class III Div. 1

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HOW TO USE THE WORKSHOP MANUAL

This workshop manual describes how to dismantle and assemble products 4610 and 4620 in connection with repair and reconditioning work.

The operative part consists of step-by-step instructions together with illustrations for the different work operations.

In the end you will find exploded views.

Details are also provided of the special tools which do not only facilitate repair work but which are sometimes necessary in order to carry out a particular operation.

We would also like to point out that the practical work involved in compiling this manual has been performed under extremely favourable conditions. We have dismantled and assembled a brand new product. A product which has been in use for a longer period of time has acquired a “patina” and other working methods besides those recommended here will sometimes have to be used.

If the product is specially approved, please read the chapter “Specially approved mixer (Ex)”.

Flygt renounces all responsibility for work done by untrained, unauthorized personnel.

SAFETY PRECAUTIONS

Before starting work on the machine, make sure that the machine is disconnected from the power supply and cannot be energized.

Make sure that the machine can’t roll or fall over and injure people or damage property.

Make sure that the lifting equipment can handle the weight you want to lift and that it is in good condition.

Keep out from suspended loads.

Cut hazard

Worn parts may have sharp edges.

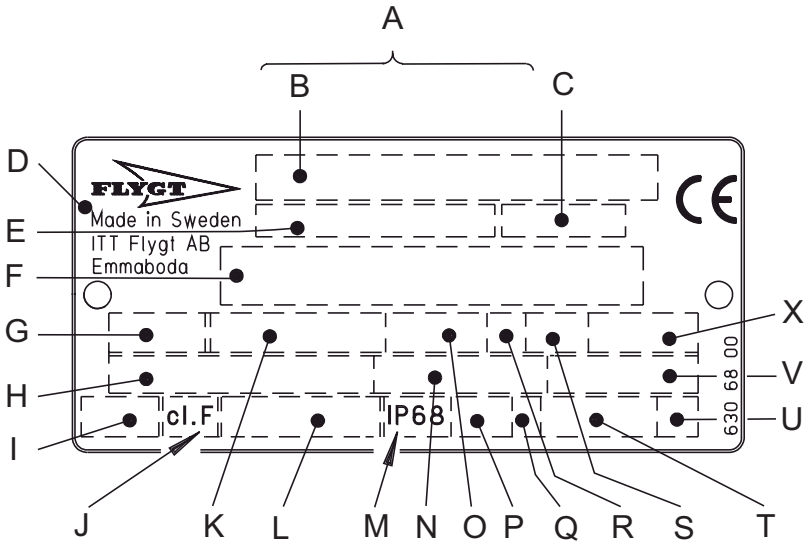
In order to minimize the risk of accident in connection with service work, the following rules should be followed.

- Never work alone. Use a lifting harness (part No. 84 33 02), a safety line (part No. 84 33 03) and a respirator (part No. 84 33 01), as required. Do not ignore the risk of drowning!
- Make sure that there is sufficient oxygen and that there are no poisonous gases present.
- Check the explosion risk before welding or using electric hand tools.
- Do not ignore health hazards. Observe strict cleanliness.
- Bear in mind the risk of electrical accidents.
- Make sure that the lifting equipment and tools are in good condition.
- Provide a suitable barrier around the work area, for example a guard rail.
- Make sure that you have a clear path of retreat!
- Use a safety helmet, safety goggles and protective shoes/gloves.
- All personnel who work with sewage systems should be vaccinated against diseases that can occur.
- A first-aid kit must be handy.

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

DATA PLATE INTERPRETATION

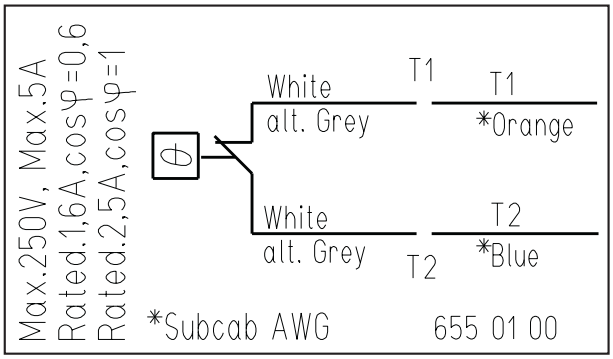
General data plate



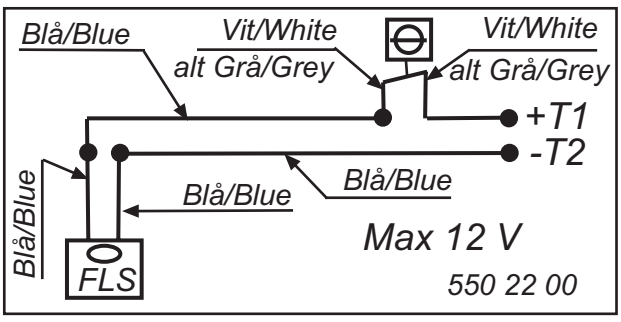
A Serial number
B Product code + Number
C Curve code / Propeller code
D Country of origin
E Product number
F Additional information
G Phase; Type of current; Frequency
H Rated voltage
I Thermal protection
J Thermal class
K Rated shaft power
L International standard
M Degree of protection
N Rated current
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

Connection plate

Monitoring equipment



FLS

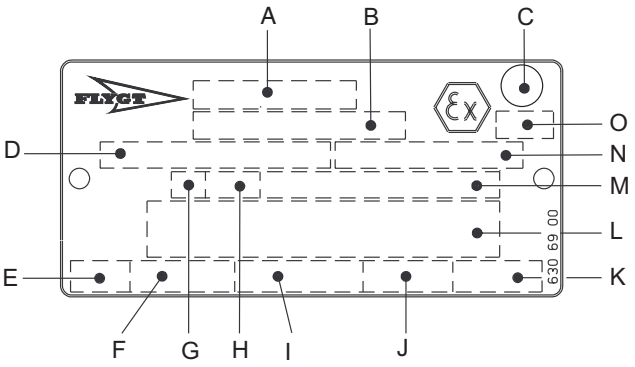


DATA PLATE INTERPRETATION

Approval plates

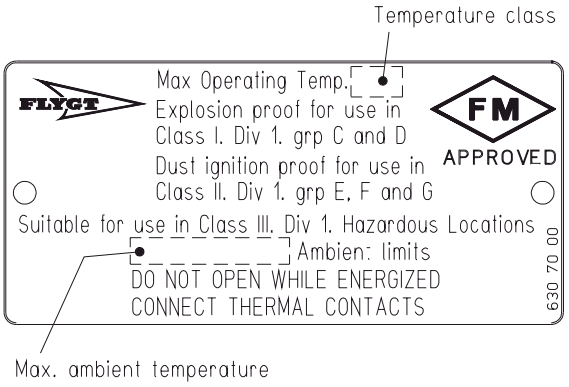
Always together with the general data plate.

EN: European Norm,
ATEX Directive
EN 50 014, EN 50 018, EN 1127-1,
Ex II 2 G EEx dII T4



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

FM: Factory Mutual,
Class I Div. I Grp C and D
Class II and III Div. I Grp E, F and G



TECHNICAL DATA

For weight, amperages, voltages, power ratings and speed, please refer to the data plate of the machine.

Lubricants

Part No	Denomination
90 17 52	Oil (Mobil Whiterex 309)
90 18 00	Oil (Castrol iloform BWN 205)

Checking of seal tightness

The seal tightness can be checked by following procedure:

1. Make sure that there is no oil in the oil housing.
2. Apply a pressure in the oil housing (use the oil filling hole).

   - Applied pressure should be about 0.5 bar and never above 1 bar as seal rings then might be pushed out of position or seal may open.
   - An accurate pressure gauge with high resolution is needed to keep test time at a reasonable level.

3. Maximum allowed pressure drop over a certain period of time is calculated as:

$$\Delta P_{max} = 0.017 * P_o * t/V \text{ [bar]}$$

P_o = pressure in test object [bar]
t = test time [min]
V = the volume of the test object (lit)
ΔP_{max} = pressure drop in test object [bar]

4. Location of any leak can be determined with soap water.

Monitoring equipment

Three thermal contacts are incorporated in the stator and are normally closed. The thermal contacts can be connected to:

- maximum of 250 volts
- breaking of 5 amps. current at maximum.
- rated 1.6, cosφ = 0.6
- rated 2.5, cosφ = 1

Connect the thermal contacts to the starter. See connection plate, page 4 (or on connection house).

Winding resistances at 20°C (68°F)

	Stator No	50 Hz Resistance	60 Hz Ohm/Phase
4610 3 Phase	640 67 01	12.6	9
	02	15.4	7.3
	03	19.7	19
	04	42.5	–
	05	3.15	–
	06	–	11
	07	–	21
4620 3 Phase	64068 01	6.91	6.91
	02	8.62	–
	03	10.7	10.7
	04	21.2	–
	05	1.72	–
	06	–	4.73
	07	–	1.29
4620 1 Phase	64072 01	4.58[1)]	–
		7.87[2)]	–
	02	3.37[1)]	–
		6.02[2)]	–
	03	1.15[1)]	–
		1.97[2)]	–
	04	–	3.06[1)]
		–	5.20[2)]
	05	–	2.30[1)]
		–	4.00[2)]
	06	–	0.764[1)]
		–	1.30[2)]

[1)] Main phase [2)] Auxiliaru phase

SPECIALLY APPROVED MIXER

This chapter describes the specially approved mixer versions 4610.490 and 4620.490. For identification, see the mixer data plate and approval plate.

Specially approved mixers may only be repaired and adjusted by Flygt workshop and/or workshop personnel authorized by Flygt.

General

In a specially approved product (explosion proof) the gaps between different parts, for example the bearing holder and the stator casing unit, shall prevent any sparks from the interior of the machine from getting out and igniting surrounding gases.
All joint widths and gaps shall be measured with accurate and calibrated instruments. All joint surfaces shall be inspected. No scratches, tool marks or the like are permissible.
Failure to meet the above requirements may render the special approval **invalid.** Note that the work requires experienced and specially trained personnel.
To ensure that the product complies with the regulations
and approval of the authorities, use only genuine Flygt spare parts when carrying out repair work.
Always check the dimensions of vital parts before assembly, see picture.
The assembled machine shall always be insulation-tested
and test-run before delivery.

Workshop repair

The product must be thoroughly examined and a report must be prepared on all findings. Any measurements, dimensional checks, test regardings, details of materials,
parts of windings which are found require attention should be carefully noted.
If the products have been modified and does not comply with original approval, the owner must be informed and further information on the application must be requested.
If there are any doubts during the repair as to the results of measurements, tests, the continued integrity of parts or possible reclamation of damage parts, reference must be made to your local Ex Coordinator.

Guidelines for repair

Dismantling

When dismantling Ex approved products, care must be taken as damage to flameproof faces can easily occur. For instance, if difficulties are found in separating
spigoted joints, draw studs should be used wher-ever possible rather than trying to wedge the compo-nents apart, as not only will damage occur at the point of wedging, but the wedges are liable to be driven through and damage the flamepath surface of the spigot.
Similarly, care should be exercised when removing the main bearing assembly and bearing holder to ensure that damage does not occur on the parts that constitute the flamepath.
Unless obviously damaged through either mechanical injury or dry or wet burn out, the stator winding should not be removed until preliminary testing has been done to determine the condition of the stator winding and monitoring devices, i.e. overtemperature thermal switches.
The users instruction should be consulted to verify whether the machine has been returned for repair because of electrical problems, such as operation of overload, short circuit or tripping out on an earth trip leakage device.
Once the machine has been completely dismantled, detailed examination of all parts should be made and a concise record kept of all findings.

Assembling

Before assembling an Ex approved product, measure the gaps and the joint widths. Inspect the joint surfaces and smear them with grease to prevent corrosion.
If a part does not meet the requirements on dimensional
accuracy or surface finish, it must be discarded and a new specially approved part ordered. The new part must also be inspected.
Observe caution during assembly to prevent damage to the joint surfaces.

Flamepaths

Which parts require special examination can be ascertained by refering to the Spare parts list and dimensional checks.
The flamepaths should be examined for any corrosive pitting or damage which may have occured.
All castings should be examined for blow holes or hairline cracks. If there is evidence that there has been an internal explosion of gases, this may be confirmed by the user and will probably be evident by smoke and debris tracking across the flamepaths.

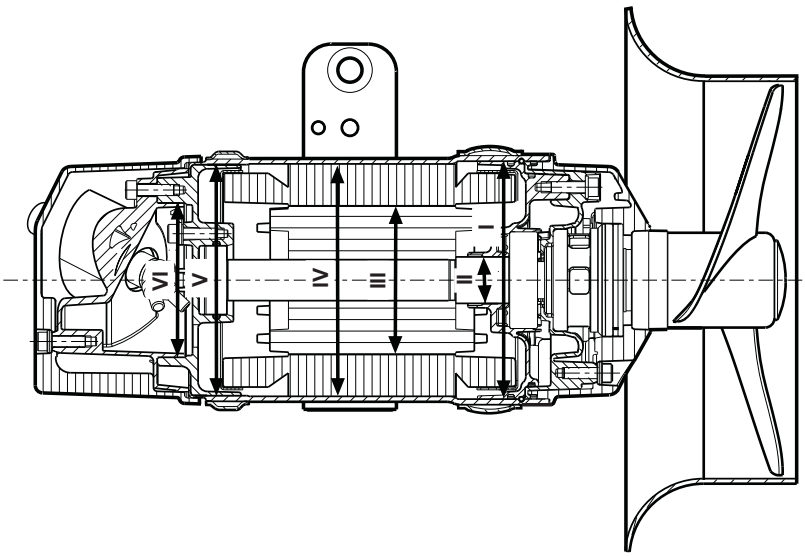
SPECIALLY APPROVED MIXER

Also violent damage will possibly have occurred to the stator windings, stator leads and terminal boards or bushings. In such cases, consideration should be given to the renewal of all parts forming the flameproof enclosure.
Using the dimensional check information for the particular
product under repair, the length of all flamepaths can be measured using a vernier type gauge (the type incorporating a depth gauge is particularly suitable for this purpose).
When measuring flamepaths on spigoted parts, care should be taken to measure only from the outer edge of the flamepath to the outer edge of the “O” ring groove. It would be unusual for these measurements to be wrong as any corrosive or mechanical damage affecting the length of the flamepath would be evident by visual inspection.
The flameproof gap is ascertained by measuring the outside diamater (OD) of the spigoted or male part and the inside diameter (ID) of the female part of the casting into which it fits. Measurements should be taken at several points on the circumference and the smaller (in case of OD) and the larger (in case of ID) should be used to calculate the diametral clearance. Micrometers should be used for taking measurements. The calculation is simply to subtract the OD of male part from the ID of the female part into which it fits.

Care and experience is required when taking any of these measurements, as the tolerances are very fine. For measuring the inside circumference of the stator core or the outside diameters of rotors, special measuring tools are required. Shaft outside diameter and inside diameters of bearing casing etc. can be measured using micrometers.
The flameproof gaps should be calculated, recorded and checked against the dimensional check table for the product under repair.

Stator and rotor
Prior to examining the stator casing, preliminary electrical testing of the stator winding should be undertaken. This requires an insulation test between windings and earth and between windings, for single phase also between windings and auxiliaries.
The two monitoring cores should be short circuited together during this test. A suitable test with a 1000 volt megger would be 20 MΩ.
The continuity of the thermal switches should be measured to ensure their continued integrity. In the rare case when thermistors and PT100 elements are used, they can be tested using a digital type high impedance instrument.

Joint	Length of joint mm	Diameter mm		Gap of joint mm	
				min	max
I	> 12,5	128 +0,15/-0	128 h7(0/-0,04)	0	0,19
II	> 12,5	25,239 H6(+0,013/-0)	25 h5(+0/-0,009)	0,239	0,261
III	min. 69,0	80 JS9(±0,037)	79,3 h9(+0/-0,074)	0,663 k = 0,05	0,811 m = 0,3
IV	min. 69,35	125 -0,03/-0,1	125 k9(+0/-0)	Shrinkfit	
V	> 12,5	124,3 +0/-0,2	124,4 ±0,05	Shrinkfit	
VI	> 12,5	83 H8(+0,054/-0)	83 h8(+0/-0,054)	0	0,108



DISMANTLING / ASSEMBLY

Dismantling

Before starting

WARNING!
Before starting work on the machine, make sure that the machine is isolated from the power supply and cannot be energized.This applies to the control circuit as well.

Before starting the work on the machine, make sure that all tools are at hand (see list).

Make sure that O-rings and any other parts that are to be replaced are set out.

Clean the outside of the mixer before.

In the dismantling/assembly instructions the position numbers in parenthesis refers to the exploded views on page 25 and 26.

Specially approved mixers may only be repaired and adjusted by Flygt workshop and/or workshop personnel authorized by Flygt.

Tools

1. Screwdrivers
2. Hexagon socket wrench
   - 13 mm
3. Hexagon socket head cup wrench
   - 5 mm
   - 6 mm
4. Torque wrench (7 - 17 Nm/5.2 - 12.6 ft/lb)
   hexagon socket head cup
   - 6 mm
   screwdriver socket bit
   - 12 mm
5. Screw M12 x 60 turned down to ∅ 6 mm over a length of 20 mm
6. Screw M8 x 50
7. Nippers for cutting closed end splices
8. Circlip pliers, SgA 20

9. Puller (84 13 62)
10. Puller (84 20 48)
11. Bearing mounting set, SKF (84 15 45)
    or
    - tube D_i= 12 mm, D_y=19 mm for the smaller bearing
    - tube D_i= 42 mm, D_y=52 mm for the larger bearing (outer ring)
    - tube D_i= 20 mm, D_y=30 mm for the larger bearing (inner ring)
12. Club
13. Knife
14. Stripping tongs
15 Pliers for clamping closed end splice
16. Funnel
17. Oil tray
19. Screw vice
20. Drift, ∅ 24 mm
21. 2 stiff wires (l=400 mm) with a flatten bend end
22. Tube for shaft. D_i=23 mm, D_y=30 mm

1. Dismantle the jet ring (208, 210) and the guiding claw unit (207).

a. Undo and remove the screws, washers and nuts.

Tool: hexagon socket wrench (13 mm), hex. socket head cup wrench (6 mm)

b. Remove the clamp.

c. Lift off the jet ring.

d. Dismantle the guiding claw unit in the same way.

2. Remove the propeller.

a. Remove the plastic plug (94).

Tool: screwdriver

b. Undo the central screw and washer.

Tool: hex. socket head cup wrench (6 mm)

c. Lift off the propeller together with screw and washer.

Cut hazard

A worn propeller may have sharp edges

3. Check for seal leakage.

a. Attach the mixer in a screw vice. Use the lifting handle (131) as attachment.

b. Undo and remove the inspection screw (with O-ring

Tool: screwdriver

d. Undo the mixer from the screw vice and turn the mixer upside down over an oil tray. If any liquid runs out , the seal is worn out and has to be replaced.

4. Empty the oil (and check for water in oil).

a. Remove both oil screws (and O-rings).

b. Tap all oil in an oil tray. Turn the mixer back and forth to make sure that all oil is tapped.

Tool: Oil tray

c. Check if there are any water in the oil. If there are, the seal is worn out and has to be replaced.

5. Dismantle the oil housing (63).

a Attach the mixer to the screw vice.

b. Undo and remove the screws (and seal washers).

Tool: hex. socket head cup wrench (5 mm).

c. Fit M12 x 60 screws to the oil filling holes.

d. Press off the oil housing by tighten the screws alternately.

Tool: screw M12 x 60

e. Remove the O-rings (24) and (27).

f. Wipe off any oil inside the oil housing. repeat step 2 and 5.

6. Dismantle the plug-in seal (80).

a. Remove the retaining ring.

Tool: circlip pliers (SgA 20)

b. Dismantle the plug-in seal from the shaft.

7. Dismantle the bearing cover (64).

a. Remove the O-ring (24).

b. Undo and remove the screws. Discard the washers.

Tool: hex. socket head cup wrench (5 mm)

c. Use the M12 x 60 screw to undo the bearing cover.

Tool: screw M12 x 60

8. Remove the spring (55).

a. Knock gently on the bearing casing.

Tool: club

b. Remove the spring carefully with two screw drivers.

Tool: screwdriver

9. Dismantle the entrance flange (121).

a. Turn the mixer in the screw vice (cable entry facing upwards).

b. Undo and remove the screws (and seal washers).

Tool: hex. socket head cup wrench (5 mm)

c. Dismantle the entrance flange.

d. Remove the clamp (112).

e. Move the cable entry parts by the cable.

10. Dismantle the entrance cover (124).

a. Undo and remove the screws (and seal washers).

Tool: hex. socket head cup wrench (5 mm).

b. Move the entrance cover by the cable.

11. Dismantle the connection housing (123).

a. Remove the O-ring (29) by the cable.

b. Undo and remove the screws.

Tool: hex. socket head cup wrench (5 mm).

c. Lift off and move the connection housing by the cable.

12. Disconnect the cable.

a. Cut the closed end splice of each conductor with a nippers.

Tool: nippers

13. Remove all parts from the cable.

14. Dismantle the shaft-rotor unit (60).

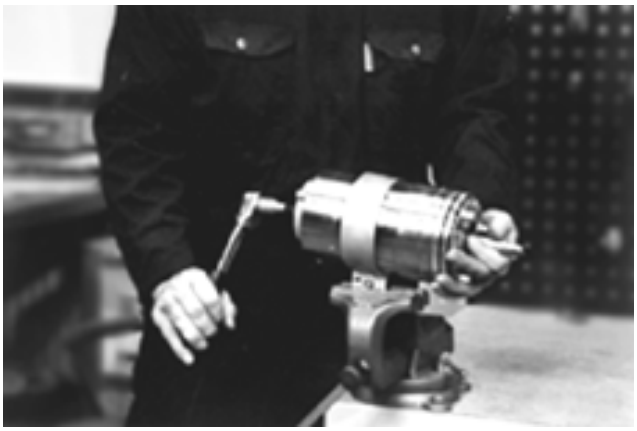
a. Fit the screw to the back end of the stator housing unit (the bearing casing).

Tool: screw M8 x 50

b. Press out the shaft-rotor unit by tighten the screw while holding the shaft-rotor unit with the other hand.

c. Remove the screw.

d. Undo the stator housing unit from the screw vice.



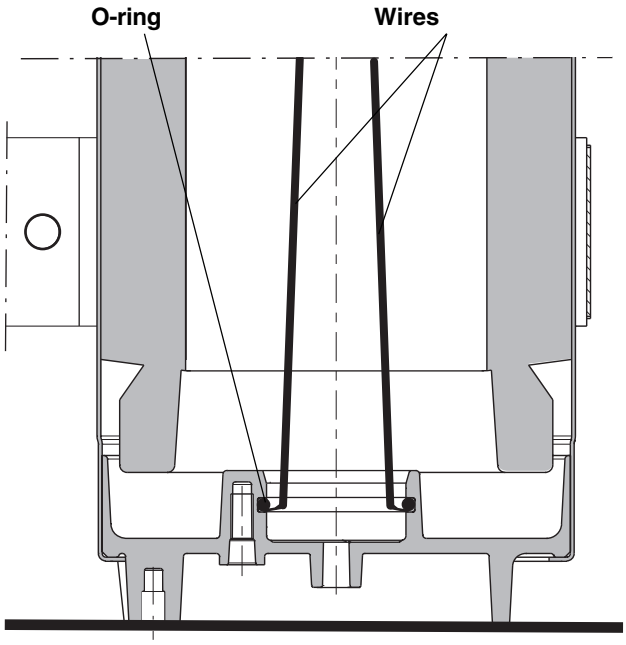
15. Remove O-ring (61.2) from the stator housing unit.

a. Put the stator housing unit on the work bench.

b. Remove the O-ring from the groove.

Tool: stiff wires

c. Turn the stator housing upside down to get the O-ring out.



16. Remove the O-rings from bearing casing (62).

a. Fit the propeller screw (8) to the shaft end to protect it from damage.

b. Remove the O-rings.

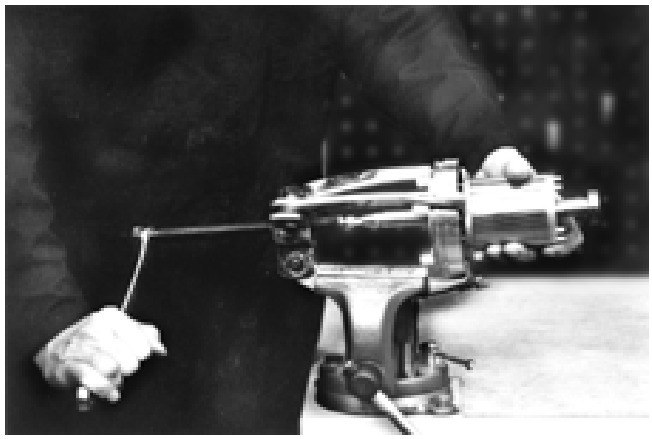
17. Dismantle the bearing casing (62) from the shaft-rotor unit (60).

a. Fit the puller.

Tool: puller 841362

NOTE!

Only a puller with three claws must be used. Otherwise the bearing casing may be damaged.



b. Attach the shaft-rotor unit to the screw vice. Use the puller as bracket.

c. Tighten the puller screw while holding shaft-rotor unit with the other hand.

d. Remove the puller.

18. Dismantle the bearing (50) from the rotor-shaft.

a. Attach a tube to the screw vice.

Tool: tube for shaft

b. Place the shaft-rotor into the tube.

c. Fit the puller to the bearing.

Tool: puller 842048

d. Pull the bearing off.

19. Dismantle the bearing (51) from the bearing casing.

a. Place the bearing casing on the work bench.

b. Knock the bearing off with a drift.

Tool: drift (D=24 mm)

Assembling

Before starting the work:

- Clean all parts throughly, particularly O-ring grooves.

1. Assemble the bearing (51) and the bearing casing (62).

a. Place the bearing casing on the work bench.

b. Fit the bearing in position with the bearing designation upwards.

c. Knock on the outer bearing ring with a drift until bearing is in place.

Tool: SKF B20-52 or tube (D_i=42 mm, D_y=52 mm)

2. Fit the bearing casing to the shaft-rotor unit (60).

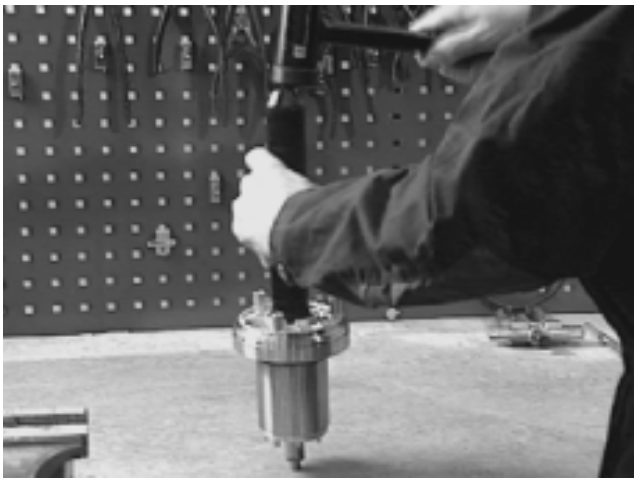
a. Place the shaft-rotor unit on the work bench.

b. Fit the bearing casing.

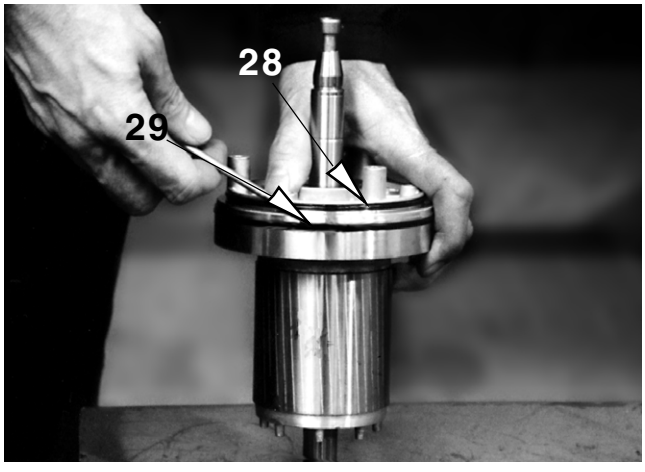
c. Tap the bearing in place.

Tool: SKF B20-52 or tube (D_i=20 mm, D_y=30 mm)

d. Fit the O-rings to the bearing casing.



3. Fit the O-rings (28 and 29) to the bearing casing.



4. Assemble the back bearing (50) to the shaft-rotor unit.

a. Attach a tube to the screw vice.

Tool: Tube D_i=24 mm

b. Place the front shaft end into the tube.

c. Fit a new bearing to the back shaft end.

d. Tap the bearing is in place.

Tool: SKF A12-37 or
tube D_i=12 mm, D_y=19 mm

5. Fit O-ring (61.2) to the stator housing unit.

a. Let the O-ring slide down in place by a screw driver.

Tool: screwdriver

b. Use two screwdrivers to place the O-ring to the O-ring seat.

Tool: screwdrivers

6. Assemble the shaft-rotor unit and the stator housing unit.

a. NOTE! Attach the stator housing unit to the screw vice.

b. Place the shaft-rotor unit into the stator hous ing and press.

c. Turn the shaft rotor in right position.
The “Down” mark on the bearing casing (64) should point at the same angle as the “Down” mark on the back bearing casing (62).

d. Knock gently on the shaft end with a club to get the shaft-rotor unit in place.

Tool:club

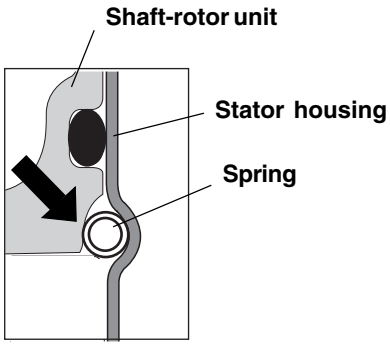
e. Check that the spring groove is visible. If not, the bearing casing was not mounted in correct position on the shaft. Repeat step 2 and 5.

7. Fit the spring (55).

a. Fit the spring to the groove in the stator housing. Using a screwdriver will facilitate the mounting.

Tool: screwdriver

b. Pull the shaft-rotor unit against the spring.



8. Fit the bearing cover (64).

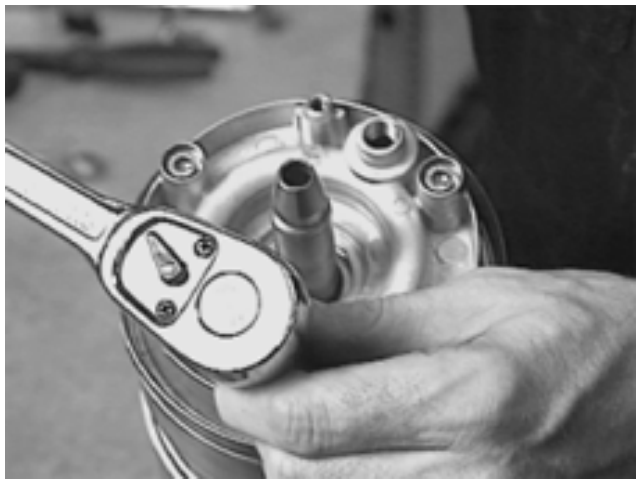
a. Fit the bearing cover.The "Down" mark on the bearing cover should point at the same angle as the "Down" mark on the back bearing casing (62).

b. Fit new washers (19) to the screws.

c. Fit the screws and washers and tighten alternately to *7-11 Nm/5.2-8.2 ft lb.*

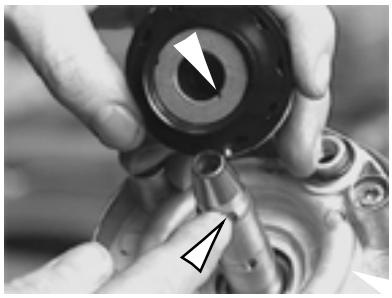
Tool: hex. socket head cup wrench (5 mm)

d. Check that the shaft rotates free.



9. Fit the plug- in seal.

a. Turn the seal unit so that the carrier lip fits into the shaft groove. Press the seal in correct position.



10. Fit the retaining ring.

> **NOTE!**
>
> **The retaining ring has one flat and one crowned side. The crowned side should face the seal.**

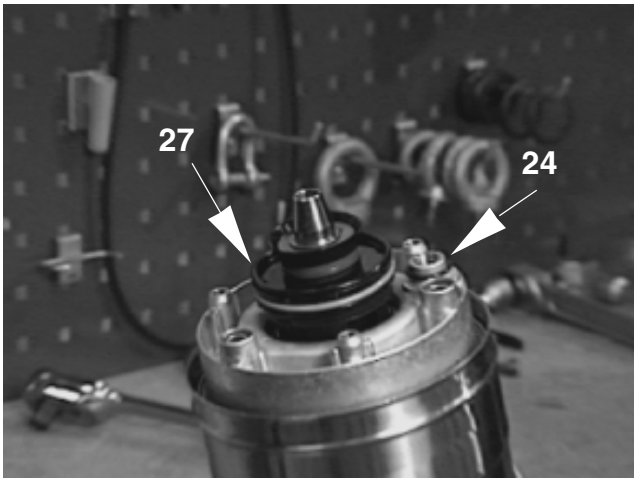
a. Make sure that the retaining ring has entered the groove (check by knocking with a screw driver on the ring).

Tool: circlip pliers, screwdriver

11. Fit O-rings (27) and (24).

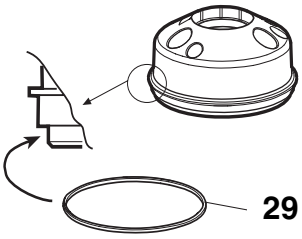
a. Place the O-ring (27) concentric on the plug-in seal.

b. Fit O-ring (24) to the inspection hole.



12. Fit the oil housing (63).

a. Fit the O-ring (29) to the oil housing.



b. Turn the oil housing inright position and fit it. The inspection holes in oil housing and bearing cover should face each other.

c. Fit the screws (and seal washers) and tighten alternaty to *7 Nm/5.2 ft lb*.

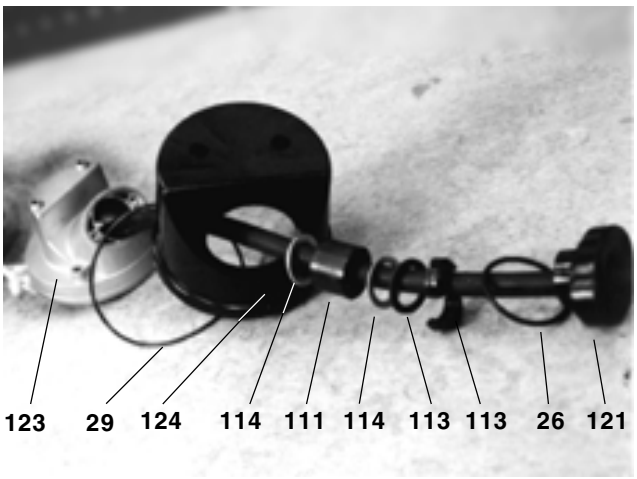
Tool: hex. socket head cup wrench (5 mm)

13. Connect the cable to the mixer.

a. Thread following parts in order on to the cable: entrance flange (121) with O-ring (26) , gasket (113), washer (114), seal sleeve (111), washer (114), entrance cover (124) with O-ring (29) , connection housing (123).

b. Strip the outer isolation over a length of 8 cm (3.1”) and the leads.

Tool: knife, stripping tongs, pliers



NOTE!

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

14. Connect the stator leads and cable leads

a. Connect the leads with closed end splices according to the wire diagram.

All electrical equipment must be earthed (grounded). This concerns the machine as well as any control or monitoring equipment. It is an extreme danger to life not to follow the above warning. Ensure that the ground connection is actually completed back to ground by testing the ground circuit.

Leads not in use must be isolated

Cable

Cable leads colour	Connection starter	Cable leads colour	Connect. starter
SUBCAB 4x1.5+2x1,5 mm		**SUBCAB® 14AWG/7**	
brown	L1	red	L1
blue	L2	white	L2
black	L3	black	L3
yellow/green	earth	yellow	GC**
black T1	T1*	yellow/green	earth
black T2	T2*	orange	T1*
		blue	T2*

HCR SO7E6E5-7

black 1	L1
black 2	L2
black 3	L3
black 4	T1*
black 5	T2*
black 6	–
yellow/green	earth

Stator

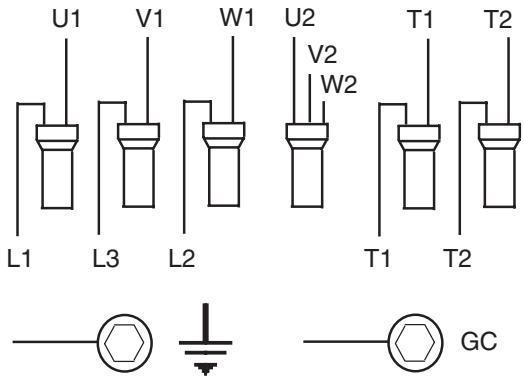
Stator leads colour

3 phase		*1 phase*	
U1	Red	U1	Red
V1	Brown	U2	Brown
W1	Yellow	Z1	Yellow
U2	Green	Z2	Black
V2	Blue	T1*	White
W2	Black	T2*	White
T1*	White		
T2*	White		

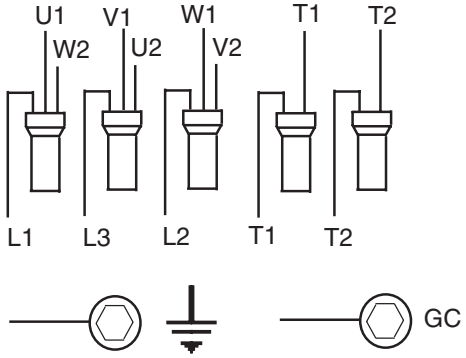
* Terminal for connection of thermal switches in motor and monitoring equipment.

** GC = Ground Check

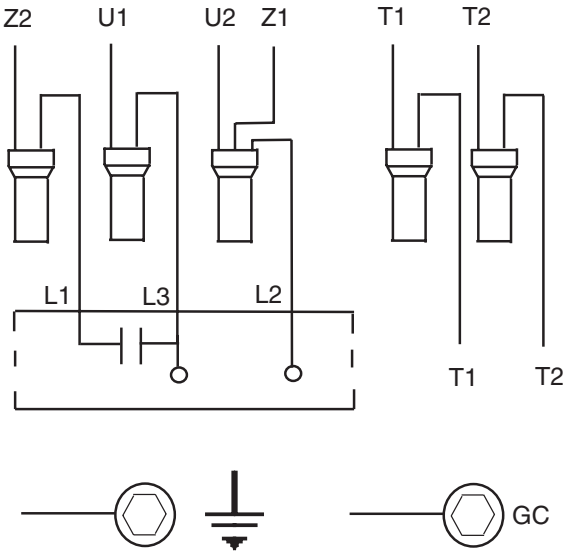
3 phase 6 lead stator, Y



3 phase 6 lead stator, Δ



1 phase, 4 lead stator



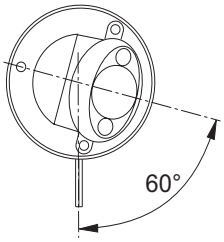
15. Fit connection housing (123).

a. Attach the connection house to the mixer. The cable should be streched.

b. Fit the screws and tighten to *7 Nm/5.2 ft lb*.

Tool: hex. socket head cup wrench (5mm)

c. Note the polar position.



16. Fit entrance cover (124).

a. Fit O-ring (29) on to the connection housing.

b. Fit entrance cover.

c. Fit the screws (and seal washers) and tighten to *7 Nm/5.2 ft lb*.

Tool: hex. socket head cup wrench (5 mm)

17. Assemble the entrance flange (121).

a. Bring in the cable into connection housing.

b. Bring in the washer, the seal sleeve, the washer, the gasket and the clamp into the entrance hole in the entrance cover.

c. Press the assembly in place together with the entrance flange.

d. Fit the screws (and seal washers) and tighten alternately (important!) to *7 Nm/5.2 ft lb*.

Tool: hex. socket head cup wrench (5 mm)

18. Oil filling.

a. Fit inspection screw (with O-ring).

b. Fill up with new oil *(0.15 lit/0.16 qt)* in one of the oil holes.

Tool: funnel

Part No	Denomination
90 17 52	Oil (Mobil Whiterex 309)
90 18 00	Oil (Castrol iloform BWN 205)

c. Fit both oil screws (with O-rings).

d. Tighten inspection and oil screws to *10 Nm/7.4 ft.lb.*

Tool: torque wrench (with screwdriver socket bit 12 mm)

19. Mount the propeller.

a. Attach the propeller to the shaft.

b. Fit screw and washer and tighten to *17 Nm/12.6 ft lb*.

Tool: torque wrench (6 mm)

c. Press the plastic plug (94) in place.

20. Assembly the jet ring (208, 210) and guiding claw unit (207)

a. Attach the mixer to the screw vice.

b. Fit the jet ring. It should be placed against the lifting handle. Note the polar position.

c. Fit the clamp, screws, washers and nuts and then tighten.

d. Make sure that the propeller rotates free from the jet ring.

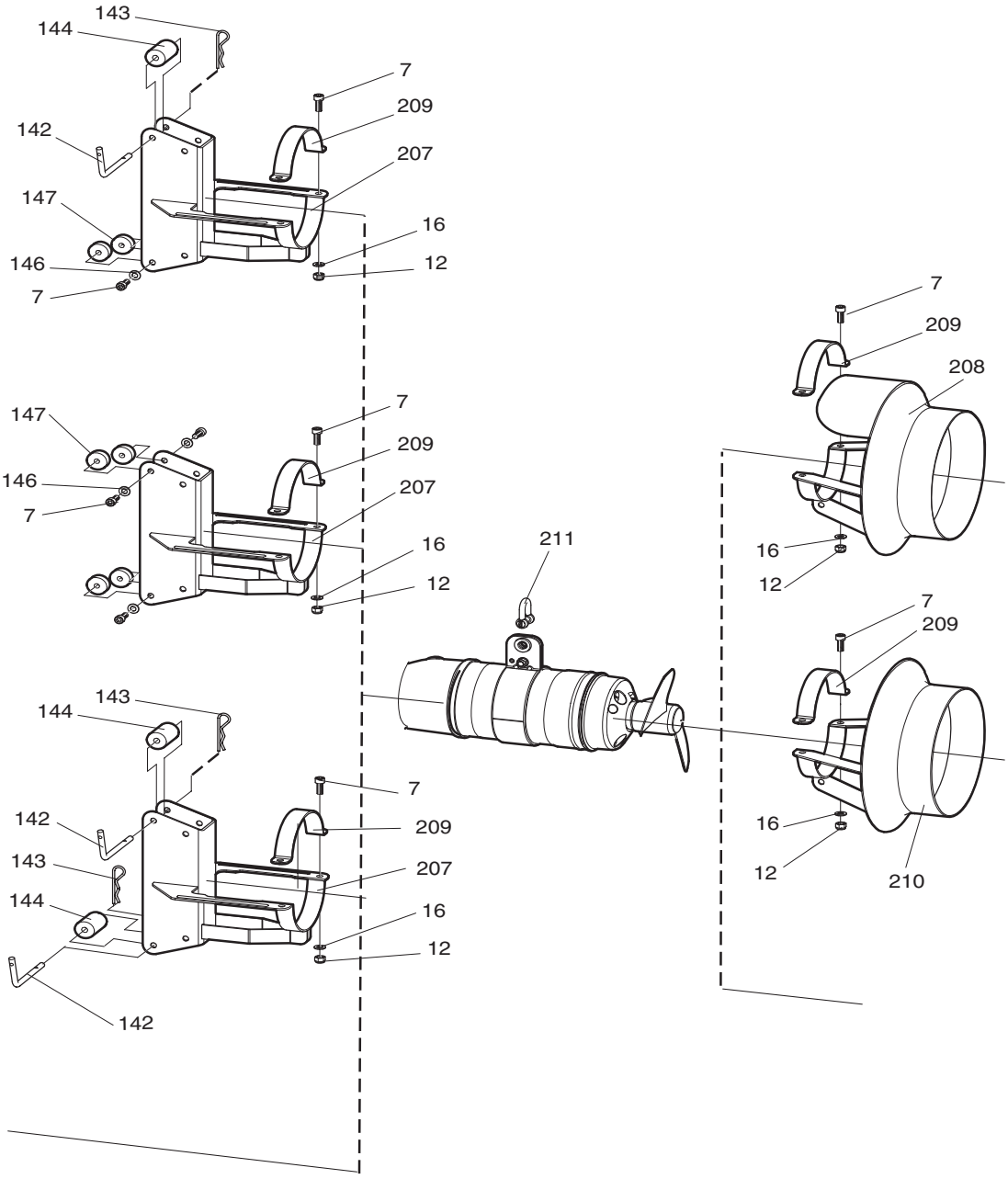
e. Assemble the guiding claw unit in the same way.

Tool: hexagon socket wrench (13 mm), hex. socket head cup wrench (6 mm)

NOTES

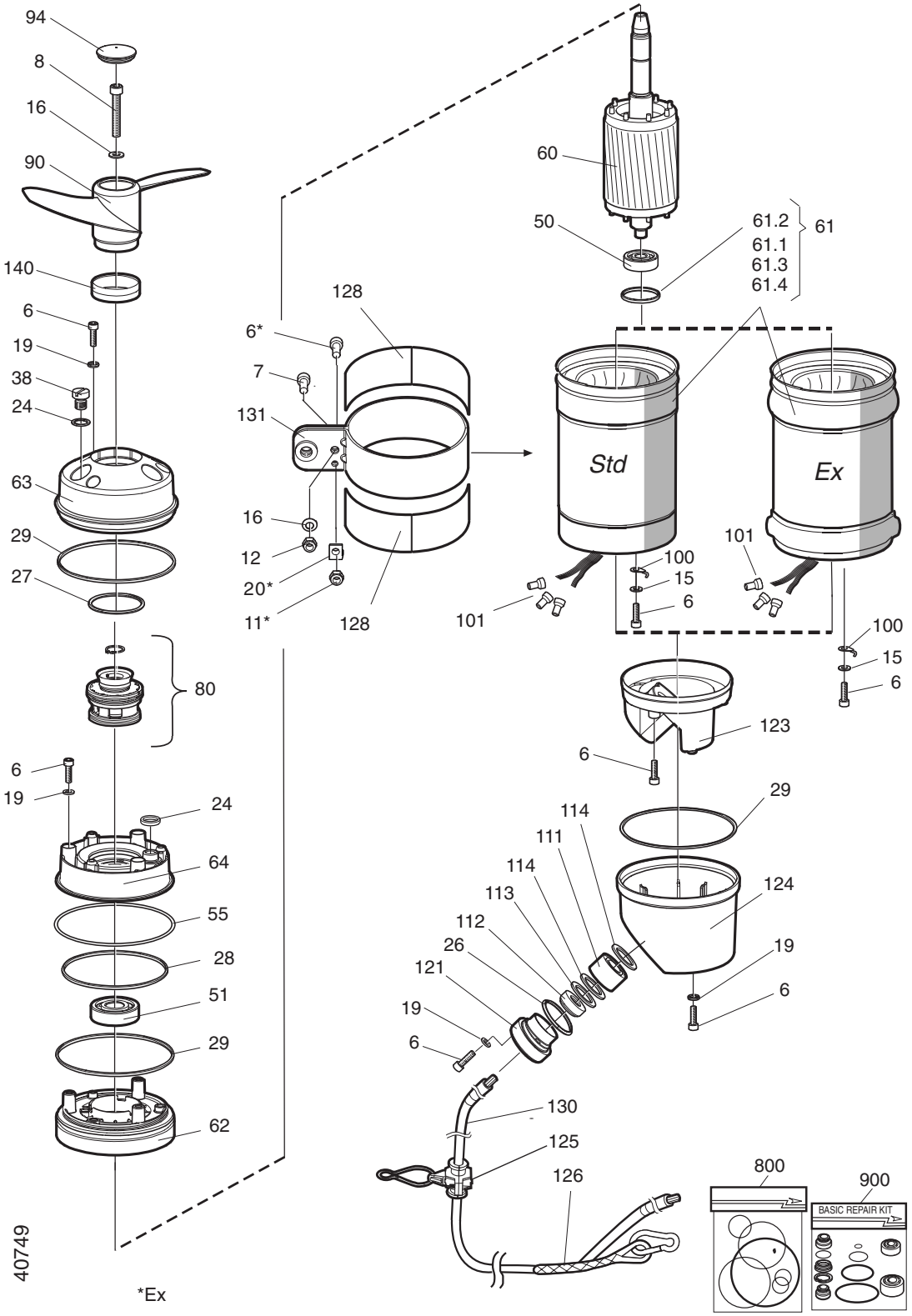
EXPLODED VIEW

Accessories



EXPLODED VIEW

4610
4620



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