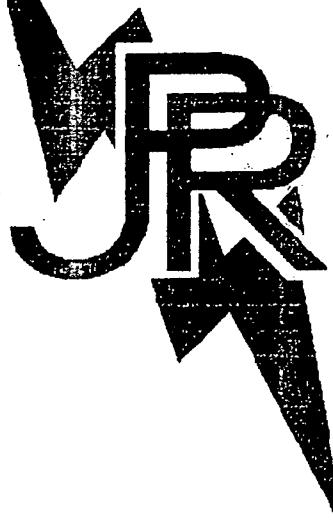


SP279



J. & P. RICHARDSON INDUSTRIES PTY. LTD.  
A.C.N. 001 952 325



**BRISBANE CITY COUNCIL  
SEWERAGE PUMPING STATION**

**1925 GYMPIE ROAD BALD HILLS  
PUMPING EQUIPMENT AND SWITCHBOARD  
OPERATION AND MAINTENANCE MANUAL**

BY  
J & P RICHARDSON INDUSTRIES PTY LTD  
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Ph. (07) 3271 2911  
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1.0 PUMPS

2.0 TEST CERTIFICATES

3.0 VALVES

4.0 TELEMETRY

5.0 "AS CONSTRUCTED" DRAWINGS

## 1.0 PUMPS

SUPPLIER: ITT FLYGT LTD  
14A DEVLAN STREET  
MANSFIELD QLD 4122

PH: (07) 3849 7477  
FAX: (07) 3849 7633

MODEL: FLYGT CP3102.180 MT 430 IMPELLER

SERIAL NO: 9840355 & 98340356

MOTOR KW RATING: 3.1 KW

MOTOR SPEED: 1450 RPM

FULL LOAD CURRENT: 6.1 AMPS

VOLTAGE: 415 V



3085  
3102  
3127

## INSTALLATION, CARE AND MAINTENANCE



**ITT Flygt**

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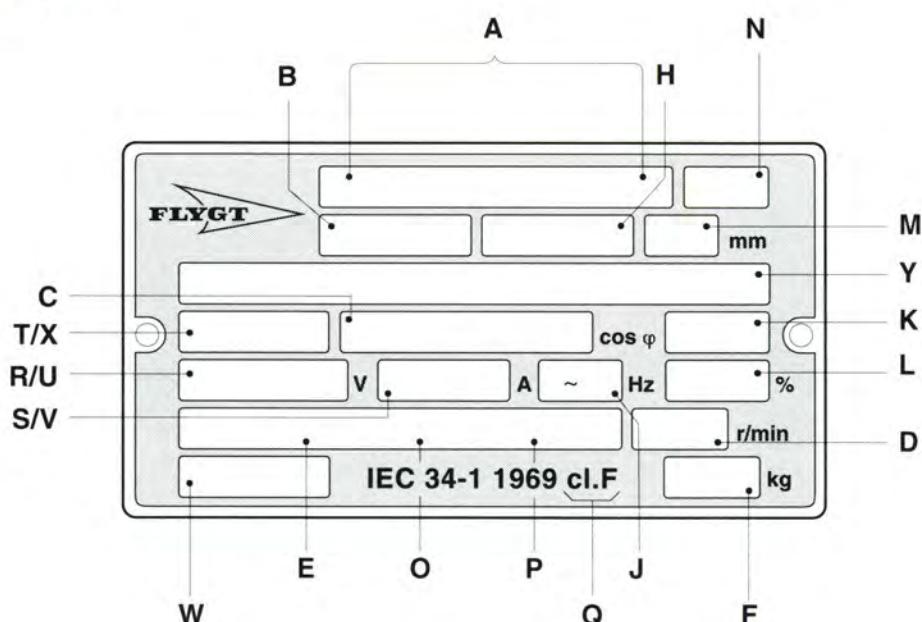
892062/03

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## DATA PLATE INTERPRETATION

### General data plate



|   |  |     |  |
|---|--|-----|--|
| A | Product No.                                  | N   | Factory code                             |
| B | Serial No.                                   | O   | * Gear ratio                             |
| C | Shaft power                                  | P   | * Direction of rotation: L=left, R=right |
| D | Rated speed                                  | Q   | Temperature class                        |
| E | * Propeller speed                            | R/U | Rated voltage                            |
| F | Weight                                       | S/V | Rated current                            |
| H | Curve code, first digit = Number of poles    | T/X | Stator connection                        |
| J | Number of phases, type of current, frequency | W   | Special order No.                        |
| K | Power factor                                 | Y   | Motor No.                                |
| L | Operating duty, cont./int.                   |     | * For mixers                             |
| M | Impeller/propeller diam.                     |     |  |

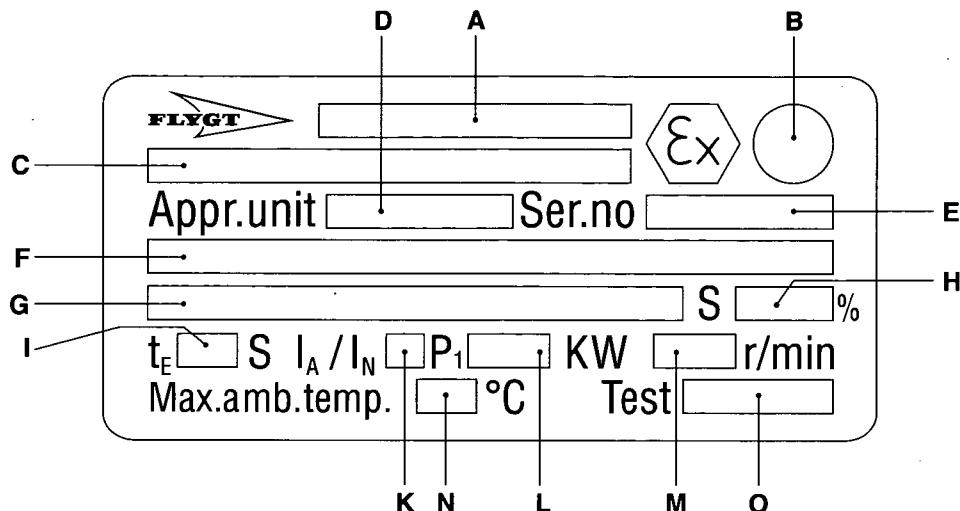
The pictures in this manual may differ somewhat from the delivered pump depending on the hydraulic end configuration.

# DATA PLATE INTERPRETATION

## Approval plates

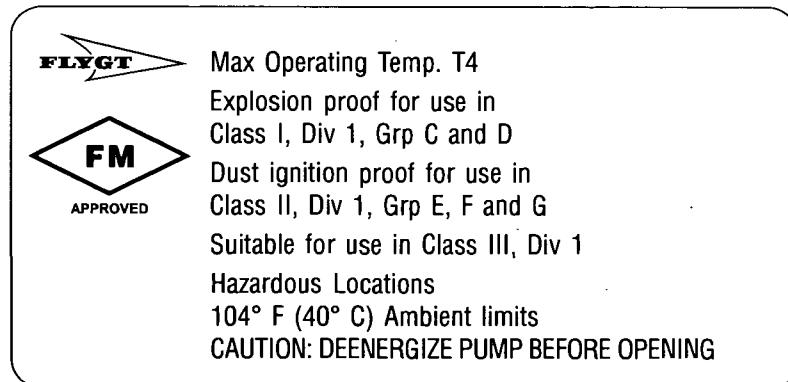
These approval plates apply to an explosion-proof submersible Flygt pump. The plates are used together with the general data plate on the pump.

**EN:** European Norm  
EN 50014, EN 50018, EEx dII T4



|      |                            |   |                                |
|------|----------------------------|---|--------------------------------|
| A    | Approval                   | I | Stall time                     |
| B    | For Class I approval       | K | Starting current/Rated current |
| C    | Approval no.               | L | Input power                    |
| D    | Approved drive unit        | M | Speed                          |
| E    | Serial no.                 | N | Max. ambient temp.             |
| F, G | Additional information     | O | Controller                     |
| H    | Operating duty, cont./int. |   |                                |

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



# PRODUCT DESCRIPTION

## Introduction

Thank you for buying a submersible Flygt pump. In this Installation, Care and Maintenance manual you will find general information on how to install and service the 3085, 3102 or 3127 pump to give it a long and reliable life. In the Parts List you will find all the specific technical data for your pump.

## Application

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.

Depending on the hydraulic end, the pump is intended to be used for:

- pumping of waste water
- pumping of light liquid manure and urine
- pumping of sludge
- pumping of ground water
- pumping of sewage if the solids need to be cut into small pieces.

The pumps must not be used in highly corrosive liquids. See pH limits below.

The pump is available for permanent installation in a sump or portable installation with hose connection and stand.

In some applications, the pump is also available for a dry stationary installation on a base stand directly connected to the inlet and outlet lines.

For further information on applications, contact your nearest Flygt representative.

## Specific technical data

For specific technical data regarding your pump, please see Parts List.

## General technical data

**Liquid temperature:** max. 40°C (104°F). The pump can be operated at full load only if at least half the stator housing is submerged.

The pump can be equipped for operation at temperatures up to 90°C (195°F). At increased temperatures, the pump must be completely submerged when operated at full load.

Higher temperatures than 40°C (104°F) are not permitted for Ex-approved pumps.

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

**The pH of the pumped liquid:** 6—13 (cast iron pumps).

**The pH of the pumped liquid:** 3—14 (stainless steel pumps).

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



- In some installations and at certain operating points on the performance curve, the noise level of 70 dB or the noise level specified for the actual pump may be exceeded.
- Only Ex-approved pumps may be used in an explosive or flammable environment.

## Warranty claim

Flygt pumps are high quality products with expected reliable operation and long life. However, should the need arise for a warranty claim, please contact your Flygt representative.

# GENERAL DESIGN OF A FLYGT PUMP

## Design

The pump is a submersible, electric motor-driven product.

### 1. Impeller

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

### 2. Shaft seals

The pump has two mechanical face seals – one inner and one outer, with an intermediate oil housing.

### 3. Shaft

The shaft is delivered with the rotor as an integral part.  
Shaft material: stainless steel.

### 4. Bearings

The support bearing of the rotor consists of a single-row ball bearing.

The main bearing of the rotor consists of a two-row angular contact ball bearing.

### 5. Oil housing

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

### 6. Motor

Squirrel-cage 1-phase or 3-phase induction motor for 50 Hz or 60 Hz.

The motor can be started by direct on-line or star-delta starting.

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, 1969.

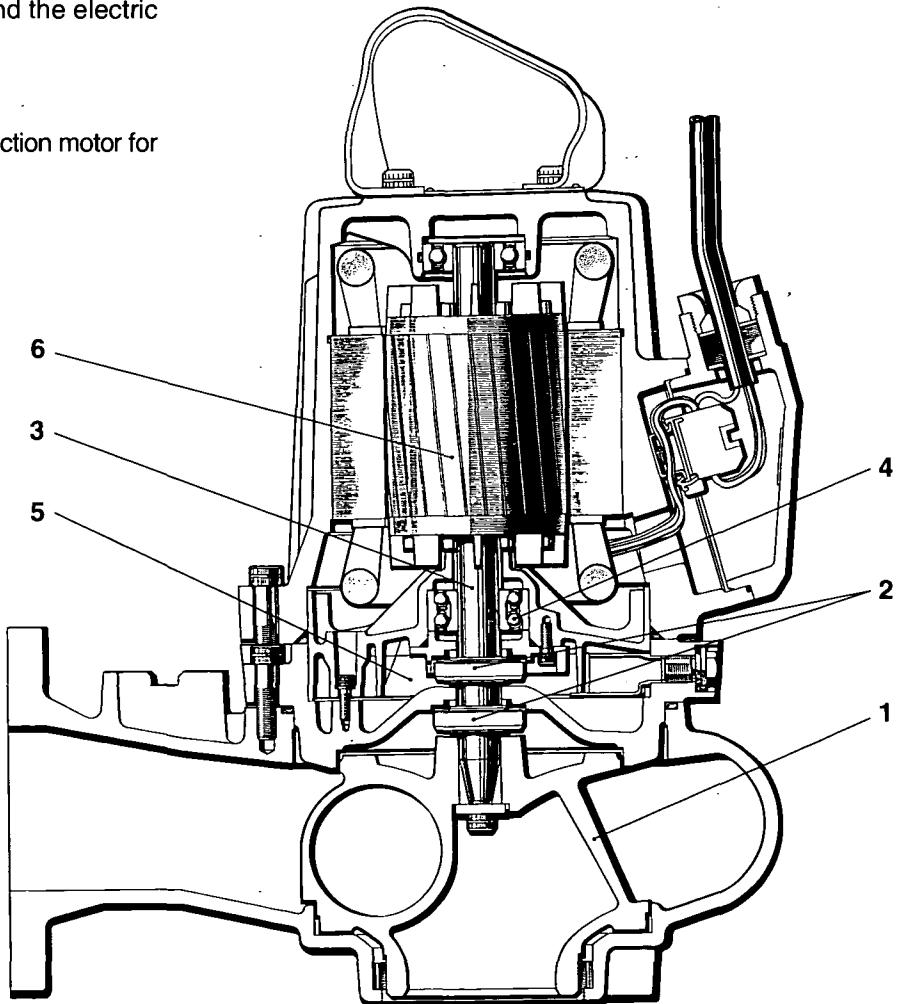
The stator is insulated in accordance with class F (155°C, 310°F). The motor is designed to deliver its rated output at  $\pm 5\%$  variation from the rated voltage. Without overheating the motor,  $\pm 10\%$  variation from the rated voltage can be accepted provided that the motor does not run continuously at full load. The motor is designed to operate at a voltage imbalance of up to 2% between the phases.

### Monitoring equipment

The stator incorporates thermal contacts connected in series.

The pump can be equipped with sensors for sensing water in the oil\* and/or stator housing.

\*Not applicable to Ex-approved pumps.



# INSTALLATION

## Handling equipment

Lifting equipment is required for handling the pump.



- Stay clear of suspended loads.
- Always lift the pump by its lifting handle - never by the motor cable or the hose.

The minimum height between the lifting hook and the floor shall be sufficient to lift the pump out of the sump.

The lifting equipment shall be able to hoist the pump straight up and down in the sump, preferably without the need for resetting the lifting hook.

Oversize lifting equipment could cause damage if the pump should stick when being lifted.

Make sure that the lifting equipment is securely anchored.

## General recommendations

To ensure proper installation, please see the dimensions on the dimensional drawing in the Parts List.

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

Check that the lifting handle and chain are in good condition.

For automatic operation of the pump (level control), it is recommended that the level regulators be used at low voltage. The data sheet delivered with the regulators gives the permissible voltage. Local rules may specify otherwise.

Clean out all debris from the sump before the pump is lowered down and the station is started.



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

## 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. Never work alone. Use a lifting harness, safety line and a respirator as required. Do not ignore the risk of drowning!
2. Make sure there are no poisonous gases within the work area.
3. Check the explosion risk before welding or using electric hand tools.
4. Do not ignore health hazards. Observe strict cleanliness.
5. Bear in mind the risk of electrical accidents.
6. Make sure that the lifting equipment is in good condition.
7. Provide a suitable barrier around the work area, e.g a guard rail.
8. Make sure you have a clear path of retreat!
9. Use safety helmet, safety goggles and protective shoes.
10. All personnel who work with sewage systems must be vaccinated against diseases to which they may be exposed.
11. A first-aid kit must be close at hand.
12. Note that special rules apply to installation in explosive atmosphere.

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

# ELECTRICAL CONNECTIONS



- Before starting work on the pump, make sure that the pump and the control panel are isolated from the power supply and cannot be energized.
- If the pump is equipped with automatic level control, there is a risk of sudden restart.
- 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.**

**NOTE for Ex version**

- Electrical connections on the explosion-proof motor must be made by authorized personnel.  
**Flygt disclaims all responsibility for work done by untrained, unauthorized personnel.**
- The pump may be used only in accordance with the approved motor data stated on the pump's plates.
- Thermal contacts must be connected to protection circuit intended for that purpose according to the approval of the product.

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

Local codes and regulations shall be complied with.

Check on the data plate which voltage supply is valid for your pump.

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

If the pump can be connected to different voltages, the connected voltage is specified by a yellow sticker.

Connect the motor cable to the starter equipment as illustrated in the wiring diagrams.

**Conductors that are not in use must be isolated.**

The cable should be replaced if the outer sheath is damaged. Contact a Flygt service shop.

Make sure that the cable does not have any sharp bends and is not pinched.

Under no circumstances may the starter equipment be installed in the sump.

**NOTE!** For safety reasons, the earth conductor should be approx. 50 mm (2.0") longer than the phase conductors. If the motor cable is jerked loose by mistake, the earth conductor should be the last conductor to come loose from its terminal. This applies to both ends of the cable.

Thermal contacts are incorporated in the stator. The thermal contacts can be connected to max 250 V, breaking current max 4 A. Flygt recommends that they be connected to 24 V over separate fuses to protect the other automatic equipment.

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

When using a variable-frequency-drive (VFD) special rules have to be followed to avoid clogging and overheating. Contact your Flygt representative and ask your VFD-supplier for electrical limitations.

# ELECTRICAL CONNECTIONS

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

The Parts List gives rated current. Fuse rating and cable shall be selected in accordance with local rules and regulations. Note that with long cables, the voltage drop in the cable must be taken into consideration, since the motor's rated voltage is the voltage that is measured at the terminal board in the pump.

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

Check the phase sequence in the mains with the phase sequence indicator.

If intermittent operation is prescribed (see Data Plate), the pump shall be provided with control equipment that provides such operation.

## Single phase operation

The Flygt single phase pumps must be equipped with a starter which has start and run capacitors.

A special Flygt designed starter is required for the operation of single phase pumps. The connection of the motor cable to the starter is shown in the wiring diagram.

**NOTE!** It is not possible to change the direction of rotation of a single phase pump by changing the cable conductors on the starter. Please contact your nearest Flygt representative.

## Monitoring equipment

A plate in the junction box shows if the pump is equipped with sensors.

**CLS-30** is a leakage sensor for sensing water in the oil housing and initiates an alarm when the oil contains 30% water. Oil change is recommended after the alarm. If the sensor initiates an alarm shortly after the oil is changed, contact your nearest Flygt representative. The CLS sensor is installed in the bearing housing and goes down into the oil housing. The sensor is not applicable to Ex-approved pumps.

**CLS sensor body made of glass.  
Handle with care.**



The **FLS** sensor consists of a small float switch for sensing water in the stator housing. Its design makes it suitable for pumps in vertical installations. The FLS sensor is installed in the bottom of the stator housing.

The two sensors, CLS and FLS, can be used in the same pump. They are connected in parallel. Follow the instructions for monitoring equipment.

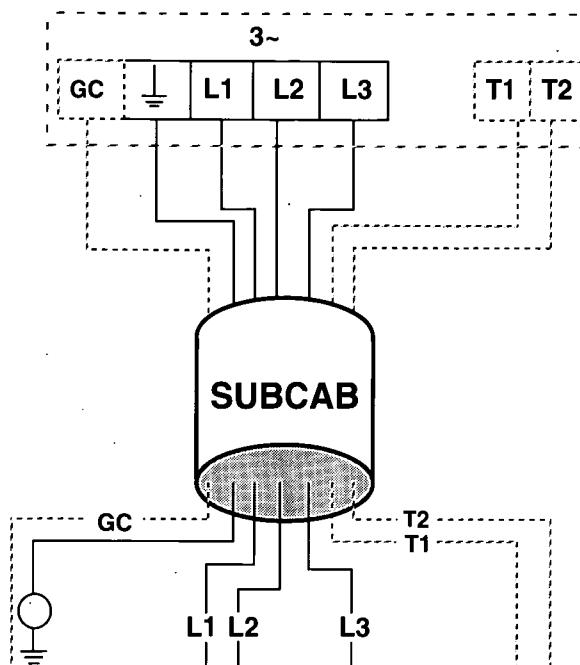
The **MiniCas II** is a monitoring relay to which CLS and/or FLS are connected.

Check:

- signals and tripping function.
- that relays, lamps, fuses and connections are intact.

Replace defective equipment.

# CABLE CHART



### 3-phase, direct on-line starting

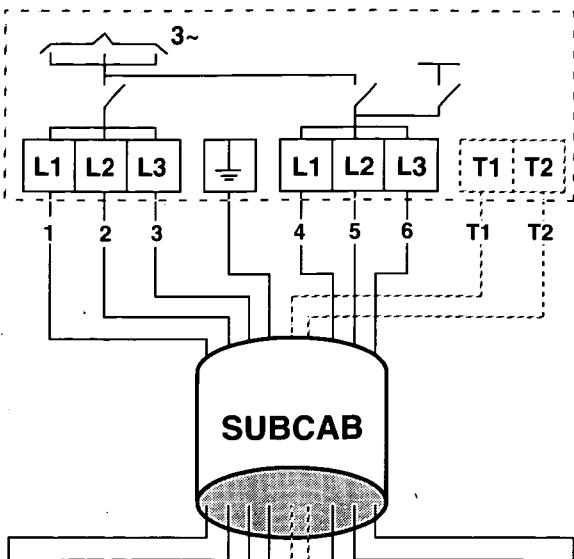
|                         | Conductors | Connection<br>starter |
|-------------------------|------------|-----------------------|
| <b>SUBCAB 4Gx</b>       |            |                       |
| brown                   | L1         |                       |
| blue                    | L2         |                       |
| black                   | L3         |                       |
| yellow/green            | earth      |                       |
| <b>SUBCAB 4Gx+2x1.5</b> |            |                       |
| brown                   | L1         |                       |
| blue                    | L2         |                       |
| black                   | L3         |                       |
| yellow/green            | earth      |                       |
| black                   | T1*        |                       |
| black                   | T1*        |                       |

### For Canada/USA

|                      |       |  |
|----------------------|-------|--|
| <b>SUBCAB xAWG/4</b> |       |  |
| red                  | L1    |  |
| white                | L2    |  |
| black                | L3    |  |
| yellow/green         | earth |  |

### SUBCAB xAWG/7

|              |       |
|--------------|-------|
| red          | L1    |
| white        | L2    |
| black        | L3    |
| yellow       | GC**  |
| yellow/green | earth |
| orange       | T1*   |
| blue         | T2*   |



### 3-phase, star-delta starting

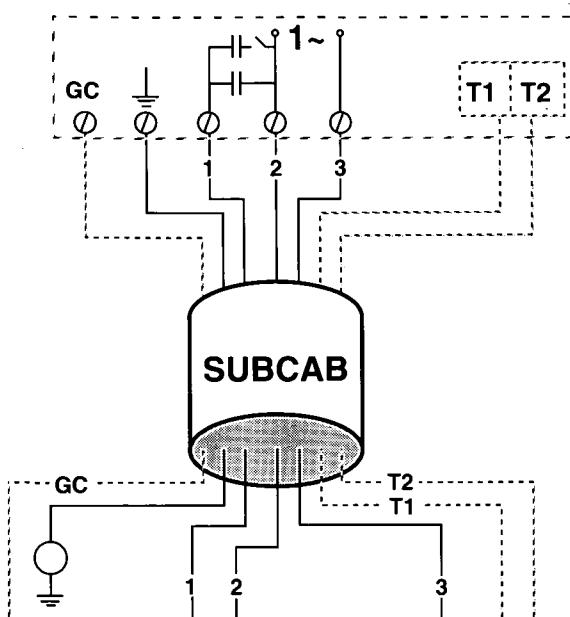
|                         | Conductors | Connection<br>starter |
|-------------------------|------------|-----------------------|
| <b>SUBCAB 7Gx</b>       |            |                       |
| black 1                 | L1         |                       |
| black 2                 | L2         |                       |
| black 3                 | L3         |                       |
| black 4                 | L1         |                       |
| black 5                 | L2         |                       |
| black 6                 | L3         |                       |
| yellow/green            | earth      |                       |
| <b>SUBCAB 7Gx+2x1.5</b> |            |                       |
| black 1                 | L1         |                       |
| black 2                 | L2         |                       |
| black 3                 | L3         |                       |
| black 4                 | L1         |                       |
| black 5                 | L2         |                       |
| black 6                 | L3         |                       |
| black T1                | T1*        |                       |
| black T2                | T2*        |                       |
| yellow/green            | earth      |                       |

\* Terminal for connection of thermal contacts in the motor and monitoring equipment.

\*\* GC = Ground Check

SUBCAB is a registered trademark of ITT Flygt AB for electrical cables.

# CABLE CHART



## Single phase

|                   | Conductors | Connection<br>starter |
|-------------------|------------|-----------------------|
| <b>SUBCAB 4Gx</b> |            |                       |
| brown             | 1          |                       |
| black             | 2          |                       |
| blue              | 3          |                       |
| yellow/green      | earth      |                       |

## SUBCAB 4Gx+2x1.5

| Conductors   | Connection<br>starter |
|--------------|-----------------------|
| brown        | 1                     |
| black        | 2                     |
| blue         | 3                     |
| yellow/green | earth                 |
| black        | T1*                   |
| black        | T2*                   |

## For Canada/USA

### SUBCAB xAWG/4

|              |       |
|--------------|-------|
| red          | 1     |
| black        | 2     |
| white        | 3     |
| yellow/green | earth |

### SUBCAB xAWG/7

|              |       |
|--------------|-------|
| red          | 1     |
| black        | 2     |
| white        | 3     |
| yellow       | GC**  |
| yellow/green | earth |
| orange       | T1*   |
| blue         | T2*   |

\* Terminal for connection of thermal contacts in the motor and monitoring equipment.

\*\* GC = Ground Check

# TRANSPORTATION AND STORAGE

The pump can be transported and stored in a vertical or horizontal position.



- Always lift the pump by its lifting handle – never by the motor cable or the hose.
- Make sure that the pump cannot roll or fall over and injure people or damage property.

The pump is frostproof as long as it is operating or is immersed in the liquid. If the pump is raised when the temperature is below freezing, the impeller may freeze.

The pump shall be run for a short period after being raised in order to discharge 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 occasionally (for example every other month) to prevent the seals from sticking together.

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

Follow the instructions under the heading "Before starting".

# OPERATION

## Before starting



- Before starting work on the pump, make sure that the pump is isolated from the power supply and cannot be energized.
- Make sure that the pump cannot roll or fall over and injure people or damage property.

Check that the visible parts on the pump and installation are undamaged and in good condition.

Check the oil level in the oil housing.

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

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.

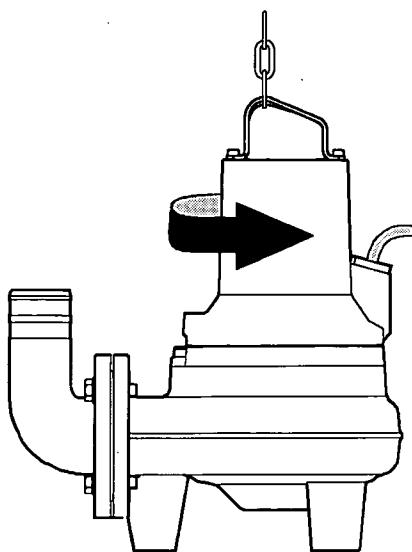
In the case of dry installation, check the direction of rotation through the inlet elbow access cover.

Transpose two phase leads if the impeller rotates in the wrong direction (3~).



**In some installations the pump surface and the surrounding liquid may be hot. Bear in mind the risk of burn injuries.**

## Starting jerk



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

# CARE AND MAINTENANCE



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

**This applies to the control circuit as well.**



**NOTE for Ex version**

**All work on the explosion-proof motor section must be performed by personnel authorized by Flygt.**

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



**Make sure that the pump cannot roll or fall over and injure people or damage property.**

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

- Make sure that the pump has been thoroughly cleaned.
- Beware of the risk of infection.
- Follow local safety regulations.

The pump is designed for use in liquids which can be hazardous to health. In order to prevent injury to the eyes and skin, observe the following points when working on the pump:

- Always wear goggles and rubber gloves.
- Rinse the pump thoroughly with clean water before starting work.
- Rinse the components in water after dismantling.
- The oil housing may be under pressure. Hold a rag over the oil screw (oil plug) to prevent splatter.

Proceed as follows if hazardous chemicals have splashed into your eyes:

- Rinse your eyes immediately in running water for 15 minutes. Hold your eyelids apart with your fingers.
- Contact an eye specialist.

On your skin:

- Remove contaminated clothes.
- Wash your skin with soap and water.
- Seek medical attention, if required.

## Inspection

Regular inspection and preventive maintenance ensure more reliable operation.

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

Under normal operating conditions, the pump should have a major overhaul in a service shop at least every third year for permanent installation and every year for portable pumps. This requires special tools and should be done by an authorized service shop.

If the seals have been replaced an inspection of the oil is recommended after one week of operation.

**NOTE!** Regular check of the condition of the lifting handle and chain is important.

### Inspection of hot water applications

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

| Temp.            | Mode of operation | Inspection     | Shop overhaul |
|------------------|-------------------|----------------|---------------|
| ≤70°C<br>(160°F) | Continuous        | 1000 hours     | 4000 hours    |
| ≤70°C<br>(160°F) | Intermittent      | twice a year   | once a year   |
| ≤90°C<br>(195°F) | Cont./Int.        | 6 times a year | twice a year  |

# OIL CHANGE

A check of the condition of the oil can show whether there has been 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. if it is heavily emulsified (cream-like), or if the oil housing contains free water. Check again one week after changing the oil.



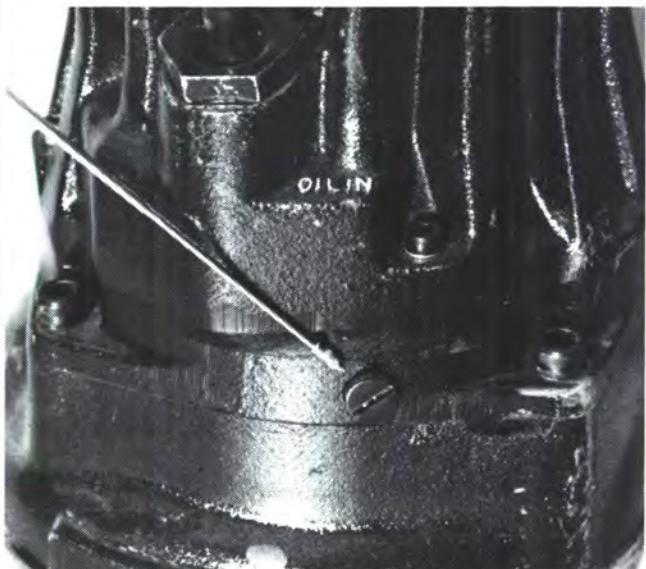
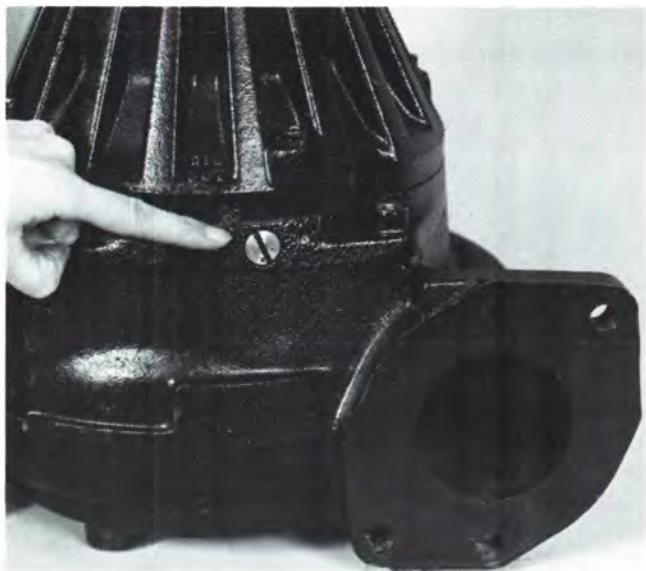
**The oil housing may be under pressure. Hold a rag over the oil plug to prevent splatter.**

1. Lay the pump on its side on a bench or over two supports. Unscrew the oil housing screw (oil plug) marked "oil out". Emptying the oil must be done through the "oil out" hole.
2. Turn the pump. Unscrew the "oil in" oil hole screw/plug. In order to drain out all oil, the pump must be raised upright for a short while during drainage.
3. Replace the O-rings under the oil housing screws (plugs) with new ones.
4. Install the "oil out" screw/plug and fill with oil through the other hole. It is important that the oil be added through the hole marked "oil in" since the oil housing must contain some air for pressure equalization. The pump should be tilted slightly and put down again horizontally in order to get the full amount of oil in.

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.

Please see Parts List for the correct volume.



# SERVICE LOG

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



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**PARTS LIST  
DETALJLISTA  
ERSATZTEILLISTE  
LISTE DES PIÈCES DE RECHANGE  
LISTA DE PIEZAS DE REPUESTO**



**ITT Flygt**

An **ITT Industries** company

892338/03

**Parts list  
Detaljlista  
Ersatzteilliste**
**Liste des pièces de rechange  
Lista de piezas de repuesto**

- 3102.180:** Standard
- 3102.090:** EEx d IIB T4  
**FM:** Class I Div. 1 Grp. C and D  
**Class II Div. 1 Grp. E, F and G**  
**Suitable for use in Class III Div. 1**
- 3102.170:** Grinder Standard
- 3102.890:** Grinder  
**EEx d IIB T4**  
**FM:** Class 1 Div.1 Grp. C and D  
**Class II Div. 1 Grp. E, F and G**  
**Suitable for use in Class III Div. 1**

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**Sales codes****Säljkoder****Verkaufscode****Codes de vente****Código de ventas**

**(C) (P) 3102.180 (MT)**

IMPELLER  
PUMPHJUL  
LAUFRAD  
ROUE  
IMPUŁSOR

INSTALLATION  
INSTALLATION  
AUFSTELLUNGSART  
INSTALLATION  
INSTALACIÓN

HEAD  
TRYCK  
DRUCK  
PRESSION  
PRESIÓN

**IMPELLER**  
**PUMPHJUL**  
**LAUFRAD**

**ROUE**  
**IMPULSOR**

**C** = Vane impeller  
Kanalhjul  
Kanalrad

Roue canal  
Impulsor de canal  
Curve Nos. (410 - 442, 430 - 438, 252 - 254)

**D** = Swirl-type impeller version  
Virvelhjulsutförande  
Wirbelradausführung

Version roue vortex  
Versión de impulsor de torbellino  
(Curve No. 470)

**F** = For pumping liquid manure  
Pumphjul med skäranordning  
Für Gülleförderung

Pour pompage de lisier  
Versión para purines  
(Curve Nos. 490 - 492)

**L** = Vane impeller  
Kanalhjul  
Kanalrad

Roue canal  
Impulsor de canal  
(Curve Nos. 410 - 412)

**M** = Impeller with cutter wheel  
Skärhjul för tuggerpump  
Laufrad mit Schneidvorrichtung

Roue de coupe (Curve Nos. 210, 212, 216,  
Rueda de corte 261 - 263, 267)

## Sales codes Säljkoder Verkaufscode

## Codes de vente Código de ventas

### INSTALLATION INSTALLATION AUFSTELLUNGSART

- P** = For permanent installation in a sump.  
 För stationär installation i en pumpgröp.  
 Für stationäre Installation in einem Pumpensumpf.
- S** = Portable pump with a stand and vertical outlet.  
 Transportabel pump på stativ och, med vertikal tryckanslutning.  
 Transportable Pumpe auf Stativ und vertikalem Schlauch-  
 ansluss.
- T** = For dry stationary installation on base and directly connected to the inlet and outlet lines.  
 För torr stationär installation på fundament och direkt-  
 ansluten till in- och utloppsledningarna.  
 Für stationäre Trockenaufstellung auf einem Sockel,  
 direkt an die saug - und Druckrohrleitung.
- F** = Free standing pump on legs with vertical discharge outlet.  
 Transportabel pump på ben, med vertikal tryckanslutning.  
 Freistehende Pumpe auf Beinen mit vertikalem Druck-  
 leitungsanschluss.
- L** = Lift pump version  
 Lyftpumpsutförande  
 Hebepumpeausführung

### INSTALLATION INSTALACIÓN

- Installation permanente dans un puisard.  
 Unidad estacionaria para pozo húmedo.
- Pompe portable avec socle et orifice de refoulement vertical.  
 Unidad transportable con soporte y salida de descarga vertical.
- Pour installation fixe en fosse sèche sur un socle et directement raccordée aux tuyauteries de refoulement et d'aspiration.  
 Para instalación estacionaria seca sobre una base y conexión directa a cañerías de entrada y salida.

Installation indépendante sur pieds, avec orifice de refoulement vertical.  
 Unidad transportable sobre patas con salida de descarga vertical.

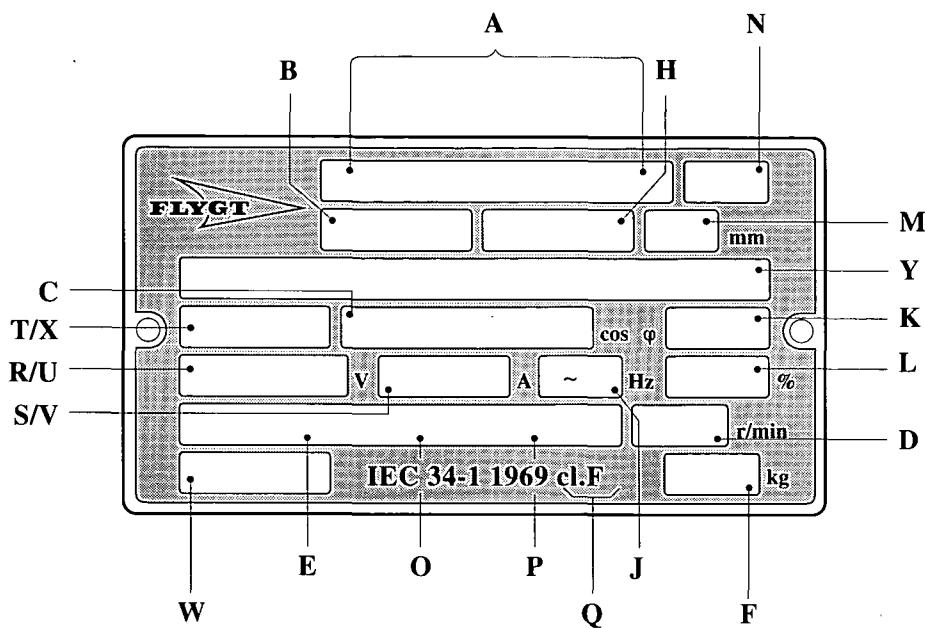
Modèle pompe de levage  
 Versión de bomba elevable

### HEAD TRYCK DRUCK

- LT** = Low-head version  
 Lågtrycksutförande  
 Niederdruckausführung
- MT** = Medium-head version  
 Medeltrycksutförande  
 Mitteldruckausführung
- HT** = High-head version  
 Högtrycksutförande  
 Hochdruckausführung

### PRESSION PRESIÓN

- Modèle basse pression  
 Modelo de baja altura de elevación  
 (Curve Nos. 410 - 412, 440 - 442, 490 - 492, 210, 212,  
 216)
- Modèle moyenne pression  
 Modelo de altura media de elevación  
 (Curve Nos. 430 - 438, 470)
- Modèle haute pression  
 Modelo de gran altura de elevación  
 (Curve Nos. 252 - 254)

**How to read the data plate****Hur man läser dataskylten****Data plate interpretation:**

- A Product No
  - B Serial No.
  - C Shaft power
  - D Rated speed
  - E \* Propeller speed
  - F Weight
  - G Curve code, first digit = Number of poles
  - H Number of phases, type of current, frequency
  - I Power factor
  - J Operating duty, cont./int.
  - K Impeller/propeller diam.
  - L Impeller/propeller diam.
  - M Special order No.
  - N Factory code
  - O \* Gear ratio
  - P \* Direction of rotation: L=left, R=right
  - Q Temperature class
  - R/U Rated voltage
  - S/V Rated current
  - T/X Stator connection
  - W Special order No.
  - Y Motor No.
- \* For mixers  
1 kg = 2,20 pound  
1 Lit = 0,26 US gallon

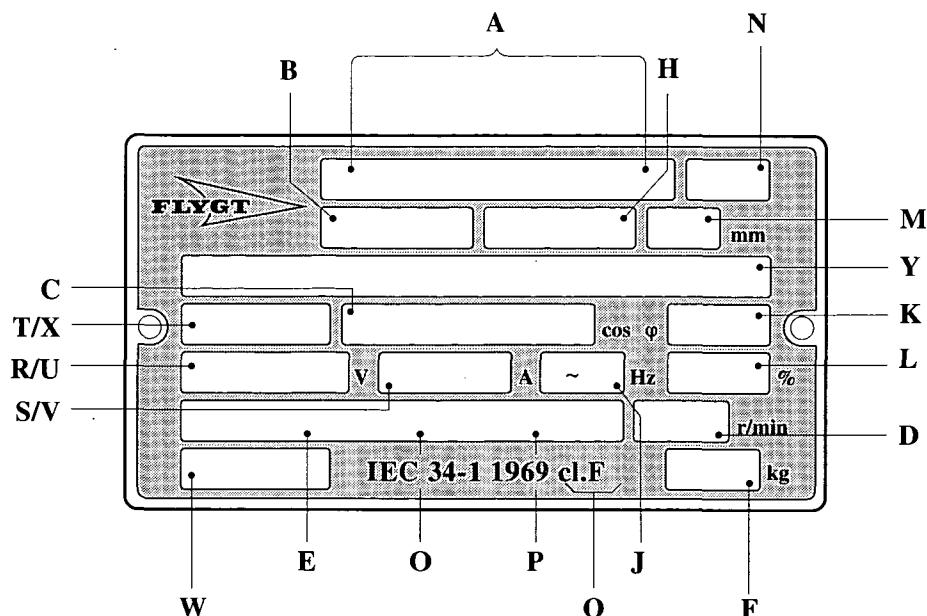
**Dataskylt inskriftion:**

- A Produktnummer
  - B Tillverkningsnummer
  - C Axleffekt, motor
  - D Varvtal
  - E \* Propellervarvtal
  - F Vikt
  - G Kurvnummer
  - H Fastal, strömart, frekvens
  - I Effektfaktor
  - J Driftart, kont/int. drift
  - K Pumpjhul/propeller diam.
  - L Fabrikskod
  - M Utväxlingsförhållande
  - N Rotationsriktning: L=vänster, R=höger
  - O Isolationsklass
  - P Märkspänning
  - Q Märkström
  - R/T/X Statorkoppling
  - S/W Special order number
  - Y Motornummer
- \* För omrörare  
1kg = 2.20 pound.  
1 Lit = 0.26 US gallon

**When ordering spares please state A and B**  
**Vid beställning av reservdelar ange A och B**

## Erläuterungen zum Datenschild

## Comment lire la plaque signalétique



### Datenschild, Beschriftung:

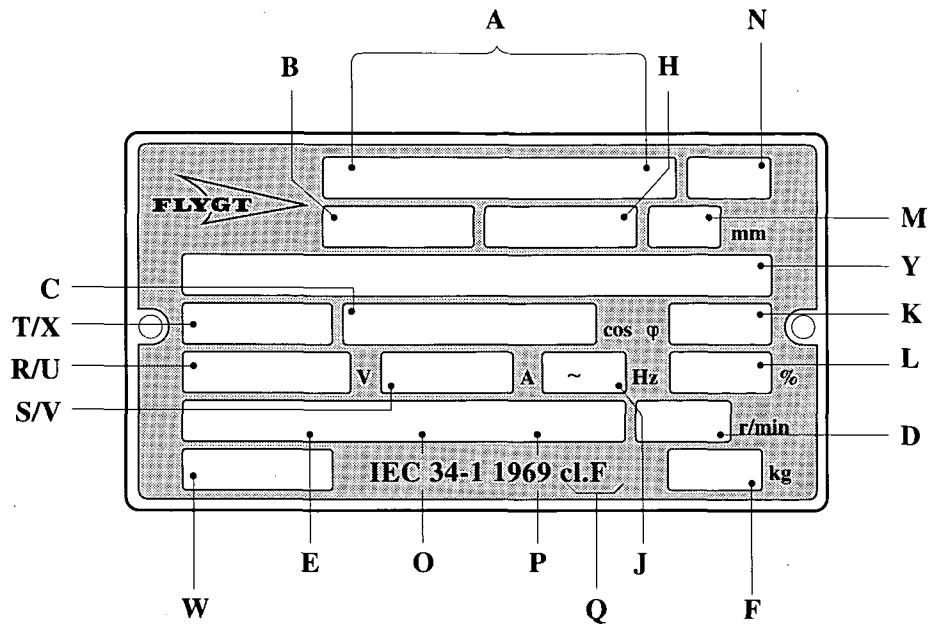
- A Produkt Nr.
  - B Serien Nr.
  - C Leistungsabgabe
  - D Drehzahl
  - E \* Propellerdrehzahl
  - F Gewicht
  - H Kurve Nr.
  - J Phasenzahl, Stromart, Frequenz
  - K Leistungsfaktor
  - L Betriebsart, kont./int.
  - M Laufrad/Propeller Durchmesser
  - N Fabrikskode
  - O \* Übersetzungsverhältnis
  - P \* Drehrichtung: L=links, R=rechts
  - Q Isolationsklasse
  - R/U Nennspannung
  - S/V Nennstrom
  - T/X Statorschaltung
  - W S-Auftragsnummer
  - Y Motor Nr.
- \* Für Rührwerke  
1kg = 2.20 pound  
1 Lit = 0.26 US gallon

### Légende de la plaque signalétique:

- A No de produit
  - B No de série
  - C Puissance sur l'arbre, moteur
  - D Régime
  - E \* Vitesse de rotation d'hélice
  - F Poids
  - H No de courbe
  - J Nombre de phases, type de courant, fréquence
  - K Facteur de puissance
  - L Art de fonctionnement, continu/intermittent
  - M Roue/Hélice diamètre
  - N Code d'usine
  - O \* Rapport de réduction
  - P \* Sens de rotation: L=gauche, R=droite
  - Q Classe d'isolation
  - R/U Tension nominale
  - S/V Intensité nominale
  - T/X Couplage du stator
  - W Numéro d'ordre S
  - Y No de moteur
- \* Pour les agitateurs  
1 kg = 2.20 pound.  
1 Lit = 0.26 US gallon

Bei Bestellung von Ersatzteilen bitte stets A und B angeben.  
En commandant des pièces de rechange veuillez indiquer A ou B.

## Interpretación de la placa de características



### Placa de características

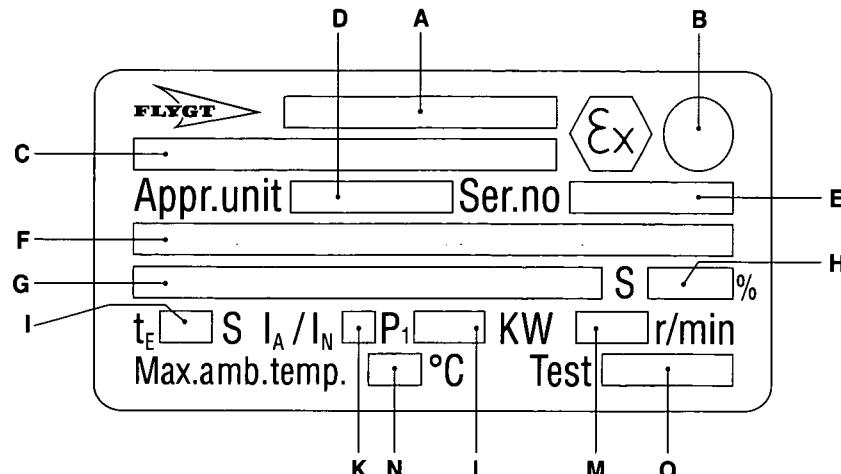
|     |   |
|-----|---|
| A   | Número producto                         |
| B   | Número de fabricación                   |
| C   | Potencia del eje                        |
| D   | Velocidad rotación                      |
| E * | Velocidad rotación                      |
| F   | Peso                                    |
| H   | Número curva                            |
| J   | Número de fases frecuencia              |
| K   | Factor de potencia                      |
| L   | Factor de servicio                      |
| M   | Diám. impulsor/hélice                   |
| N   | Código de fábrica                       |
| O * | Desmultiplicación                       |
| P * | Sentido de rotación, L = izq. R = dcha. |
| Q   | Clase de aislamiento                    |
| R/U | Tensión nominal                         |
| S/V | Intensidad de corriente nominal         |
| T/X | Conexión del estator                    |
| W   | Número de pedido /S                     |
| Y   | Número de motor                         |

\* Para agitadores  
1kg = 2.20 pound.  
1 Lit = 0.26 US gallon

Cuando se pidan piezas de repuesto, por favor, especifiquen A y B.

## Approval plate Prüfschild

## Godkännande skylt Plaque d'agrément



### Approval plate interpretation:

- A Approval
- B For class I, approval
- C Approval No.
- D Approved drive unit
- E Serial No.
- F, G Additional information
- H Operating duty, cont./int.
- I Stall time
- K Starting current/Rated current
- L Input power
- M Speed
- N Max. ambient temp.
- O Controller

### Zulassungsschild, Beschriftung:

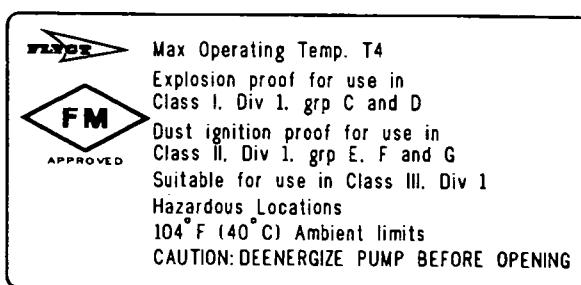
- A Zulassung
- B Für Klasse I Zulassung
- C Zulassungs-Nr.
- D Zugelassener Antrieb
- E Fabrikations-Nr.
- F, G Zusätzl. Angaben
- H Betriebsart, kont./int.
- I Abreisszeit
- K Anlaufstrom/Nennstrom
- L Leistungsaufnahme
- M Drehzahl
- N Max. Umgebungstemp.
- O Kontrolleur

### Uppgifter på godkännande skylt:

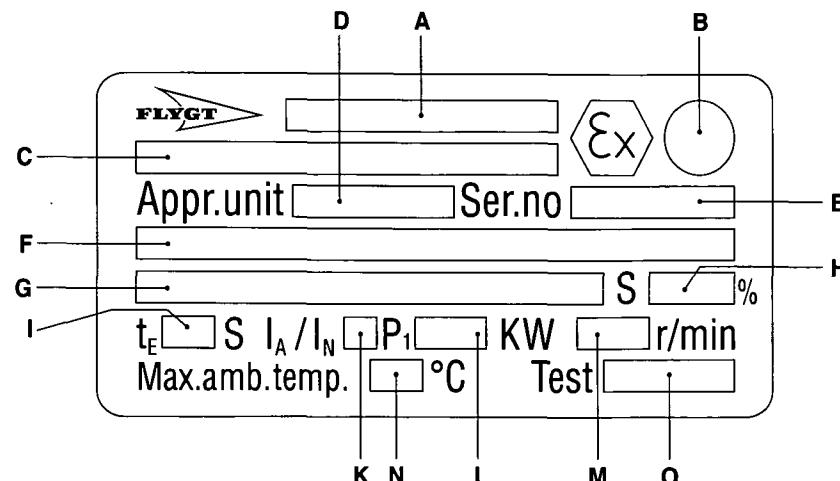
- A Godkännande
- B För Klass I, godkännande
- C Godkännande-nr
- D Godkänd drivenhet
- E Tillverknings-nr
- F, G Kompletterande uppgifter
- H Driftart
- I Fastbromsningstid
- K Startström/Märkström
- L Inmatad effekt
- M Varvtal
- N Max. omgivningstemperatur
- O Kontrollant

### Légende de la plaque d'agrément:

- A Approbation
- B Pour Class I, approbation
- C Approbation No.
- D Approbat moteur
- E No. de serie
- F, G Informations complémentaires
- H Art de fonctionnement, continu./intermittent
- I Stall time
- K Intensité nominale
- L Puissance d'alimentation
- M Régime
- N Température ambiante max.
- O Contrôleur



## Placa de aprobación

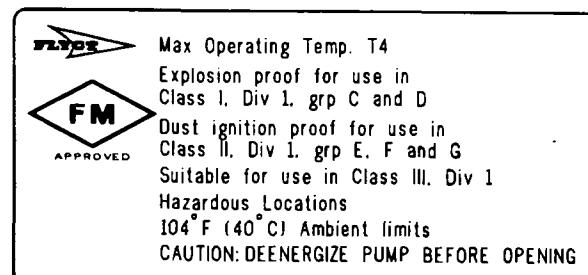


### Declaraciones en la placa de aprobación:

- A Aprobación
- B Para la clase I aprobación
- C Número de la aprobación
- D Número de fabricación
- E Unidad de accionamiento aprobada
- F, G Información adicional
- H Tipo de funcionamiento, cont./int.
- I Tiempo de parada
- K Intensidad de corriente de arranque intensidad de corriente nominal
- L Potencia consumida
- M Velocidad
- N Temperatura ambiente máx.
- O Controlador



APPROVED



## **Guarantee Garanti**

## **Garantie Garantie**

## **Garantia**

### **Guarantee**

The provision of the manufacturer's guarantee applies only under the condition that genuine Flygt spare parts are used and that the repair and service work is carried out by a workshop authorized by Flygt.

The terms of the guarantee apply only providing the product is used in accordance with the instructions and in applications for which it is intended.

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

The manufacturer reserves the right to alter specification alter specifications and design.

### **Garanti**

Tillverkarens garantibestämmelser gäller endast under förutsättning att Flygts originaldelar används samt att reparations- och servicearbeten utförs av en av Flygt auktoriserad verkstad.

Garantivillkoren förutsätter att produkten används enligt instruktionen och i applikationer för vilka den är avsedd.

Flygt garanterar reservdelshållning i 15 år efter att tillverkningen av denna produkt har upphört.

Rätt till ändringar i utförande och specifikationer förbe-hålls.

### **Garantie**

Die Garantiebestimmungen des Herstellers gelten nur unter der Voraussetzung, daß Original Flygt Ersatzteile verwendet werden, und daß Reparatur- und Wartungsarbeiten von einer, von Flygt autorisierten Werkstatt durchgeführt werden.

Die Garantiebedingungen setzen voraus, daß das Produkt gemäss der Instruktion und des Einsatzes für den es bestimmt ist, verwendet wird.

Flygt sichert die Lieferung von Ersatzteilen bis 15 Jahre nach Einstellung der Fertigung dieses Produkts zu.

Änderungen in Bezug auf Ausführung und Spezifikationen behalten wir uns vor.

### **Garantie**

La garantie du constructeur n'est valable que dans la mesure où sont exclusivement utilisées des pièces de rechange Flygt d'origine et où les réparations et interventions sont assurées par un atelier agréé par Flygt.

La garantie n'est valable que dans la mesure où la produit est utilisée conformément aux directives du constructeur et uniquement affectée aux usages auxquels elle est destinée.

Flygt garantit l'approvisionnement en pièces de rechange pendant un délai de 15 ans après la fin de la fabrication de ce produit.

Nous nous réservons le droit de modifier sans préavis les spécifications de nos produits.

### **Garantía**

La garantía del fabricante sólo rige suponiendo que se utilicen piezas originales de Flygt y que el trabajo de reparación y mantenimiento lo realice un taller autorizado por Flygt.

Las condiciones de garantía presuponen que la bomba se use en concordancia con las instrucciones del fabricante y en las que está destinada.

Flygt garantiza que se mantendrá un stock de repuestos por 15 años después de haberse interrumpido la fabricación de este producto.

Nos reservamos el derecho de introducir cambios en la ejecución y especificaciones de nuestros productos.

## Ordering spare parts Reservdelsbeställning Ersatzteilbestellung

### Ordering spare parts

State product No. and serial No. of the product when ordering parts.

Do not use item Nos. when ordering spare parts or for stock records. Use part Nos. instead.

The warm liquid version of this pump has a product code that ends with **W**, for example 3102.180-**W** (see the pump's data plate.) Certain parts are different in the standard and warm liquid versions. Make sure that spare parts with part numbers marked (**W**) in the parts list are used for warm liquid pumps.

If the pump is to fulfil requirements and obtain official approval, genuine Flygt parts must always be used for repairs.

Only Flygt or Flygt-authorized service personnel may undertake repair work on specially approved pumps.

Spare parts marked with **Ex** are subjected to dimensional accuracy inspection.

### Reservdelsbesättning

Uppge produktens tillverkningsnummer och produkt- nummer vid reservdelsbeställning.

Använd inte positionsnummer utan använd detaljnummer vid reservdelsbeställning och lagerhållning.

Varmvattenversion av denna pump har en produktkod som slutar med **W**, t ex 3102.180-**W** (se pumpens dataskylt). Vissa delar är olika i standard- och varmvattensversionen. Se till att reservdelar med detaljnummer märkta (**W**) i detaljlistan används för varmvattenspumpar.

För att pumparna skall uppfylla bestämmelserna och myndigheternas godkännande ska alltid Flygts original

delar användas vid reparation.

Ingrepp på special-godkända pumpar får endast göras av Flygt eller av Flygt-aktorisera verkstad/ personal.

Reservdelar markerade med **Ex** är underkastade mått kontroll.

### Ersatzteilbestellung

Bei Bestellung bitte die Produkt-Nr. und die Fabrikationsnummer von dem Produkt angeben.

Benutzen Sie nicht die Pos.-Nummern sondern nur die Bestellnummern bei der Ersatzteilbestellung.

Die Warmwasserversio dieser Pumpe hat einen Produktcode, der mit **W** endet, z.B. 3102.180-**W** (siehe Datenschild der Pumpe). Bestimmte Teile sind verschieden für die Standard- und

Warmwasserversio. Es ist darauf zu achten, daß für Warmwasserpumpen stets nur Ersatzteile verwendet werden, die in der Ersatzteilliste bei der Ersatzteilnummer mit (**W**) gekennzeichnet sind. Die Pumpe entspricht den Vorschriften und den behördlichen Genehmigungen nur unter

## Commande des pièces de rechange Pedidos de piezas de recambio

Voraussetzung, dass bei Reparaturen ausschließlich Original-Flygt-Ersatzteile eingebaut werden.

Arbeiten an Pumpen mit Spezial-Zulassung dürfen nur von Flygt-Personal oder von durch Flygt autorisiertem Personal durchgeführt werden.

Mit **Ex** gekennzeichnete Ersatzteile werden besonderen Masshaltigkeitskontrollen unterzogen.

### Commande des pièces de rechange

Pour toute commande de pièces de rechange, prié d'indiquer le N° de produit et le N° de série de la pompe à laquelle ces pièces sont destinées.

Ne pas utiliser les numéros de repérage lors de la commande de pièces de rechange, ou sur les fiches de stocks. Utiliser les numéros de pièces.

La version pour eau chaude de cette pompe a un code de produit finissant par **W**, par exemple 3102.180-**W** (voir plaque signalétique). Certains éléments étant différents pour les versions standard et pour eau chaude, il convient donc de veiller à ce que les pièces de rechange utilisées pour les pompes à eau chaude soient celles dont le numéro de référence est complété par (**W**)

Pour que la pompe demeure conforme à la réglementation ainsi qu'à l'homologation accordée par les autorités compétentes, il est indispensable que seules des pièces Flygt d'origine soient utilisées lors des réparations.

Les interventions au niveau les pompes spécialement approuvés doivent être confiées uniquement à un personnel Flygt ou à un atelier agréé par Flygt.

Les pièces indiquées en **Ex** sont soumises à un contrôle de cotes.

### Pedidos de piezas de recambio

Al cursar pedidos de piezas de recambio indicar los números de producto y fabricación de la bomba.

No usar el número de referencia, sino el de pieza, al cursar pedido de piezas de recambio y piezas para stocks.

La versión para agua caliente de esta bomba tiene un código de producto que termina en **W**, por ej. 3102.180-**W** (ver la placa de características de la bomba). Ciertas piezas son diferentes en las versiones estándar y para agua caliente.

Comprobar que las piezas de recambio con el número de pieza marcado con (**W**) en la lista de piezas se usen para bombas destinadas a bombear agua caliente.

Para que el producto cumpla las ordenanzas y la homologación de las autoridades respectivas, al repararlo deberán emplearse siempre piezas originales.

Los trabajos en productos con la aprobación EN/FM sólo está permitido que los realice Flygt o un taller o personal aprobados por Flygt.

Las piezas de recambio marcadas con **Ex** se someten a control dimensional.

| Item No<br>Pos. Nr.<br>Pos.-Nr.<br>Nº de<br>reperage<br>No de<br>sondero | Part No.<br>Detail nr<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Désignation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Dénomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Número<br>Número |
|--|--|--|--|---|
|  |  |  |  | 090 180 0                                       |
|  |  |  |  | 170 0 88  |
|  |  |  |  |   |

## Motor parts

### Motordetaljer

### Motorteile

## Pièces du moteur

### Piezas del motor

|    |                           |  |              |                    |
|----|---------------------------|--|--------------|--------------------|
| 1  | 477 11 00                 | LIFTING HANDLE<br>LYFTBYGEL<br>TRAGBÜGEL<br>TRIER D'ELEVER<br>ABRAZADERA DE ELEVAR         |              | 1 1 1 1            |
| 2  | 82 00 49                  | SOCKET HEAD SCREW<br>SEXKANTHÅLSKRUV<br>SCHRAUBE<br>VIS<br>TORNILLO                        | M10x20-A2-70 | 2 2 2 2            |
| 3  | 438 37 00<br>533 62 00    | DATA PLATE<br>DATASKYLT<br>DATENSCHILD<br>PLAQUE SIGNALÉTIQUE<br>PLACA DE CARACTERIST      | (60Hz)       | 1 1 1 1<br>- - 2 2 |
| 5  | 274 52 00                 | EXPORT PLATE<br>EXPORTSKYLT<br>EXPORTSCHILD<br>PLAQUE D'ORIGINE<br>PLACA DE ORIGEN         |              | 1 1 1 1            |
| 6  | 83 02 58                  | SOCKET HEAD SCREW<br>SEXKANTHÅLSKRUV<br>SCHRAUBE<br>VIS<br>TORNILLO                        | M5x12-A4-70  | 2 - - 2            |
| 8  | 279 29 00                 | EARTHING PLATE<br>SKYDDSLEDARPLATTA<br>ERDUNGSPLATTE<br>PLAQUE DE TERRE<br>PLACA DE TIERRA |              | 1 - - 1            |
| 9  | 82 20 88                  | DRIVE SCREW<br>DRIVSKRUV<br>TREIBSCHRAUBE<br>VIS FILETANTE<br>TORNILLO                     | 4x5-A2-70    | 8 8 8 8            |
| 10 | 439 31 00<br>Ex 439 31 01 | STATOR HOUSING<br>STATORHUS<br>STATORGEHÄUSE<br>LOGEMENT DE STATOR<br>CARCASA DE ESTATOR   |              | - 1 1<br>1 - - 1   |

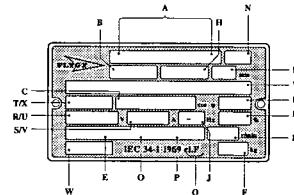
| Item No<br>Pos. Nr.<br>Pos.-Nr.<br>Nº de<br>repérage<br>No de<br>sondero | Part No.<br>Detail nr.<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Denomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Número<br>Número |
|--|---|--|--|---|
|  |   |  |  | 090 180 170 890                                 |

|    |   |   |                                |   |
|----|---|---|--------------------------------|---|
| 11 | 82 00 72  | SOCKET HEAD SCREW<br>SEXKANTHÅLSKRU<br>SCHRAUBE<br>VIS<br>TORNILLO                                      | M12x45-A2-70                   | 4 4 4 4   |
| 13 | W 543 39 00   | PLATE<br>SKYLT<br>SCHILD<br>PLAQUE<br>PLACA   |                                | - 1 - -   |
| 14 | Ex 530 85 00<br>Ex 535 64:00  | CERTIFICATE PLATE<br>CERTIFIKATS SKYLT<br>ZEUGNISSCHILD<br>PLAQUE DE CERTIFICAT<br>PLACA DE CERTIFICADO | EN<br>FM                       | 1 - - 1<br>1 - - 1  |
| 15 | 545 54 00<br>550 21 00<br>550 22 00<br>550 23 00<br>550 24 00<br>559 92 00<br>585 20 00 | CONNECTION PLATE<br>KOPPLINGSSKYLT<br>KUPPLUNGSSCHILD<br>PLAQUE DE BRANCHÉM.<br>PLACA DE CONEXION       |                                | - 1 - -<br>- 1 1 -<br>1 1 1 1<br>- 1 1 -<br>1 1 1 1<br>- 1 1 1<br>- - 1 1 |
| 16 | 82 74 93<br>W 82 75 20  | O-RING<br>O-RING<br>O-RING<br>ANNEAU TORIQUE<br>ANILLO TORICO   | 199,3x5,7-NBR<br>199,3x5,7 FPM | 1 1 1 1<br>- 1 - -  |
| 17 | 83 15 73  | BALL BEARING<br>KULLAGER<br>KUGELLAGER<br>ROULEMENT A BILLES<br>COJINETE DE BOLAS                       | 6305 Z/C3 25x62x17             | 1 1 1 1   |

| Item No<br>Pos Nr.<br>Pos.-Nr.<br>Nº de<br>reperage<br>No de<br>sondero | Part No.<br>Detailj nr<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Désignation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Dénomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|---|---|--|--|---|
|   |   | SHAFT UNIT   | For motor  | 090   |
|   |   | AXELENHET  | För motor  | 180   |
|   |   | WELLENEINHEIT  | Für motor  | 0   |
|   |   | UNITE D'ARBRE  |  | 170   |
|   |   | UNIDAD DE ARBOL  |  | 0   |
|   |   |  |  | 860   |
|   |   |  |  | 1170  |
|   |   |  |  | 880   |

|    |  |  |                                     |                           |
|----|--|--|-------------------------------------|---------------------------|
| 18 | 439 35 03<br>439 38 05<br>439 38 06<br>Ex 444 75 02<br>Ex 444 76 04<br>444 76 05 | SHAFT UNIT<br>AXELENHET<br>WELLENEINHEIT<br>UNITE D'ARBRE<br>UNIDAD DE ARBOL | For motor<br>För motor<br>Für motor | Pour moteur<br>Para motor |
|    |  |  | 18-11-4A                            | - 1 - -                   |
|    |  |  | 18-10-2A                            | - 1 1 -                   |
|    |  |  | 18-10-2G                            | - - 1 -                   |
|    |  |  | 18-11-4A                            | 1 - - -                   |
|    |  |  | 18-10-2A                            | 1 - - 1                   |
|    |  |  | 18-10-2G                            | - - - 1                   |

|    |   |
|----|---|
| 19 | STATOR<br>STATOR<br>STATOR<br>STATOR<br>ESTATOR |
|----|---|



3~, 50Hz, 3.1kW, 1440r/min (18-11-4A)

|           |                       |
|-----------|-----------------------|
| 310 11 12 | —                     |
| 310 11 27 | 190-200V Y            |
| 310 11 28 | 190-200V Δ            |
| 310 11 29 | —                     |
| 310 11 30 | —                     |
| 310 11 32 | 346-350V Y/200-208V Δ |
| 310 11 34 | 380V Y/220V Δ         |
| 310 11 35 | 346-350V Δ            |
| 310 11 38 | 660V Y/380V Δ         |
| 310 11 39 | 690V Y/400V Δ         |
| 310 11 40 | 400V Δ                |
| 310 11 44 | 400-440V Δ            |
| 310 11 50 | 500V Δ                |
| 310 11 52 | —                     |
| 310 11 55 | 550V Δ                |
| 310 11 58 | 660V Δ                |

3~, 60Hz, 3.7kW, (5.0hp) 1700r/min (18-11-4A)

|                               |         |
|-------------------------------|---------|
| 440-460V Y ser./220-230V Y // | 1 1 - - |
| 200-220V Y                    | 1 1 - - |
| 200-220V Δ                    | 1 1 - - |
| 380V Y/220V Δ                 | 1 1 - - |
| 380V Δ                        | 1 1 - - |
| 400V Y/230-240V Δ             | 1 1 - - |
| 440-460V Y/260V Δ             | 1 1 - - |
| —                             | 1 1 - - |
| 440-460V Δ                    | 1 1 - - |
| —                             | 1 1 - - |
| 400V Δ                        | 1 1 - - |
| —                             | 1 1 - - |
| 575V Δ                        | 1 1 - - |
| 575-600V Δ                    | 1 1 - - |
| —                             | 1 1 - - |
| —                             | 1 1 - - |

3~, 50Hz, 4.4kW, 2850r/min (18-10-2A)

|           |                       |
|-----------|-----------------------|
| 344 86 12 | —                     |
| 344 86 27 | 190-200V Y            |
| 344 86 28 | 190-200V Δ            |
| 344 86 29 | —                     |
| 344 86 30 | —                     |
| 344 86 32 | 346-350V Y/200-208V Δ |
| 344 86 34 | 380V Y/220V Δ         |
| 344 86 35 | 346-350V Δ            |
| 344 86 38 | 660V Y/380V Δ         |
| 344 86 40 | 400V Δ                |
| 344 86 44 | 400-440V Δ            |

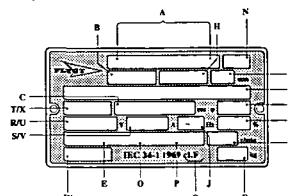
3~, 60Hz, 4.5kW, (6.0hp) 3450r/min (18-10-2A)

|                               |         |
|-------------------------------|---------|
| 440-460V Y ser./220-230V Y // | 1 1 1 1 |
| 200-220V Y                    | 1 1 1 1 |
| 200-220V Δ                    | 1 1 1 1 |
| 380V Y/220V Δ                 | 1 1 1 1 |
| 380V Δ                        | 1 1 1 1 |
| 400V Y/230-240V Δ             | 1 1 1 1 |
| 440-460V Y/260V Δ             | 1 1 1 1 |
| —                             | 1 1 1 1 |
| 440-460V Δ                    | 1 1 1 1 |
| —                             | 1 1 1 1 |
| 400V Δ                        | 1 1 1 1 |
| —                             | 1 1 1 1 |

| Item No.          | Part No.              | Denomination | Suppl. Descript.          | Quantity          |
|-------------------|-----------------------|--------------|---------------------------|-------------------|
| Pos Nr.           | Detail nr             | Benämning    | Kompl. Benäm.             | Antal             |
| Pos.-Nr.          | Bestell-Nr.           | Bezeichnung  | Zusätzl. Bezeichnung      | Anzahl            |
| Nº de<br>repérage | Nº de piece           | Designación  | Dénomination Compl.       | Nombre            |
| No de<br>sondero  | Número de<br>elemento | Designación  | Descripción suplementaria | Número            |
|                   |                       |              |                           | 090 180 0 170 890 |

19

STATOR  
STATOR  
STATOR  
STATOR  
ESTATOR



3~, 50Hz, 4.4kW, 2850r/min (18-10-2A)

3~, 60Hz, 4.5kW, (6.0hp) 3450r/min (18-10-2A)

|           |        |            |   |   |   |   |
|-----------|--------|------------|---|---|---|---|
| 344 86 50 | 500V Δ | 575V Δ     | 1 | 1 | 1 | 1 |
| 344 86 52 | —      | 575-600V Δ | 1 | 1 | 1 | 1 |
| 344 86 55 | 550V Δ | —          | 1 | 1 | 1 | 1 |
| 344 86 58 | 660V Δ | —          | 1 | 1 | 1 | 1 |

1~, 60Hz, 4.0kW, (5.4hp) 3490r/min (18-10-2G)

|           |   |          |   |   |   |   |
|-----------|---|----------|---|---|---|---|
| 522 72 72 | — | 220-230V | - | - | 1 | 1 |
|-----------|---|----------|---|---|---|---|

|    |          |   |                        |   |   |   |   |
|----|----------|---|------------------------|---|---|---|---|
| 22 | 83 45 59 | CABLE TIE<br>BUNTBAND<br>SPANNBAND<br>COLLIER DE CABLE<br>COLLAR DE CABLE | 200x2,4 PA 6/6 -55+105 | 1 | 1 | 1 | 1 |
|----|----------|---|------------------------|---|---|---|---|

MOTORCABLE  
MOTORSLADD  
MOTORKABEL  
CABLE DE MOTEUR  
CABLE DEL MOTOR



|    |  |   |   |   |   |   |
|----|--|---|---|---|---|---|
| 23 | W 94 19 75<br>94 20 42<br>94 20 59<br>94 20 82<br>94 21 02<br>94 21 04<br>94 21 06 | SIH-J 4x2.5mm <sup>2</sup> , max 90°C (194°F)(10)-12 mm (0.39"-0.47")<br>SUBCAB, 4x2.5mm <sup>2</sup> , max 70°C (158°F)(12.5)-13.5 mm (0.49"-0.53")<br>SUBCAB, 4G2.5+2x1.5mm <sup>2</sup> , max 70°C (158°F)(17)-18 mm (0.67"-0.71")<br>SUBCAB, 7G2.5mm <sup>2</sup> +2x1.5mm <sup>2</sup> , max 70°C (158°F)(20)-23 mm (0.79"-0.91")<br>SUBCAB, 14 AWG/7, max 70°C (158°F)(18)-20 mm (0.71"-0.79")<br>SUBCAB, 12AWG/7, max 70°C (158°F)(19.5)-21.5 mm (0.77"-0.85")<br>SUBCAB, 10AWG/3-2-1-GC, max 70°C (158°F)(20.3)-22.3 mm (0.80"-0.88") | - | * | - | - |
|    |  |   | - | * | * | - |
|    |  |   | * | * | * | * |
|    |  |   | * | * | * | * |
|    |  |   | - | * | * | - |
|    |  |   | * | * | * | * |
|    |  |   | * | * | * | * |

|      |   |   |  |   |   |   |   |
|------|---|---|--|---|---|---|---|
| 24.1 | 394 77 10<br>394 77 11<br>397 81 00<br>431 81 00<br>431 81 01<br>435 56 00<br>435 56 03 | CABLE ENTRY UNIT<br>INFÖRINGSSENHET<br>KABELEINFÜHRUNGSEINH<br>ENTREE DE CABLE UNIT<br>ENTRADA DE CABLE UNI<br>(20) - 26 mm<br>(26) - 32 mm<br>(10) - 20 mm<br>(26) - 32 mm<br>(26) - 29 mm<br>(20) - 23 mm<br>(17) - 20 mm | (20) - 26 mm<br>(26) - 32 mm<br>(10) - 20 mm<br>(26) - 32 mm<br>(26) - 29 mm<br>(20) - 23 mm<br>(17) - 20 mm | - | 1 | 1 | - |
|      |   |   |  | - | 1 | 1 | - |
|      |   |   |  | * | 1 | 1 | - |
|      |   |   |  | * | 1 | 1 | - |
|      |   |   |  | * | 1 | 1 | - |
|      |   |   |  | * | 1 | 1 | - |
|      |   |   |  | * | 1 | 1 | - |
|      |   |   |  | * | 1 | 1 | - |

| Item No<br>Pos. Nr.<br>Pos.-Nr.<br>Nº de<br>repérage<br>No de<br>sondero | Part No.<br>Detalj nr<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Désignation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Dénomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|--|--|--|--|---|
|  |  |  |  | 090 180 170 0 890                               |

|      |  |  |  |  |
|------|--|--|--|--|
| 24.1 | 435 56 04<br>435 56 05   | CABLE ENTRY UNIT<br>INFÖRINGSENHET<br>KABELEINFÜHRUNGSEINH<br>ENTREE DE CABLE UNIT<br>ENTRADA DE CABLE UNI | (14) - 17 mm<br>(23) - 26 mm   | 1 - - 1<br>1 - - 1   |
| 24.2 | 398 98 00<br>398 98 01<br>398 98 02<br>398 98 03<br>398 98 05<br>398 98 06<br>398 98 07  | CLAMP<br>KLÄMMA<br>KLEMME<br>CRAMPON<br>ABRAZADERA   | PA 12, 10-12 mm<br>PA 12, 12-14 mm<br>PA 12, 14-15 mm<br>PA 12, 16-17 mm<br>PA 12, 18-20 mm<br>PA 12, 15-16 mm<br>PA 12, 17-18 mm  | - 1 - -<br>- 1 1 -  |
| 24.3 | 82 00 69   | SOCKET HEAD SCREW<br>SEXKANTHÅLSKRU<br>SCHRAUBE<br>VIS<br>TORNILLO   | M12x30-A2-70   | 2 2 2 2  |
| 24.4 | 82 40 55<br>82 40 57<br>82 40 59<br>82 40 76<br>82 40 77<br>82 40 78<br>82 40 79<br>82 40 80<br>82 40 81<br>82 40 82<br>82 40 84<br>82 41 08   | WASHER<br>BRICKA<br>SCHEIBE<br>RONDELLE<br>ARANDELA  | 16,5x35x2-A2-70<br>18,5x35x2-A2-70<br>20,5x35x2-A2-70<br>22,5x52x2-A2-70<br>24,5x52x2-A2-70<br>26,5x52x2-A2-70<br>28,5x52x2-A2-70<br>30,5x52x2-A2-70<br>32,5x52x2-A2-70<br>34,5x52x2-A2-70<br>14,5x35x2-A2-70<br>12,5x35x2-A2-70   | - 2 2 -<br>- 2 2 -<br>2 2 2 2<br>2 - - 2<br>- 2 2 -<br>- 2 - -   |
| 24.5 | 84 18 00<br>84 18 01<br>84 18 02<br>84 18 03<br>84 18 04<br>84 18 05<br>84 35 32<br>84 35 33<br>84 35 34<br>84 35 59<br>84 35 66<br>84 36 39<br>84 36 40<br>84 38 83<br>84 38 84<br>84 38 85<br>84 38 86<br>84 38 87<br>84 38 88 | SEAL SLEEVE<br>TÄTNINGSHYLSA<br>DICHTUNGSHÜLSE<br>DOUILLE DE JOINT<br>MANGUITO DE JUNTA                    | DIAM=18;L=26<br>DIAM=21;L=26<br>DIAM=23;L=26<br>DIAM=26;L=26<br>DIAM=29;L=26<br>DIAM=31,5;L=26<br>15x35x22<br>17x35x22 TYP 2<br>19x35x22<br>13x35x22 TYP 2<br>11x35x22<br>18x35x22 TYP 2<br>16x35x22 TYP 2<br>21x52x26<br>23x52x26<br>25x52x26<br>27x52x26<br>29x52x26<br>31x52x26 | 1 - - 1<br>1 - - 1<br>- 1 1 -<br>- 1 1 -<br>- 1 1 -<br>- 1 1 -<br>- 1 - -<br>- 1 1 - |

| Item No.          | Part No.              | Denomination | Suppl. Descript.       | Quantity        |
|-------------------|-----------------------|--------------|------------------------|-----------------|
| Pos. Nr.          | Detalj nr             | Benämning    | Kompl. Benämnn.        | Antal           |
| Pos.-Nr.          | Bestell-Nr.           | Bezeichnung  | Zusatzi. Bezeichnung   | Anzahl          |
| Nº de<br>reperage | Nº de pièce           | Designación  | Dénomination Compl.    | Nombre          |
| No de<br>sondero  | Número de<br>elemento | Designation  | Descrip. suplementaria | Número          |
|                   |                       |              |                        | 090 180 170 890 |

|      |  |  |  |                               |
|------|--|--|--|-------------------------------|
| 24.6 | 82 17 61                               | SCREW<br>SKRUV<br>SCHRAUBE<br>VIS<br>TORNILLO  | TAPTITE-M6x12  | 3 3 3 3                       |
| 24.7 | 83 42 96<br>83 43 45                   | CABLE LUG<br>KABELSKO<br>KABELSCHUH<br>SABOT DE CABLE<br>GRAPA DE CABLE                          | 4-6 mm <sup>2</sup> ; M6<br>1,6-2,5 mm <sup>2</sup> ; M6 | 2 2 2 2<br>2 2 2 2            |
| 24.8 | 83 44 23<br>83 44 24<br>W 83 44 48     | CLOSED END SPLICE<br>ÄNDSKARVHYLSA<br>KABELENDVERBINDER<br>RACCORDS EMBOUTS<br>CONECTOR CONTERA  | 5,1-10,5;L=40<br>2,5-6(AWG 12-10)L=17,5<br>4,16-7,47     | 3 3 3 3<br>2 - 2 2<br>- 2 - - |
| 25   | 443 50 00<br>Ex 443 50 01<br>443 51 00 | ENTRANCE COVER<br>INFÖRINGSLOCK<br>EINFÜHRUNGSDECKEL<br>COUVERCLE D'ENTREE<br>TAPA DE ENTRADA    | Ø 20 - 32 mm<br>Ø 10 - 20 mm                             | - 1 1 -<br>1 - - 1<br>- 1 1 - |
| 26   | 82 00 34<br>82 00 36                   | SOCKET HEAD SCREW<br>SEXKANTHÅLSKRUV<br>SCHRAUBE<br>VIS<br>TORNILLO                              | M8x25-A2-70<br>M8x35-A2-70                               | 4 - - 4<br>- 4 4 -            |
| 27   | 82 74 79<br>W 82 80 98                 | O-RING<br>O-RING<br>O-RING<br>ANNEAU TORIQUE<br>ANILLO TORICO                                    | 129,5x3,0-NBR<br>129,5x3,0 FPM                           | 1 1 1 1<br>- 1 - -            |
| 28.1 | 83 53 21                               | TERMINAL CLAMP<br>KOPPLINGSKLÄMMA<br>ANSCHLUSSKLEMME<br>BORNE DE RACCORDEM.<br>BORNE DE CONEXION | 6 mm <sup>2</sup>  | 6 6 6 6                       |
| 28.2 | W 83 53 30                             | TERMINAL CLAMP<br>KOPPLINGSKLÄMMA<br>ANSCHLUSSKLEMME<br>BORNE DE RACCORDEM.<br>BORNE DE CONEXION | 10 mm <sup>2</sup>                                       | - 6 - -                       |

| Item No.       | Part No.           | Denomination | Suppl. Descript.          | Quantity    |
|----------------|--------------------|--------------|---------------------------|-------------|
| Pos. Nr.       | Detalj nr.         | Benämning    | Kompl. Benäm.             | Antal       |
| Pos.-Nr.       | Bestell-Nr.        | Bezeichnung  | Zusätzl. Bezeichnung      | Anzahl      |
| N° de repérage | N° de pièce        | Designación  | Denomination Compl.       | Nombre      |
| No de sondero  | Número de elemento | Designation  | Descripción suplementaria | Número      |
|                |                    |              |                           | 090 0 0 0 0 |
|                |                    |              |                           | 180 1 1 1 1 |
|                |                    |              |                           | 170 1 1 1 1 |
|                |                    |              |                           | 890 1 1 1 1 |

|      |            |   |               |         |
|------|------------|---|---------------|---------|
| 28.3 | 83 53 22   | END PLATE<br>ÄNDPLATTA<br>ENDPLATTE<br>PLAQUE DE BOUT<br>PLACA DE DETRAS                  | APPA - 1179,6 | 1 1 1 1 |
| 28.4 | 83 53 33   | END PLATE<br>ÄNDPLATTA<br>ENDPLATTE<br>PLAQUE DE BOUT<br>PLACA DE DETRAS                  |               | - 1 - - |
| 28.6 | 83 53 31   | END SUPPORT<br>ÄNDSTOPP<br>ENDANSCHLAG<br>ARRET DE BOUT<br>TOPE DE DETRAS                 | 35x15         | 2 2 2 2 |
| 28.7 | 443 68 00  | RAIL<br>SKENA<br>SCHIENE<br>RAIL<br>RIEL  |               | 1 1 1 1 |
| 28.8 | W 83 95 18 | MARKING STRIP<br>MÄRKREMSA<br>MARKIERUNGSSTREIFE<br>RUBAN DE MARQUAGE<br>FRANJA DE MARCAR |               | - 2 - - |
| 28.9 | 471 77 01  | MARKING STRIP<br>MÄRKREMSA<br>MARKIERUNGSSTREIFE<br>RUBAN DE MARQUAGE<br>FRANJA DE MARCAR |               | 2 2 2 2 |
| 29   | 457 92 00  | SLEEVE<br>HYLSA<br>HÜLSE<br>DOUILLE<br>MANGUITO   |               | 1 1 1 1 |

| Item No<br>Pos Nr.<br>Pos.-Nr.<br>Nº de<br>reperage<br>No de<br>sondero | Part No.<br>Detail nr.<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designation                     | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Dénomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|---|---|--|--|---|
|   |   |  |  | 090 180 0 170 890                               |
| 30  | 443 69 00   | LEAD THROUGH<br>GENOMFÖRING<br>DURCHFÜHRUNG<br>PASSAGE<br>PASA CABLE                       |  | 1 1 1 1   |
| 31  | 439 44 01   | SCREW<br>SKRUV<br>SCHRAUBE<br>VIS<br>TORNILLO  |  | 3 - - 3   |
| 32  | 596 07 00   | WASHER<br>BRICKA<br>SCHEIBE<br>RONDELLE<br>ARANDELA  |  | 3 - - 3   |
| 33  | 82 17 64  | SCREW<br>SKRUV<br>SCHRAUBE<br>VIS<br>TORNILLO  | TAPTITE-M6x20  | 7 7 7 7   |
| 34  | 82 50 60  | LOCK WASHER<br>LÄSBRICKA<br>SICHERUNGSSCHEIBE<br>RONDELLE DE BLOCAGE<br>ARANDELA DE CIERRE | DUBO NR 301  | 3 3 3 3   |
| 35  | 439 42 00<br>439 42 01  | SLEEVE<br>HYLSA<br>HÜLSE<br>DOUILLE<br>MANGUITO  | Shaft unit 439 35 03<br>Shaft unit 439 38 05   | - 1 -<br>- 1 1 1                                |
| 36  | 504 78 06   | CABLE UNIT<br>SLADDENHET<br>KABELEINHEIT<br>UNITE DE CABLE<br>UNIDAD DE CABLE              | (CLS)  | - 1 1 -   |
| 37  | 504 78 07   | CABLE UNIT<br>SLADDENHET<br>KABELEINHEIT<br>UNITE DE CABLE<br>UNIDAD DE CABLE              | (FLS)  | 1 1 1 1   |

| Item No<br>Pos Nr.<br>Pos.-Nr.<br>Nº de<br>repérage<br>No de<br>sondero | Part No.<br>Detail nr<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Dénomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|---|--|--|--|---|
|   |  |  |  | 090 180 170 890                                 |
|   |  |  |  | - 180 170 890                                   |
|   |  |  |  |   |

|    |  |   |   |                               |
|----|--|---|---|-------------------------------|
| 38 | 518 89 02                              | LEAKAGE DETECT.UNIT<br>LÄCKAGEDETEKT.ENHET<br>LECKAGEDETEKT.EINH.<br>DETECT.FUITE-UNITE<br>DETECT.GOTEZO-UNIDAD | FLS   | 1 1 1 1                       |
| 39 | 505 12 00                              | LEAKAGE DETECT.UNIT<br>LÄCKAGEDETEKT.ENHET<br>LECKAGEDETEKT.EINH.<br>DETECT.FUITE-UNITE<br>DETECT.GOTEZO-UNIDAD | CLS   | - 1 1 -                       |
| 40 | 439 33 10<br>Ex 439 33 11<br>439 33 12 | BEARING HOLDER<br>LAGERHÅLLARE<br>LAGERHALTER<br>SUPPORT DE ROULEMENT<br>SUJETADOR DE COJIN.                    | (CLS)   | - 1 1 -<br>1 - - 1<br>- 1 1 - |
| 41 | 83 36 90                               | BALL BEARING<br>KULLAGER<br>KUGELLAGER<br>ROULEMENT A BILLES<br>COJINETE DE BOLAS                               | 3305A C3 25x62x24,4                                 | 1 1 1 1                       |
| 42 | 82 74 65<br>W 82 80 90                 | O-RING<br>O-RING<br>O-RING<br>ANNEAU TORIQUE<br>ANILLO TORICO   | 59,5x3,0-NBR<br>59,5x3,0 FPM                        | 1 1 1 1<br>- 1 - -            |
| 43 | 605 20 00                              | BEARING COVER<br>LAGERLOCK<br>LAGERDECKEL<br>COUVERCLE DE ROULEM<br>TAPA DE COJINETE                            |   | 1 1 1 1                       |
| 44 | 592 01 01<br>592 01 03                 | MECHANICAL SEAL<br>PLANTÄTNING<br>GLEITRINGDICHTUNG<br>JOINT MECANIQUE<br>JUNTA MECANICA                        | CSb - Al <sub>2</sub> O <sub>3</sub><br>WCCo - WCCo | 1 1 1 1<br>1 1 1 1            |
| 45 | 82 00 72<br>82 00 74                   | SOCKET HEAD SCREW<br>SEXKANTHÅLSKRUV<br>SCHRAUBE<br>VIS<br>TORNILLO   | M12x45-A2-70<br>M12x55-A2-70                        | 3 - - 3<br>3 3 3 -            |

| Item No<br>Pos Nr.<br>Pos.-Nr.<br>Nº de<br>repérage<br>No de<br>sondero | Part No.<br>Detail nr.<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Denomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Número<br>Número |
|---|---|--|--|---|
|   |   |  |  | 090 180 170 090                                 |

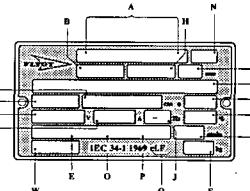
|    |  |  |   |  |
|----|--|--|---|--|
| 46 | 439 32 02  | OIL HOUSING BOTTOM<br>OLJEHUSBOTTEN<br>ÖLGEHÄUSEBODEN<br>FOND DE CART.A HUILE<br>FONDO CAM.DE ACEITE     |   | 1 1 1 1                                  |
| 47 | 443 49 00  | SLEEVE<br>HYLSA<br>HÜLSE<br>DOUILLE<br>MANGUITO  |   | 1 1 1 1                                  |
| 48 | W 82 72 95<br>82 73 90                           | O-RING<br>O-RING<br>O-RING<br>ANNEAU TORIQUE<br>ANILLO TORICO  | 19,2x3,0 FPM<br>19,2x3,0 NBR  | - 6 - -<br>6 6 6 6                       |
| 49 | 428 22 01  | INSPECTION SCREW<br>INSPEKTIONSSKRUVE<br>INSPEKTIONSSCHRAUBE<br>VIS D'INSPECTION<br>TORNILLO DE INSPECT. |   | 2 2 2 2                                  |
| 53 | 592 01 00<br>592 01 03<br>592 01 04              | MECHANICAL SEAL<br>PLANTÄTNING<br>GLEITRINGDICHTUNG<br>JOINT MECANIQUE<br>JUNTA MECANICA                 | Al <sub>2</sub> O <sub>3</sub> - WCCo<br>WCCo - WCCo<br>WCCo - WCCR | 1 1 1 1<br>1 1 1 1<br>1 1 1 1            |
| 57 | 82 74 95<br>W 82 71 35<br>82 78 27               | O-RING<br>O-RING<br>O-RING<br>ANNEAU TORIQUE<br>ANILLO TORICO  | 219,3x5,7-NBR<br>174,6x6,99 FPM<br>174,6x6,99 NBR                   | 1 1 - -<br>- 1 - -<br>1 1 - -            |
| 58 | 82 74 90   | O-RING<br>O-RING<br>O-RING<br>ANNEAU TORIQUE<br>ANILLO TORICO  | 184,3x5,7 NBR   | - - 1 1                                  |
| 60 | 379 79 02<br>379 79 03<br>379 79 04<br>379 79 07 | WASHER<br>BRICKA<br>SCHEIBE<br>RONDELLE<br>ARANDELA  | 157x172x11<br>151x172x11<br>124x172x11<br>136x172x11                | - - 1 1<br>- - 1 1<br>- - 1 1<br>- - 1 1 |

| Item No.<br>Pos Nr.<br>Pos.-Nr.<br>Nº de<br>repérage<br>No de<br>sondero | Part No.<br>Detail nr.<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Denomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|--|---|--|--|---|
|  |   |  |  | 090 180 170 080                                 |

|    |   |  |  |   |
|----|---|--|--|---|
| 61 | 380 91 00<br>398 93 00<br>404 90 01<br>464 06 00<br>464 06 01 | GUIDING CLAW<br>STYRKLO<br>FÜHRUNGSKLAUE<br>GRIFFE DE GUIDAGE<br>GARRA DE GUIA                         | CP-LT,MT,HT; FP<br>CP-MT/HT; DP-MT (60 Hz) HT<br>FJ<br>MP-HT<br>MP | 1 1 - -<br>1 1 - -<br>1 1 - -<br>- - 1 1<br>- - 1 1 |
| 62 | 81 41 58<br>82 00 72  | HEXAGON HEAD BOLT<br>SEXKANTSKRUV<br>SECHSKANTSCHRAUBE<br>VIS A TÉTE HEXAGONAL<br>TORNILLO DE CAB.EXAG | M12x45-A2-70<br>M12x45-A2-70                                       | 4 4 - -<br>- - 2 2                                  |
| 63 | 439 41 00   | SLEEVE<br>HYLSA<br>HÜLSE<br>DOUILLE<br>MANGUITO  |  | 1 1 1 1   |

## Pump parts Pumpdetaljer Pumpenteile

## Pièces de la pompe Piezas para bombas

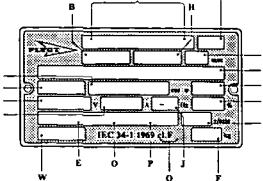
|    |   |   |   |         |
|----|---|---|---|---------|
| 64 | IMPELLER<br>PUMPHJUL<br>LAUFRAD<br>ROUE<br>IMPULSOR | Curve No.<br>Kurva nr.<br>Kurve Nr.<br>Courbe N°<br>Curvas N° |  |         |
|    | 303 36 00   | 411, 50-60 Hz, 3 ~  |   | 1 1 - - |
|    | 303 70 00   | 410, 50 Hz, 3 ~   |   | 1 1 - - |
|    | 303 79 00   | 412, 50-60 Hz, 3 ~  |   | 1 1 - - |
|    | 344 09 00   | 252, 50 Hz, 3 ~   |   | 1 1 - - |
|    | 344 11 00   | 254, 50-60 Hz, 3 ~  |   | 1 1 - - |
|    | 373 10 00   | 442, 50-60 Hz, 3 ~  |   | 1 1 - - |
|    | 373 12 00   | 440, 50 Hz, 3 ~   |   | 1 1 - - |
|    | 403 86 25   | 476, 50 Hz, 3 ~   |   | 1 1 - - |
|    | 403 86 26   | 478, 50 Hz, 3 ~   |   | 1 1 - - |
|    | 429 65 00   | 470, 50 Hz, 3 ~   |   | 1 1 - - |
|    | 431 67 00   | 436, 60 Hz, 1 ~   |   | 1 1 - - |
|    | 431 67 02   | 438 60 Hz, 1 ~  |   | 1 1 - - |
|    | 431 68 00   | 437, 60 Hz, 1 ~   |   | 1 1 - - |
|    | 431 69 00   | 441, 50-60 Hz, 3 ~  |   | 1 1 - - |
|    | 438 90 00   | 430, 50 Hz, 3 ~   |   | 1 1 - - |
|    | 438 93 00   | 435, 50-60 Hz, 3 ~  |   | 1 1 - - |
|    | 438 96 00   | 432, 50-60 Hz, 3 ~  |   | 1 1 - - |
|    | 438 99 00   | 433, 50-60 Hz, 3 ~, 60 Hz, 1 ~                                |   | 1 1 - - |
|    | 457 77 00   | 490, 50 Hz, 3 ~   |   | 1 1 - - |
|    | 457 77 01   | 491, 50-60 Hz, 3 ~  |   | 1 1 - - |

| Item No<br>Pos. Nr.<br>Pos.-Nr.<br>N° de<br>repérage<br>No de<br>sondero | Part No.<br>Detali nr.<br>Bestell-Nr.<br>N° de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusatzl. Bezeichnung<br>Dénomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|--|---|--|--|---|
|  |   |  |  | 090 180 170 860                                 |

64

IMPELLER  
PUMPHJUL  
LAUFRAD  
ROUE  
IMPULSOR

Curve No.  
Kurva nr.  
Kurve Nr.  
Courbe N°  
Curvas N°



|           |                                |   |   |     |
|-----------|--------------------------------|---|---|-----|
| 457 77 02 | 492, 50-60 Hz, 3 ~, 60 Hz, 1 ~ | 1 | 1 | -   |
| 486 48 01 | 262, 60 Hz, 3 ~                | - | - | 1 1 |
| 486 54 01 | 210, 50 Hz, 3 ~                | - | - | 1 1 |
| 486 54 02 | 212, 60 Hz, 3 ~                | - | - | 1 1 |
| 486 54 03 | 216, 60 Hz, 1 ~                | - | - | 1 1 |
| 486 54 06 | 263, 60 Hz, 3 ~                | - | - | 1 1 |
| 486 54 07 | 261, 50 Hz, 3 ~                | - | - | 1 1 |
| 486 54 08 | 267, 60 Hz, 1 ~                | - | - | 1 1 |

66

CUTTER WHEEL  
SKÄRHJUL  
SCHNEIDRAD  
ROUE DE COUPE  
RUEDE DE CORTE

Curve No.  
Kurva nr.  
Kurve Nr.  
Courbe N°  
Curvas N°

|           |                                      |   |   |     |
|-----------|--------------------------------------|---|---|-----|
| 486 47 00 | 210-267, 50Hz, 3 ~ / 60 Hz, 3 ~, 1 ~ | - | - | 1 1 |
|-----------|--------------------------------------|---|---|-----|

| Item No.       | Part No.           | Denomination | Suppl. Descript.          | Quantity        |
|----------------|--------------------|--------------|---------------------------|-----------------|
| Pos. Nr.       | Detalj nr.         | Benämning    | Kompl. Benämnn.           | Antal           |
| Pos.-Nr.       | Bestell-Nr.        | Bezeichnung  | Zusätzl. Bezeichnung      | Anzahl          |
| N° de repérage | Nº de pièce        | Designación  | Dénomination Compl.       | Nombre          |
| No de sondero  | Número de elemento | Désignation  | Descripción suplementaria | Número          |
|                |                    |              |                           | 090 180 170 890 |
|                |                    |              |                           | 190 170 890     |

**Pump parts, C-LT-version**  
**Pumpdetaljer, C-LT-utförande**  
**Pumpenteile, C-LT-Ausführung**

**Pièces de la pompe, version C-LT**  
**Piezas para bombas, versión C-LT**

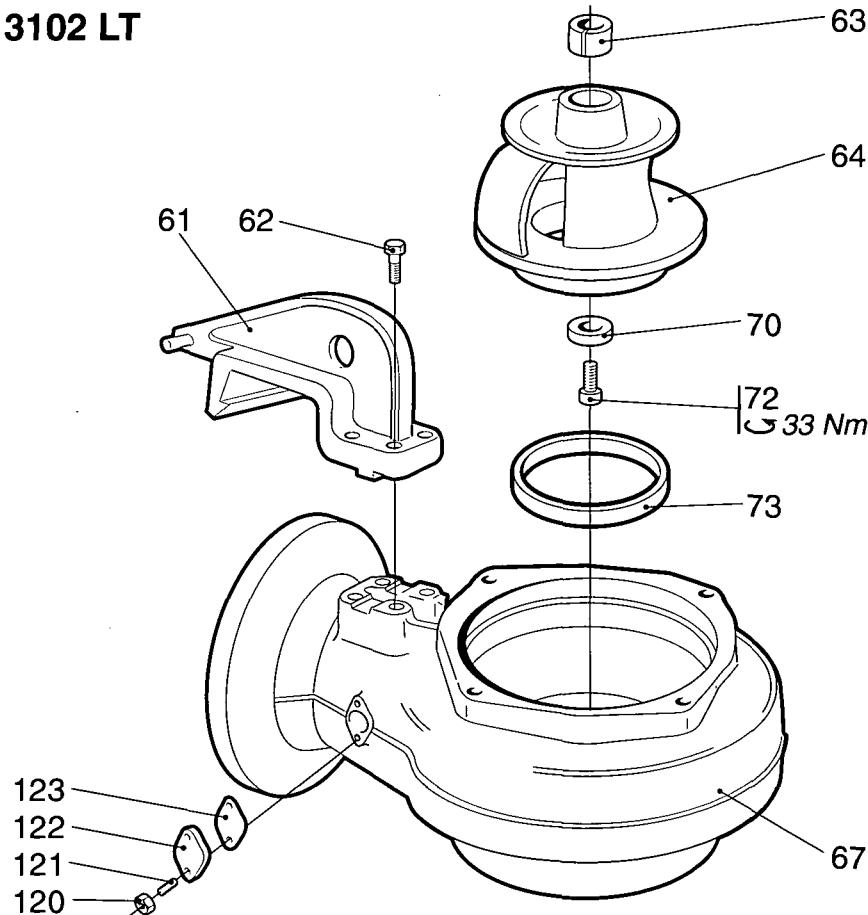
|           |  |  |   |         |
|-----------|--|--|---|---------|
| 67        |  | PUMP HOUSING<br>PUMPHUS<br>PUMPENGEHÄUSE<br>CORPS DE POMPE<br>CUERPO DE BOMBA                                    |   |         |
| 303 35 10 |  | DN 150<br>6"   |   | 1 1 - - |
| 303 35 20 |  | For flush valve<br>För omrörarventil<br>Für Rührwerkventil<br>Pour vanne de brassage<br>Para válvula de limpieza |    | 1 1 - - |
| 303 35 12 |  | DN 150<br>6"   |  | 1 1 - - |
| 303 35 16 |  | DN 150<br>6"   |  | 1 1 - - |
| 383 99 00 |  | DN 100<br>4"   |   | 1 1 - - |
| 383 99 20 |  | For flush valve<br>För omrörarventil<br>Für Rührwerkventil<br>Pour vanne de brassage<br>Para válvula de limpieza |  | 1 1 - - |
| 383 99 01 |  | DN 100<br>4"   |  | 1 1 - - |
| 383 99 02 |  | DN 100<br>4"   |  | 1 1 - - |
| 383 99 05 |  | DN 100<br>4"   |  | 1 1 - - |

| Item No.          | Part No.              | Denomination | Suppl. Descript.       | Quantity |
|-------------------|-----------------------|--------------|------------------------|----------|
| Pos. Nr.          | Detail nr.            | Benämning    | Kompl. Benämnn.        | Antal    |
| Pos.-Nr.          | Bestell-Nr.           | Bezeichnung  | Zusätzl. Bezeichnung   | Anzahl   |
| Nº de<br>reperage | Nº de pièce           | Designación  | Denomination Compl.    | Nombre   |
| No de<br>sondero  | Número de<br>elemento | Designación  | Descrip. suplementaria | Número   |
|                   |                       |              |                        | 090      |
|                   |                       |              |                        | 180      |
|                   |                       |              |                        | 170      |
|                   |                       |              |                        | 860      |

**CP 3102 LT**

Curve No.  
Kurva nr.  
Kurve Nr.  
Courbe Nº  
Curvas Nº

410  
411  
412  
440  
441  
442



| Item No.          | Part No.              | Denomination | Suppl. Descript.       | Quantity  |
|-------------------|-----------------------|--------------|------------------------|-----------|
| Pos. Nr.          | Detalj nr.            | Benämning    | Kompl. Benämnn.        | Antal     |
| Pos.-Nr.          | Bestell-Nr.           | Bezeichnung  | Zusatzi. Bezeichnung   | Anzahl    |
| Nº de<br>repérage | Nº de pièce           | Designación  | Denomination Compl.    | Nombre    |
| No de<br>sondero  | Número de<br>elemento | Designation  | Descrip. suplementaria | Número    |
|                   |                       |              |                        | 060 180 0 |
|                   |                       |              |                        | 170 170   |
|                   |                       |              |                        | 890 890   |

**Pump parts, C-MT-version**  
**Pumpdetaljer, C-MT-utförande**  
**Pumpenteile, C-MT-Ausführung**

**Pièces de la pompe, version C-MT**  
**Piezas para bombas, versión C-MT**

67

PUMP HOUSING  
 PUMPHUS  
 PUMPENGEHÄUSE  
 CORPS DE POMPE  
 CUERPO DE BOMBA

303 24 00 DN 100  
 4"

1 1 - -



303 24 20 For flush valve  
 För omrörarventil  
 Für Rührwerkventil  
 Pour vanne de brassage  
 Para válvula de limpieza

1 1 - -

303 24 01 DN 100  
 4"



SMS 342, DIN 2533  
 BS 4622: 1970 Table 11

1 1 - -

303 24 02 DN 100  
 4"



1882 Standard

1 1 - -

303 24 05 DN 100  
 4"



ANSI B 16.1:1967 Table 5

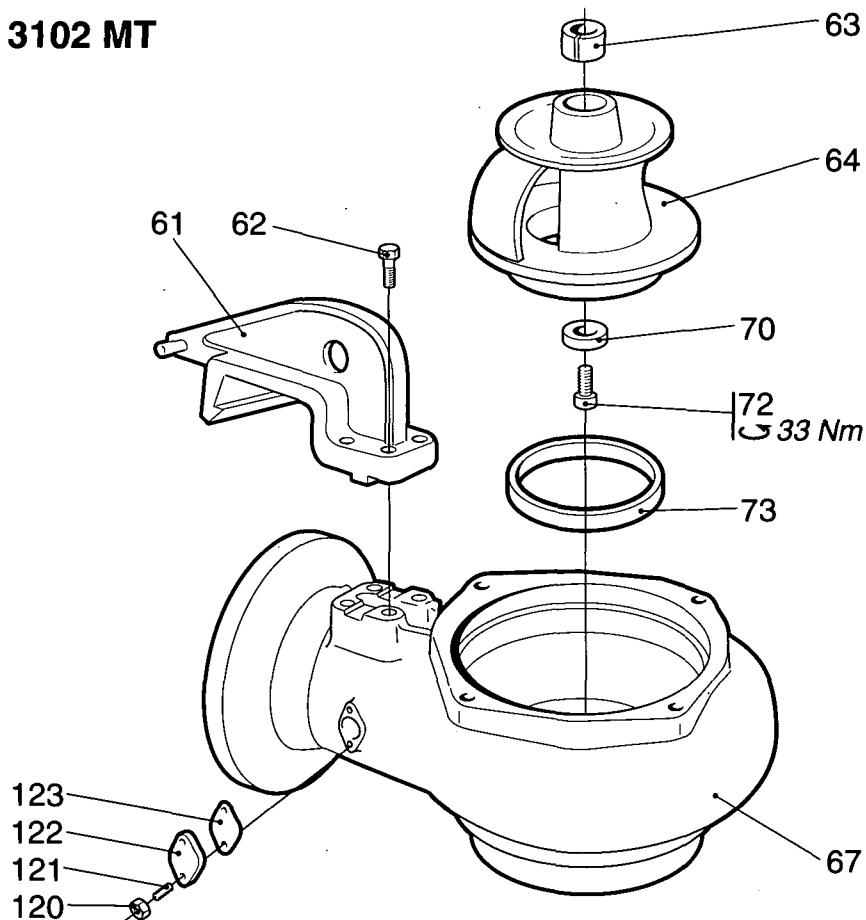
1 1 - -

| Item No.          | Part No.              | Denomination | Suppl. Descript.       | Quantity        |
|-------------------|-----------------------|--------------|------------------------|-----------------|
| Pos Nr.           | Detail nr.            | Benämning    | Kompl. Benämnn.        | Antal           |
| Pos.-Nr.          | Bestell-Nr.           | Bezeichnung  | Zusatztl. Bezeichnung  | Anzahl          |
| N° de<br>repérage | N° de pièce           | Designación  | Denomination Compl.    | Nombre          |
| No de<br>sondero  | Número de<br>elemento | Designación  | Descrip. suplementaria | Número          |
|                   |                       |              |                        | 090 180 170 680 |
|                   |                       |              |                        | 090 180 170 680 |

**CP 3102 MT**

Curve No.  
Kurva nr.  
Kurve Nr.  
Courbe N°  
Curvas N°

430  
432  
433  
435  
436  
437  
438



| Item No.<br>Pos Nr.<br>Pos.-Nr.<br>Nº de<br>repérage<br>No de<br>sondero | Part No.<br>Detalj nr<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designation | Suppl. Descript.<br>Kompl. Benämnn.<br>Zusätzl. Bezeichnung<br>Dénomination Compl.<br>Descripc. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|--|--|--|---|---|
|  |  |  |   | 090 180 170 170 690                             |
|  |  |  |   |   |

**Pump parts, C-HT-version**  
**Pumpdetaljer, C-HT-utförande**  
**Pumpenteile, C-HT-Ausführung**

**Pièces de la pompe, version C-HT**  
**Piezas para bombas, versión C-HT**

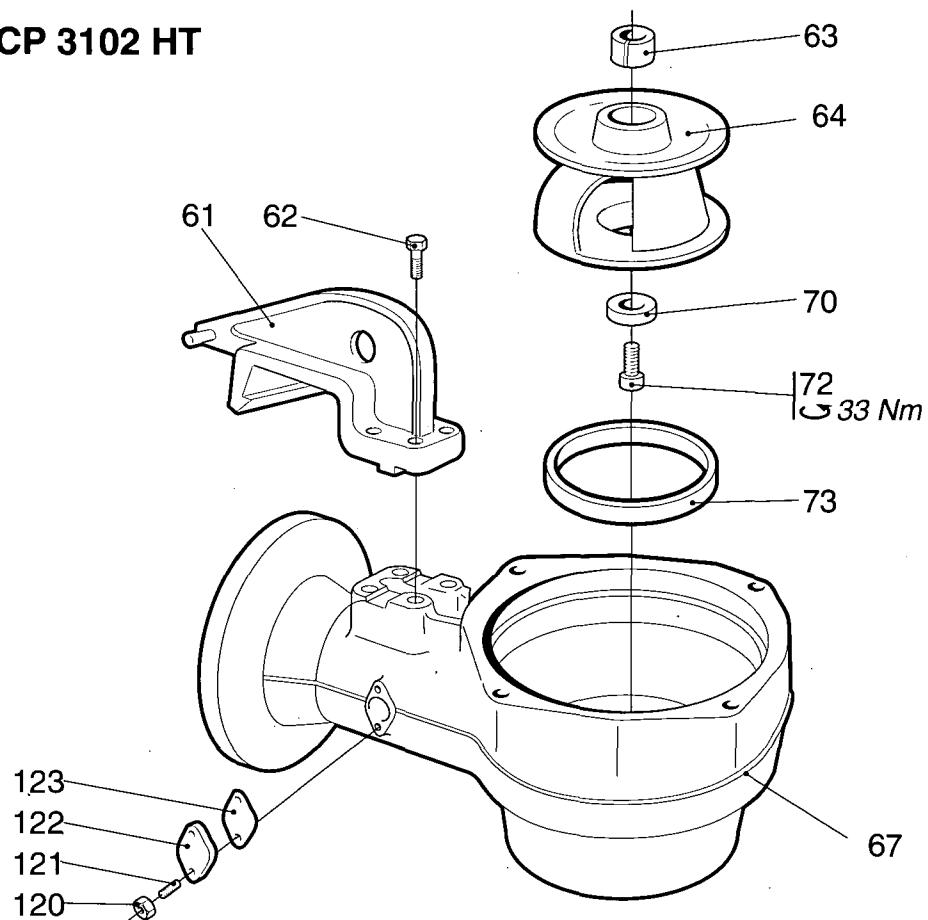
|    |           |  |   |  |
|----|-----------|--|---|--|
| 67 |           | PUMP HOUSING<br>PUMPHUS<br>PUMPENGEHÄUSE<br>CORPS DE POMPE<br>CUERPO DE BOMBA                                    |   |  |
|    | 387 32 00 | DN 80<br>3"  |   | 1 1 - -  |
|    | 387 32 20 | For flush valve<br>För omrörarventil<br>Für Rührwerkventil<br>Pour vanne de brassage<br>Para válvula de limpieza |    | 1 1 - -  |
|    | 387 32 01 | DN 80<br>3"  |  | SMS 342, DIN 2533<br>1882 Standard   |
|    | 387 32 05 | DN 80<br>3"  |  | ANSI B 16.1:1967 Table 5   |
|    | 387 32 07 | DN 80<br>3"  |  | BS 4622: 1970 Table 11   |
|    | 387 32 04 | DN 80<br>3"  |   | For conv. unit *303 84 00<br>Für übergangseinheit *)<br>Pour unite transiton *)<br>Para unidad transicion *) |

| Item No.          | Part No.              | Denomination | Suppl. Descript.          | Quantity |
|-------------------|-----------------------|--------------|---------------------------|----------|
| Pos. Nr.          | Detail nr.            | Benämning    | Kompl. Benäm.             | Antal    |
| Pos.-Nr.          | Bestell-Nr.           | Bezeichnung  | Zusätzl. Bezeichnung      | Anzahl   |
| Nº de<br>repérage | Nº de pièce           | Designación  | Dénomination Compl.       | Nombre   |
| No de<br>sondero  | Número de<br>elemento | Designación  | Descripción suplementaria | Número   |
|                   |                       |              |                           | 090      |
|                   |                       |              |                           | 180      |
|                   |                       |              |                           | 170      |
|                   |                       |              |                           | 890      |
|                   |                       |              |                           | 88       |

**CP 3102 HT**

Curve No.  
Kurva nr.  
Kurve Nr.  
Courbe Nº  
Curvas Nº

252  
254



| Item No.<br>Pos. Nr.<br>Pos.-Nr.<br>Nº de<br>reperage<br>No de<br>sondero | Part No.<br>Detali nr.<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Denomination Compl.<br>Descrip. suplementaria | Quantity<br>-Antal<br>Anzahl<br>Nombre<br>Número |
|---|---|--|--|--|
|   |   |  |  | 090 180 170 068                                  |
|   |   |  |  |  |

**Pump parts, D-version**  
**Pumpdetaljer, D-utförande**  
**Pumpenteile, D-Ausführung**

**Pièces de la pompe, version D**  
**Piezas para bombas, versión D**

67

PUMP HOUSING  
PUMPHUS  
PUMPENGEHÄUSE  
CORPS DE POMPE  
CUERPO DE BOMBA

403 87 00  
429 62 00

DN 80, 3"  
DN 100, 4"



1 1 - -  
1 1 - -

429 62 20

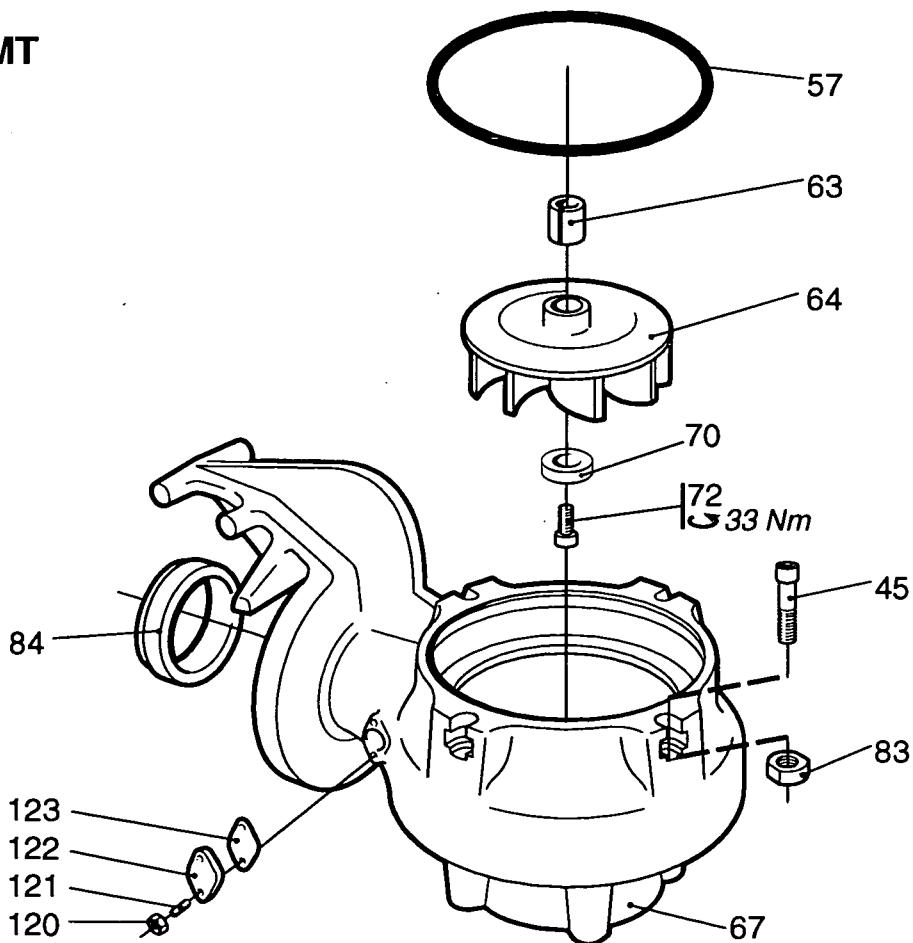
For flush valve  
Für omrörarventil  
Für Rührwerkventil  
Pour vanne de brassage  
Para válvula de limpieza

1 1 - -

**DP 3102 MT**

Curve No.  
Kurva nr.  
Kurve Nr.  
Courbe N°  
Curvas N°

470

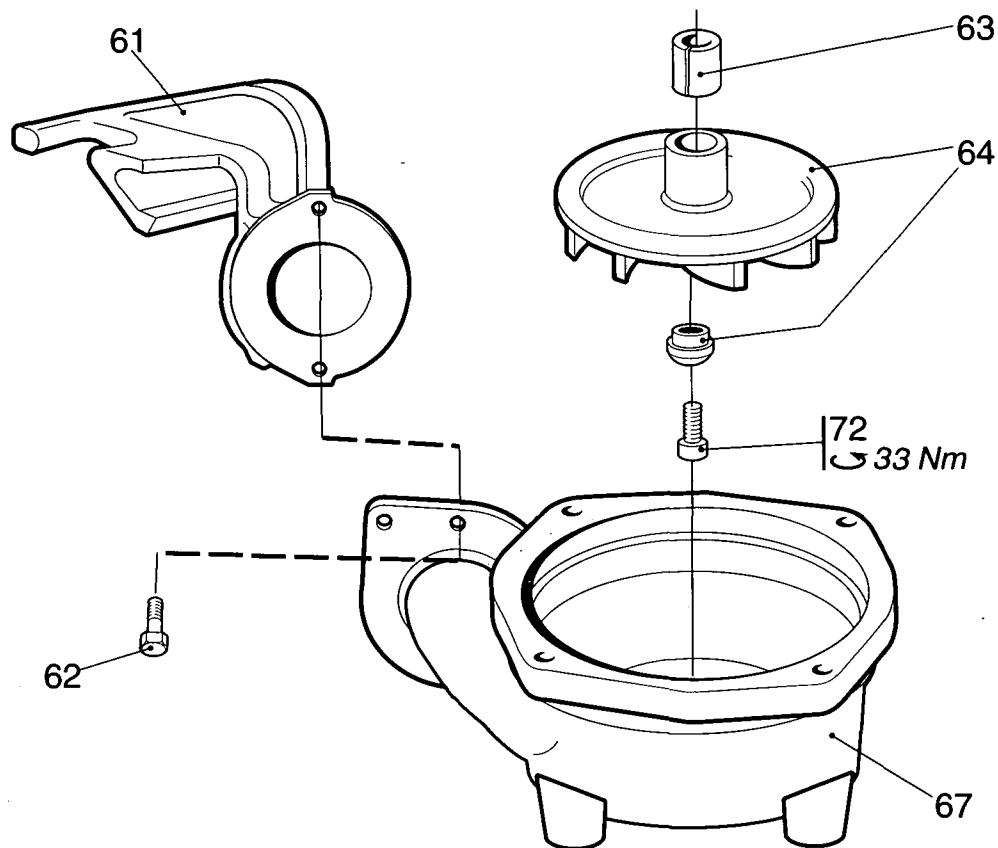


| Item No.       | Part No.           | Denomination | Suppl. Descript.       | Quantity |
|----------------|--------------------|--------------|------------------------|----------|
| Pos Nr.        | Detailj nr         | Benämning    | Kompl. Benämnn.        | Antal    |
| Pos.-Nr.       | Bestell-Nr.        | Bezeichnung  | Zusatzi. Bezeichnung   | Anzahl   |
| Nº de reperage | Nº de pièce        | Designación  | Dénomination Compl.    | Nombre   |
| No de sondero  | Número de elemento | Designation  | Descrip. suplementaria | Número   |
|                |                    |              |                        | 090      |
|                |                    |              |                        | 180      |
|                |                    |              |                        | 170      |
|                |                    |              |                        | 890      |
|                |                    |              |                        | 6        |

## DP 3102 HT 2 pol, 50 Hz

Curve No.  
Kurva nr.  
Kurve Nr.  
Courbe N°  
Curvas N°

276  
278



| Item No.          | Part No.              | Denomination | Suppl. Descrip.        | Quantity |
|-------------------|-----------------------|--------------|------------------------|----------|
| Pos Nr.           | Detalj nr             | Benämning    | Kompl. Benämnp.        | Antal    |
| Pos.-Nr.          | Bestell-Nr.           | Bezeichnung  | Zusätzl. Bezeichnung   | Anzahl   |
| Nº de<br>repérage | Nº de piece           | Designación  | Dénomination Compl.    | Nombre   |
| No de<br>sondero  | Número de<br>elemento | Désignation  | Descrip. suplementaria | Número   |
|                   |                       |              |                        | 060      |
|                   |                       |              |                        | 180      |
|                   |                       |              |                        | 170      |
|                   |                       |              |                        | 880      |

**Pump parts, F-version**  
**Pumpdetaljer, F-utförande**  
**Pumpenteile, F-Ausführung**

**Pièces de la pompe, version F**  
**Piezas para bombas, versión F**

67

PUMP HOUSING  
 PUMPHUS  
 PUMPENGEHÄUSE  
 CORPS DE POMPE  
 CUERPO DE BOMBA

435 34 01

DN 100  
 4"



SMS 342, DIN 2533  
 BS 4622:1970 Table 11

1 1 - -

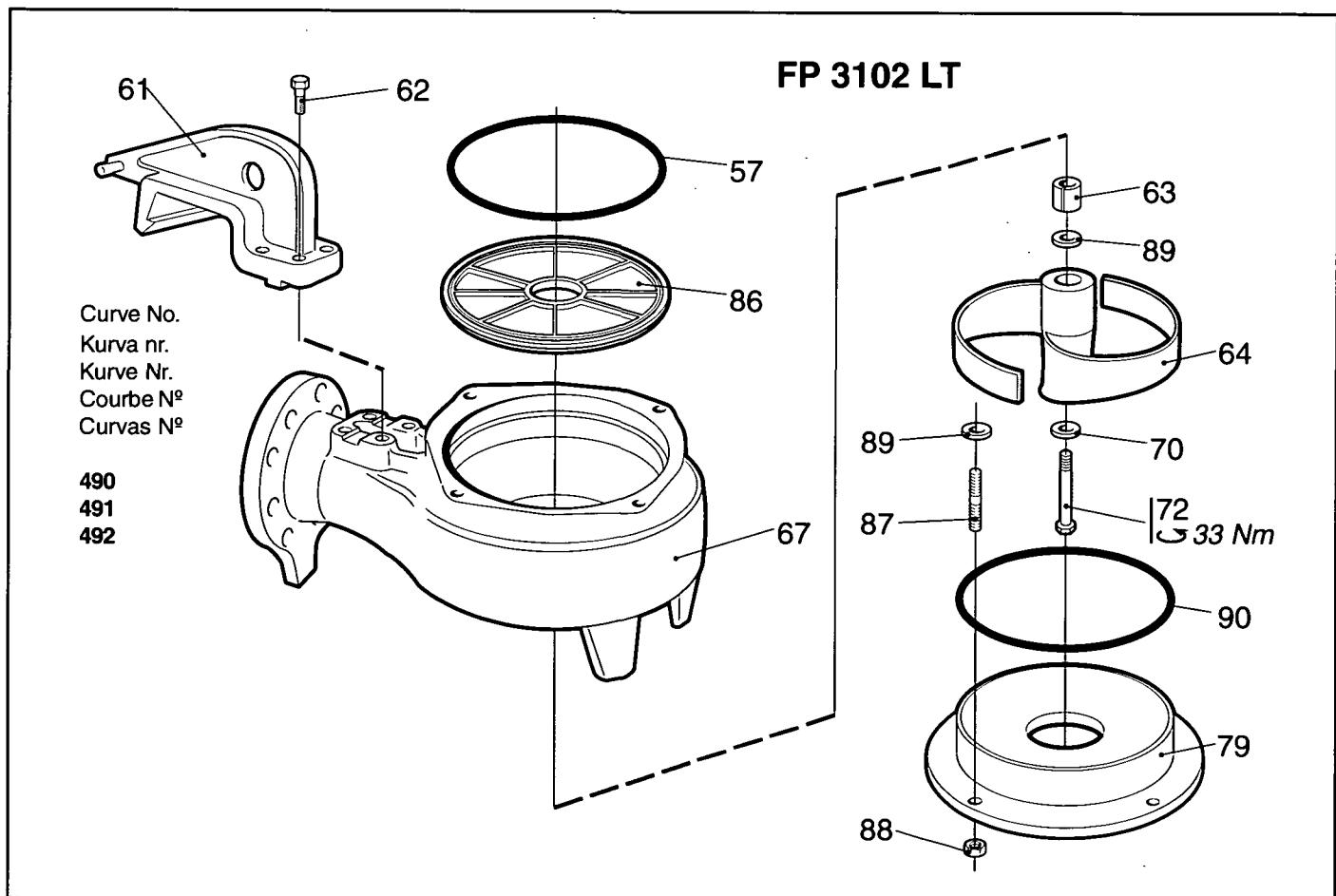
435 34 05

DN 100  
 4"



ANSI B 16.1:1967 Table 5

1 1 - -



| Item No.       | Part No.           | Denomination | Suppl. Descript.       | Quantity        |
|----------------|--------------------|--------------|------------------------|-----------------|
| Pos Nr.        | Detalj nr.         | Benämning    | Kompl. Benäm.          | Antal           |
| Pos.-Nr.       | Bestell-Nr.        | Bezeichnung  | Zusatzi. Bezeichnung   | Anzahl          |
| N° de reperage | N° de pièce        | Designación  | Denomination Compl.    | Nombre          |
| No de sondero  | Numero de elemento | Designation  | Descrip. suplementaria | Numero          |
|                |                    |              |                        | 090 180 170 890 |

Pump parts, LL-version  
 Pumpdetaljer, LL-utförande  
 Pumpenteile, LL-Ausführung

Pièces de la pompe, version LL  
 Piezas para bombas, versión LL

67 PUMPHOUSING  
 PUMPHUS  
 PUMPENGEHÄUSE  
 CORPS DE POMPE  
 CUERPO DE BOMBA

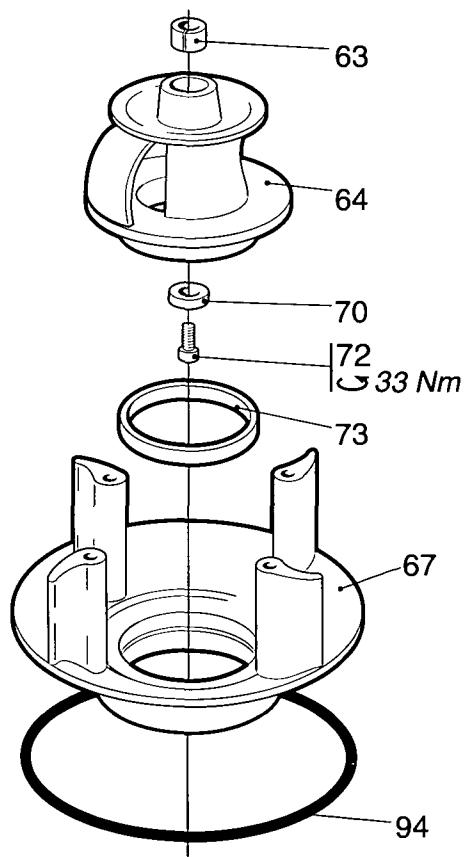
396 72 00 Diffuser  
 Ledskenedel  
 Diffusor  
 Anneau diffuseur  
 Difusor

1 1 - -

### LL 3102 LT

Curve No.  
 Kurva nr.  
 Kurve Nr.  
 Courbe N°  
 Curvas N°

410  
 411  
 412



| Item No.       | Part No.           | Denomination | Suppl. Descript.       | Quantity |
|----------------|--------------------|--------------|------------------------|----------|
| Pos. Nr.       | Detalj nr.         | Benämning    | Kompl. Benämnn.        | Antal    |
| Pos.-Nr.       | Bestell-Nr.        | Bezeichnung  | Zusätzl. Bezeichnung   | Anzahl   |
| N° de repérage | N° de pièce        | Designación  | Denomination Compl.    | Nombre   |
| No de sondero  | Número de elemento | Désignation  | Descrip. suplementaria | Número   |
|                |                    |              |                        |          |
|                |                    |              |                        | 090      |
|                |                    |              |                        | 180      |
|                |                    |              |                        | 170      |
|                |                    |              |                        | 060      |
|                |                    |              |                        | 88       |

**Pump parts, MP, MH and****MF-version****Pumpdetaljer, MP, MH och****MF-utförande****Pumpenteile, MP, MH und****MF-Ausführung****Pièces de la pompe, version MP,****MH et MF****Piezas para bombas, MP, MH y****versión MF**

|    |                                     |   |   |                               |
|----|-------------------------------------|---|---|-------------------------------|
| 67 |                                     | PUMPHOUSING<br>PUMPHUS<br>PUMPENGEHÄUSE<br>CORPS DE POMPE<br>CUERPO DE BOMBA                                |   |                               |
|    | 464 00 00                           | Vertical outlet<br>Vertikalt utlopp<br>Vertikaler Auslass<br>Sortie verticale<br>Salida vertical            | ISO - G 1½"<br>HT, 464 00 00+505 43 00 = 1½-11½ NPT<br>INSIDE | - - 1 1                       |
|    | 486 51 00                           | Vertical outlet<br>Vertikalt utlopp<br>Vertikaler Auslass<br>Sortie verticale<br>Salida vertical            | LT, R2"<br>LT, 486 51 00+505 43 01 = 2-11½ NPT<br>INSIDE      | - - 1 1                       |
|    | 464 00 01                           | Horizontal outlet<br>Horisontellt utlopp<br>Horizontaler Auslass<br>Sortie horizontale<br>Salida horizontal | HT, Ø 40mm  | - - 1 1                       |
|    | 486 51 01                           | Horizontal outlet<br>Horisontellt utlopp<br>Horizontaler Auslass<br>Sortie horizontale<br>Salida horizontal | LT, Ø 48mm  | - - 1 1                       |
| 68 | 444 88 00<br>486 42 00<br>508 67 00 | CUTTING RING<br>SKÄRRING<br>SCHNEIDRING<br>ANNEAU DE COUPE<br>ANILLO DE CORTE                               | 262<br>210,212,216<br>261,263,267                             | - - 1 1<br>- - 1 1<br>- - 1 1 |

page sida  
Seite página

Exploded view with item Nos.  
 Sprängteckning med pos nr.  
 Explosionszeichnung mit Pos. - Nrn. ....

Vue éclatée de la pompe avec N°s de repérage  
 Despiece numeros de pos.

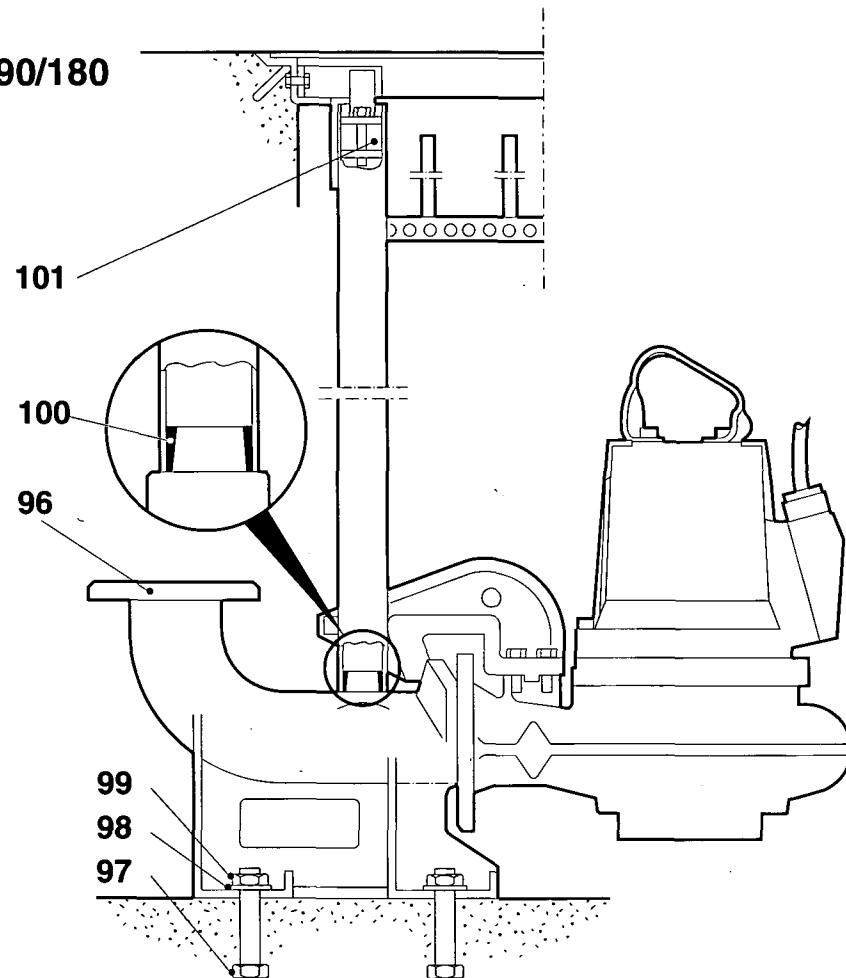
54-57

| Item No.          | Part No.              | Denomination | Suppl. Descript.       | Quantity        |
|-------------------|-----------------------|--------------|------------------------|-----------------|
| Pos. Nr.          | Detail nr.            | Benämning    | Kompl. Benämnn.        | Antal           |
| Pos.-Nr.          | Bestell-Nr.           | Bezeichnung  | Zusätzl. Bezeichnung   | Anzahl          |
| Nº de<br>répérage | Nº de piece           | Designación  | Dénomination Compl.    | Nombre          |
| No de<br>sondero  | Número de<br>elemento | Designation  | Descrip. suplementaria | Número          |
|                   |                       |              |                        | 090 180 170 180 |

|    |  |   |   |  |
|----|--|---|---|--|
| 69 | 82 00 11   | SOCKET HEAD SCREW<br>SEXKANTHÅLSKRUV<br>SCHRAUBE<br>VIS<br>TORNILLO                                     | M6x12-A2-70   | - - 3 . 3                                |
| 70 | 82 37 04<br>338 13 00<br>403 94 01<br>486 43 00  | WASHER<br>BRICKA<br>SCHEIBE<br>RONDELLE<br>ARANDELA   | 10 -A2-A 200. Version D, F<br>410 - 412, 430 - 442, 252 - 254, 270<br>490 - 492<br>210 - 216, 260 - 267 | 1 1 - -<br>1 1 - -<br>1 1 - -<br>- - 1 1 |
| 72 | 82 00 53<br>82 03 15                             | SOCKET HEAD SCREW<br>SEXKANTHÅLSKRUV<br>SCHRAUBE<br>VIS<br>TORNILLO                                     | FJ  | 1 1 1 1<br>1 1 - -                       |
| 73 | 303 50 00<br>303 66 00<br>314 88 00<br>314 88 01 | WEAR RING<br>SLITRING<br>VERSCHLEISSRING<br>ANNEAU D'USURE<br>ANILLO DE DESGASTE                        | MT/HT 0516.2634.01<br>LT 0516.2634.01<br>MT/HT 0461.5204.15<br>LT 0461.5204.15                          | 1 1 - -<br>1 1 - -<br>1 1 - -<br>1 1 - - |
| 77 | 81 41 29<br>81 41 56<br>84 34 03                 | HEXAGON HEAD SCREW<br>SEXKANTSKRUV<br>SECHSKANTSCHRAUBE<br>VIS A TÉTE HEXAGONAL<br>TORNILLO DE CAB.EXAG | M10x20-A2-70<br>M12x35-A2-70<br>M16x40-A2-70  | 2 2 - -<br>4 4 - -<br>4 4 - -            |
| 79 | 435 35 00  | SUCTION COVER<br>SUGLOCK<br>SAUGDECKEL<br>FOND D'ASPIRATION<br>FONDO DE ASPIRACION                      |   | 1 1 - -                                  |
| 83 | 429 67 00  | NUT<br>MUTTER<br>MUTTER<br>ECROU<br>TUERCA  |   | 3 3 - -                                  |
| 84 | 429 66 00  | U-RING<br>U-RING<br>U-RING<br>ANNEAU-U<br>ANILLO-U  |   | 1 1 - -                                  |

| Item No<br>Pos Nr.<br>Pos.-Nr.<br>Nº de<br>repérage<br>No de<br>sondero | Part No.<br>Detail nr<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Désignation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Denomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|---|--|--|--|---|
|   |  |  |  | 090 180 170 890                                 |

|    |   |  |  |  |
|----|---|--|--|--|
| 86 | 394 39 00<br>410 15 00                          | PUMP HOUSING COVER<br>PUMPHUSLOCK<br>PUMPENGEHÄUSE DECKEL<br>COUV.DE CORPS POMPA<br>TAPA DE CUERPO BOMBA | 490<br>491 - 492   | 1 1 - -<br>1 1 - -                         |
| 87 | 80 94 87  | STUD<br>PINNSKRUVE<br>STIFTSCHRAUBE<br>GOUJON<br>ESPARRAGO   | 8x40-A2-70   | 3 3 - -                                    |
| 88 | 82 27 27  | LOCK NUT<br>LÄSMUTTER<br>SICHERUNGSMUTTER<br>ECROU DE BLOCAGE<br>TUERCA DE SEGURIDAD                     | M8-A4-70   | 3 3 - -                                    |
| 89 | 82 35 17<br>250 23 02<br>250 23 03<br>250 23 05 | WASHER<br>BRICKA<br>SCHEIBE<br>RONDELLE<br>ARANDELA  | 70-3/8" t = 2 mm<br>t = 0,25 mm<br>t = 0,5 mm<br>t = 0,20 mm | 6 6 - -<br>18 18 - -<br>6 6 - -<br>5 5 - - |
| 90 | 82 74 94<br>W 82 80 83                          | O-RING<br>O-RING<br>O-RING<br>ANNEAU TORIQUE<br>ANILLO TORICO  | 209,3x5,7-NBR<br>209,3x5,7 FPM                               | 1 1 - -<br>- 1 - -                         |
| 94 | 82 83 40  | G-RING<br>G-RING<br>G-RING<br>ANNEAU G<br>ANILLO G   | DIAM=325;T=16 SBR  | 1 1 - -                                    |

**CP, DP 3102.090/180**

| Item No<br>Pos Nr.<br>Pos.-Nr.<br>Nº de<br>repérage<br>No de<br>sondero | Part No.<br>Detalj nr<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Désignation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Dénomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|---|--|--|--|---|
|   |  |  |  | 090   |
|   |  |  |  | 180   |
|   |  |  |  | 170   |
|   |  |  |  | 068   |

**Sump components CP, DP and MP**  
**Pumpgropsdetaljer CP, DP och MP**  
**Schachteinbauteile CP, DP und MP**

**Equipement du puisard CP, DP et MP**  
**Equipo para pozo negro CP, DP y MP**

96

DISCHARGE CON.STAT.  
 TRYCKANSL. STATIONÄR  
 DRUCKANSCHLUSS STAT.  
 ORIFICE DE REF.STAT.  
 ORIFICIO DE REC.STAT

444 68 00      DN 80 (3")  
 540 13 00      DN 100 (4")  
 444 70 00      DN 150 (6")



1 1 - -  
 1 1 - -  
 1 1 - -

444 68 05      DN 80 (3")



ANSI B 16.1:1967 Table 5

1 1 - -

540 13 02      DN 100 (4")



1882 Standard

1 1 - -

444 70 02      DN 150 (6")



1882 Standard

1 1 - -

444 68 01      DN 80 (3")  
 444 68 07      DN 80 (3")



DIN 2533  
 BS 4622:1970 Table 11  
 BS 4504:1969 Table 16/11

1 1 - -  
 1 1 - -

540 13 01      DN 100 (4")



SMS 342, DIN 2533  
 BS 4622:1970 Table 11  
 BS 4504:1969 Table 16/11

1 1 - -

540 13 05      DN 100 (4")



ANSI B 16.1:1967 Table 5

1 1 - -

444 70 06      DN 150 (6")



SMS 342, DIN 2533  
 BS 4622:1970 Table 11  
 BS 4504:1969 Table 16/11  
 ANSI B 16.1:1967 Table 5

1 1 - -

| Item No<br>Pos Nr.<br>Pos.-Nr.<br>Nº de<br>reperage<br>No de<br>sondero | Part No.<br>Detail nr.<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Denomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|---|---|--|--|---|
|   |   |  |  | 090 180 170 890                                 |

|     |  |   |  |  |
|-----|--|---|--|--|
| 96  | 486 55 00<br>486 55 01                           | ISO - G2"<br>2 - 11 ½ NPT   | MP H = 100 mm<br>MP H = 100 mm                       | - - 1 1<br>- - 1 1                       |
| 97  | 81 39 82   | HEXAGON HEAD BOLT<br>SEKANTSKRUV<br>SECHSKANTSCHRAUBE<br>VIS A TÉTE HEXAGONAL<br>TORNILLO DE CAB.EXAG | M20x120  | 4 4 - -                                  |
| 98  | 82 35 26   | WASHER<br>BRICKA<br>SCHEIBE<br>RONDELLE<br>ARANDELA   | 20-A2-A 140  | 4 4 - -                                  |
| 99  | 82 23 62   | HEXAGON NUT<br>SEKANTMUTTER<br>MUTTER<br>ECROU<br>TUERCA  | M20-A2-70  | 4 4 - -                                  |
| 100 | 255 47 00  | RING<br>RING<br>RING<br>ANNEAU<br>ANILLO  |  | 2 2 - -                                  |
| 101 | 264 92 01<br>304 28 01<br>405 77 00<br>408 05 00 | GUIDE HOLDER<br>GEJDFÄSTE<br>FÜHRUNGSHALTER<br>FIXATION DE GUIDE<br>SOPORTE DE GUIAS                  | Ø 3/4"<br>Ø 2"<br>100x100 mm (FJ)<br>100x100 mm (FJ) | - - 1 1<br>1 1 - -<br>1 1 - -<br>1 1 - - |

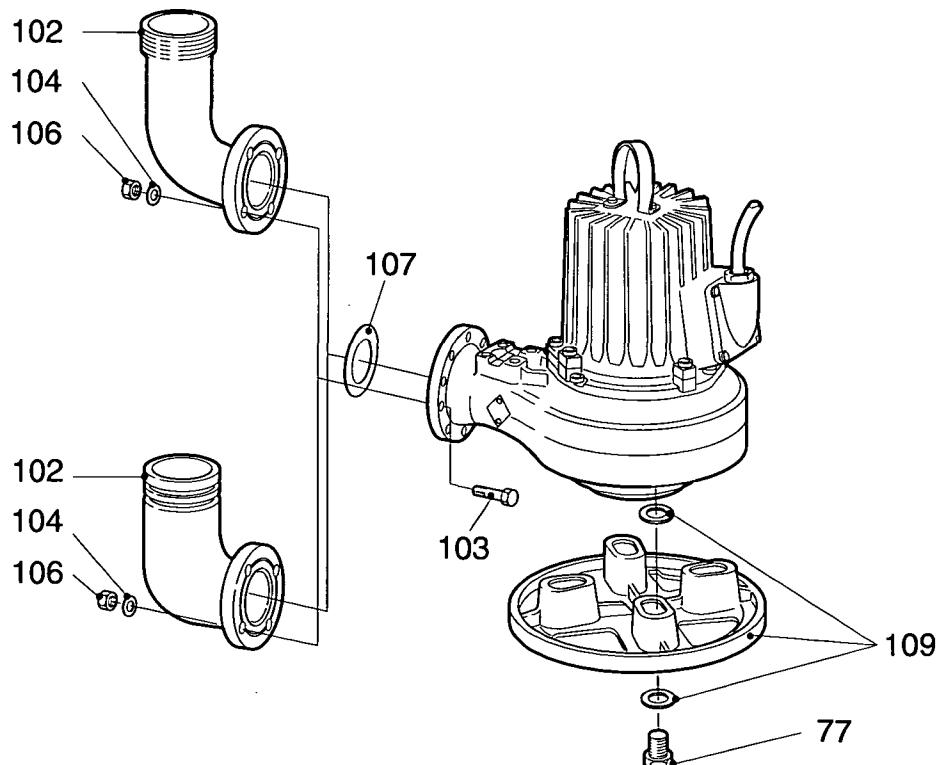
| Item No.       | Part No.           | Denomination | Suppl. Descript.       | Quantity |
|----------------|--------------------|--------------|------------------------|----------|
| Pos. Nr.       | Detalj nr          | Benämning    | Kompl. Benäm.          | Antal    |
| Pos.-Nr.       | Bestell-Nr.        | Bezeichnung  | Zusatzl. Bezeichnung   | Anzahl   |
| N° de repérage | N° de pièce        | Designación  | Denomination Compl.    | Nombre   |
| No de sondero  | Número de elemento | Désignation  | Descrip. suplementaria | Número   |
|                |                    |              |                        | 868      |
|                |                    |              |                        | 170      |
|                |                    |              |                        | 180      |
|                |                    |              |                        | 990      |

**CS-version, LT****CS-utförande, LT****CS-Ausführung, LT****Version CS, LT****Versión CS, LT**

102

DISCHARGE CONNECTION  
 TRYCKANSLUTNING  
 DRUCKANSCHLUSS  
 ORIFICE DE REFOULEM.  
 ORIFICIO DE RECALC.

|           |                    |   |   |   |   |
|-----------|--------------------|---|---|---|---|
| 259 82 00 | DN 100 4"          | 1 | 1 | - | - |
| 259 84 00 | DN 100 4" 4-8 NPSM | 1 | 1 | - | - |
| 259 84 01 | DN 100 4" R4"      | 1 | 1 | - | - |
| 295 57 00 | DN 150 6"          | 1 | 1 | - | - |
| 309 31 00 | DN 150 6" 6-8 NPSM | 1 | 1 | - | - |
| 309 31 01 | DN 150 6" R6"      | 1 | 1 | - | - |

**CS 3102 LT**

| Item No.       | Part No.           | Denomination | Suppl. Descript.          | Quantity |
|----------------|--------------------|--------------|---------------------------|----------|
| Pos Nr.        | Detalj nr.         | Benämning    | Kompl. Benämnn.           | Antal    |
| Pos. Nr.       | Bestell-Nr.        | Bezeichnung  | Zusätzl. Bezeichnung      | Anzahl   |
| Nº de reperage | Nº de pièce        | Designación  | Dénomination Compl.       | Nombre   |
| No de sondero  | Número de elemento | Designation  | Descripción suplementaria | Número   |
|                |                    |              |                           | 090      |
|                |                    |              |                           | 181      |
|                |                    |              |                           | 171      |
|                |                    |              |                           | 890      |

**CS-version, MT****Version CS, MT****CS-utförande, MT****Versión CS, MT****CS-Ausführung, MT**

102

DISCHARGE CONNECTION  
TRYCKANSLUTNING  
DRUCKANSCHLUSS  
ORIFICE DE REFOULEM.  
ORIFICIO DE RECALC.

259 82 00

DN 100 4"

1 1 - -

259 84 00

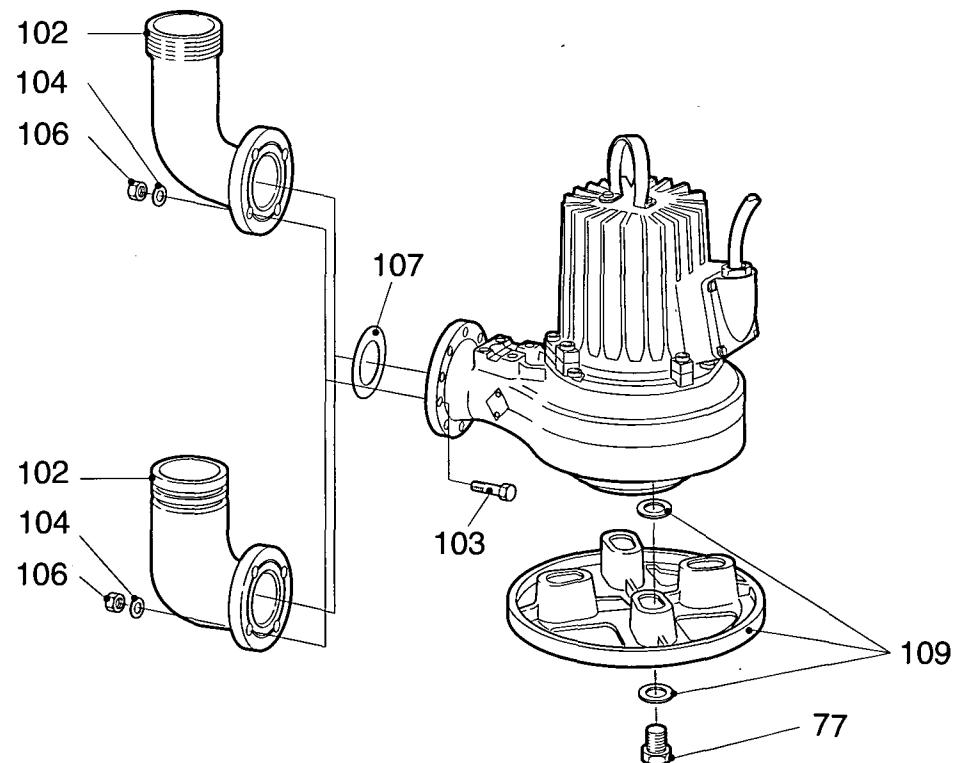
DN 100 4" 4-8 NPSM

1 1 - -

259 84 01

DN 100 4" R4"

1 1 - -

**CS 3102 MT**

| Item No.       | Part No.           | Denomination | Suppl. Descript.       | Quantity |
|----------------|--------------------|--------------|------------------------|----------|
| Pos. Nr.       | Detalj nr          | Benämning    | Kompl. Benämnn.        | Antal    |
| Pos.-Nr.       | Bestell-Nr.        | Bezeichnung  | Zusätzl. Bezeichnung   | Anzahl   |
| Nº de repérage | Nº de pièce        | Designación  | Dénomination Compl.    | Nombre   |
| No de sondero  | Número de elemento | Désignation  | Descrip. suplementaria | Número   |
|                |                    |              |                        |          |
|                |                    |              |                        | 090      |
|                |                    |              |                        | 180      |
|                |                    |              |                        | 170      |
|                |                    |              |                        | 890      |

**CS-version, HT****Version CS, HT****CS-utförande, HT****Versión CS, HT****CS-Ausführung, HT**

102

DISCHARGE CONNECTION  
 TRYCKKANSLUTNING  
 DRUCKANSCHLUSS  
 ORIFICE DE REFOULEM.  
 ORIFICIO DE RECALC.

310 03 00

DN 75, 3"

1 1 - -

385 52 00

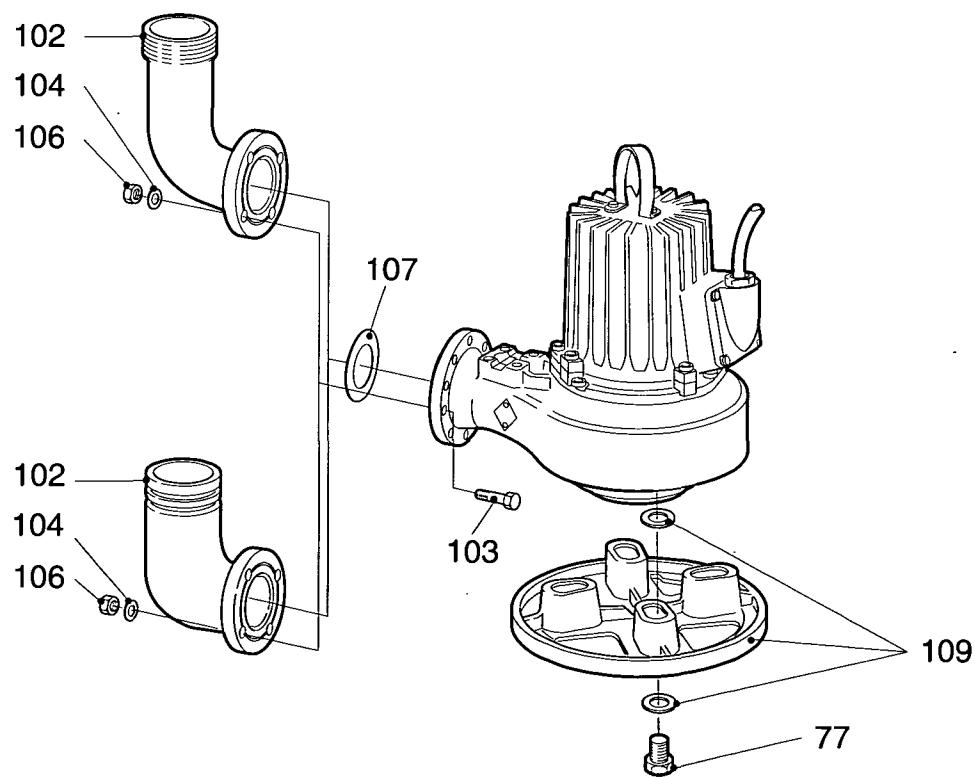
DN 75, 3", 3-8 NPSM

1 1 - -

385 52 01

DN 75, 3", HT, threaded

1 1 - -

**CS 3102 HT**

| Item No.          | Part No.              | Denomination | Suppl. Descript.          | Quantity    |
|-------------------|-----------------------|--------------|---------------------------|-------------|
| Pos Nr.           | Detalj nr.            | Benämning    | Kompl. Benämning          | Antal       |
| Pos.-Nr.          | Bestell-Nr.           | Bezeichnung  | Zusätzl. Bezeichnung      | Anzahl      |
| Nº de<br>repérage | Nº de piece           | Designación  | Dénomination Compl.       | Nombre      |
| No de<br>sondero  | Número de<br>elemento | Désignation  | Descripción suplementaria | Número      |
|                   |                       |              |                           | 090 180 0 0 |
|                   |                       |              |                           | 170 0 0 0   |
|                   |                       |              |                           | 890 170 0 0 |

**FS-version, LT**  
**FS-utförande, LT**  
**FS-Ausführung, LT**

**Version FS, LT**  
**Versión FS, LT**

102

DISCHARGE CONNECTION  
TRYCKANSLUTNING  
DRUCKANSCHLUSS  
ORIFICE DE REFOULEM.  
ORIFICIO DE RECALC.

391 40 00

DN 100 4"

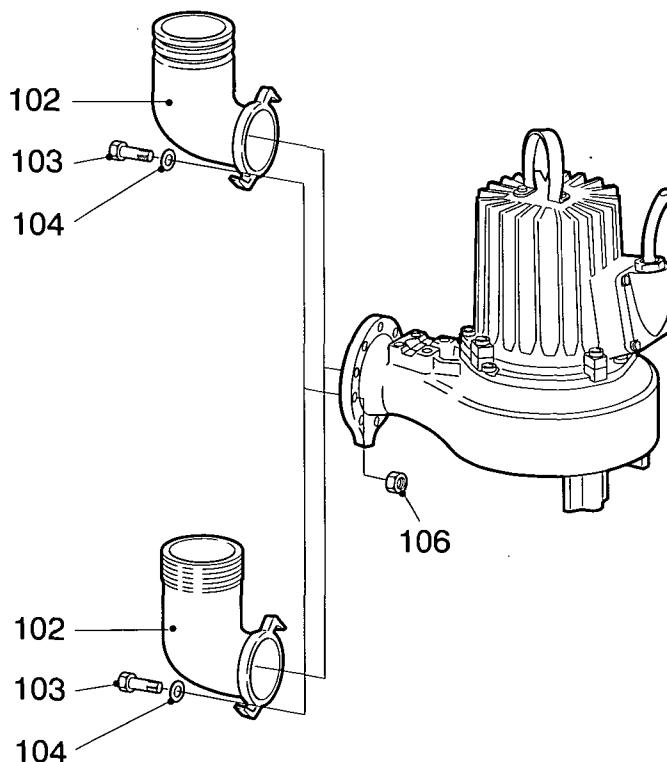
1 1 - -

391 41 00

DN 100 4" 4-8 NPSM

1 1 - -

### FS 3102 LT



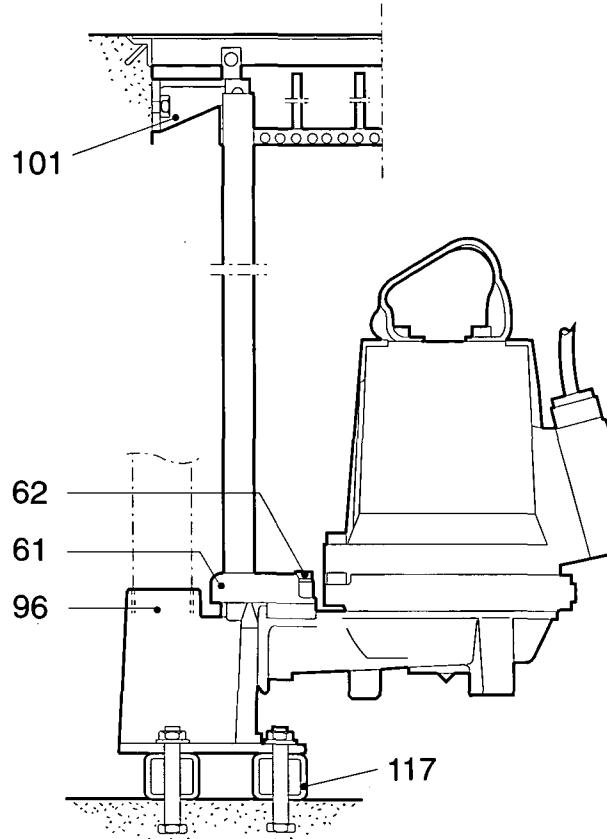
| Item No.<br>Pos. Nr.<br>Pos.-Nr.<br>Nº de<br>repérage<br>No de<br>sondero | Part No.<br>Detailj nr.<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Denomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|---|--|--|--|---|
|   |  |  |  | 690 180 0 170 0 68                              |

|     |  |   |  |  |
|-----|--|---|--|--|
| 103 | 84 34 08<br>84 34 11<br>84 34 30<br>84 34 32   | HEXAGON HEAD BOLT<br>SEKANTSKRUV<br>SECHSKANTSCHRAUBE<br>VIS A TÉTE HEXAGONAL<br>TORNILLO DE CAB.EXAG | M16x65-A2-70<br>M16x80-A2-70<br>M20x60-A2-70<br>M20x70-A2-70                             | 4 4 - -<br>2 2 - -<br>4 4 - -<br>8 8 - - |
| 104 | 82 35 23<br>82 35 26<br>82 37 29               | WASHER<br>BRICKA<br>SCHEIBE<br>RONDELLE<br>ARANDEL  | 16-A2-A 140<br>20-A2-A 140<br>16-200 HV-FZB  | 4 4 - -<br>4 4 - -<br>2 2 - -            |
| 106 | 82 23 61<br>82 23 62                           | HEXAGON NUT<br>SEXKANTMUTTER<br>MUTTER<br>ECROU<br>TUERCA   | M16-A2-70<br>M20-A2-70   | 4 4 - -<br>8 8 - -                       |
| 107 | 259 83 00<br>295 64 00<br>310 05 00            | GASKET<br>PACKNING<br>PACKUNG<br>JOINT<br>JUNTA   | CS LT/MT 4"<br>CS LT 6"<br>CS HT 3"  | 1 1 - -<br>1 1 - -<br>1 1 - -            |
| 109 | 436 94 00<br>436 94 01                         | STAND<br>STATIV<br>STATIV<br>BATI<br>BASTIDOR   | CS MT/HT<br>CS LT  | 1 1 - -<br>1 1 - -                       |
| 110 | 398 95 00                                      | STUD<br>PINNSKRUV<br>STIFTSCHRAUBE<br>GOUJON<br>ESPARRAGO   | MF   | - - 3 3                                  |
| 111 | 83 92 47<br>83 92 49<br>505 43 00<br>505 43 01 | COUPLING<br>KOPPLING<br>KUPPLUNG<br>ACCOUPLEMENT<br>ACOPLAMIENTO                                      | ISO - G1½" A - Ø48<br>ISO - G2" A<br>ISO - G1½" A -1½ -11½ NPT<br>ISO - G2" A -2-11½ NPT | - - 1 1<br>- - 1 1<br>- - 1 1<br>- - 1 1 |
| 112 | 534 48 00                                      | FOOT<br>FOT<br>FUSS<br>SOCLE<br>BAST  | MF   | - - 3 3                                  |

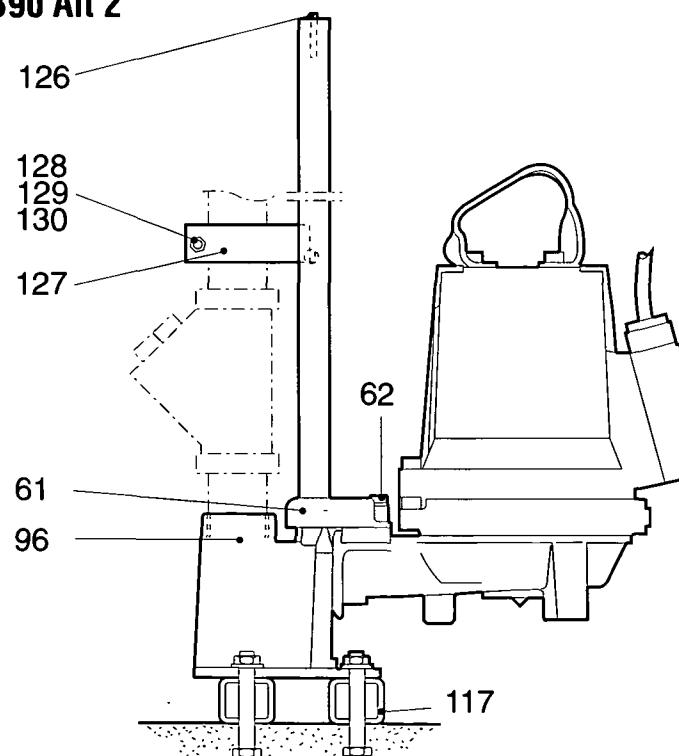
**M-version  
M-utförande  
M-Ausführung**

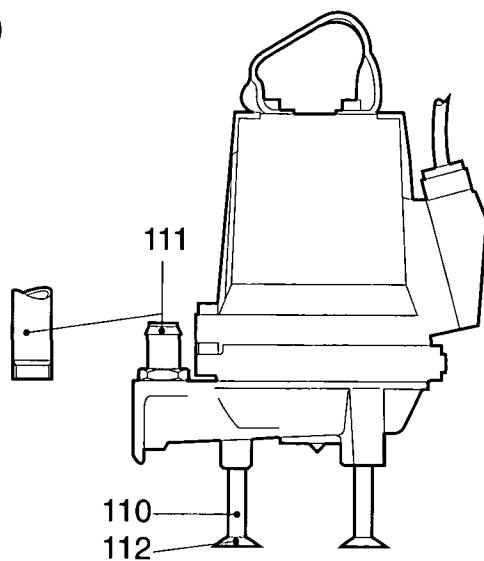
**Version M  
Versión M**

**MP 3102.170/890 Alt 1**



**MP 3102.170/890 Alt 2**



**MF 3102.170/890**

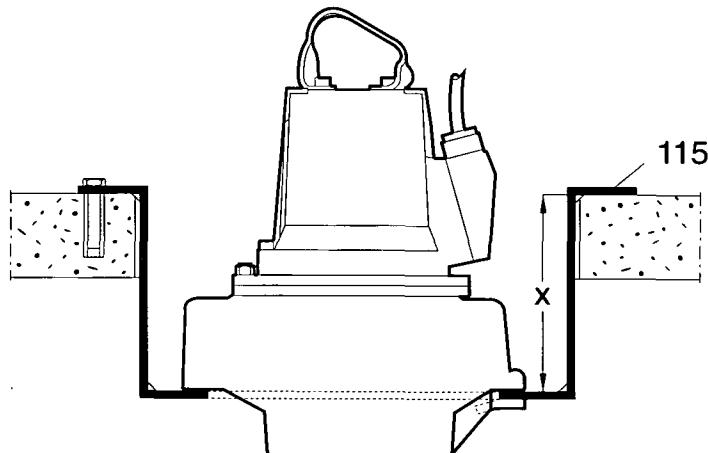
| Item No<br>Pos. Nr.<br>Pos.-Nr.<br>Nº de<br>repérage<br>No de<br>sondero | Part No.<br>Detail nr.<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Dénomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|--|---|--|--|---|
|  |   |  |  | 090 180 170 890                                 |
|  |   |  |  |   |
|  |   |  |  |   |

**LL-version**  
**LL-utförande**  
**LL-Ausführung**

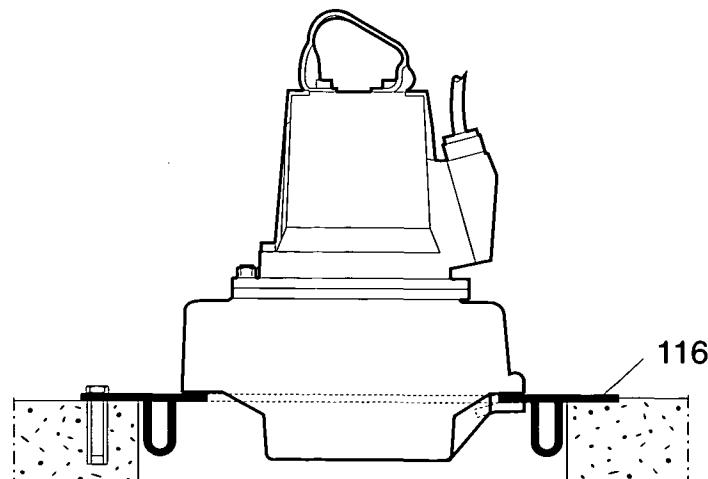
**Version LL**  
**Versión LL**

|     |           |  |  |       |
|-----|-----------|--|--|-------|
| 115 | 416 12 00 | SPACING RING<br>DISTANSRING<br>DISTANZRING<br>RONDELLE<br>ANILLO | For LL, type A<br>Für LL, typ A<br>Für LL, Typ A<br>Pour LL, typ A<br>Para LL, versión A | - 1 - |
| 116 | 416 13 00 | PLATE<br>PLATTA<br>PLATTE<br>PLAQUE<br>PLACA                     | For LL, typ B<br>Für LL, typ B<br>Für LL, Typ B<br>Pour LL, typ B<br>Para LL, versión B  | - 1 - |

**LL 3102, type A**



**LL 3102, type B**



| Item No.<br>Pos. Nr.<br>Pos.-Nr.<br>Nº de<br>reparación<br>No de<br>sondero | Part No.<br>Detailj. nr.<br>Bestell-Nr.<br>Nº de piece<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Dénomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Número<br>Número |
|---|---|--|--|---|
|   |   |  |  | 090 180 0 170 0 88                              |

|     |           |  |                          |         |
|-----|-----------|--|--------------------------|---------|
| 117 | 517 55 00 | DISTANCE PIPE<br>DISTANSRÖR<br>DISTANZROHR<br>TUBE D'ECARTEMENT<br>TUBO DE DISTANCIA | H = 50 mm                | - - 2 2 |
| 118 | 82 35 20  | WASHER<br>BRICKA<br>SCHEIBE<br>RONDELLE<br>ARANDELA                                  | 12-A2-A 140 CT-version   | 4 4 - - |
| 120 | 82 27 28  | LOCK NUT<br>LÅSMUTTER<br>SICHERUNGSMUTTER<br>ECROU DE BLOCAGE<br>TUERCA DE SEGURIDAD | M10-A4-70                | 2 2 - - |
| 121 | 80 95 07  | STUD<br>PINNSKRUV<br>STIFTSCHRAUBE<br>GOUJON<br>ESPARRAGO                            | 10x45-A2-70              | 2 2 - - |
| 122 | 433 56 00 | COVER<br>LOCK<br>DECKEL<br>COUVERCLE<br>TAPA   |                          | 1 1 - - |
| 123 | 502 53 00 | GASKET<br>PACKNING<br>PACKUNG<br>JOINT<br>JUNTA                                      |                          | 1 1 - - |
| 125 | 389 25 02 | HEXAGON SCREW<br>SEXKANTSKRUV<br>SCHRAUBE<br>VIS<br>TORNILLO                         | M12x200 10.9 impeller F. | 1 1 - - |
| 126 | 495 27 00 | CLAMP<br>KLÄMMA<br>KLEMME<br>CRAMPOON<br>ABRAZADERA                                  | MP-version               | - - 1 1 |

| Item No<br>Pos-Nr.<br>Pos.-Nr.<br>Nº de<br>repérage<br>No de<br>sondero | Part No.<br>Detail nr.<br>Bestell-Nr.<br>Nº de piece<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Désignation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Denomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Número<br>Número |
|---|---|--|--|---|
|   |   |  |  | 060 180 170 880                                 |

|     |                        |  |                        |                    |
|-----|------------------------|--|------------------------|--------------------|
| 127 | 495 26 00<br>495 26 01 | CLAMP<br>KLÄMMA<br>KLEMME<br>CRAMPON<br>ABRAZADERA   | MP-version             | - - 1 1<br>- - 1 1 |
| 128 | 81 41 14               | HEXAGON HEAD BOLT<br>SESKANTSKRUV<br>SECHSKANTSCHRAUBE<br>VIS A TÉTE HEXAGONAL<br>TORNILLO DE CAB.EXAG | M8x65-A2-70 MP-version | - - 1 1            |
| 129 | 82 23 57               | HEXAGON NUT<br>SESKANTMUTTER<br>MUTTER<br>ECROU<br>TUERCA  | M8-A2-70 MP-version    | - - 1 1            |
| 130 | 82 35 16               | WASHER<br>BRICKA<br>SCHEIBE<br>RONDELLE<br>ARANDELA  | 8-A2-A 140 MP-version  | - - 1 1            |

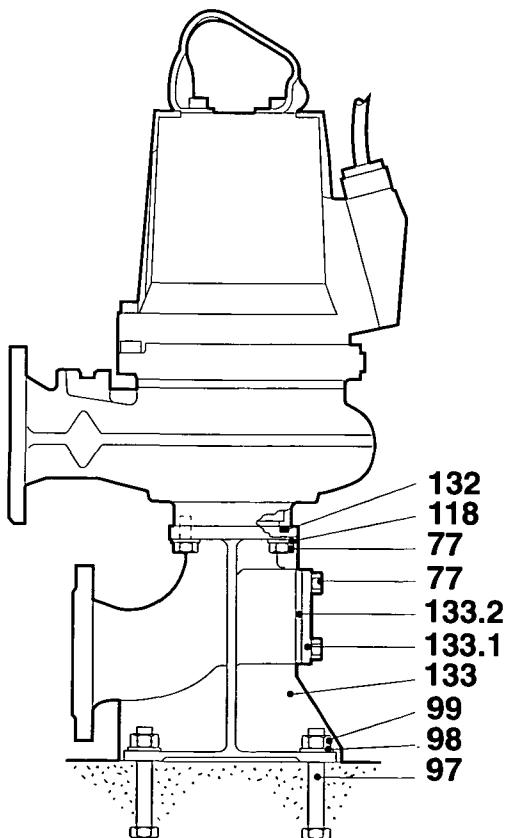
**CT-version  
CT-utförande  
CT-Ausführung**

**Version CT  
Versión CT**

|       |   |  |   |   |
|-------|---|--|---|---|
| 132   | 82 74 17<br>82 74 86  | O-RING<br>O-RING<br>O-RING<br>ANNEAU TORIQUE<br>ANILLO TORICO  | 124,3x5,7-NBR<br>164,3x5,7-NBR  | 1 1 - -<br>1 1 - -  |
| 133   | 303 72 00<br>303 72 01<br>303 72 02<br>303 72 05<br>303 85 00<br>303 85 02<br>303 85 06 | SUCTION CONNECTION<br>SUGANSLUTNING<br>SAUGANSCHLUSS<br>ORIFICE D'ASPIRATION<br>ORIFICIO DE ASPIRADO | MT Undrilled<br>MT SMS 342, DIN 2533, BS 4622:1970<br>MT 1882 Standard<br>MT ANSI B16.1:1967 Table 5<br>LT Undrilled<br>LT 1882 Standard<br>LT SMS 342, DIN 2533, BS 4622:1970<br>Table 11, ANSI B16.1:1967 Table 5 | 1 1 - -<br>1 1 - - |
| 133.1 | 303 76 00<br>303 87 00  | CLEANING DOOR<br>RENSLUCKA<br>REINIGUNGSDECKEL<br>REGARD DE NETTOYAGE<br>PUERTA DE LIMPIEZA          | MT<br>LT  | 1 1 - -<br>1 1 - -  |

| Item No.<br>Pos. Nr.<br>Pos.-Nr.<br>N° de<br>repérage<br>No de<br>sondero | Part No.<br>Detailj nr<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Dénomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|---|---|--|--|---|
|   |   |  |  | 090 180 170 860                                 |
|   |   |  |  | 090 180 170 860                                 |
|   |   |  |  | 090 180 170 860                                 |
|   |   |  |  | 090 180 170 860                                 |

|       |                                     |   |   |                               |
|-------|-------------------------------------|---|---|-------------------------------|
| 133.2 | 303 77 00<br>303 88 00              | GASKET<br>PACKNING<br>PACKUNG<br>JOINT<br>JUNTA               | MT<br>LT  | 2 2 - -<br>2 2 - -            |
| 134   | 554 21 03<br>554 21 04<br>554 21 05 | STARTER<br>STARTAPPARAT<br>STARTER<br>DEMARREUR<br>ARRANCADOR | 4.0-6.3 A, Cable 9-18 mm<br>6.0-10.0 A, Cable 9-18 mm<br>9.0-14.0 A, Cable 13-25 mm | - 1 - -<br>- 1 - -<br>- 1 - - |

**CT 3102.090/180**


| Item No.<br>Pos. Nr.<br>Pos.-Nr.<br>Nº de<br>reperage<br>No de<br>sondero | Part No.<br>Detail nr.<br>Bestell-Nr.<br>Nº de piece<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Designstion | Suppl. Descript.<br>Kompl. Benäm.<br>Zusatzi. Bezeichnung<br>Denomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|---|---|--|--|---|
|   |   |  |  | 090 180 0 000                                   |
|   |   |  |  | 090 180 0 000                                   |
|   |   |  |  | 090 180 0 000                                   |
|   |   |  |  | 090 180 0 000                                   |

## Recommended spare parts

### Rekommenderade reservdelar

### Empfohlene Ersatzteile

## Pièces de rechange recommandées

## Repuestos de recomendación

|      |           |                   |                             |         |
|------|-----------|-------------------|-----------------------------|---------|
| 24.2 | 398 98 00 | CLAMP             | PA 12, 10-12 mm             | - 1 - - |
|      | 398 98 01 | KLÄMMA            | PA 12, 12-14 mm             | - 1 1 - |
|      | 398 98 02 | KLEMME            | PA 12, 14-15 mm             | - 1 1 - |
|      | 398 98 03 | CRAMPON           | PA 12, 16-17 mm             | - 1 1 - |
|      | 398 98 05 | ABRAZADERA        | PA 12, 18-20 mm             | - 1 1 - |
|      | 398 98 06 |                   | PA 12, 15-16 mm             | - 1 1 - |
|      | 398 98 07 |                   | PA 12, 17-18 mm             | - 1 1 - |
| 24.4 | 82 40 55  | WASHER            | 16,5x35x2-A2-70             | - 2 2 - |
|      | 82 40 57  | BRICKA            | 18,5x35x2-A2-70             | - 2 2 - |
|      | 82 40 59  | SCHEIBE           | 20,5x35x2-A2-70             | - 2 2 - |
|      | 82 40 76  | RONDELLE          | 22,5x52x2-A2-70             | - 2 2 - |
|      | 82 40 77  | ARANDELA          | 24,5x52x2-A2-70             | - 2 2 - |
|      | 82 40 78  |                   | 26,5x52x2-A2-70             | - 2 2 - |
|      | 82 40 79  |                   | 28,5x52x2-A2-70             | - 2 2 - |
|      | 82 40 80  |                   | 30,5x52x2-A2-70             | - 2 2 - |
|      | 82 40 81  |                   | 32,5x52x2-A2-70             | 2 2 2 2 |
|      | 82 40 82  |                   | 34,5x52x2-A2-70             | 2 - - 2 |
|      | 82 40 84  |                   | 14,5x35x2-A2-70             | - 2 2 - |
|      | 82 41 08  |                   | 12,5x35x2-A2-70             | - 2 - - |
| 24.5 | 84 18 00  | SEAL SLEEVE       | DIAM=18;L=26                | 1 - - 1 |
|      | 84 18 01  | TÄTNINGSHYLSA     | DIAM=21;L=26                | 1 - - 1 |
|      | 84 18 02  | DICHTUNGSHÜLSE    | DIAM=23;L=26                | 1 - - 1 |
|      | 84 18 03  | DOUILLE DE JOINT  | DIAM=26;L=26                | 1 - - 1 |
|      | 84 18 04  | MANGUITO DE JUNTA | DIAM=29;L=26                | 1 - - 1 |
|      | 84 18 05  |                   | DIAM=31,5;L=26              | 1 - - 1 |
|      | 84 35 32  |                   | 15x35x22                    | - 1 1 - |
|      | 84 35 33  |                   | 17x35x22 TYP 2              | - 1 1 - |
|      | 84 35 34  |                   | 19x35x22                    | - 1 1 - |
|      | 84 35 59  |                   | 13x35x22 TYP 2              | - 1 1 - |
|      | 84 35 66  |                   | 11x35x22                    | - 1 - - |
|      | 84 36 39  |                   | 18x35x22 TYP 2              | - 1 1 - |
|      | 84 36 40  |                   | 16x35x22 TYP 2              | - 1 1 - |
|      | 84 38 83  |                   | 21x52x26                    | - 1 1 - |
|      | 84 38 84  |                   | 23x52x26                    | - 1 1 - |
|      | 84 38 85  |                   | 25x52x26                    | - 1 1 - |
|      | 84 38 86  |                   | 27x52x26                    | - 1 1 - |
|      | 84 38 87  |                   | 29x52x26                    | - 1 1 - |
|      | 84 38 88  |                   | 31x52x26                    | - 1 1 - |
| 24.7 | 83 42 96  | CABLE LUG         | 4-6 mm <sup>2</sup> ;M6     | 2 2 2 2 |
|      | 83 43 45  | KABELSKO          | 1,6-2,5mm <sup>2</sup> ;M62 | 2 2 2 2 |
|      |           | KABELSCHUH        |                             |         |
|      |           | SABOT DE CABLE    |                             |         |
|      |           | GRAPA DE CABLE    |                             |         |

| Item No.<br>Pos Nr.<br>Pos.-Nr.<br>Nº de<br>repérage<br>No de<br>sondero | Part No.<br>Detail nr.<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designacion<br>Désignation   | Suppl. Descript.<br>Kompl. Benäm<br>Zusätzl. Bezeichnung<br>Denomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|--|---|--|---|---|
|  |   |  |   | 090 180 170 068                                 |
| 24.8   | 83 44 23<br>83 44 24<br>83 44 48  | CLOSED END SPLICE<br>ÄND SKARVHYLSA<br>KABELENDVERBINDER<br>RACCORDES EMBOUTS<br>CONECTOR CONTERA                          | 5,1-10,5;L=40<br>2,5-6(AWG 12-10)L=17,5<br>4,16-7,47  | 3 3 3 3<br>2 2 2 2<br>- 2 - -                   |
| 53   | 592 01 00<br>592 01 02<br>592 01 04   | MECHANICAL SEAL<br>PLANTÄTNING<br>GLEITRINGDICHTUNG<br>JOINT MECANIQUE<br>JUNTA MECANICA                                   | Al <sub>2</sub> O <sub>3</sub> - WCCo<br>WCCo - WCCo<br>WCCo - WCCR                                       | 1 1 1 1<br>1 1 1 1<br>1 1 1 1                   |
| 73   | 303 50 00<br>303 66 00<br>314 88 00<br>314 88 01                              | WEAR RING<br>SLITRING<br>VERSCHLEISSRING<br>ANNEAU D'USURE<br>ANILLO DE DESGASTE   | MT/HT 0516.2634.01<br>LT 0516.2634.01<br>MT/HT 0461.5204.15<br>LT 0461.5204.15                            | 1 1 - -<br>1 1 - -<br>1 1 - -<br>1 1 - -        |
| 800  | 80 32 32<br>80 32 73  | O-RINGS KIT<br>O-RINGSSATS<br>O-RINGS SATZ<br>JEU DE ANN.TORIQUE<br>JUEGO DE ANIL.TORICO                                   | 3102.090,180<40DGG<br>3102.090F/170/180F/890  | 1 1 - -<br>1 1 1 1                              |
| 900  | 601 89 05<br>601 89 06  | BASIC REPAIR KIT<br>GRUNDREPARATIONSSATS<br>GRUNDREPARATURSATZ<br>KIT PALIER<br>JUEGO BASICO DE REP.<br>KIT DE RIPARAZIONE | WCCO/Al <sub>2</sub> O <sub>3</sub> - Al <sub>2</sub> O <sub>3</sub> /Csb<br>WCCO/WCCO - WCCO/WCCO        | 1 1 - -<br>1 1 - -                              |

| Item No.       | Part No.           | Denomination | Suppl. Descript.       | Quantity          |
|----------------|--------------------|--------------|------------------------|-------------------|
| Pos Nr.        | Detail nr.         | Benämning    | Kompl. Benämning       | Antal             |
| Pos. Nr.       | Bestell-Nr.        | Bezeichnung  | Zusätzl. Bezeichnung   | Anzahl            |
| N° de repérage | Nº de piece        | Designacion  | Dénomination Compl.    | Nombre            |
| No de sondero  | Número de elemento | Designation  | Descrip. suplementaria | Numero            |
|                |                    |              |                        | 050 180 0 170 890 |

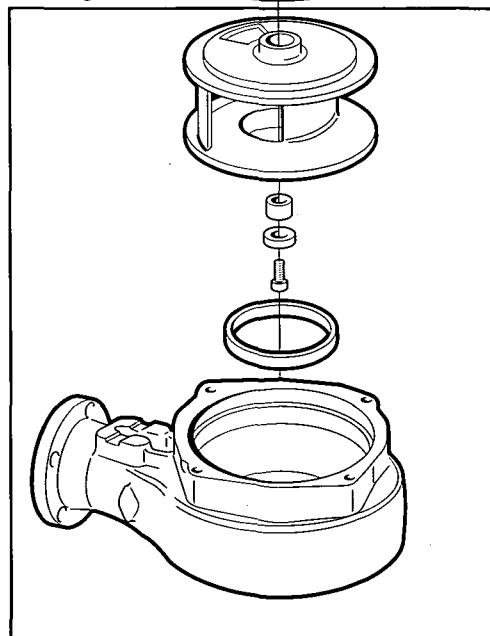
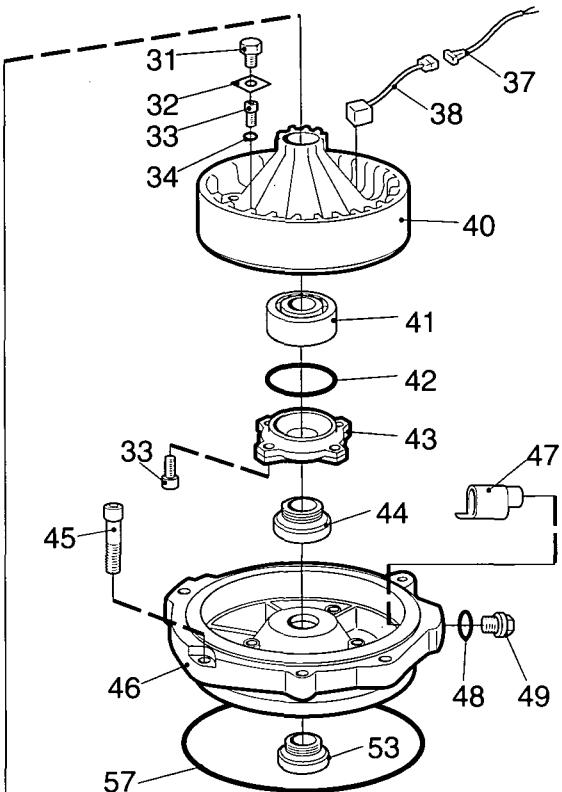
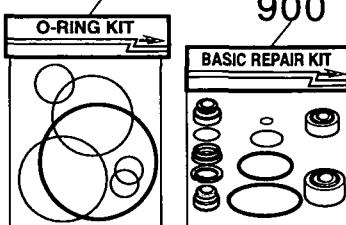
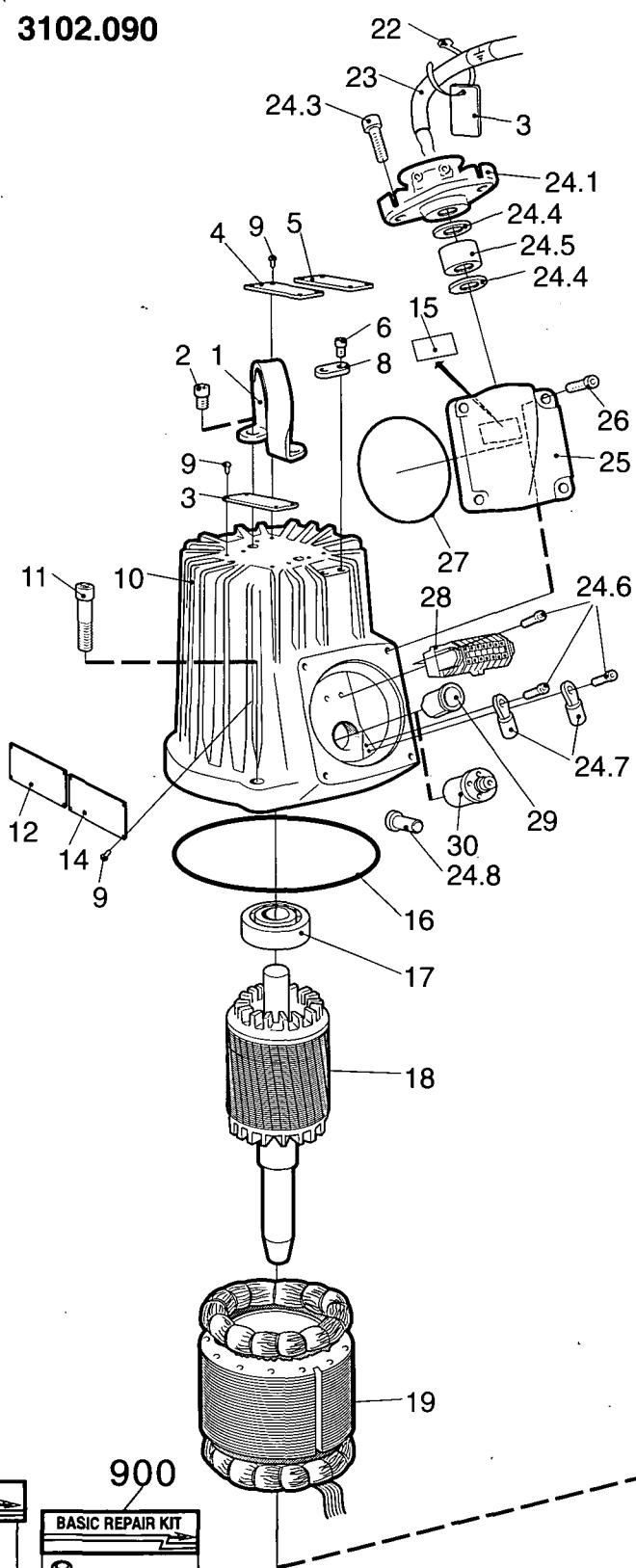
**For Service**  
**För Service**  
**Für Service**

**Pour maintenance**  
**Para mantenimiento**

|           |  |  |         |
|-----------|--|--|---------|
| 90 17 52  | PARAFFIN OIL<br>PARAFFINOLJA<br>PARAFFINÖL<br>HUILE DE PARAFFINE<br>ACEITE DE PARAFINA               | 1.0 l.   | * * * * |
| 90 20 61  | BEARING GREASE<br>LAGERFETT<br>LAGERFETT<br>GRAISSE A ROULEMENT<br>GRASA DE COJINETE                 | 0.280 kg (Pos. 17= 0.012 kg,<br>Pos. 41= 0.025 kg)   | * * * * |
| 84 15 30  | CARTRIDGE GUN<br>PATRONPISTOL<br>PATRONENPISTOLE<br>PISTOLE CARTOUCHE<br>PISTOLA CARTUCHO            |  | * * * * |
| 457 89 00 | MOUNTING TOOL<br>MONTERINGSVERKTYG<br>MONTAGEWERKZEUG<br>OUTIL DE MONTAGE<br>UTIL DE MONTAJE         | For Mechanical Seal<br>Für Plantätning<br>Für Gleitringdichtung<br>Pour Joint Mecanique<br>Para Junta Mecanica | * * * * |
| 216 68 00 | SLEEVE PULLER<br>MANSCHETTAVDRAGARE<br>MANSCHETTENABZIEHER<br>ARRACHE MANCHETTE<br>EXTRACTOR DE PUNO | For Mechanical Seal<br>Für Plantätning<br>Für Gleitringdichtung<br>Pour Joint Mecanique<br>Para Junta Mecanica | * * * * |
| 394 69 00 | STATORPULLER<br>STATORUTTAGARE<br>STATORABZIEHER<br>ARRACHE STATOR<br>EXTRACT. DE ESTATOR            | Inner Ø=130-170 mm   | * * * * |
| 249 92 02 | IMPELLER PULLER<br>HJULAVDRAGARE<br>LAUFRADABZIEHER<br>EXTRACT. DE ROUE<br>EXTRACT. DE IMPULSOR      | Cross L=123-150 mm<br>LT 440-442   | * * - - |

| Item No<br>Pos. Nr.<br>Pos. Nr.<br>Nº de<br>reperage<br>No de<br>sondero | Part No.<br>Detail nr<br>Bestell-Nr.<br>Nº de pièce<br>Número de<br>elemento | Denomination<br>Benämning<br>Bezeichnung<br>Designación<br>Désignation | Suppl. Descript.<br>Kompl. Benäm.<br>Zusätzl. Bezeichnung<br>Denomination Compl.<br>Descrip. suplementaria | Quantity<br>Antal<br>Anzahl<br>Nombre<br>Número |
|--|--|--|--|---|
|  |  |  |  | 090 180 170 068                                 |

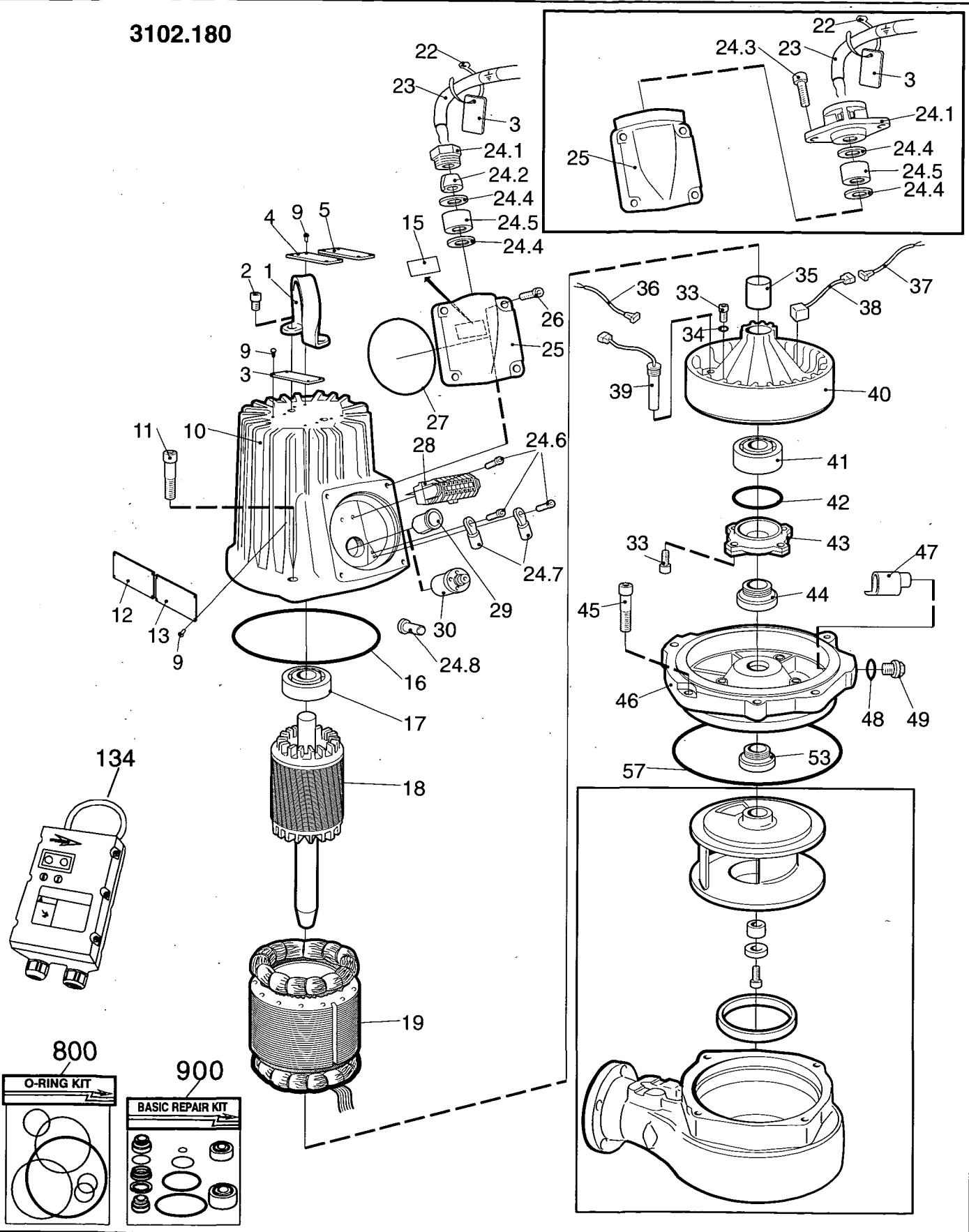
|           |   |                                 |         |
|-----------|---|---------------------------------|---------|
| 295 72 02 | IMPELLER PULLER<br>HJULAVDRAGARE<br>LAUFRADABZIEHER<br>EXTRACT. DE ROUE<br>EXTRACT. DE IMPULSOR     | Cross L=98-132 mm<br>LT 410-412 | * * - - |
| 303 60 00 | IMPELLER PULLER<br>HJULAVDRAGARE<br>LAUFRADABZIEHER<br>EXTRACT. DE ROUE<br>EXTRACT. DE IMPULSOR     | Cross L=72-100 mm<br>MT 436-438 | * * - - |
| 344 13 00 | IMPELLER PULLER<br>HJULAVDRAGARE<br>LAUFRADABZIEHER<br>EXTRACT. DE ROUE<br>EXTRACT. DE IMPULSOR     | Cross L=50-80 mm<br>HT 252-254  | * * - - |
| 389 25 02 | HEXAGON SCREW<br>SEKANTSKRUV<br>SCHRAUBE<br>VIS<br>TORNILLO   | M12-7.5x200 mm<br>Impeller F    | * * - - |
| 398 21 00 | MOUNTING SOCKET<br>MONTERINGSHYLSA<br>MONTIERUNGSHÜLSE<br>DOUILLE DE MONTAGE<br>MANQUITO DE MONTAGE | L=15-185 mm<br>Stat. seal ring  | * * * * |
| 466 97 01 | BEARING PULLER<br>LAGERAVDRAGARE<br>LAGERABZIEHER<br>EXTRACT. DE ROULEMENT<br>EXTRACT. DE COJINETE  | Main bearing removal/fitting    | * * * * |

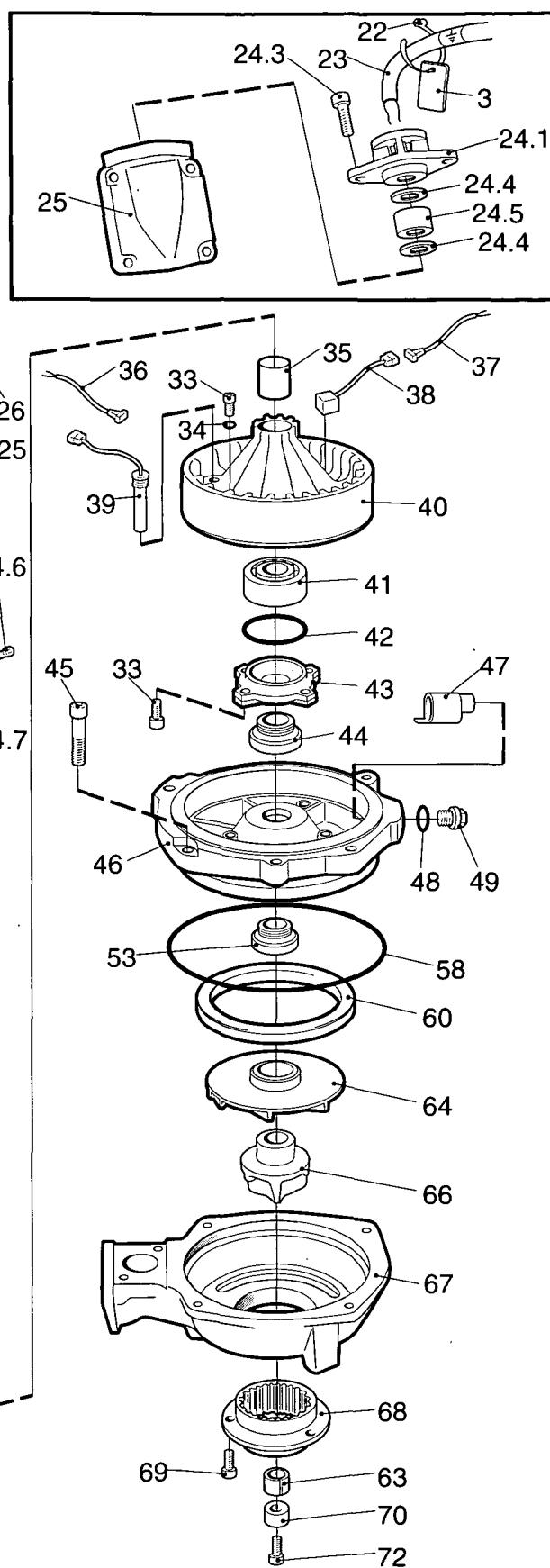
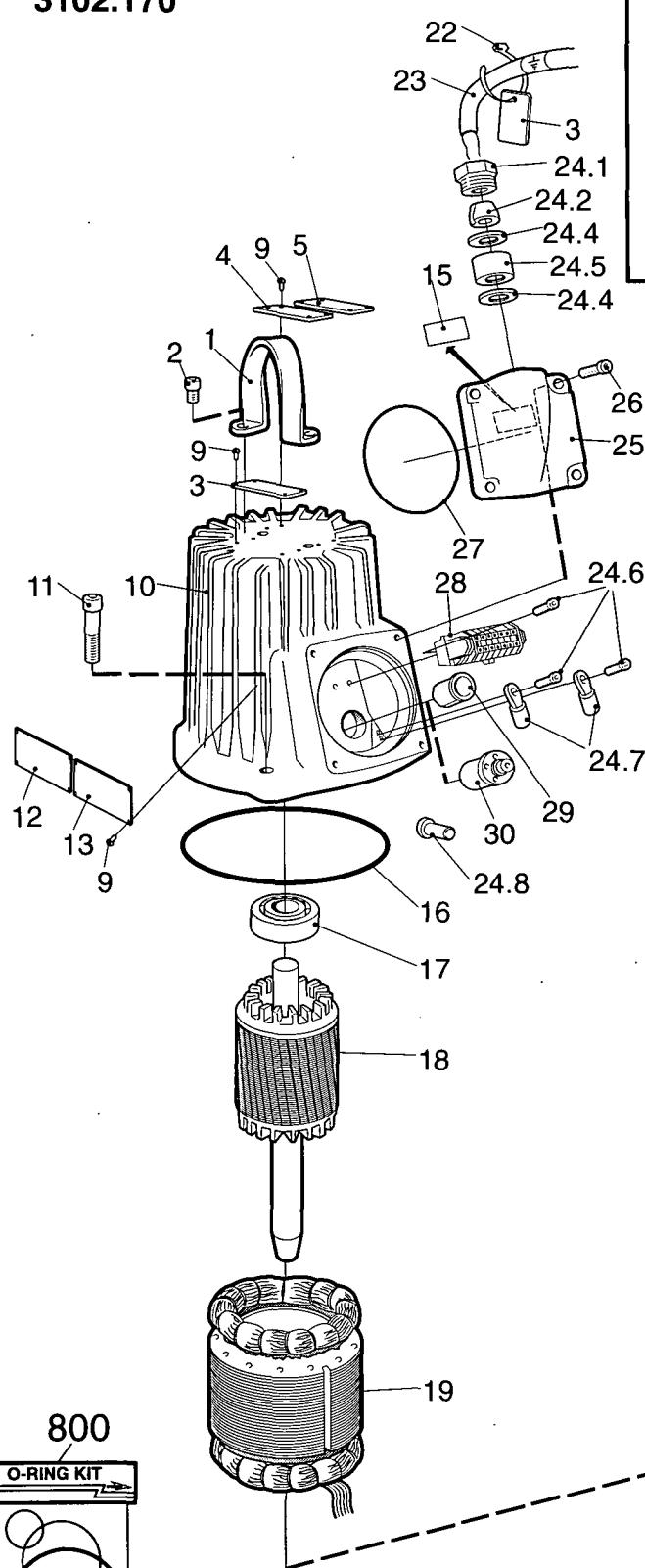
**Exploded view with item no****Sprängteckning med pos. nr.****Explosionszeichnung mit Pos.-Nr.****Vue éclatée de la pompe avec N° de****repérage****Despiece numero de pos.****3102.090**

**Exploded view with item no  
Sprangteckning med pos. nr.  
Explosionszeichnung mit Pos.-Nr.**

**Vue éclatée de la pompe avec N° de  
repérage  
Despiece numero de pos**

3102.180

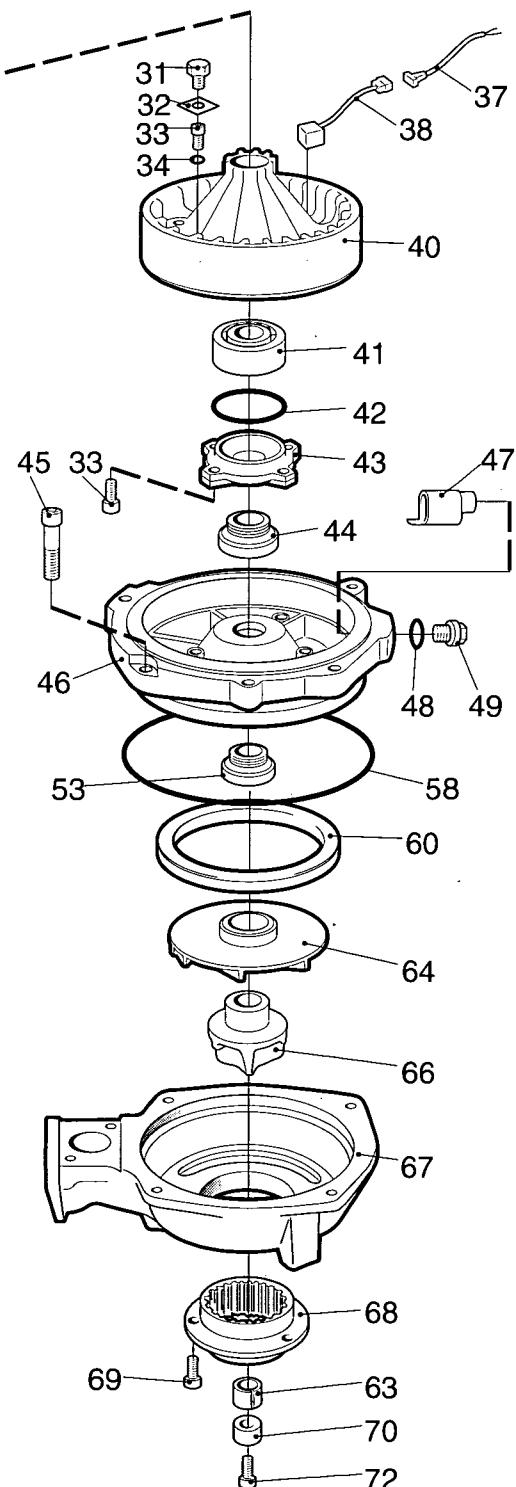
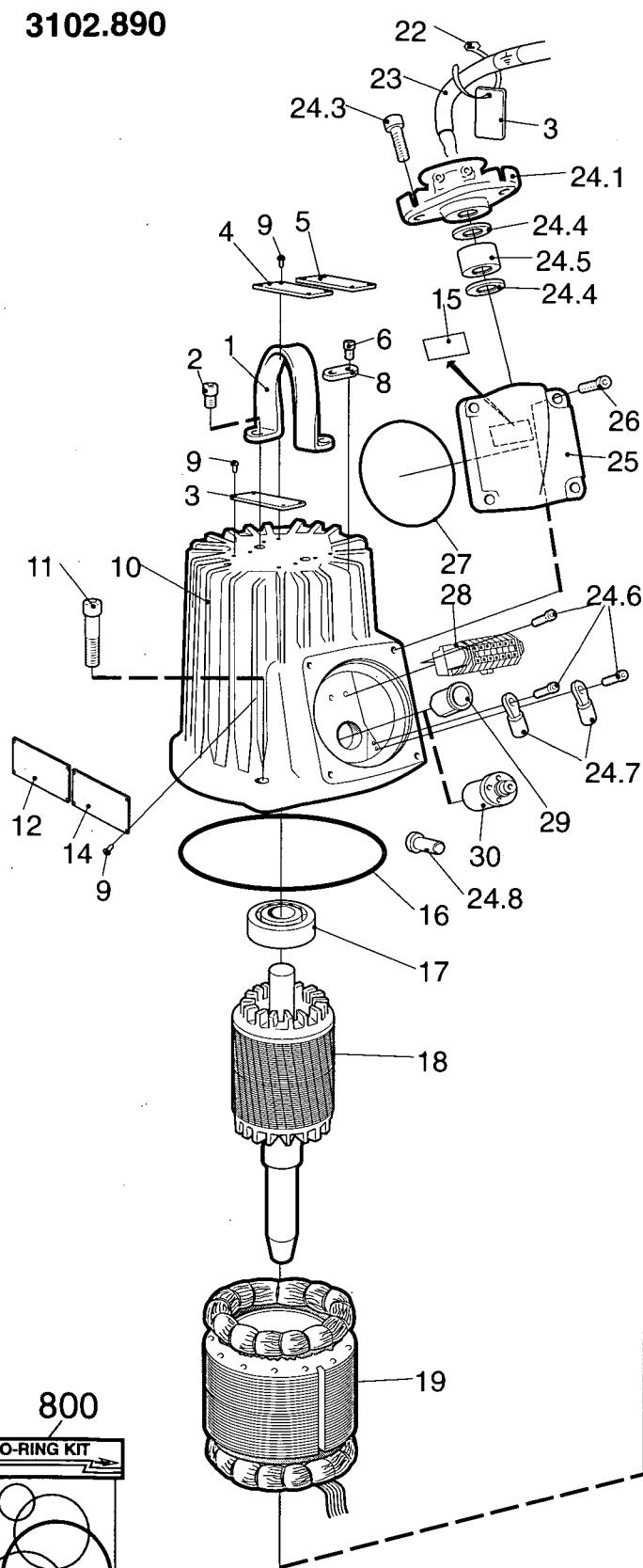


**Exploded view with item no****Sprängteckning med pos. nr.****Explosionszeichnung mit Pos. - Nr.****Vue éclatée de la pompe avec N° de****repérage****Despiece numero de pos****3102.170**

**Exploded view with item no.  
Sprängteckning med pos. nr.  
Explosionszeichnung mit Pos.-Nr.**

**Vue éclatée de la pompe avec N° de  
repérage  
Despiece numero de pos**

3102.890





An **ITT Industries** company

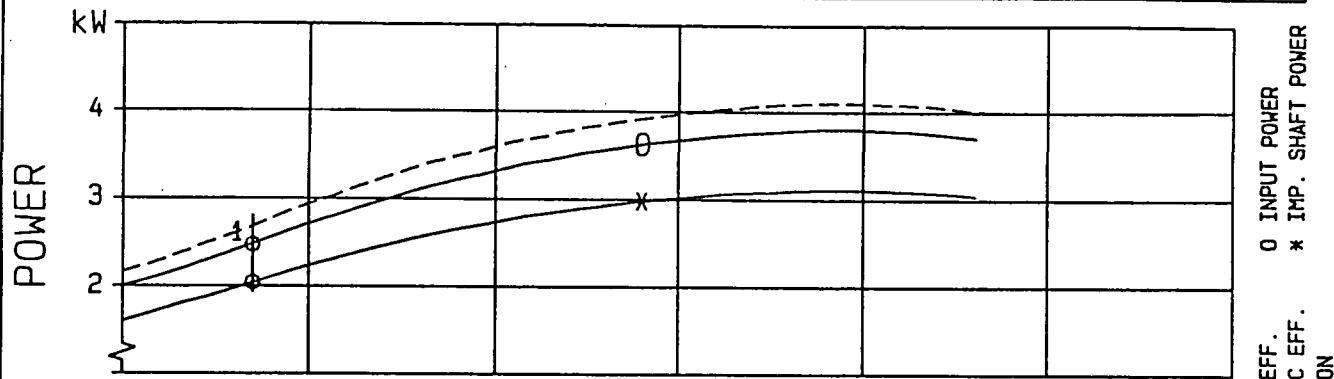
**2.0 TEST CERTIFICATES**

JPR Ref:- (A21500.001)

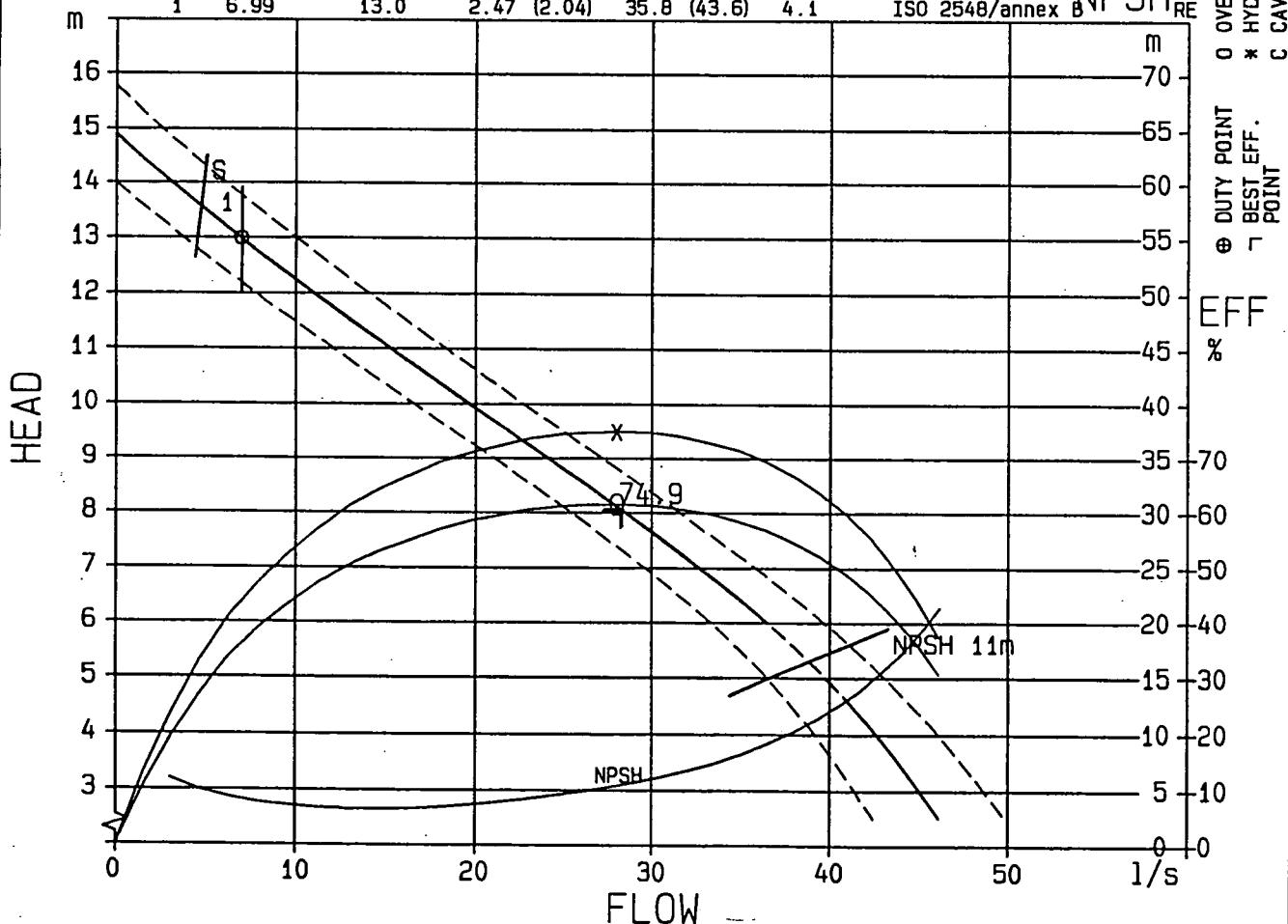
Revision 0

October 27, 1998

|   |  |                         |                       |  |                                     |                          |
|---|--|-------------------------|-----------------------|--|-------------------------------------|--------------------------|
| <b>FLYGT</b>  | <b>PERFORMANCE CURVE</b>               |                         |                       |  | <b>PRODUCT</b><br><b>CP3102.180</b> | <b>TYPE</b><br><b>MT</b> |
| DATE<br>98-07-09                                    | PROJECT<br>ARAMIST PTY LTD BALD HILLS. |                         |                       |  | CURVE NO<br>53-430-00-3730          | ISSUE<br>4               |
| MOTOR COS FI<br>MOTOR EFFICIENCY<br>GEAR EFFICIENCY | 0.86<br>81.9 %<br>---                  | 0.82<br>82.6 %<br>---   | 0.72<br>80.9 %<br>--- | MOTOR SHAFT<br>POWER .... 3.1 KW<br>STARTING<br>CURRENT ... 34.0 A<br>RATED<br>CURRENT ... 6.10 A<br>RATED<br>SPEED .... 1430 RPM<br>TOT. MOM. OF<br>IMP. THROUHLET<br>INERTIA ... 0.031KGXM2<br>NO. OF<br>BLADES .... 1 | IMPELLER DIAMETER<br>--- MM         |                          |
| COMMENTS<br>NEVA CLOG                               | OUTLET<br>100 MM                       | IMP. THROUHLET<br>76 MM |                       | MOTORTYPE<br>18-11-4AL   | STATOR REV<br>44D                   | 10                       |
|   |  |                         |                       | FREQ<br>50 HZ  | PHASES<br>3                         | VOLTAGE<br>415 V         |
|   |  |                         |                       | POLES<br>4   | GEARTYPE<br>---                     | RATIO<br>---             |



| DUTY-POINT: FLOW (l/s) | HEAD (m)     | POWER (kW)                 | EFF (%)                    | NPSH (m)   | GUARANTY                             |
|------------------------|--------------|----------------------------|----------------------------|------------|--------------------------------------|
| BEP: 28.2<br>1 6.99    | 8.06<br>13.0 | 3.63 {2.98}<br>2.47 {2.04} | 61.5 {74.9}<br>35.8 {43.6} | 5.6<br>4.1 | ISO 2548/annex B<br>ISO 2548/annex B |



S: RISK FOR SEDIMENTATION AT VELOCITY BELOW 0.6 M/S  
(STANDARD DIAM. 100 MM)

CURVES SHOW PERFORMANCE WITH CLEAR WATER



ISO-CURVE  
ISO 2548

### 3.0 VALVES

SUPPLIER: TUBEMAKERS WATER  
63 Currumbin Creek Road  
Currumbin QLD 4223

PH: (07) 5589 4400  
FAX: (07) 5598 1272

ISOLATING VALVES:-100mm RESILIENT SEATED FLANGED SLUICE VALVES

NON RETURNS VALVES:-100mm FLANGED SWING CHECK VALVES  
WITH COUNTER WEIGHTS

## **OPERATION AND MAINTENANCE MANUAL**

### **CONTENTS**

- 1.00.00 Description of DN100 Table C Resilient Seated Sluice Valve
- 1.01.00 Operating Instructions
- 1.02.00 Maintenance Instructions
- 2.00.00 Spare Parts List
- 3.00.00 Address for Queries

## OPERATION AND MAINTENANCE MANUAL

### 1.00.00 DESCRIPTION

- 1.00.01 This section covers a manually operated DN100 Flg/Flg Class 16 Resilient Seated Sluice Valve, Table C.
- 1.00.02 Reference drawing number 04-16-02-1081.

### 1.01.00 OPERATING INSTRUCTIONS

- 1.01.01 The valve is operated in an anti-clockwise closing direction.
- 1.01.02 The number of turns from open to close is approximately 23.
- 1.01.03 Valves of this type are not designed for throttling purposes.

### 1.02.00 MAINTENANCE INSTRUCTIONS

- 1.02.01 This valve does NOT require any lubrication.
- 1.02.02 In the unlikely event of any of the long life Stem Sealing Rings (items 14 & 15) requiring replacement, ensure valve is fully OPEN and remove Cap or Handwheel and Stem Housing (items 6 & 3) by removing concealed Capscrews (item 12). This will permit the Stem Housing (item 3) to be removed from the stem (item 5) for replacement of the appropriate rings.
- 1.02.03 Re-assemble in the reverse sequence using any commercially available water pump grease applied to the upper end of the Stem to aid assembly. Reseal Setscrews with silicon sealant.

### 2.00.00 SPARE PARTS LIST

- 2.00.01 Spare parts are NOT normally required for this type of valve.
- 2.00.02 In the unlikely event of a sealing ring failure the appropriate ring may be selected from items 14 & 15 in the attached general assembly drawing No. 04-16-02-1081.

**3.00.00 ADDRESS FOR QUERIES**

**3.00.01** Should there by any queries or additional information required, please contact:

Tubemakers Water P/L  
63 Currumbin Creek Road  
CURRUMBIN QLD 4223  
Ph: (07) 5589 4400  
Fax: (07) 5534 7079

**BILL OF MATERIAL****DN100 RESILIENT SEATED SLUICE VALVE - CLASS 16**  
**TABLE 'C'****PARENT ITEM NO. : VRDCC10500A**

| CHILD ITEM NO. | DESCRIPTION         | MATERIAL         | QTY |
|----------------|---------------------|------------------|-----|
| VZ041602601C   | BODY, FL/FL 'C'     | DUCTILE IRON     | 1   |
| VZ041602611    | BONNET              | DUCTILE IRON     | 1   |
| VZ031602612    | STEM HOUSING        | GUNMETAL         | 1   |
| VZ041602624    | WEDGE (SBR COATED)  | DUCTILE IRON     | 1   |
| VZ041602644    | STEM                | STAINLESS STEEL  | 1   |
| VZ041602518    | CAP                 | DUCTILE IRON     | 1   |
| VZDHW08500A    | HANDWHEEL           | DUCTILE IRON     | 1   |
| VZ031602620    | THRUST WASHER       | ERTACETAL        | 1   |
| VZ041602629    | BODY GASKET         | SYNTHETIC RUBBER | 1   |
| VZ031602623    | STEM HOUSING GASKET | SYNTHETIC RUBBER | 1   |
| VZ031602628    | WEDGE NUT           | GUNMETAL         | 1   |
| ZDBMT12035     | SOC. HEAD CAPSCREW  | ALLOY STEEL      | 4   |
| ZDBMT10030     | SOC. HEAD CAPSCREW  | ALLOY STEEL      | 4   |
| ZDSTH12020     | HEX. HEAD SETSCREW  | STAINLESS STEEL  | 1   |
| ZSRR0214       | 'O' RING            | SYNTHETIC RUBBER | 2   |
| ZSRRW20        | WIPER RING          | SYNTHETIC RUBBER | 1   |

Ref: 174-94.MKT

04-16-02-1081

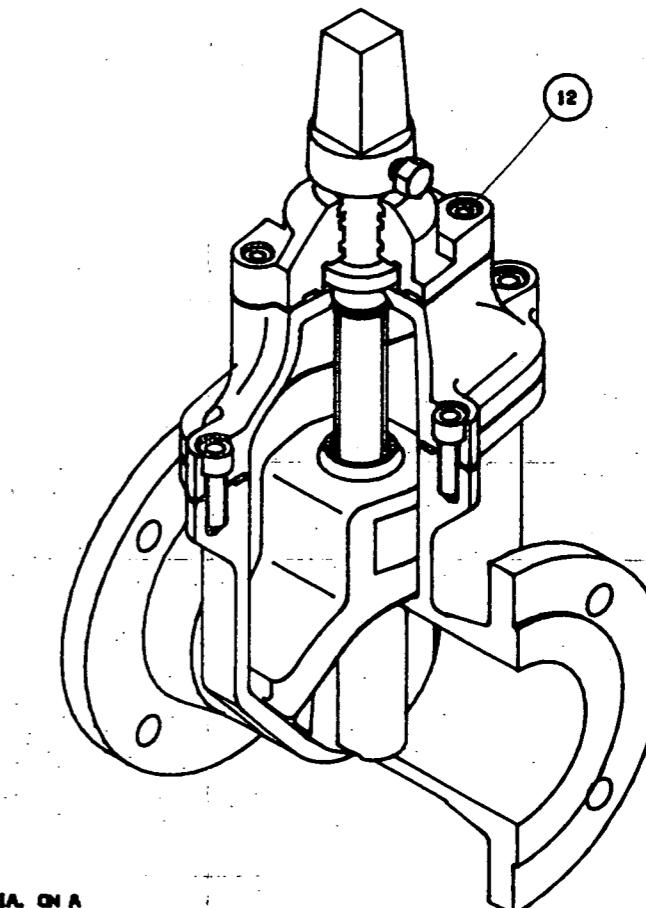
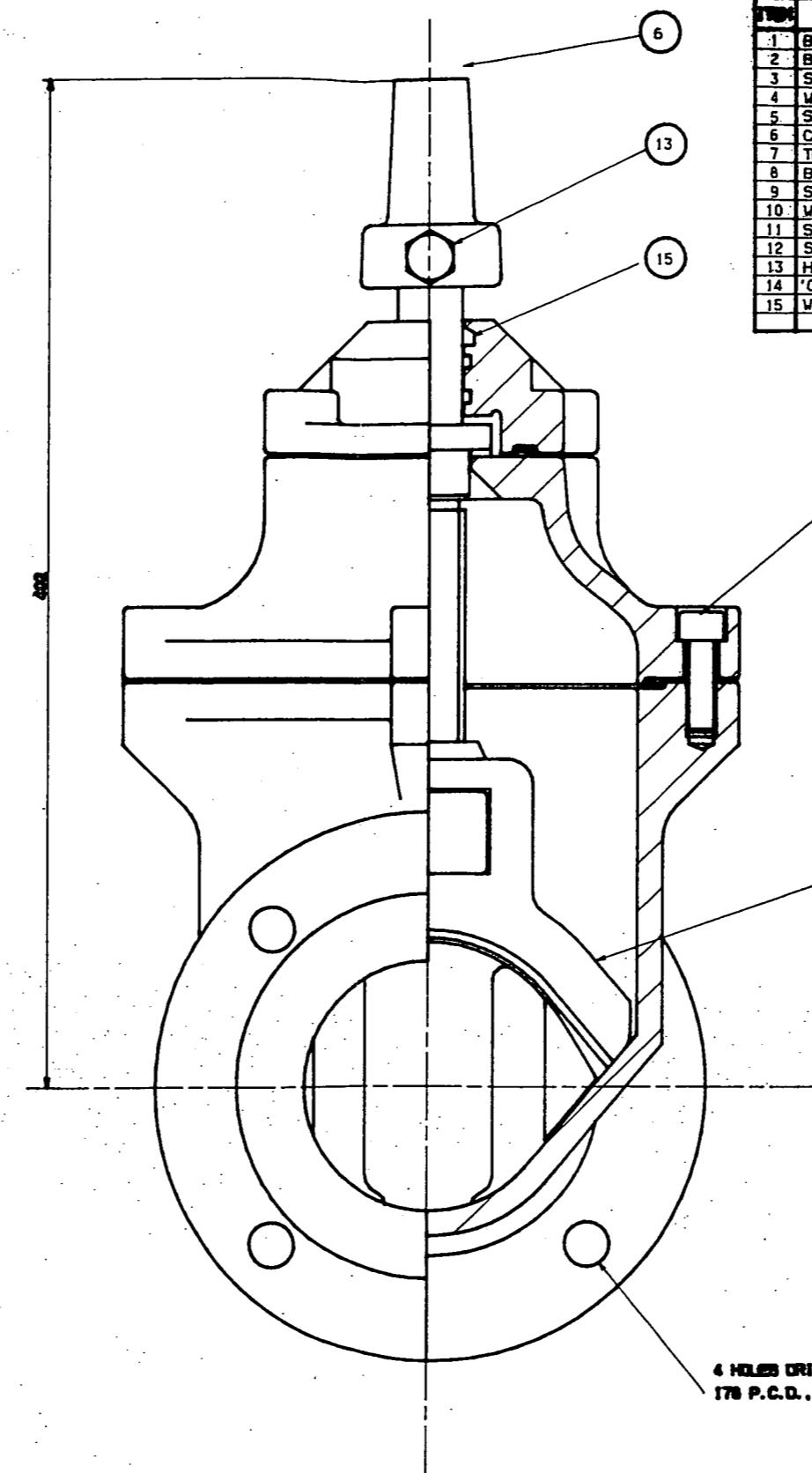
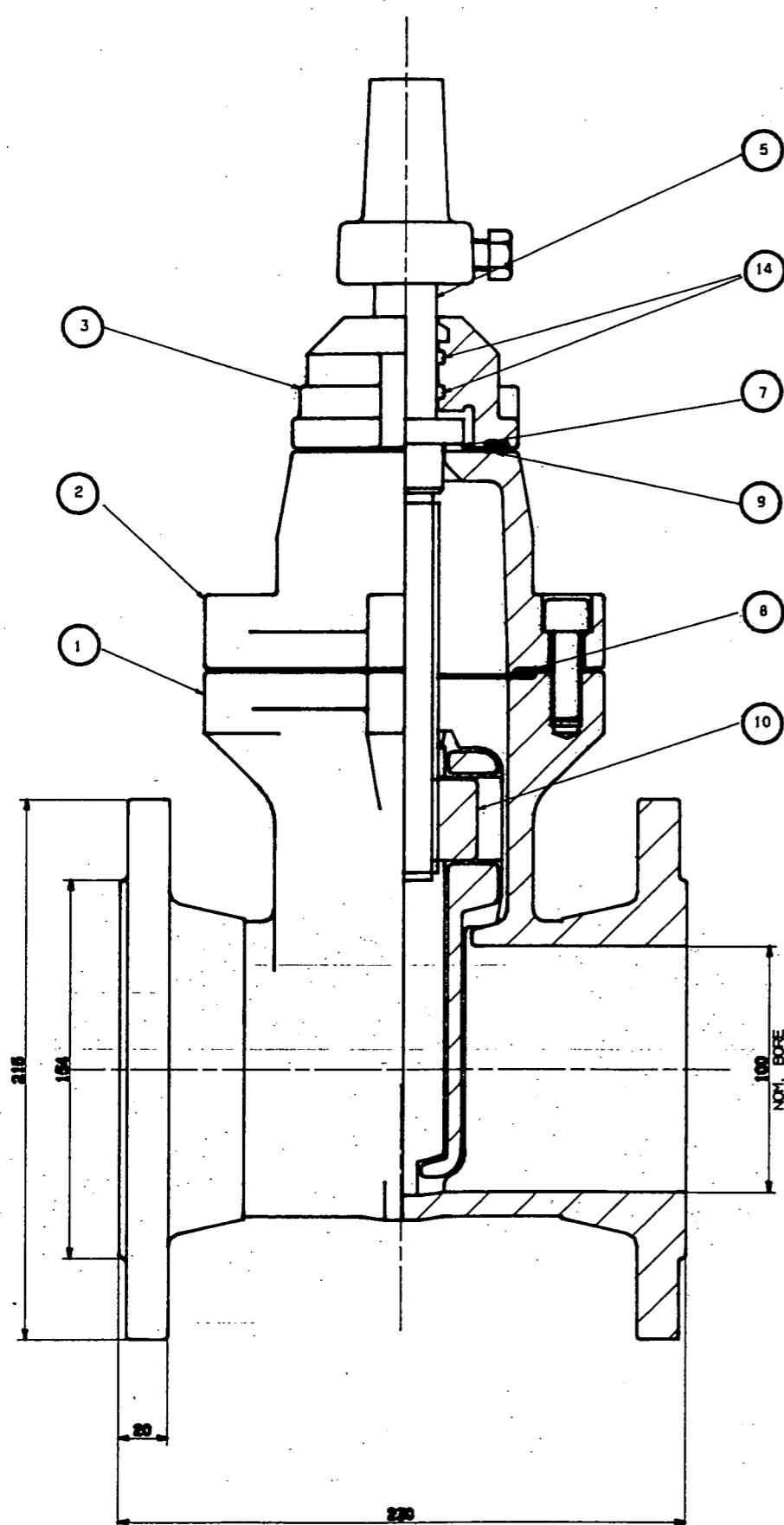
| ITEM | DESCRIPTION           | QTY | MATERIAL            | NOTES            | DRAWING NO.  |
|------|-----------------------|-----|---------------------|------------------|--------------|
| 1    | BODY                  | 1   | SGI AS1831/400-12   |                  | 04-16-02-601 |
| 2    | BONNET                | 1   | SGI AS1831/400-12   |                  | 04-16-02-611 |
| 3    | STEM HOUSING          | 1   | LGM AS1565/C83500   |                  | 03-16-02-612 |
| 4    | WEDGE                 | 1   | SGI AS1831/400-12   | SB RUBBER COATED | 04-16-02-624 |
| 5    | STEM                  | 1   | ST/STEEL AS2637/431 |                  | 04-16-02-643 |
| 6    | CAP                   | 1   | SGI AS1831/400-12   |                  | 04-16-02-517 |
| 7    | THRUST WASHER         | 1   | ERTACETAL           |                  | 03-16-02-620 |
| 8    | BODY GASKET           | 1   | SYNTHETIC RUBBER    |                  | 04-16-02-629 |
| 9    | STEM HOUSING GASKET   | 1   | SYNTHETIC RUBBER    |                  | 03-16-02-623 |
| 10   | WEDGE NUT             | 1   | LGM AS1565/C83500   |                  | 03-16-02-627 |
| 11   | SOCKET HEAD CAP SCREW | 4   | ALLOY STEEL         |                  |              |
| 12   | SOCKET HEAD CAP SCREW | 4   | ALLOY STEEL         |                  |              |
| 13   | HEX HEAD SCREW        | 1   | ST/STEEL            |                  |              |
| 14   | 'O' RING              | 2   | SYNTHETIC RUBBER    |                  |              |
| 15   | WIPER RING            | 1   | SYNTHETIC RUBBER    |                  |              |

WORKING PRESSURE - 1600kPa

TEST PRESSURE

BODY - 3000 kPa

SEAT - 1600 kPa



| ITEM   | DATE     | REVISION            | BY  | C.N. | CL. | MATERIAL | Basic            | Drawn         | Pub | Ed | Issue |
|--|----------|---------------------|-----|------|-----|----------|------------------|---------------|-----|----|-------|
| 1  | 02/01/03 | Listed and Released | J.M |      |     |          | 1:0.75<br>Traced | 04-16-02-1081 |     |    |       |
| <hr/>  |          |                     |     |      |     |          |                  |               |     |    |       |
| SURFACE FINISH                               |          |                     |     |      |     |          |                  |               |     |    |       |
| 1:0.50<br>Cyl. & App.                        |          |                     |     |      |     |          |                  |               |     |    |       |
| LEADS WHERE NOT STATED                       |          |                     |     |      |     |          |                  |               |     |    |       |
| Diam.<br>Cast Diam.<br>Angles<br>Cast Angles |          |                     |     |      |     |          |                  |               |     |    |       |
| DRAW. NO. 04-16-02-1081                      |          |                     |     |      |     |          |                  |               |     |    |       |
| ISSUE 1                                      |          |                     |     |      |     |          |                  |               |     |    |       |
| DIMENSIONS IN MILLIMETRES                    |          |                     |     |      |     |          |                  |               |     |    |       |
| TUBEMAKERS FOUNDRY PRODUCTS                  |          |                     |     |      |     |          |                  |               |     |    |       |
| PIPE Dn 100 SLUICE VALVE                     |          |                     |     |      |     |          |                  |               |     |    |       |
| RESILIENT SEAT AS2638 - CL16                 |          |                     |     |      |     |          |                  |               |     |    |       |

This drawing remains the property of TUBEMAKERS FOUNDRY PRODUCTS and must not be copied, lent or used in any way detrimental to the interests of this company. All drawings must be returned immediately to the owner on completion of the undertaking for which they were issued, or upon prior request.

## OPERATION AND MAINTENANCE MANUAL

### CONTENTS

- 1.00.00 Description of DN100 & ~~DN150~~ Flanged Class 14 Swing Check Valves
- 1.01.00 Operating Instructions
- 1.02.00 Maintenance Instructions
- 2.00.00 Spare Parts List
- 3.00.00 Troubleshooting Guide
- 4.00.00 Address for Queries

Ref: 3-96.MKT

## OPERATION AND MAINTENANCE MANUAL

### 1.00.00 DESCRIPTION

- 1.00.01 Operation and maintenance instructions for DN100 & DN150 flanged class 14 swing check valves. Free acting and lever and weight versions.
- 1.00.02 Reference drawing number 04-16-03-001 typical.

### 1.01.00 OPERATING INSTRUCTIONS

- 1.01.01 The operation of the swing check valve is automatic. The valve opens in response to flow velocity and closes in response to cessation or reversal of flow in the forward direction.
- 1.01.02 Valves are supplied either free acting or with extended hinge pin for fitting of lever and weight.
- 1.01.03 Lever and weights are often applied to swing check valves to assist the closing action and to make the valve more responsive to flow reversal and thus reducing disc slam with resulting water hammer effects.
- 1.01.04 When lever and weight is applied it should be positioned on the hinge pin to maximise its effect on closure ie. with valve positioned horizontally, the lever should move through an arc 45° below the centre line.
- 1.01.05 Through trials the weight should be positioned along the lever at a point where the smallest valve action is obtained under cessation of flow.
- 1.01.06 Where a valve is fitted with extended hinge pin it should also be fitted with lever and weight. When a valve is fitted with extended hinge pin it necessarily has to have seals fitted. The seals increase friction which in turn retards the action of the disc, increasing the tendency toward valve slam and thus more severe water hammer effect.
- 1.01.07 To minimise wear and increase the valve performance life, ensure the valve is correctly sized and the disc is fully open under normal flowing conditions.

### 1.02.00 MAINTENANCE INSTRUCTIONS

- 1.02.01 No external maintenance either preventative or otherwise can be applied external to the valve under operating conditions other than adjustments to lever and weight assemblies etc.
- 1.02.02 Major maintenance involving complete de-watering of the valve may be necessary once or twice throughout the product's life, depending on severity of service conditions. The usual reasons for such a service are:
  - Worn hinge components needing replacement.

Ref: 3-96.MKT

- Degradation of seat seal requiring refacing.
- Severely retarded valve action requiring cleaning and freeing of all hinge bearing areas.

1.02.03 To obtain access to internal components, first remove both hinge seal plugs, RH screwed. In free-acting valve hinge pin, can be drifted from bearings from either side releasing disc sub-assembly for removal through the cover opening. For the extended hinge pin version, drift hinge pin from the non-extended side, the bronze hinge pin bush interference fitted, will be removed with the hinge pin thus releasing the disc assembly.

## 2.00.00 SPARE PARTS LIST

2.00.01 It is not usual to carry spare parts for this product as they are major components used very infrequently.

Refurbishment is usually carried out in conjunction with major planned outages. The reason for the work has usually been identified well prior to the shutdown allowing for specific components to be obtained from the manufacturer if necessary.

## 3.00.00 TROUBLE SHOOTING GUIDE

3.00.01 There are a number of malfunctions which can occur within the generic type.

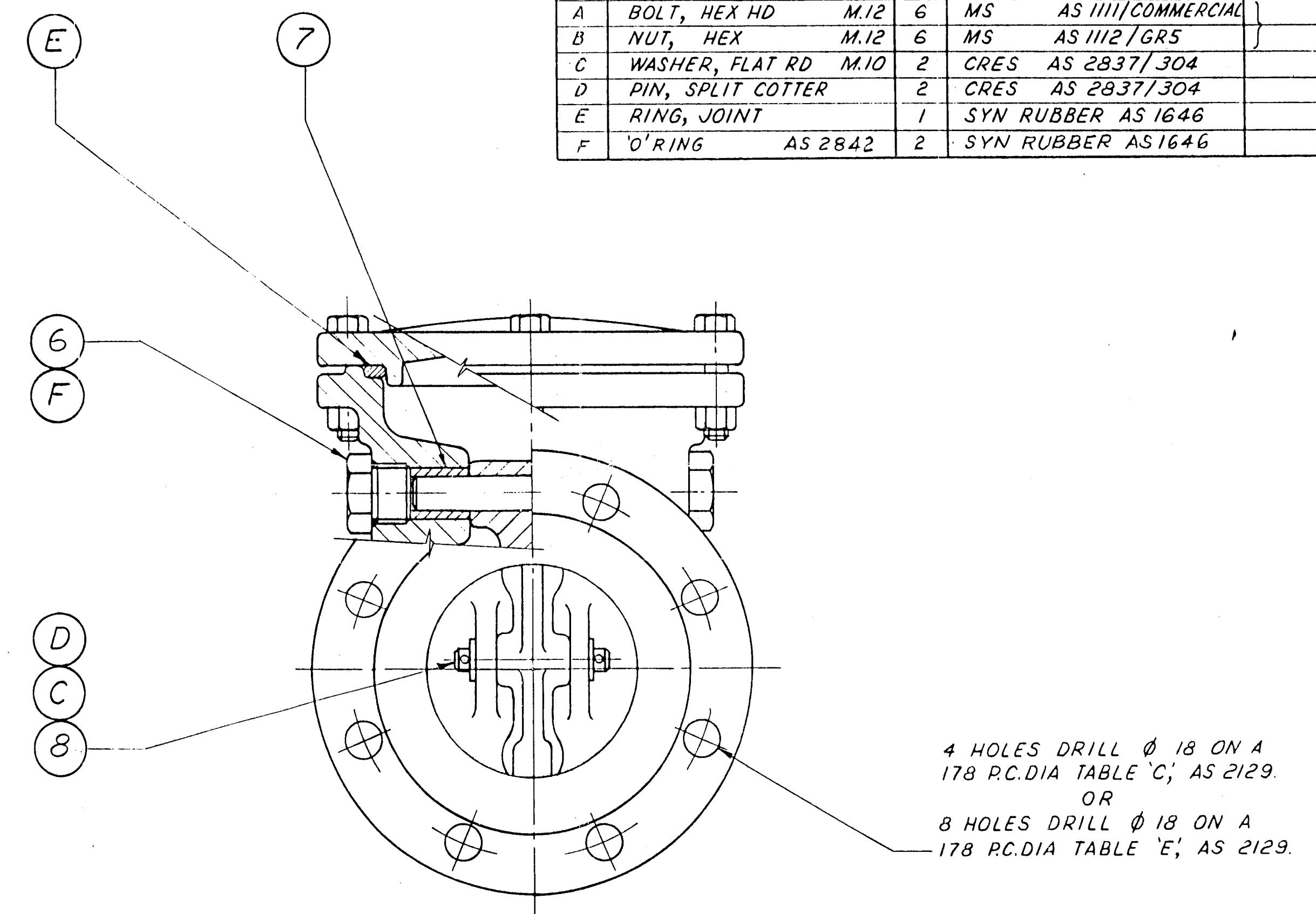
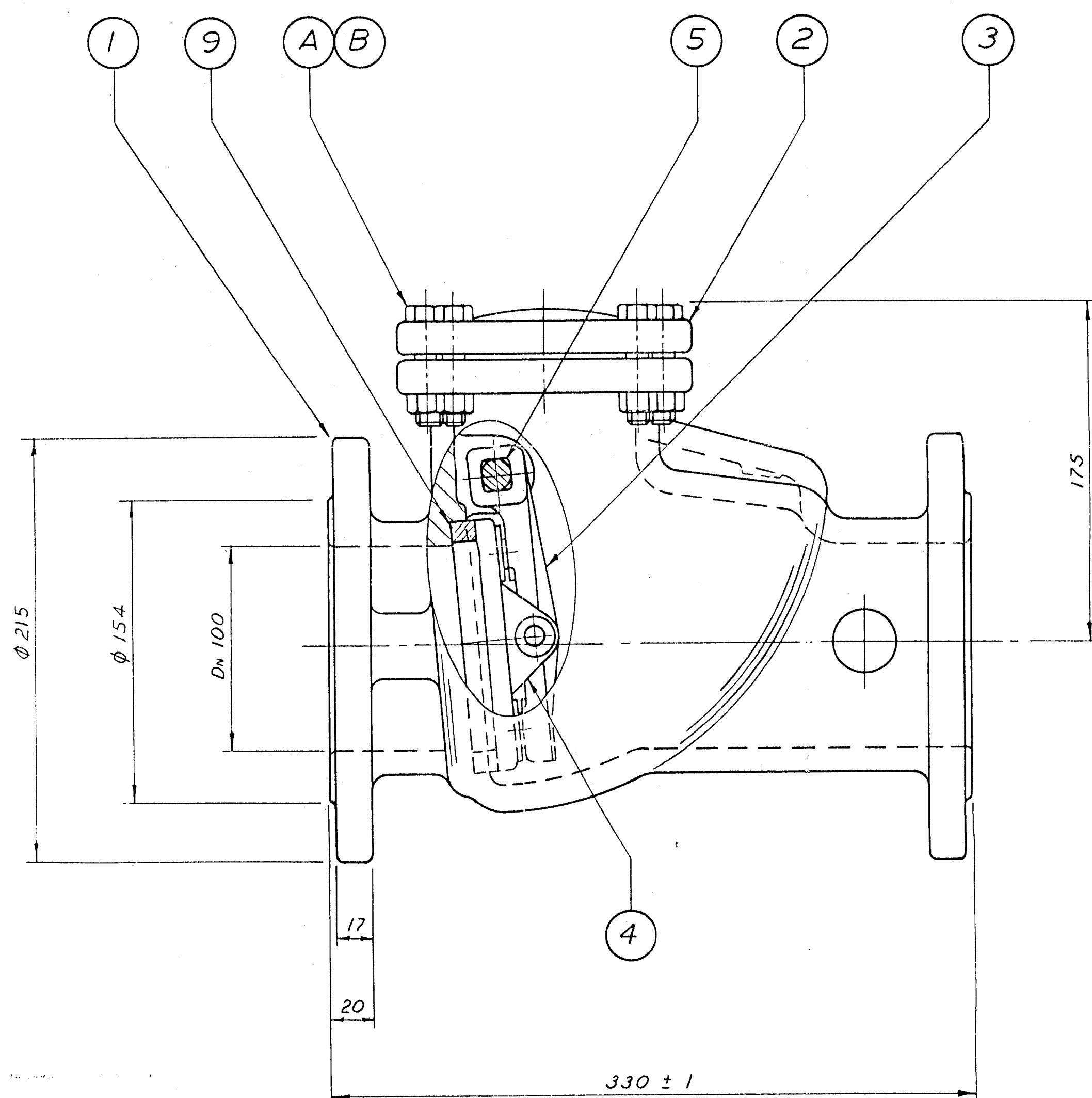
- Seat leakage - replace body and disc seats
- Increasing tendency for valve slam (increasing water hammer) - hinge components binding, clean and free.
- Disc hanging up (not closing) - worn hinge components replace.

## 4.00.00 ADDRESS FOR QUERIES

4.00.01 Should there be any queries or additional information required, please contact:

Tubemakers Water  
63 Currumbin Creek Road  
CURRUMBIN QLD 4223  
Ph: (07) 5534 2522  
Fax: (07) 5534 7079

| ITEM | DESCRIPTION          | QTY | MATERIAL              | CLIENTS | REQ     |
|------|----------------------|-----|-----------------------|---------|---------|
| 1    | BODY                 | 1   | SGI AS 1831/500-7     |         |         |
| 2    | COVER                | 1   | SGI AS 1831/500-7     |         |         |
| 3    | HINGE                | 1   | LGM AS 1565/C83600    |         |         |
| 4    | DISK                 | 1   | LGM AS 1565/C83600    |         |         |
| 5    | PIN, F/A HINGE       | 1   | CRES AS 2837/431      |         |         |
| 6    | PLUG, BLANK          | 2   | AI BRS AS 1567/486    |         |         |
| 7    | SLEEVE, BEARING      | 2   | AI BRS AS 1567/486    |         |         |
| 8    | PIN, DISK/HINGE      | 1   | CRES AS 2837/431      |         |         |
| 9    | RING, BODY           | 1   | LGM AS 1565/C83600    |         |         |
| A    | BOLT, HEX HD M.12    | 6   | MS AS 1111/COMMERCIAL | HD GALV |         |
| B    | NUT, HEX M.12        | 6   | MS AS 1112/GR5        |         | AS 1214 |
| C    | WASHER, FLAT RD M.10 | 2   | CRES AS 2837/304      |         |         |
| D    | PIN, SPLIT COTTER    | 2   | CRES AS 2837/304      |         |         |
| E    | RING, JOINT          | 1   | SYN RUBBER AS 1646    |         |         |
| F    | 'O'RING AS 2842      | 2   | SYN RUBBER AS 1646    |         |         |



PRESSURE TEST BODY :- 3000 kPa  
VALVE SEAT :- 1600 kPa

**TESTING WITNESSED BY :-**

**FOR INFORMATION ONLY  
NO FOLLOWING AMENDMENTS**

AS 3578



| Issue | Date      | Revision                          | By    | Change No. | Ck. | MATERIAL          | Scale | Drawn                   | P.T.C. | 3.11.88. | COASTLINE FOUNDRY                         |
|-------|-----------|-----------------------------------|-------|------------|-----|-------------------|-------|-------------------------|--------|----------|---|
| 1     | 3.11.88.  | LISTED AND RELEASED               | RT.C. |            |     | —                 |       | Traced                  | A.M.B. | 5.11.88. |   |
| 2     | 4.7.89.   | UPDATED PRIOR TO PRODUCTION       | RT.C. |            |     |                   |       | Chkd.                   |        |          | Creek Rd., Currumbin, Gold Coast, Q. 4223 |
| 3     | 19.11.91. | CONVERTED TO CLASS 16 RAISED FACE | RT.C. | 1084       |     | SURFACE FINISH.   |       | App.                    |        |          | NAME                                      |
|       |           |                                   |       |            |     | —                 |       | LIMITS WHERE NOT STATED |        |          | CHECK VALVE                               |
|       |           |                                   |       |            |     |                   | Dims  | ±                       | —      |          | Dn 100 CL.16 FREE-ACTING                  |
|       |           |                                   |       |            |     |                   | Cast  | Dims                    | ±      | —        | PART NO                                   |
|       |           |                                   |       |            |     |                   |       | Angles                  | ±      | —        | 04-16-03-001                              |
|       |           |                                   |       |            |     |                   |       | Cast Angles             | ±      | —        | ISSUE                                     |
|       |           |                                   |       |            |     | SURFACE TREATMENT |       |                         |        |          | 3   |
|       |           |                                   |       |            |     | RED OXIDE         |       |                         |        |          |   |

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interests of this company. All drawings must be returned immediately to the owner  
on completion of the undertaking for which they were issued, or upon prior request.

**4 . 0    TELEMETRY**

JPR Ref:- (A21500.001)

Revision 0

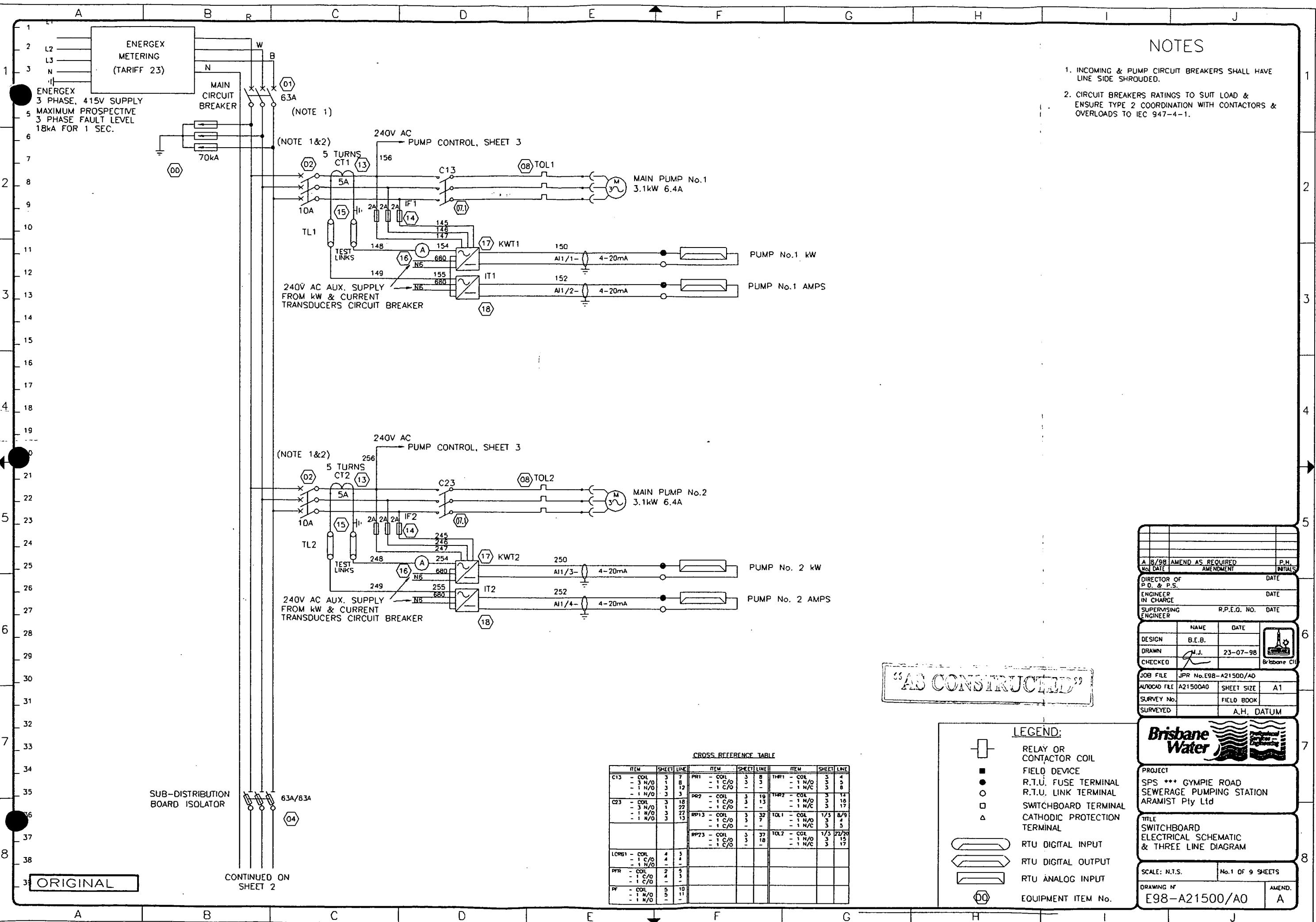
October 27, 1998

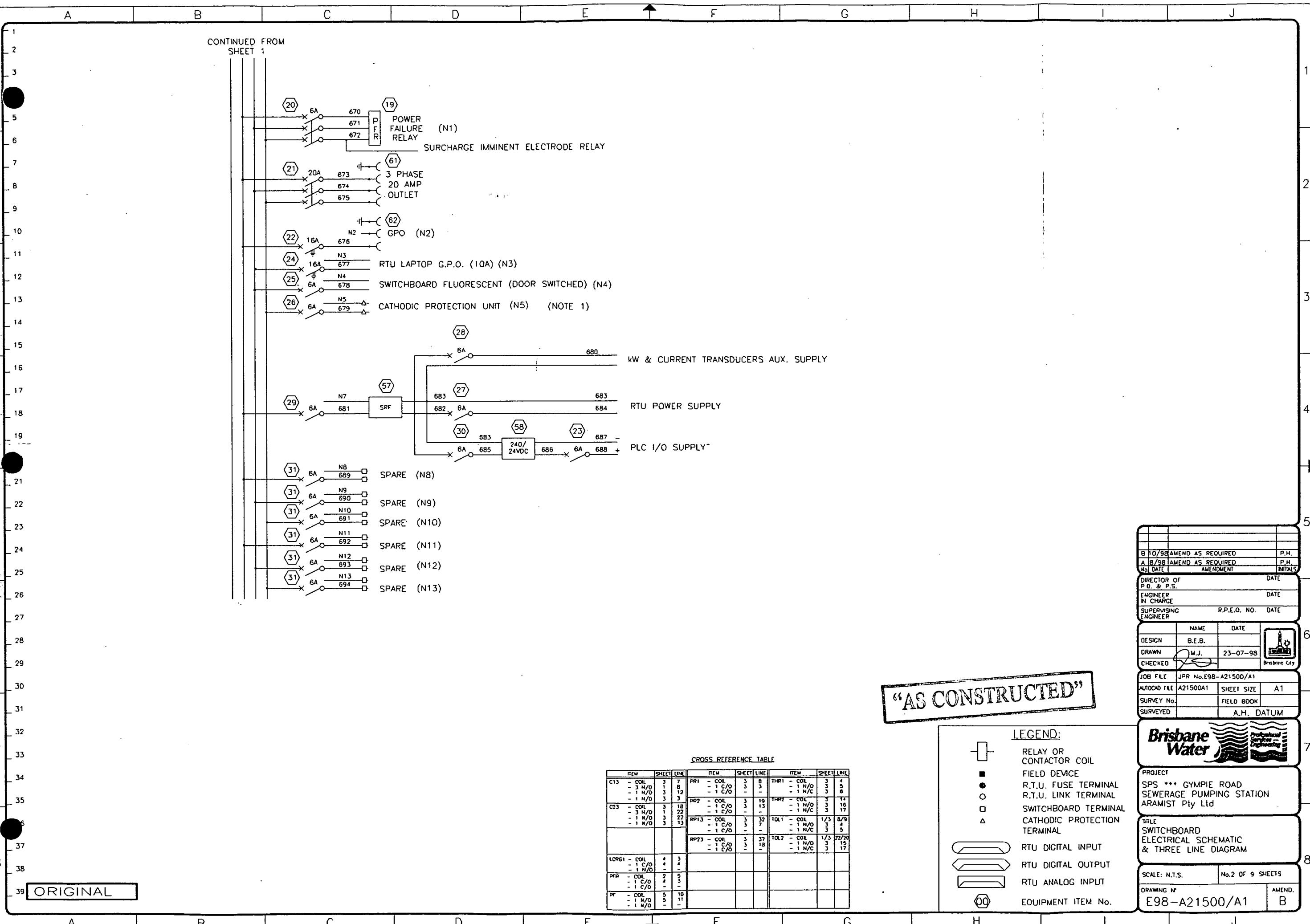
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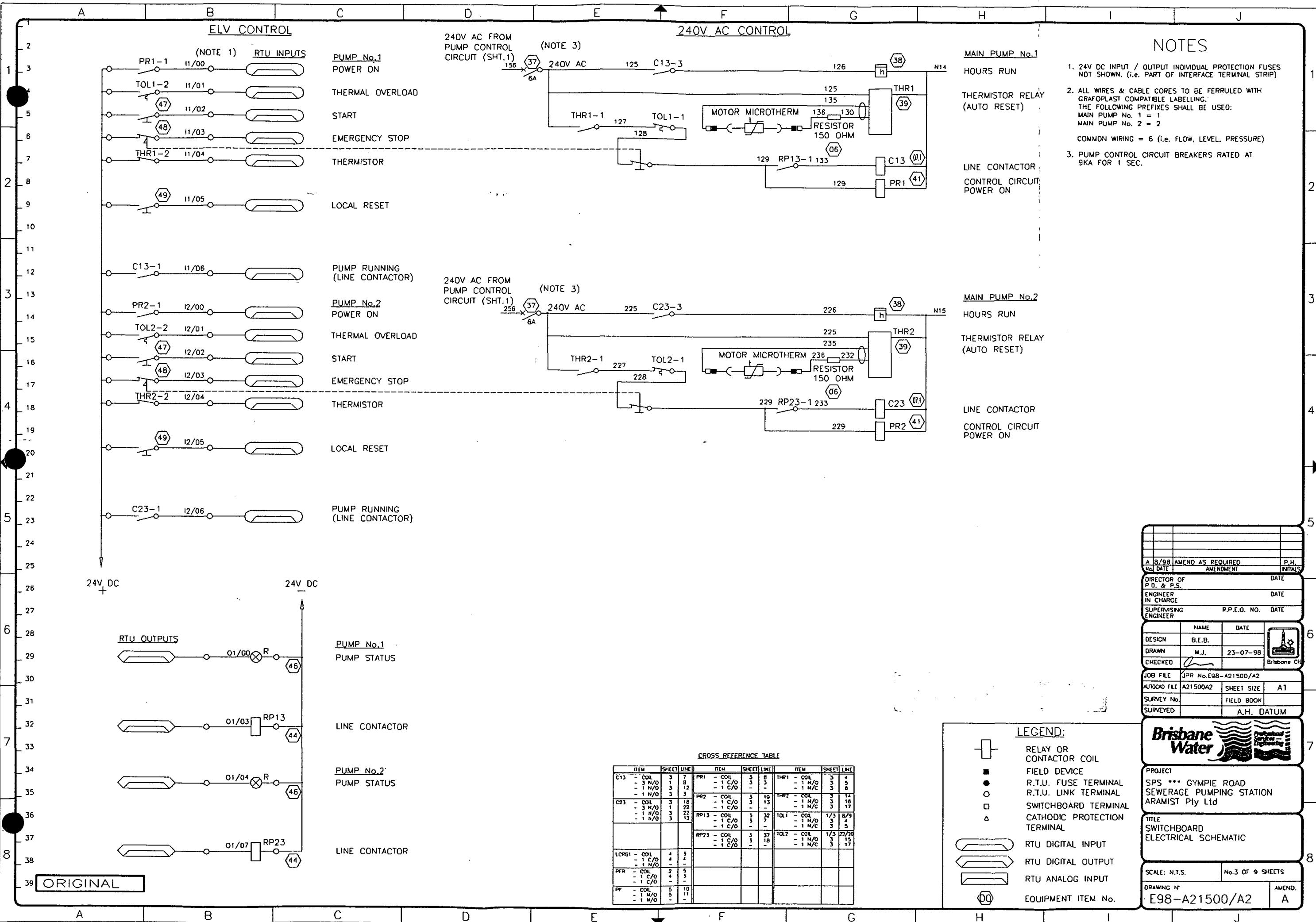
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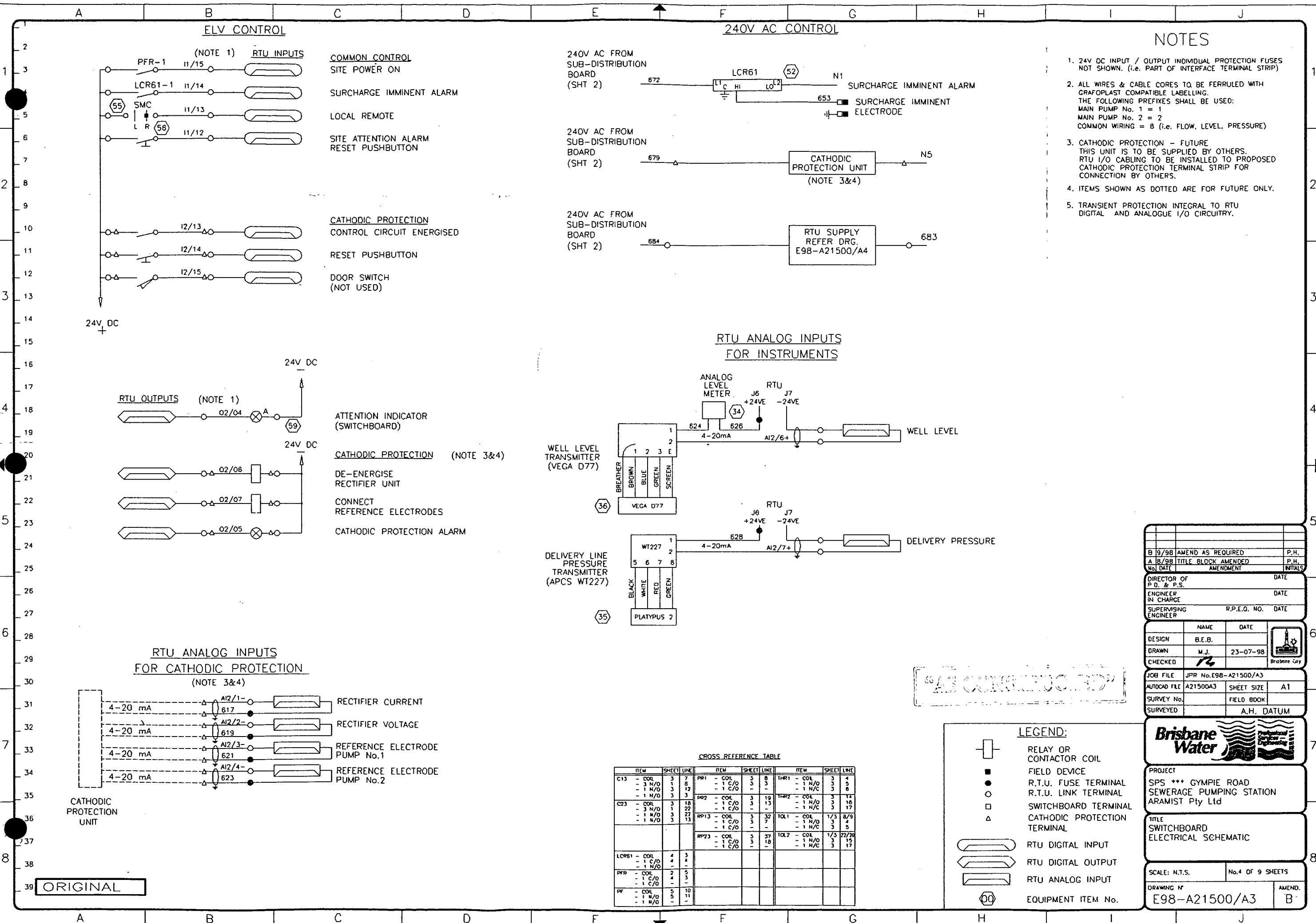
Revision 0

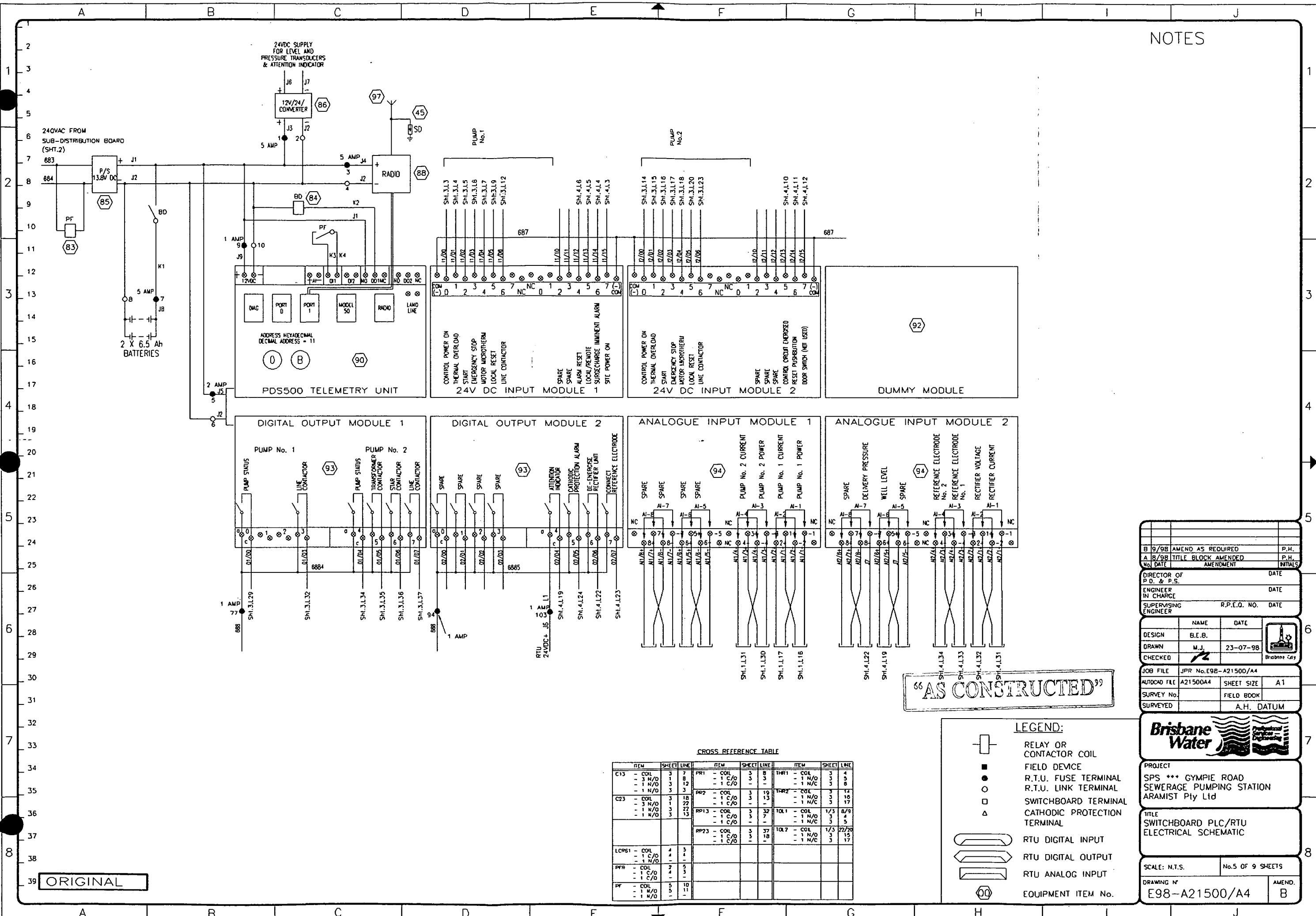
October 27, 1998

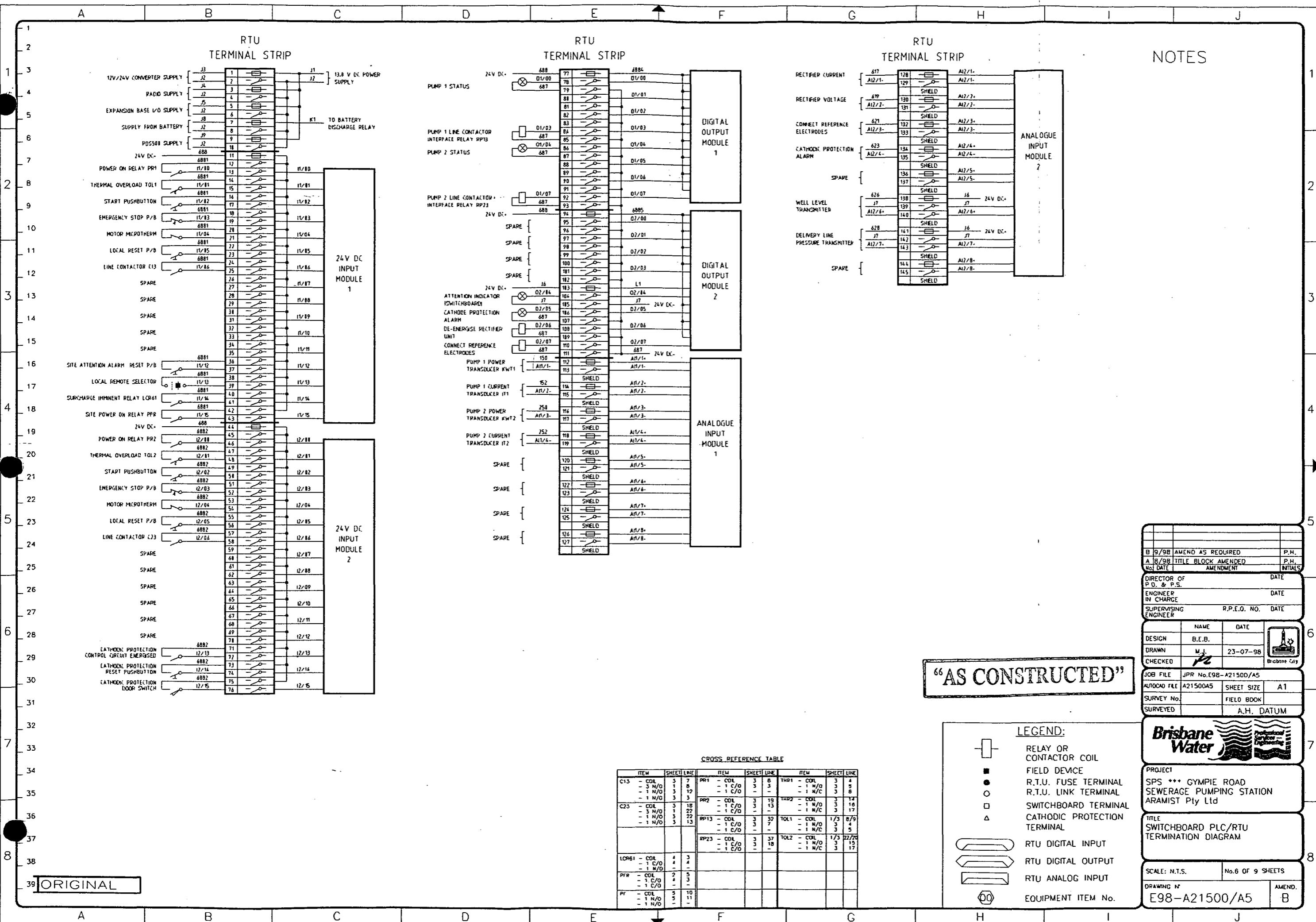


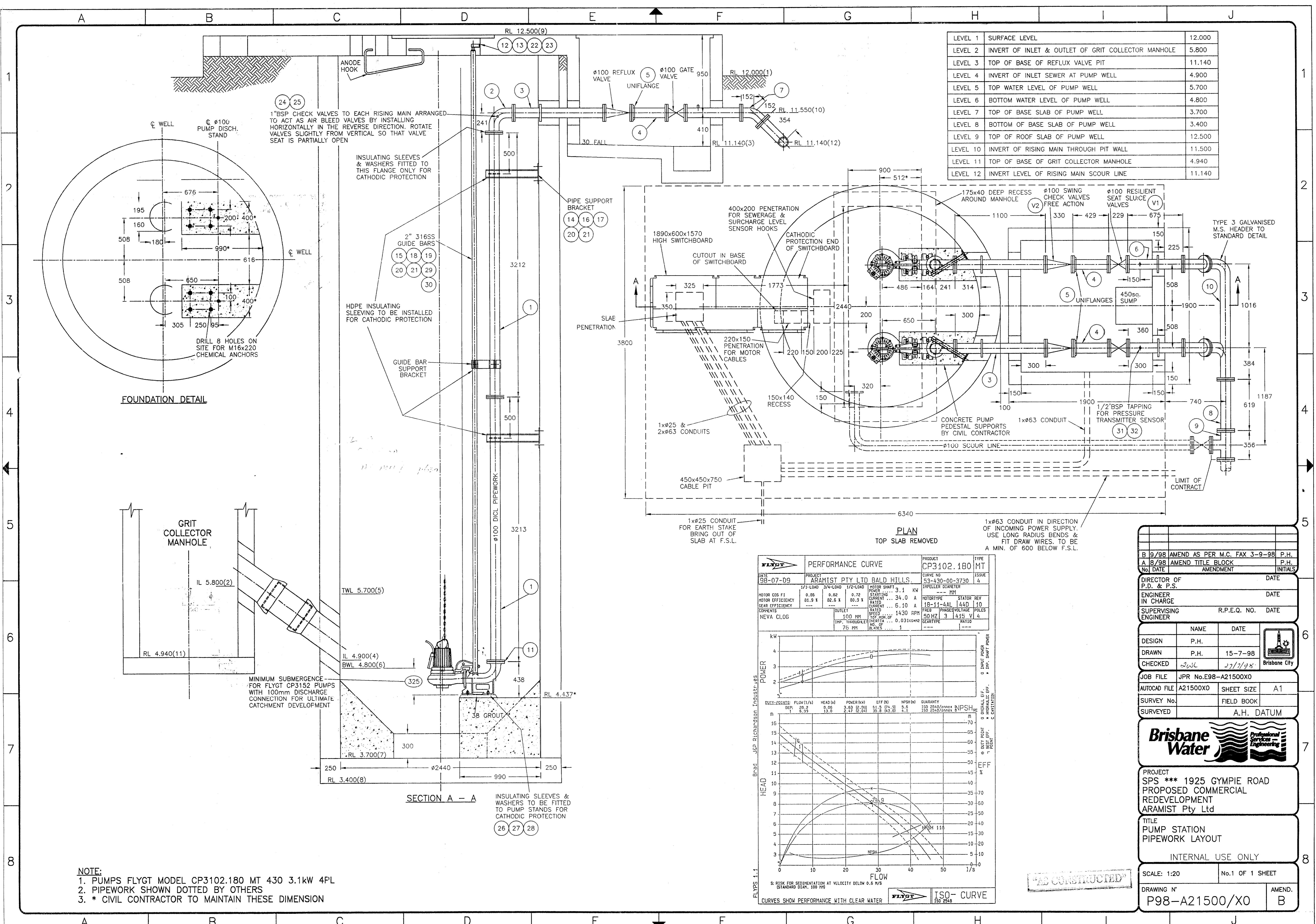


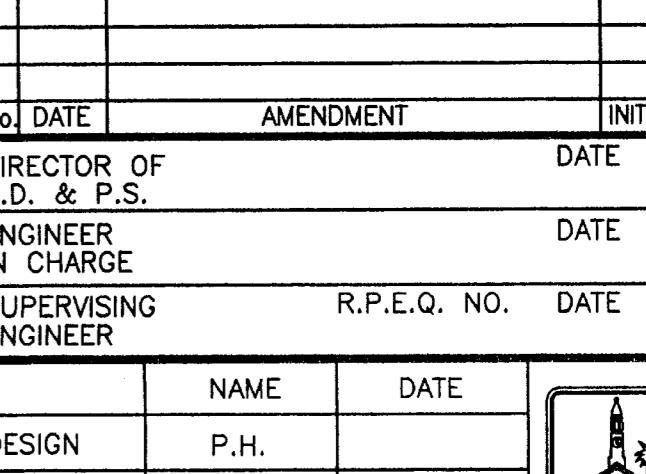










| 1                                      | A   | B                   | C  | D | E | ↑ | F        | G | H | I | J | 1 |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|--|---|---------------------|--|---|---|---|----------|---|---|---|---|---|----|------|-----------|----------|-------------------------|--|--|--|--------------------|--|--|--|--|--|--|--|------|--|------|--|--------|------|--|--|-------|------|---------|--|---------|-----|---------|---------------|----------|--|---------------------|--|--------------|--|----------|---------------|------------|--|------------|--|----------|--|------------|--|
|  | FILE:- A21500.001   | 7 September 1998    |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | ITEM  | QTY                 | MAKE and NUMBER  |   |   |   | REC. No. |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
| 2                                      | 1   | 4                   | 100 DIA OF PIPES 3212 LONG   |   |   |   | F6848    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 2   | 2                   | 100 DIA OF 90° BENDS WITH 1" BSP TAPPING LOCATED AS SHOWN 1 FLANGE OF EACH BEND BACKFACED                      |   |   |   | F6848    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 3   | 2                   | 100 DIA OF PIPE 1100 LONG WITH A WEEP FLANGE 314 FROM FLANGE   |   |   |   | F6848    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 4   | 2                   | 100 DIA FL/PE PIPE 429 LONG  |   |   |   | F6848    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 5   | 2                   | 100 DIA UNIFLANGED C/W 316 SS STUDS  |   |   |   | F6848    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 6   | 2                   | 100 DIA OF PIPES 675 LONG WITH A WEEP FLANGE 360 FROM THE FLANGE & A 1/2" BSP TAPPING 150 FROM THE SAME FLANGE |   |   |   | F6848    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 7   | 2                   | 100 DIA OF 45° BENDS 152 X 152   |   |   |   | F6850    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 8   | 1                   | 100 DIA OF PIPE 619 LONG   |   |   |   | F6850    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 9   | 1                   | 100 DIA ALL FLANGE TEE 358 X 178   |   |   |   | F6850    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 10  | 1                   | 100 DIA M.S.C.L. HEADER PIPE 1016 X 384 X 384  |   |   |   | F6850    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 11  | 24                  | 100 DIA BWG SET 316 SS TABLE 'C'   |   |   |   | F6850    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 12  | 2                   | 16 DIA SS CHAIN HOOKS  |   |   |   | F6850    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 13  | 2                   | 10 DIA CABLE HOOKS   |   |   |   | F6850    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 14  | 8                   | M16 X 100 HSARM HILTI ANCHORS  |   |   |   | F6850    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 15  | 2                   | 60 00 316 SS GUIDE RAIL & INTERMEDIATE BRACKET ASSY'S 7.7m LONG PC 2367  |   |   |   | F6850    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 16  | 4                   | PIPE SUPPORT BRACKET 50 X 50 X 6 316 SS 550 LONG PC 2368   |   |   |   | F6850    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 17  | 4                   | 316 SS 'U' BOLTS M12 TO DRAWING PC 2369  |   |   |   | F6853    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 18  | 4                   | M12 X 35 - 316 SS SET SCREWS   |   |   |   | F6853    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 19  | 4                   | M12 X 50 - 3136 SS SET SCREWS  |   |   |   | F6853    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 20  | 16                  | M12 - 316 SS NUTS  |   |   |   | F6853    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 21  | 16                  | 12x 316 SS FLAT WASHERS  |   |   |   | F6853    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 22  | 4                   | M10 X 90 HSARM HILTI ANCHORS   |   |   |   | F6853    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 23  | 2                   | PC 6 NYLON CABLE STOCKINGS   |   |   |   | F6853    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 24  | 2                   | 1" BSP BRASS NIPPLES   |   |   |   | F6853    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 25  | 2                   | 1" BSP BRASS SWING CHECK VALVES  |   |   |   | F6853    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 26  | 2                   | M16 - 316 SS BROKER ROD  |   |   |   | F6853    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 27  | 16                  | M16 - 316 SS NUTS  |   |   |   | F6853    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 28  | 16                  | 15mm GALV SQUARE WASHERS   |   |   |   | F6853    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 29  | 2                   | 6mm HOT DIP GALV LIFTING CHAINS WITH RINGS @ 1200 CRS S.W.L 400 KG EACH 8.4m LONG                              |   |   |   | F6854    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 30  | 2                   | 16 X 13 GALV BOW SHACKLES S.W.L. 2000KG  |   |   |   | F6854    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 31  | 2                   | 1/2" BSP NIPPLES BRASS   |   |   |   | F6854    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | 32  | 2                   | 1/2" BSP BALL VALVES   |   |   |   | F6854    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | <b>VALVES</b>   |                     |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | V1  | 2                   | 100mm OF R.S SLUICE VALVES ACC WITH HANDWHEEL  |   |   |   | F6819    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | V2  | 2                   | 100mm OF SWING CHECK VALVES WITH COUNTER WEIGHTS   |   |   |   | F6819    |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%;">No</td><td style="width: 10%;">DATE</td><td style="width: 10%;">AMENDMENT</td><td style="width: 10%;">INITIALS</td></tr> <tr><td colspan="4">DIRECTOR OF P.D. &amp; P.S.</td></tr> <tr><td colspan="4">ENGINEER IN CHARGE</td></tr> <tr><td colspan="4">SUPERVISING ENGINEER R.P.E.Q. NO. DATE</td></tr> <tr><td colspan="2">NAME</td><td colspan="2">DATE</td></tr> <tr><td>DESIGN</td><td>P.H.</td><td></td><td></td></tr> <tr><td>DRAWN</td><td>P.H.</td><td>14-9-98</td><td></td></tr> <tr><td>CHECKED</td><td>ZWL</td><td>15/9/98</td><td>Brisbane City</td></tr> <tr><td colspan="2">JOB FILE</td><td colspan="2">JPR No.E98-A21500X1</td></tr> <tr><td colspan="2">AUTOCAD FILE</td><td>A21500X1</td><td>SHEET SIZE A1</td></tr> <tr><td colspan="2">SURVEY No.</td><td colspan="2">FIELD BOOK</td></tr> <tr><td colspan="2">SURVEYED</td><td colspan="2">A.H. DATUM</td></tr> </table> |                     |  |   |   |   |          |   |   |   |   |   | No | DATE | AMENDMENT | INITIALS | DIRECTOR OF P.D. & P.S. |  |  |  | ENGINEER IN CHARGE |  |  |  | SUPERVISING ENGINEER R.P.E.Q. NO. DATE |  |  |  | NAME |  | DATE |  | DESIGN | P.H. |  |  | DRAWN | P.H. | 14-9-98 |  | CHECKED | ZWL | 15/9/98 | Brisbane City | JOB FILE |  | JPR No.E98-A21500X1 |  | AUTOCAD FILE |  | A21500X1 | SHEET SIZE A1 | SURVEY No. |  | FIELD BOOK |  | SURVEYED |  | A.H. DATUM |  |
| No                                     | DATE  | AMENDMENT           | INITIALS   |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
| DIRECTOR OF P.D. & P.S.                |   |                     |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
| ENGINEER IN CHARGE                     |   |                     |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
| SUPERVISING ENGINEER R.P.E.Q. NO. DATE |   |                     |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
| NAME                                   |   | DATE                |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
| DESIGN                                 | P.H.  |                     |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
| DRAWN                                  | P.H.  | 14-9-98             |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
| CHECKED                                | ZWL   | 15/9/98             | Brisbane City  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
| JOB FILE                               |   | JPR No.E98-A21500X1 |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
| AUTOCAD FILE                           |   | A21500X1            | SHEET SIZE A1  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
| SURVEY No.                             |   | FIELD BOOK          |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
| SURVEYED                               |   | A.H. DATUM          |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  |    |                     |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | <b>PROJECT</b><br>SPS *** 1925 CYMPIE ROAD<br>PROPOSED COMMERCIAL<br>REDEVELOPMENT<br>ARAMIST Pty Ltd   |                     |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | <b>TITLE</b><br>PUMP STATION<br>MATERIAL LIST<br><div style="text-align: center;"><b>"AS CONSTRUCTED"</b></div>   |                     |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |
|  | SCALE: 1:20      No.1 OF 1 SHEET<br>DRAWING N° P98-A21500/X1      AMEND.  |                     |  |   |   |   |          |   |   |   |   |   |    |      |           |          |                         |  |  |  |                    |  |  |  |  |  |  |  |      |  |      |  |        |      |  |  |       |      |         |  |         |     |         |               |          |  |                     |  |              |  |          |               |            |  |            |  |          |  |            |  |