

**MOSSVALE ON MANLY - STAGE 1
SEWERAGE PUMPING STATION**

Constructed by: JOBLIN CONTRACTORS PTY LTD

**19 KAMHOLTZ COURT
ASHMORE QLD 4214**

PH: (07) 5539 5979

**Electrical by: J & P RICHARDSON INDUSTRIES PTY LTD
114 CAMPBELL AVE
WACOL BRISBANE QLD 4076**

PH: (07) 3271 2911

COMMISSIONED:

MOSSVALE ON MANLY - STAGE 1 SEWERAGE PUMPING STATION

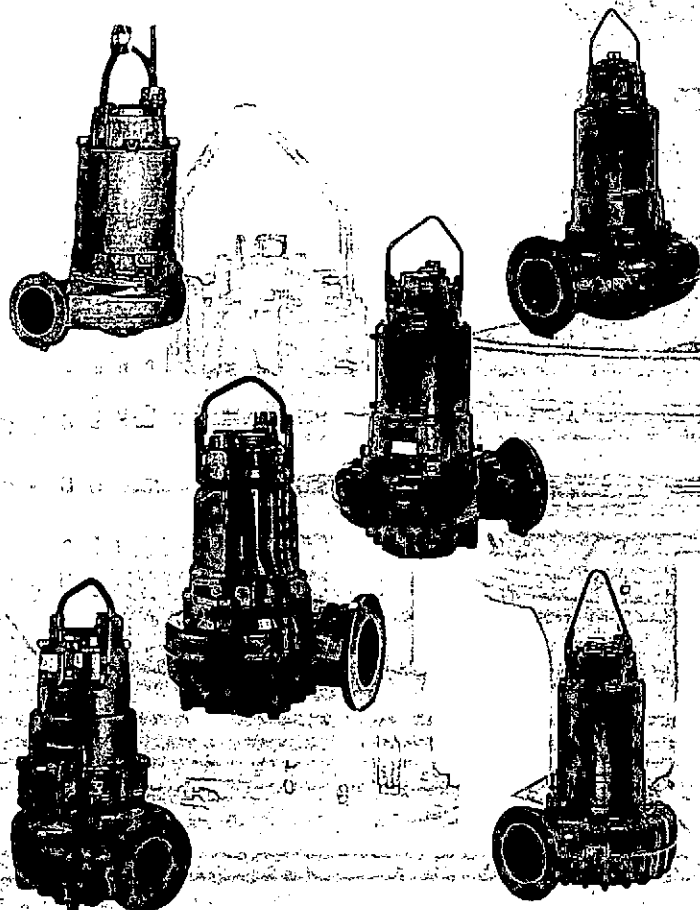
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Installation, care and maintenance

3126/3140/3152/3170/3201/3300



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SAFETY

This manual contains basic information on the installation, operating and maintenance and should be followed carefully. It is essential that these instructions are carefully read before installation or commissioning by both the installation crew as well as those responsible for operation or maintenance. The operating instructions should always be readily available at the location of the unit.

Identification of safety and warning symbols



General Danger:

Non-observance given to safety instructions in this manual, which could cause danger to life have been specifically highlighted with this general danger symbol.



High Voltage:

The presence of a dangerous voltage is identified with this safety symbol.

WARNING!

Non-observance to this warning could damage the unit or affect its function

Qualifications of personnel

An authorized (certified) electrician and mechanic shall carry out all work.

Safety regulations for the owner/operator

All government regulations, local health and safety codes shall be complied with.

All dangers due to electricity must be avoided (for details consult the regulations of your local electricity supply company).

Unilateral modification and spare parts manufacturing

Modifications or changes to the unit/installation should only be carried out after consulting with ITT Flygt.

Original spare parts and accessories authorized by the manufacturer are essential for compliance. The use of other parts can invalidate any claims for warranty or compensation.

Dismantling and re-assembly

If the pump has been used to pump hazardous media, care must be taken that, when draining the leakage, personnel and environment are not endangered.

All waste and emissions such as used coolant must be appropriately disposed of. Coolant spills must be cleaned up and emissions to the environment must be reported.

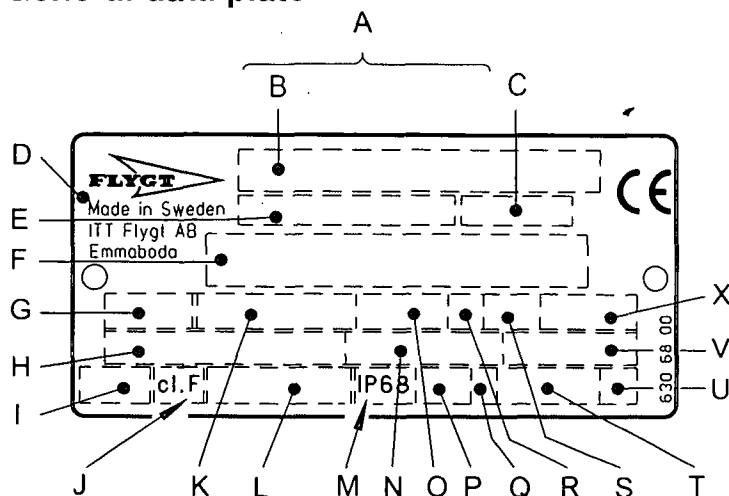
The pumping station must be kept tidy and in good order at all times.

All government regulations shall be observed.

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

DATA PLATE INTERPRETATION

General data plate

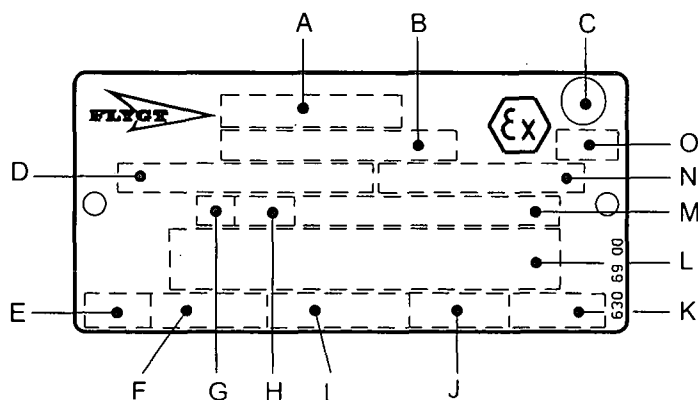


- A Serial number
- B Product code + Number
- C Curve code / Propeller code
- D Country of origin
- E Product number
- F Additional information
- G Phase; Type of current; Frequency
- H Rated voltage
- I Thermal protection
- J Thermal class
- K Rated shaft power
- L International standard
- M Degree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

Approval plates

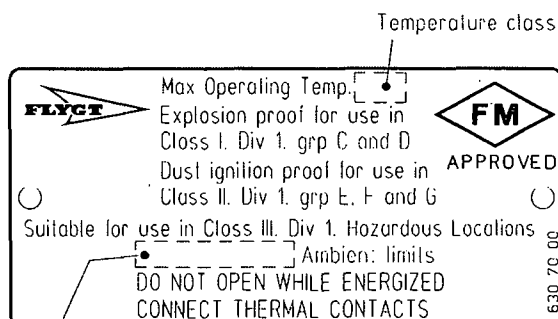
These approval plates apply to an explosion-proof submersible Flygt pump.
The plates are used together with the general data plate on the pump.

- EN: European Norm
ATEX Directive
EN 50014, EN 50018, EN 1127-1
⊠ II 2 G EEx dII T4
⊠ I M 2 EEx dl



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

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



Max. ambient temperature

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 3126, 3140, 3152, 3170, 3201 or 3300 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). If the pump is not equipped with cooling jacket, 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/m³ (9.2 lb per US gal.)

The pH of the pumped liquid: 5.5—14 (for cast iron pumps).

The pH of the pumped liquid: 3—14 (for 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 or carbon steel.

4. Bearings

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

The stator is cooled by either the surrounding media or by forced circulation in a cooling jacket.

7. 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.

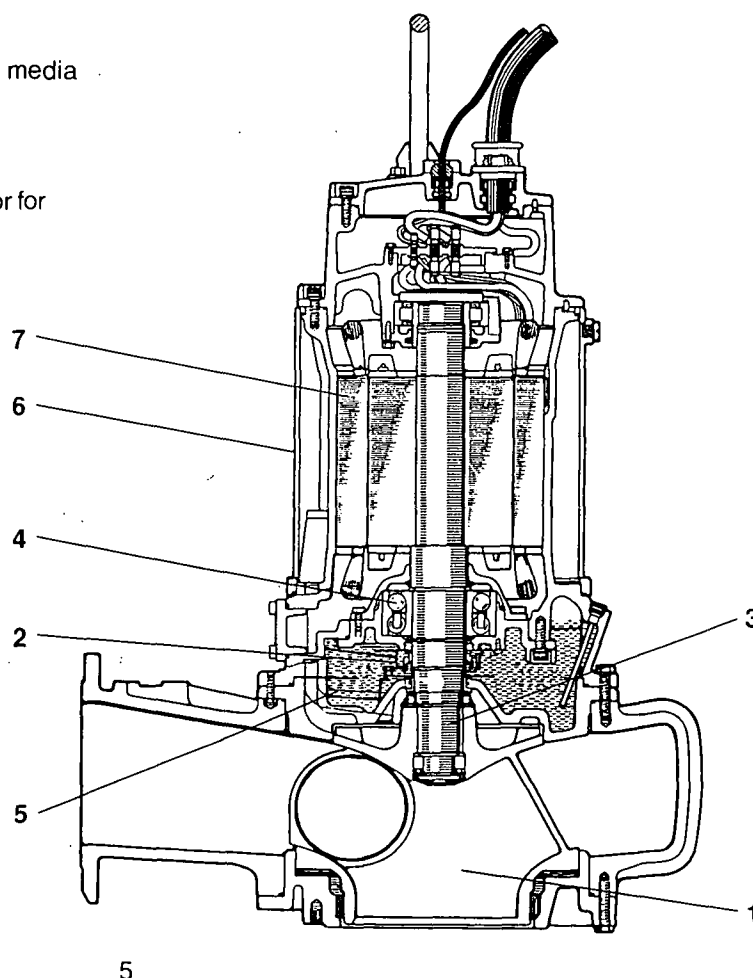
The stator is insulated in accordance with class F (155°C, 310°F). The motor is designed to deliver its rated output at $\pm 5\%$ variation from the rated voltage. Without overheating the motor, $\pm 10\%$ variation from the rated voltage can be accepted provided that the motor does not run continuously 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.
- Minimum stop level should be according to the dimensional drawing.
- The pump must never run dry.

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.

NOTE! If the pump optionally is equipped with thermistors in the stator winding, make sure that the thermistors are never exposed to voltages higher than 2.5 V. If the voltage exceeds this value, e.g. when the control circuit is being checked, the thermistors will be destroyed.

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

When using a variable-frequency-drive (VFD) the shielded cable (type NSSHÖU.../3E+St) should be used. 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.

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.

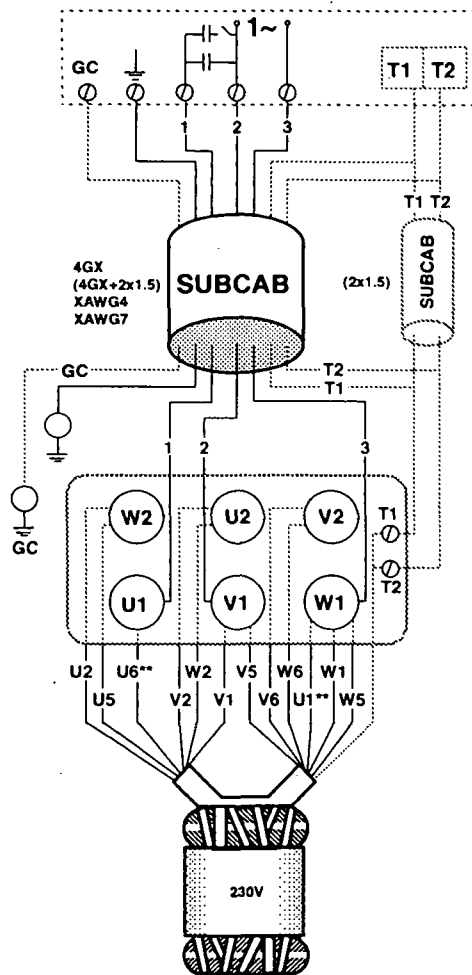
The **MiniCas II** is a monitoring relay to which CLS and/or FLS are connected.

Check:

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

Replace defective equipment.

CABLE CHART



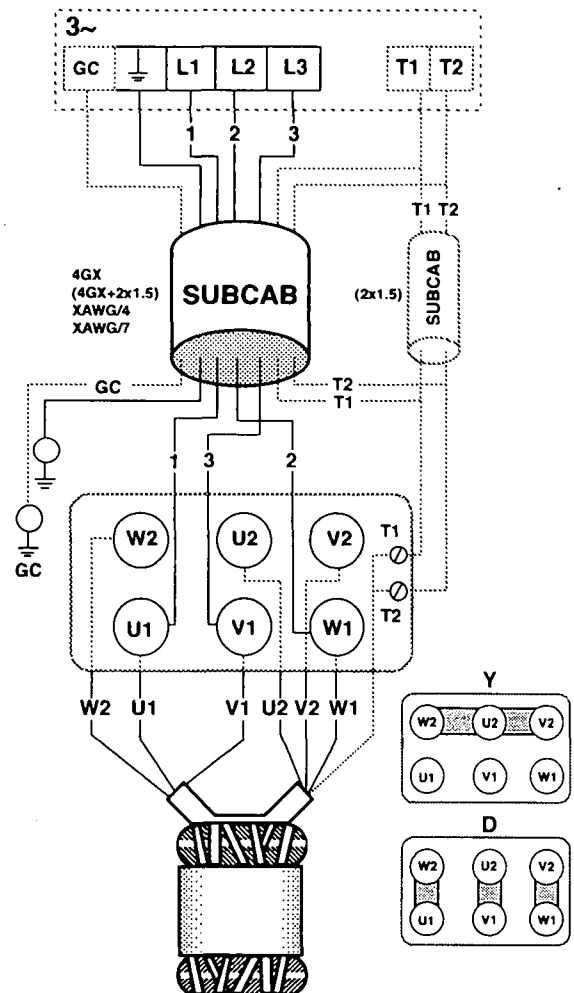
Single-phase

SUBCAB/SUBCAB AWG***

Connection	Conductors
starter	
1	brown (red***)
2	black (black***)
3	blue (white***)
Earth	yellow/green
GC**	yellow
T1*	black T1/orange***
T2*	black T2/blue***

Stator leads

U1 = red	U5 = red
V1 = brown	V5 = brown
W1 = yellow	W5 = yellow
U2 = green	U6 = green
V2 = blue	V6 = blue
W2 = black	W6 = black



3-phase, direct-on-line starting

SUBCAB/SUBCAB AWG***

Connection	Conductors
starter	
1	brown (red***)
2	blue (white***)
3	black (black***)
Earth	yellow/green
GC**	yellow
T1*	black T1/orange***
T2*	black T2/blue***

Stator leads

U1 = red
V1 = brown
W1 = yellow
U2 = green
V2 = blue
W2 = black

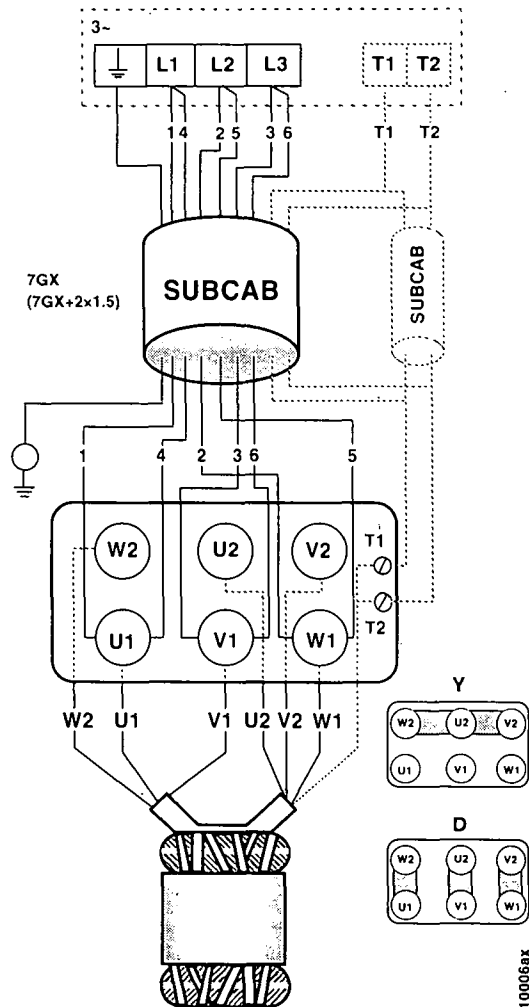
* Terminal for connection of thermal contacts in the motor and monitoring equipment.

** GC = Ground Check

*** SUBCAB/AWG

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

CABLE CHART



3-phase, direct-on-line starting

SUBCAB 1+2

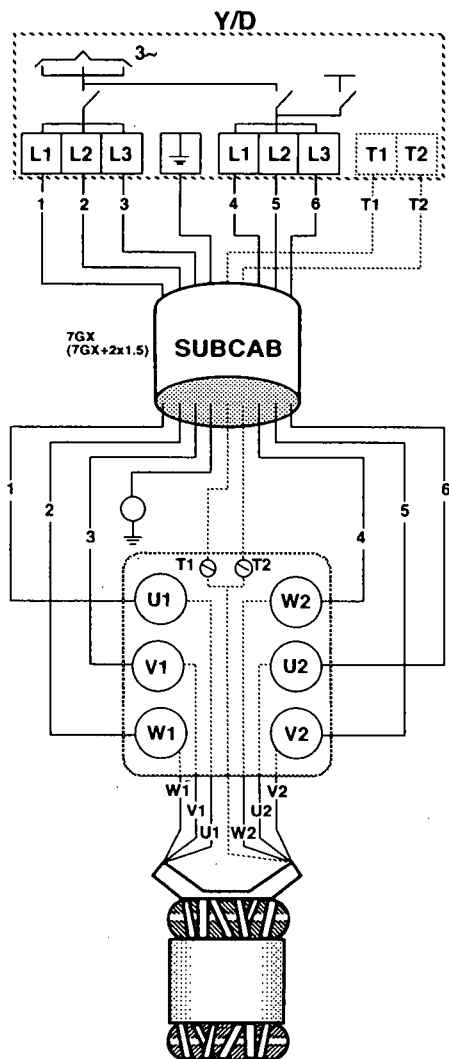
Connection	Conductors
1+2	brown
2/5	blue
3/6	black
Earth	yellow/green
T1*	black T1
T2*	black T2

Stator leads

U1	= red
V1	= brown
W1	= yellow
U2	= green
V2	= blue
W2	= black

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

CABLE CHART



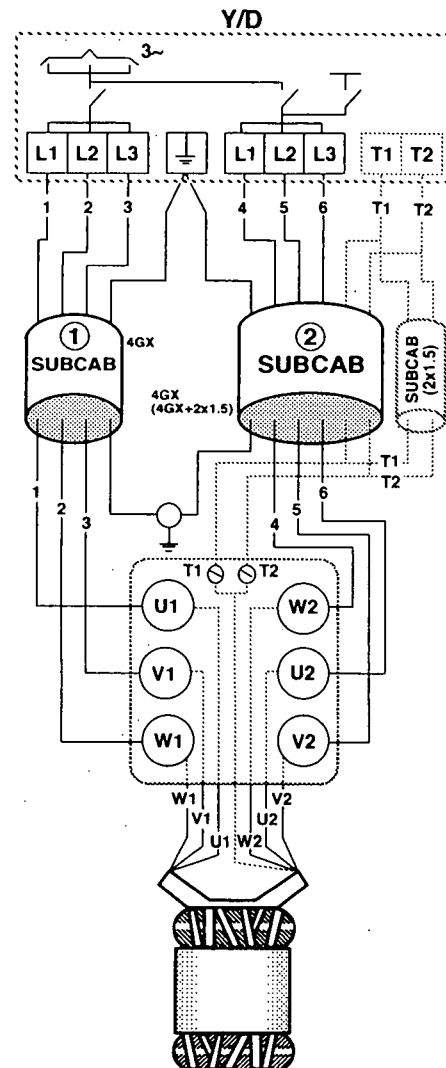
3-phase, star-delta starting

SUBCAB

Connection starter	Conductors
1	black 1
2	black 2
3	black 3
4	black 4
5	black 5
6	black 6
Earth	yellow/green
T1*	black T1
T2*	black T2

Stator leads

U1	= red
V1	= brown
W1	= yellow
U2	= green
V2	= blue
W2	= black



3-phase, star-delta starting

SUBCAB 1+2

Connection starter	Conductors
1/4	brown
2/5	blue
3/6	black
Earth	yellow/green
T1*	black T1
T2*	black T2

Stator leads

U1	= red
V1	= brown
W1	= yellow
U2	= green
V2	= blue
W2	= black

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

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.

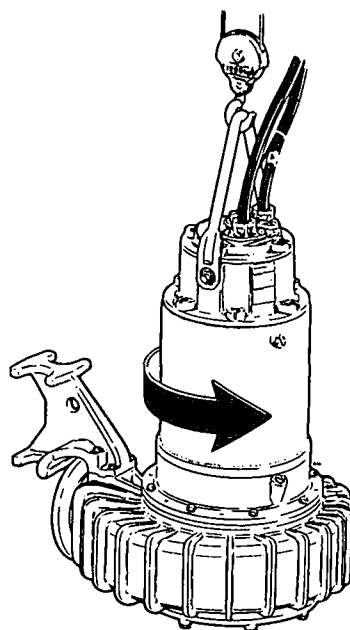
In the case of dry installation, check the direction of rotation through the inlet elbow access cover.

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 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 (160°F)	Continuous	1000 hours	4000 hours
≤70°C (160°F)	Intermittent	twice a year	once a year
≤90°C (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.

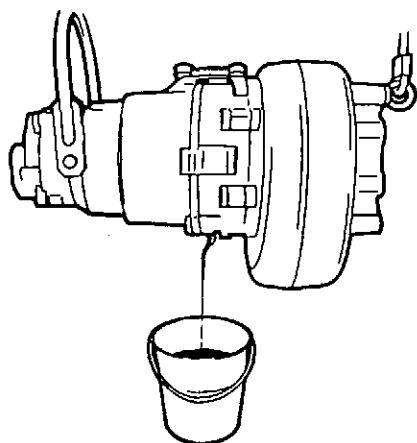
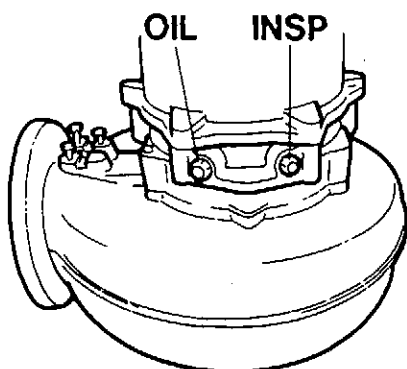
Change the oil if it contains too much water, i.e. if it is heavily emulsified (cream-like), or if the oil housing contains free water. Check again one week after changing the oil.



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

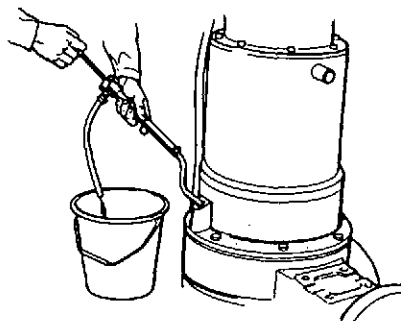
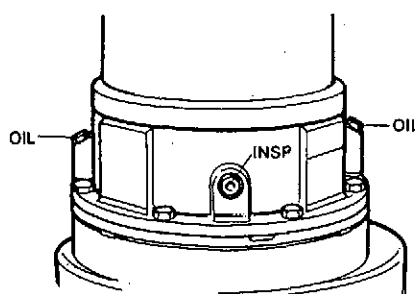
3126 / 3140 / 3152

1. Suspend the pump horizontally from an overhead crane.
2. Unscrew the oil housing screw marked "oil out". Emptying the oil must be done through the "oil out" hole. Turn the pump so that the oil hole faces downwards. It is easier to drain the oil if the oil hole screw "oil in" is also removed.



3170 / 3201 / 3300

1. Unscrew the oil housing screw marked "oil out". Emptying the oil must be done through the "oil out" hole.
2. Pump out the oil. Using the oil drainage pump 83 95 42 or an equivalent pump. Make sure that the suction tube goes all the way down to the oil housing bottom.



3126 / 3140 / 3152 / 3170 / 3201 / 3300

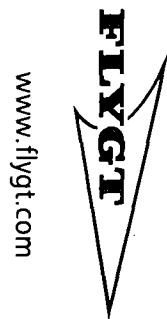
3. Install the "oil out" screw and fill with oil through the other hole. It is important that the oil be added through the hole marked "oil in" since the oil housing must contain some air for pressure equalization. A paraffin oil with viscosity close to ISO VG15 (e.g. Mobile Whiterex 309) is recommended. The pump is delivered from the factory with this type of oil. In applications where poisonous properties are of less concern, a mineral oil with viscosity up to ISO VG32 can be used.

• Please see Parts List for the correct volume and tightening torque.

4. Always replace the O-rings under the oil housing screws with new ones.

SERVICE LOG

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



FLYGT

TEST REPORT

PRODUCT

Serial No. 3300.181 0210082		Performance curve No. 53- 460-00-2060		Motor module/type 193	Voltage (V) 415
Base module 060	Impeller No. 481 72 01	Gear type	Gear ratio	Imp.diam/Blade angle	Water temp °C 22

TEST RESULTS

Pump total head H (m)	Volume rate of flow Q (l/s)	Motor input power P (kW)	Voltage U (V)	Current I (A)	Overall efficiency η (%)
63.57	1.8	34.61	418	60.5	
60.46	16.8	39.17	417	65.8	
56.04	35.2	43.79	417	73.2	
51.46	58.1	50.30	417	83.1	
46.92	82.9	57.43	417	94.1	

Accepted after ISO2548C/B	Test facility Lindas Sweden	Test date Q2 02-02-02	Time 13:30	Chief tester 1042
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455137/2

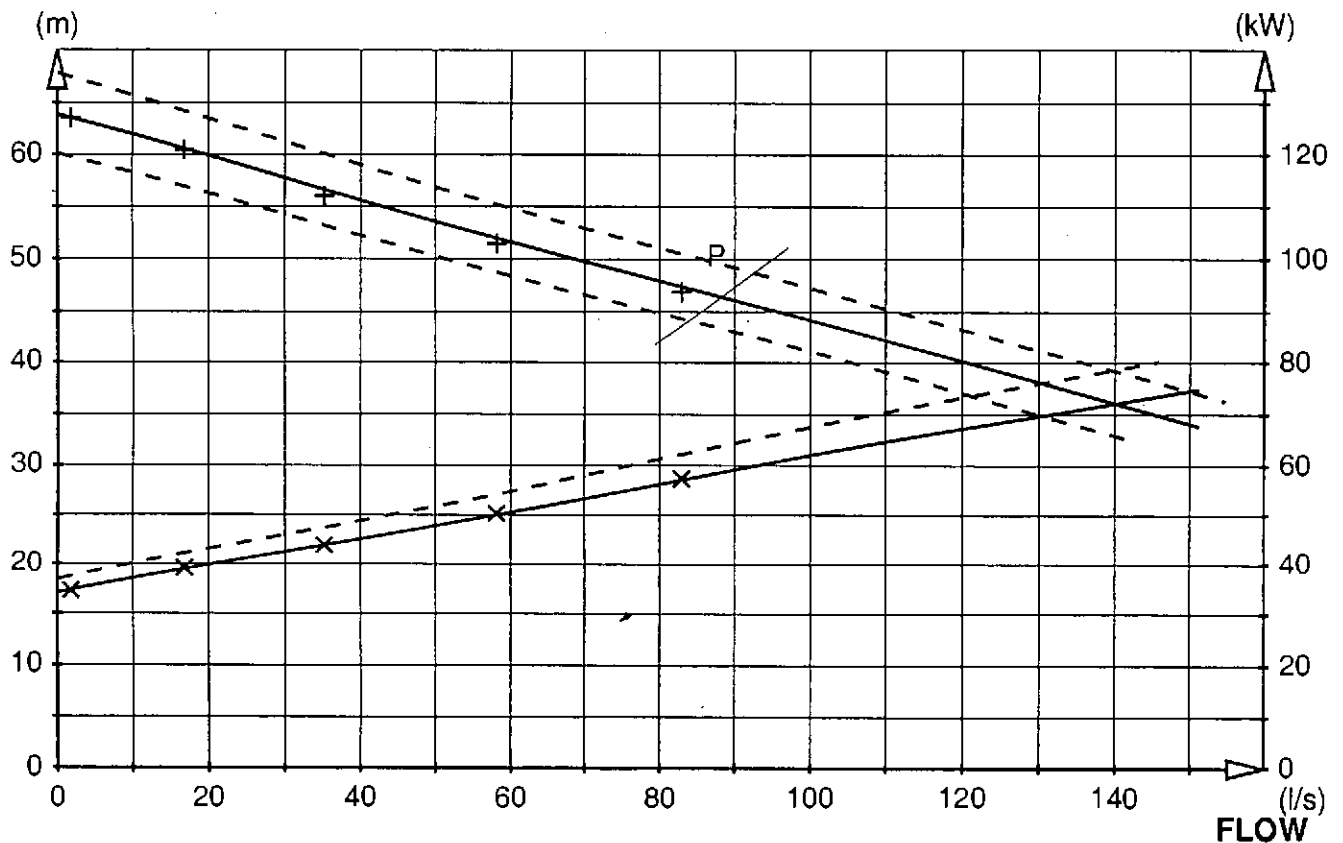
PLOTTED TEST RESULTS

Measured point: $+$ = Q/H Duty point: \diamond = Q/H
 \times = Q/P \square = Q/P
 \triangle = Q/ETA overall

Calculated point: \wedge = Q/ETA overall
1

TOTAL HEAD

INPUT POWER





TEST REPORT

PRODUCT

Serial No. 3300.181 0210079		Performance curve No. 53- 460-00-2060		Motor module/type 193	Voltage (V) 415
Base module 060	Impeller No. 481 72 01	Gear type	Gear ratio	Imp.diam/Blade angle	Water temp °C 21

TEST RESULTS

Pump total head H (m)	Volume rate of flow Q (l/s)	Motor input power P (kW)	Voltage U (V)	Current I (A)	Overall efficiency η (%)
64.47	0.8	34.68	415	60.8	
59.41	25.8	41.64	416	71.4	
56.25	38.2	45.12	416	76.3	
51.26	62.0	52.00	416	86.7	
46.22	88.8	59.33	416	98.0	

Accepted after ISO2548C/B	Test facility Lindas Sweden	Test date Q2 02-02-02	Time 12:09	Chief tester 2050
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ORD.NR455137 POS2

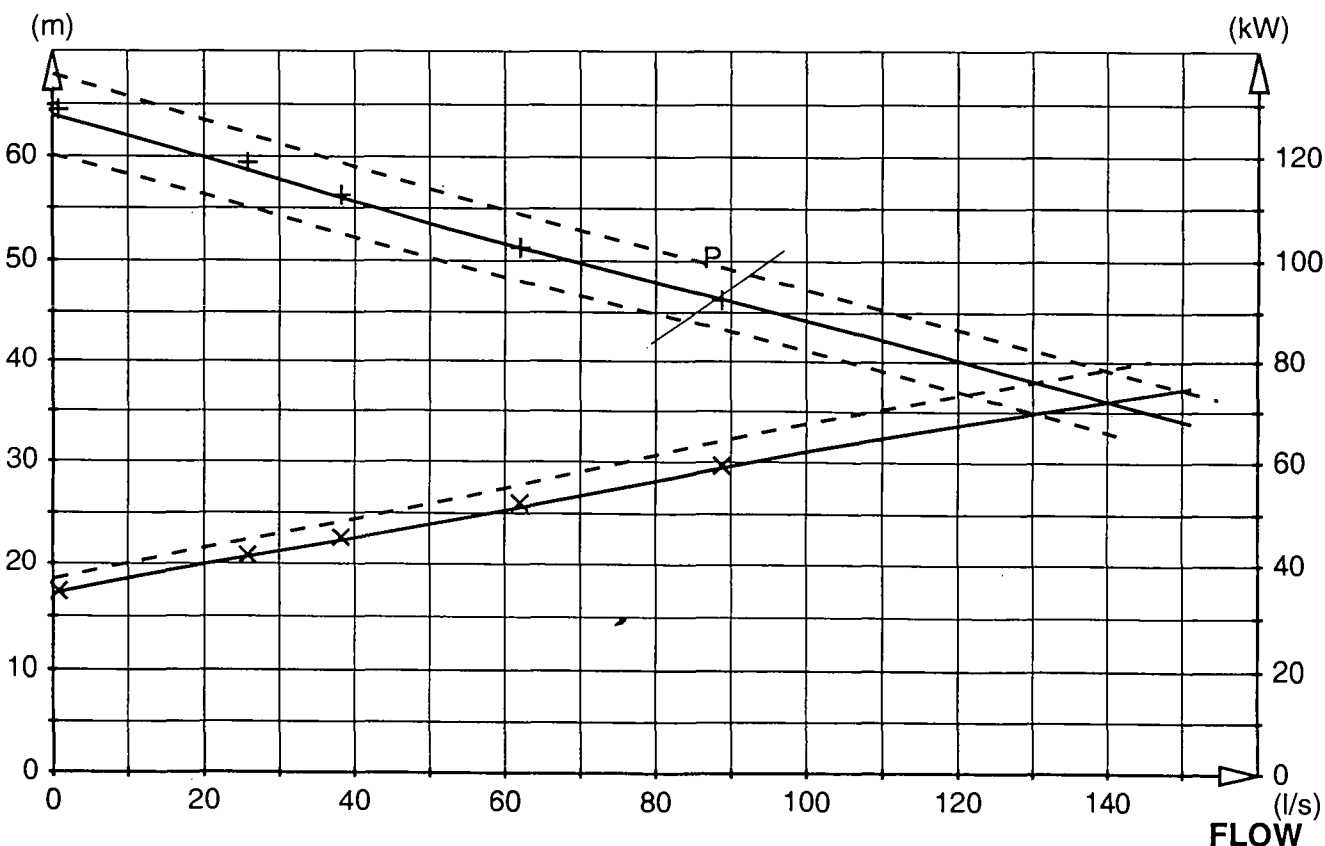
PLOTTED TEST RESULTS

Measured point : + = Q/H Duty point : \diamond = Q/H
 X = Q/P \square = Q/P
 \triangle = Q/ETA overall

Calculated point : \wedge = Q/ETA overall
 1

TOTAL HEAD

INPUT POWER








FLYGT
TILLVERKNINGSKORT, produkter
PRODUCTION CARD, products

List.nr 5	Vår/Our order 455137	Pos.nr/Item No. 2	Antal/pos 7	Sen. packn.datum 2002-02-06	Säljst. 5032	Fältspråk EN	BANK14	
Tillverkn.nr/Serial No. 3300.181-0210082		060 D		193	260	373	452	599
Stycklisteför		Info						
CP 3300 HT FLYGT PUMP CODE 460 54 KW, 415VD-96A, 3-PH, 50 HZ, 1470 RPM, 59 KW				Namnskylt 621 06 00		Kontroll-provning/Inspection-Test		
				Emballage 21 07 26(CS)		Kontrollplan Montering		
Lagerplats		MUNTERINGS+FÖLJEKORT		Från		Till		1. Monteringskontroll/ Assembly check 2. Täthetsprov/ Tightness Test 3. Olja påfylld/ Oil filled 4. Spänningsprov/ Dielectric test 5. Leveransprovning/ Acceptance test 6. Packning/ Packing
Produktvikt 900		Produktnr/Product No. 3300.181-0753		Löpnr/Seq No. 0210082		21		
Streckkod		Meddelande						

3300 181 0210082 534609360 5032





TILLVERKNINGSKORT, produkter PRODUCTION CARD, products

29/1

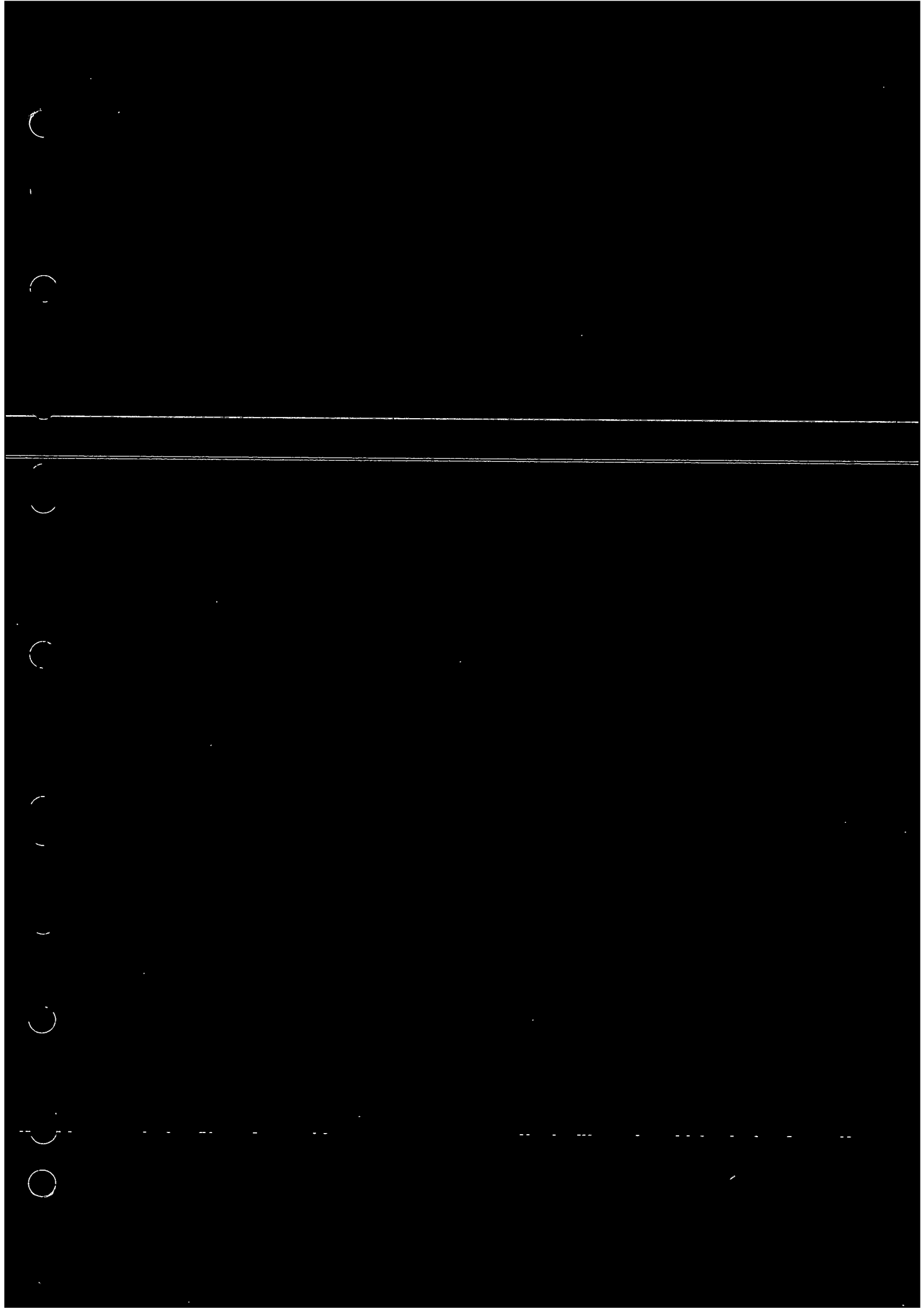
List.nr 2	Vår/Our order 455137	Pos.nr/Item No. 2	Antal/pos 7	Sen. packn.datum 2002-02-06	Säljst. 5032	Fältspråk EN	BANK14	
Tillverkn.nr/Serial No. 3300.181-0210079		060	0	193	260	373	452	599
Stycklistefno		Info						
CP 3300 HT FLYGT PUMP CODE 460 54 KW, 415VD-96A, 3-PH, 50 HZ, 1470 RPM, 59 KW				Namnskylt 621 06 00		Kontroll-provning/Inspection-Test Kontrollplan Montering 1. Monteringskontroll/ Assembly check 2. Täthetsprov/ Tightness Test 3. Olja påfylld/ Oil filled 4. Spänningsprov/ Dielectric test 5. Leveransprovning/ Acceptance test 6. Packning/ Packing		
				Emballage 21 07 26(CS)				
Lagerplats		MONTERINGS+FÖLJEKORT						
Produktvikt 900		Produktnr/Product No. 3300.181-0753		Löpnr/Seq No. 0210079		Från 21	Till	
Meddelande								

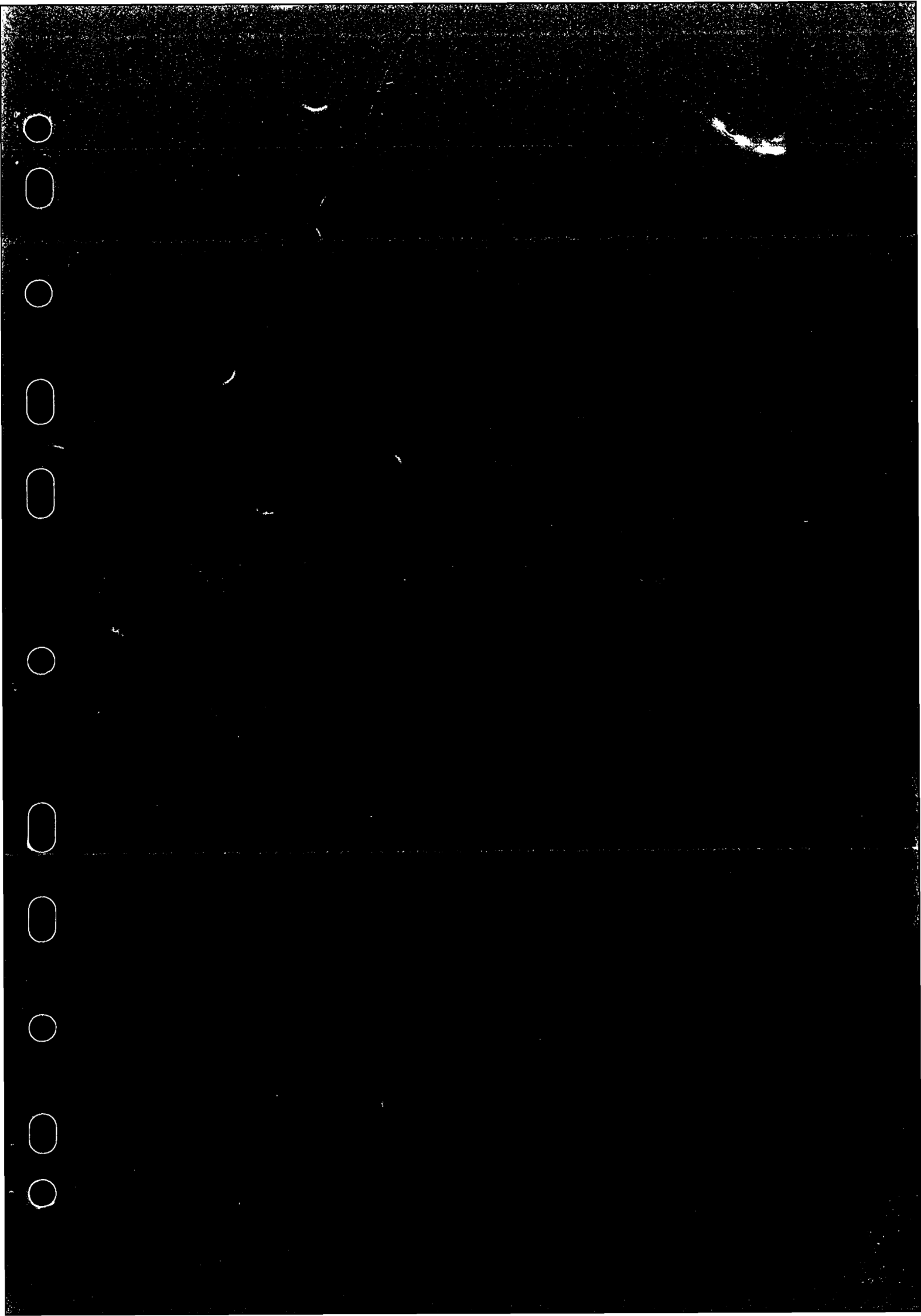
15.0274.4 Strålhus 4.00 BH2685/140709 Mac

Streckkod

3300 181 0210079 534609360 5032

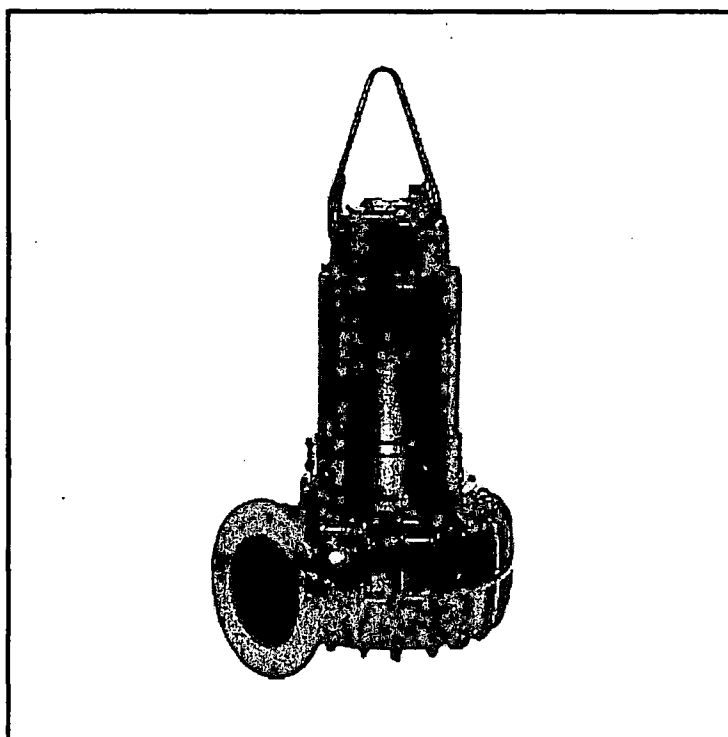








FLYGT SUBMERSIBLE PUMP
PARTS LIST CP 3300 HT
SERIAL NO 3300.181 0210082



ITT FLYGT LTD.
P O BOX 1425
LEVEL 4 THE OCTAGON 99 PHILLIP STR

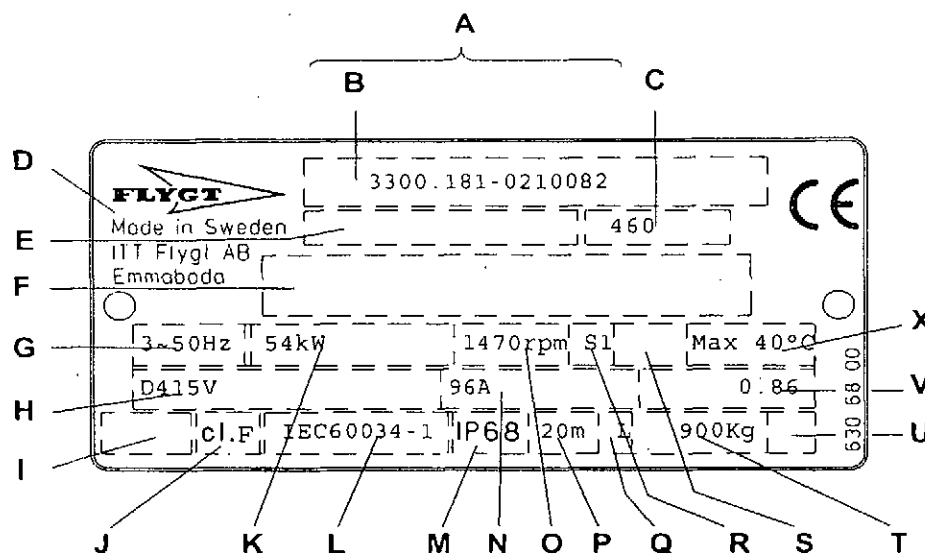
PARRAMATTA NSW 2124
AUSTRALIA
TELEPHONE NO: 2-92020600

Flygt



ITT Industries

DATAPLATE

FLYGT CP 3300 HT
DATE: 2002-01-25
SERIAL NO: 3300.181 0210082

Dataplate interpretation:

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

(1 kg = 2.2 pound, 1 Lit=0.26 US gallon, 1 l = 0,22 UK gallon)

Recommended spare parts:

See REC. column: **A** = Parts for inspection and maintenance
B = Parts for major overhaul

For service;

To ensure long operating life use Flygt Bearing Grease 90 20 61 (Cartridge).

Lubrication kit 84 15 40 contains two 90 20 61 and one 84 15 30 (Grease gun).

The O-ring kit contains a full set of O-rings. Position no 800.

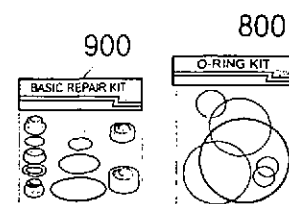
The Basic Repair kits contain both inner and outer Mechanical seals, bearings and a O-ring kit. Position no 900.

A complete set of tools can be ordered for repair and maintenance work, i.e. standard hand tools and special tools for seal change and hydraulic-end use.

Order:

This partlist can be used as an order form by marking out the number of parts in the Qty/Order column.

Please send or fax the form to your Flygt representative.



PARTS LIST

FLYGT CP 3300 HT

SERIAL NO 3300.181 0210082

Item no	Partno	Rec	Denomination	Qty/ord.
1	342 10 00		Lifting handle compl	1
2	84 34 07	B	Hexagon head bolt M16X60-A2-70	2
3	342 20 00	B	Sleeve	2
5	342 21 00		Washer	2
6	83 38 94	B	Disc spring B-56X28,5X2-1	2
7	83 45 59		Cable tie 200X2,4 PA 6/6 -55+105	1
8	630 68 00		Data plate USE 6306801 AS SPARE PART	2
9	404 12 00		Instruction plate	1
9	426 71 00		Connection plate	1
9	426 75 00		Connection plate	1
9	427 13 00		Marking tape	1
9	550 24 00		Connection plate	1
10	82 20 88		Drive screw 4X5-A2-70	10
24	394 77 14		Cable entry unit	1
24.1	81 73 64	B	Slotted screw	2
24.3	82 23 55	B	Hexagon nut	2
26	81 41 55		Hexagon head screw M12X30-A2-70	2
28	82 41 02	AB	Washer 37,5X60X2-A2-70	2
28	82 41 03	AB	Washer 39,5X60X2-A2-70	2
29	84 35 62	AB	Seal sleeve (35)-37 MM	1
29	84 35 63	AB	Seal sleeve (37)-39 MM	1
32	319 03 11		Entrance cover	1
33	82 75 00	AB	O-ring 269,3X5,7 NBR	1
34	80 30 46		Parallel pin CP-H8-8X16-2346	1
35	82 01 05		Socket head screw M16X40-A2-70	4
37	391 30 00		Bearing housing	1
38	82 75 06	B	O-ring 359,3X5,7 NBR	1
39	80 30 46		Parallel pin CP-H8-8X16-2346	1
40	82 01 05		Socket head screw M16X40-A2-70	6
43	426 82 00		Terminal board unit	1
44	82 74 81	B	O-ring 139,5X3,0 NBR	1
45	81 41 06		Hexagon head screw M8X25-A2-70	4
46	82 35 16		Washer 8-A2-A 140	4
49	83 42 34	B	End sleeve 25,0MM2; L=15MM	6
52	94 05 15	B	Insulating hose pvc	1.56 m

Ordered by:

Company:.....Ref:.....Tel:.....Date:.....

PARTS LIST

Item no	Partno	Rec	Denomination	Qty/ord.
53	81 41 04		Hexagon head screw M8X20-A2-70	4
56	303 09 00	B	Earthing plate	4
58	391 32 00	B	Cover	1
59	82 59 21	B	Retaining ring SGA 72	1
60	393 03 00		Washer	1
61	84 53 75	B	Roller bearing (75X160X37)	1
65	391 33 00		Bearing cover	1
66	391 31 00		Ring	1
67	82 73 30	B	Seal strip	1
68	81 41 32		Hexagon head screw M10X30-A2-70	4
69	531 43 00		Stator housing	1
70	82 01 05		Socket head screw M16X40-A2-70	4
73	319 14 00		Shaft unit	1
79	530 28 44		Stator 35-28-4a	1
80	80 23 58		Parallel pin CP-H8-8X50-1650	1
82	319 12 01		Outer casing	1
83	82 75 10	B	O-ring 439,3X5,7 NBR	1
84	82 78 88	B	O-ring 460,0X8,0-1 NBR	1
86	283 13 01		Slotted screw	2
87	82 73 91		O-ring 22,2X3,0 NBR	2
89	279 76 01		Pipe	1
92	374 81 03		Plate	1
93	81 73 42		Slotted screw M4X12-A4-70	2
105	503 45 00		Bearing housing	1
106	84 25 73	B	Seal ring	1
107	374 56 00	B	Retaining ring	1
108	82 44 26		Supporting washer 90X110X3,5	2
109	83 37 03	B	Ball bearing 3318 C3 GLAPP(90X190X73)	1
110	503 34 00		Bearing cover	1
111	82 75 02	B	O-ring 289,3X5,7 NBR	1
112	81 41 55		Hexagon head screw M12X30-A2-70	4
114	617 99 01	B	Mechanical seal WCCR/WCCR	1
114.7	82 81 94		O-ring	1
114.8	641 25 00		Spring housing unit	1
117	374 57 00		Washer	1
118	319 19 00		Washer	1
119	81 73 86		Slotted screw M8X12-A4-70	4
120	428 22 01	B	Inspection screw	2
122	82 73 90	AB	O-ring 19.2X3.0 NBR	2
126	411 16 02		Cover	1
127	82 74 07	AB	O-ring 74.2X5.7 NBR	1

Ordered by:

Company:.....Ref:.....Tel:.....Date:.....

PARTS LIST

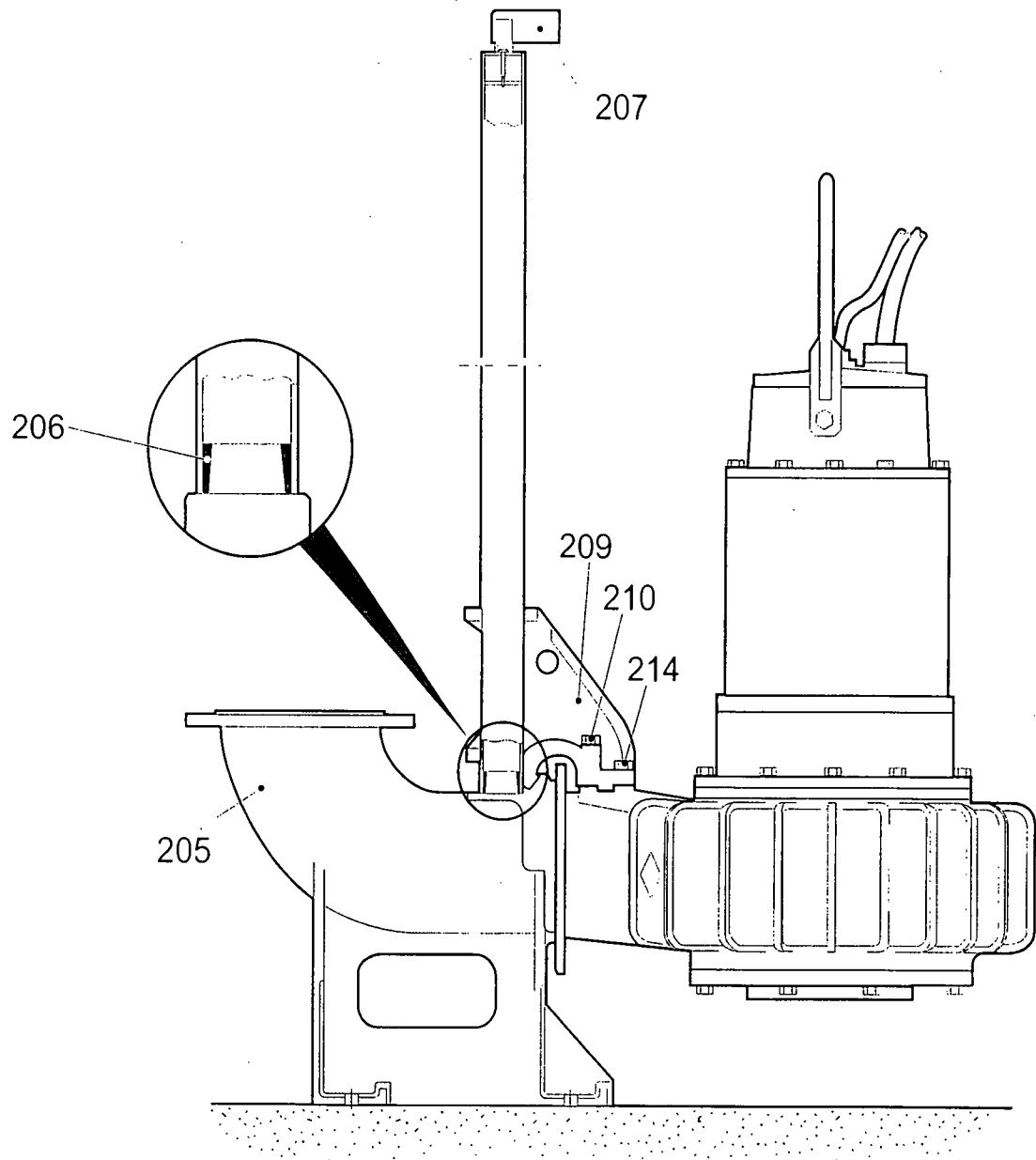
Item no	Partno	Rec	Denomination	Qty/ord.
128	82 00 52		Socket head screw M10X30-A2-70	4
129	620 78 00		Oil housing	1
130	82 75 12	B	O-ring 479,3X5,7 NBR	2
132	646 59 00	B	Gasket compl.	1
133	81 41 34		Hexagon head bolt M10X40-A2-70	5
134	319 20 00		Washer	1
135	306 73 00		Hexagon screw	9
136	302 21 00		Compression spring	9
141	337 79 11	B	Mechanical seal WCCR/WCCR-TYPE S	1
141.1	82 81 54		O-ring	1
141.2	82 81 55		O-ring	1
141.6	82 61 20		Retaining ring	1
141.11	574 26 00		Seal ring	1
145	84 34 09		Hexagon head bolt M16X70-A2-70	8
150	434 49 03		Hub	1
151	82 00 71		Socket head screw M12X40-A2-70	2
152	82 74 12	B	O-ring 99,1X5,7 NBR	1
153	434 48 00		Insert ring upper	1
154	82 00 49		Socket head screw M10X20-A2-70	2
158	481 72 01	B	Impeller unit	1
158.1	345 25 02	AB	Wear ring	1
165	84 59 12		Locking assembly 55X85	1
179	82 75 10		O-ring 439,3X5,7 NBR	1
184	314 88 05	AB	Ring	1
191	434 50 00	B	Suction cover	1
197	84 34 11		Hexagon head bolt M16X80-A2-70	8
198	81 41 55		Hexagon head screw M12X30-A2-70	2
200	319 36 00		Pump housing	1
209	305 79 00		Guiding claw	1
210	84 34 37		Hexagon head bolt M20X110-A2-70	2
214	84 34 30		Hexagon head screw M20X60-A2-70	2
800	80 32 41		O-rings kit 3300.090,091,180,181	1
900	601 89 24		Basic repair kit 3300.090,091,180,181	1
	90 17 52		Paraffin oil	13 l
	90 20 54		Bearing grease ESSO UNIREX N3	0.16 kg
...
...
...
...

Ordered by:

Company: Ref: Tel: Date:

CONNECTION

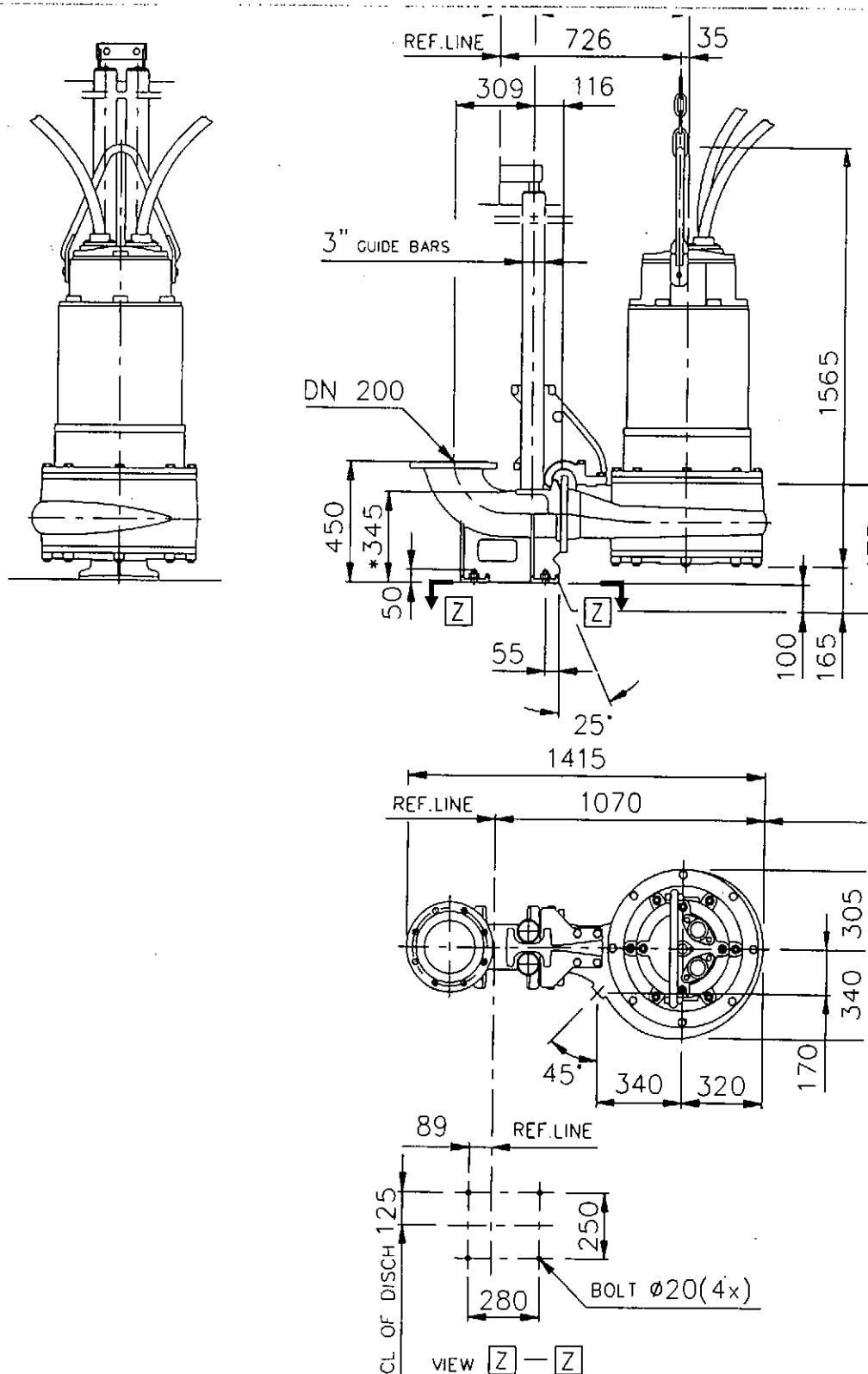
CP 3300.091/181



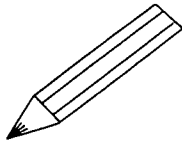
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DIMENSIONAL DRAWING

5396300D



* DIMENSION TO ENDS OF GUIDE BARS

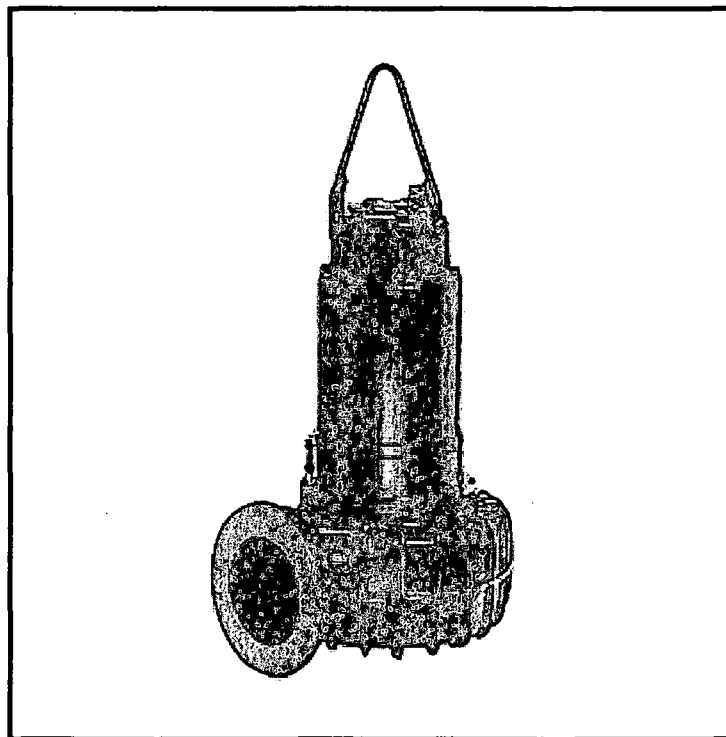




FLYGT SUBMERSIBLE PUMP

PARTS LIST CP 3300 HT

SERIAL NO 3300.181 0210079



ITT FLYGT LTD.
P O BOX 1425
LEVEL 4 THE OCTAGON 99 PHILLIP STR

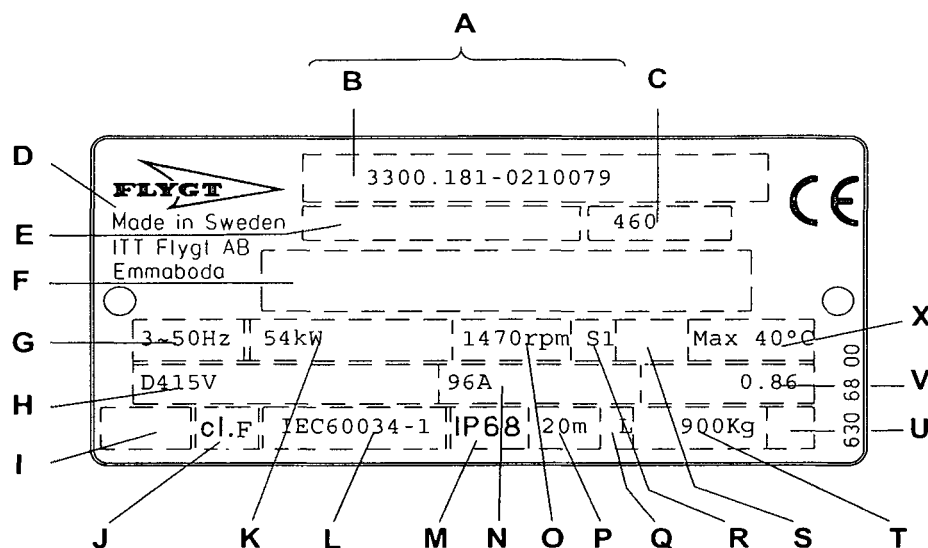
PARRAMATTA NSW 2124
AUSTRALIA
TELEPHONE NO: 2-92020600

Flygt



ITT Industries

DATAPLATE

FLYGT CP 3300 HT
DATE: 2002-01-25
SERIAL NO: 3300.181 0210079

Dataplate interpretation:

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

(1 kg = 2.2 pound, 1 Lit=0.26 US gallon, 1 l = 0,22 UK gallon)

Recommended spare parts:

See REC. column: **A** = Parts for inspection and maintenance
B = Parts for major overhaul

For service;

To ensure long operating life use Flygt Bearing Grease 90 20 61 (Cartridge).

Lubrication kit 84 15 40 contains two 90 20 61 and one 84 15 30 (Grease gun).

The O-ring kit contains a full set of O-rings. Position no 800.

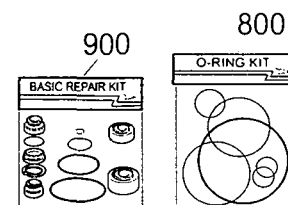
The Basic Repair kits contain both inner and outer Mechanical seals, bearings and a O-ring kit. Position no 900.

A complete set of tools can be ordered for repair and maintenance work, i.e. standard hand tools and special tools for seal change and hydraulic-end use.

Order:

This partlist can be used as an order form by marking out the number of parts in the Qty/Order column.

Please send or fax the form to your Flygt representative.



PARTS LIST

FLYGT CP 3300 HT

SERIAL NO 3300.181 0210079

Item no	Partno	Rec	Denomination	Qty/ord.
1	342 10 00		Lifting handle compl	1
2	84 34 07	B	Hexagon head bolt M16X60-A2-70	2
3	342 20 00	B	Sleeve	2
5	342 21 00		Washer	2
6	83 38 94	B	Disc spring B-56X28,5X2-1	2
7	83 45 59		Cable tie 200X2,4 PA 6/6 -55+105	1
8	630 68 00		Data plate USE 6306801 AS SPARE PART	2
9	404 12 00		Instruction plate	1
9	426 71 00		Connection plate	1
9	426 75 00		Connection plate	1
9	427 13 00		Marking tape	1
9	550 24 00		Connection plate	1
10	82 20 88		Drive screw 4X5-A2-70	10
24	394 77 14		Cable entry unit	1
24.1	81 73 64	B	Slotted screw	2
24.3	82 23 55	B	Hexagon nut	2
26	81 41 55		Hexagon head screw M12X30-A2-70	2
28	82 41 02	AB	Washer 37,5X60X2-A2-70	2
28	82 41 03	AB	Washer 39,5X60X2-A2-70	2
29	84 35 62	AB	Seal sleeve (35)-37 MM	1
29	84 35 63	AB	Seal sleeve (37)-39 MM	1
32	319 03 11		Entrance cover	1
33	82 75 00	AB	O-ring 269,3X5,7 NBR	1
34	80 30 46		Parallel pin CP-H8-8X16-2346	1
35	82 01 05		Socket head screw M16X40-A2-70	4
37	391 30 00		Bearing housing	1
38	82 75 06	B	O-ring 359,3X5,7 NBR	1
39	80 30 46		Parallel pin CP-H8-8X16-2346	1
40	82 01 05		Socket head screw M16X40-A2-70	6
43	426 82 00		Terminal board unit	1
44	82 74 81	B	O-ring 139,5X3,0 NBR	1
45	81 41 06		Hexagon head screw M8X25-A2-70	4
46	82 35 16		Washer 8-A2-A 140	4
49	83 42 34	B	End sleeve 25,0MM2; L=15MM	6
52	94 05 15	B	Insulating hose pvc	1.56 m

Ordered by:

Company:.....Ref:.....Tel:.....Date:.....

PARTS LIST

Item no	Partno	Rec	Denomination	Qty/ord.
53	81 41 04		Hexagon head screw M8X20-A2-70	4
56	303 09 00	B	Earthing plate	4
58	391 32 00	B	Cover	1
59	82 59 21	B	Retaining ring SGA 72	1
60	393 03 00		Washer	1
61	84 53 75	B	Roller bearing (75X160X37)	1
65	391 33 00		Bearing cover	1
66	391 31 00		Ring	1
67	82 73 30	B	Seal strip	1
68	81 41 32		Hexagon head screw M10X30-A2-70	4
69	531 43 00		Stator housing	1
70	82 01 05		Socket head screw M16X40-A2-70	4
73	319 14 00		Shaft unit	1
79	530 28 44		Stator 35-28-4a	1
80	80 23 58		Parallel pin CP-H8-8X50-1650	1
82	319 12 01		Outer casing	1
83	82 75 10	B	O-ring 439,3X5,7 NBR	1
84	82 78 88	B	O-ring 460,0X8,0-1 NBR	1
86	283 13 01		Slotted screw	2
87	82 73 91		O-ring 22,2X3,0 NBR	2
89	279 76 01		Pipe	1
92	374 81 03		Plate	1
93	81 73 42		Slotted screw M4X12-A4-70	2
105	503 45 00		Bearing housing	1
106	84 25 73	B	Seal ring	1
107	374 56 00	B	Retaining ring	1
108	82 44 26		Supporting washer 90X110X3,5	2
109	83 37 03	B	Ball bearing 3318 C3 GLAPP(90X190X73)	1
110	503 34 00		Bearing cover	1
111	82 75 02	B	O-ring 289,3X5,7 NBR	1
112	81 41 55		Hexagon head screw M12X30-A2-70	4
114	617 99 01	B	Mechanical seal WCCR/WCCR	1
114.7	82 81 94		O-ring	1
114.8	641 25 00		Spring housing unit	1
117	374 57 00		Washer	1
118	319 19 00		Washer	1
119	81 73 86		Slotted screw M8X12-A4-70	4
120	428 22 01	B	Inspection screw	2
122	82 73 90	AB	O-ring 19.2X3.0 NBR	2
126	411 16 02		Cover	1
127	82 74 07	AB	O-ring 74.2X5.7 NBR	1

Ordered by:

Company:.....Ref:.....Tel:.....Date:.....

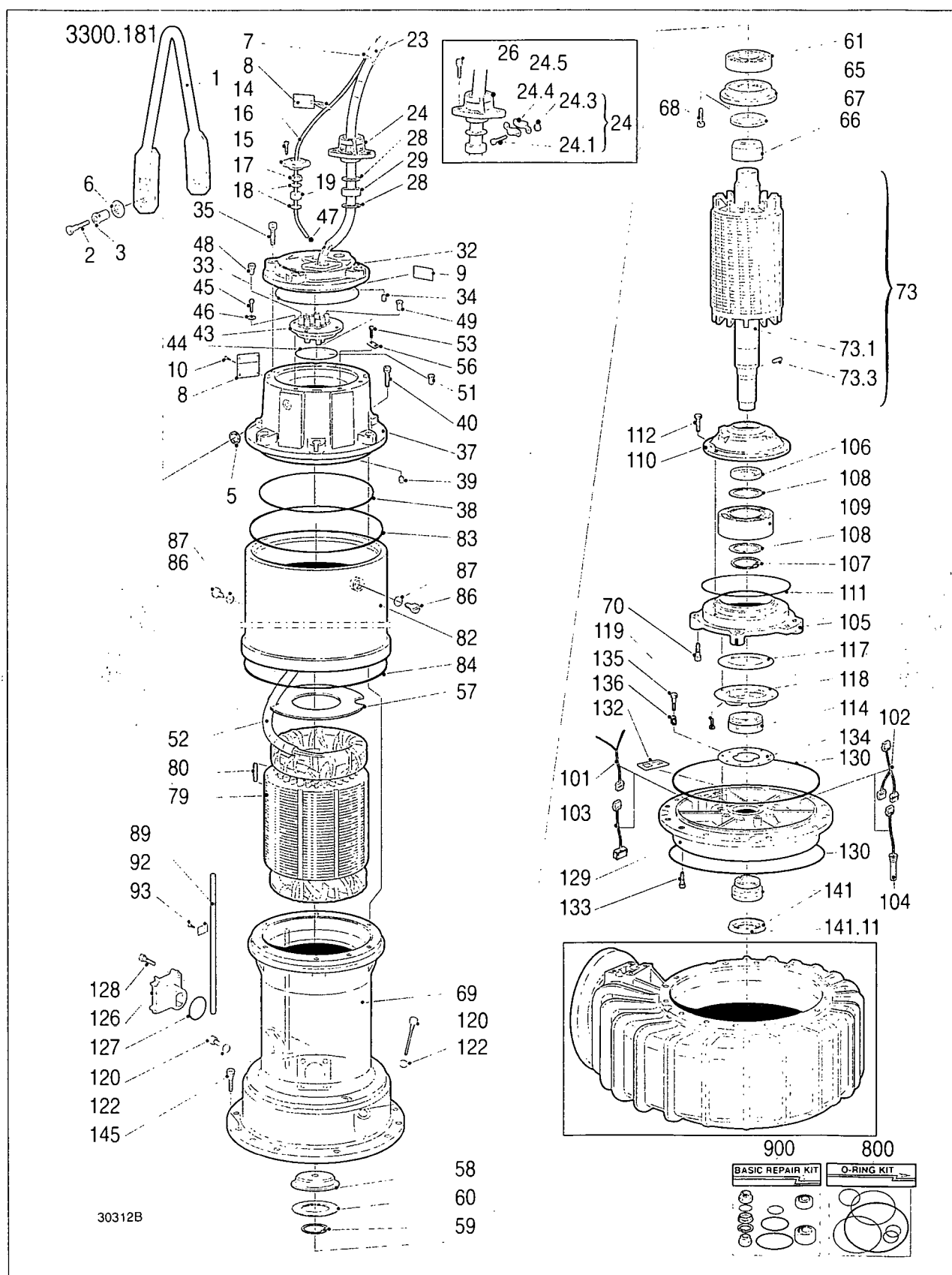
PARTS LIST

Item no	Partno	Rec	Denomination	Qty/ord.
128	82 00 52		Socket head screw M10X30-A2-70	4
129	620 78 00		Oil housing	1
130	82 75 12	B	O-ring 479,3X5,7 NBR	2
132	646 59 00	B	Gasket compl.	1
133	81 41 34		Hexagon head bolt M10X40-A2-70	5
134	319 20 00		Washer	1
135	306 73 00		Hexagon screw	9
136	302 21 00		Compression spring	9
141	337 79 11	B	Mechanical seal WCCR/WCCR-TYPE S	1
141.1	82 81 54		O-ring	1
141.2	82 81 55		O-ring	1
141.6	82 61 20		Retaining ring	1
141.11	574 26 00		Seal ring	1
145	84 34 09		Hexagon head bolt M16X70-A2-70	8
150	434 49 03		Hub	1
151	82 00 71		Socket head screw M12X40-A2-70	2
152	82 74 12	B	O-ring 99,1X5,7 NBR	1
153	434 48 00		Insert ring upper	1
154	82 00 49		Socket head screw M10X20-A2-70	2
158	481 72 01	B	Impeller unit	1
158.1	345 25 02	AB	Wear ring	1
165	84 59 12		Locking assembly 55X85	1
179	82 75 10		O-ring 439,3X5,7 NBR	1
184	314 88 05	AB	Ring	1
191	434 50 00	B	Suction cover	1
197	84 34 11		Hexagon head bolt M16X80-A2-70	8
198	81 41 55		Hexagon head screw M12X30-A2-70	2
200	319 36 00		Pump housing	1
209	305 79 00		Guiding claw	1
210	84 34 37		Hexagon head bolt M20X110-A2-70	2
214	84 34 30		Hexagon head screw M20X60-A2-70	2
800	80 32 41		O-rings kit 3300.090,091,180,181	1
900	601 89 24		Basic repair kit 3300.090,091,180,181	1
	90 17 52		Paraffin oil	13 l
	90 20 54		Bearing grease ESSO UNIREX N3	0.16 kg
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...
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Ordered by:

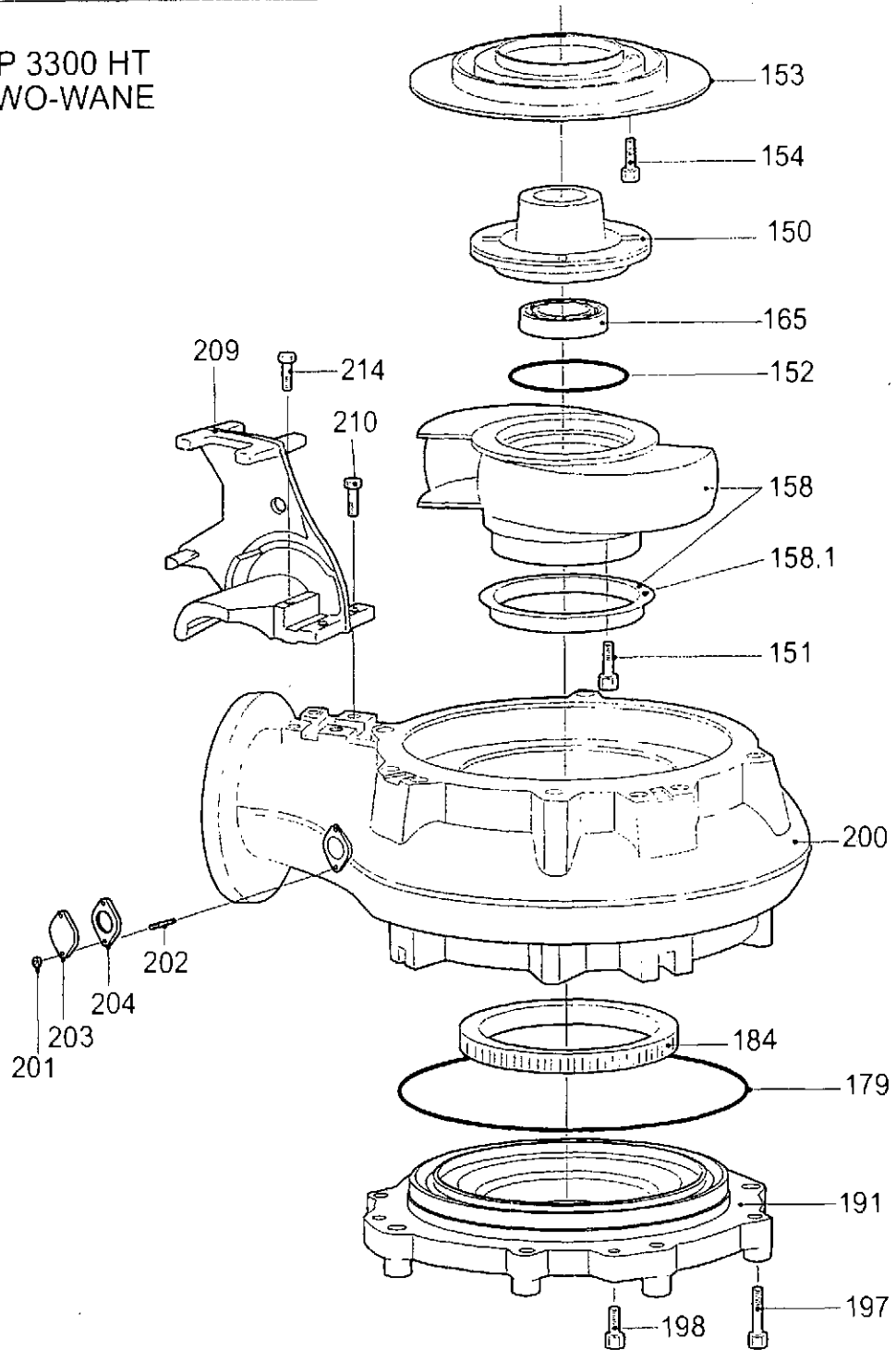
Company:.....Ref:.....Tel:.....Date:.....

EXPLODED VIEW



HYDRAULIC PARTS

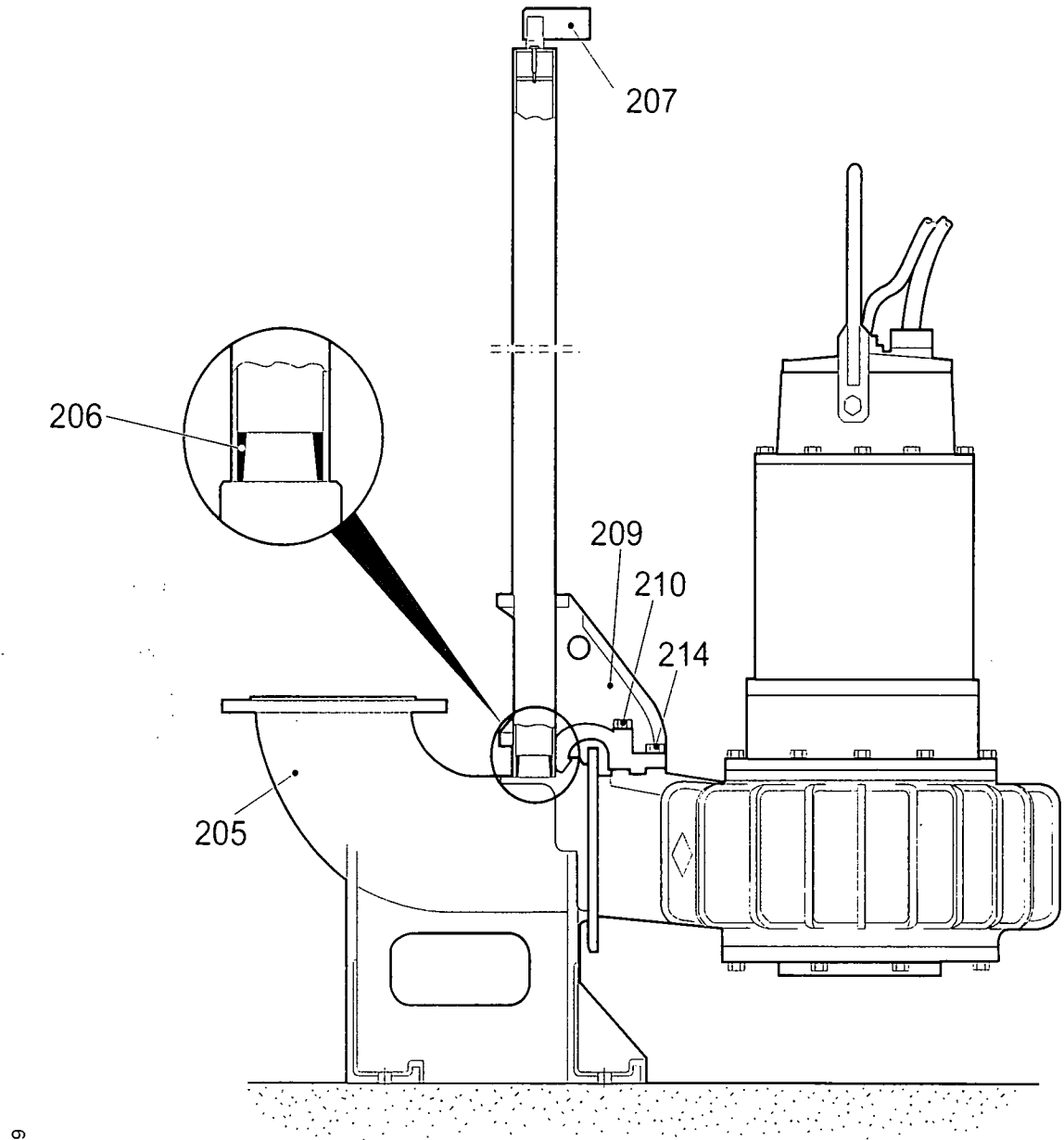
CP 3300 HT
TWO-WANE



30362

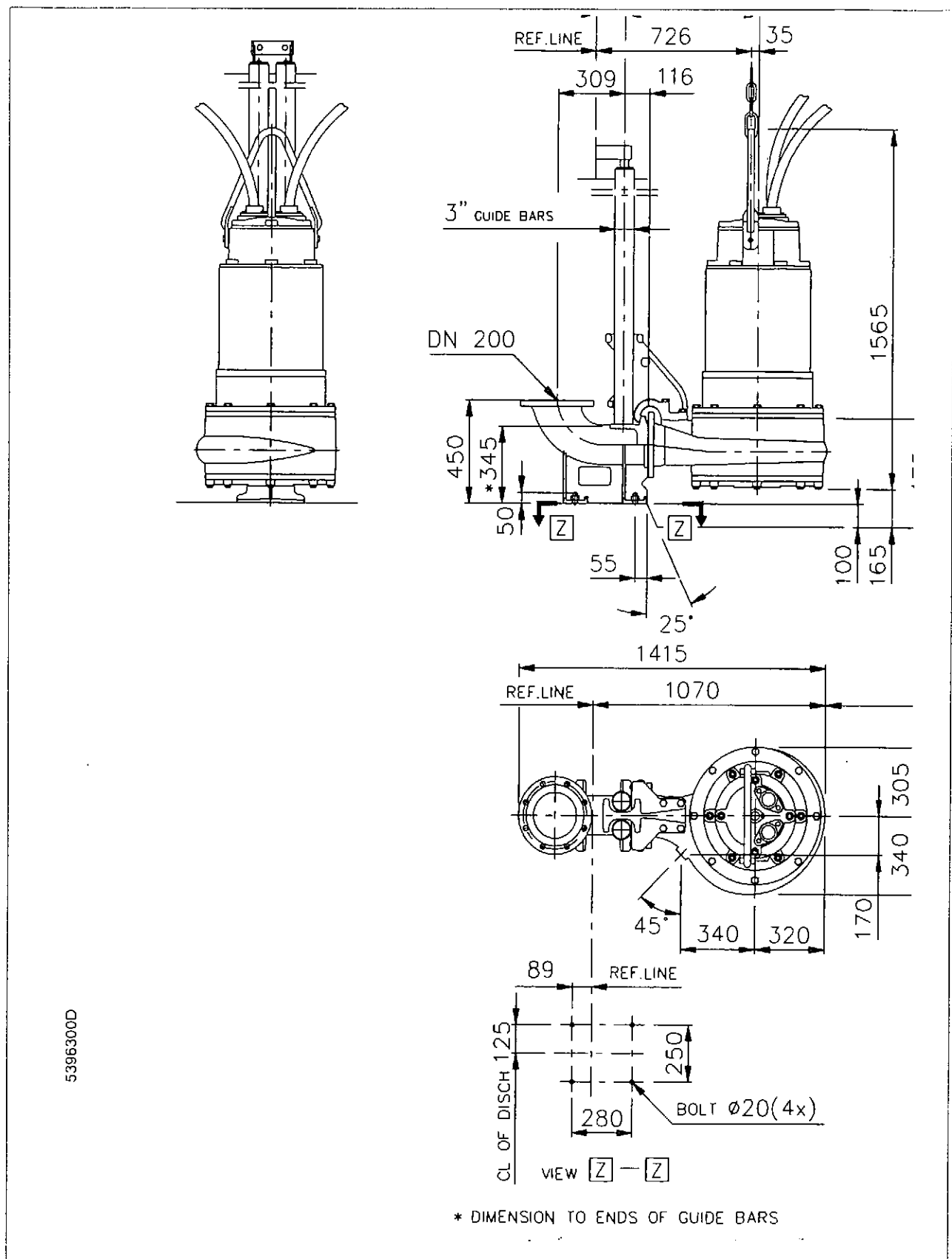
CONNECTION

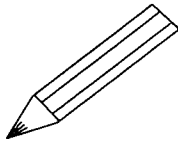
CP 3300.091/181



30389

DIMENSIONAL DRAWING





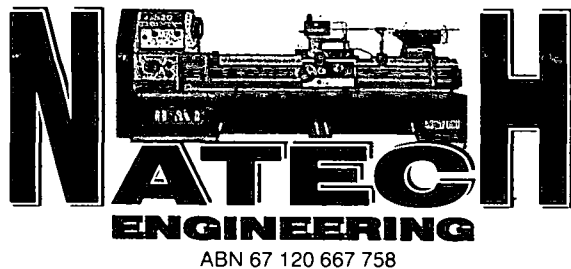
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Flygt



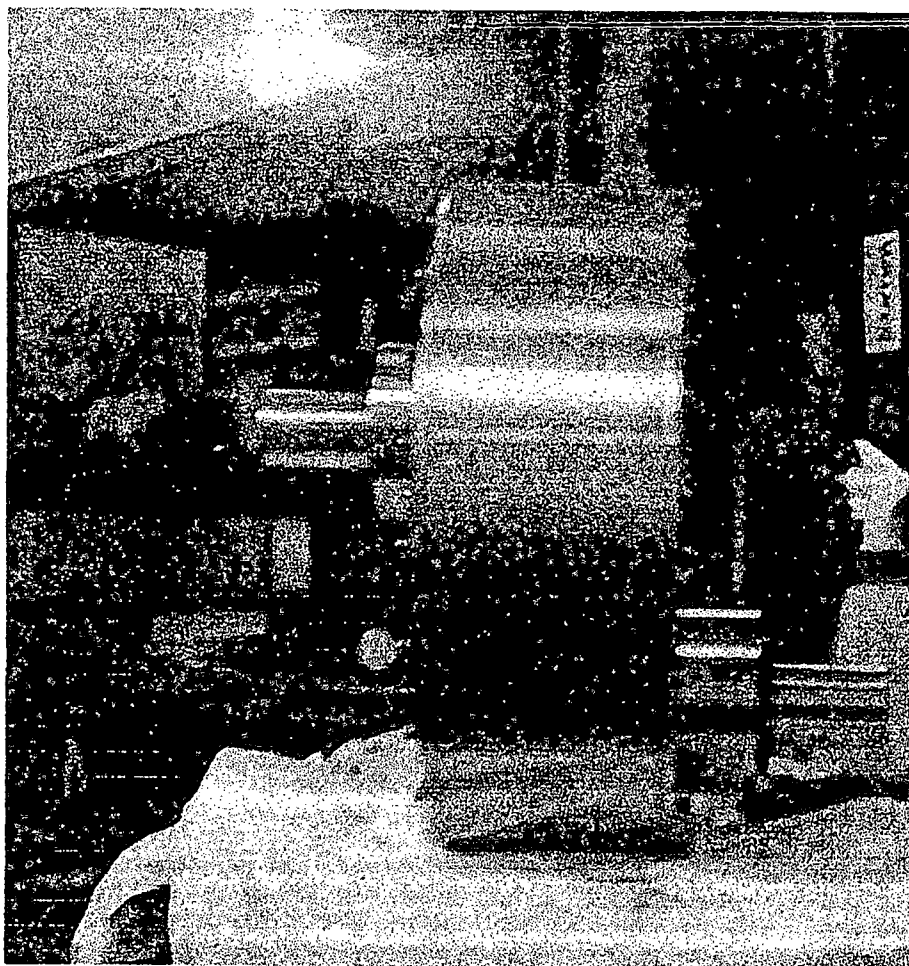
ITT Industries

www.flygt.com



2:1 REDUCTION **GEARBOX**

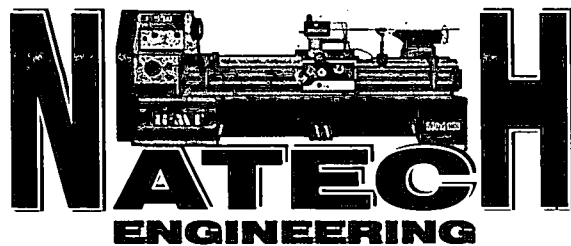
68-34R



**NATECH
ENGINEERING**

**21 Kamholtz Crt
Ashmore 4214
Queensland**

**Phone/Fax:
(07) 5597 1622**



ABN 67 120 667 758

DATE: 27/08/02

NATECH ENGINEERING REDUCTION GEARBOX

SERIAL NO: R-1101SS

68-34R

THE 68-34R GEARBOX WAS DESIGNED FOR TOXIC CONDITIONS AS A REDUCTION BOX FOR A SEWERAGE PLANT. THE 68-34 IS A STRONG AND RELIABLE GEARBOX FOR THE APPLICATION REQUIRED AND COULD ALSO BE USED AS A STEP-UP GEARBOX IF ROTATED.

THE 68-34R GEARBOX IS MADE FROM HIGH QUALITY 316 STAINLESS STEEL, AS THE SURROUNDING ENVIRONMENT REQUIRES THE STAINLESS STEEL TO COMPENSATE FOR THE CORROSIVE NATURE OF SEWERAGE.

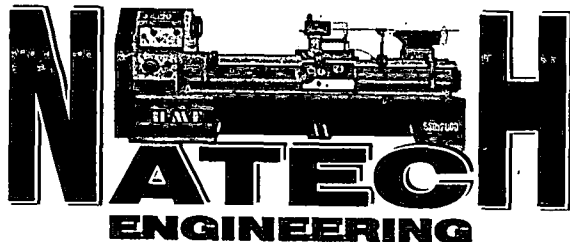
THE 68-34R GEARBOX HAS BEEN DESIGNED FOR HAND ROTATION ONLY. TO AVOID EXCESSIVE WEAR, THE GEARBOX SHOULD BE RETURNED FOR SERVICE EVERY 500 HOURS OF USE OR EVERY 12 MONTHS.

ITEM	DESCRIPTION	PART NO.
OIL	HYPERGEAR SAE 80W-90 3.9 LITRE CAPACITY	O-918958
LARGE GEAR	PITCH- 2.5 MODULE TEETH- 68 OD- 174.3 TOOTH DEPTH- 5.62mm BORE- 40mm WITH 12mm KEY BOSS- 80mm IN DIAMETER AND 25mm IN LENGTH GEAR FACE WIDTH- 25mm MATERIAL- K1045	G-174681
SMALL GEAR	PITCH- 2.5 MODULE TEETH- 34 OD- 89.65mm TOOTH DEPTH- 5.62mm BORE- 40mm WITH 12mm KEY BOSS- 70mm IN DIAMETER AND 25mm IN LENGTH GEAR FACE WIDTH- 25mm MATERIAL- K1045	G-896341

**NATECH
ENGINEERING**

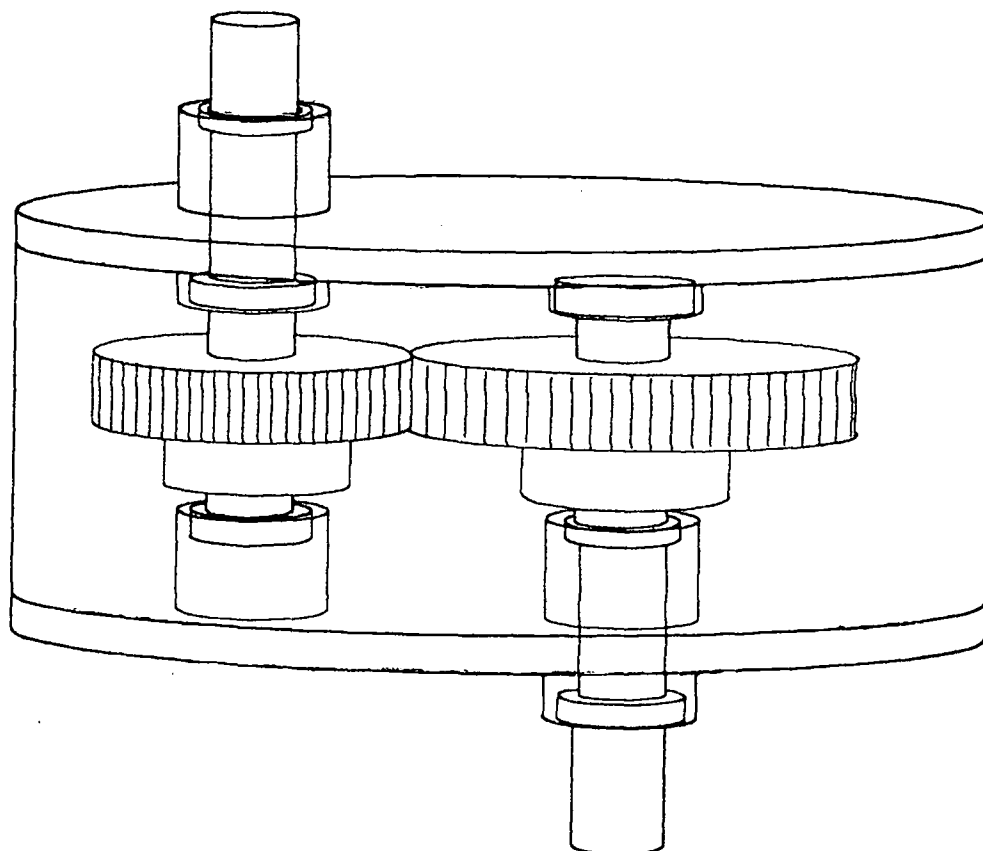
**21 Kamholtz Crt
Ashmore 4214
Queensland**

**Phone/Fax:
(07) 5597 1622**



ABN 67 120 667 758

2:1 REDUCTION GEARBOX 68-34R



**NATECH
ENGINEERING**

**21 Kamholtz Crt
Ashmore 4214
Queensland**

**Phone/Fax:
(07) 5597 1622**

**THANKYOU FOR CHOOSING
NATECH ENGINEERING**

tyco**Flow Control****Tyco Water****Tyco Water Pty Ltd**

ABN 75 087 415 745

Customer Centre Gold Coast

63 Currumbin Creek Road

PO Box 150

Currumbin QLD 4223

Phone: (07) 5589 4400

Fax: (07) 5534 7079

Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE**CERTIFICATE NO:**

11/07/211

DATE:

11/07/02

CUSTOMER:

JOBLIN CONTRACTORS

ORDER NO.

MOSSVALE

INVOICE NO:

583254

TRANS NO:

414373

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

Tyco Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road

Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance
in design, development, production, installation and servicing

Licence No.QEC 0017

StandardsMark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No.1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No.1200

AS3952-1991

Water Supply - DN80 Spring Hydrant Valve for General Purposes

Licence No 1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No.2234

Yennora Manufacturing Facility

Dursley Road

Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance
in design, development production installation and servicing

Licence No. QEC 0015

StandardsMark


AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.



Quality Assurance Officer / Representative

26 February 2001

tyco**Flow Control****Tyco Water****Tyco Water Pty Ltd**

ABN 75 087 415 745

Customer Centre Gold Coast

63 Currumbin Creek Road

PO Box 150

Currumbin QLD 4223

Phone: (07) 5589 4400

Fax: (07) 5534 7079

Email: ccg@tycowater.com

SUPPLIER'S CONFORMANCE CERTIFICATE**CERTIFICATE NO:**

11/07/210

DATE:

11/07/02

CUSTOMER:

JOBLIN CONTRACTORS

ORDER NO.

MOSSVALE

INVOICE NO:

583253

TRANS NO:

406663

We certify that Tyco Water Customer Centre Gold Coast is licenced by Quality Assurance Services to AS/NZS ISO 9002 Quality systems-Model for quality assurance in production, installation and servicing (Licence No. 5459).

Tyco Water manufacturing sites are also licenced by Quality Assurance Services as follows:

Currumbin Manufacturing Facility

63 Currumbin Creek Road

Currumbin Queensland

Products: Ductile iron fittings, valves, flanged pipe, couplings and other pipeline components

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development, production, installation and servicing

Licence No. QEC 0017

StandardsMark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 1199

AS2638-1999

Sluice Valves for Waterworks Purposes

Licence No. 1200

AS3952-1991

Water Supply - DN80 Spring Hydrant Valve for General Purposes

Licence No 1202

AS3579-1993

Cast Iron Wedge Gate Valves for General Purposes

Licence No. 2234

Yennora Manufacturing Facility

Dursley Road

Yennora NSW

Products: Ductile iron pipe

Quality System

AS/NZS ISO 9001-1994

Quality systems-Model for quality assurance

in design, development production installation and servicing

Licence No. QEC 0015

StandardsMark

AS/NZS2280-1999

Ductile Iron Pressure Pipes & Fittings

Licence No. 0883

We further certify that the items supplied for the above Order/Contract have been manufactured and tested in accordance with the appropriate Australian product standards.

Other ancillary products supplied with this Order/Contract have been purchased from approved/certified manufacturers according to the requirements of AS/NZS ISO 9002.



Quality Assurance Officer / Representative

26 February 2001

SUBMERSIBLE SEWAGE PUMP STATION 54kW (Soft Starting) STANDARD ELECTRICAL DRAWINGS

ELECTRICAL DRAWING LIST

Sheet No.	DWG N°.	TITLE
	0431-E-000	DRAWING INDEX
01	0431-E-001	SCHEMATIC DIAGRAM
02	0431-E-002	PUMP 01 SCHEMATIC DIAGRAM
03	0431-E-003	PUMP 02 SCHEMATIC DIAGRAM
04	0431-E-004	COMMON CONTROL & ALARMS SCHEMATIC DIAGRAM
05	0431-E-005	PLC/RTU SCHEMATIC DIAGRAM
06	0431-E-006	PLC/RTU TERMINATION DIAGRAM
07	0431-E-007	EQUIPMENT LIST
08	0431-E-008	CABLE SCHEDULE
09	0431-E-009	SWITCHBOARD LABEL SCHEDULE
10	0431-E-010	SWITCHBOARD GENERAL ARRANGEMENT
11	0431-E-011	SWITCHBOARD CONSTRUCTION NOTES
12	0431-E-012	SWITCHBOARD GENERAL ARRANGEMENT SECTIONS
13	0431-E-013	SWITCHBOARD CONSTRUCTION DETAILS
14	0431-E-014	CATHODIC PROTECTION WIRING DIAGRAM
15	0431-E-015	CATHODIC PROTECTION EQUIPMENT LAYOUT
16	0431-E-016	CATHODIC PROTECTION LABEL SCHEDULE
17	0431-E-017	RAG REDUCTION TUBE FOR THE VEGA LEVEL PROBE

Sheet 00

"AS CONSTRUCTED"

J. & P. RICHARDSON
INDUSTRIES PTY LTD ELECTRICAL CONTRACTORS AND ENGINEERS
A.B.N. 23 001 852 325 114 CAMPBELL AVE WICKO QLD 4076
PH. (07) 3271 2911 FAX. (07) 3271 3623
EMAIL. jpr@jpr.com.au

Date: 01-07-02 Traced: D.M.C. Checked: JPR Drawing No.: E02-853600/A0 Rev.:



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DATE: 04/03/02 - 4:19 pm XREF: -

No	DATE	DRAFTING	DESIGN	REVIEW	REV'D	APP'D	AMENDMENT
D	01.07.02						ISSUED FOR CONSTRUCTION
C	01.05.02						ISSUED FOR APPROVAL
B	19.04.02						PRELIMINARY & NFC STAMPS ADDED
A	04.03.02						PRELIMINARY ISSUE

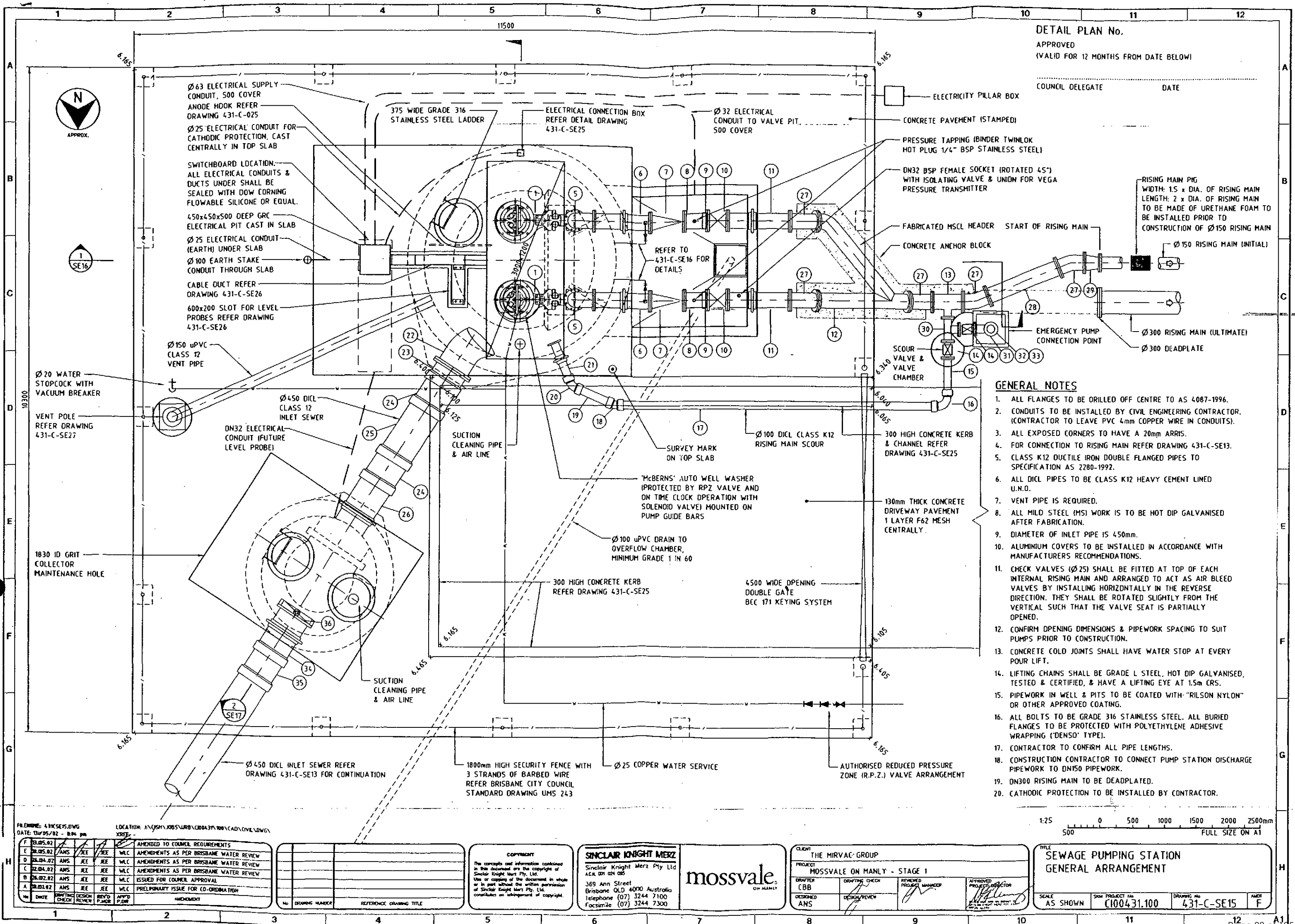
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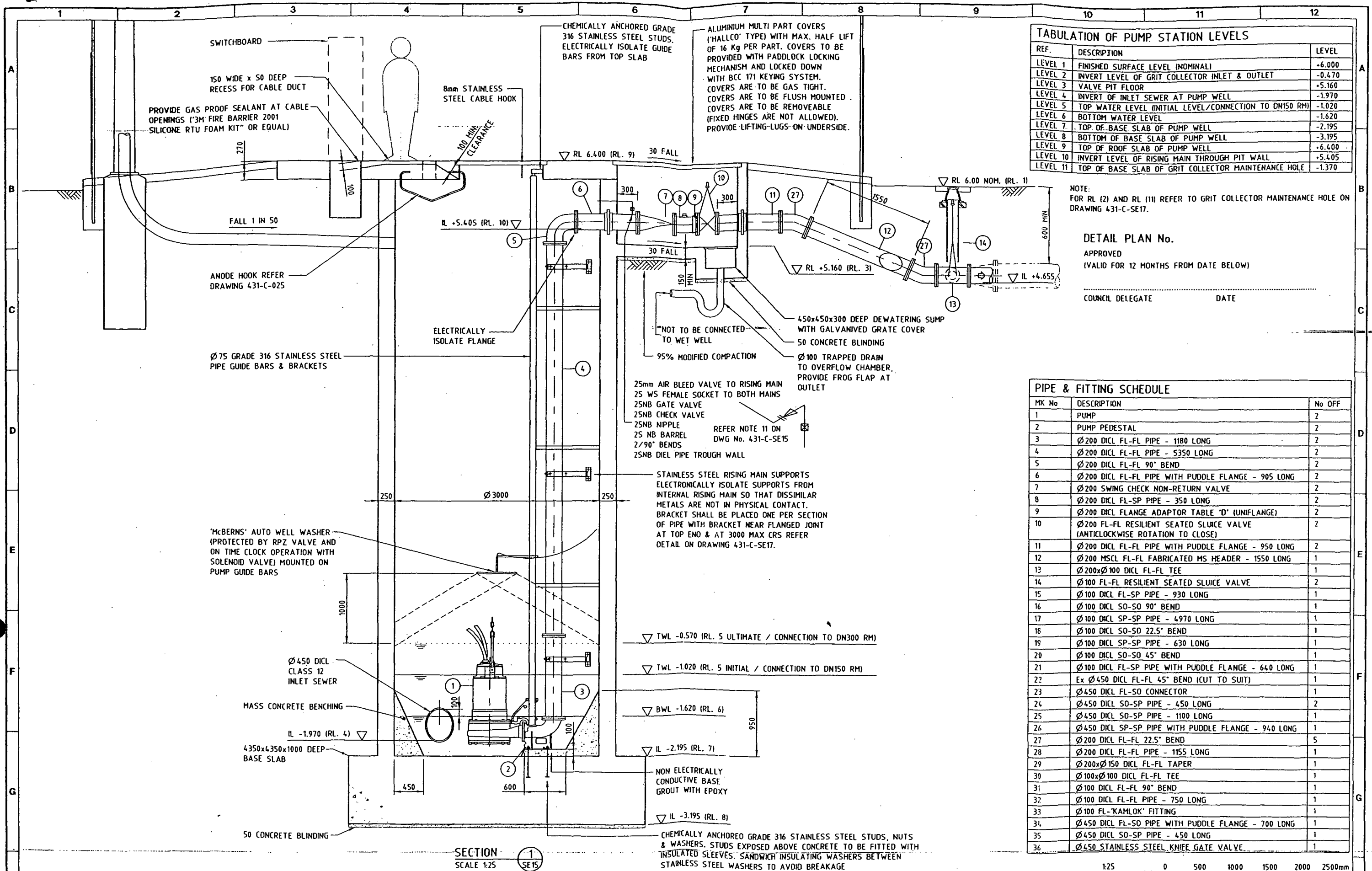
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Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 085
369 Ann Street
Brisbane QLD 4000 Australia
Telephone (07) 3244 7100
Facsimile (07) 3244 7300

CLIENT: MIRVAC GROUP
PROJECT: WAKERLEY SEWAGE
DRAFTER: N.J.P.
DESIGNED: B.J.D.
DRAFTING CHECK: DESIGN REVIEW
REVIEWED: PROJECT MANAGER
APPROVED: PROJECT DIRECTOR

TITLE: STANDARD 54 kW SOFT STARTER
SEWAGE PUMP STATION
DRAWING INDEX
SCALE: NTS
SWM PROJECT No: C100431.100
DRAWING No: 0431-E-000
AMT: D





FILENAME: 431CSE16.DWG
DATE: 13/05/07 - 7:01 pm
LOCATION: A:\CSMP\JOBS\URB\00431\100\CAD\CIVIL\DWG\

DATE	DRAWING CHECK	DESIGN REVIEW	REV'D P.MGR	APP'D P.DR	AMENDMENT
13.05.07	AMS	JEE	JEE	WLC	AMENDMENTS TO COUNCIL REQUIREMENTS
10.05.07	AMS	JEE	JEE	WLC	AMENDMENTS AS PER BRISBANE WATER REVIEW
26.04.07	AMS	JEE	JEE	WLC	AMENDMENTS AS PER BRISBANE WATER REVIEW
26.04.07	AMS	JEE	JEE	WLC	PUMP WELL AMENDED, VALVE PIT AMENDED
26.02.07	AMS	JEE	JEE	WLC	ISSUED FOR COUNCIL APPROVAL
18.01.07	AMS	JEE	JEE	WLC	PRELIMINARY ISSUE FOR CO-ORDINATION

No	DRAWING NUMBER	REFERENCE DRAWING TITLE
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

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Sinclair Knight Merz Pty Ltd
ACN 001 024 095
369 Ann Street
Brisbane QLD 4000 Australia
Telephone (07) 3244 7100
Facsimile (07) 3244 7300

mossvale
ON MANLY

CLIENT: THE MIRVAC GROUP

PROJECT: MOSSVALE ON MANLY - STAGE 1

DRAFTER: CBB

DESIGNED: ANS

DRAFTING CHECK

DESIGN REVIEW

REVIEWED

PROJECT MANAGER

APPROVED

PROJECT DIRECTOR

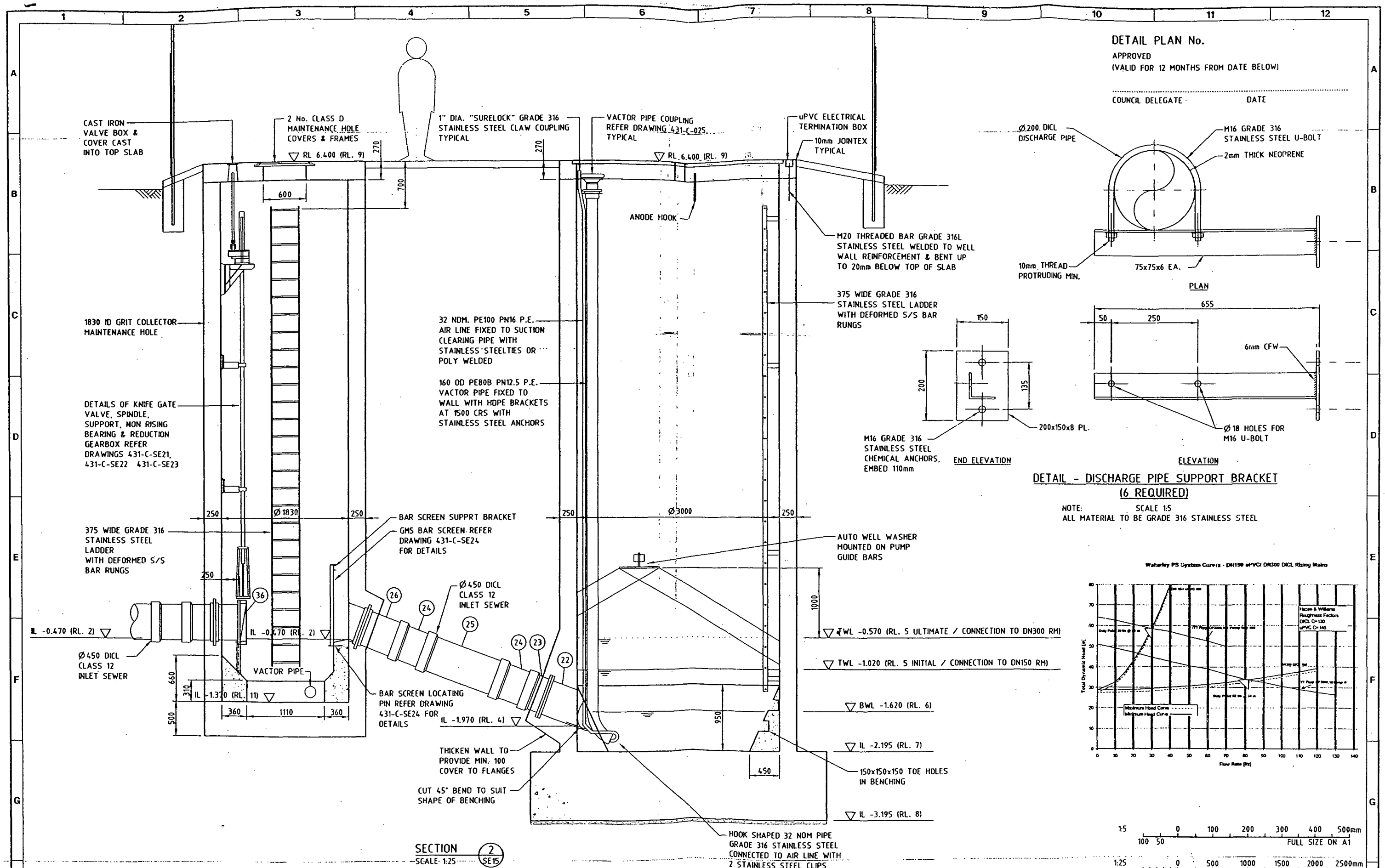
SEWAGE PUMPING STATION
SECTIONS & DETAILS
SHEET 1 OF 2

SCALE: AS SHOWN

SHW PROJECT NO: C100431.100

DRAWING NO: 431-C-SE16

AMDT: F



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DATE: 13/05/02 - 6:44 pm		XREF: -	
F	13.05.02		AMENDED TO COUNCIL REQUIREMENTS
E	10.05.02	AMS	JEE JEE WLC AMENDMENTS AS PER BRISBANE WATER REVIEW
D	26.04.02	AMS	JEE JEE WLC AMENDMENTS AS PER BRISBANE WATER REVIEW
C	12.04.02	AMS	JEE JEE WLC AMENDMENTS AS PER BRISBANE WATER REVIEW
B	26.02.02	AMS	JEE JEE WLC ISSUED FOR COUNCIL APPROVAL
A	18.01.02	AMS	JEE JEE WLC PRELIMINARY ISSUE FOR CO-ORDINATION
	DATE	DRAWING CHECKED	REV'D BY
		DESIGN REVIEW	APP'D BY
			AMENDMENT

No.	DRAWING NUMBER	REFERENCE DRAWING TITLE

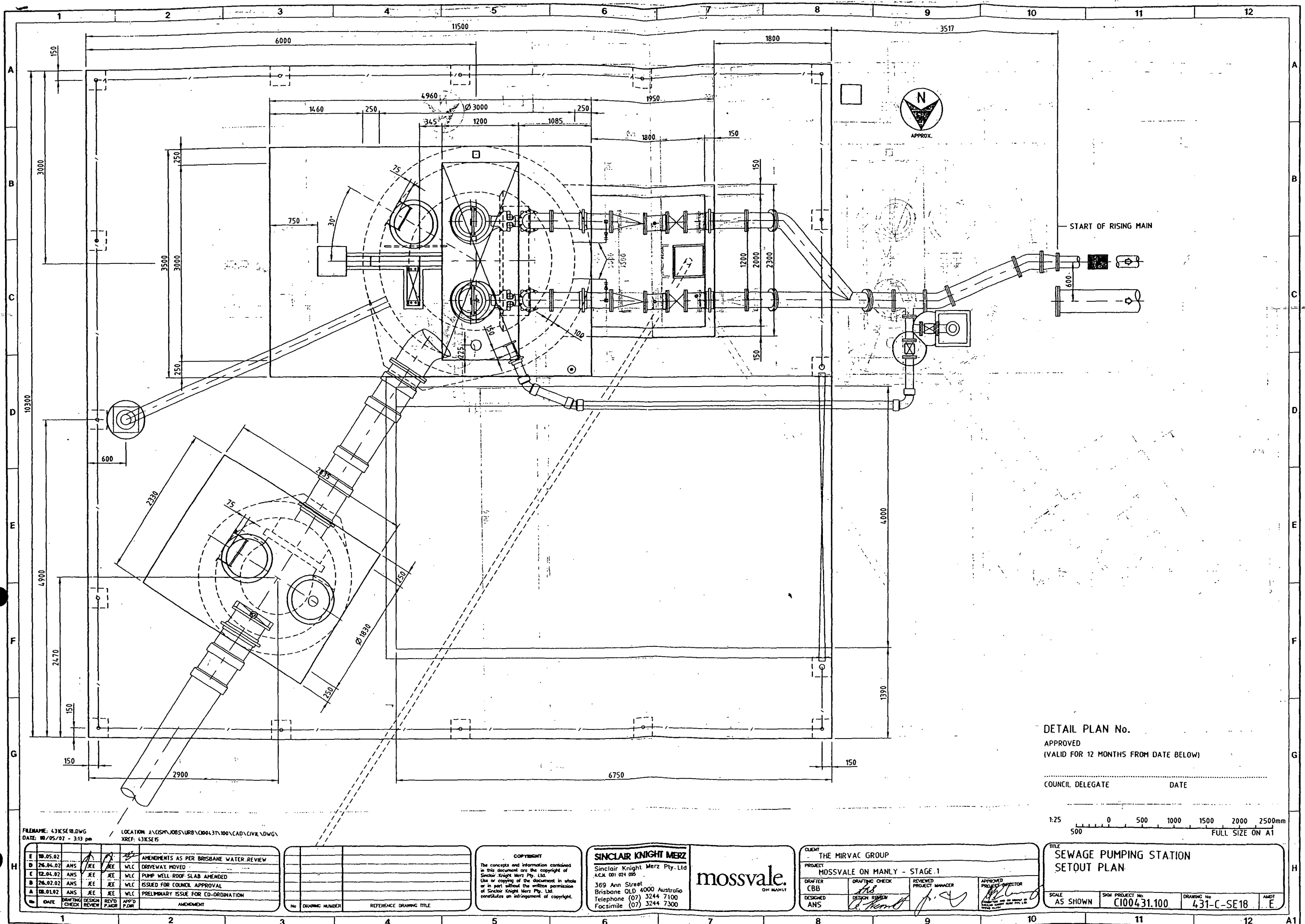
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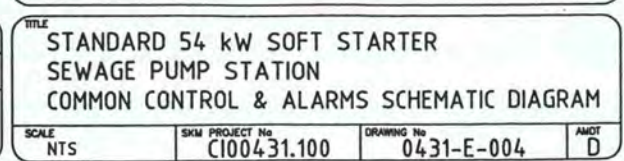
SINCLAIR KNIGHT MERZ
Sinclair Knight Merz Pty Ltd
ACN 001 024 095
369 Ann Street
Brisbane QLD 4000 Australia
Telephone (07) 3244 7100
Facsimile (07) 3244 7300

mossvale
ON MAN

CLIENT THE MIRVAC GROUP			
PROJECT MOSSVALE ON MANLY - STAGE 1			
DRAWN CBB	DRAFTING CHECK [Signature]	REVIEWED PROJECT MANAGER [Signature]	APPROVED PROJECT DIRECTOR [Signature] DAVID L. BROWN DIRECTOR OF CONSTRUCTION MIRVAC GROUP 10000 W. 10TH AVE. SUITE 1110 DENVER, CO 80202
DESIGNED ANS	DESIGN REVIEW [Signature]		

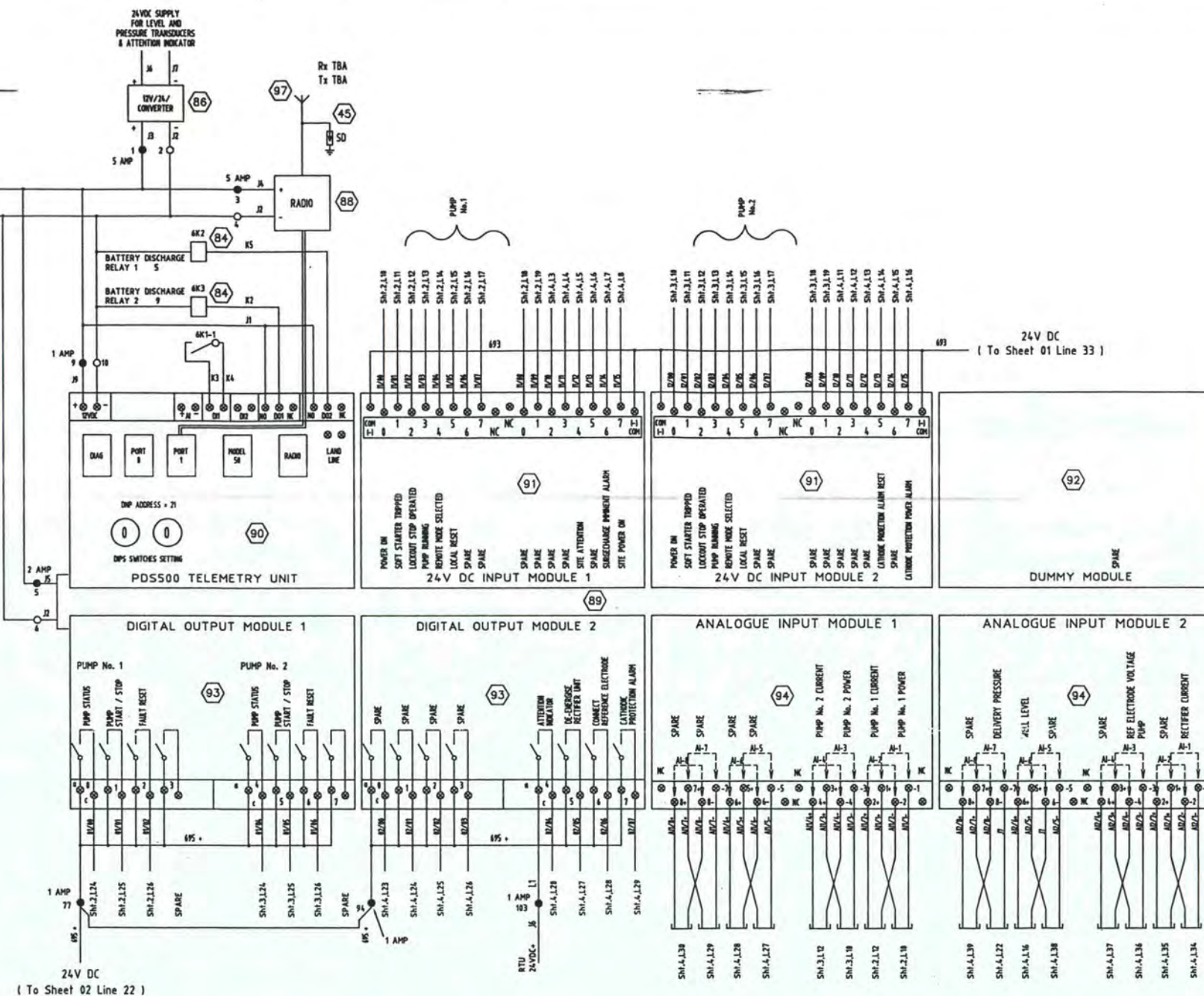
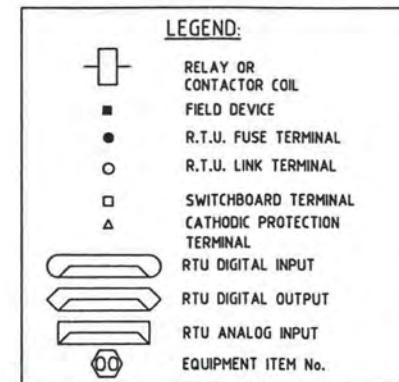
title SEWAGE PUMPING STATION SECTIONS & DETAILS SHEET 2 OF 2			
SCALE AS SHOWN	SPM PROJECT No C100431.100	DRAWING No 431-C-SF17	AMDT F





NOTES

1. TERMINAL NUMBER SHOWN EITHER IMMEDIATELY BELOW, RIGHT OR LEFT OF TERMINAL.



Sheet 05

"AS CONSTRUCTED"

J. & P. RICHARDSON
INDUSTRIES PTY LTD ELECTRICAL CONTRACTORS AND ENGINEERS
A.B.N. 23 001 952 325 114 CAMPBELL AVE WIGLQ QLD 4076
Date: 01-07-02 Traced: D.M.C. Checked: JPR Drawing No.: E02-B53600/AS Rev.:



FILENAME: 0431E005.DWG LOCATION: R:\GHE\JOBS\100431\100\CAD\ELECTRICAL\XREF: -
DATE: 04/03/02 - 10:49 am

No	DATE	DRAFTING	DESIGN	REVIEW	REV'D	APP'D	AMENDMENT
D	01.07.02						ISSUED FOR CONSTRUCTION
C	01.05.02						REVISED AS INDICATED
B	10.04.02						REVISED AS INDICATED
A	04.03.02						PRELIMINARY ISSUE

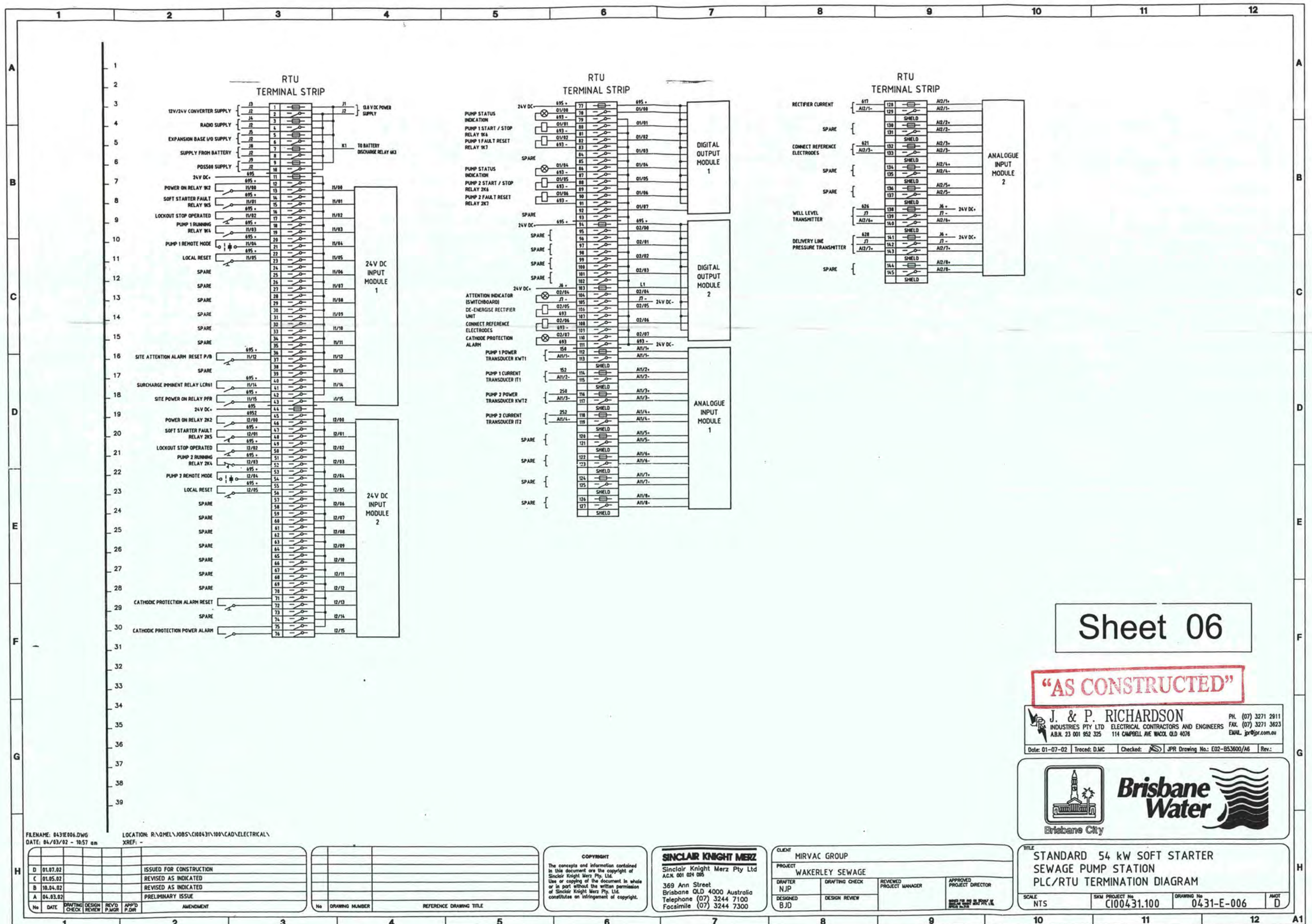
No	DRAWING NUMBER	REFERENCE DRAWING TITLE

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SINCLAIR KNIGHT MERZ
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 085
369 Ann Street
Brisbane QLD 4000 Australia
Telephone (07) 3244 7100
Facsimile (07) 3244 7300

CLIENT	MIRVAC GROUP
PROJECT	WAKERLEY SEWAGE
DRAFTER	NJP
DESIGNED	BJD
DRAFTING CHECK	
REVIEWED	PROJECT MANAGER
APPROVED	PROJECT DIRECTOR

TITLE	STANDARD 54 kW SOFT STARTER SEWAGE PUMP STATION PLC/RTU SCHEMATIC DIAGRAM
SCALE	NTS
SKM PROJECT No	C100431.100
DRAWING No	0431-E-005
AMOUNT	D



[illegible]

[illegible]

ITEM No	DESCRIPTION	LABEL 1	LABEL 2 IF NECESSARY	TEXT HEIGHT	MATERIAL / COLOUR	CORRECTLY INSTALLED	ITEM No	DESCRIPTION	LABEL 1	LABEL 2 IF NECESSARY	TEXT HEIGHT	MATERIAL / COLOUR	CORRECTLY INSTALLED
00	SURGE DIVERTER	LIGHTNING ARRESTORS		4mm	TRAFOLYTE W/B/W		48	PUMP STOP PUSH BUTTON	PUMP EMERGENCY STOP	PUMP EMERGENCY STOP	4mm	TRAFOLYTE W/B/W	
01	MAIN CIRCUIT BREAKER	MAIN SWITCH		4mm	TRAFOLYTE W/B/W		49	PUMP RESET PUSH BUTTON	LOCAL RESET	LOCAL RESET	4mm	TRAFOLYTE W/B/W	
02	PUMP CIRCUIT BREAKER	PUMP No 1	PUMP No 2	4mm	TRAFOLYTE W/B/W		50	PUMP STOP PUSH BUTTON	STOP	STOP	4mm	TRAFOLYTE W/B/W	
03	PUMP SOFT STARTER	SSM No 1	SSM No 2	4mm	TRAFOLYTE W/B/W		51	PUMP FAULT RESET PB	RESET	RESET	4mm	TRAFOLYTE W/B/W	
04	SUB-DISTRIBUTION BOARD OFS	SUB-DISTRIBUTION BOARD		4mm	TRAFOLYTE W/B/W		52	PUMP START/STOP RELAY	RT	RT	4mm	TRAFOLYTE W/B/W	
04.1				4mm			53	SURCHARGE ALARM	LOCAL SURCHARGE IMMINENT		4mm	TRAFOLYTE W/B/W	
04.2				4mm			54				4mm		
05				4mm			55	PUMP CONTROL SELECTOR SW.	PUMP CONTROL	PUMP CONTROL	4mm	TRAFOLYTE W/B/W	
06	CURRENT TRANSFORMER	CURRENT TRANSFORMER	CURRENT TRANSFORMER	4mm	TRAFOLYTE W/B/W		56	SITE ATTENTION RESET	ALARM RESET		4mm	TRAFOLYTE W/B/W	
06.1				4mm			57				4mm		
07	PUMP CONTACTOR	NC CONTACTOR	NC CONTACTOR	4mm	TRAFOLYTE W/B/W		58				4mm		
07.1				4mm			59	SITE ATTENTION ALARM	ATTENTION ALARM		4mm	TRAFOLYTE W/B/W	
07.2				4mm			60				4mm		
07.3				4mm			61	3 PHASE OUTLET	3 Ø OUTLET		4mm	TRAFOLYTE W/B/W	
08	BY-PASS CONTACTOR	BY-PASS CONTACTOR	BY-PASS CONTACTOR	4mm	TRAFOLYTE W/B/W		62	1 PHASE OUTLET	1 Ø OUTLET		4mm	TRAFOLYTE W/B/W	
09				4mm			63	NEUTRAL LINK	NEUTRAL		4mm	TRAFOLYTE W/B/W	
10				4mm			64	EARTH LINK	EARTH		4mm	TRAFOLYTE W/B/W	
11				4mm			65				4mm		
12	PUMP N/LINK	PUMP No 1	PUMP No 2	4mm	TRAFOLYTE W/B/W		65.1				4mm		
12A				4mm			65.2				4mm		
13	PUMP INSTRUMENT CT	PUMP No 1	PUMP No 2	4mm	TRAFOLYTE W/B/W		65.3				4mm		
14	INSTRUMENT FUSES	F1	F2	4mm	TRAFOLYTE W/B/W		65.4				4mm		
14.1				4mm			65.5				4mm		
15	CT TEST LINK	TL1	TL2	4mm	TRAFOLYTE W/B/W		65.6				4mm		
15.1				4mm			65.7				4mm		
15.2				4mm			65.8				4mm		
15.3				4mm			66	MAIN NEUTRAL LINK	MAIN NEUTRAL		4mm	TRAFOLYTE W/B/W	
15.4				4mm			67	MAIN EARTH LINK	MAIN EARTH		4mm	TRAFOLYTE W/B/W	
16	PUMP AMMETER	PUMP No 1	PUMP No 2	4mm	TRAFOLYTE W/B/W		68	INSTRUMENTATION EARTH LINK	INSTRUMENTATION EARTH		4mm	TRAFOLYTE W/B/W	
17	KW TRANSDUKERS	KW1	KW2	4mm	TRAFOLYTE W/B/W		69				4mm		
18	CURRENT TRANSOUKER	IT1	IT2	4mm	TRAFOLYTE W/B/W		70				4mm		
19	PHASE FAILURE RELAY	PF		4mm	TRAFOLYTE W/B/W		71				4mm		
20	PHASE FAILURE CIRCUIT BREAKER	PHASE FAILURE RELAY		4mm	TRAFOLYTE W/B/W		72				4mm		
21	3 PHASE OUTLET CIRCUIT BREAKER	3 PHASE OUTLET		4mm	TRAFOLYTE W/B/W		73	24VDC 3A LINEAR POWER SUPPLY	24VDC POWER SUPPLY		4mm	TRAFOLYTE W/B/W	
22	1 PHASE OUTLET CIRCUIT BREAKER	1 PHASE OUTLET		4mm	TRAFOLYTE W/B/W		74	24VDC CIRCUIT BREAKER	1/0 SUPPLY 24VDC		4mm	TRAFOLYTE W/B/W	
23				4mm			75				4mm		
24	RTU LAP TOP GPO CIRCUIT BKR	RTU LAP TOP GPO		4mm	TRAFOLYTE W/B/W		76				4mm		
25	SW/BO FLURO CIRCUIT BREAKER	SWITCHBOARD LIGHTS		4mm	TRAFOLYTE W/B/W		77	BATTERY ENCLOSURE	RTU BATTERIES		4mm	TRAFOLYTE W/B/W	
26	CATHODE PROTECTION CIRCUIT BKR	CATHODE PROTECTION		4mm	TRAFOLYTE W/B/W		78				4mm		
27	24VDC POWER SUPPLY CIRCUIT BKR	24VDC POWER SUPPLY		4mm	TRAFOLYTE W/B/W		79	RTU LAPTOP G.P.O.	RTU LAPTOP G.P.O.		4mm	TRAFOLYTE W/B/W	
28	TRANSOUKERS CIRCUIT BREAKER	TRANSOUKERS SUPPLY		4mm	TRAFOLYTE W/B/W		80	DECONTACTOR	PUMP No 1	PUMP No 2	4mm	TRAFOLYTE W/B/W	
29	RTU CIRCUIT BREAKER	RTU SUPPLY		4mm	TRAFOLYTE W/B/W		81				4mm		
30				4mm			82				4mm		
31				4mm			83	RTU POWER FAULT RELAY	PF		4mm	TRAFOLYTE W/B/W	
32				4mm			84	RTU BATTERY DISCHARGE RELAY	BD		4mm	TRAFOLYTE W/B/W	
33				4mm			85	RTU POWER SUPPLY	RTU POWER SUPPLY		4mm	TRAFOLYTE W/B/W	
34	WELL LEVEL INDICATOR	WELL LEVEL		4mm	TRAFOLYTE W/B/W		86	12/24VDC CONVERTER	12/24VDC CONVERTER		4mm	TRAFOLYTE W/B/W	
35	PRESSURE TRANSMITTER RELAY	PRESSURE TRANSMITTER		4mm	TRAFOLYTE W/B/W						4mm		
36	WELL LEVEL TRANSMITTER	WELL LEVEL TRANSMITTER		4mm	TRAFOLYTE W/B/W						4mm		
37	PUMP CONTROL CIRCUIT BKR	PUMP No 1	PUMP No 2	4mm	TRAFOLYTE W/B/W						4mm		
38	PUMP HOURS RUN METER	HOURS RUN	HOURS RUN	4mm	TRAFOLYTE W/B/W						4mm		
39				4mm							4mm		
40				4mm							4mm		
41	CONTROL CIRCUIT ON RELAY	PR1 C.T. ON	PR2 C.T. ON	4mm	TRAFOLYTE W/B/W						4mm		
42	PUMP FAULT RELAY	BS	BS	4mm	TRAFOLYTE W/B/W						4mm		
43	PUMP TRIPPED BKR	FAULT	FAULT	4mm	TRAFOLYTE W/B/W						4mm		
44	PUMP AVAIL RELAY	AVAILABLE	AVAILABLE	4mm	TRAFOLYTE W/B/W						4mm		
45				4mm							4mm		
46	PUMP STATUS INDICATOR	RUNNING	RUNNING	4mm	TRAFOLYTE W/B/W						4mm		
47	PUMP START PUSH BUTTON	PUMP START	PUMP START	4mm	TRAFOLYTE W/B/W						4mm		

NOTE
LABELS FITTED ADJACENT ASSOCIATED EQUIPMENT
LABELS OBSTRUCTED BY SWITCHBOARD WIRING ARE RELOCATED TO ADJACENT DUCT LID.
DUCT LID SECURED BY SINGLE CABLE TIE AT ONE CORNER

FILENAME: 0431E009.DWG
DATE: 04/03/02 - 11:17 am

LOCATION: R:\QIMEL\JOBS\000431\100\CAD\ELECTRICAL\
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No	DATE	DRAFTING	DESIGN	REVIEW	REV'D	APPRO'D	AMENDMENT
D	01.07.02						ISSUED FOR CONSTRUCTION
C	01.05.02						ITEM No. 6 AND ITEM No. 8 ADDED
B	10.04.02						PRELIMINARY AND NFC STAMPS ADDED. NOTE 1 DELETED
A	04.03.02						PRELIMINARY ISSUE

No	DRAWING NUMBER	REFERENCE DRAWING TITLE

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SINCLAIR KNIGHT MERZ
Sinclair Knight Merz Pty Ltd
ACN 001 024 085
369 Ann Street
Brisbane QLD 4000 Australia
Telephone (07) 3244 7100
Facsimile (07) 3244 7300

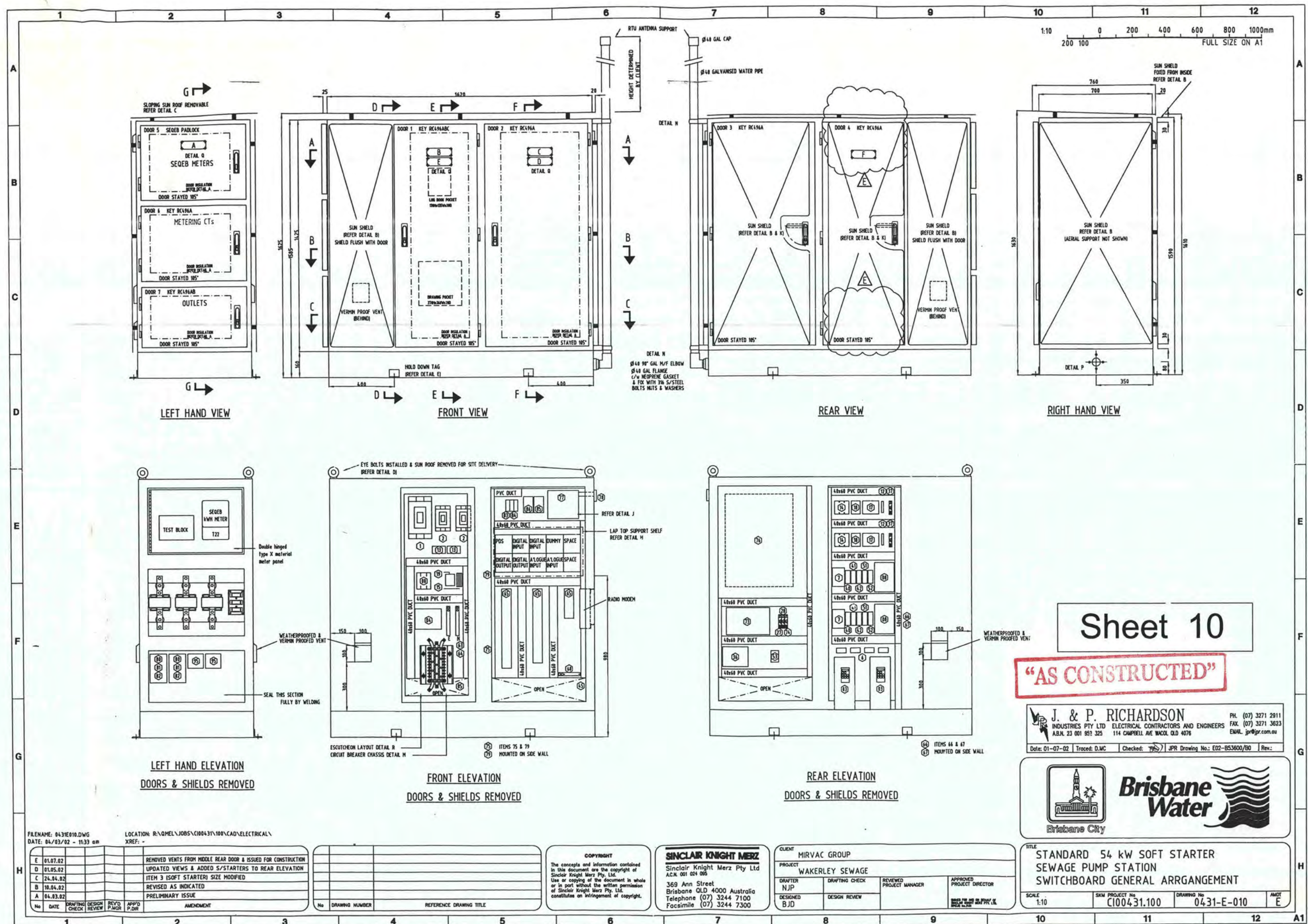
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PROJECT	WAKERLEY SEWAGE
DRAFTER	NJP
DRAFTING CHECK	
DESIGNED	BJD
DESIGN REVIEW	
REVIEWED	PROJECT MANAGER
APPROVED	DIRECTOR

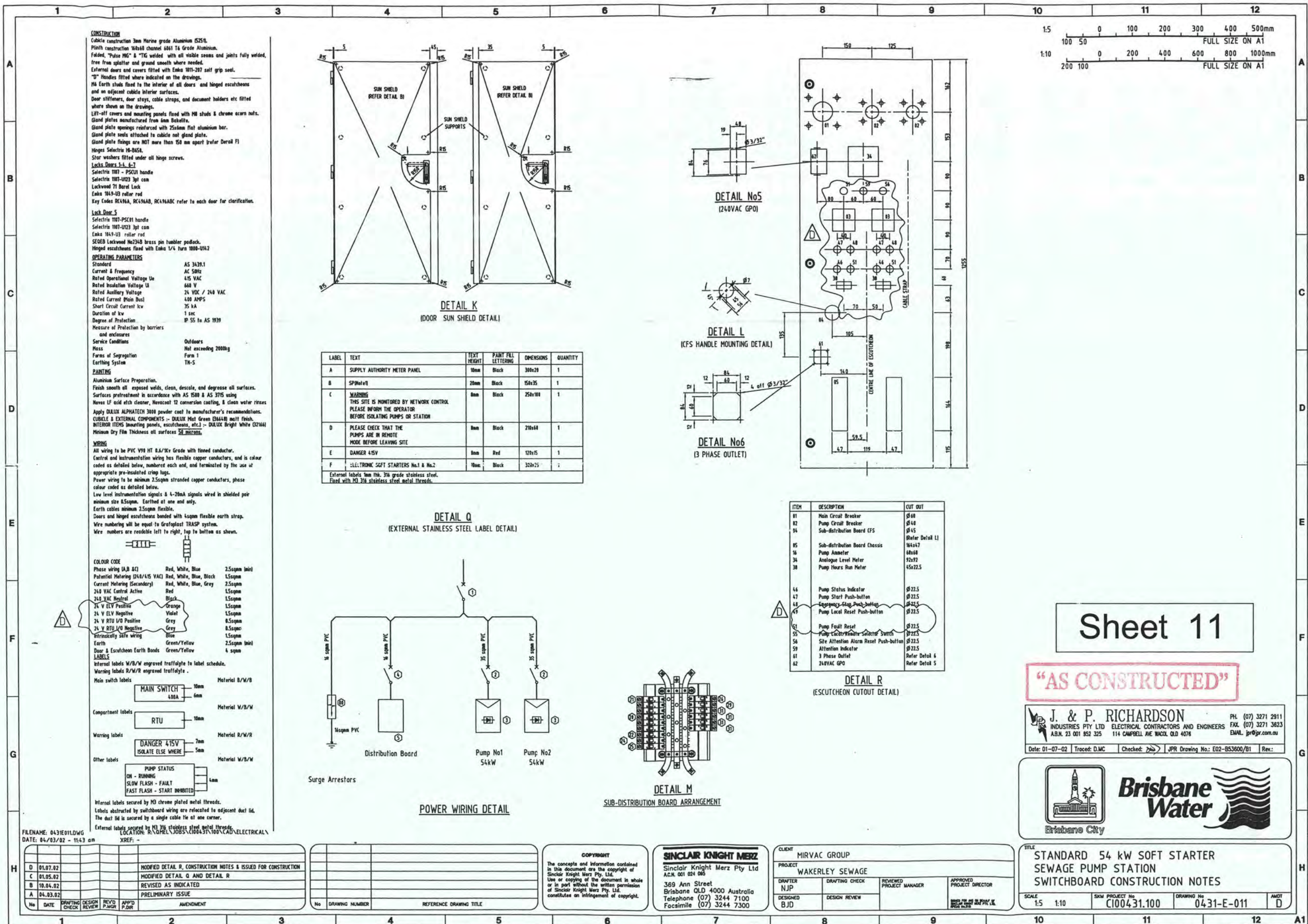
J. & P. RICHARDSON
INDUSTRIES PTY LTD ELECTRICAL CONTRACTORS AND ENGINEERS
ABN 23 001 552 325 114 CAMPBELL AVE WICKHAM QLD 4076
PH. (07) 3271 2911
FAX. (07) 3271 3623
EMAIL. jpr@jpr.com.au

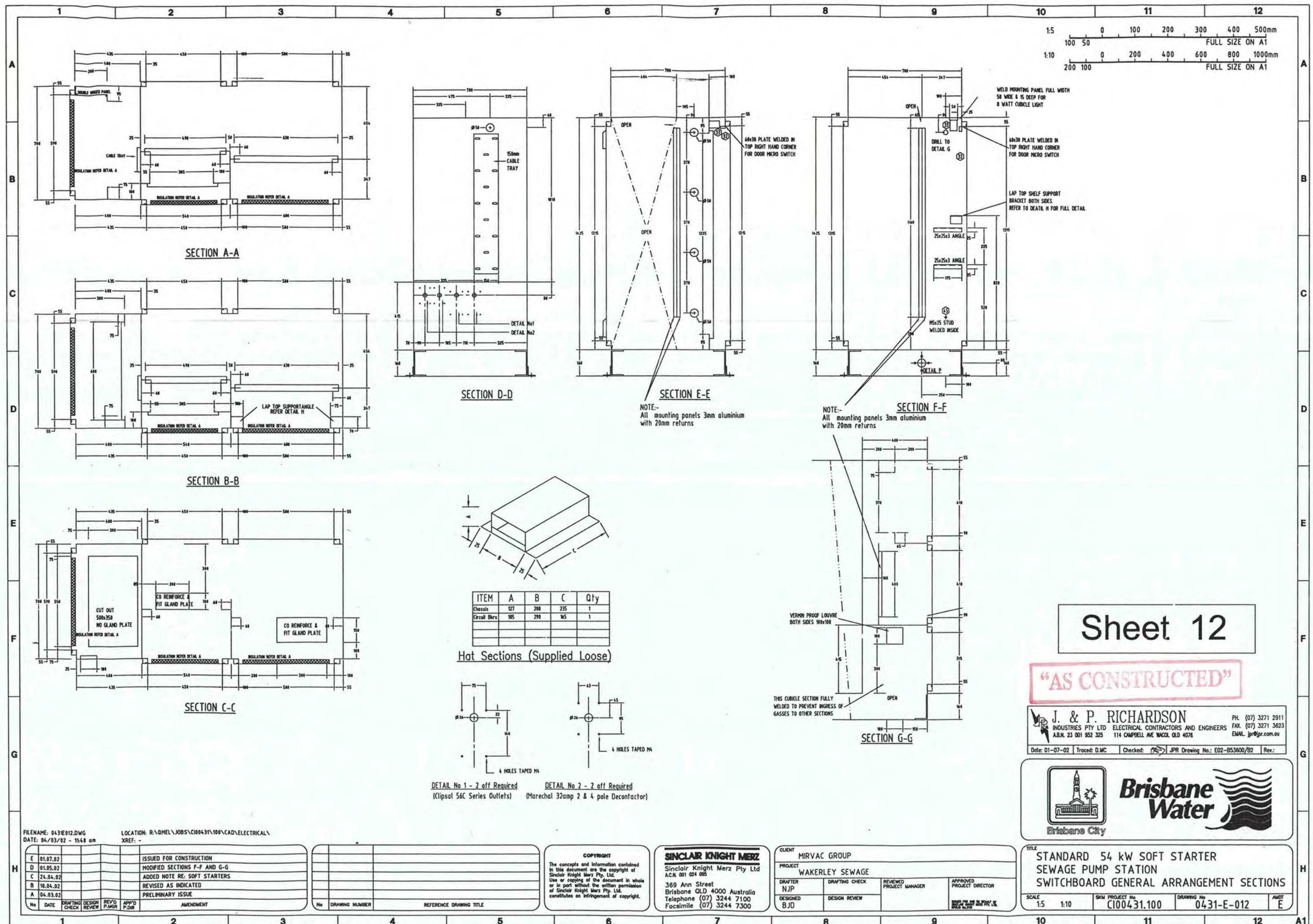
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TITLE	STANDARD 54 kW SOFT STARTER SEWAGE PUMP STATION SWITCHBOARD LABEL SCHEDULE
SCALE	NTS
SKM PROJECT No	CI00431.100
DRAWING No	0431-E-009
AMDT	D







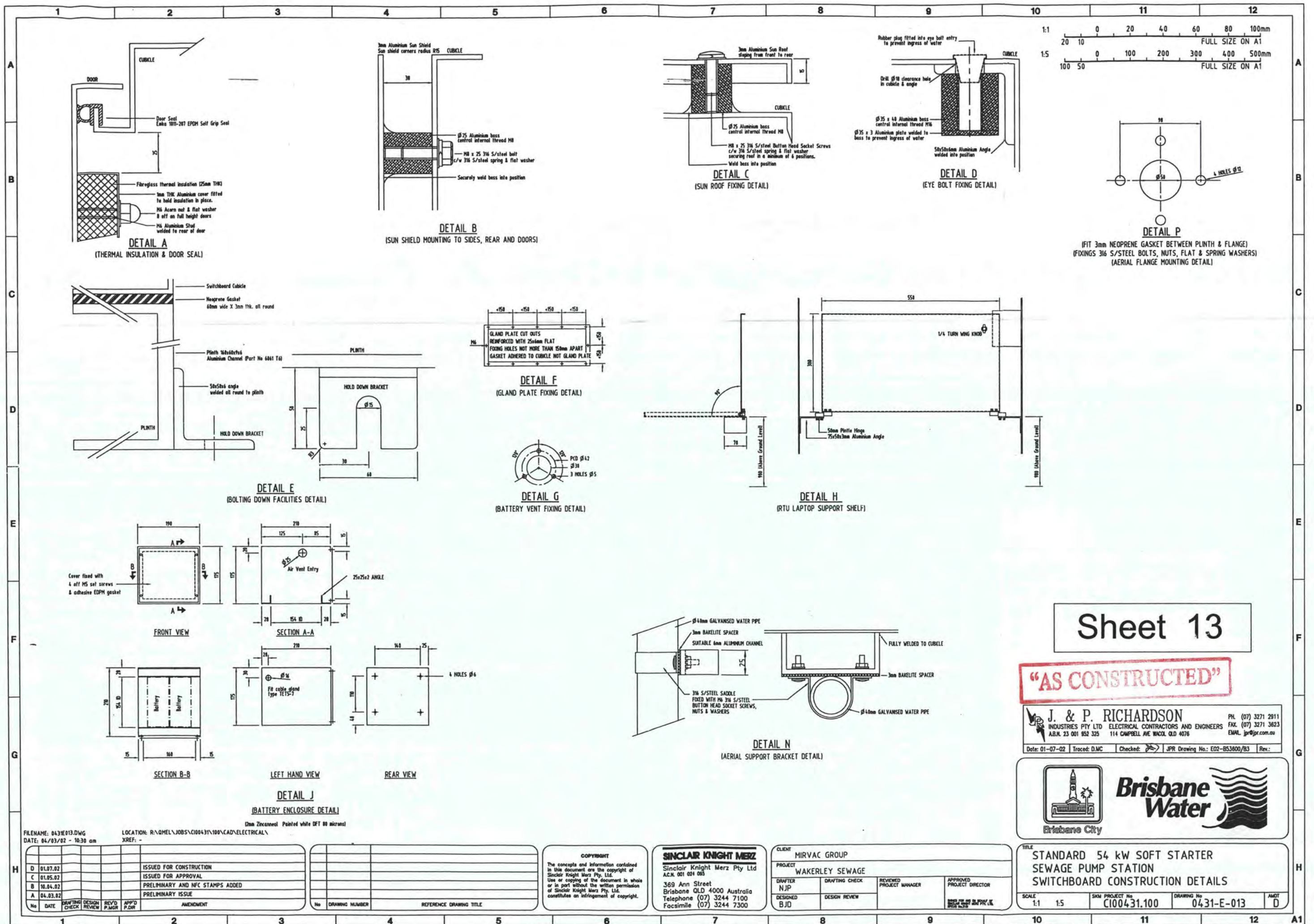
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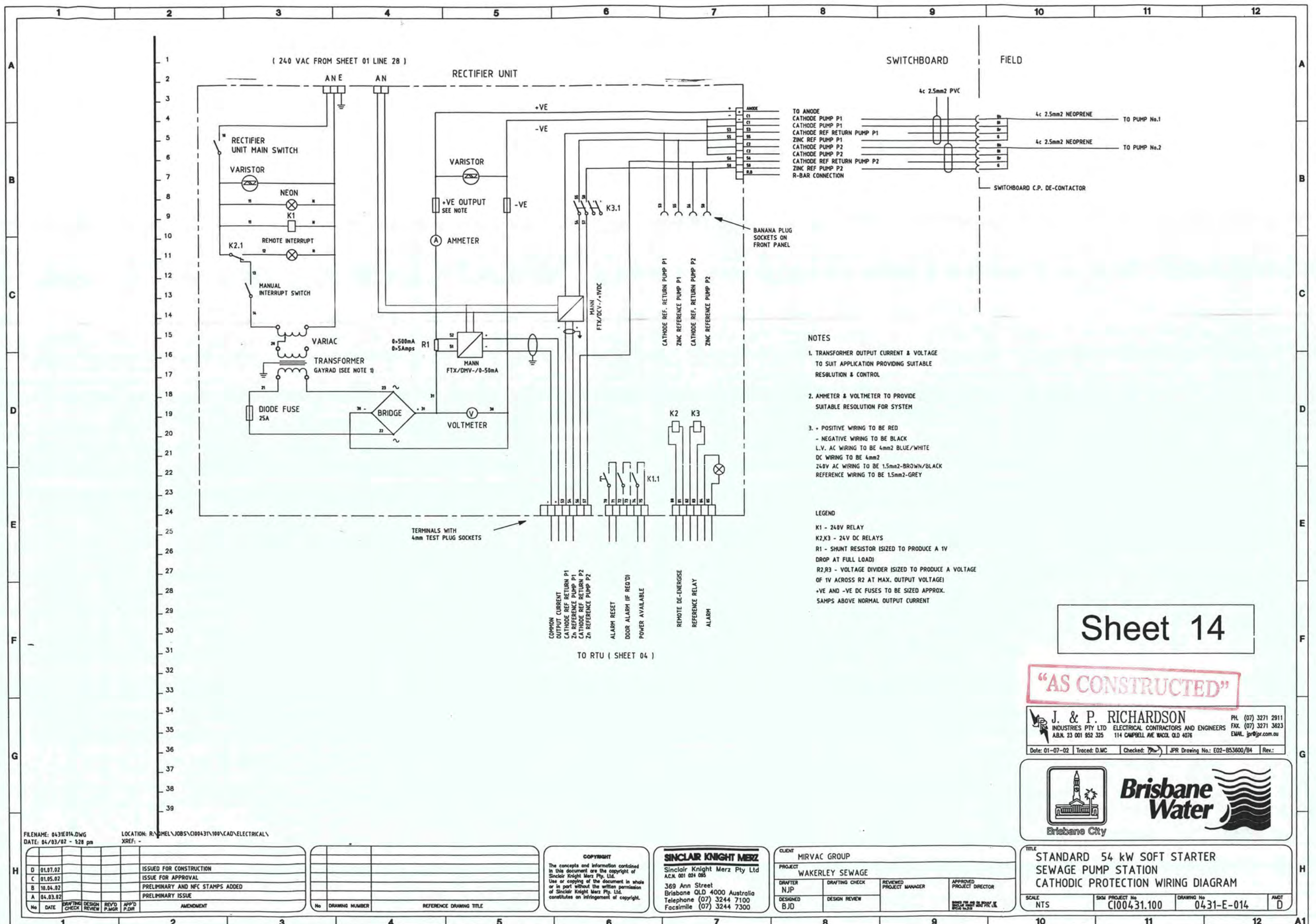
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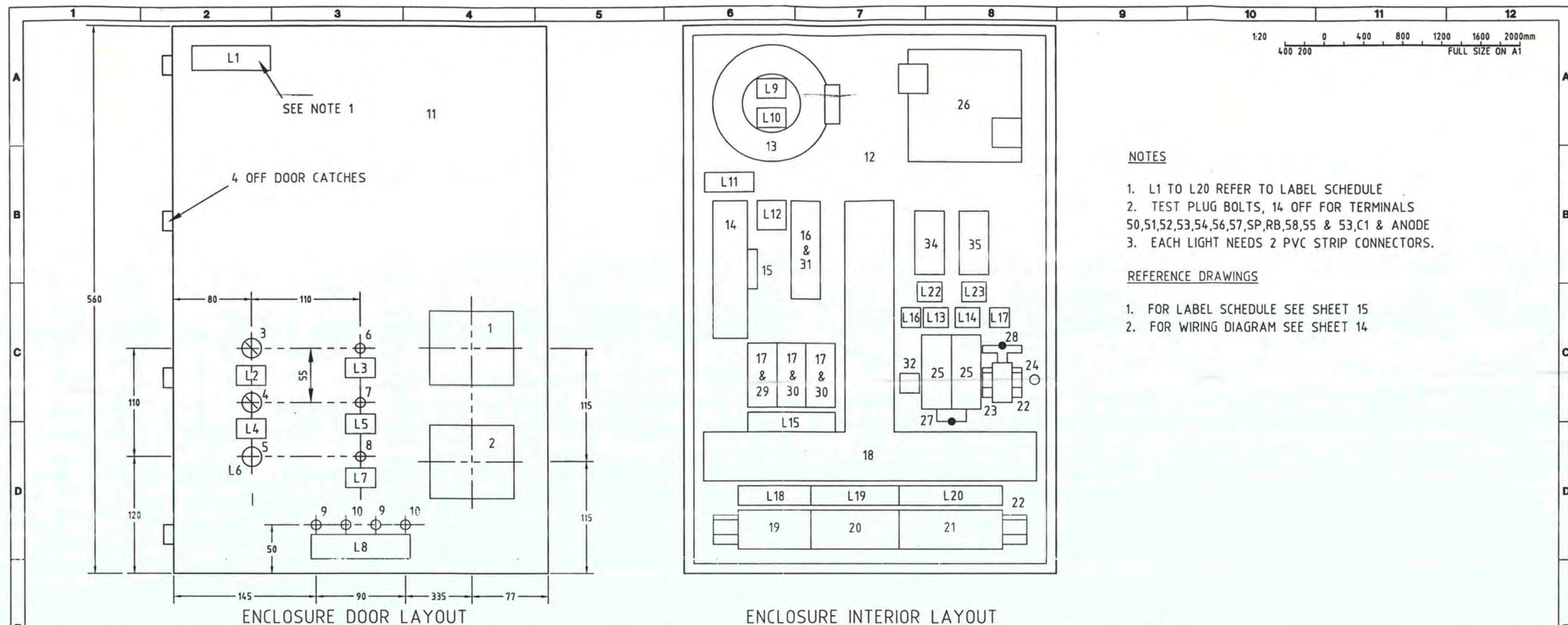
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INDUSTRIES PTY LTD ELECTRICAL CONTRACTORS AND ENGINEERS
A.B.N. 23 001 952 325 114 CAMPBELL AVE WACOL QLD 4076
PH. (07) 3271 2911 FAX. (07) 3271 3623
EMAIL: jpr@jpr.com.au

Date: 01-07-02 Traced: D.M.C. Checked: JPR Drawing No.: E02-B53600/02 Rev.:









NOTES

1. L1 TO L20 REFER TO LABEL SCHEDULE
2. TEST PLUG BOLTS, 14 OFF FOR TERMINALS 50,51,52,53,54,56,57,SP,RB,58,55 & 53,C1 & ANODE
3. EACH LIGHT NEEDS 2 PVC STRIP CONNECTORS.

REFERENCE DRAWINGS

1. FOR LABEL SCHEDULE SEE SHEET 15
2. FOR WIRING DIAGRAM SEE SHEET 14

ITEM	DESCRIPTION	MAKE AND MODEL No.	ITEM	DESCRIPTION	MAKE AND MODEL No.
1	VOLTMETER	CROMPTON	19	7 TERMINALS	KLIPPON TYPE SAK 10
2	AMMETER	CROMPTON	20	14 TERMINALS	KLIPPON TYPE SAK 4
3	SWITCH	CUTLER HAMMER E22XBFA	21	11 TERMINALS	KLIPPON TYPE SAK 10
4	SWITCH	CUTLER HAMMER E22XBFA	22	"G" RAIL, END PLATES & CLAMPS WEIDMULLER TYPE	
5	PUSH BUTTON	CUTLER HAMMER E22PB2B	23	2 TERMINALS	KLIPPON TYPE SAK 10
6	PILOT LAMP	RED RS 576-608 (SEE NOTE 3)	24	EARTH STUD	
7	PILOT LAMP	WHITE RS 576-620 (SEE NOTE 3)	25	FUSE HOLDER/FUSE	FEDERAL FC20, 20A, 440V/16A HRC
8	PILOT LAMP	AMBER RS 576-563 (SEE NOTE 3)	26	TRANSFORMER	GEC ALSTHOM 240/32V, TYPE 040
9	METER PLUG	BLACK RS 444-618	27	VARISTOR	DC SUPPLY RS 239-264
10	METER PLUG	GREEN RS 444-630	28	VARISTOR	AC SUPPLY RS 649-251
11	PVC ENCLOSURE	FISKARS FISSC563818G, IN GREY	29	RELAY	IZUMI RY4S 240V AC
12	PVC ENCLOSURE	MOUNTING PLATE	30	RELAY	IZUMI RY4S 24V DC
13	VARIAC	0-260VOLTS AC	31	DIODE FUSE	25A, RS 414-752
14	HEAT SINK	RS 402-945	32	RESISTORS	R1,R2,R3. REFER WIRING DIAGRAM
15	BRIDGE RECTIFIER	RS 264-917	33	TEST PLUG BOLT	WEIDMULLER No.16990 SEE NOTE 2
16	FUSE HOLDER	GEC Safeclip	34	TRANSDUCER	MANN FTX/DCV-/+1VDC
17	RELAY BASE	IZUMI RY4S	35	TRANSDUCER	MANN FTX/DMV-/0-50mA
18	PVC SLOTTED DUCT	50 x 30			

Sheet 15

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J. & P. RICHARDSON
INDUSTRIES PTY LTD ELECTRICAL CONTRACTORS AND ENGINEERS
A.B.N. 23 001 952 325 114 CAMPBELL AVE WACOL QLD 4078
PH. (07) 3271 2911 FAX. (07) 3271 3623
EMAIL. jpr@jpr.com.au

Date: 01-07-02 Traced: D.M.C. Checked: JPR Drawing No.: E02-B53600/B5 Rev.:



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No	DATE	DRAFTING	DESIGN	REVIEW	REV'D	APP'D	AMENDMENT
D	01.07.02						ISSUED FOR CONSTRUCTION
C	01.05.02						ISSUED FOR APPROVAL
B	10.04.02						PRELIMINARY AND NFC STAMPS ADDED
A	04.03.02						PRELIMINARY ISSUE

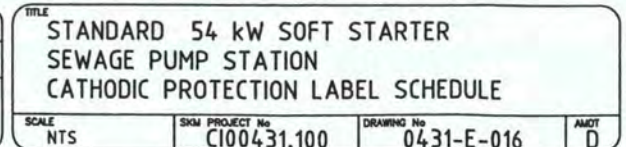
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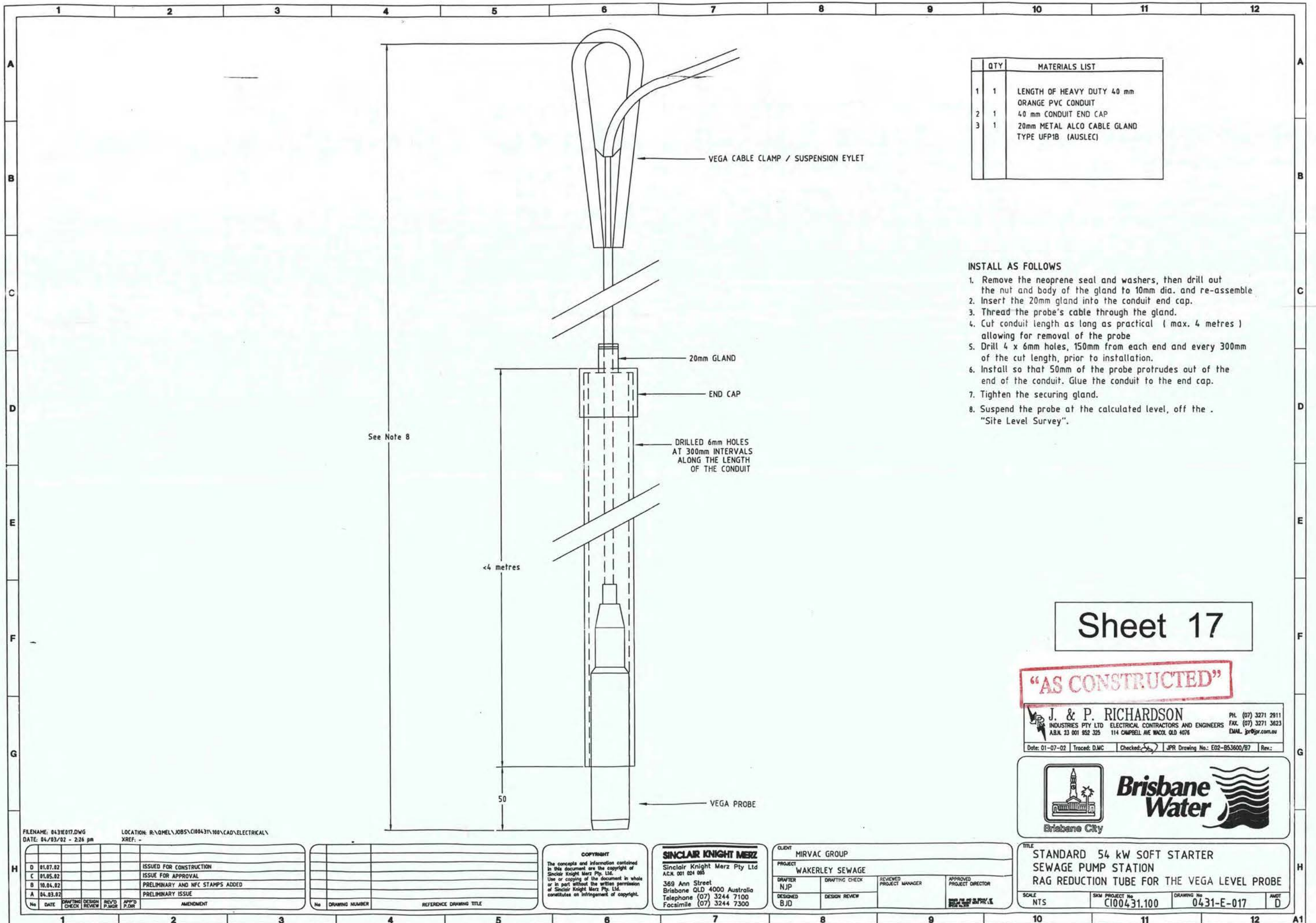
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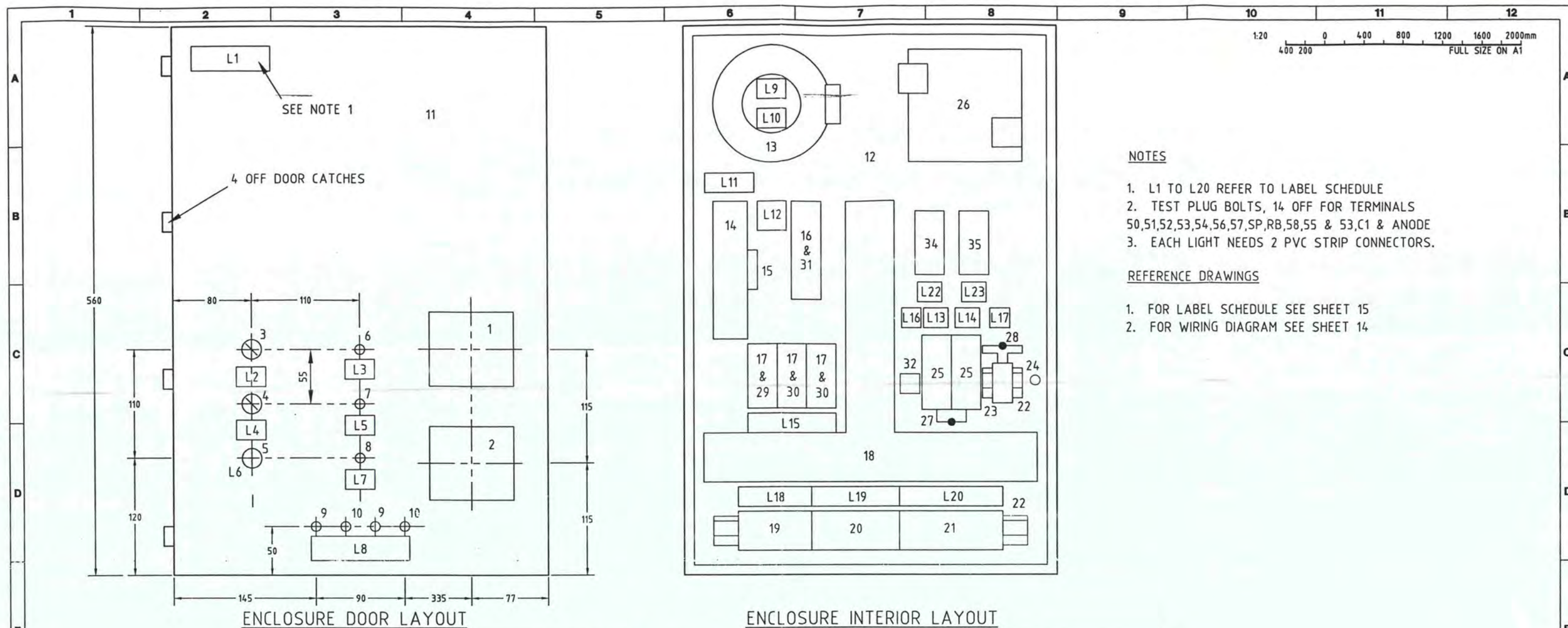
SINCLAIR KNIGHT MERZ
Sinclair Knight Merz Pty Ltd
A.C.N. 001 024 095
389 Ann Street
Brisbane QLD 4000 Australia
Telephone (07) 3244 7100
Facsimile (07) 3244 7300

CLIENT	PROJECT	DRAFTER	DRAFTING CHECK	REVIEWED	APPROVED
MIRVAC GROUP	WAKERLEY SEWAGE	NJP			
		DESIGNED	DESIGN REVIEW	PROJECT MANAGER	PROJECT DIRECTOR
		BJD			

TITLE	SCALE	SKM PROJECT No	DRAWING No	AMOUNT
STANDARD 54 kW SOFT STARTER SEWAGE PUMP STATION CATHODIC PROTECTION EQUIPMENT LAYOUT	1:20	C100431.100	0431-E-015	D







NOTES

1. L1 TO L20 REFER TO LABEL SCHEDULE
2. TEST PLUG BOLTS, 14 OFF FOR TERMINALS 50,51,52,53,54,56,57,SP,RB,58,55 & 53,C1 & ANODE
3. EACH LIGHT NEEDS 2 PVC STRIP CONNECTORS.

REFERENCE DRAWINGS

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17	RELAY BASE	IZUMI RY4S	35	TRANSDUCER	MANN FTX/DMV-/0-50mA
18	PVC SLOTTED DUCT	50 x 30			

Sheet 15

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J. & P. RICHARDSON
 INDUSTRIES PTY LTD ELECTRICAL CONTRACTORS AND ENGINEERS
 A.B.N. 23 001 952 325 114 CAMPBELL AVE WACOL QLD 4076
 PH. (07) 3271 2911 FAX. (07) 3271 3623
 EMAIL: jpr@jpr.com.au

Date: 01-07-02 Traced: D.M.C. Checked: JPR Drawing No.: E02-B53600/05 Rev.:



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D	01.07.02					ISSUED FOR CONSTRUCTION
C	01.05.02					ISSUED FOR APPROVAL
B	10.04.02					PRELIMINARY AND NFC STAMPS ADDED
A	04.03.02					PRELIMINARY ISSUE

No	DRAWING NUMBER	REFERENCE DRAWING TITLE

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SINCLAIR KNIGHT MERZ
 Sinclair Knight Merz Pty Ltd
 A.C.N. 001 024 085
 369 Ann Street
 Brisbane QLD 4000 Australia
 Telephone (07) 3244 7100
 Facsimile (07) 3244 7300

CLIENT	PROJECT	DRAFTING CHECK	REVIEWED PROJECT MANAGER	APPROVED PROJECT DIRECTOR
MIRVAC GROUP	WAKERLEY SEWAGE	NJP		
DESIGNED	DESIGN REVIEW	BJD		

TITLE	SCALE	SKM PROJECT No	DRAWING No	AMDT
STANDARD 54 kW SOFT STARTER SEWAGE PUMP STATION CATHODIC PROTECTION EQUIPMENT LAYOUT	1:20	C100431.100	0431-E-015	D

