

15tph MODULAR GRAVITY HARD ROCK GOLD RECOVERY PLANT

Gravity Recoverable Gold (GRG) Process Plant is offered for sale capable of processing P_{100} -10mm crushed ROM gold bearing ore at a feed rate of 10tph (Design), 15tph (Maximum). All equipment is new, other than for:

- the fully reconditioned ball mill, supplied with a full set of new liners.
- An optional reconditioned CAT diesel generator and step up transformer.

The plant includes a set of the suppliers recommended spares suitable for one year's operation.

The plant Process Design, Plant Layout drawings, P&ID's, a Mass Balance and a Tailings Disposal Facility design are also available.

The plant has been trial assembled at the suppliers yard, dismantled, packed in containers and is currently located in Johannesburg and Durban, RSA.

Price:

- 15tph GRG Plant: **US\$1,500,000**
- CAT 3516 diesel generator set, rated 1,825kVA at 400VAC, 50Hz, c/w 400V/6.6kV transformer packaged in a 10' ISO container: **US\$250,000**

The Main Plant & primary concentration circuit consists of the following proprietary equipment:

- Single deck 2,400mm x 1,220mm, 2x1.5kW classification screen with feed and discharge chutes.
- Manually operated Falcon SB750B Gravity Concentrator.
- Manually operated actuated diverter valve arrangement above the Falcon concentrator.
- FLSmidth Ball Mill FT Series 2.5 x 5m c/w 350kW drive, lube container, barring gear and jacking cradles.
- Mill feed launder, ball kibble loading electric hoist & mill discharge sump.
- Mill discharge slurry pump (Weir) and Weir vertical spindle spillage sump pump.
- Cyclone feed sump and pump (Weir) and mill cyclone (Multotec).
- Motor Control Centre c/w mill drive VSD & field panels.
- Fully reconditioned CAT 3516 diesel generator set with 400 V alternator, rated for 2,000kVA stand-by and 1,825kVA at Prime Power use. This unit has approximately 5,000 running hours and is packaged in a 40' container.
- Used step-up transformer, 400V up to 6.6kV rated at 2,000kVA. The transformer is dry type packaged in a 10' ISO container.
- Generator maintenance kit, comprising:
 - One set V-Belts
 - Three Oil Filter
 - Six Air Filter

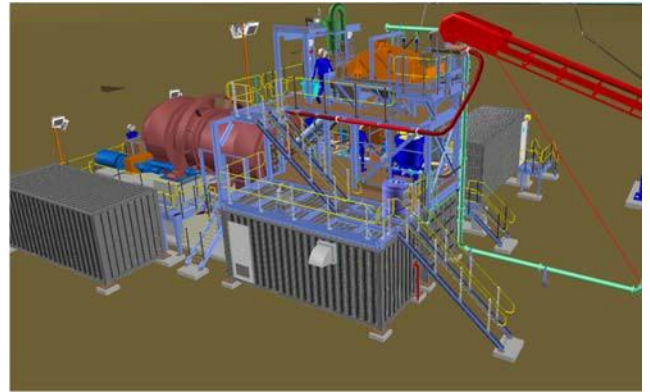


Figure 1 - Plant Layout



Figure 2 - Plant Layout



Figure 3 - Plant Side Elevation

- Fifteen Fuel Filters

The generator has an onboard day tank, is fitted with safety limiters for filling & includes the kit required to connect the fuel system to the Diesel Fuel Storage system, from a DN80 gate valve, including the following components.

- 1 - Check Valve
- 1 – DN80 to 1.5” Reducer
- 100m - 1.5” Diameter Heavy Duty UV resistant fuel line (fuel header to pump skid)
- 3m – 1” Diameter Heavy Duty UV resistant fuel line (pump skid to generator)
- 1 – Small Pump Skid
- 1 – Fuel Pump with pressure regulator
- 1 – Analog Consumption Meter
- 1 – Motor Starter
- 5m – control cable to fuel tank

The generator will require a 32A 400V 5W connection for instruments and cooling fan power, and the pump skid will require a 16A 400V 5W connection for power and controls. These cables are not included.

Secondary gold recovery consists of the following proprietary equipment:

- Gemeni GT250 shaking table c/w concentrate buffer tank and auxiliary equipment.
- Bench scale.
- 80lt drying oven.
- Mag chute.
- Electrical furnace c/w crucibles and all handling tools, mold trolley, slag tray and smelter PPE.
- Bar cleaning table, letter stamps and bar cleaning gun,
- Category 4 safe.

Water plant consisting of the following:

- 75m³ Hydrex Tank and KSB raw water pump.
- Tailings disposal pump and pontoon mounted return water pump including isolation valves, piping and hoses.

Crushing and screening plant:

The GRG Plant was designed to be fed by -10mm crushed ore from a modular design crushing and screening plant that is NOT included in this scope of supply.

The current design battery limit is the Screen Feed Chute and assumes a P₁₀₀ of -10mm Gravel via a 600mm wide conveyor.

Excluded Capital Equipment supply:

The following equipment will be required to operate the GRG Plant and is NOT included in the scope of supply:

- Crushing and screening plant.
- Tailings storage facility and tailings distribution systems.
- Raw water supply.
- Power generation.
- Site infrastructure and facilities (offices, workshop, toilets, etc).
- First fills and grinding media.

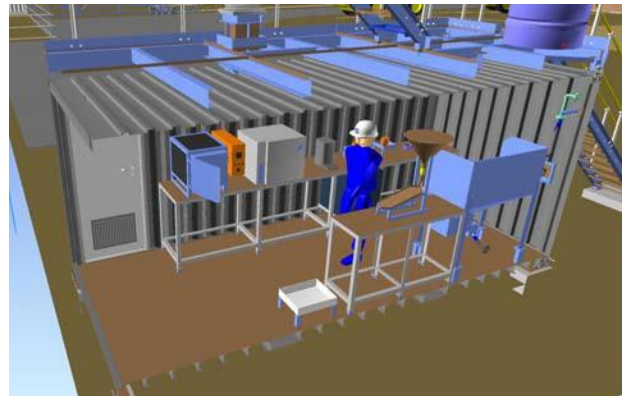


Figure 4 – Containerised Gold Room

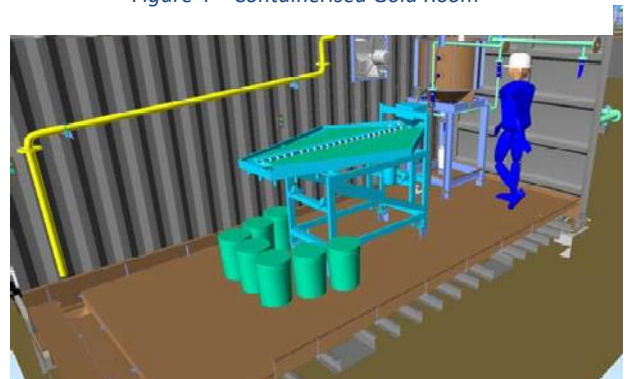


Figure 5 – Containerised Shaking Table

Process Description:

See Figure 6, below:

- Crushed material feed (-10mm) is conveyed to the GRG Plant at a controlled feed rate (crushing and feeding plant not included).
- The crushed product is discharged onto a single deck wet sizing screen (1.2 m wide x 2.4 m long) fitted with 3 mm x 12.5 mm PU panels.
- Screen overflow (-10/+3 mm) discharges into the mill feed launder. Screen underflow (-3mm) reports to a Falcon Gravity Concentrator.
- Falcon tails are gravity discharged to a sump for pump transfer to the mill feed cyclone with the cyclone underflow discharging back into the Mill.
- Ball mill product is discharged to the mill area product pump for recycle to the sizing screen.
- Steel balls will be manually added to the mill via the mill feed hopper. A ball kibble is supplied with the refurbished mill package that can alternatively be utilized with a mobile crane.
- Both mill and cyclone feed pump drives are supplied with VSD's.
- Cyclone overflow discharges via the tails pump to the Tailing Storage Facility, which will be located adjacent to the plant.
- Concentrate is periodically flushed from the Falcon unit and is gravity fed into a concentrate storage decant tank from where it will be manually fed onto the shaking table.
- Table concentrate may be given a 2nd pass over the table for further cleaning. Final concentrate will then be decanted and accumulated.
- Concentrate is carried through a door into the gold room for secure storage. Here the concentrate will be dried and then passed over the mag chute to remove any steel.
- Concentrate is then smelted with fluxes in an electric furnace and poured into 2 kg ingot molds.
- Slag is removed from the bars on the bullion cleaning table.
- A small table and drill press is included for the drilling of samples from the bars for assay purposes.
- A safe is provided for the storage of the doré bullion bars.
- Slag will periodically be recycled for re-smelting before disposal back into the milling circuit.

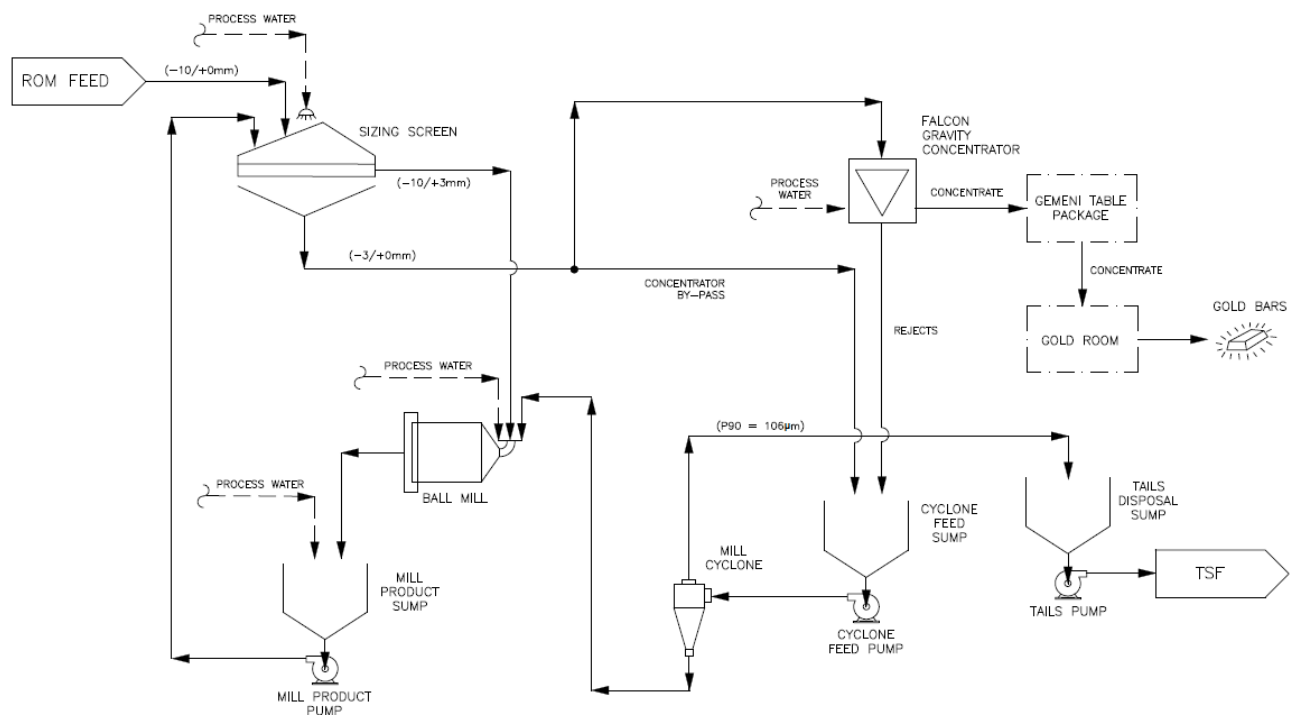


Figure 6 - Process Flow Diagram

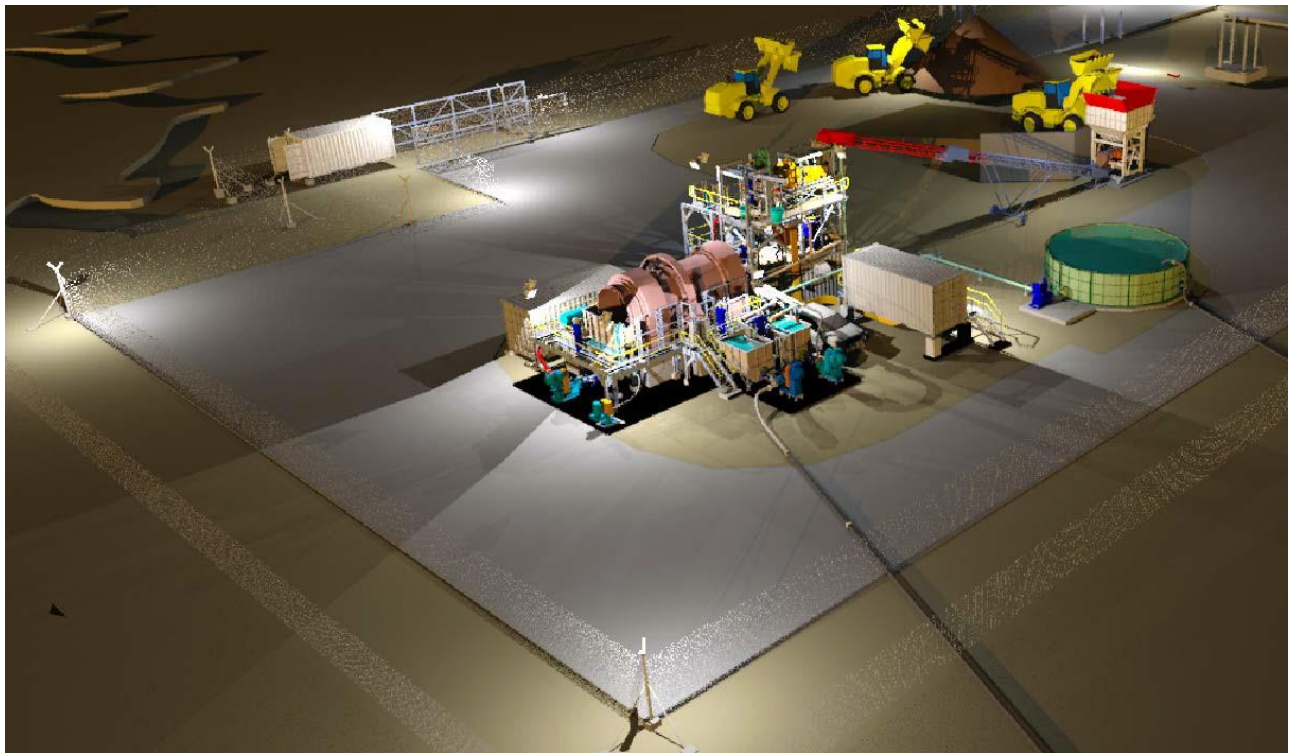


Figure 7 - Pictorial Site Layout

CAT 3516 diesel generator set, rated 1,825kVA at 400VAC, 50Hz



Achievements

Rated power SOHz LTP	2000 kVA
50hz Rated power PRP	1825 kVA
50hz Rated power COP	1600 kVA
Tension	400 VAC
Frequency	50 Hz
Power Factor	0.8

Ambient min./max. -20 / + 40 ° C

connections

Type fuel connection	1" BSP
external power supply	32A 5P CEE 400V
Judging terminal strip	M12

fuel consumption

fuel tank capacity	1300 l
Fuel charge 25%	96 l / h
Fuel charge 50%	187 l / h
Fuel consumption 75% charge	281 l / h
Fuel consumption 100% charge	375 l / h
Fuel Autonomy taxed 25%	13 hours
Fuel Autonomy taxed 50%	7 hours
Fuel Autonomy 75% charge	4.5 hours
Fuel Autonomy 100% charge	3.5 hours

General data

leakproof construction	Yes
Stilstandverwarming	Yes
Battery charger	Yes
Operating system	QC4001
Brand	CATERPILLAR

specifications engine

brand engine	CATERPILLAR
engine type	3516 DITA

specifications generator

brand aenerator	CATERPILLAR
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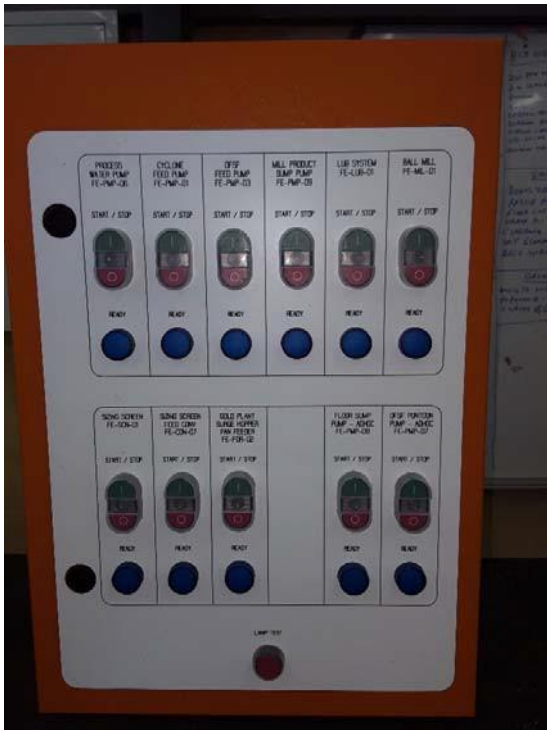


Figure 8 – Assembled GRG Plant - Rear

Figure 9 - GRG Plant Starter Panel

15TPH HARD ROCK GRAVITY RECOVERABLE GOLD PLANT	
EQUIPMENT LIST	
Description	Item
ERIEZ ELECTROMAGNETIC FEEDER & CONTROLLER	For installation beneath clients gold ore feed bin.
FALCON GRAVITY CONCENTRATOR	SB750B Concentrator, Piping, Manual System
MILL CYCLONE FEED PUMP	WEIR, 4/3 AH (HS) Metal, Expeller, 30kW
COMBINED SIZING SCREEN	Vibramech 2,400x1,220, 2x1.5kW
MILL CYCLONE	HC350-15-1/A-B/20 C/W 180° HDPE O/ELBOW (120-HS SPIGOT)
REFURBISHED BALL MILL	FT Series Ball Mill, 2.5m x 5.0m
MILL AREA SUMP PUMP	WEIR, SP65 Metal, 30kW
BALL MILL LINERS	Rubber Liners (Full Set - Includes 25% Additional Lifters)
BALL MILL LOADING KIBBLE	350kg of Plate Fabrication
BALL MILL LOADING KIBBLE HOIST	Tusker YSLD100 Elec Chain Hoist c/w 7700mm Lift, 1.0 ton 75-150mm Geared Trolley-R1 c/w 7700mm
BALL MILL LOADING KIBBLE STEELWORK	Approximately 720kg of Steel & Plate Fabrication
BALL MILL DISCHARGE PUMP	Weir 4/3 AH (HS) Metal Gravel Pumps c/w 30kW Drive
AIR COMPRESSOR, RECEIVER, DRYER	Ingersoll Rand - 1 x R5.5i compressor, 1 x D108iN-A dryer, 1 x FA75iG filter
STEELWORK, ACCESSWAYS, GUARDS	Approximately 2600kg of Steel & Plate Fabrication
GUARDS/SCREENS AROUND CONCENTRATOR	Approximately 407kg of Steel & Mesh Fabrication
LABORATORY EQUIPMENT	
ORE FINES DISPOSAL PUMP (FE-PMP-03)	3/2 AH HS Metal, Metal Lined
PROCESS WATER PUMP	KSB, ETN 100-080-315, 18.5kW, Skid Mounted, Included Steel Piping & Suction/Delivery Valves
SHAKING TABLE, GEMINI, GT250, GENERIC	GEMINI, GT250 - Use Generic ST-120
PROCESS WATER TANK	75m3 Hydrex Panel, 12.27 Dia x 1.8m High, c/w Inlet/Outlet/Overflow, Control Valve, Crated
RETURN WATER PUMP, PONTOON & FLOATS	KSB Etanorm 100-080-315 GG 1A PO, 15kW, Pontoon Mounted
PONTOON ACCESWAY/FLOATING WALKWAY	
ORE FINES HDPE LINE FLANGES, FITTINGS, TEES, VALVES	
RETURN WATER HDPE LINE FLANGES, FITTINGS & VALVES	
RAW WATER HDPE LINE FLANGES, FITTINGS & VALVES	
SCALE #1	Model NBL 16001e Analytical Balance, Capacity 16kg, Stainless steel platform 400 x 300mm
BENCH DRILL	5-Speed, 220v, 0.3Kw

DRYING OVEN	LABEX, ODS 80: 80LT Digital Oven
EXTRACTION FAN	Donkin Tiracamino, 220v, 0.12Kw
EXTRACTION CANOPY, HANGER BRACKETS & COWL	Provision for Extraction Canopy, hanger brackets and Cowl
FURNACE	Electrical Furnace, Talfurnco TFC/P42, 230V, 2.64kW, 12 Amp
MAGNETIC CHUTE	Magnetic Chute, BAFE, c/w Hopper & Valves
BULLION CLEANING TABLE	Bullion Table: 1400mm (L) x 900 (D) x 790mm (H), Piping & Valves, Top Light, Etc
SAFE #2	Category 4 Safe 330 Litre, 2 x Key lock with keys in duplicate, 1600mmH x 710mmW x 755mmD
BULLION HANDLING TROLLEY	Bullion handling trolley complete with 4 x heavy duty castor 100mm diameter wheels
BULLION MOULDS	2kg Bullion Moulds
CRUCIBLE	Graphite Crucibles
HANDLING TOOLS	Crucible Loading Tongs
HANDLING TOOLS	Crucible Stand
HANDLING TOOLS	Crucible Spillage Tray
HANDLING TOOLS	2kg Bullion bar lifting scissor type tong
HANDLING TOOLS	Medium needle pneumatic gun.
NUMBER PUNCHES	8mm Alphabetic and numeric letter stamp set.
CONSUMABLES	25kg Borax Bags
GOLDROOM PPE	Smelting apron
GOLDROOM PPE	Heat resistant shoulder length gloves
GOLDROOM PPE	Clear visor including green specs
GOLDROOM CONTAINER	20' Container Procurement and Modifications (Including Cladding, DB's, Lighting)
SHAKING TABLE CONTAINER	20' Container Procurement
Container Modifications	20' Container Modifications
Container Lighting	Provisional: Lighting, DB's
Container Locking System	Container Locks - Provision
Container Corner Castings	
MCC	Hardwired Floorstanding MCC and Mill Drive VFD
Remote stop/start field panel #1	
Remote stop/start field panel #2	
2kva Dip Proof Inverter	
Modified MCC Container	20' Insulated and climate controlled, includes cladding.
E,C&I Cabling and Racking	
INSTRUMENTATION	
DENSITY METER	Arenal Easydens ultrasound density analyser with spool-sensor
Fabricated Chutes, Process Piping & Support Structures	
Hoses	
Valves	
Supply of First Fills of Lubricants	
Commissioning Spares	Process Plant Spares - Refer to Spares Schedule below

SPARES SCHEDULE			
DESCRIPTION	TYPE/SIZE	VENDOR / SUPPLIER	SPARES DESCRIPTION
FALCON GRAVITY CONCENTRATOR	SB750B	Sepro Mineral Systems Corporation	WEAR, COMPOUND NORDBAK PNEU-WEAR
FALCON GRAVITY CONCENTRATOR	SB750B	Sepro Mineral Systems Corporation	GREASE, MOBILITH SHC 100, CAD
FALCON GRAVITY CONCENTRATOR	SB750B	Sepro Mineral Systems Corporation	NOZZLE, VEEJET 1/2 NPT CONNECTOR SS
FALCON GRAVITY CONCENTRATOR	SB750B	Sepro Mineral Systems Corporation	NOZZLE, VEEJET 1/4 NPT CONNECTOR
FALCON GRAVITY CONCENTRATOR	SB750B	Sepro Mineral Systems Corporation	KIT, UNION ROTATING RH 1 NPT STD
MILL CYCLONE FEED PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	IMPELLER
MILL CYCLONE FEED PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	O-RING
MILL CYCLONE FEED PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	HEXAGON HEAD SET SCREW
MILL CYCLONE FEED PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	LANTERN RING
MILL CYCLONE FEED PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	EXPELLER
MILL CYCLONE FEED PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	GLAND BOLT
MILL CYCLONE FEED PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	GLAND ASSEMBLY
MILL CYCLONE FEED PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	PACKING SET OF 4
MILL CYCLONE	HC350-20-0/A-A/45 c/w FULL 180 HDPE OE		Spigot - one size smaller
MILL CYCLONE	HC350-20-0/A-A/45 c/w FULL 180 HDPE OE		Spigot - one size larger
MILL CYCLONE	HC350-20-0/A-A/45 c/w FULL 180 HDPE OE		Spigot - one size larger
MILL CYCLONE	HC350-20-0/A-A/45 c/w FULL 180 HDPE OE		Spigot - one size larger
BALL MILL	Trunnion Bearing Lubrication	NCP Osborn	Tank Temperature Transmitter
BALL MILL	Trunnion Bearing Lubrication	NCP Osborn	Thermometer
BALL MILL	Trunnion Bearing Lubrication	NCP Osborn	Filter Glog Switch
BALL MILL	Trunnion Bearing	NCP Osborn	Oil Flow Switches

	Lubrication		
BALL MILL	Trunnion Bearing Lubrication	NCP Osborn	Pressure Relief Valve
BALL MILL	Gearbox Lubrication	NCP Osborn	Tank Temperature Transmitter
BALL MILL	Gearbox Lubrication	NCP Osborn	Thermometer
BALL MILL	Gearbox Lubrication	NCP Osborn	Oil Level Gauge
BALL MILL	Gearbox Lubrication	NCP Osborn	Filter Glog Switch
BALL MILL	Gearbox Lubrication	NCP Osborn	In Line Thermometer
BALL MILL	Gearbox Lubrication	NCP Osborn	Oil Flow Switches
BALL MILL	Gearbox Lubrication	NCP Osborn	Pressure Switched
BALL MILL	Gearbox Lubrication	NCP Osborn	Pressure Relief Valve
BALL MILL	Instrumentation	NCP Osborn	Temperature Transmitter
FLOOR SUMP PUMP	WEIR, SP40 METAL	Weir Minerals	IMPELLER - 5 V
MILL PRODUCT SUMP PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	IMPELLER
MILL PRODUCT SUMP PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	O-RING
MILL PRODUCT SUMP PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	HEXAGON HEAD SET SCREW
MILL PRODUCT SUMP PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	LANTERN RING
MILL PRODUCT SUMP PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	EXPELLER
MILL PRODUCT SUMP PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	GLAND BOLT
MILL PRODUCT SUMP PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	GLAND ASSEMBLY
MILL PRODUCT SUMP PUMP	WEIR, 4/3 AH (HS) METAL	Weir Minerals	PACKING SET OF 4
OFSF FEED PUMP	WEIR, 3/2 AH HS METAL, METAL LINED PUMP	Weir Minerals	IMPELLER - 5 VCG
OFSF FEED PUMP	WEIR, 3/2 AH HS METAL, METAL LINED PUMP	Weir Minerals	O-RING
OFSF FEED PUMP	WEIR, 3/2 AH HS METAL, METAL LINED PUMP	Weir Minerals	HEXAGON HEAD SET SCREW
OFSF FEED PUMP	WEIR, 3/2 AH HS METAL, METAL LINED PUMP	Weir Minerals	LANTERN RING

	LINED PUMP		
OFSF FEED PUMP	WEIR, 3/2 AH HS METAL, METAL LINED PUMP	Weir Minerals	EXPELLER RING
OFSF FEED PUMP	WEIR, 3/2 AH HS METAL, METAL LINED PUMP	Weir Minerals	GLAND BOLT
OFSF FEED PUMP	WEIR, 3/2 AH HS METAL, METAL LINED PUMP	Weir Minerals	GLAND ASSEMBLY
OFSF FEED PUMP	WEIR, 3/2 AH HS METAL, METAL LINED PUMP	Weir Minerals	PACKING SET OF 4
PROCESS WATER PUMP	KSB ETANORM 100- 080-315	KSB PUMPS AND VALVES (PTY) LTD	Gasket Kit
PROCESS WATER PUMP	KSB ETANORM 100- 080-315	KSB PUMPS AND VALVES (PTY) LTD	Gland Packing
PROCESS WATER PUMP	KSB ETANORM 100- 080-315	KSB PUMPS AND VALVES (PTY) LTD	VB16Nx2150 V-Belts
PROCESS WATER PUMP	KSB ETANORM 100- 080-315	KSB PUMPS AND VALVES (PTY) LTD	VB16Nx2120 V-Belts
PROCESS WATER PUMP	KSB ETANORM 100- 080-315	KSB PUMPS AND VALVES (PTY) LTD	VB16Nx2180 V-Belts
PROCESS WATER PUMP	KSB ETANORM 100- 080-315	KSB PUMPS AND VALVES (PTY) LTD	Coupling Bush 3020/65
PROCESS WATER PUMP	KSB ETANORM 100- 080-315	KSB PUMPS AND VALVES (PTY) LTD	Coupling Bush 2517/32
PROCESS WATER PUMP	KSB ETANORM 100- 080-315	KSB PUMPS AND VALVES (PTY) LTD	Pully Motor Bush 2517/55
PROCESS WATER PUMP	KSB ETANORM 100- 080-315	KSB PUMPS AND VALVES (PTY) LTD	Pully Pump Bush 2517/65
ELECTRICAL FURNANCE, TALFURNCO TFC/100P	TALFURNCO TFC/P42, 230V/1- Ph/50Hz, 2.64kW, 12A	TALFURNCO (PTY) LTD	K-Type Thermocouple
ELECTRICAL FURNANCE, TALFURNCO TFC/100P	TALFURNCO TFC/P42, 230V/1- Ph/50Hz, 2.64kW, 12A	TALFURNCO (PTY) LTD	Fuse
SHAKING TABLE	GEMINI, GT250, 415V/3-Ph/50Hz or 240V/1-Ph/50Hz	MINERAL TECHNOLOGIES	Drive shaft bearing
SHAKING TABLE	GEMINI, GT250, 415V/3-Ph/50Hz or 240V/1-Ph/50Hz	MINERAL TECHNOLOGIES	Eccentric bush
SHAKING TABLE	GEMINI, GT250, 415V/3-Ph/50Hz or 240V/1-Ph/50Hz	MINERAL TECHNOLOGIES	Adjusting bush
SHAKING TABLE	GEMINI, GT250,	MINERAL TECHNOLOGIES	Drive shaft

	415V/3-Ph/50Hz or 240V/1-Ph/50Hz		
SHAKING TABLE	GEMINI, GT250, 415V/3-Ph/50Hz or 240V/1-Ph/50Hz	MINERAL TECHNOLOGIES	Spring support bush
SHAKING TABLE	GEMINI, GT250, 415V/3-Ph/50Hz or 240V/1-Ph/50Hz	MINERAL TECHNOLOGIES	Spring retainer
SHAKING TABLE	GEMINI, GT250, 415V/3-Ph/50Hz or 240V/1-Ph/50Hz	MINERAL TECHNOLOGIES	Spring compression
SHAKING TABLE	GEMINI, GT250, 415V/3-Ph/50Hz or 240V/1-Ph/50Hz	MINERAL TECHNOLOGIES	Rocker plate bearings
OFSF PONTOON PUMP	KSB, ETN 100-080- 315, ON FLOATING PONTOON	KSB PUMPS AND VALVES (PTY) LTD	Gasket Kit
OFSF PONTOON PUMP	KSB, ETN 100-080- 315, ON FLOATING PONTOON	KSB PUMPS AND VALVES (PTY) LTD	Gland Packing
OFSF PONTOON PUMP	KSB, ETN 100-080- 315, ON FLOATING PONTOON	KSB PUMPS AND VALVES (PTY) LTD	VB16Nx2530 V-Belts
OFSF PONTOON PUMP	KSB, ETN 100-080- 315, ON FLOATING PONTOON	KSB PUMPS AND VALVES (PTY) LTD	VB16Nx2500 V-Belts
OFSF PONTOON PUMP	KSB, ETN 100-080- 315, ON FLOATING PONTOON	KSB PUMPS AND VALVES (PTY) LTD	VB16Nx2580 V-Belts
OFSF PONTOON PUMP	KSB, ETN 100-080- 315, ON FLOATING PONTOON	KSB PUMPS AND VALVES (PTY) LTD	Coupling Bush 3020/65
OFSF PONTOON PUMP	KSB, ETN 100-080- 315, ON FLOATING PONTOON	KSB PUMPS AND VALVES (PTY) LTD	Coupling Bush 2517/32
OFSF PONTOON PUMP	KSB, ETN 100-080- 315, ON FLOATING PONTOON	KSB PUMPS AND VALVES (PTY) LTD	Pully Motor Bush 2517/48
OFSF PONTOON PUMP	KSB, ETN 100-080- 315, ON FLOATING PONTOON	KSB PUMPS AND VALVES (PTY) LTD	Pully Pump Bush 2517/65