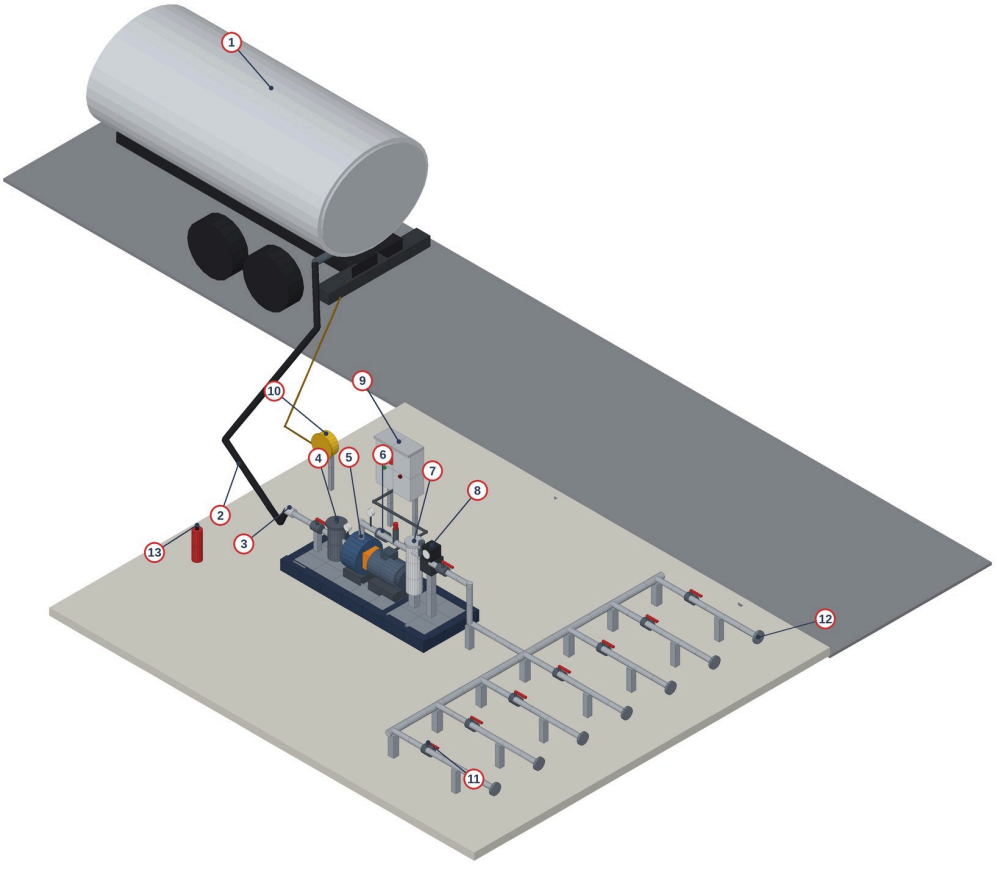
PETROBUILD

TECHNICAL BROCHURE
FUEL HANDLING EQUIPMENT

SKID-MOUNTED · FACTORY-TESTED · 500 L/MIN

DIESEL TANKER OFFLOADING & TRANSFER PUMP SYSTEM

One factory-built skid empties a 36,000-litre road tanker in about 72 minutes and delivers into the storage tank you select, through a transfer manifold sized to your tank farm.



500 L/min	**≈72 min**	**3–4 wk**	**Zone 2**
Design flow at 3 bar discharge	To empty a 36,000 L road tanker	Ex works lead time, factory-tested	Spark-proof 5.5 kW, 380 V motor

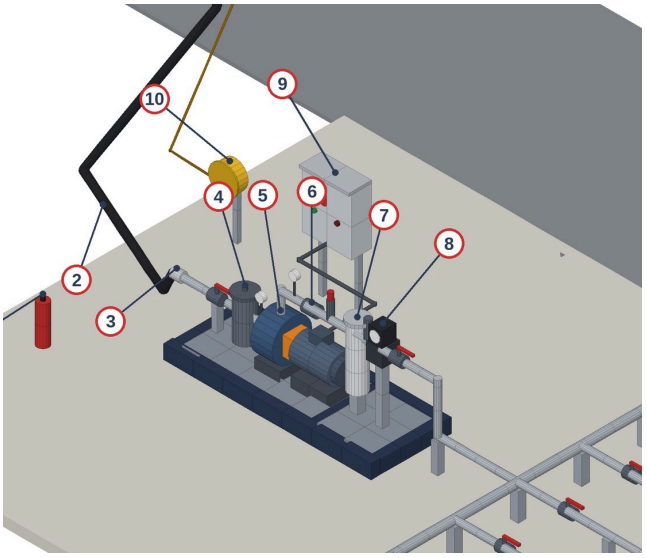
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HOW IT WORKS

The pump set, flow meter, filtration, valves and controls are assembled on a single modular steel skid, then wired, pressure-tested and given a factory acceptance test (FAT) in Johannesburg before dispatch. On site the skid connects to the tanker offloading point on the suction side and to the common transfer manifold on the discharge side.

THE FLOW PATH

1. **Tanker connection.** 3" API female coupling with dust cap on a 6 m × 3" diesel-rated composite hose.
2. **Suction protection.** 3" flanged ball valve for isolation, then a 3" basket strainer to protect the pump.
3. **Pump.** Gorman-Rupp self-priming centrifugal pump, 500 L/min at 3 bar, on a 5.5 kW 380 V Zone 2 motor.
4. **Discharge protection.** Non-return valve, pressure relief valve and filter housing with a 25 µm element.
5. **Metering.** TCS 700-25 NMI trade-approved flow meter with air eliminator, strainer and mechanical register.
6. **Distribution.** Common transfer manifold with an isolation valve per tank outlet, sized to the tank farm.



Pump skid close-up. Indicative only; final arrangement per the approved supplier GA.

1	Road tanker (by others)	8	Flow meter
2	6 m × 3" composite hose	9	Control panel
3	API coupling, suction valve	10	Bonding cable reel
4	3" basket strainer	11	Manifold isolation valves
5	Pump set	12	Tank branches
6	Non-return and relief valves	13	9 kg fire extinguisher
7	25 µm filter		

BUILT-IN SAFETY

Bond first

The tanker is bonded to the skid earth with the reel-mounted cable and clamp before connection.

Emergency stop

A latching E-stop on the control panel trips the pump at any point in the transfer.

Pressure relief

Hi-lift safety valve set at 15 bar, plus thermal relief with a 5 bar check valve.

Hazardous-area ready

Zone 2 motor with contactor, overload and fuse protection; 9 kg extinguisher on the skid.

PERFORMANCE & COMPONENTS

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HYDRAULIC BASIS

The pump meets a 400–500 L/min design flow at 3 bar, and the 5.5 kW motor carries about 20% margin over the calculated 4.5 kW shaft power.

PARAMETER	VALUE	BASIS
Design flow	500 L/min (30 m³/h)	Top of 400–500 L/min range
Discharge pressure	3 bar (≈ 36 m diesel head)	Pump rating; diesel SG 0.84
Hydraulic power	2.5 kW	Q × ΔP
Shaft power	≈ 4.5 kW	55% pump efficiency assumed
Installed motor	5.5 kW, 380 V, Zone 2	≈ 20% margin over shaft power
Velocity, 3" Sch 40 line	1.75 m/s at 500 L/min 1.40 m/s at 400 L/min	ID 77.9 mm
Offloading time, 36,000 L tanker	72 min at 500 L/min 90 min at 400 L/min	Excludes connection and dipping

PER SITE Figures assume the furthest tank is within 30 m and the highest inlet within 10 m of the pump. The final hydraulic calculation is issued per project; if the longest run needs it, the manifold header is upsized to 4" (1.0 m/s at 500 L/min).

PUMP SKID COMPONENTS

COMPONENT	SPECIFICATION	QTY
Pump and motor	Gorman-Rupp self-priming centrifugal, 500 L/min at 3 bar; 380 V, 5.5 kW spark-proof (Zone 2) motor; coupling, guard, steel base	1
Flow meter	TCS 700-25, NMI trade approved; mechanical register, air eliminator and strainer	1
Filtration	Filter housing with 25 µm particle element	1
Suction strainer	3" basket strainer	1
Ball valves	3" reduced-bore, ASA 150 flanged	4
Coupling and hose	API female coupling with dust cap; 6 m × 3" diesel-rated composite hose	1
Bonding	Bonding cable on manual reel with clamp	1
Fire extinguisher	9 kg, with bracket	1
Control panel	DB enclosure, contactor, overload, fuses and terminals, start/stop, latching emergency stop, cables, glands, cable rack	1
Skid	Modular steel pump skid, factory assembled and FAT tested	1

Options: suction and discharge pressure gauges (glycerine-filled, with isolation valves); common transfer manifold to suit the tank farm.

CONSTRUCTION & COMPLIANCE

MECHANICAL

All pipework, valves and fittings are carbon steel to ANSI Class 150, fabricated and installed to SANS 10131 and SANS 10089.

ELEMENT	SPECIFICATION
Ball valves	Split-body, full-port, fire-safe; carbon steel ASTM A105N body, PTFE seat; ANSI Class 150; to API 607 and API 6FA
Pressure relief valve	Birkett Bialy 746 Series spring-loaded hi-lift safety valve, set at 15 bar
Thermal relief	2 × 20NB half-coupling stub-ins, 2 × 20NB isolating ball valves, 1 × 20NB Series VU check valve, cracking pressure 5 bar
Non-return valve	Double-door swing check
Pipe	Schedule 40 seamless, ASTM A106-B
Fittings	To ANSI B16.9
Flanges	Raised-face slip-on, ASA 150
Gaskets	150# NOVUS 34, 3 mm ring gaskets, ANSI B16.5 drilling, from 25NB
Flange bolts	M16 × 75, grade 4.8, with nut and washer, zinc plated
Pipe supports	76 × 38 mm taper channel, 300WA; 200 × 200 × 10 mm base plates
Coating	Shot-blasted, primer and final coat, Hempel system
Welding	To ASME Boiler and Pressure Vessel Code Section IX (2015)

ELECTRICAL & HAZARDOUS AREA

ITEM	REQUIREMENT
Supply	380 V, 3-phase, 50 Hz; one 5.5 kW motor; supply cable and isolator to the panel by client
Motor protection	Contactor with thermal overload and fuses
Controls	Local start/stop; latching emergency stop
Hazardous area	Zone 2 motor; final zone classification of the offloading bay by client
Earthing and bonding	Tanker bonding reel and clamp on skid; skid earth boss for connection to the site earth mat
Documents supplied	Panel schematic, component data sheets, motor Ex certificate

DESIGN STANDARDS

SANS 10131 | SANS 10089 | SANS 10089-2 | SANS 10086-1 | SANS 10108 | API 607 / 6FA | ASME IX | ANSI B16.5 / B16.9

SKID ENVELOPE

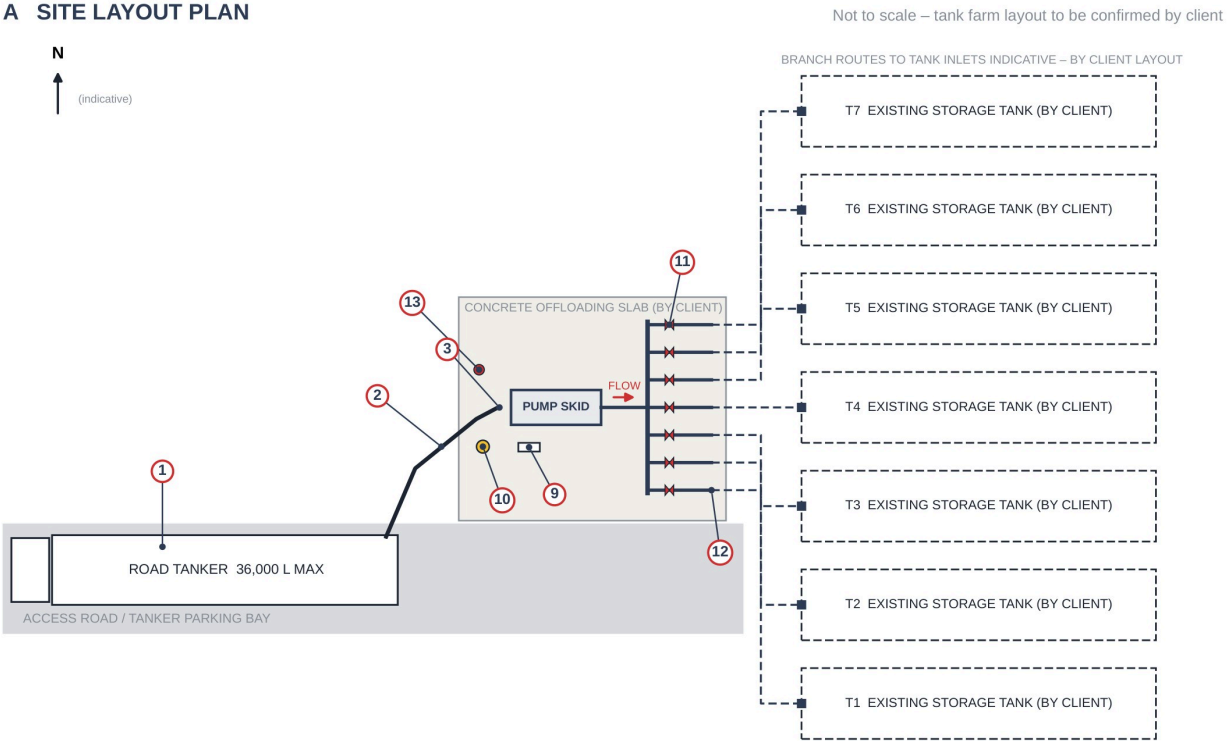
3.55 × 1.2 × 1.53 m
L × W × H, approx.

≈ 600 kg
Excl. control panel

GENERAL ARRANGEMENT

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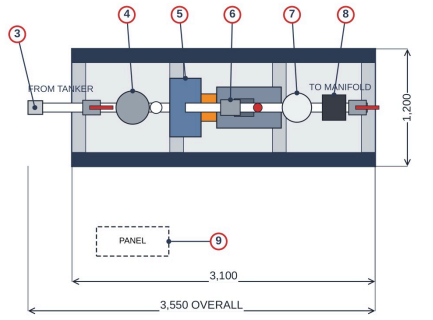
A SITE LAYOUT PLAN



Typical site layout, shown with seven storage tanks. Not to scale; the tank farm layout is confirmed for each site.

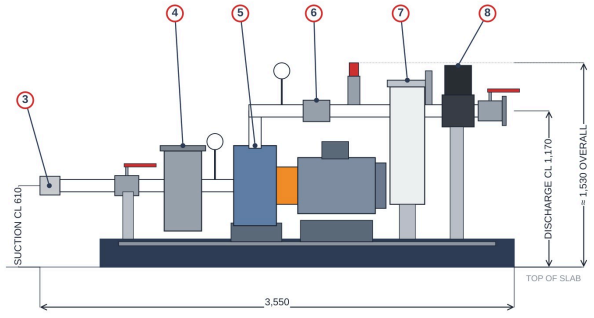
B PUMP SKID – PLAN

Dimensions in mm – HOLD, see note 5



C PUMP SKID – SIDE ELEVATION

Dimensions in mm from underside of skid – HOLD, see note 5



LEGEND

1 Road tanker, 36,000 L maximum (by others)

2 6 m × 3" diesel-rated composite hose

3 API female coupling with dust cap; suction isolation valve

4 3" basket strainer; suction gauge (option)

5 Gorman-Rupp self-priming pump, 500 L/min at 3 bar; 5.5 kW Zone 2 motor

6 Non-return valve, relief valve (15 bar); discharge gauge (option)

7 Filter housing, 25 µm element

8 TCS 700-25 NMI flow meter with air eliminator; discharge valve

9 Control panel on stand, start/stop and E-stop

10 Bonding cable on manual reel with clamp

11 Manifold header, one isolation ball valve per tank

12 Branch outlets to tanks, 150 lb RF flanges

13 9 kg fire extinguisher on bracket

NOTES

Typical arrangement, not for construction; dimensions in mm, provisional until the certified supplier GA is issued. Final skid GA, P&ID and hydraulic calculation are issued per project. Transfer run assumed ≤ 30 m to the furthest tank, ≤ 10 m lift.

SCOPE & SPARES

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INCLUDED AS STANDARD

- Pump set and Zone 2 motor
- NMI trade-approved flow meter
- Basket strainer and 25 µm filter
- Ball valves, NRV, pressure and thermal relief
- 6 m hose with API coupling
- Bonding reel and 9 kg extinguisher
- Modular steel skid
- Electrical control panel with E-stop
- Factory assembly and FAT

OPTIONAL, PRICED PER SITE

- Transfer manifold sized to the tank farm
- Suction and discharge pressure gauges
- Delivery, incl. cross-border clearing
- Site installation and tie-in
- Testing and commissioning
- On-site operator training
- Commissioning and 2-year spares
- Maintenance agreement

BY THE SITE

- Foundation, offloading slab and spill containment
- 380 V supply and cabling to the panel
- Earth mat, lightning protection, electrical CoC
- Storage tanks, nozzles, vents and level instruments
- Hazardous-area classification, permits and approvals
- Diesel and a tanker for commissioning

RECOMMENDED SPARES

SPARE	COMMISSIONING	2-YEAR OPERATING
Filter element, 25 µm	1	4
Basket strainer screen, 3"	1	2
Flange gaskets, full set	1 set	2 sets
Pump mechanical seal kit	–	1
Pump impeller and wear plate	–	1
Flow meter register seal and strainer screen	–	1
API coupling seal and dust cap	1	2
Panel fuses, overload and contactor	1 set	1 set

Confirmed against the OEM spares schedule on order.

TO QUOTE YOUR SYSTEM, SEND US

- ☐ Tank farm layout and number of tanks
- ☐ Tank nozzle sizes and pipe run lengths
- ☐ Highest tank inlet and furthest tank
- ☐ Site power at the panel location
- ☐ Site address, road access, offloading equipment
- ☐ Number of operators to train

DELIVERY & SUPPORT

Each skid is assembled to order and is ready for dispatch **3–4 weeks** after order, ex works Johannesburg. Freight, clearing and site works follow, with timing set by the destination.

WEEK 0
Order placed; GA drawing and P&ID issued for approval

WEEKS 1–4
Fabrication, skid assembly and FAT in Johannesburg

WEEK 4
Release for dispatch

FREIGHT
Road freight, incl. cross-border clearing; time depends on destination

ON SITE
Installation, commissioning and operator training

AFTER-SALES

- **OEM parts** supplied from Johannesburg stock
- **Standard catalogue** pump, meter, valves and filtration
- **One contact** for commercial and site coordination: info@petrobuild.co.za
- **Maintenance agreement** available on request

12 MONTH WARRANTY

On equipment and workmanship from takeover, subject to maintenance to OEM specification by trained personnel. Pump, meter, valves and filtration are standard catalogue items held in South Africa.

MAINTENANCE SCHEDULE

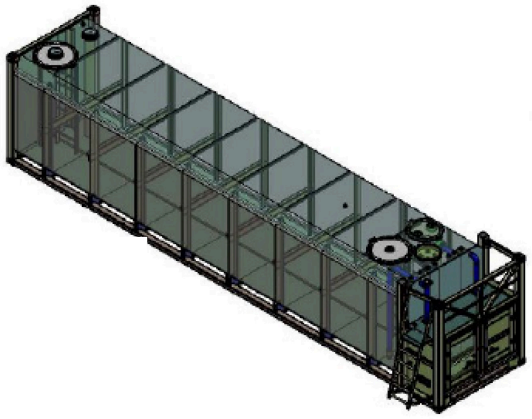
CHECK	FREQUENCY
Hose, coupling and dust cap: wear, cracks, leaks	Before each offload
Strainer basket and filter differential: clean or replace	Every 10 offloads or monthly
Bonding cable and clamp: continuity	Monthly
Valves, flanges, PRV: leak check	Monthly
Pump seal and bearings: leak, noise, temperature	Quarterly
Flow meter: calibration verification	Annually
Electrical panel and Ex equipment: inspection to SANS 10086-1	Annually

DOCUMENTATION PACK

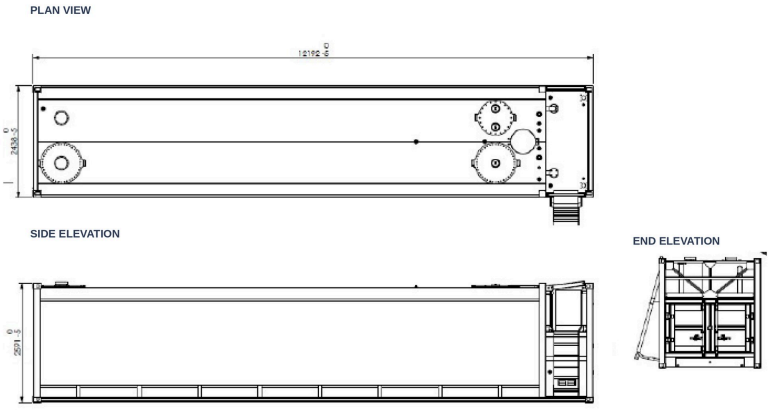
- Pump, motor, meter, filter and valve data sheets
- Pump performance curve and hydraulic calculation
- Welding procedure (ASME IX) and FAT procedure
- General arrangement drawing and P&ID
- Electrical schematic and motor Ex certificate
- Operator training and handover documents

COMPLETE THE FUEL FARM

Pair the offloading skid with the **PB-68**, Petrobuild's 40 ft high-cube self-bunded diesel tank, holding 65,570 L at safe fill. Supplied separately from the pump system.



Construction	Double-walled, self-bunded aboveground tank in a 40 ft HC container frame
Total / safe-fill volume	69,023 L / 65,570 L
Overall L × W × H	12,192 × 2,438 × 2,591 mm
Piping	ASME B31.3 / B31.4; Sch 40 to ANSI B36.10; 150 lb RF flanges
Structural	AWS D1.1; grade 350WA, minimum 10 mm plate
Corrosion protection	ISO 12944; blast to ISO 8501-1 SA2.5; Sigma PPG coating system



PB-68 general arrangement: plan, side and end elevations, dimensions in mm. Certified GA, nozzle schedule and calibrated dip chart issued with approved drawings.

REQUEST A QUOTATION

Send your tank farm layout, pipe run lengths, highest tank inlet elevation and site power details, and we will size the manifold and confirm the duty point.

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