

SURPLUS SCREW COMPRESSOR

CERTIFIED COMPRESSOR PACKAGE UNIT

05-412

SOUR GAS SERVICE

WAUKESHA F18GL

SULLAIR PC25L, 3.7VI

SCREW COMPRESSOR

F18GL (LCR) ENGINE ACCESSORIES

The engine will be provided with the following factory accessories:

- Gas Regulator- Fisher Y692, for natural gas only. Gas inlet pressure: 25-50 psig, mounted (2027).
- Waukesha Custom Engine Control Electronic Ignition System- Components meet CSA Class I, Division 2, Group D, hazardous location requirements (3314A).
- Governor- PSG, hydraulic, lever controlled (6130A).
- Speed Control- Air Actuator- Westinghouse A2H (3-15 psi) (6254A).
- Stub Shaft (8000 for Screw Only).
- Front Mounted Shaft (8101).

F18GL (LCR) ENGINE UTILITY

Power Adjustments

- All engine performance includes any applicable de-rating for the elevation and ambient temperature indicated on the performance curves and run data.
- As a suitable fuel gas analysis has not been provided, no adjustments for fuel quality have been included. Please be advised the purchaser is responsible for providing a suitable fuel gas analysis prior to start-up to determine any applicable engine de-rating.

General

- Automatic engine speed control.
- Automatic engine overload control.
- Engine vibration protection c/w vibration switch.
- 24 VDC power required.

Oil & Water System

- Engine oil cooling circuit c/w high temperature shutdown and low pressure shutdown.
- Engine crankcase oil level controller/shut down c/w piping from daytank, isolation ball valve and Y-strainer.
- Engine crankcase drain piping to integral skid waste oil storage tank c/w isolation gate valve.
- Engine jacket water (EJW) cooling circuit c/w low point fill/drain connection, glycol surge tank.
- Turbo aftercooler water (TAW) cooling circuit c/w low point fill/drain connection, glycol surge tank.
- Surge tanks c/w low level shutdowns and "automotive" pressure caps.

Intake & Exhaust System

- High air intake manifold temperature shutdown.
- Air intake piping c/w sliding warm air mixing valves from cooler plenum.
- Hospital grade exhaust silencer piped to 1.5 times peak height of building from grade level c/w flex connector and sampling point.
- Interior piping insulation c/w flex connector, 2" air gap, 2" of insulation, SS inner liner and aluminium outer liner.

Fuel & Start Gas System

- 1½"-npt skid edge connection for 100 to 120 psig max (or 40 to 60 psig max) dry clean customer supplied fuel/start gas c/w relief valve (vented to flare header).
- 6.625" O.D x 42" S/S fuel gas filter separator rated 230 psig @ 300 deg F c/w removable element, level gauge and manual drain piped to scrubber drain manifold.
- Fuel gas piping c/w isolation ball valve, low pressure regulator, pneumatic shutoff valve and steel braided flex connector (shutoff valve vented to cooler plenum).
- Start gas piping c/w isolation ball valve, pneumatic shutoff valve, steel braided flex connector and turbine gas starter (starter vented to building eave).

SULLAIR PC25 COMPRESSOR UTILITY

Drive

- Direct driven via a flexible spacer type drive coupling.
- Compressor vibration protection c/w vibration switch.

Lubrication

- Compressor driven continuous oil pump for bearing lubrication, cooling and filtration c/w oil pressure regulating valve.
- Differential pressure driven oil system for main rotor lubrication, cooling and filtration.
- Indirect oil cooling via ASME Code shell and tube lube oil cooler c/w thermostatically controlled lube oil bypass/mixing valve and full port isolation ball valves.
- CLOW cooling circuit c/w engine driven glycol circulation pump, pulleys, belts and idler arm (combined with TAW cooling circuit for turbo-charged engines only).
- All flanged compressor oil utility piping is built in accordance with ASME B31.3 and, after final assembly, the entire system is shop air leak tested to 120 psig.
- Primary full flow oil filtration via one Y-strainer (100 mesh removable stainless steel element) c/w full port isolation ball valves, differential pressure indication for cleaning and provision for future installation of a secondary Y-strainer (to allow cleaning "on-the-fly").
- Secondary bearing oil filtration via one filter assembly (25 micron replaceable filter element) c/w full port isolation ball valves, differential pressure indication for replacement and provision for future installation of a secondary filter (to allow for replacement "on-the-fly").

Capacity Control

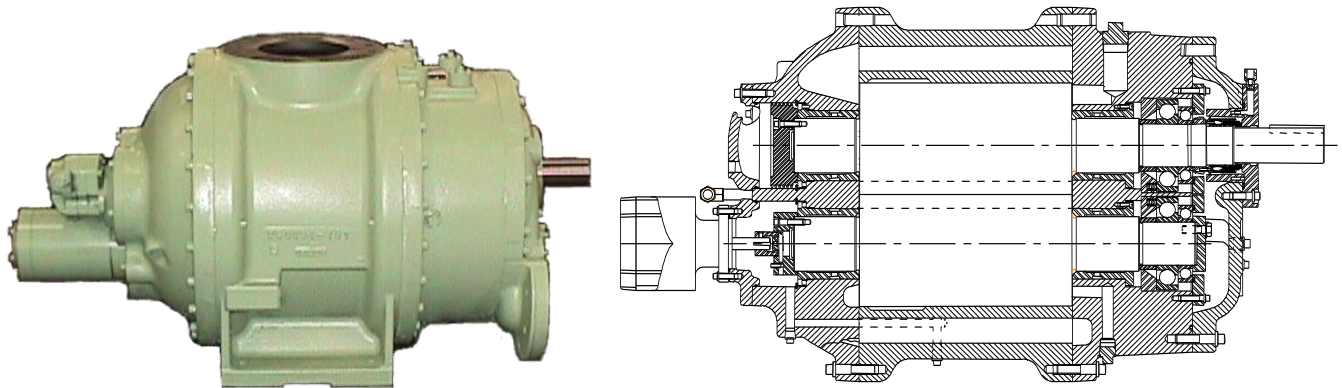
- Automated stepless, hydraulically actuated capacity control slide valve c/w pneumatic loading pump, load/unload solenoids and potentiometer position indicator.



PC25S, M, and L

ROTARY SCREW GAS COMPRESSOR

- Rotors:** Ground asymmetric profile for optimal combination of capacity and power. Rotor speed range: 15 M/s to 50 M/s on male rotor tip. S=1.15 L/D, M=1.25 L/D, and L =1.7 L/D.
- Discharge:** Several built-in volume ratios allow selection to pressure ratio requirements. Volume ratios: 2.2, 2.6, 3.7, and 4.8 (field changeable upon request).
- Casing:** Heavy-duty 450 psig double-wall cast iron casing for structural rigidity, pressure integrity, and low noise (10"-600#RF inlet and 6"-300#RF outlet).
- Shaft:** Ductile iron shaft can be coupled to the driver with keyed fit, mechanical locking or shrink-fit coupling hub.
- Shaft Seal:** High-temperature metallized carbon shaft seal with tungsten face and Viton elastomers. Flange-mounted for easy maintenance. Oil-cooled for long life.
- Bearings:** All-steel Angular contact thrust bearing (no plastic or "yellow metal" cages) radial loads are carried by plain journal bearings. Thrust loads are balanced by non contacting balance pistons.
- Control:** Capacity control via slide valve which allows gas that has been only slightly compressed to bypass back into the suction head. Capacity can be manually adjusted or automatically controlled based on pressure signal down to as low as 10% of full load capacity.
- Oil Pump:** Rotor driven oil pump available.
- Weight:** PC25S 2550 Lbs. PC25M 2640 Lbs. PC25L 3000 Lbs.



Continuous improvement by Sullair Corporation may result in changes to these published specifications.

Such changes are made without liability regarding product currently in service.

SOUR COOLER

Criteria	Standard
Manufacturer	Air Cooled Exchangers, Inc.
Model	J96-14
Flow	Induced
Registration	AB, BC & SK
Ambient	90 °F

General

- Cooler vibration protection c/w vibration switch.
- Cooler is engine driven via a belt drive system c/w pulleys, sheaves and mounted slide idler.
- Inlet bug screen frame c/w soft removable panels.
- Top mounted discharge hail guard.
- Standard enamel primer and warm grey paint.

Water Sections

- Two sets standard manual discharge (inlet for induced) shutters tied together c/w single grade manual level operator.
- SA214 tubing.
- 1"-npt connection opposite each discharge nozzle.

Gas Sections

- One set standard discharge (inlet for induced) shutters c/w single air motor with temperature controller maintaining an AC discharge temperature of 120 deg F.
- SA179 tubing.
- 0.1250" corrosion allowance.
- 100% UT c/w x-ray of nozzle butt welds.
- PWHT.
- 1"-npt thermowell connection opposite each discharge nozzle.

Fan

- Moore 8 blade.

SOUR PRESSURE VESSELS

General Design

The mechanical design, materials of construction, fabrication, inspection, testing, certification (ASME code stamp), installation and safety aspects of operation and maintenance are in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, Pressure Vessels Division I, latest revisions. Final design and accessory selections are subject to engineering revision. General pressure vessel design criteria are as follows:

Criteria	Standard
Corrosion Allowance	0.1250"
NDT	Full radiography per ASME Code UW-11(a), RT-1
PWHT	1150 deg F \pm 25 deg F for 1 hour (or more depending on material thickness)
Hydro-Testing	1.3 x design pressure
Cleaning	Pickled and internally rust protected
Registration	AB

Suction Scrubber

The following scrubbers are typically designed to API 11P Scrubber Service Class A and should not be used for primary gas/liquid separation where liquids may be present:

Purpose	Size	Design
Suction Scrubber	24" O.D. x 78" S/S	450 psig @ 300 °F

Scrubbers will be provided with auxiliary equipment as follows:

Purpose	End Device
Mesh	6" thick 316SS
High Level Shutdown	2"-npt Linc 471-11 (NACE)
Level Control	2"-npt Linc 282-11-10 (NACE)
Auto-Dump Valve	1"-npt Fisher D2 (NACE as Standard)
Manual Dump Valve	1"-npt RP Ball Valve (NACE)
Level Gauge	3/4"-npt c/w Quality Reflex, Iso Cocks & 1/2"-npt RP Drain Ball Valve (NACE)

Dry Gas Filter

Provision only for future installation. Dry gas filters are designed for dry particulate removal only and should not be used where liquids are present.

Oil Separator

Oil Separators are designed for gas/lubricant separation after compression.

Purpose	Size	Design
Oil Separator	30" O.D. x 90" S/S	450 psig @ 300 °F

Oil Separators will be provided with auxiliary equipment as follows:

Purpose	End Device
Mesh	6" thick 316SS
Filters	Coalescing Elements
Fill Connection	1 to 2"-npt (Plugged)
Level Gauge	3/4"-npt c/w Quality Reflex, Iso Cocks & 1/2"-npt RP Drain Ball Valve (NACE)

SOUR PROCESS PIPING

Process Piping System

Process piping sizes are as follows:

Start	Finish	Size/ANSI
Skid Edge Suction (Compressor End)	Compressor Inlet	8"-300#RF
Compressor Discharge	Oil Separator Inlet	4"-300#RF
Oil Separator Outlet	Skid Edge Discharge (Compressor End)	4"-300#RF
Final Discharge	Manual Bypass Valve	2"-300#RF
Manual Bypass Valve	Initial Suction	2"-300#RF
Flare Header	Skid Edge Discharge (Compressor End)	3"-150#RF

Process piping is fabricated as follows:

- Designed in accordance with ASME B31.3 (Normal) gas specification.
- 0.1250" corrosion allowance.
- 100% x-ray of butt welds.
- PWHT at 1150 deg F + 25 deg F for 1 hour (or more depending on material thickness).
- Hydro tested to 1.5 times design pressure at ambient.
- All flanges to be ASTM-SA-105N, RFWN c/w 316 SS spiral wound gaskets, SA-193-B7M studs and SA-194-2HM nuts.
- Process screwed connections to be minimum 3000# F.S. threadolets.
- Suction piping spools for all stages c/w cone screen and 1½"-npt inspection opening.
- Piping to be anchored to structural members with Bidell standard type heavy duty clamps (no "U" bolt types)

Suction Pressure Control

- Provision only for future installation of a 4"-300#RF "V-ball" suction pressure control valve.

Bypass System

- One 2"-NPT regular port manual ball bypass valve.

Back Pressure Control

- Provision only for future installation of a 3"-300#RF "V-ball" back pressure control valve.

Check Valves

- One 8"-300#RF spring loaded dual flapper wafer suction check valve.

Blowdown System

- One 1"-npt full port manual ball blowdown valve piped to the high pressure vent header.

Relief System

- Flanged discharge relief valve piped to the flare header.

PACKAGING

Skid & Storage Tanks

- A heavy structural steel skid suitable for gravel pad, piles or concrete slab mounting.
- Engine and compressor mounted on main beams with machined blocks or universal, adjustable steel chocks.
- 18" @ 55 lbs./ft wide flange main beam.
- 6" @ 20 lbs./ft wide flange support stringers.
- Concrete filled center section under engine and compressor for additional strength and mass.
- Seal welded environmental flatpans in wings c/w 1" grating and 1½"-npt drains (plugged).
- Complete skid priming prior to installation of equipment.
- Live roll lifting points at the cooler end for loading and unloading.
- A hollow structural steel outboard skid wing tank for waste oil storage c/w 2"-NPT pump out connection and vent to building eave.

Maintenance Crane

- Provision only for one 2 ton maintenance crane.

Oil Make Up Tanks

- One 55 U.S. gallon engine/compressor clean oil make up tank c/w level sight glass, block valve, fill valve, vent and tubing to level controllers/shutdowns.

Personnel Guards

- Drive coupling is enclosed with a removable gauge plate guards bolted to the skid base for maintenance.
- Cooler belt drive is enclosed with a removable personnel guard for maintenance.

Painting

- Completed package will receive one coat of shop standard lead free primer and warm grey enamel paint.

Testing

- Completed package will receive a "loaded" shop test run (air for screws).
- Control panel will receive a point to point check of all hook ups and shutdowns.

Fluids

- The unit will ship with an initial charge of oil and glycol (excluding make up tanks).

Manuals & Drawings

- One hard copy and one CD-ROM unit manual c/w drawings are included.
- Additional manuals are available upon request.



Power Ignition and Controls Automation Solutions

REMOVUE-500 MICRO COMPRESSOR CONTROL SYSTEM

General Design

One Spartan compressor control panel suitable for:

- 24VDC customer power
- Inland, indoor, on-skid location
- Panel approved/labeled CSA Class 1, Div 2, Group C & D

REMOVue-500micro programmable and configurable system:

- 512kB static RAM, battery-backed
- 20 discrete inputs (maximum 20)
- 8 discrete outputs (maximum 8)
- 8 analog (4-20mA) inputs (maximum 12)
- 4 analog (4-20mA) outputs (maximum 4)
- 8 thermocouple inputs (maximum 24)
- Non-incendive skid discrete input barriers are included

Communications

The REMVue-500micro comes c/w three communications ports. All can be configured Master or Slave.

- Main Port #1(Ethernet)-remote communications
- Main Port #2(Modbus RS422/485)-remote communications
- Local Port (RS232)-HMI

Operator Interface

One 5.7" blue monochrome touchscreen HMI with the following screens:

- Main
- Overview
- Alarm (128 entries)
- Setpoint entry

Programming

- Spartan Controls standard compressor operating system programming and HMI configuration.

Control Cabinet

- 60"H x 24"W x 16"D with 15"H stand
- Single front access door
- NEMA 12, carbon steel painted Spartan Controls blue
- Maintained ESD pushbutton

BUILDING

General

Criteria	Standard
Estimated Dimensions	19'-0" Long x 17'6" Wide x 10'6" Eave
Type of Building	Self Framing Gable
Exterior Wall & Roof Panels (22 ga min)	Galvalume
Roof Slope	4:12
Wall & Roof Insulation	R-12
Doors (20 ga metal & insulated)	(2) 6'x7' Double c/w (1) wire glazed window
Windows (single glazed horz sliding c/w screen)	(2) 40"x40"
Liner	24 ga Fluted Aluminum
Wall Louvers	(2) 18"x32" adjustable c/w manual control & screen
Ridge Ventilator	Full Length c/w manual controls & bird screen
Polyethylene Barrier	4 Mil
Eavestroughs	Optional
Downspouts	Optional
Ice Rakes	Included

Design Loads

- Design loads are based upon Calgary, Alberta and the latest edition of the Alberta Building Code

Heaters

- Two 16,000 BTU catadyne heaters c/w 120VAC (wiring by customer) and thermostats.

CERTIFIED SURPLUS COMPRESSORS

Every used package provided undergoes a comprehensive inspection and comes with our Certified Service Report with recommendations.

The following is supplied with every Certified package:

- All filters will be replaced;
- All belts will be replaced;
- Every end device will be inspected and reported;
- Pillow blocks on the cooler shaft will be replaced;
- Engine and Compressor fluids will be replaced;
- Service recommendations for the package;
- Package modification recommendations for optimization of client specific conditions;
- Visual inspection of all pressure containing components as well as a spot corrosion survey of pressure vessels and cooler header boxes;
- Quality Control / Quality Assurance inspections and review of package documentation.

All Certified packages are supported by our extensive experience in the Engineering, Design and Service groups.

We are providing this unit "As Is" and Certified with the exception of the modifications listed in the commercial section of this proposal. We have also provided standard options for your review. All assumptions for this offer have been based on the current known state of the package.

COMPRESSOR PERFORMANCE

Please see the attached performance curves for operating ranges. If additional curves or performance ranges are required, please contact your Representative.

Designs are based on pressures measured at the compressor suction and discharge flanges and includes a pressure drop for each stage from the compressor discharge through the cooler, suction scrubber to the next cylinder or skid edge. This is based on maximum engine rated speed.

The following performance is typically accurate to:

- +/- 3% with a specific gravity between 0.5 and 0.8.
- +/- 6% with a specific gravity greater than 0.8 or less than 0.5
- *Note - The horsepower specified is at the elevation and ambient temperature specified on the performance data printouts. Please consult for any conditions outside the stated elevation and ambient temperature.
- As a suitable fuel gas analysis has not been provided, no adjustments for fuel quality have been included. Please be advised the purchaser is responsible for providing a suitable fuel gas analysis prior to start-up to determine any applicable engine de-rating.