



**KelairPumps**

# PumpAction..... Issue 47 Feb 08

## Case Study

### Sandpipers very cool in central Queensland mine

Sales Engineer Myro Bratkovic QLD

The mining industry has been very innovative in its approach to pumps and pumping equipment. Kelair Pumps Australia was recently contacted by CQuip Mackay who was asked to supply a number of pumping packages to one of the Central Queensland's open-cut mines.

CQuip's client was requesting air-powered diaphragm pumps to supply radiator coolant for the large haul trucks when being serviced. One package was for pumps to be skid-mounted for workshop duties and the other for mobile use on trailers.

The design, packaging and assembly was provided for the mine by CQuip.

Based on the requested flow rate, Myro Bratkovic from Kelair's newest



branch office in Mackay chose the Sandpiper S1F Metallic pumps for the duty. The Sandpiper S1F pumps' maximum flow rate easily meets and



exceeds the mine's requirements. In fact the pumps are regulated back

to provide a safe and manageable delivery rate to adhere to the engine manufacturer's recommended radiator filling rate.

The lube-free operation of the Sandpiper pump air system also made it very attractive for the mine by eliminating the need for additional air side support components like a lubricator. The non-stalling design of the Sandpiper air system means that the client is assured that the Sandpiper pump will start pumping each time.

The pictures show one of the Sandpiper pumps mounted on the "workshop" skid and being prepared for testing at CQuip's workshop prior to delivery where it will draw coolant from a 1000L bulk container.

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## Selecting the best elastomer material for Sandpiper A0DDP's

Experience is always the best guide of the best elastomer materials for air powered double diaphragm pumps. In the absence of previous experience, elastomer materials should be selected from the many available resistance charts including the;

[Sandpiper Chemical Resistance Chart](#)

These charts are only intended to be used as a guide. It may be prudent to check compatibility by immersing test pieces in

the liquid to be pumped, and measure for any changes in dimensions.

This diaphragm life is dependent on many application parameters including the following:

- chemical compatibility with the liquid
- flex life of the diaphragm material (may be temperature dependent)
- abrasiveness of the liquid
- temperature of the liquid (different temperatures may affect chemical resistance)
- size of diaphragm
- suction lift (if applicable)

Pump manufacturers test for mechanical flex life generally by fully immersing the diaphragm in room temperature water and mechanically flexing the diaphragm and counting the number of flexes before the diaphragm fails.

From factory testing in water, it can be concluded that Neoprene and Santoprene diaphragms provide the best flex life and should generally be used unless the chemical resistance charts show them

to be totally unsatisfactory. Even though Buna, EPDM, Teflon® and Viton® may show superior chemical resistance ratings, if chemical impact on Neoprene or Santoprene is minor, it will probably be the most economical choice on a "cost of diaphragms per volume pumped" basis.

This is particularly relevant for Viton® diaphragms due to cost being about six times and mechanical flex life being

**Sandpiper Features and Benefits**

- Non-stalling guarantee
- Cross-drilled technology, to eliminate stalling
- ESADS (Externally Serviceable Air Distribution System, allowing repair of pump without removing from pipeline)
- Fully-bolted design, minimising repair time and reducing maintenance cost
- Lubrication-free, eliminates requirement for lubricators, reducing initial cost and maintenance cost

about one third that of Neoprene. Viton® should only be considered for aggressive media at extreme temperatures if Neoprene, Buna, EPDM and Teflon® show an unsatisfactory rating.

These guidelines do not hold for valve ball material selection. The diaphragms are securely gripped between the inner and outer

pistons and 20% swell can occur without causing any serious trouble. If the valve balls swell even a very small amount, they may not function properly. Therefore, there will be cases where Neoprene diaphragms may be the best selection but valve ball material maybe different.

Temperature limits are based upon mechanical

stress only. Certain chemicals will significantly reduce maximum safe operating temperatures.

Consult engineering guides for chemical compatibility and temperature limits.

**Case Study**

**Viking pumps steam ahead in asphalt and bitumen**

Sales Engineer Anthony Sidawi NSW

Recently, one of Australia's biggest bitumen companies decided to standardise its bitumen pumps to Kelair's Viking Q224a's to minimise stock spares. The Q224a pumps are supplied with jacketed bracket and jacketed relief valve.

Kelair's sales engineer Anthony Sidawi worked very closely with the company resulting in the installation of many 4" Q224a's.

The pump is constructed from cast iron casing, steel idler rotor and shaft, hardened steel idler pin and bronze bushing with packed gland shaft seal.

Viking has supplied steam-jacketed pumps to the asphalt and bitumen industries since 1933. Working with asphalt and bitumen professionals worldwide, Viking has analysed how different asphalt and bitumen affects pump performance. Looking even further, Viking minimised its pumps' impact on bitumen and asphalt characteristics and performance.

Kelair has worked closely for many years with Viking thus its sales and applications engineers have expertise in selection, installation, commissioning, operation and service of any Viking gear pump application.

For each unique type of asphalt or bitumen application, Viking and Kelair have a unique pumping solution. This knowledge-base provides field-tested operation speeds, clearances, materials and options that ensure the success of the application.

Viking offers two series of asphalt pumps:

- General purpose pumps 34 series
- Heavy duty pumps 224a series

**General purpose Asphalt pump**

For low pressure transfer of clean blended asphalt. Viking / Kelair offer jacketed general purpose asphalt pumps. The floating rotor on these pumps is a simple, economical design. Options include:

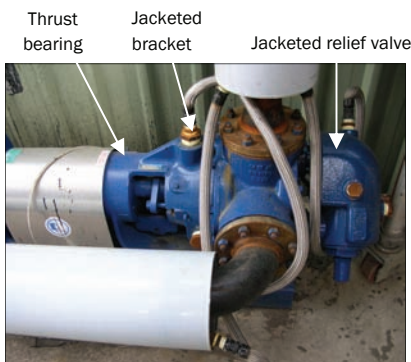
- Packed lip seal or mechanical seals
- Cast iron construction
- Steel fitted for high viscosities
- 6 different sizes that start from 1½" to 5"

**Heavy duty asphalt pump**

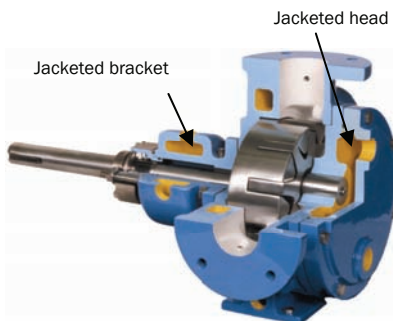
For emulsions, filled asphalts, high pressure and refinery applications, Viking heavy duty jacketed pumps feature a thrust bearing that fixes the rotor position in the head, so users can set precise clearances and compensate for wear over time.

Options include:

- Universal seal pump with a three year limited warranty. Allows changing from packing to component seals or cartridge seal in the field
- Behind the rotor seal option
- Steel, ductile iron or cast iron construction
- Special bushing materials and hardened parts
- 21 different sizes that start from 1½" to 8"



**Heavy Duty Asphalt Pump**



**General Purpose Asphalt Pump**



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