DURAPAC
ENGINEERED FOR RELIABILITY

Instruction Manual

Rotary Air Hydraulic Power Unit
Model – DPR-223S

Maximum Operating Pressure – 700 bar

ABSOLUTE EQUIPMENT PTY LTD – 2/186 Granite Street, GEEBUNG QLD 4034 – Australia
sales@absoluteequipment.com.au – Phone: +61 7 3865 4006 – Fax: +61 7 3102 6288

This is a safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid injury or death

1.0 Product Information

DURAPAC – Rotary Air Hydraulic Power Units are engineered to meet Industrial Standards for Performance and Safety. The DPR-223S model is a two speed, high performance pump design that is ideally suited to applications where air is the preferred power source. The power units feature a Gast® heavy duty air motor and an 11 litre usable oil reservoir. They have a 3 way/3 position solenoid valve for Advance/Hold/Retract of a single acting cylinder/tool.

The unique hydraulic circuit allows the quick displacement of hydraulic fluid under no load conditions and easy pumping in loaded conditions. These air actuated power units supply compressed hydraulic fluid to a compatible single-acting cylinder, anywhere that 700 bar of fluid pressure is needed.

Special skill, knowledge and training may be required for a specific task and the product may not be suitable for all jobs. The user must ultimately make the decision regarding suitability of the product for any given task and assume the responsibility of safety for all in the work area. Contact a Durapac representative if you are unsure of your power unit's suitability for a particular application.

2.0 Receiving Instructions

It is recommended prior to use that an inspection be done by qualified personnel and that any missing or damaged parts, decals, warning/safety labels or signs are replaced with Durapac authorised replacement parts only. Any power unit that appears to be damaged in any way, is worn, leaking or operates abnormally should be removed from service immediately until such time as repairs can be made. Any power unit that has been or suspected to have been subject to a shock load should be removed from service immediately until inspected by a Durapac authorised service centre. Owners and operators of this equipment should be aware that the use and subsequent repair of this equipment may require specialised training and knowledge.

3.0 Safety

Save these instructions. For your safety, read and understand the information contained within. The owner and operator should have an understanding of this product and safe operating procedures before attempting to use this product. Instructions and safety information should be conveyed in the operator's native language before use of this product is authorised. Make certain that the operator thoroughly understands the inherent dangers associated with the use and misuse of the product. If any doubt exists as to the safe and proper use of this product as outlined in this factory authorised manual, remove from service immediately.

DANGER:

- To avoid personal injury keep hands and feet away from work area during operation
- **Do NOT** handle pressurized hoses. Escaping oil under pressure can penetrate the skin causing serious injury. If oil is injected under the skin, see a doctor immediately

- Stay clear of loads supported by hydraulics. A cylinder, when used as a load lifting device, should never be used as a load holding device. After the load has been raised or lowered, it must always be supported mechanically

WARNING:

- The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Install pressure gauges in the system to monitor operating pressure. It is your window to what is happening in the system
- Always wear appropriate personal protective equipment (PPE) when operating hydraulic equipment. The operator must take precaution against injury due to failure of the tool or work piece(s)
- **Do NOT** hold or stand directly in line with any hydraulic connections while pressurising
- **Do NOT** attempt to disconnect hydraulic connections under pressure. Release all line pressure before disconnecting hoses
- All personnel must be clear before lowering load or depressurising the system
- **Do NOT** attempt to lift a load weighing more than the capacity of the cylinder

IMPORTANT:

- If at any stage, the safety related decals become hard to read, these must be replaced
- Minimum age of the operator must be 18 years. The operator must have read and understood all instructions, safety issues, cautions and warnings before starting to operate the equipment. The operator is responsible for this activity towards other persons
- **Do NOT** lift hydraulic equipment by the hoses or couplers. Use the carrying handle or other means of safe transport
- Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the Durapac authorised service centre in your area. To protect your warranty, use only high quality hydraulic oil

CAUTION:

- **KEEP HYDRAULIC EQUIPMENT AWAY FROM FLAMES AND HEAT.** Hydraulic fluid can ignite and burn. Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weakens hose materials and packings. For optimum performance do not expose equipment to temperatures of 65°C (150°F) or higher. Protect all equipment from weld spatter
- No alteration should be made to this device

3.1 Hydraulic Power Units

- **Do** use a gauge or other load measuring instrument to verify load
- **Do NOT** exceed the rated capacity of the power unit or any equipment in the system. Burst hazard exists if connection pressure exceeds rated pressure
- **Do NOT** operate the system with bent or damaged couplers or damaged threads
- **Do NOT** subject the power unit and its components to shock loads

- Use only Durapac approved accessories and components
- **Do NOT** connect to an application which can return more oil to the reservoir than the power unit reservoir can hold
- **Do NOT** connect power unit to a hydraulic system that is powered by another pump

3.2 Hydraulic Hoses & Fluid Transmission Lines

- Avoid short runs of straight line tubing. Straight line runs do not provide for expansion and contraction due to pressure and/or temperature changes
- Reduce stress in tube lines. Long tubing runs should be supported by brackets or clips. Before operating the power unit, tighten all hose connections with proper tools. Do not over tighten. Connections should be tightened securely and leak-free. Over tightening can cause premature thread failure or high pressure fittings to burst
- Should a hydraulic hose ever rupture, burst or need to be disconnected, immediately shut off the power unit and release all pressure. Never attempt to grasp a leaking pressurised hose with your hands. The force of escaping hydraulic fluid can inflict injury
- **Do NOT** subject the hose to potential hazard such as fire, sharp objects, extreme heat or cold or heavy impact
- **Do NOT** allow the hose to kink, twist, curl, crush, cut or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear
- Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as battery acid, creosote-impregnated objects and wet paint. Never paint a coupler or hose

FAILURE TO HEED THESE WARNINGS MAY RESULT IN PERSONAL INJURY AS WELL AS PROPERTY DAMAGE.

4.0 Installation

IMPORTANT:

- This power unit is for use with a single-acting cylinder ONLY! Connect a hose from the power unit's oil output port to the input port of a single-acting application such as a cylinder. Block the unused subplate port securely. This model **cannot** be used with a double-acting cylinder
- Always secure threaded port connections with high grade, non-hardening pipe thread sealant. Teflon tape can be used if only one layer of tape is used and it is applied carefully, two threads back, to prevent the tape from being introduced into hydraulic system, which could cause jamming of precision-fit parts
- To extend the life of your power unit, the air compressor should have a filter, regulator and lubricator system that will provide clean, lubricated air to the power unit. Contact your Durapac representative for the necessary accessories

4.1 Familiarise yourself with the specifications and illustrations in this owner's manual. Know your power unit, its limitations and how it operates before attempting to use. Refer to the specification chart below for details of oil port thread size, usable oil capacity, and more. If in doubt, contact a Durapac representative.

Model Number	Used with Cylinder	Oil Port Thread (2x)	Air Pressure Range (bar)	Air Consumption (Lpm)	Max. Pressure Rating (bar)	Pressure Rating (bar)		Oil Output Flow Rate (Lpm)		Valve Type	Motor Size (kW)	Weight (kg)
						1st Stage	2nd Stage	1st Stage	2nd Stage			
DPR-223S	S/A	3/8"NPTF	4.1 - 5.6	1,246	700	48	700	6.8	0.36	Solenoid 3W/3P	1.27	32

4.2 Check all system fittings and connections to be sure they are tight and leak free.

4.3 Replace shipping plug with air vent plug before use.

4.4 **Hydraulic Connection:** Connect oil output port to suitable fittings and application/cylinder.

4.5 **Air Connection**: After making the necessary hydraulic connections above, connect suitable air supply to air input connection. Ensure that your air source can dedicate 1,246 Lpm @ a range of 4.1 – 5.6 bar for rated capacity performance.

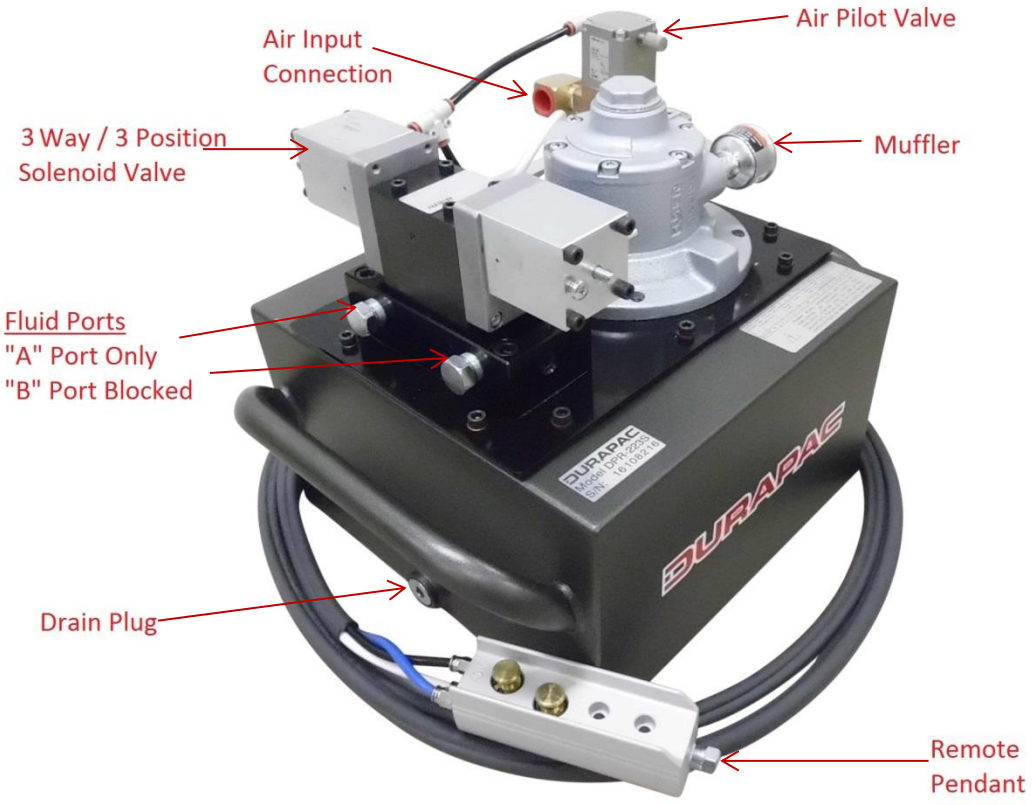

Figure 1 - DPR-223S Components

4.6 **Remove air from the power unit** – Air can accumulate in the hydraulic system during the initial setup or after prolonged use, causing the cylinder to respond slowly or in an unstable manner. Should removal of air from pump be required, please follow the steps in 6.2 – Bleeding Air from the System in the Maintenance Section.

4.7 Check oil level in reservoir before operating power unit.

5.0 Operation

IMPORTANT:

- Always monitor pressure, load or position using suitable equipment. Pressure may be monitored by means of an optional manifold and gauge. Do not load a hydraulic application (cylinder, spreader, etc) to more than 80% of its rated capacity. Load may be monitored by means of a load cell and digital indicator. Correct application position can only be determined by the operator of the equipment
- **Do NOT** operate a power unit that is disconnected from the application. If operated in this condition, the hose and connections will become pressurised. This increases the chance of a burst hazard. Damage may also occur to the power unit and its components

5.1 To Direct Fluid to and from the Application

⚠ Do not continue to operate the power unit after the cylinder piston rod is fully extended or retracted

5.1.1 Connect the air source to the air input connection.

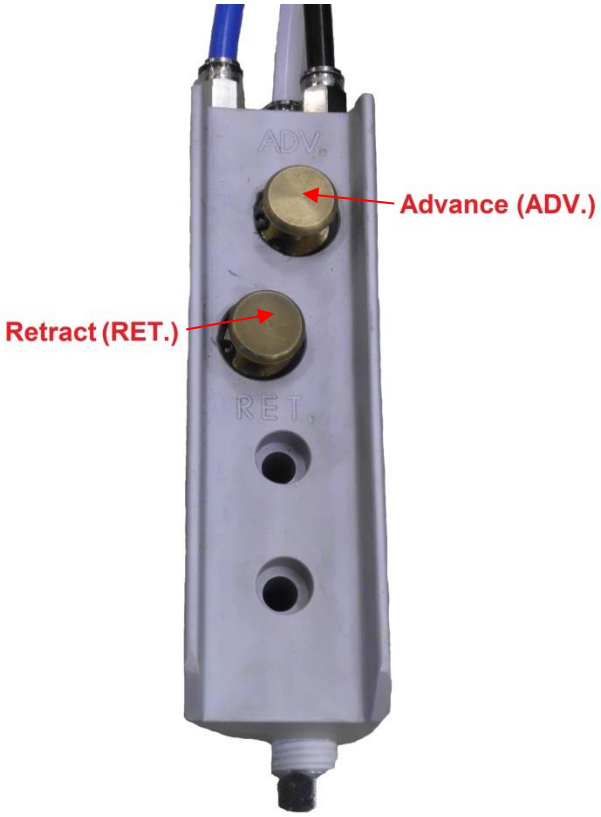

Figure 2 - DPR-223S – Remote Pendant

5.1.2 **Advance -** Press the remote pendant ADV. button (see Figure 2) to start the air motor and advance the cylinder until the desired pressure, load or position is reached. Releasing the ADV. button will stop the motor and hold the cylinder position.

5.1.3 **Retract –** Press the remote pendant RET. button (see Figure 2) to energise the retract air solenoid and retract the cylinder until the desired pressure, load or position is reached.

Note - Both air input ports use a 1/4" NPT air nipple (not included). It is recommended to install an inline air filter upstream from the power unit to provide clean, lubricated air. Contact your Durapac representative for the necessary accessories.

6.0 Maintenance

IMPORTANT:

- Check oil level regularly
- Use only good quality hydraulic fluid. **Do NOT** use brake fluid, transmission fluid, turbine oil, motor oil, alcohol, glycerine etc. Use of anything other than good quality hydraulic oil will void warranty and damage the power unit, hose, and application. We recommend Durapac Hydraulic Oil or equivalent
- Equipment must only be serviced by a qualified hydraulic technician. For repair service, contact your local Durapac authorised service centre
- Damage to hydraulic hoses may not be detected during visual inspections. For this reason, Durapac recommends that hydraulic hoses be replaced on a regular basis
- Tighten connections as needed. Use non-hardening pipe thread compound when servicing connections

Dirt, sand, etc. will quickly ruin any hydraulic system. Ensure that couplings are clean and free of foreign matter. After each use, clean couplings and attach dust caps.

Maintenance is required when wear or leakage is noticed. Periodically inspect all components to detect any problem that may require service and maintenance.

6.1 Adding Hydraulic Fluid

⚠ WARNING: Always add oil with cylinders fully retracted (or extended, if pull cylinders) or the system will contain more oil than the reservoir can hold

6.1.1 Depressurise and disconnect hydraulic hose from application/cylinder.

6.1.2 With the power unit in an upright, horizontal position, remove the air vent plug located on the top plate of the reservoir.

6.1.3 Use a small funnel to fill the reservoir to within 19mm (3/4") of the opening.

6.1.4 Bleed air from system if necessary.

6.1.5 Wipe up any spilled fluid and reinstall the air vent plug/reservoir cap.

6.2 Bleeding Air from the System

6.2.1 Repeat Steps 6.1.1 to 6.1.5 (above), if required.

6.2.2 Invert cylinder and place at a lower level than the power unit reservoir.

6.2.3 Extend and retract the cylinder several times without putting a load on the system. Air will be released into the power unit reservoir.

6.2.4 Recheck oil level after removing air.

6.3 Changing Hydraulic Fluid

⚠ For best results, change fluid once a year or every 300 hours of use

6.3.1 Repeat Steps 6.1.1 to 6.1.2 (above).

6.3.2 Pour used fluid into a sealable container.

6.3.3 Repeat Steps 6.1.3 to 6.1.5 (above).

6.3.4 Dispose of fluid in accordance with local regulations.

6.4 Lubrication

When power unit is operated on a daily basis, it is recommended that an inline oiler and air dryer is installed and SAE grade oil (5W to 30W) is used.

6.5 Storage

6.5.1 When not in use, depressurise and disconnect the hydraulic power unit from the application.

6.5.2 Wipe clean thoroughly and store in a clean, dry environment. Avoid temperature extremes.

6.5.3 For transportation or long storage, replace the air vent plug with shipping plug.

6.5.4 Shield power unit with a protective cover.

7.0 Troubleshooting

Problem	Cause	Solution
Application does not extend, move or respond to pressurised fluid	Overload condition	• Remedy overload condition
	Loose couplers	• Tighten couplers
	Faulty couplers	• Replace couplers
	Malfunctioning power unit	• Contact a Durapac authorised service centre • Repair or replace as necessary
	Inadequate air supply	• Ensure the air source can dedicate 1246 Lpm @ a range of 4.1 – 5.6 bar for the 1.27kW power unit
Application responds to pressurised fluid, but system does not maintain pressure	Overload condition	• Remedy overload condition
	Malfunctioning power unit or valve	• Contact a Durapac authorised service centre • Repair or replace as necessary
	Leaking application/connection	• Replace application/connection
Application responds slower than normal	Loose connection or coupler	• Tighten connection or coupler
	Restricted hydraulic line or fitting	• Clean and replace if damaged
	Leaking application/connection	• Replace application/connection
Application does not return fluid to power unit (i.e. cylinder will not retract)	Malfunctioning coupler/ damaged application	• Secure load by other means • Depressurise power unit and hose • Remove coupler and/or application • Repair or replace as necessary
Application does not fully extend (cylinder or spreader)	Overfilled reservoir	• Secure load by other means • Depressurise power unit and hose • Remove application • Drain fluid to proper level
	Low fluid level in power unit	• Secure load by other means • Depressurise power unit and hose • Remove application • Fill fluid to proper level
Poor performance	Low fluid level in power unit	• Ensure proper fluid level

8.0 Control Circuit