DPU50-1VE

Hydraulic
Power Pack

Safety, Operation and Maintenance Manual

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Warning of serious injury/death or damage to equipment

Caution

Information / Helpful hints

Technical Support: -

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1. Introduction

This manual aims to provide the user with information to allow safe operation, maintenance and adjustment of the power pack.

1.1 Do not operate this equipment without reading this manual fully. Make sure you know how to use this equipment safely.

1.2 Hydraulic power packs should not be run unattended.

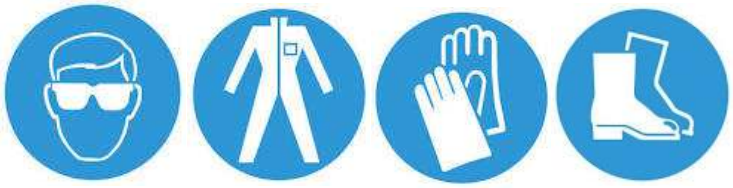
1.3 It is the buyer or user's responsibility to ensure use of the correct flow and pressure for the product being powered by the power pack.

1.4 This equipment should only be used by a competent person who has received training in hydraulics. If there are any questions or anything is not clear contact the manufacturer. Contact details on page 2.

2. Health and safety

Eye protection should always be worn

General hydraulic tool safety

HAZARD	SAFETY
All hydraulic equipment can be hazardous. This hydraulic power pack is designed to run hydraulic tools with a fluid pressure rating of 155 bar. No responsibility can be taken for running tools that have a lower pressure rating.	Always wear safety glasses and personal protective clothing and equipment. 
HYDRAULIC INJECTION **Fluid under pressure can penetrate the skin.** If there is a leak and sudden or unexpected release of fluid at high pressure and temperature, there is a risk of serious injury or death. **Beware:** The degree of injury may not be immediately apparent (HSE 2013). In the event of an accident treat as a medical emergency and see a doctor immediately.	**Always assess the risks before using hydraulic tools.** This equipment should only be used by trained and competent persons. Ensure safe working position before operating the unit. Never operate this equipment if you are ill or under the influence of alcohol or drugs. Follow the operation and maintenance instructions. Ensure that equipment is inspected and serviced at appropriate intervals. Maintain correct operation and maintenance routines. Always check the equipment and hoses for signs of wear before use.
Manual Handling.	Use the lifting points and employ safe lifting techniques. Check equipment is in good condition.
Hydraulic pressure can cause hose movement.	Never hold the hoses by hand when equipment is in use. Make sure hoses are safely positioned prior to and during use, ensuring all hoses and fittings are correctly and securely connected.
Some hydraulic fluids can explode or cause fires when ignited.	Check local regulations. Eliminate all ignition sources prior to use. Check for leaks.
Hot surfaces.	Care must be taken not to come into contact with hot or moveable hydraulic parts.

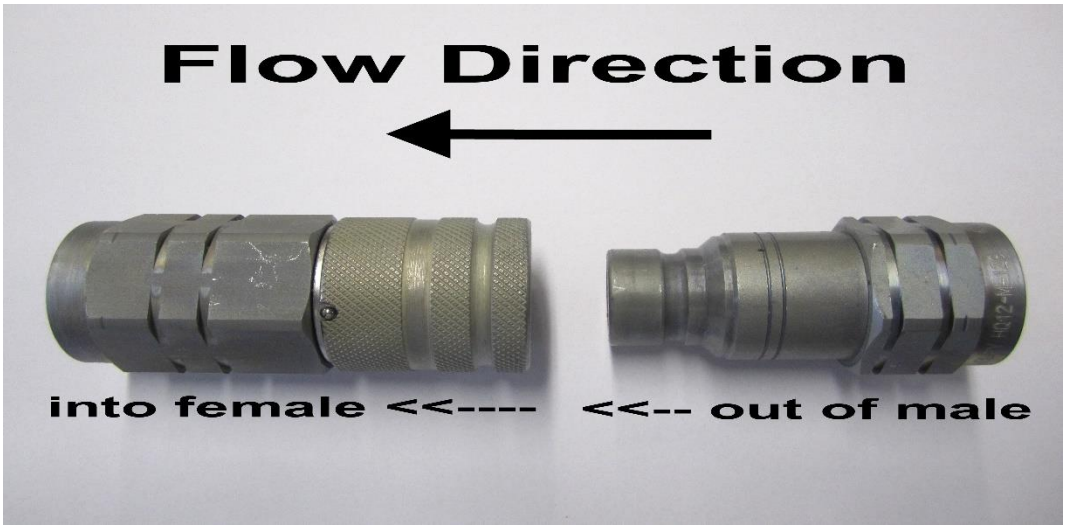
Powerpack safety

HAZARD	SAFETY
HYDRAULIC INJECTION Hydraulic fluid at high pressure could penetrate the skin causing serious injury or death. Fine jets of oil from the hose could cause injury.	Always wear eye protection and personal protective equipment. Check hoses for signs of wear and replace before use if damaged.  NEVER feel for leaks with your hands.
Risk of manual handling injury.	Always employ safe lifting techniques complying with safety regulations. Use the lifting points. Check for damage.
Risk of pollution or contamination.	Never use the tool if there is any evidence of oil leaking. Regular maintenance and servicing will reduce the risk of oil leakage.
Possible exposure to hazardous chemicals.	Always check the safety data sheets before starting any job. Use barrier cream, wear gloves and personal protective equipment to prevent skin contact. Avoid spillage. Wash hands thoroughly after use.
Sparks Risk of fire or explosion as a result of any sparks from the exhaust or electrical system.	Avoid using the power pack when there is flammable material, dust or vapor nearby. Always wear safety glasses and personal protective clothing and equipment
Exhaust gases Breathing exhaust gases can be harmful and could cause death to you and others.	Ensure good ventilation whenever the unit is being used.
Hot surfaces Potential burns, particularly from exhaust and hydraulic tank.	Do not touch the hydraulic tank, hydraulic oil or any part of the exhaust system.
Instructions for the safe use of power packs are written on the label on the unit.	Read the labels before using the unit. Renew any damaged labels prior to use.
HYDRAULIC INJECTION **Hydraulic fluid** Fine jets of fluid at high pressure can penetrate the skin.	Always wear eye protection and personal protective clothing & gloves during examination of the unit. Use cardboard close to any suspected leaks and inspect for fluid. Never put your face close to suspected leaks. Get medical help immediately if any fluid penetrates the skin.
Oil is toxic Used oil contains harmful contaminants. These have potential to cause skin cancer or death.	Always use barrier cream and wear gloves to prevent skin contact. If skin is contaminated, wash thoroughly in warm soapy water immediately. If any oil is swallowed do not induce vomiting and seek medical advice. Never use fuel or paraffin to clean your skin.
Damaged hoses can cause fatal accidents	Inspect hoses regularly, checking for chafed, ballooned, kinked or crushed covers and replace before use.

3.1 Normal operation of the Power pack

	Checklist	Comment
3.1.1	Check engine oil level	Top up as necessary. Low oil level will seriously damage the engine. Type: Synthetic Oil AGIP SINT 2000 5w-40
3.1.2	Cheque adequate fuel level	DO NOT refill with fuel with the engine running. Fire may result and cause serious injury/death.
3.1.3	Check engine coolant level	Top up with correct ratio coolant mixture.
3.1.4	Check hydraulic oil level	Top up with correct grade as necessary.
3.1.5	Check instruction labels	Replace any labels that are missing or damaged.
3.1.6	Check power pack for damage, particularly hoses and control circuits	Only perform this task when the unit is NOT running.
3.1.7	Position the power pack safely	
3.1.8	Connect hydraulic hoses between the power pack and tool before starting	

Industry convention is that oil flows out of the male (smallest) connector and returns through the female (largest) connector.



Ensure when replacing connectors that a male connector replaces male and a female connector replace female. Using the wrong connector will cause the tool to go backwards and lose significant performance and cause damage to tool.

3.2 Starting the Power pack

	Checklist	Comment
3.2.1	Ensure the Ignition switch is in the OFF position	
3.2.2	Ensure the output control lever is in the OFF position	Starting will be easier because the motor is off load
3.2.3	Ensure the engine throttle control lever is in the IDLE position	
3.2.4	Connect suitable set of hydraulic hoses to the power packs hydraulic couplers	This power pack is fitted with ¾" flat face hydraulic couplers
3.2.5	Connect couplers of other end of hydraulic hoses to the tool	Check coupler compatibility
3.2.6	If a water pump is being used, connect the water outlet hose with the flexible hose. Avoid any kinks or twists	Beware: If there are kinks or twists the hose may whip as the water comes through
3.2.7	Position the water pump outlet to discharge safely away from personnel	Potential danger from water containing stones traveling at high speed
3.2.8	Adjust the flow control valve to the LOW flow position	
3.2.9	Rotate the ignition key switch clockwise to the RUN position	A series of RED warning indicators should illuminate along with a timed YELLOW glow plug assist light
3.2.10	Once the YELLOW glow plug start assist light goes out, start the engine by turning the ignition switch further clockwise, release once started	All RED warning lights should extinguish within 1-2 seconds and GREEN ok light should illuminate and stay lit
3.2.11	Adjust the engine throttle control lever to FULL speed	
3.2.12	Adjust the hydraulic flow control valve to give the required output	Observe flow rate via hydraulic flow meter (see Note 1.)
3.2.13	Ensure the pressure filter condition gauge is indicating GREEN	If indicating RED, replace pressure filter element
3.2.14	Move the output control lever to the ON position	
3.2.15	Do not disconnect hoses with the engine running	This can cause pressure lock of hose

Notes

1. The hydraulic flow indicator will not give accurate output readings until the hydraulic oil has reached its nominal operating temperature of 45 Deg C.

3.3 Stopping the Power pack

	Checklist	Comment
3.3.1	Move the output control lever to the OFF position	
3.3.2	Move the engine throttle lever to the IDLE position	
3.3.2	Rotate the ignition key switch counter clockwise to stop the engine	
3.3.3	Wait until engine has fully stopped	
3.3.4	Disconnect the hydraulic hoses from both the power pack and hydraulic tool	
3.3.5	Check the power pack for leaks	

4. Regular Maintenance

4.1	**Daily**
4.1.1	Check hydraulic oil level (top ups as necessary)
4.1.2	Visually check all joints for leaks, use eye protection if unit is running
4.1.3	Check condition of power pack labels, replace if necessary

4.2	**Weekly or every 100 hours**
4.2.1	Complete all daily maintenance
4.2.2	Check filter condition gauge. Change filter if in red
4.2.3	Check Quick Release Connectors for leaks. Change if necessary. Always change as a pair as damage to one half can cut the seals in the other half.
4.2.4	Visually check the condition of the hoses & replace as necessary. Use eye protection.
4.2.5	Check hydraulic cooler matrix is clear (clean with compresses air if necessary).
4.2.6	Check for general site damage, which could affect the safety of the system.

4.3	**6 monthly or 1000 hours**
4.3.1	Complete all daily and weekly maintenance.
4.3.2	Drain oil.
4.3.3	Replace hydraulic pressure filter. When fitting new filter, spread some oil on the sealing O-Ring to avoid damaging the seal. Check filter condition gauge for damage.
4.3.4	Replace hydraulic oil with suitable good quality replacement. Biodegradable hydraulic oil should be synthetic oil type only. Other types will cause damage in the long term.
4.3.5	Check bolts for tightness.

4.4	Other maintenance tasks as required.

4.5	**Before carrying out any major work on the power pack disconnect the power pack from the electrical supply.**

4.6	**Engine Maintenance**
4.6.1	See engine owner's manual (supplied) for daily checks and service intervals.

5. Adjustments

Eye protection and personal protective equipment should be used. Fine jets of hydraulic fluid could be travelling at high speed and blindness, serious injury or death could result.

Before making any adjustments, check the hydraulic oil level – top up if necessary.

5.1 Adjusting the Hydraulic flow.

Whilst observing the hydraulic flowmeter rotate the flow control valve to set the required hydraulic flow. (see Note 1. on page 7)

5.2 Adjusting the Hydraulic Pressure Relief Valve.

DO NOT CLOSE THE BALL VALVE ON THE FLOW AND PRESSURE TESTER TO FULLY SHUT QUICKLY, AS IF THE RELIEF VALVE IS SET TOO HIGH, DAMAGE TO THE POWER PACK OR PERSONNEL COULD RESULT.

The setting of the relief valve should be done quickly, as leaving the power pack with the relief valve open for long periods will cause the hydraulic oil to overheat.

Hot components and hot oil can cause burns.

The function of the relief valve is to limit the maximum pressure that can be generated by the power pack. The relief valve poppet spool is held tightly closed by a strong spring; the spring is compressed by a screw which can be adjusted by use of a 5mm Allen Key. The adjusting screw is locked in place by a nut, a 13mm spanner should be used to unlock this. Ensure the units hydraulic output control is set in the OFF position then connect the flow and pressure tester to the feed and return couplings.

Set the ball valve on the flow and pressure tester to fully open and start the engine. Increase the engine throttle control to FULL speed and switch the units hydraulic output control to the ON position. Set the hydraulic flow control valve to maximum.

Slowly close the ball valve and watch both the hydraulic flow and pressure gauge.

Eye protection and skin protection should be used as fine jets of hydraulic fluid could be travelling at high speed. Blindness, serious injury or death could result.

At some point the relief valve will crack to open, this can be seen by a sudden drop in the flow on the flowmeter. As the valve is fully shut the oil will be prevented from passing through the tester. This should occur about 20bar higher than the crack open point and full hydraulic flow will take place across the relief valve. If the relief

valve is set too high, do not close the flow and pressure tester ball valve fully as this may be dangerous and will probably destroy the pressure gauge by sending the needle round the clock. This pressure is called the full relief pressure.

Open the flow and pressure testing ball valve fully, slowly close this again, as it is being closed just before the relief valve cracks open the flow and pressure tester should read:

155 bar @ 50 ltr/Min

It is important to do this with a rising pressure as when moving from the full relief valve point back down to the cracking point, it may be noticed that the flow is slightly reduced, this is because the engine may have reduced its revs slightly causing the flow to reduce.

5.3 Replacement of Hydraulic filter

The element is changed by unscrewing the Filter Bowl at the bottom of the filter, a 30mm Socket is required. Fit new Filter Element (AQA2196) and retighten to 65Nm.

6. Technical data

6.1 Weight

Power pack	Condition	
DPU50-1VE	Operational weight fully filled	740kg

6.2 Dimensions

Power pack	Dimensions	
DPU50-1VE	Length Height Width	1300 mm 1485 mm 1100 mm

6.3 Hydraulic output

Power pack	Litre/min Range
DPU50-1VE	Single circuit, variable flow 0-50 ltr/min

6.4 Hydraulic pressure

Power pack	Pressure	Bar
DPU50-1VE	Normal working pressure	155 Bar
	Full relief valve pressure	180 Bar

6.5 Hydraulic oil

Power pack		
DPU50-1VE	Hydraulic oil type	ISO32
	Reservoir Capacity	72 L

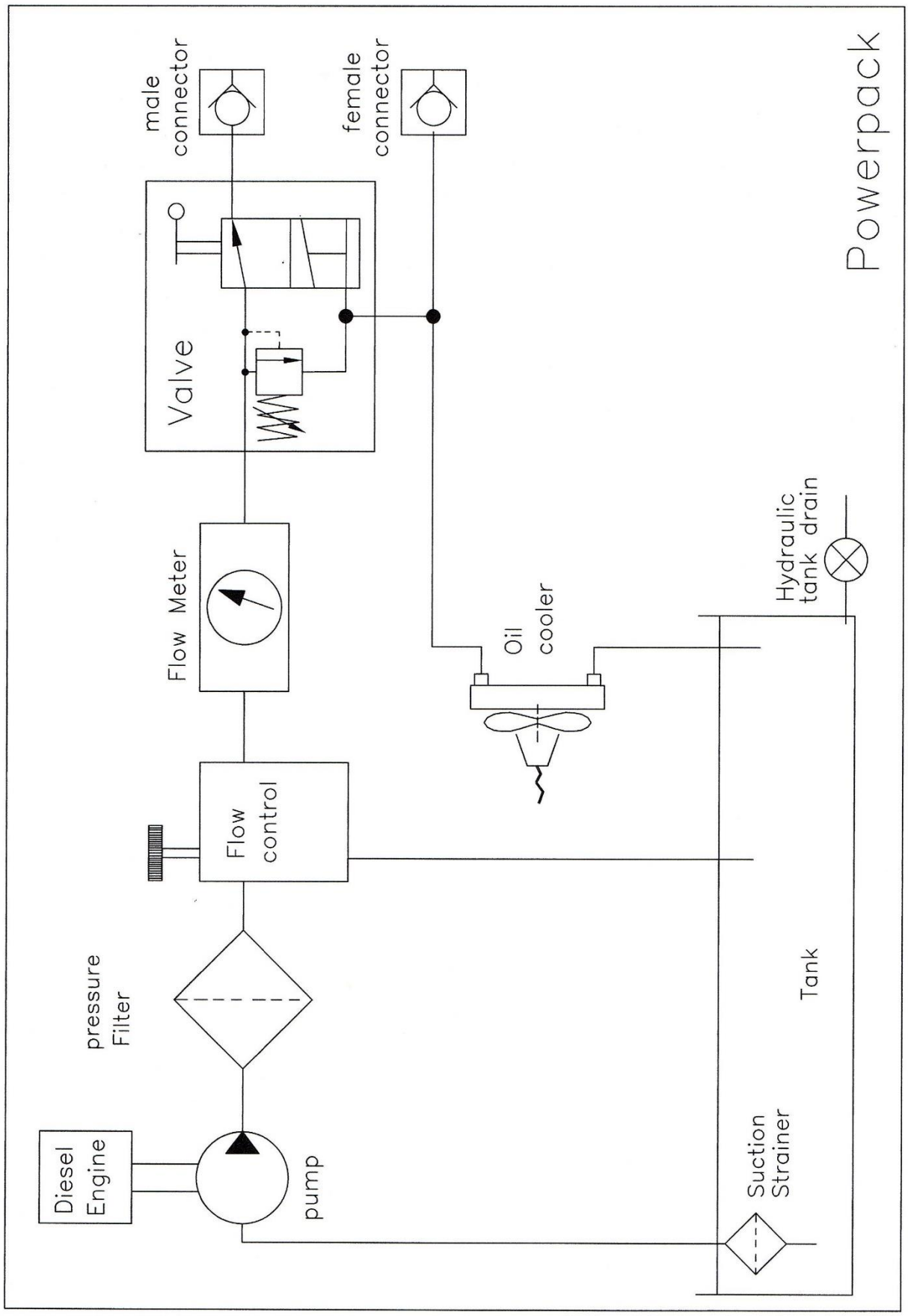
6.6 Engine

Power pack		
DPU50-1VE	Kohler KDW 1404E527 Emissions Stage 5	
Engine Oil type	Synthetic Oil AGIP SINT 2000 5W-40	

6.7 Noise Level

Power pack		
DPU50-1VE	Sound Power with full hydraulic load at 7m hemisphere	101 LWA
	Sound Pressure average at 7m	76 db(A)

6.8 Hydraulic circuit drawing



7. Spares Information

DPU50 spares

AQA2041	Hydraulic Pump
AQA2194	Valve
AQA2045	Filler Breather
AQA2191	Filter assembly
AQA2048	Level Gauge
AQA2070	Suction Hose
AQA2206	Hose Pump-Filter
AQA2069	Hose Filter-Flow control
AQA2144	Hose flow control – tank
AQA2115	Hose flow control- flowmeter
AQA2115	Hose flowmeter –valve
AQA2069	Hose valve- oil cooler
AQA2205	Hose oil cooler-tank
AQA2207	Drain hose hydraulic tank
AQA2207	Drain hose Engine Oil
AQA2191	Pressure Filter
AQA2196	Filter element
AQA2192	flow control valve
AQA2193	Flow Meter
AQA2194	On-Off Valve
AQA6023	Male Flat Face Connector
AQA6024	Female Flat Face Connector

8. WARRANTY

This product is guaranteed (subject to normal wear and tear) against defective parts and faulty workmanship for a period of 12 months from date of purchase.

It does not cover: -

Parts already covered by original equipment manufacturers own warranties already in place.

Failure of parts due to lack of maintenance and services.

Any failure due to non-genuine parts fitted.

Rubber products.

Product subjected to misuse/abuse or being neglected in any way.

Being modified in any way without prior written consent of E.C. Hopkins Ltd.

In case of disagreement between parties as to whether it is warranty or not, the failed part will be returned to the supplier for inspection at the customers cost. The findings by that supplier as to why the part failed will be binding.

With an ongoing design and development program E.C. Hopkins Ltd reserve the right to alter the design or specification of any product without prior notice.

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