

L916 Rev. O 02/04

Repair Parts Sheets for this product are available from the Enerpac web site at www.enerpac.com, or from your nearest Authorized Enerpac Service Center or Enerpac Sales office.

1.0 IMPORTANT RECEIVING INSTRUCTIONS

Visually inspect all components for shipping damage. Shipping damage is **not** covered by warranty. If shipping damage is found, notify carrier at once. The carrier is responsible for all repair and replacement costs resulting from damage in shipment.

SAFETY FIRST

2.0 SAFETY ISSUES



Read all instructions, warnings and cautions carefully. Follow all safety precautions to avoid personal injury or property damage during system operation. Enerpac cannot be responsible for damage or injury resulting from unsafe product use, lack of maintenance or incorrect product and/or system operation. Contact Enerpac when in doubt as to the safety precautions and operations. If you have never been trained on high-pressure hydraulic safety, consult your distribution or service center for a free Enerpac Hydraulic safety course.

Failure to comply with the following cautions and warnings could cause equipment damage and personal injury.

A **CAUTION** is used to indicate correct operating or maintenance procedures and practices to prevent damage to, or destruction of equipment or other property.

A **WARNING** indicates a potential danger that requires correct procedures or practices to avoid personal injury.

A **DANGER** is only used when your action or lack of action may cause serious injury or even death.



- **Check all Coupler Connections:** Make sure all coupler connections are complete. Loose or incomplete coupler connections will cause complete or partial blockage of oil flow.
- **Check all Hose Connections:** Make sure all hose connections are properly mated and secured.
- **Do Not** use excessive closing torque on valve handle or use any handle extension. This will cause unnecessary wear on valve stem and seat and may damage the spring.
- **Check for Safe System Setups:** Make sure that your valve, connecting hoses, etc. are protected from any external source of damage, such as: excessive heat, flame, moving machine parts, sharp edges, falling objects, corrosive chemicals, dripping, etc.



WARNING: Wear proper personal protective gear when operating hydraulic equipment.



WARNING: 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 blocked mechanically.



WARNING: USE ONLY RIGID PIECES TO HOLD LOADS. Carefully select steel or wood blocks that are capable of supporting the load. Never use a hydraulic cylinder as a shim or spacer in any lifting or pressing application.



DANGER: To avoid personal injury keep hands and feet away from cylinder and workpiece during operation.



WARNING: Do not exceed equipment ratings. Never attempt to lift a load weighing more than the capacity of the cylinder. Overloading causes equipment failure and possible personal injury. The cylinders are designed for a max. pressure of 700 bar [10,000 psi]. Do not connect a jack or cylinder to a pump with a higher pressure rating.



Never set the relief valve to a higher pressure than the maximum rated pressure of the pump. Higher settings may result in equipment damage and/or personal injury.



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.



CAUTION: Avoid damaging hydraulic hose. Avoid sharp bends and kinks when routing hydraulic hoses. Using a bent or kinked hose will cause severe back-pressure. Sharp bends and kinks will internally damage the hose leading to premature hose failure.



Do not drop heavy objects on hose. A sharp impact may cause internal damage to hose wire strands. Applying pressure to a damaged hose may cause it to rupture.



IMPORTANT: Do not lift hydraulic equipment by the hoses or swivel couplers. Use the carrying handle or other means of safe transport.



CAUTION: Keep hydraulic equipment away from flames and heat. 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 hoses and cylinders from weld spatter.



DANGER: 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.



WARNING: Only use hydraulic cylinders in a coupled system. Never use a cylinder with unconnected couplers. If the cylinder becomes extremely overloaded, components can fail catastrophically causing severe personal injury.



WARNING: BE SURE SETUP IS STABLE BEFORE LIFTING LOAD. Cylinders should be placed on a flat surface that can support the load. Where applicable, use a cylinder base for added stability. Do not weld or otherwise modify the cylinder to attach a base or other support.



Avoid situations where loads are not directly centered on the cylinder plunger. Off-center loads produce considerable strain on cylinders and plungers. In addition, the load may slip or fall, causing potentially dangerous results.



Distribute the load evenly across the entire saddle surface. Always use a saddle to protect the plunger.



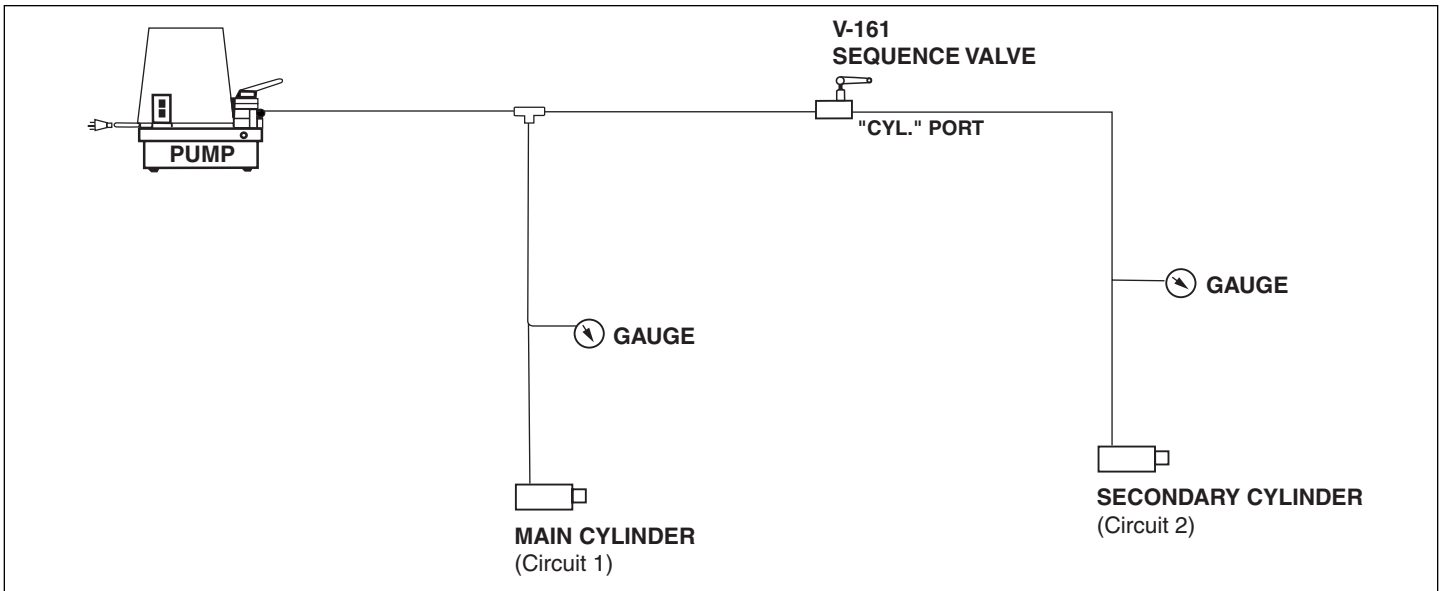
IMPORTANT: Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the Authorized ENERPAC Service Center in your area. To protect your warranty, use only ENERPAC oil.



WARNING: Immediately replace worn or damaged parts by genuine ENERPAC parts. Standard grade parts will break causing personal injury and property damage. ENERPAC parts are designed to fit properly and withstand high loads.

SEQUENCING VALVE, V-161

- Connect valve as shown, plumbing "cyl." port to sequenced cylinder.
- Adjust Sequence Valve to desired sequencing pressure. Turn sequence valve handle clockwise to increase pressure, or counterclockwise to decrease pressure.



VALVE OPERATION (Example)

With sequence valve set at desired pressure (500 psi), close valve on pump. The main cylinder will extend and the pressure will raise to the desired sequence pressure (500 psi). The sequence valve will then open at which point the pressure to both cylinders will increase until the valve on the pump is returned to neutral, or until system relief pressure is reached. (Note: the secondary cylinder pressure will be 500 psi less than main cylinder.) Open valve on pump and return system pressure to zero. Both cylinders will now retract.

DO NOT use excessive closing torque on valve handle or use any handle extension. This will cause unnecessary wear on valve stem and seat and may damage the spring.

Valve handle can be removed (loosen cap screw at end of handle) to reduce tampering with valve settings. When handles are reassembled on valve stem, make sure the cap screw is contacting flat on the stem and the cap screw is tightened securely.

PROTECT YOUR WARRANTY, USE ONLY ENERPAC HYDRAULIC OIL.

Enerpac Worldwide Locations

Africa

ENERPAC Middle East FZE
P.O. Box 18004
Jebel Ali, Dubai
United Arab Emirates
Tel: +971 (0)4 8872686
Fax: +971 (0)4 8872687

Australia

ENERPAC, Applied Power Australia Ltd.
Block V Unit 3, Regents Park Estate
391 Park Road
Regents Park NSW 2143
(P.O. Box 261) Australia
Tel: +61 297 438 988
Fax: +61 297 438 648

Brazil

Power Packer do Brasil Ltda.
Rua dos Inocentes, 587
04764-050 - Sao Paulo (SP)
Tel: +55 11 5687 2211
Fax: +55 11 5686 5583
Toll Free in Brazil:
Tel: 0800 891 5770
vendasbrasil@enerpac.com

Canada

Actuant Canada Corporation
6615 Ordan Drive, Unit 14-15
Mississauga, Ontario L5T 1X2
Tel: +1 905 564 5749
Fax: +1 905 564 0305
Toll Free:
Tel: +1 800 268 4987
Fax: +1 800 461 2456

Technical Inquiries:
techservices@enerpac.com

China

Actuant China Ltd.
1F, 269 Fute N. Road
Waigaoqiao Free Trade Zone
Pudong New District
Shanghai, 200 131 China
Tel: +86 21 5866 9099
Fax: +86 21 5866 7156

Actuant China Ltd. (Beijing)
709A Xin No. 2
Diyang Building
Dong San Huan North Rd.
Beijing City, 100028 China
Tel: +86 10 845 36166
Fax: +86 10 845 36220

Central and Eastern Europe

ENERPAC B.V.
Storkstraat 25
P.O. Box 269, 3900 AG Veenendaal
The Netherlands
Tel: +31 318 535 936
Fax: +31 318 535 951

France

ENERPAC Une division de
ACTUANT s.a.
B.P. 200
Parc d'Activités
du Moulin de Massy
F-91882 Massy CEDEX France
Tel: +33 1 601 368 68
Fax: +33 1 692 037 50

**Germany, Austria, Switzerland,
Russia and CIS (excl. Caspian Sea
Countries) ENERPAC
Applied Power GmbH**

P.O. Box 300113
D-40401 Düsseldorf
Germany
Tel: +49 211 471 490
Fax: +49 211 471 49 28

India

ENERPAC Hydraulics (India) Pvt. Ltd.
Plot No. A/571
MIDC, TTC Industrial Area
Mahape-400 701

✦ e-mail: info@enerpac.com

Navi Mumbai, India

Tel: +91 22 2778 1472
Fax: +91 22 2778 1473

Italy

ENERPAC S.p.A.
Via Canova 4
20094 Corsico (Milano)
Tel: +39 02 4861 111
Fax: +39 02 4860 1288

Japan

Applied Power Japan Ltd.
1-1-11, Shimomae
Toda-shi
Saitama Pref.
Japan 335-0016
Tel: +81 484 30 1055
Fax: +81 484 30 1066

**The Netherlands, Belgium,
Luxembourg, Sweden, Denmark,
Norway, Finland**

ENERPAC B.V.
Storkstraat 25
P.O. Box 269, 3900 AG Veenendaal
The Netherlands
Tel: +31 318 535 911
Fax: +31 318 525 613
+31 318 535 848

Technical Inquiries Europe:
techsupport.europe@enerpac.com

Singapore

Enerpac Asia Pte. Ltd.
25 Serangoon North Ave. 5
#03-01 Keppel Digihub
Singapore 554914
Thomson Road
P.O. Box 114
Singapore 915704
Tel: +65 64 84 5108
+65 64 84 3737
Fax: +65 64 84 5669

Technical Inquiries:
chee@actuant.com.sg

South Korea

Actuant Korea Ltd.
3Ba 717, Shihwa Industrial
Complex, Jungwang-Dong,
Shihung-Shi, Kyunggi-Do
Republic of Korea 429-450
Tel: +82 31 434 4506
Fax: +82 31 434 4507

Spain, Portugal

ENERPAC
C/San José Artesano 8
Pol. Ind.
28108 Alcobendas
(Madrid) Spain
Tel: +34 91 661 11 25
Fax: +34 91 661 47 89

✦ internet: www.enerpac.com

Middle East, Turkey , Caspian Sea, Greece

ENERPAC Middle East FZE
P.O. Box 18004
Jebel Ali, Dubai
United Arab Emirates
Tel: +971 (0)4 8872686
Fax: +971 (0)4 8872687

United Kingdom, Ireland

ENERPAC Ltd., P.O. Box 33
New Romney, TN28 8QF
United Kingdom
Tel: +44 01797 363 639
Fax: +44 01527 585 500

USA, Latin America and Caribbean

ENERPAC
P.O. Box 3241
6100 N. Baker Road
Milwaukee, WI 53209 USA
Tel: +1 262 781 6600
Fax: +1 262 783 9562

User inquiries:
+1 800 433 2766

Distributor inquiries/orders:
+1 800 558 0530

Technical Inquiries:
techservices@enerpac.com