Enerpac Worldwide Locations ✦ **e-mail**: info@enerpac.com ✦ **internet**: www.enerpac.com

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

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

China
Applied Power 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

France, Turkey, Greece, Africa, Middle East
ENERPAC S.A.
B.P. 200
Parc d'Activités
du Moulin de Massy
F-91882 Massy CEDEX (Paris)
France
Tel: +33 1 601 368 68
Fax:+33 1 692 037 50

Germany, Switzerland, Austria, Eastern Europe
ENERPAC
Applied Power GmbH
P.O. Box 300113
D-40401 Düsseldorf
Germany
Tel: +49 211 471 490
Fax:+49 211 471 49 28

Hong Kong
ENERPAC
Room 907 Workingberg
Commercial Building
41-47 Marble Road
North Point
Tel: +852-2561 6295
Fax:+852-2561 6772

India
ENERPAC
Hydraulics (India) Pvt Ltd
Plot No. A-571
MIDC, TTC Industrial Area
Mahape-400 701
Navi Mumbai, India
Tel: +91 22 769 47 78
Fax:+91 22 769 84 73

Italy
ENERPAC
Applied Power Italiana S.p.A.
Via Canova 4
20094 Corsico (Milano)
Tel: +39 02 4861 1110
Fax:+39 02 4860 1288

Japan
Applied Power Japan Ltd.
1-1-11, Shimomae
Toda-shi
Saitama Pref.
Japan 335-0016
Tel: +81-48-430-2311
Fax:+81-48-430-1117

Mexico
ENERPAC Applied Power
Mexico S.A. de C.V.
Avenida Principal
La Paz #100
Fracc. Industrial La Paz
42092 Pachuca, Hidalgo
Tel: +52 771 337 00
Fax:+52 771 838 00

The Netherlands, Belgium, Luxembourg, Sweden, Denmark, Norway, Finland, United Kingdom, Ireland
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
UK, Ireland
Tel: +44 01527 598 900
Fax:+44 01527 585 500

Singapore
Applied Power Asia Pte Ltd
No. 8, Ang Mo Kio,
Industrial Park 2
#01-00
Singapore 569500
Thomson Road
P.O. Box 114
Singapore 915704
Tel: +65 484 5108
Fax:+65 484 5669

South Korea
ENERPAC
Applied Power Korea Ltd.
163-12 Dodang-Dong
Wonmi-Ku, Buchun-shi
Kyunggi-Do
Republic of Korea
Tel: +82 32 675 08 36
Fax:+82 32 675 30 02/73

Spain, Portugal
ENERPAC
Applied Power International S.A.
Avda. Camino de lo Cortao
21 - Nave 3
San Sebastian de los Reyes
28709 Madrid
Spain
Tel: +34 91 661 11 25
Fax:+34 91 661 47 89

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

All Enerpac products are guaranteed against defects in workmanship and materials for as long as you own them.
For your nearest authorized Enerpac Service Center, visit us at www.enerpac.com 092501

ENERPAC

Instruction Sheet

Gauges

L505 Rev C 10/01

Index:

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.

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.

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.

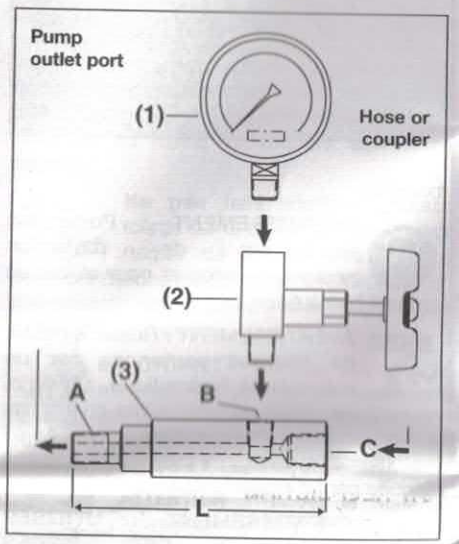
WARNING: Immediately replace worn or damaged parts by genuine ENERPAC parts. Standard grade parts will break causing personal injury and property damage. ENERPAC parts are designed to fit properly and withstand high loads.

3.0 DESCRIPTION

Your Enerpac gauge is designed primarily to function as a visual measuring device for observing the hydraulic operating condition of your system. The use of a hydraulic gauge is recommended with every hydraulic system to insure that the operating ratings of the hydraulic components within the system are not exceeded.

In high-production applications, once the hydraulic system pressure settings have been adjusted for production runs, your hydraulic gauge should be disconnected from the hydraulic system. This can be done by complete removal from the system or by installation of a shut-off valve between the gauge and the high-pressure line.

Should the hydraulic gauge be left in operation continuously, the calibration of the gauge may be greatly affected, requiring recalibration or complete replacement. Shut-off valves are recommended as added protection for any hydraulic gauge that may be subjected to high cycle rates or pressure fluctuations.



(1) Gauge
(2) Shut-off Valve
(3) Gauge Adaptor

4.0 INSTALLATION

NOTE: When making hydraulic connections, use high quality sealing compound only on the threads of the male NPT fittings. If you use Teflon tape, do not tape the first thread. Use tape sparingly. Loose Teflon tape in your pump or cylinder can cause malfunctions and damage. Wrap tape so that it tightens upon assembly (clockwise with the threads facing you). Install your hydraulic gauge where it is easily readable but well protected against damage from external sources.

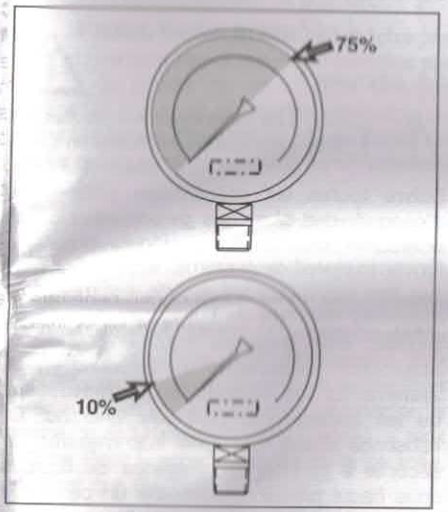
1. Remove the hydraulic oil outlet plug(s) from your pump.
2. Apply sealant (or Teflon tape) to male NPT threads. Make connections as pictured above. When tightening hydraulic connections and fittings, use the proper open-end wrenches. Do not use crescent or pipe wrenches, as they may damage the high-pressure fittings.

5.0 OPERATION

The gauge should be operated at pressures which do not normally exceed 75% of full scale.

Using the gauge to read less than 10% of the full scale can result in an erroneous reading.

IMPORTANT: The gauge should be checked for accuracy on a periodic basis, especially when the pressure measurement is critical and a gauge failure or inaccuracy will create a hazard to personnel or property.



6.0 REPAIR AND SERVICE INFORMATION

Enerpac gauges are precalibrated by the factory to within ±1% and ±1½% of the full scale. For recalibration, please refer to your local phone or business directory. For warranty and/or repair service, send your gauge to the nearest Enerpac Service Center.

6.1 Glycerin Gauge Maintenance

For maintenance, please contact your nearest authorized Enerpac Service Center. The procedure for filling the glycerin gauge is covered in Enerpac's Instruction Sheet, L2561.

Gauge Adaptor Specifications				
Part Number	Thread Dimensions			
	A	B	C	L
GA-1	3/8" NPT	1/2" NPT	3/8" NPT	2.81 in. (71 mm)
GA-2	3/8" NPT	1/2" NPT	3/8" NPT	6.10 in. (139 mm)
GA-3	3/8" NPT	1/4" NPT	3/8" NPT	5.25 in. (133 mm)
GA-4	1/4" NPT	1/2" NPT	3/8" NPT	4.38 in. (111 mm)