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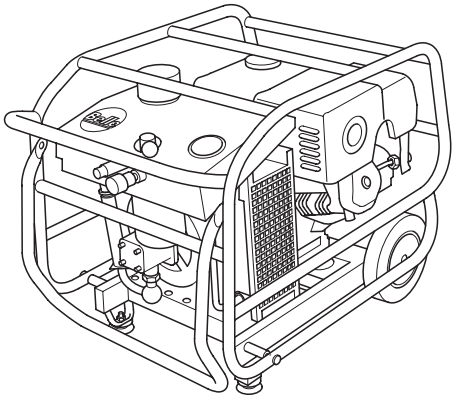
HYDRAULIC POWER PACKS

GB **OPERATOR MANUAL**



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05/05

How To Use This Manual

GB

This manual has been written to help you operate and service the Hydraulic Power Pack safely. This manual is intended for dealers and operators of the Hydraulic Power Pack

Foreword

The '***Machine Description***' section helps you to familiarise yourself with the machine's layout and controls.

The '***General Safety***' and '***Health and Safety***' sections explain how to use the machine to ensure your safety and the safety of the general public.

The '***Trouble Shooting***' guide helps you if you have a problem with your machine.

The '***Service & Maintenance***' section is to help you with the general maintenance and servicing of your machine.

The '***Warranty***' Section details the nature of the warranty cover and the claims procedure.

The ***'Declaration of Conformity'*** section shows the standards that the machine has been built to.

Directives with regard to the notations.
Text in this manual to which special attention must be paid are shown in the following way:

CAUTION The product can be at risk. The machine or yourself can be damaged or injured if procedures are not carried out in the correct way.

WARNING The life of the operator can be at risk.

Notes

GB

Notes

Warning

Before you operate or carry out any maintenance on this machine **YOU MUST READ** and **STUDY** this manual.

KNOW how to safely use the unit's controls and what you must do for safe maintenance.

(NB Be sure that you know how to switch the machine off before you switch on, in case you get into difficulty.)

ALWAYS wear or use the proper safety items required for your personal protection.

If you have **ANY QUESTIONS** about the safe use or maintenance of this unit,
ASK YOUR SUPERVISOR OR CONTACT:

BELLE GROUP (UK): +44 (0) 1298 84606

Contents

Belle Group reserves the right to change machine specification without prior notice or obligation.

GB Technical Data

Model	20-90	20-140	20-110D
Type	Cub	Midi	Midi
Engine	Honda GX160 & B & S Vanguard	Honda GX270 & Robin EX27	Lombardini 15LD 350
Engine Power (Hp)	5.5	9	7.5
Hydraulic Flowrate (Ltrs/Min)	20	20	20
Working Pressure (Bar)	90	140	110
Length (mm)	570	750	750
Width (mm)	440	530	530
Height (mm)	450	570	570
Hydraulic Connections	3/8" / 1/2"	3/8" / 1/2"	3/8" / 1/2"
	Flat faced, quick release, Non-drip couplings		
Hydraulic Oil Type	- Below 30º = ISO VG T32. - Above 30º = ISO VG T46		
Dry Weight (Kg)	37.5	60	67
Weight Including Oils (Kg)	42	66	73
Oil Tank Capacity (Ltrs)	4.5	6.2	6.2
Fuel Type	Unleaded	Unleaded	Diesel
Fuel Tank Capacity (Ltrs)	3.6	6	4.3
Noise Level (dB(A))	104	104	104

Model	20-140X	20-140D	30-140	20/20-140
Type	Major	Major	Major	Major Twin
Engine	Honda GX390	Robin DY42	Honda GX 390	B & S Vanguard
Engine Power (Hp)	5.5	9	7.5	18
Hydraulic Flowrate (Ltrs/Min)	20	20	30	40
Working Pressure (Bar)	140	140	140	140
Length (mm)	780	780	780	830
Width (mm)	540	540	540	580
Height (mm)	615	615	615	700
Hydraulic Connections	3/8" / 1/2"	3/8" / 1/2"	3/8" / 1/2"	1/2" / 3/4"
	Flat faced, quick release, Non-drip couplings			
Hydraulic Oil Type	- Below 30º = ISO VG T32. - Above 30º = ISO VG T46			
Dry Weight (Kg)	72	88	72	93
Weight Including Oils (Kg)	78	94	78	99
Oil Tank Capacity (Ltrs)	6.2	6.2	6.5	9
Fuel Type	Unleaded	Diesel	Unleaded	Unleaded
Fuel Tank Capacity (Ltrs)	6.5	6	6.5	7
Noise Level (dB(A))	104	108	104	108

EC DECLARATION OF CONFORMITY / DECLARATION CE DE CONFORMITE / DECLARACIÓN CE DE CONFORMIDAD CE / DECLARAÇÃO CE DE CONFORMIDADE / EG-VERKLARING VAN OVEREENSTEMMING

GB We, **Belle Group Sheen UK, Sheen, Nr. Buxton, Derbyshire, SK17 0EU, GB,** hereby certify that if the product described within this certificate is bought from an authorised Belle Group dealer within the EEC, it conforms to the following EEC directives: 98/37/EC (This directive is a consolidation of the original machinery directive 89/392/EEC), Electromagnetic Compatability Directive 89/336/EEC (as amended by 92/31/EEC & 93/68 EEC). The low voltage directive 73/23/EEC. EN 292 Safety of machinery and associated harmonised standards, where applicable. Noise emissions conform to directive 2000/14/EC Annex VI, the notified body being **AV Technology Limited, AVTECH house, Birdhall Lane, Cheadle Heath, Stockport, Cheshire, SK3 0XU, GB.**

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P O signatário, **Belle Group Sheen UK, Sheen, Nr Buxton, Derbyshire, SK 0EU, GB**, pelo presente, declara que se o produto descrito neste certificado foi adquirido a um distribuidor autorizado do Belle Group em qualquer país da UE, está em conformidade com o estabelecido nas seguintes directivas comunitárias: 98/37/EC (esta directiva é uma consolidação da directiva de maquinaria original 89/392/EEC), Directiva de Compatibilidade Electromagnética 89/336/EEC (conforme corrigido pelas 92/31/EEC & 93/68 EEC), A directiva de baixa voltagem 73/23/EEC, EN 292 Segurança da maquinaria e às normas harmonizadas afins se aplicáveis. As emiss?es acústicas estão em conformidade com a directiva 2000/14/EC Anexo VI, sendo o organismo notificador a **AV Technology Limited, AVTECH house, Birdhall Lane, Cheadle Heath, Stockport, Cheshire, SK3 0XU, GB.**

NL Ondergetekende, Belle Group Sheen UK, Sheen, Nr. Buxton, Derbyshire, SK17 OEU, GB,verklaren hierbij dat als het product zoals beschreven in dit certificaat is gekocht van een erkende Belle Group dealer binnen de EEG, het voldoet aan de volgende EEG richtlijnen: 98/37/EC (Deze richtlijn is een opvolger van de originele Machinerichtlijn 89/392/EEG), Electromagnetische Compatability Richtlijn 89/336/EEG (geamendeerd door 92/31/EEG & 93/68 EEG). De Laagspannings Richtlijn 72/23/EEG, EN 292 Veiligheid van Machines en hieraan gekoppelde geharmoniseerde Standaarden, waar deze van toepassing is. Geluidsemissies volgens richtlijn 2000/14/EC Bijlage VI. Het contactorgaan is AV Technology Limited, AVTECH house, Birdhall Lane, Cheadle Heath, Stockport, Cheshire, SK3 OXU, GB

PRODUCT TYPE ..... **TYPE DE PRODUIT** ..... **TIPO DE PRODUCTO** ..... **TIPO DE PRODUTO:** ..... **PRODUCTTYPE**.....

MODEL ..... **MODELE**..... **MODELO** ..... **MODELO:**..... **MODEL** .....

SERIAL No..... **N° DE SERIE** ..... **Nº DE SERIE** ..... **NO. DE SÉRIE:** ..... **SERIENUMMER** .....

DATE OF MANUFACTURE..... **DATE DE FABRICATION**..... **FECHA DE FABRICACIÓN**..... **DATA DE FABRIC**..... **FABRICAGEDATUM** .....

SOUND POWER LEVEL..... **NIVEAU DE** ..... **NIVEL DE** ..... **NIVEL DE** ..... **GEMETEN** .....
MEASURED (GUARANTEED): **PUISSANCE SONORE MESUREE (GARANTIE)** **POTENCIA ACÚSTICA MEDIDO (GARANTIZADO)** **POTÊNCIA DE SOM MEDIDO (GARANTIDO)** **GELUIDSSTERKTENIVEAU (GEGARANDEERD)**

Signed by: Managing Director - On behalf of BELLE GROUP (SHEEN) UK.
Signature:
Medido por: Le Directeur Général - Pour le compte de la SOCIETE BELLE GROUP (SHEEN) UK.
Assinado por: Director Gerente - En nombre de BELLE GROUP (SHEEN) UK.
Getekend door: Director-Geral - Em nome de BELLE GROUP (SHEEN) UK.
Ray Neilson Algemeen Directeur - Namens BELLE GROUP (SHEEN) UK.

852/10004/2

Warranty

Your new Belle Group Hydraulic Power Pack is warranted to the original purchaser for a period of one-year (12 months) from the original date of purchase.

The Belle Group warranty is against defects in design, materials an workmanship.

The following are not covered under the Belle Group warranty:

1. Damage caused by abuse, misuse, dropping or other similar damage caused by or as a result of failure to follow assembly, operation or user maintenance instructions.
2. Alterations, additions or repairs carried out by persons other than Belle Group or their recognised agents.
3. Transportation or shipment costs to and from Belle Group or their recognised agents, for repair or assessment against a warranty claim, on any machine.
4. Materials and/or labour costs to renew, repair or replace components due to fair wear and tear.

The following components are not covered by warranty.

- Engine air filter
- Engine spark plug

Belle Group and/or their recognised agents, directors, employees or insurers will not be held liable for consequential or other damages, losses or expenses in connection with or by reason of or the inability to use the machine for any purpose.

Warranty Claims
All warranty claims should firstly be directed to Belle Group, either by telephone, by Fax, by Email, or in writing.

For warranty claims:

UK: Belle Group Warranty Department,
Unit 5, Bode Business Park,
Ball Haye Green, Leek,
Staffordshire,
ST13 6BW
England.

Tel : +44 (0)1538 380000, Fax : +44 (0)1538 380038
Email : warranty@belle-group.co.uk

Applications

The Belle Cub Power Pack is suitable to power the following Belle hydraulic tools.
a) 2012 PAN 12 Kg. Hand held Pick. *b) 2018 PAN 18 Kg. Hand held breaker.*
c) 2322-C PAN Submersible Water Pump.
The Cub Power Pack can safely be connected to any tool which carries the EHTMA Category ‘C’ (Green Triangle), however the operator should be aware that tools requiring operating pressures above the 90 Bar supplied may perform at a lower efficiency. (ie:- a disc cutter will stall more easily). If in doubt regarding the correct and safe connection of a tool please consult Belle Group. or your local Agent for advice.

The Belle Midi Power Pack is suitable to power the following Belle hydraulic tools.
a) 2012 PAN 12 Kg. Hand held Pick. *b) 2018 PAN 18 Kg. Hand held breaker.*
c) 2023 PAN 23kg Hand held breaker. *d) 2025 PAN 25 Kg. Hand held breaker.*
e) 2322-S Submersible Water Pump.
The Midi Power Pack can safely be connected to any tool which carries the EHTMA Category ‘C’ (Green Triangle). If in doubt regarding the correct and safe connection of a tool please consult Belle Group, or your local Agent for advice.

The Belle Major Power Pack MAJOR/20-140X & MAJOR/20-140D is suitable to power the following Belle hydraulic tools EHTMA Cat. ‘C’.
a) 2012 PAN 12 Kg. Hand held Pick. *b) 2018 PAN 18 Kg. Hand held breaker.*
c) 2023 PAN 23kg Hand held breaker. *d) 2025 PAN 25 Kg. Hand held breaker.*
e) 2322-S Submersible Water Pump.

The Belle Major Power Pack MAJOR/30-140 is suitable to power the following Belle hydraulic tools EHTMA Cat. ‘D’.
a) 3025 PAN 25 Kg. Hand held Pick. *b) 2311 PAN Disc Cutter*
The Major Power Pack can safely be connected to any other tool which carries the relevant EHTMA Category label. If in doubt regarding the correct and safe connection of a tool please consult Belle Group or your local Agent for advice.

The Belle Major Twin Power Pack is suitable to power the following Belle hydraulic tools EHTMA Cat. ‘C’.
a) 2012 PAN 12 Kg. Hand held Pick. b) 2018 PAN 18 Kg. Hand held breaker.
c) 2023 PAN 23kg Hand held breaker. d) 2025 PAN 25 Kg. Hand held breaker.
e) 2322-S Submersible Water Pump.
The Major Twin Power Pack can safely be connected to any other tool which carries the correct EHTMA Category label. If in doubt regarding the correct and safe connection of a tool please consult Belle Group. or your local Agent for advice.

General Safety

The following precautions should be taken before operating Belle Hydraulic Power Units and Road Breaking Tools.

a) Read this Operators Guide and the operating handbook for the tool to be connected and run. Observe the manufacturers recommendations.
b) Never operate the power units and tools without the correct Personal Protection Equipment. Belle recommend the use of protective goggles and/or face shield, ear defenders, protective footwear, gloves, and hand hat.
c) Ensure that the 'STEEL' is securely locked into the breaker.
d) Only operate the Power unit in a well Ventilated area ensuring adequate flow of air for the cooling fan and the removal of the exhaust gases.
e) Ensure that a safe operating work position (Workstation) is selected. Belle recommend that tools are operated at the extremity of the transmission hoses connecting the tool to the power unit.
f) Ensure that the hydraulic tool is compatible with the hydraulic power supply to be used. It is DANGEROUS to use a hydraulic tool with an incompatible flow rate and pressure.

NOTE:- Hydraulic power units and tools supplied by EHTMA member companies carry range identification labels and it is
essential to check that the tools and power unit have the same identification label.

g) Check the power unit, hoses and tools frequently for damage and/or leaks.
h) Do not adjust the power pack settings, ie:- the engine speed/flow rate, Relief Valve pressure setting etc. Operating with flows and pressures outside the specifications can be dangerous.
j) Use only Belle replacement parts. It can Prove dangerous to fit obscure parts.

WARNING NEVER ATTEMPT TO ADD FUEL OR OIL WHEN THE ENGINE IS RUNNING. USE ONLY THE CORRECT GRADE AND DO NOT OVERFILL

Troubleshooting Guide

Problem	Cause	Remedy
Engine stops or will not start.	Fuel tap switched off.	Switch on fuel tap.
	Fuel shortage.	Refuel.
	Fuel line blocked.	Clean filters/pipes.
	Air vents in filter cap blocked.	Clean.
	Air cleaner blocked.	Clean or renew element. Refer to engine manual.
	Engine malfunctions.	Refer to engine manual.
	Low engine oil. (Petrol only).	Top up to correct level. Refer to engine manual for correct grade.
	Insufficient oil in hydraulic tank.(Petrol only).	Top up to correct level (Refer to Section 2).
	Engine Ignition switch or connecting wires damaged (Petrol units only).	Check for earth leak, and renew worn or damaged parts.
	Hydraulic tank float switch wires damaged (Petrol units only).	Renew worn or damaged parts.
	Hydraulic pump seized.	Renew pump.
Hydraulic oil pressure low.	Bypass lever is in the 'BYPASS' position.	Set to 'FLOW'.
	Relief valve set low or worn.	Check relief valve setting and adjust.
	Pump worn or damaged.	Check system oil flow. Renew pump as necessary.
	Engine power low.	Refer to engine manual.
Accessory tool running hot. or loose.	Radiator fins blocked.	Clean using air blast.
	Oil cooler fan damaged necessary.	Tighten or renew as
	Hydraulic pump worn or damaged.	Renew pump.
	Relief valve set low or worn.	Check setting and renew as necessary.
	Thermal valve malfunction.	Renew valve.
	Hydraulic oil contaminated.	Drain oil tank and transmission hoses and replenish with clean oil. Replace filters.
Engine speed remains at idle when tools are operated. (Mid/ Major units only).	P.O.D. Cylinder seized in retracted position.	Check the cylinder and replace as necessary.
	P.O.D. Cable adjustment incorrect.	Re-adjust as necessary.
	Throttle lever incorrectly set at low speed.	Reset engine speed and lock throttle lever.
Engine speed remains at full when off load/ Bypass.	P.O.D. Cylinder seized in extended position.	Check cylinder and replace as necessary.
	P.O.D. Cable adjustment incorrect.	Re-adjust as necessary.

GB Service & Maintenance

The following schedule details the attentions considered necessary to ensure satisfactory operation of the power unit.

NOTE:- THE ATTENTIONS AND PERIODS SUMMARISED IN THE SCHEDULE ARE THE INITIAL RECOMMENDATIONS AND SHOULD BE REVISED TO SUIT THE POWER UNIT WORKING CONDITIONS.

ITEM	ATTENTION	10 Hrs	100 Hrs	300 Hrs
Complete Unit	Keep all areas clean and free from dust, debris etc.	✓		
	Check security of all fasteners especially on engine mountings.	✓		
	Wheels and Feet Examine for damage.	✓		
Transmission Hoses	Examine for leaks or damage.	✓		
	Check for the correct positioning of the protective sleeves.	✓		
Engine	Check oil level.	✓		
	Examine mountings.		✓	
	Examine exhaust silencer for damage of deterioration.	✓		
	Check for excess vibration when running.		✓	
	Change Oil/Service (Refer to manufacturers instructions).			
Hydraulic Tank	Check oil level.	✓		
	Replace Filter.			✓
	Change Hydraulic Oil.			✓
Oil Cooler.	Externally clean using compressed air. **DO NOT USE A WIRE BRUSH.**		✓	
Return Line Filter	Replace as shown, or when indicator shows clogged.			✓
Hydraulic pipes/connectors	Examine for oil leaks.	✓		

System Pressure and Flow Checks

1. Connect a suitable hydraulic test unit to the powerpack. The unit should comprise a high pressure flowmeter 0-50l/min, a gauge 0-200 bar (0-3000psi), a temperature gauge, and a load valve. Suggested unit available from UCC (UC4120).
2. Connect the test unit to the power pack with the load valve and the By-Pass lever in the by-pass position and start the power pack. Allow the engine to warm up, set the by-pass lever to the flow position. Close the load valve completely and check that the relief valve setting is correct. The hydraulic oil will tend to get quite hot during this operation and therefore the checking should be carried out as quickly as possible and the load valve opened before excessive temperatures are reached.
3. Carefully close the load valve to raise the pressure to 100 Bar (70 Bar for Cub). Check that the flow rate is between 18 and 20 l/min (28 and 30 l/min for Major 30-140). Adjust the engine speed to give the correct flow.

DO NOT EXCEED 3600 RPM (2900 RPM for Major 30-140)"on load" . If correct flow cannot be obtained within max engine speed then the pump must be replaced

Health & Safety GB

Vibration

Some vibration from the machines operation is transmitted through the handle to the operator's hands. The Belle Group Hydraulic Breaker range has been specifically designed to reduce hand/arm vibration levels. Refer to specifications & technical data for vibration levels and usage times (recommended maximum daily exposure time). DO NOT exceed the maximum usage times.

PPE (Personal Protective Equipment)

Personal injury or property damage may be caused by knocks, crushing, slipping, tripping, falling, or by flying chips due mainly to the improper or careless handling of the machine, or working in a confined area.

Suitable PPE must be worn when using this equipment i.e. Safety Goggles, Gloves, Ear Defenders, Dust Mask and Steel Toe capped footwear.
Wear clothing suitable for the work you are doing. Tie back long hair and remove any jewellery which may catch in the equipment's moving parts.

Dust

Using the Hydraulic Breaker can produce dust, which may be hazardous to your health. Always wear a mask that is suited to the type of dust being produced..

Pre-Start Checks GB

1) Ensure that the Power Unit is standing on stable ground or where necessary that it is suitable chocked for stability.

CAUTION DO NOT OPERATE THE MACHINE AT AN ANGLE OF GREATER THAN 20 DEGREES, OTHERWISE THE ENGINE LUBRICATING SYSTEM MAY FAIL CAUSING EXTENSIVE DAMAGE TO THE ENGINE.

2) Ensure that the engine exhaust is not obstructed and that there is adequate ventilation to disperse the exhaust gases.
3) Ensure that the transmission hoses are positioned to avoid damage by vehicles etc., and that they will not be understrain when the accessory tool is in use.

CAUTION ENSURE THAT THE HOSE COUPLINGS TO THE ACCESSORY TOOL ARE THOROUGHLY CLEANED BEFORE CONNECTING. FAILURE TO DO SO MAY CAUSE DAMAGE TO THE SEALS.

4) Check engine fuel and oil level, and top up as necessary. Refer to the engine manuals for details of grade.
5) Check hydraulic oil level and top up as necessary.

NOTE:- WHEN TOPPING UP THE HYDRAULIC TANK IT IS ADVISABLE TO USE A STRAINER. DO NOT OVERFILL.

Operating Instructions

STARTING THE ENGINE.

NOTE:- REFER TO THE ENGINE MANUAL FOR DETAILS. ALWAYS ENSURE THAT THE BYPASS LEVER IS IN THE BYPASS POSITION.

Petrol Engines.
1) Open the fuel tap.
2) Close the choke on the carburetter.
3) Set the engine ignition switch to 'ON'.
4) Start the Engine by pulling on the recoil starter rope.
5) As the engine warms up, gradually return the choke to 'OPEN'.

NOTE:- MIDI AND MAJOR PETROL POWER PACKS ARE FITTED WITH A POWER ON DEMAND DEVICE AND THE ENGINE WILL RUN AT IDLE SPEED UNTIL PRESSURE IS GENERATED IN THE HYDRAULIC SYSTEM.

Diesel Engines.
1) Open the fuel tap.
2) Set the engine speed control to the 'START' position.
3) Set the decompressor lever to the 'START' position.
4) Start the engine by pulling the recoil starter rope.

OPERATING CHECKS.
Before commencing operation with the accessory tool connected, the following checks should be carried out.
1) Bypass lever is in the "FLOW' position.
2) Check that there is no excessive engine vibrations.
3) Ensure that there are no hydraulic leaks from hoses or couplings.
4) Check that the filter condition indicator is not within the clogging sector. When this sector is indicated, the return line filter should be replaced. Depending on the ambient temperature, optimum performance is usually achieved after 5-10 minutes operation, this is the time required for the hydraulic oil to reach its correct operating temperature.

STOPPING THE ENGINE.
NOTE:- REFER TO THE ENGINE MANUAL FOR DETAILS.

Petrol Engines.
1) Set the bypass lever to the 'BYPASS' position.
2) Set the ignition switch to 'OFF'.
3) Switch off the fuel tap.

Diesel Engines.
1) Set the bypass lever to the 'BYPASS' position.
2) Set the engine speed control to the 'STOP' position.
3) Switch off the fuel tap.

EHTMA - Code Of Practice

EUROPEAN HYDRAULIC TOOL MANUFACTURERS ASSOCIATION
CODE OF PRACTICE – HYDRAULIC POWER SYSTEMS

Before Starting. Refer to manufacturer's operating instructions.

Compatibility. Hydraulic Power Systems are designed to operate at a specific Flow and Pressure. Equipment produced by EHTMA members carries a triangular colour coded range identification label. Check that both the tool and power unit have the same identification label before operation. It is imperative that power systems and tools having different colour codings are not interconnected as this practice is both inefficient and dangerous.

For reference the EHTMA colour code is as follows:-

Classification.	Colour code.	Flow 1/min	Max pressure Bar.
A Yellow	5.5 – 6.5	180	
B	Blue	13.5 – 16.5	172
C	Green	18.0 – 22.0	138
D	Brown	27.0 – 33.0	138
E	Red	36.0 – 44.0	138
F	Black	45.0 – 55.0	138
G	Orange	54.0 – 66.0	138
Z	Grey	9.0 – 11.0	180

If in doubt consult the equipment manufacturer.

Characteristics. Operators not familiar with the use of hydraulic tools should note the following points:-
1) Hydraulic breakers are usually more powerful than the equivalent weight pneumatic tools.
2) The body of the hydraulic breaker and the supply hoses will become quite warm during normal operation.
3) As the breaker has no exhaust it is generally much quieter in operation. This should not be taken as a lack of power.

Safety Points.
1) Always wear safety footwear when operating breaking equipment.
2) Eye protection is strongly recommended, particularly on hard surfaces.
3) Ensure that the 'steel' is securely locked into the breaker.
4) Check hoses for deep cuts or exposed braiding; replace any damaged hose.