

FTI OPERATIONS, MAINTENANCE, AND REPAIR MANUAL

FT-B100 Series Cordless PowerPak

Part #2720-129, Log #36592
Revision B

August 11, 2022



Fatigue Technology (FTI) is a world-leading aerospace engineering and manufacturing company. FTI pioneered cold expansion technology (which provides solutions to fatigue problems associated with holes in metal structures) back in 1969 and have advanced this science to develop innovative bushing and fastener products. These proprietary products and associated tooling may be covered by patents or agreements owned by, or exclusively licensed to Fatigue Technology. Use of tooling procured from other than a licensed source may constitute patent infringement.

The detailed tooling information in this manual was compiled and written by FTI. The tooling was designed specifically for use with FTI's Cold Expansion (Cx™) Systems. FTI cannot be held responsible for damage or injury as a result of operating this equipment if it is used for other than the process intended, with any other tooling not provided by FTI, or not used in accordance with the instructions contained in this manual. To avoid personal injury, please observe all safety precautions and instructions. FTI reserves the right to change specifications or configurations of equipment detailed in this manual as part of our ongoing technical and product improvement programs. If you have any questions about the use or serviceability of this equipment, please contact our Sales Department.

FTI's systems and processes are the subject matter of one or more of the following patents: 4,809,420, 4,885,829, 4,934,170, 5,083,363, 5,096,349, 5,103,548, 5,127,254, 5,129,253, 5,218,854, 5,245,743, 5,305,627, 5,341,559, 5,380,136, 5,405,228, 5,433,100, 5,468,104, 6,077,010, 6,183,180, 6,487,767, 6,792,657, 6,990,722, 7,024,908, 7,100,264; 1,061,276, 513,898, 692015124, 581,385, 69310828, 468,598, 69105390, 643,231, 69414946, 696,686, 785,366, 1032769, and other patents pending. These systems and processes are tooling critical and must be performed in accordance with FTI's specifications or controlling documents. To ensure proper results from FTI's cold expansion systems and to be licensed to use FTI's patented processes, it is essential that FTI's complete integrated system of tooling be purchased and utilized. The use of tooling purchased from other than a licensed supplier could jeopardize fatigue life enhancement and may constitute patent infringement.

FTI reserves the right to change the specifications or configurations of tooling detailed in this manual as part of its ongoing technical and product information program. Should inconsistencies occur between your tooling and this manual, please contact our Sales Department.

ABOUT FATIGUE TECHNOLOGY

FTI has provided innovative solutions to fatigue problems in metal structures since 1969. Complete systems of tooling are used worldwide to enhance the fatigue life of holes in airframes, turbine engines, and other critical structures.

The FTI staff of professionals provides a full range of support services including:

- Application engineering
- Detailed project planning, implementation and management
- On-site assistance, including training and tool room setup

The Sales Department is always available to assist with special fatigue enhancement requirements. Please contact FTI with questions at any time.

This manual can be made available in other languages. Please contact the Sales Department to request a copy.

TABLE OF CONTENTS

SECTION	DESCRIPTION	PAGE
1.0	Introduction.....	1
1.1	About the FT-B100 Series Cordless PowerPaks	1
1.2	General Specifications.....	1
2.0	Safety	2
2.1	Safety Symbols and Definitions.....	2
2.2	General Hydraulic Safety Precautions	3
2.3	Battery Operated Pump Safety Precautions	4
3.0	Major Features and Components	5
3.1	Product Data	6
3.2	External Dimensions	7
3.3	Prior to Pump Operation.....	8
4.0	Operating Instructions.....	10
4.1	Introduction, Hydraulic PowerPak Setup Procedure and Operation	10
4.2	Operation	13
5.0	Maintenance	15
5.1	Transportation and Shipment.....	16
6.0	Troubleshooting	17
7.0	Safety Data Sheets	23

FIGURES

Figure 3.1-1	Pump Features and Components.....	5
Figure 3.2-1	Pump Key Dimensions	7
Figure 3.3-1	FT-B100.....	8
Figure 3.3-2	Safety Labels.....	9
Figure 4.1-1	Battery and Charger	10
Figure 4.1-2	Battery Capacity Indicator	11
Figure 4.1-3	Battery Installation.....	12
Figure 4.1-4	Remote Pendant	13
Figure 5.0-1	Hydraulic Reservoir	16
Figure 6.0-1	Enerpac CT-604 Pressure Relief Tool	18
Figure 6.0-2	Overall System Hydraulic Circuit Diagram.....	19
Figure 6.0-3	Hydraulic Piston Circuit Showing “Pull” Action	20
Figure 6.0-4	Hydraulic Piston Circuit Showing “Stop” Action.....	21
Figure 6.0-5	Hydraulic Piston Circuit Showing “Return” Action	22

TABLE OF CONTENTS (Continued)

SECTION	DESCRIPTION	PAGE
TABLES		
Table 3.0-1	Pump Features and Components.....	5
Table 3.1-1	Pump Specifications.....	6
Table 3.2-1	Pump Specifications - Key Dimensions.....	7

SECTION 1.0: INTRODUCTION

This instruction manual contains information on the operation and maintenance of the FT-B100 Series Cordless Hydraulic PowerPaks. To obtain optimum performance and many years of trouble-free service, operate the PowerPak properly and follow maintenance procedures carefully. The key to trouble-free operation is maintaining a clean air supply and clean hydraulic oil. **Before operating the PowerPak, read this manual** and retain it for future reference.

1.1 ABOUT THE FT-B100 SERIES CORDLESS POWERPAKS

The FT-B100 Series A PowerPak is the hydraulic pump that best supports the FTI Rail Tec system of tooling. It is used to operate the FTI RailTec family of puller units.

The FT-B100 contains a battery operated hydraulic pump that generates up to $10,000 \pm 500$ psi (689.5 ± 34.5 bar) hydraulic pressure.

1.2 GENERAL SPECIFICATIONS

Dimensions:	24.5 x 16.3 x 14 inches (64.3 cm x 41.4 cm x 35.6 cm)
Weight:	65.5lbs. - 29.7 Kg
Operating Hydraulic Pressure:	10,000 psi maximum
Operating Temperature Range	40°F to 120°F (4.4°C to 48.8°C)
Hydraulic Fluid Capacity:	1.75 US gallons 6.6 L
Hydraulic Fluid Characteristics:	Enerpac HF
Viscosity Index:	100 minimum
Viscosity:	48 SUS at 210°F, 215 SUS at 100°F
Specific Gravity at 60°F:	0.88
Flash Point, degrees:	400°F
Fire Point, degrees:	430°F
Pour Point, degrees:	-30°F
Aniline Point, degrees:	210°F/220°F
Paraffinic Base Color:	ASTM 2.0
Suitable Substitutes for Hydraulic Fluid:	Power Team Hydraulic Oil #9637; or U.S. MIL-SPEC #5606; MIL-PRF-83282; or meets ISO 46: FTI Part Number 1045-154; Aeroshell 41; ASTM 215

SECTION 2.0: SAFETY

Read all instructions carefully. Follow all recommended safety precautions to avoid personal injury as well as damage to the pump and/or damage to other property. Fatigue Technology cannot be responsible for any damage or injury from unsafe use, lack of maintenance or incorrect operation. Do not remove warning labels, tags, or decals. In the event any questions or concerns arise, contact Fatigue Technology for clarification.

If you have never been trained on high-pressure hydraulic safety, contact FTI for training.

2.1 SAFETY SYMBOLS AND DEFINITIONS

This manual follows a system of safety alert symbols, signal words and safety messages to warn the user of specific hazards. Failure to comply with these warnings could result in death or serious personal injury, as well as damages to the equipment or other property.



The **Safety Alert Symbol** appears throughout this manual. It is used to alert you to potential physical injury hazards. Pay close attention to Safety Alert Symbols and obey all safety messages that follow this symbol to avoid the possibility of death or serious personal injury.

Safety Alert Symbols are used in conjunction with certain Signal Words that call attention to safety messages or property damages messages and designate a degree or level of hazard seriousness. The Signal Words used in this manual are WARNING, CAUTION, and NOTICE.

WARNING

Indicates a hazardous situation that, if not avoided, **could** result in death or serious personal injury.

CAUTION

Indicates a hazardous situation that, if not avoided, **could** result in minor or moderate personal injury.

NOTICE

Indicates information considered important, but not hazard related (e.g. messages relating to property damages). Please note that the Safety Alert symbol will **not** be used with this signal word.

2.2 GENERAL HYDRAULIC SAFETY PRECAUTIONS

WARNING

Failure to observe and comply with the following precautions could result in death or serious personal injury. Property damages could also occur.

- Do not remove or disable the pressure relief valve.
- Never set the pressure relief value to a higher pressure than the maximum rated pressure of the pump.
- Stay clear of loads supported by hydraulics. To avoid personal injury, keep hands and feet away from puller unit and work piece during operation.
- Do not handle pressurized hoses. Escaping oil under pressure can penetrate the skin. If oil is injected under the skin, see a doctor immediately.
- 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.
- The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Refer to the installed pressure gage on the pump outlet. It is your window to see what is happening in the system.
- Wear personal protective equipment (P.P.E.) when operating hydraulic equipment. Always wear eye protection. Safety equipment such as dusk mask, non-skid safety shoes, hard hat, or hearing protection should be used in appropriate conditions and will reduce personal injuries.
- Immediately replace worn or damaged parts with genuine Fatigue Technology parts. Standard grade parts will break causing personal injury and property damages.
- Do not operate in an explosive environment.

CAUTION

Failure to observe and comply with the following precautions could result in minor or moderate personal injury. Property damage could also occur.

- Do not use or repair damaged 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 object on hose. A sharp impact may cause internal damage to hose wire strands. Applying pressure to a damaged hose may cause it to rupture.
- Do not lift hydraulic equipment by the hoses or swivel couplers. Use the carrying handle or strap.
- 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 150 °F [65°C] or higher. Protect all hydraulic equipment from weld spatter.
- Immediately replace worn or damaged parts with genuine Fatigue Technology parts. Fatigue Technology parts are designed to fit properly and to withstand high loads. Non-Fatigue Technology parts may break or cause the pump to malfunction.

NOTICE

- Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact Fatigue Technology.

2.3 BATTERY OPERATED PUMP SAFETY PRECAUTIONS

WARNING

Failure to observe and comply with the following precautions could result in death or serious personal injury. Property damage could also occur.

- Do not use the pump if the remote pendant rocker switch cannot turn the pump on or off. Have the remote pendant repaired before using the pump.
- Do not operate the pump near combustible materials, such as flammable liquid, gases or dust.
- Remove the battery from the pump before making any adjustments, performing maintenance or storing the pump.
- Do not attempt to disable or modify the safety key interlock feature.
- Remove safety key when pump is unattended to prevent unauthorized persons from operating pump.
- Do not probe the battery or battery charger when conductive materials.
- Do not allow metal items or material such as steel wool, aluminum foil or other foreign objects into the battery or battery charger cavity or charger terminal.
- Do not use the pump if the motor assembly is loose or damaged. Have the motor assembly inspected and repaired by Fatigue Technology before using the pump.
- Do not attempt to charge the non-specified batteries in the charger.
- Do not expose the battery or battery charger to wet conditions or excessive humidity.
- Do not immerse the battery or battery charger.
- Use the Fatigue Technology pump only with the specified Briggs & Stratton 82V LI-ION batteries. Refer to Section 3.1 for approved battery model number.
- Recharge battery only with the charger specified by Briggs & Stratton for the battery being used.
- Do not deliberately short circuit battery or battery charger.
- If battery liquid leaks and contact occurs, flush with water and seek medical help.
- Do not attempt to disassemble, repair or modify the battery or battery charger.
- Unplug battery charger when cleaning or not in use.
- Do not burn, crush or damage battery.
- Do not cover ventilation slots in the top of the charger or sides of the battery.
- Do not place battery charger on a soft surface, such as a blanket or pillow.
- Do not allow battery or battery charger to become too warm. Allow these item to cool before attempting to charge the battery.
- Store battery and battery charger in a cool, dry place. Keep these items in a secured area, away from children and pets.
- Battery and battery charger may not be opened under any circumstances. If the cover is damaged, then these items should no longer be used and must be replaced.
- Pump motor assembly (“powerhead”) in not serviceable and should not be opened. Electric shock may result.

SECTION 3.0: MAJOR FEATURES AND COMPONENTS

Table 3.0-1
Pump Features and Components

Key:	Replacement Part Number
1. Remote Pendant	1199-499
2. Carrying Handle/Roll bar	N/A
3. Hydraulic Reservoir Sight Glass	N/A
4. Hydraulic Reservoir Drain Plug	N/A
5. Oil Fill Plug	1125-024 (shipping and operation plugs as one part number)
6. Hydraulic Reservoir	N/A
7. Pump Motor	N/A
8. Battery Door	N/A
9. Battery Release Button	N/A
10. Battery	1199-497 North America, 1199-513 CE version
11. Safety Key	N/A
12. Male Hydraulic Plug	1047-013
13. Female Hydraulic Plug	1047-072
14. Fitting Nipple	1047-071

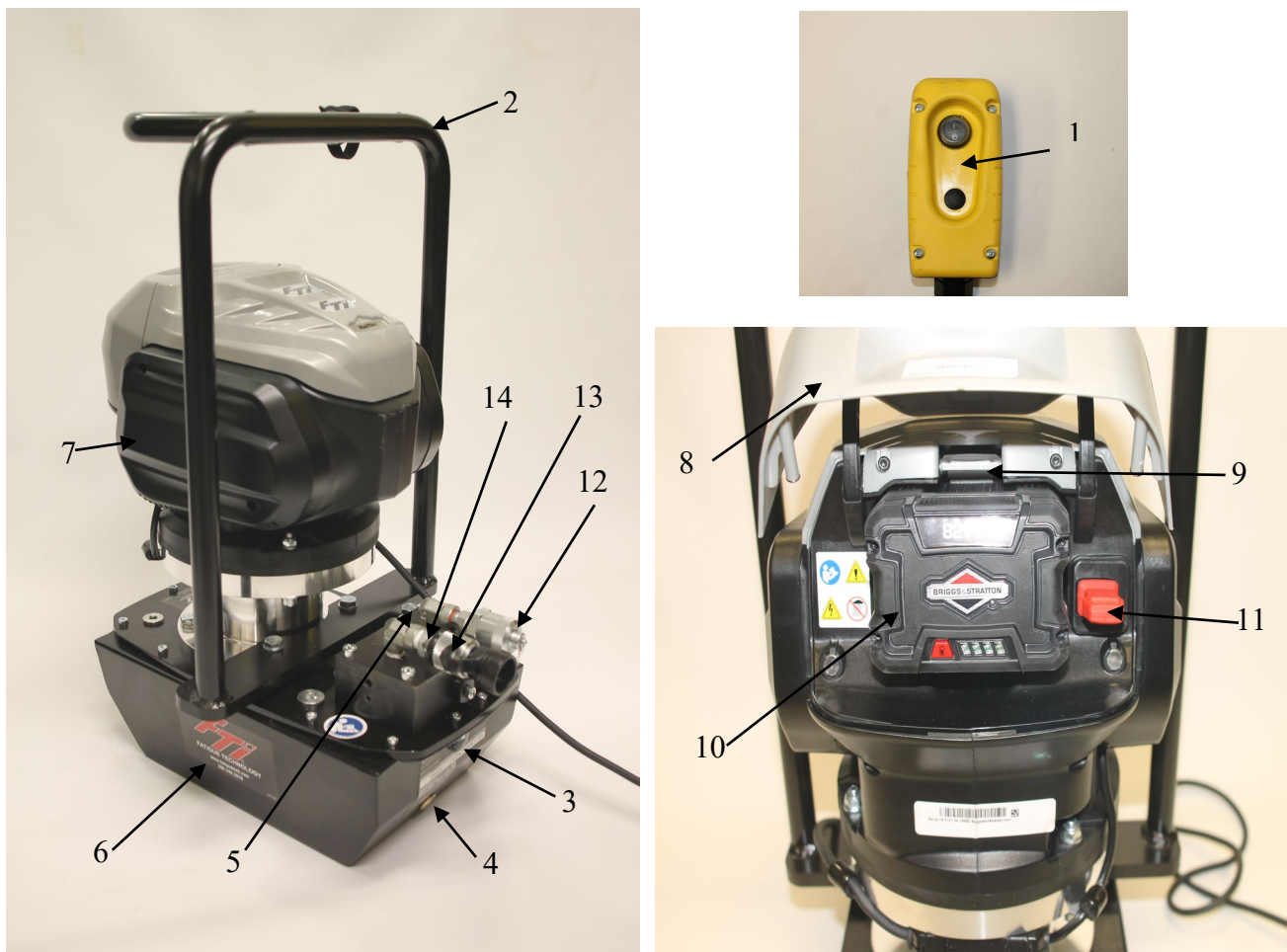


Figure 3.1-1
Pump Features and Components

3.1 PRODUCT DATA

**Table 3.1-1
Pump Specifications**

Pump Model	For Use With	Operating Temp Range	Motor Rating	Sound Pressure
FT-B100	RailTec Puller Unit	40 to 120 F +4 to +49C	1.4HP 1.0kW	75 dBA

Pump Model Number	Maximum Hydraulic Pressure	Flow Rate No Load	Flow Rate 4,000psi 276 bar	Flow Rate 10,000psi 700bar	Reservoir Size	Pump Weight	Hydraulic Oil Type
Pump Model Number	10,000psi 700bar	310 in ³ /min 5.0 l/min	80 in ³ /min 1.3l/min	32 in ³ /min .52l/min	1.75gal 6.6l	65.5lbs 29.7kgs	Enerpac HF

Pump Series	Pump Model #	Includes Charger	Charger Model Numbers	
			FTI	Briggs & Stratton
FT-B100 Series	FT-B100-120V	Battery Charger, 120V AC, 50/60 Hz Input NA	1199-495	1760263
	FT-B100-220V	Battery Charger, 220V AC, 50/60 Hz Input EU/AU CE certified	1199-494	1760264

Pump Model #	Battery FTI Part Number	FTI CE Certified	Briggs & Stratton North America	Briggs & Stratton CE Certified
FT-B100-120V	1199-496	N/A	1760265	N/A
FT-B100-220V	1199-513	Yes	N/A	1760515

Pump Series	Pump Model #	Includes Charger	Pressure Relief Tool	
			FTI	Enerpac #
FT-B100 Series	FT-B100-120V	Battery Charger, 120V AC, 50/60 Hz Input NA	1187-770	CT-604
	FT-B100-220V	Battery Charger, 220V AC, 50/60 Hz Input EU/AU CE certified	1187-770	CT-604

3.2 EXTERNAL DIMENSIONS

Table 3.2-1
Pump Specifications - Key Dimensions

Item	Dimension	
	In	mm
A	25.48	647
B	14.00	356
C	9.69	246
D	8.09	205
E	4.22	107
F	5.66	144
G	16.28	414
H	10.92	277

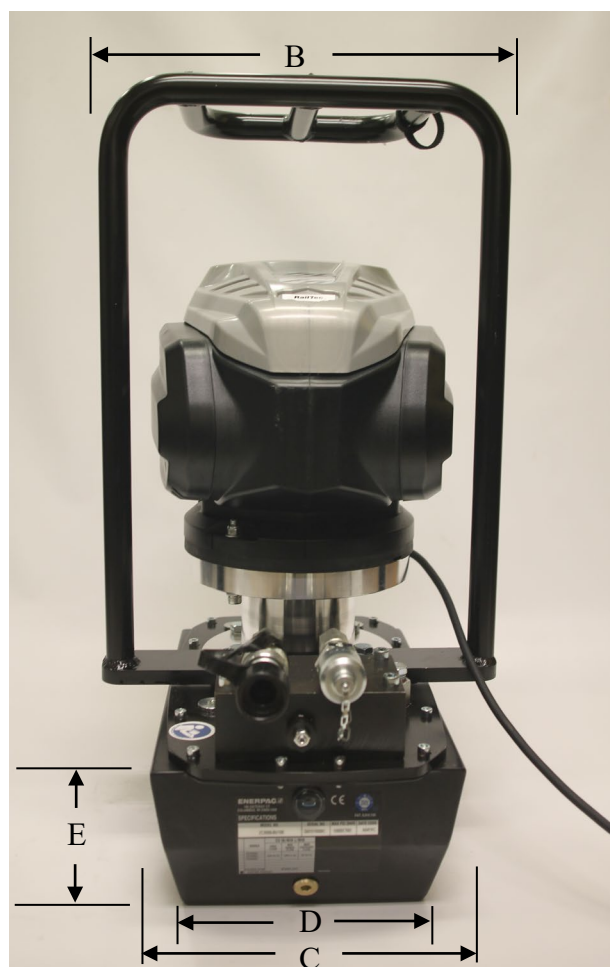
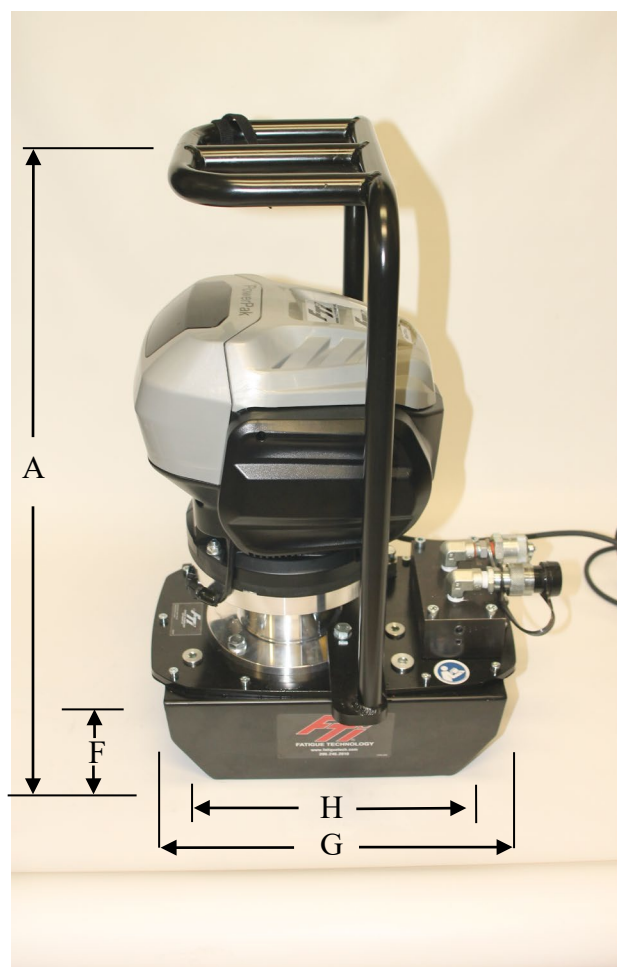


Figure 3.2-1
Pump Key Dimensions

3.3 PRIOR TO PUMP OPERATION

Consult the appropriate puller unit manual for safety precautions before installing a puller unit onto a PowerPak.

When used in accordance with these instructions, the FT-B100 PowerPak is safe and easy to use. All general safety precautions associated with hydraulic operated power tools should be observed. Many of these are noted in this section. Ultimately, the operator is responsible for personal safety; however, the following general safety precautions should be observed.

Note that the FT-B100 series pumps are not sealed units and must not be tipped or shipped wet. Tipping the unit while filled will result in oil leaks, and cause operational issues. A shipping cap is included and can be put back in place for shipping.

1. Wear eye and ear protection when operating the FT-B100 PowerPak.
2. Disconnect the remove battery when:
 - Maintenance is to be performed.
 - Hydraulic hose is disconnected.
 - PowerPak is not in use.
3. In the event of a ruptured or leaking hydraulic hose, **IMMEDIATELY TURN OFF**. **Never use your hands** to grasp a leaking hose under pressure. The force of escaping hydraulic fluid could cause serious injury. If hydraulic oil should penetrate the skin, medical attention must be sought immediately.



Figure 3.3-1
FT-B100

4. **DO NOT** attempt to disconnect the hydraulic hose while the pump is running.
5. **DO NOT** expose hoses to potential hazards such as extreme heat or cold, sharp surfaces, heavy impact, or vehicular traffic.
6. **DO NOT** allow hoses to kink, twist, curl, or bend so tightly that the oil flow within the hose is blocked or reduced.
7. Periodically inspect the hose and fittings for wear or damage that could cause premature failure of the hose or fittings and possibly result in injury. Replace damaged hoses or fittings prior to use.
8. Hose material and coupler seals must be compatible with the hydraulic fluid used (see Section 1.2 for hydraulic fluid requirements). Hoses and fittings must have a minimum working pressure of 10,000 psi with a minimum burst pressure of 20,000 psi. Note: Hydraulic hoses supplied by FTI meet these requirements.

9. Hoses must not come in contact with toxic materials such as creosote-impregnated objects and some paints. Keep clean and never paint couplers or hoses. Hose deterioration due to chemical degradation may cause the hose to fail under pressure.

10. Use caution when operating the PowerPak near electric power sources. The PowerPak is not generally insulated for coming into contact with electric power sources.
11. Do not use in potentially explosive atmospheres.
12. Two ISO safety labels have been placed on machinery to alert the operator of certain precautions that must be met to ensure proper and safe operation of the machinery. These safety labels and their definitions are shown in Figure 3.3.2.



6017-ISO: "Read Operator's Manual"

The operator must read the Operator's Manual prior to operating the machinery.



6040-ISO: "Wear Eye Protection"

The operator must wear eye protection while operating the machinery.

Notes:

- a. Safety labels are not shown actual size. Actual size is Ø0.75 inch (Ø19.05 mm).
- b. Actual colors on the safety labels are a white image on a blue background.

**Figure 3.3-2
Safety Labels**

13. **DO NOT** exceed the psi hydraulic pressure rating noted on the pump nameplate or tamper with the internal high relief valve. Creating pressures beyond rated capacities may result in personal injury.
14. Before operating the pump, tighten all hose connections. Do not overtighten the connections. Connections need only be tightened securely and leak-free. Overtightening may cause premature thread failure, or cause high-pressure fittings to split at pressures lower than their rated capacities.
15. Periodically pump clean oil through the entire length of hose, then pressurize the hose and check for leaks at the crimped connectors, between the hose material and the fitting, and between the fitting and coupler.
16. Before replenishing the oil level, retract all cylinders to prevent overfilling the pump reservoir. An overfill may cause personal injury due to excess reservoir pressure created when cylinders are retracted.
17. **DO NOT use the hose to move attached equipment.** Stress may damage the hose and cause personal injury.
18. Pump should be placed on a level surface when operated.
19. Pump should not be moved during operation.

SECTION 4.0: OPERATING INSTRUCTIONS

4.1 INTRODUCTION, HYDRAULIC POWERPAK SETUP PROCEDURE AND OPERATION

The FTI-B100 combines the high performance of an electric AC-powered pump with the convenience of a cordless, battery powered pump. It is ideal solution for remote locations, where electrical or pneumatic power sources are not available.

Major features include a brushless DC electric motor, three-stage pump element and 1.75 gallon [6.6 liter] hydraulic reservoir.

The pump is powered by a rechargeable 82V lithium-ion battery, manufactured by Briggs & Stratton Corporation. The lithium-ion battery is capable of providing impressive run time, even under extreme job site conditions.



Figure 4.1-1
Battery and Charger

4.1.1 Additional Information - Battery Charger

- The Briggs & Stratton logo is trademarked and intellectual property of Briggs & Stratton.
- Portions of this publication are subjected to copyright of Briggs & Stratton Corporation and Enerpac Corporation.

4.1.2 Conformance to National and International Standards

FTI declares that the FT-B100 series cordless electric pump has been tested and conforms to applicable standards and is approved to carry the CE, TUV C and US certification marks. An EU Declarations of conformity is enclosed separately. Note: battery and battery charger may be CE certified depending on model ordered, see Table 3.1-1.

4.1.3 Electromagnetic Compatibility (EMC)

The FT-B100 Series cordless electric pump has been tested and certified to conform to CE-EMC emission and immunity standards.

4.1.4 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 cost resulting from damage in shipment.

Note: Personnel should read this and associated puller unit manuals prior to use. Operators should be trained on the contents of this manual prior to use.

4.1.5 Hydraulic Reservoir Breather

A shipping plug is installed in the breather port on the top of the reservoir. Before using the pump, replace the shipping plug with the adaptor fitting and breather.

4.1.6 Hydraulic Connections

To ensure proper operation, avoid kinking or tightly bending hoses. If a hose becomes kinked or otherwise damaged, it must be replaced. Damaged hoses may rupture at high pressure. Serious personal injury may result.

Installation of a pressure gauge in each hydraulic line is strongly recommended. All hoses and fitting must be rated to at least 10,000 psi [700 bar].

4.1.7 Battery Capacity Indicator

New Batteries should be charged before use. Each battery contains four indicator lights. The battery capacity indicator lights show the approximate battery capacity level.

Press the battery capacity indicator button to display the lights. The battery capacity indicator light will stay lit for two seconds after the button is pressed. Refer to Figure 4.1-2 to determine the level of charge.

Run time between battery charges is dependent on the application, pump run time, pressure setting and other factors.

If none of the battery capacity indicator lights illuminate when the battery capacity is pressed, place the battery on the charger and charge as needed.



**Figure 4.1-2
Battery Capacity Indicator**

When Battery Capacity Indicator Button is pressed:	Percent Charge: (approximate)
4 Lights ON	80 - 100%
3 Lights ON	60 - 80%
2 Lights ON	40 - 60%
1 Light ON	25 - 40%
0 Lights ON	< 25%

4.1.8 Battery Installation

1. Ensure that remote pendant switch is in the OFF (O) position.
2. Lift battery door and hold it open.
3. Align ribs on battery and battery bracket. Then, slide the battery fully into the battery compartment until it stops.
4. Ensure battery release button snaps in place and that the battery is fully seated and secured before beginning operation.
5. Close the battery door.



Figure 4.1-3
Battery Installation

To ensure compatibility and proper operation, use only Briggs & Stratton 82V lithium-ion batteries with the pump. Refer to Table 3.1-1 for battery model number information.

4.1.9 Battery Removal

1. Ensure Pump motor is switched off.
2. Lift the battery door and hold it open.
3. Press the release button located above battery.
4. Slide the battery outwards and remove it from the battery compartment. Refer to Figure 4.1-3.

4.1.10 Battery Management System

The battery management system monitors and controls battery operation:

- A low voltage cut-off feature will shut down the battery when the battery voltage drops to below the acceptable limit.
- A high temperature shut down feature will shut down the battery if its internal temperature rises to above the acceptable limit.
- If the low voltage cut-off or high temperature shut down feature is activated while the pump is operating, the pump motor will emit a beeping sound and the pump will stop.
- If the high temperature shut down feature is activated, the battery must cool down to an acceptable internal temperature before the pump can be restored.

4.1.11 Additional Battery and Charger Information

- The battery is not shipped fully charged. It is recommended that battery be fully charged before first use to ensure maximum run time can be achieved.
- For best result, the battery should be charged in a location with a temperature between 43° F [61° C] and 104° F [40° C]. The battery is a lithium-ion device. It will not develop a memory and may be charged at any time.
- If the battery charger light glows green and blinks when the battery is place in the battery charger, this indicates that the battery is being charged. A solid green light indicates that the battery is fully charged.
- If the battery charger light glows solid red when the battery is placed in the battery charger, this indicated that the battery temperature is above acceptable limits. Leave the battery in the charger and allow time (up to 30 minutes) for the battery to cool. The charger should resume charging after the battery has cooled.
- If the battery has been stored with little to no charge for a long period of time, the charger goes into recovery mode, which will take 20 hours to full charge the battery. This will enhance the life of the battery. Once the battery is fully charged, the next charge will return to standard charging.

4.2 OPERATION

4.2.1 Before start up

1. Check all hydraulic fittings and connections to be sure they are tight and leak free.
2. Install hydraulic reservoir breather. Refer to Figure 3.1-1.
3. Check the hydraulic oil level. Add oil if necessary. Refer to Figure 5.0.
4. Install a fully charged battery on the pump. Refer to Section 4.1.8.
5. Verify safety key is installed.
6. Connect puller unit hydraulic hose(s) to pump as described in Puller unit manual.

4.2.2 Starting the Pump Motor

1. Place RailTec Puller Unit in the neutral (handle centered position).
2. To start the pump motor, press the upper half of the remote pendant rocker switch.

4.2.3 Stopping the Pump Motor

To stop the pump motor, press the lower half of the remote pendant rocker switch.

In an emergency, the pump motor can also be stopped by removing either the safety key or the battery.

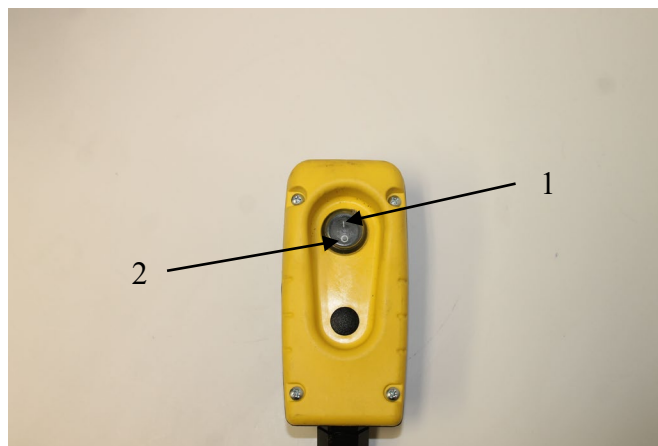


Figure 4.1-4
Remote Pendant

1. On Position

2. Off Position

4.2.4 *Operating Precautions*



Failure to observe the following precautions and instructions could allow load to drop on persons working in the area. Death or serious personal injury could result.

- Keep persons away from area under load during lifting, lowering and whenever the control valve lever is moved.
- To prevent the lifted load from dropping, always immediately support it with jack stand or other mechanical blocking device of adequate rated capacity. Be certain that blocking is fully in place before moving the control valve lever from one position to another. An unsupported load can drop when the control valve is shifted.

SECTION 5.0: MAINTENANCE

5.0.1 Check Oil Level

1. Be sure hydraulic cylinder or other tool is fully retracted.
2. Remove the battery from the pump.
3. Place the pump on a level surface.
4. Visually check the oil level by looking through the hydraulic reservoir sight glass. Reservoir is FULL when oil level is about halfway between the top and bottom of the sight glass. Refer to Figure 5.0-1.
5. If the oil level is low:
 - a. Add oil as described in Section 5.0.3.

5.0.2 Hydraulic Oil Information

Use only Enerpac HF hydraulic oil when adding additional oil or when performing an oil change. Enerpac HF hydraulic oil is available from Fatigue Technology.

Recommended use only Enerpac HF hydraulic oil. Use of other oils may result in damage to pump components. Such damage is not covered under the product warranty.

5.0.3 Adding Oil

1. Be sure hydraulic cylinder or tool is fully retracted.
Disconnect hydraulic hoses.
2. Remove the battery from the pump.
3. Place the pump on a level work surface.
4. Remove SAE #10 plug from cover plate.
5. Slowly fill the reservoir with new oil until level is about halfway between the top and the bottom of the hydraulic reservoir sight glass. Refer to Section 3.1 for oil requirements.

DO NOT overfill. Be certain that all hydraulic cylinders are fully retracted before adding any oil. Over filling hydraulic reservoir may cause damage to the pump.

5.0.4 Oil Change

Change the hydraulic oil in the pump reservoir at least once a year or whenever it is suspected that the oil has become contaminated.

To properly drain and refill the reservoir, change the oil as described in the following steps. Refer to Figure 5.0-1.

1. Be sure hydraulic cylinder or tool is fully retracted.
2. Remove the battery from the pump.
3. Disconnect hydraulic hoses from pump.

FT-B100 Series pumps are equipped with a 1.75 gallon [6.6 liter] hydraulic reservoir. Be sure the pan or container is large enough to hold all the drained oil.

4. Place a suitable pan or container of appropriate capacity under the hydraulic reservoir drain plug.
5. Remove hydraulic reservoir drain plug.
6. Allow used oil to drain completely from reservoir.
7. Clean hydraulic reservoir drain plug and remove any metal shavings (plug is magnetic).
8. Reinstall hydraulic drain plug.
9. Refill hydraulic reservoir with new oil.

Dispose of used oil in accordance with all applicable laws and regulations.



**Figure 5.0-1
Hydraulic Reservoir**

5.1 TRANSPORTATION AND SHIPMENT

1. A PowerPak will leak if tipped or inverted. Therefore, it is essential to DRAIN ALL HYDRAULIC FLUID prior to shipment. This is especially important because many federal and international regulations restrict shipment of containers that may leak fluids.

SECTION 6.0: TROUBLESHOOTING

This section provides some basic steps to identify possible causes of trouble, together with troubleshooting solutions. If you cannot solve your maintenance or operation problem with the information provided in this section, contact the nearest FTI representative.



Failure to observe and comply with the following precautions could result in death or serious personal injury. Property damage could also occur.

- Never tighten or loosen hydraulic fitting while the pump hydraulic system or connected components are pressurized. Escaping oil under pressure can penetrate the skin, causing serious personal injury.
- Keep hands, finder, and other body parts clear of pinch points and move parts when observing operation during troubleshooting.
- To prevent accidental start-up of pump servicing, always remove battery from pump before performing any maintenance or repair procedures.

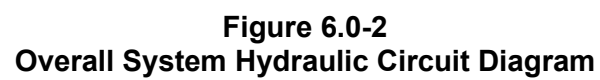
TROUBLESHOOTING GUIDE		
Symptom	Possible Cause	Solution
Pump will not start.	A. Battery is not installed.	Install Battery.
	B. Safety key is not inserted.	Insert safety key.
	C. Battery is discharged.	Charge Battery.
	D. Electrical contacts are dirty or corroded.	Clean contacts on the battery, pump and charger.
Pump clicks when remote pendant switch is on, but does not start.	A. Battery is discharged.	Charge Battery.
	B. Battery is damaged or not functioning.	Replace battery.
	C. Electrical contacts are dirty or corroded.	Clean contacts on the battery, pump and charger.
	D. Pump is jammed due to obstruction. Possible internal damage to pump.	Contact Fatigue Technology.
Low fluid output.	A. Pump needs priming.	To prime the pump. Be sure that the pump reservoir is filled with oil. Then, run the pump with the control valve in the neutral position ("3") while gently rocking the pump from side-to-side.
	B. Bypass valve malfunction.	Contact Fatigue Technology.
	C. Oil intake screen is clogged with debris.	Contact Fatigue Technology.
	D. Internal damage to pump.	Contact Fatigue Technology.
Pump does not build pressure.	A. Pressure relief valve issues.	Contact Fatigue Technology
Battery charge is reduced after more than one month of use.	The Battery has automatically performed self-maintenance to extend its life.	Fully recharge battery before use.
Pump slows down and stops.	Battery is discharged.	Charge Battery.

TROUBLESHOOTING GUIDE (continued)		
Symptom	Possible Cause	Solution
Noisy and/or vibrating pump operation.	A. Pump element piston is sticking.	Contact Fatigue Technology.
	B. Motor is damaged.	
Cylinder will not advance or retract.	A. Oil level low.	Add oil until reservoir is full.
	B. Pump needs priming.	To prime the pump. Be sure that the pump reservoir is filled with oil. Then, run the pump with the control valve in the neutral position ("3") while gently rocking the pump from side-to-side.
	C. Oil intake screens are clogged with debris	Contact Fatigue Technology.
Cylinder advances and retract erratically.	A. Air is in the system.	Advance and retract the cylinder until operation is smooth.
	B. External hydraulic leak.	Tighten connections. Replace damaged components.
	C. Internal leakage in valve.	Contact Fatigue Technology.
	D. Internal damage to valve.	Contact Fatigue Technology.
	E. Internal damage to pump.	Contact Fatigue Technology.
Pump builds full pressure without puller attached and will not release pressure or allow puller unit to be attached.	Pressure locked in pump.	Use pressure relief tool Enerpac CT-604, Figure 6.0-1, FTI part number 1187-770. See solution steps below:
<p>Solution Steps: Once hydraulic pressure has been introduced to the hydraulic hose, the pressure must be relieved before the coupler can be sufficiently tightened.</p> <p>Procedure for relieving hydraulic pressure:</p> <ol style="list-style-type: none"> 1. Remove Battery. 2. Disconnect coupler from PowerPak if connected. 3. Connect Enerpac CT-604 to the female coupler and bleed off hydraulic oil to relieve the built-up pressure. Figure 6.0-1 shows the Enerpac CT-604 Pressure Relief Tool. 4. Once pressure is relieved, coupler may be tightened and reinstalled onto PowerPak. 5. Replace the battery. 6. Check oil level in PowerPak Reservoir. 		

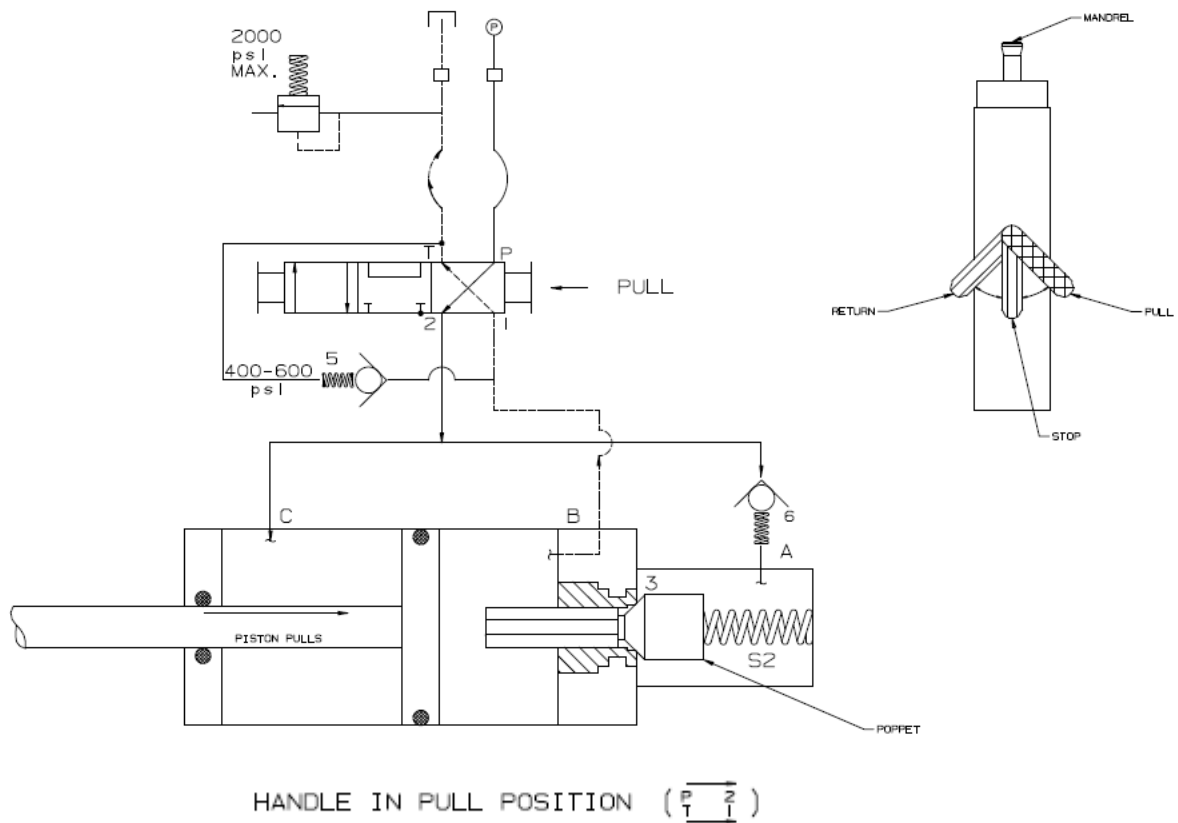


Figure 6.0-1
Enerpac CT-604 Pressure Relief Tool

The information in the Troubleshooting Guide is intended as an aid to help diagnose and correct various possible problem that may occur. For repair service. Contact Fatigue Technology. Only Fatigue Technology should be permitted to service the pump and components.



CIRCUIT DIAGRAM



PISTON PULLS, PULLING A MANDREL AND COLD WORKS THE PART. OIL ENTERS THE CYLINDER AT "C", AND RETURNS TO THE TANK THROUGH PORT "B". POPPET IS CLOSED AT 3. TOWARDS THE END OF THE STROKE THE PISTON CONTACTS THE POPPET AND UNSEATS IT AT 3. THE HIGH PRESSURE OIL IS RELIEVED TO TANK PRESSURE.

Figure 6.0.3
Hydraulic Piston Circuit Showing "Pull" Action

CIRCUIT DIAGRAM

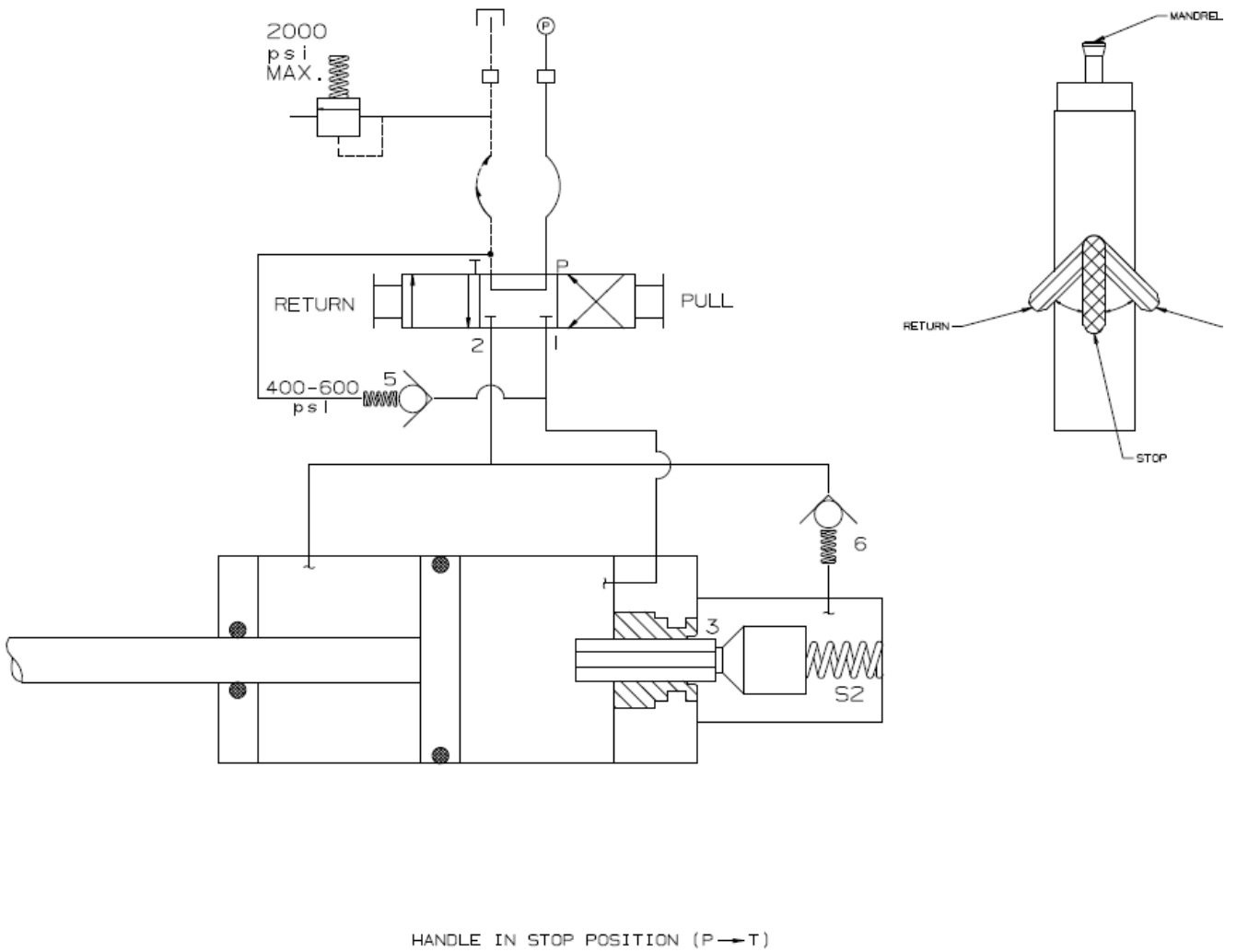


Figure 6.0-4
Hydraulic Piston Circuit Showing “Stop” Action

CIRCUIT DIAGRAM

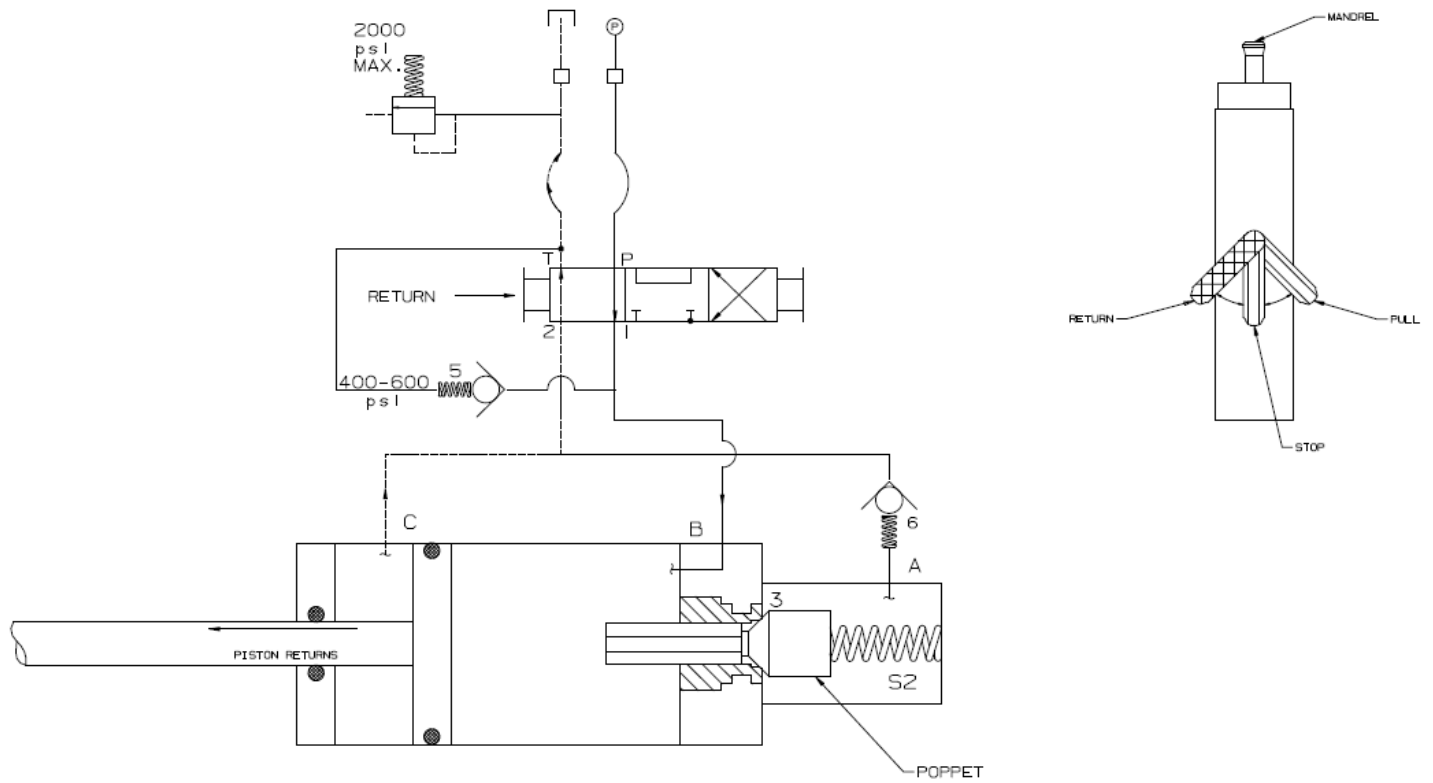


Figure 6.0-5
Hydraulic Piston Circuit Showing “Return” Action

SECTION 7.0: SAFETY DATA SHEETS

Safety Data Sheet

In Compliance with Regulation (EC) No. 1272/2008 as amended by
Commission Regulation (EU) 2015/830.

Revision date: 1-2-19

Date of issue: Dec. 27, 2018

Product name: AW Hydraulic Oil ISO 46
--

SECTION 1: Identification of Substance/Product and of the Company/Undertaking
--

1.1 Product identifier

Trade Name:	AW Hydraulic Oil ISO 46
Other names:	Standard Hydraulic Oil
Reach Registration #:	Not Applicable - Mixture
EC Number:	Not Applicable - Mixture
Index Number:	Not Applicable - Mixture
Product Code Number:	9616, 9636, 9637, 9638.
SDS number:	CGF001-EU

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses:	Standard Hydraulic Oil.
Uses advised against:	None known.

1.3 Details of the supplier of the safety data sheet

Supplied By:	
Company Name:	SPXFlow
Company Address:	5885 11th Street Rockford, IL 61109
Company Telephone:	Office hours (Mon – Fri) 8:00am – 5:00pm (CST) (815) 874-5556
Company Contact Name:	EH&S Department.
E-mail address of person Responsible for this SDS:	Info@powerteam.com

1.4 Emergency telephone number

Emergency telephone number (including hours of operation):	INFOTRAC 24 Hour Emergency Numbers: USA, Canada, Puerto Rico (800) 535-5053. International (352) 323-3500.
---	--

Revision Date: January 2, 2019

Page 1 of 11

SAFETY DATA SHEET

AW Hydraulic Oil ISO 46
SDS#: CGF001-EU

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

Classification in accordance to Regulation (EC) No. 1272/2008 (CLP/GHS).

This product is not hazardous according to the criteria for classification criteria for classification in accordance with Regulation (EC) No 1272/2008.

2.2 Label elements

Labelling in accordance with Regulation 1272/2008 (CLP).

Hazard pictograms: None

Signal word: None

Hazard statements: Not Applicable

Precautionary Statements:

Storage Statements: Not Applicable

Disposal Statements: Not Applicable

Supplemental Hazard
Statements: None known

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substance

Not applicable.

3.2 Mixture

Highly refined mineral oils and non-hazardous additives. Contains less than 3% (w/w) DMSO extract for total polycyclic aromatic compound (PAC) using IP 346.

SAFETY DATA SHEET

AW Hydraulic Oil ISO 46
SDS#: CGF001-EU

Product/ Ingredient name	Identifiers	Wt. %	Harmonized Classification Annex VI of (EC) No 1272/2008 CLP	Notes
Distillates (petroleum), solvent-dewaxed heavy paraffinic	CAS No: 64742-65-0 EC No:265-169-7 Index No: 649-474-00-6	50 - 100	Carcinogen – Category 1B:H350	L*
Note L: The Classification as a carcinogen need not apply if it can be shown that the substance contains less than 3% DMSO extract as measured by IP 346 "Determination of polycyclic aromatics in unused lubricating base oils and asphaltene free petroleum fractions – Dimethyl sulphoxide extraction refractive index method", Institute of Petroleum, London.				

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. Occupational exposure limits, if available, are listed in section 8. See section 16 for the full text of the H and EUH phrases declared above.

SECTION 4: First-aid Measures

4.1 Description of first aid measures

If inhaled: Move to fresh air. Treat symptomatically. See Section 8 for additional measures to reduce or eliminate exposure. If symptoms persist, seek medical attention.

In case of skin contact: Wash area of contact thoroughly with soap and water. If symptoms persist, seek medical attention.

In case of eye contact: If eyes become irritated, flush immediately with copious amounts of lukewarm water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation persists.

If swallowed: DO NOT induce vomiting. Consult a physician if necessary.

4.2 Most important symptoms and effects, both acute and delayed

Not expected to be a health hazard when used under normal conditions. An aspiration hazard may be appropriate if the oil is vaporized under pressure.

4.3 Indication of any immediate medical attention and special treatment needed

No additional information.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media: Water spray, Carbon dioxide, Dry chemical, Alcohol foam

Unsuitable extinguishing media: Do not use water jet.

Revision Date: January 2, 2019

Page 3 of 11

SAFETY DATA SHEET

AW Hydraulic Oil ISO 46
SDS#: CGF001-EU

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products may include carbon monoxide and other toxic gases/vapors.

Hazardous combustion products: Toxic/Irritating fumes, gases and vapours including carbon oxides and other products of incomplete combustion

5.3 Advice for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Fight fire from a protected location. Water may be ineffective in fighting the fire. Use water spray to keep fire-exposed container cool.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

No action shall be taken involving any personal risk or without suitable training. Stop leak if able to do so without risk. Keep unnecessary and unprotected personnel from entering. Eliminated ignition sources. Avoid breathing mist/vapor/aerosol/gas/fume. Do not walk through spilled material. Avoid contact with eyes, skin and clothing. Wear recommended personal protective equipment (refer to Section 8 Exposure controls/ personal protection).

For emergency responders

Keep unauthorized people away and upwind. Wear appropriate personal protective equipment (refer to Section 8 Exposure controls/ personal protection) and avoid inhalation or contact with eyes and skin. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains waterways or sewer systems. Avoid release to the environment.

6.3 Methods and materials for containment and cleaning up

Absorb in vermiculite, dry sand or earth. Sweep up and place in a clearly labeled container for chemical waste.

6.4 Reference to other sections

See Section 8 for personal protective equipment.

See Section 8 for information on personal protection equipment.

SAFETY DATA SHEET

AW Hydraulic Oil ISO 46
SDS#: CGF001-EU

SECTION 7: Handling and Storage

7.1 Precautions for safe handling

Avoid breathing mist or vapors. Avoid contact with eyes. Use only with adequate ventilation. Wash thoroughly after handling. Observe good personal hygiene practices. Change protective gloves/clothing when signs of contamination appear. Keep out of reach of children.

7.2 Conditions for safe storage, including any incompatibilities

Store in original factory container in a dry area. Do not transfer to an unmarked container. Keep container tightly closed and in a well-ventilated place. Store away from heat and light. Refer to Section 10 – Stability and Reactivity for incompatibilities.

7.3 Specific end use(s):

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values:

Ingredient name	Occupational exposure limits	Source
Oil Mist, Mineral	TWA: 5 mg/m ³ (8 hr.)	USA: OSHA PEL
	TWA: 5 mg/m ³ (8 hr.)	USA: ACGIH TLV
	TWA: 5 mg/m ³ (8 hr.)	USA: NIOSH REL
	STEL: 10 mg/m ³ (15 min.)	USA: NIOSH REL
	TWA: 5 mg/m ³ (8 hr.)	Austria: MAK
	TWA: 1 mg/m ³ (8 hr.)	Denmark: Limit Values
	STEL: 2 mg/m ³ (15 min.)	Denmark: Limit Values
	TWA: 5 mg/m ³ (8 hr.)	Netherlands: MAC OELs

Monitoring procedures: Use methods described in European Standards.

8.2 Exposure controls

Appropriate Engineering Measures

Maintain air concentrations below occupational exposure standards using engineering controls if necessary. Local exhaust ventilation is recommended. Eye wash station and showers required for emergency use.

Individual protection measures, such as personal protective equipment:

Eye and face protection: Wear safety glasses or full-face shield if splashes are likely to occur. If possible, have eye-washing facilities readily available where eye irritation can occur. Use equipment for eye protection tested and approved under appropriate government standards such as EN 166(EU).

SAFETY DATA SHEET

AW Hydraulic Oil ISO 46
SDS#: CGF001-EU

Skin protection:

Hand protection: Where hand contact with the product may occur the use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

Other skin protection: Use as necessary to prevent exposure. Work clothing should be changed daily. Contaminated clothing should be removed and washed thoroughly before re-using.

Respiratory protection: No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Use respirators and components tested and approved under appropriate government standards such as CEN (EU).

Thermal hazards: None known

Environmental exposure controls

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	
Physical state:	Liquid
Form:	Liquid
Color:	Blue
Odor:	Mild
Odor threshold:	Not available
pH:	Not available
Melting point/freezing point:	Not available
Initial boiling point and boiling range:	Not available
Flash point:	>380 °F
Evaporation rate:	Not available
Flammability (solid, gas):	Not available

Revision Date: January 2, 2019

Page 6 of 11

SAFETY DATA SHEET

AW Hydraulic Oil ISO 46
SDS#: CGF001-EU

Upper/lower flammability or explosive limits

Flammability limit – lower (%):	Not available
Flammability limit – upper (%):	Not available
Explosive limit – lower (%):	Not available
Explosive limit – upper (%):	Not available
Vapor pressure:	Not available
Vapor density:	Not available
Relative density:	0.87 -0.89
Solubility(ies):	Insoluble
Partition coefficient (n-octanol/water):	Not available.
Auto-ignition temperature:	Not available
Decomposition temperature:	Not available
Viscosity:	46 cSt @40 degrees C
Explosive properties:	Not available
Oxidizing properties:	Not available

9.2 Other information:

No further data available

SECTION 10: Stability and Reactivity

10.1 Reactivity

No hazardous reactions anticipated under normal storage and handling conditions.

10.2 Chemical stability

Stable under normal storage and handling conditions.

10.3 Possibility of hazardous reactions

No hazardous reactions anticipated under normal storage and handling conditions.

10.4 Conditions to avoid

Incompatible materials, Extreme heat, Open Flame, Sparks

10.5 Incompatible materials

Oxidizing Agents

10.6 Hazardous decomposition Products

Not anticipated under normal conditions of use.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Routes of Exposure: Oral, Dermal, Inhalation, Eye Contact

SAFETY DATA SHEET

AW Hydraulic Oil ISO 46
SDS#: CGF001-EU

Numerical measures of toxicity

Acute Toxicity Data:

Substance	Test Type (species)	Value
Distillates (petroleum), solvent- dewaxed heavy paraffinic	LD ₅₀ Oral (Rat)	>5000 mg/kg
	LD ₅₀ Dermal (Rabbit)	>5000 mg/kg
	LC ₅₀ Inhalation (Rat)	>5 mg/l (4h)

Acute Toxicity:	Does not meet the criteria for classification as Acutely Toxic by inhalation, ingestion or skin contact.
Skin corrosion/irritation:	Does not meet the criteria for classification.
Serious eye damage/eye irritation:	Does not meet the criteria for classification.
Respiratory sensitization:	Does not meet the criteria for classification.
Skin sensitization:	Does not meet the criteria for classification.
Germ cell mutagenicity:	Does not meet the criteria for classification.
Carcinogenicity:	Does not meet the criteria for classification.
Reproductive toxicity:	Does not meet the criteria for classification.
STOT - Single exposure:	Does not meet the criteria for classification.
STOT - Repeat exposure:	Does not meet the criteria for classification.
Aspiration hazard:	Does not meet the criteria for classification.

SECTION 12: Ecological information

12.1 Toxicity

Ingredient Information:

Ingredient	Test Type	Species	Value
Distillates (petroleum), solvent- dewaxed heavy paraffinic	LL/EL/IL50 NOEC/NOEL	Fish	Practically nontoxic: LL/EL/IL50 > 100 mg/l NOEC/NOEL > 100 mg/l (based on test data)
	LL/EL/IL50 NOEC/NOEL	Invertebrate	Practically nontoxic: LL/EL/IL50 > 100 mg/l NOEC/NOEL expected to be > 1.0 - <= 10 mg/l (based on test data)
	LL/EL/IL50	Algae	Practically nontoxic: LL/EL/IL50 > 100 mg/l

Revision Date: January 2, 2019

Page 8 of 11

SAFETY DATA SHEET

AW Hydraulic Oil ISO 46
SDS#: CGF001-EU

12.2 Persistence and Degradability:

Major constituents are expected to be readily biodegradable, but the product contains components that may persist in the environment.

12.3 Bioaccumulative potential:

Contains components with the potential to bioaccumulate.

12.4 Mobility in soil:

If it enters soil, it will adsorb to soil particles and will not be mobile.

12.5 Results of PBT and vPvB assessment:

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects:

None Known

12.7 Additional information:

None known

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Dispose of in accordance with all applicable local, state, national and international regulations. Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods. Do not dispose into the environment, in drains or in water courses.

Contaminated packaging

Contaminated packaging may contain traces of the product and therefore should be disposed of in the same way as product.

SECTION 14: Transport Information

International transport regulations

14.1 UN number

ADR/RID: Not Applicable

IMDG: Not Applicable

IATA: Not Applicable

SAFETY DATA SHEET

AW Hydraulic Oil ISO 46
SDS#: CGF001-EU

14.2 Proper shipping name

ADR/RID: Not Regulated for Transport.

IMDG: Not Regulated for Transport.

IATA: Not Regulated for Transport.

14.3 Transport hazard class(es)

ADR/RID: Not Applicable

IMDG: Not Applicable

IATA: Not Applicable

14.4 Packing group

ADR/RID: III

IMDG: III

IATA: III

14.5 Environmental hazard

Marine Pollutant: No

14.6 Special precautions for user

No additional information.

14.7 Transport to bulk according to Annex II of MARPOL and the IBC Code

No additional information.

SECTION 15: Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety datasheet complies with the requirements of:

EU Commission Regulation (EU) 2015/830 (Reach)

EU Regulation (EC) No 1272/2008 (CLP)

EINECS: All components in this product are listed on the European Inventory of Existing Chemical Substance

15.2 Chemical safety assessment

A chemical safety assessment has not been carried out.

SECTION 16: Other Information

Full text of H Codes referred to in section 3.

H350 May cause cancer.

Training advice: Before using/handling the product one must read carefully present SDS.

SAFETY DATA SHEET

AW Hydraulic Oil ISO 46
SDS#: CGF001-EU

Abbreviations and acronyms:

ACGIH:	American Conference of Governmental Industrial Hygienists
ADR:	Accord européen sur le transport des marchandises dangereuses par Route European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS:	Chemical Abstracts Service (division of the American Chemical Society)
CLP:	Classification, Labelling and Packaging
OSHA:	Occupational Safety and Health Administration
EINECS:	European Inventory of Existing Commercial Chemical Substances
EC50:	Half maximal effective concentration
EU:	European Union
GHS:	Globally Harmonized System of Classification and Labeling of Chemicals
IATA:	International Air Transport Association
IBC CODE:	Intermediate Bulk Container
IMDG:	International Maritime Code for Dangerous Goods
LC50:	Lethal concentration, 50 percent
LD50:	Lethal dose, 50 percent
NIOSH:	National Institute for Occupational Safety & Health
OEL:	Occupational Exposure Limits
PEL:	Permissible Exposure Limits
REACH:	Registration, Evaluation and Authorization of Chemicals
REL:	Recommended Exposure Limits
RID:	Gefahrgutvorschriften für den Transport mit der Eisenbahn
STEL:	Short Term Exposure Limits
TLV:	Threshold Limit Value
TWA:	Time Weighted Average
STEL:	Short Term Exposure Limits
UN:	United Nations

Document history

Date of issue:	December 27, 2018
Supersedes:	New document
Reason for revision:	Created to comply with EU requirements

DISCLAIMER:

To the best of our knowledge, the information contained herein is accurate. However SPXFlow does not assume any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

This page intentionally left blank for two-sided printing.