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OPERATION MANUAL

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HYDRA-SLIDE

OPERATION & MAINTENANCE MANUAL

EXTREME LOW PROFILE SKIDDING SYSTEM

Model:

XLP80/150

Revision: October 2025

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PLEASE READ OPERATING MANUAL BEFORE USING THIS EQUIPMENT AND ADHERE TO ALL SAFETY INSTRUCTIONS. FOR QUESTIONS, CONTACT HYDRA-SLIDE LTD. AT +1-519-900-1450

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HYDRA-SLIDE

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HYDRA-SLIDE

ORIGINAL INSTRUCTIONS
HYDRA-SLIDE XLP80/150 EXTREME LOW PROFILE SKIDDING SYSTEM

1 - GENERAL INFORMATION

1.1 Original Instructions

The English version of this manual is the Original Instructions for the **Hydra-Slide XLP80/150 Extreme Low Profile Skidding System**. All other language versions are translations of the Original Instructions.

1.2 Manufacturer Details

Hydra-Slide Ltd.
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1.3 Machinery Description

Machinery Designation: **XLP80/150 Extreme Low Profile Skidding System**

Hydra-Slide's **XLP80/150 Extreme Low Profile Skidding System** has been designed to move loads with a maximum push capacity of:

- 80 ton (72 tonne) using the RD1014 Cylinder Assembly, or
- 250 ton (227 tonne) using the RD3015 Cylinder Assembly

and a maximum pull capacity of:

- 80 ton (72 tonne) using the RD1014 cylinder assembly, or
- 150 ton (136 tonne) using the RD3015 cylinder assembly

The system uses specially designed slider plates and hydraulically operated push cylinders to move loads horizontally along guiding tracks over a friction surface. The hydraulic push cylinders are modified double acting cylinders which operate at 10,000 psi (700 bar). The friction surface is an ultra-high molecular weight polyethylene (UHMW). The height of the load

support section is 1.25” (32 mm), and all components are hand-portable, the maximum component weight being 100 lbs. (45 kg).

Both the XLP80 and XLP150 Skidding systems use the same track sections, Slider Plates, and Push-Pull Heads. The difference between the two systems is that the XLP80 uses a RD1014, 10 ton cylinder mounted into the cylinder support and the XLP150 system uses a RD3015, 30 ton cylinder in the cylinder support.

The following main components comprise a standard system:

- (16) x Track Sections
- (32) x Track Connector Bars
- (4) x 4ft (1.2m) Slider Plates
- (2) x 2ft (0.6m) Slider Plates
- (2) x 1ft (0.3m) Slider Plates
- (2) x Push/Pull Cylinder Assemblies
- (2) x Push/Pull Heads
- (1) x Storage Box

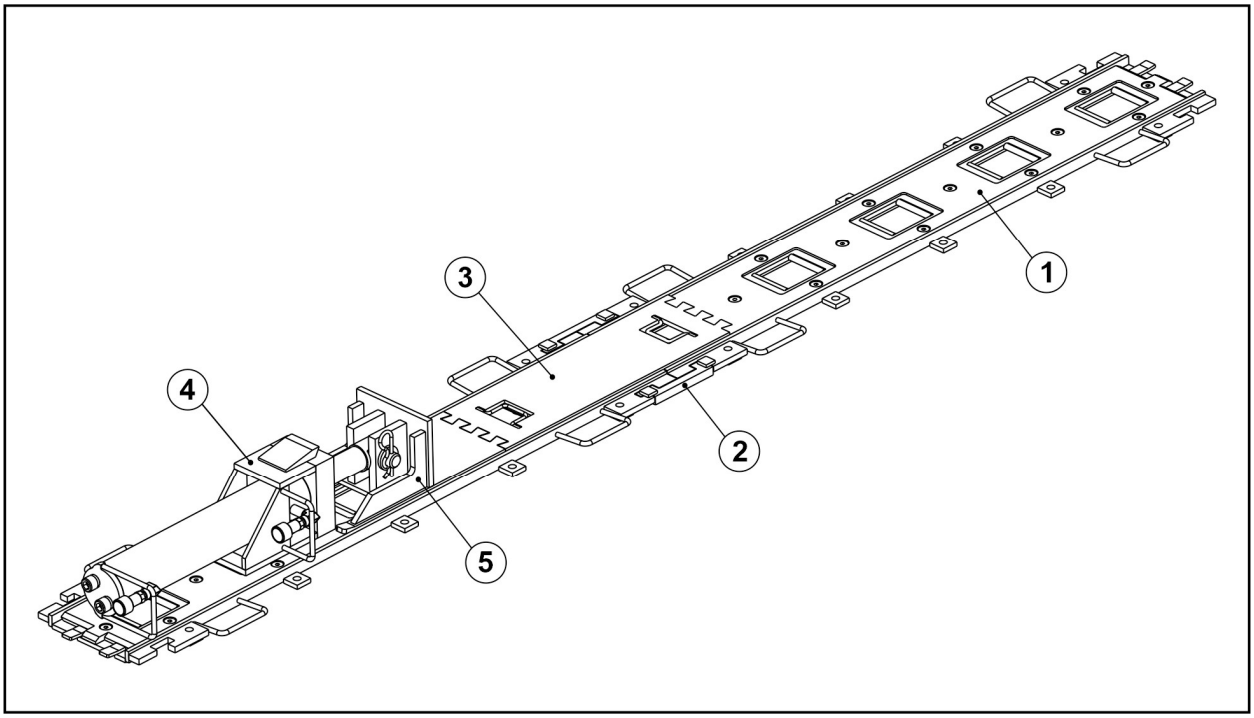


Figure 1: XLP80/150 Skidding System Main Components

Item No.	Part No.	Description
1	XLP150-01-5	Track Section
2	XLP150-02	Track Connector Bar
3	XLP150-05, 06, 07	Slider Plate (2' Slider Plate Shown)
4	XLP150-03 or XLP80-03	Push/Pull Cylinder Assembly
5	150-04	Push/Pull Head

The **XLP80/150 Extreme Low Profile Skidding System** is designed to work with most 10,000 psi (700 bar) hydraulic power units; however, it is recommended to be used with Hydra-Slide's synchronous Hydra-Pac power units. The system comes with a steel storage box to store all system components and necessary hardware to assemble and operate.

1.3.1 The Workstation

The **XLP80/150 Extreme Low Profile Skidding System** is remotely operated. It is suggested that the operator set up his/her workstation in a safe location, clear of the load to be skidded, and with as much visibility of the load and skidding system as possible.

1.3.2 Intended Use

The **XLP80/150 Extreme Low Profile Skidding System** is used to move heavy loads in a controlled manner using high pressure hydraulics.

1.4 Safety Precautions

Set up and operate the **XLP80/150 Extreme Low Profile Skidding System** only under the direction and supervision of experienced and qualified personnel.

This section contains information required for the safe operation of the **XLP80/150 Extreme Low Profile Skidding System**. Please read and understand the instructions and safety warnings that come with the equipment. Failure to comply with these safe operating recommendations could result in property damage or personal injury. Always follow safe work practices.

The **XLP80** system has been designed and manufactured for a maximum load capacity of 80 tons (72 tonnes) in **Push Mode** and 80 tons (72 tonne) in **Pull Mode**. The **XLP150** system has been designed and manufactured for a maximum load capacity of 250 tons (227 tonnes) in **Push Mode** and 150 tons (136 tonnes) in **pull mode**. The maximum operating pressure of the push cylinders is 10,000 psi (700 bar). Do not exceed these values at any time when using the system.

Use in any other manner or for any other purpose is not intended and is not recommended by the manufacturer. The operational safety of the system is only assured if used as intended.

1.4.1 General Safety Precautions and Potential Misuse

- Only qualified operators should install, operate, adjust, maintain, clean, repair or transport this equipment.
- Only use this equipment in accordance with its intended use and follow all instructions.
- Never exceed recommended maximum pressure and stroke ratings. Good practice recommends using only 80% of these ratings.
- Always wear appropriate Personal Protective Equipment.
- Protect all equipment from potential hazards such as fire, explosion, sharp surfaces, extreme heat/cold, corrosives, and heavy impact.
- Anticipate possible problems and take steps to avoid them. If in doubt, ask.
- Never operate any equipment without all provided guards and safety devices in place and in good working condition.
- Lift and move slowly and check often. Control the load at all times.
- Double-check track connections before loading the track.
- Avoid standing in the line of force of hoses or any hydraulic components.
- Lift or move equipment and components using only the provided lift lugs or handles, etc. and only employ proper lifting equipment and techniques. Never lift by the hoses or hydraulic fittings.
- Never place any part of your body under the load unless the load is on a solid support.
- Never place any part of your body between a moving load and a solid obstacle where there is danger of crushing.
- Take steps to keep all equipment clean and free from possible damage. This is particularly important for hoses and couplers.
- Don’t allow hoses to kink, twist, crush, cut or bend tightly. Bending radius should be at least 4½ inches. Inspect hoses and couplers before each use and remove from service if any signs of damage are noted. Never attempt to repair a hose.
- Never handle hoses or couplers while they are under pressure, even when wearing Personal Protective Equipment. There is risk of serious personal injury from hose leaks, faulty or improperly connected couplers.
- Use safe practices to bleed a pressurized hose or coupler; use only a specially-designed coupler bleed tool such as a CT-604 Safety Tool available through Hydra-Slide Ltd.

- Always ensure that jacks and cylinders are used parallel and in line with their axis. Never use a jack or cylinder at an angle or to “kick” or move a load sideways. Use only Hydra-Slide’s AS500 Alignment Shoes for these types of operations.
- Do not apply any external forces to the load or track other than those from proper use of the supplied hydraulic cylinder(s), i.e. do not use come-alongs, winches, etc. to push or pull the load
- If jacking a load, always use appropriate blocking or cribbing to guard against a falling or out of control load.
- Do not use any lubricants on the system other than those provided and/or specified for use.

1.4.2 Operator Training

The operator should be experienced in the safe operation of high-pressure hydraulic jacking systems. The operator should also read and understand these Instructions in full prior to operating the system.

1.4.3 Residual Risks and Protective Measures

Observing the safety precautions indicated in these Instructions minimizes the risks associated with using the **XLP80/150 Extreme Low Profile Skidding System**, however residual risks remain in the event of loss of control of the load while skidding.

1.4.4 In Case of Breakdown

In case of equipment breakdown or other operational problems, cease operation immediately and take any necessary steps to secure equipment and protect surroundings and personnel. Depressurize hoses and all hydraulic components (use coupler bleed tool as required). Identify the problem. Jack up the load to remove weight from skid system and secure it with blocking or other support. Correct the problem and/or replace any broken or defective components. Jack the load down onto the skidding system and continue operations in accordance with these Instructions.

1.4.5. Airborne Noise Emissions

Operation of the **XLP80/150 Extreme Low Profile Skidding System** does not produce airborne noise exceeding 70 dB(A).

1.4.6 Non-Ionizing Radiation

Operation of the **XLP80/150 Extreme Low Profile Skidding System** does not produce non-ionizing radiation.

2 - ASSEMBLY AND SETUP

Before each use, inspect the system for any signs of damage or oil leaks. If any issues are found, do not operate the system until corrective measures have been taken.

- Establish a clear path for the load to be moved
- Raise load (using other means) to a sufficient height to place skidding system underneath
- Place track under load

2.1 Track Plate Connection

The track sections are bi-directional and symmetric; any two ends may be connected together.

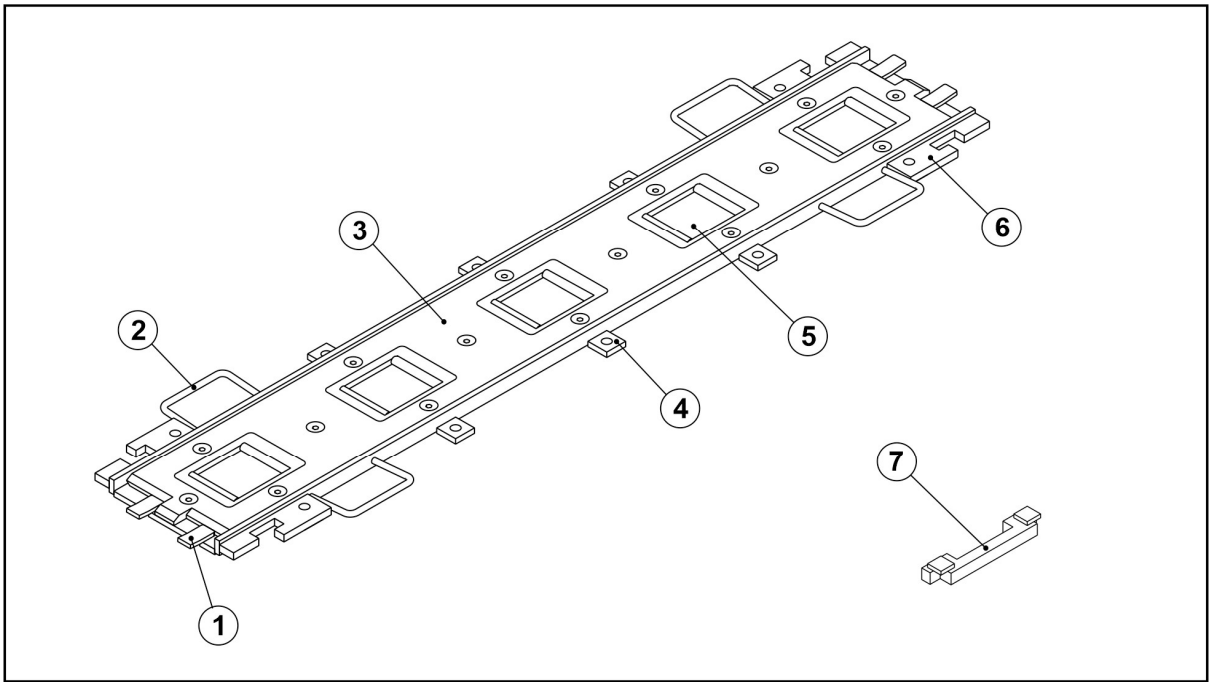


Figure 2: XLP80/150 Track Section with Track Connector Bar

Item No.	Description
1	Track Alignment Tabs
2	Track Handle
3	UHMW Slider Pad
4	Tie-Down Lug
5	Ratchet Slot
6	Track Connector Bar Lug
7	Track Connector Bar

- Connect the Track Sections using the Alignment Tabs on the track ends and secure together using the supplied Track Connector Bars. These should drop into place easily and require no special tools (See Figure 3).

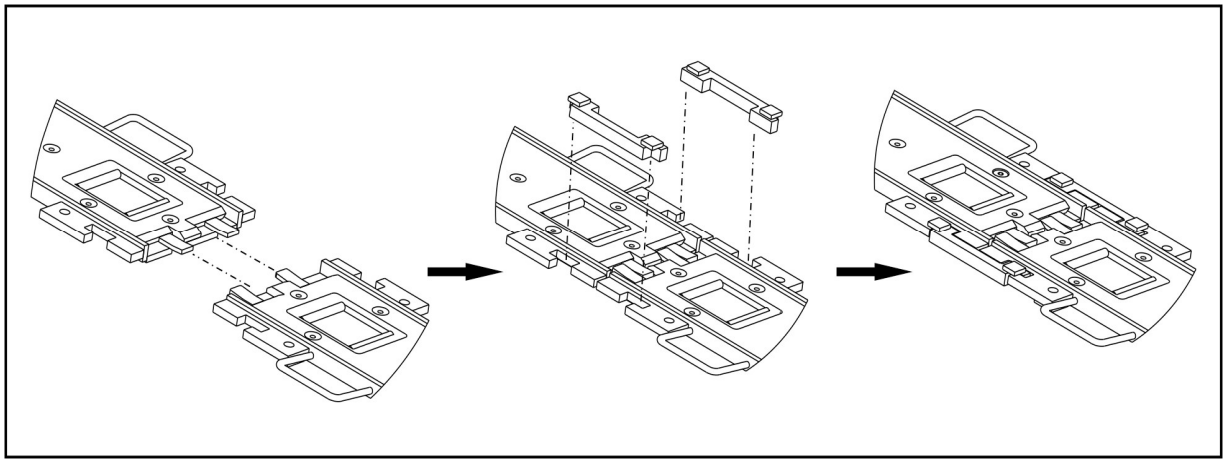


Figure 3: Connecting XLP80/150 Track Sections

- Ensure that the tracks are set up and kept level (± 2%) and parallel (± 0.25” or 6mm) at all times. It may be advantageous to have a slight incline in the direction of travel; never set up or operate the system on a decline without an adequate external holdback.
- Tracks must be oriented so the load will move in a straight line to the desired location.
- Tracks must be positioned such that the ratchet slots are equidistant from the edge of the load so the push cylinders will be able to extend and retract in synchronization.
- The track must be adequately supported over its entire length. Excess deflection can cause severe damage. Areas under track connection points must always be fully supported.

2.1.1 Track Tie-Down Lugs

In pull mode, the applied force of the cylinder assembly on the track can cause the unloaded track section to lift. If the system will be used in the pull configuration or if an external force is applied to the system, the track can be anchored to a rigid surface. The tracks feature tie-down lugs along both sides for this purpose.

2.2 Slider Plate Assembly

Insert the slider plates into the track under the load and connect the slider plates together using the dovetail joints. Ensure that the guide bars engage and that the slider plates move freely on the track.

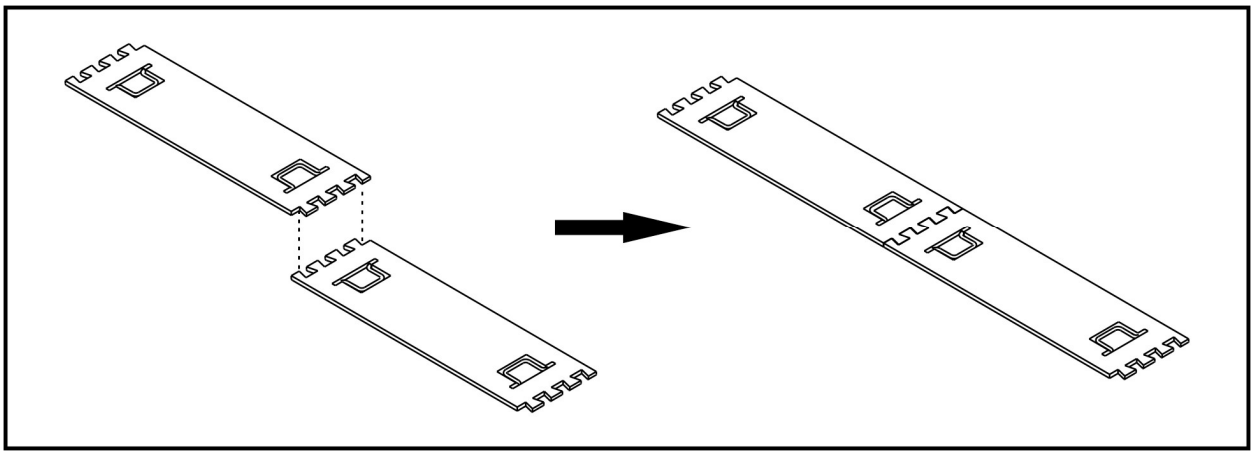


Figure 4: Connecting XLP80/150 Slider Plates

2.3 Slider Plate – Pusher Head Connection

- Attach the pusher heads to the desired end of the slider plates using the dovetail joints.

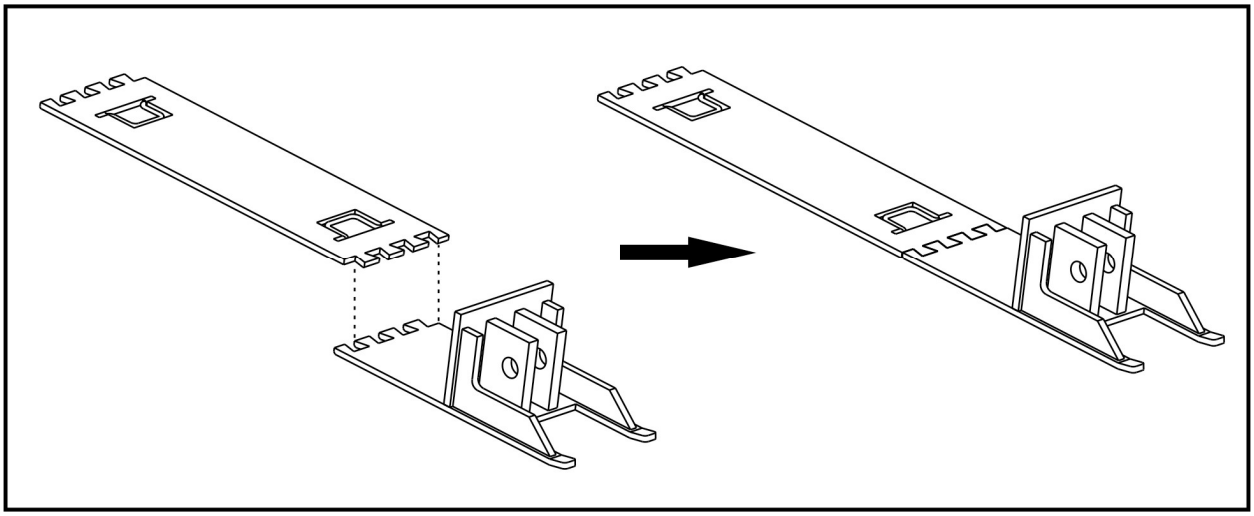


Figure 5: Connecting XLP80/150 Push-Pull Head to Slider Plate

- The pusher head and cylinder assembly can be separated at the clevis pin connection for easier handling if required.

Note: Do not lift the cylinder assembly using the hydraulic hoses or fittings; doing so could cause damage to the cylinder, hoses, or fittings. Use only the handles to lift the assembly.

- Ensure that the area on the bottom of the load where it will contact the slider plate assembly is clear and is a suitable supporting surface.

2.4 Load Placement

- Position the slider plate assembly under the load and ensure that the weight of the load will be distributed evenly over the surface of the slider plates. See Appendix 1 – Track Capacity & Support.

  Note: Do not point-load the slider plates.

  Note: It is good practice to use a friction material such as wood or rubber between the slider plate and the load.

- The push/pull heads **must** make direct contact with the load, otherwise the push/pull heads or slider plates can bend causing severe damage to the system.

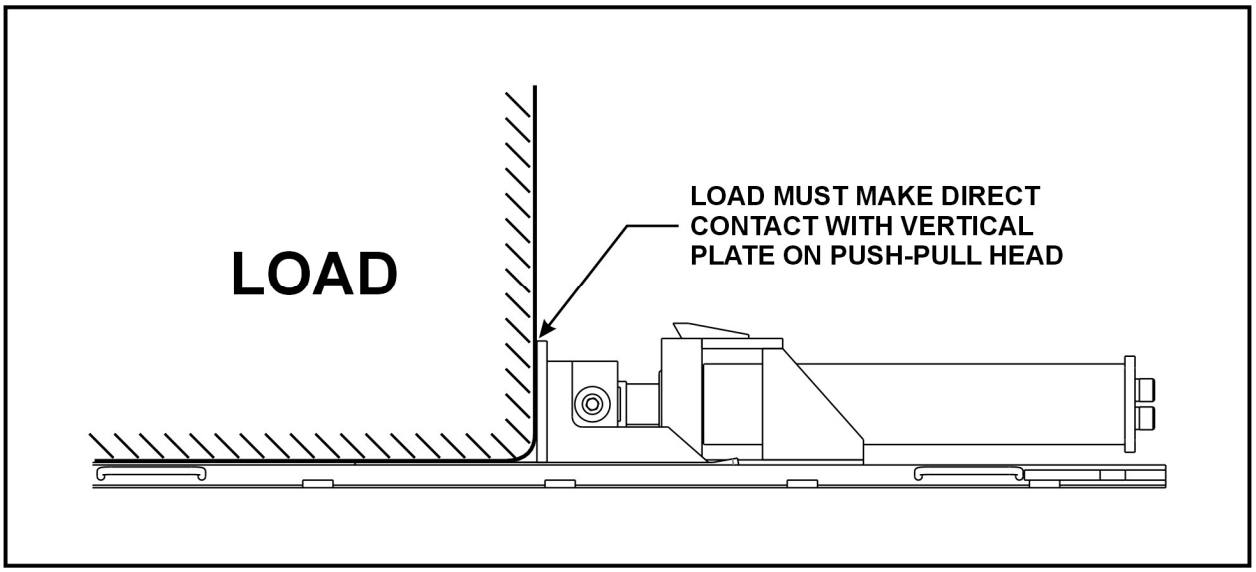


Figure 6: Load Placement on XLP80/150 Push-Pull Head

- Check to make sure that the track has been set up properly and is adequately supported.
- Lower the load (by other means) onto the slider plates and ensure that it is evenly distributed over the slider plate surface.
- Check one final time to make sure that the tracks and slider plates are properly set up and adequately supported, and that nothing has shifted during placement of the load. Make any necessary corrections before operating the system.

3 – OPERATION

It is recommended that the cylinder rods be extended and retracted fully at least twice before connecting to the system to verify their functionality. If problems with cylinder operation are encountered, please refer to Section 4.2 Troubleshooting.

- Insert the push/pull cylinder assemblies into the tracks. Ensure the push/pull cylinders are installed in the proper orientation in either push or pull mode. It is recommended to operate the system in push mode whenever possible.
- Connect the cylinder rod ends to the push/pull heads using the clevis pins and clevis pin washers provided. Use the hex head bolt and washer (or spring cotter pin) to secure the pins in place.

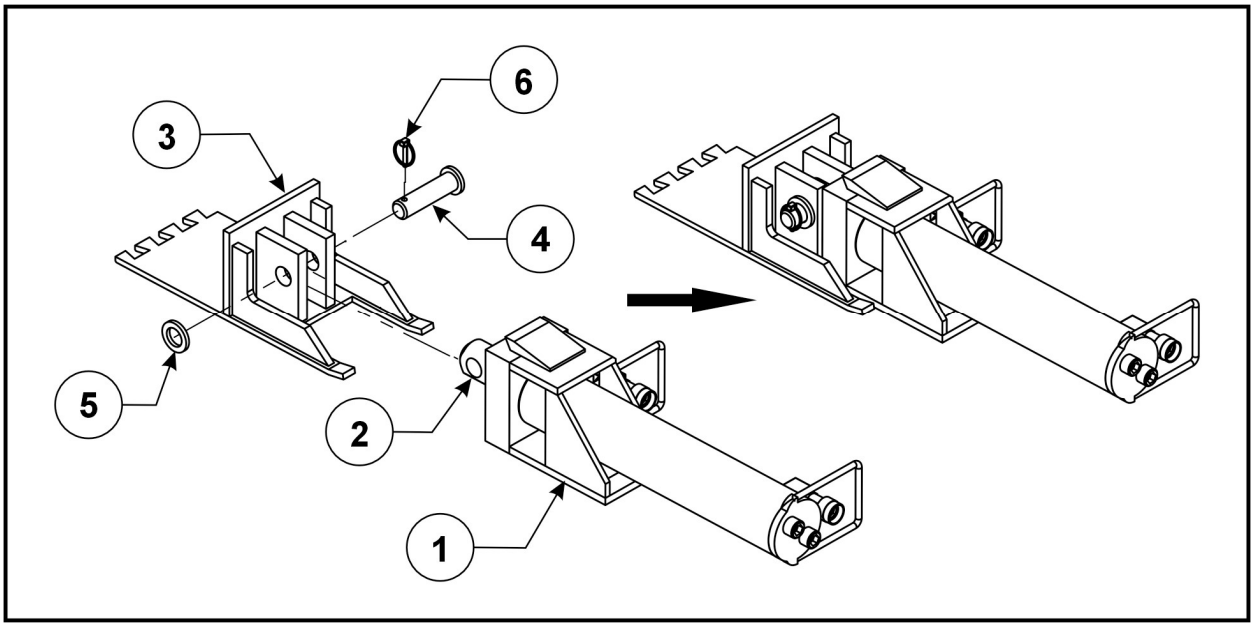


Figure 7: Cylinder Assembly Connection to Push-Pull Head

Item No.	Description
1	Push-Pull Cylinder Assembly (XLP80-03 or XLP150-03)
2	Rod End Clevis
3	Push/Pull Head
4	Clevis Pin
5	Clevis Pin Washer
6	Linch Pin

- Attach suitable 10,000 psi-rated hydraulic hoses to the cylinder quick coupler fittings. Unless otherwise specified, the advance and retract ports have standard Power Team 9796 female couplers.

- Connect the other end of the hoses to a suitable hydraulic pump unit, ensuring that the bottom of each cylinder is connected to the advance port and the top of each cylinder is connected to the return port. These systems will function with most 10,000 psi double-acting hydraulic pumps, however we recommend use of a synchronous pump unit.
- Ensure that all couplers are fully engaged and hand-tight, otherwise the hose check valves will not open and the cylinders will not function properly.
- Ensure a clear path for the hydraulic hoses and monitor continually to make sure they will not become caught or entangled during the move.
- The pump unit should be placed in a location which gives the operator an unobstructed view of the push cylinders during operation. Personnel should be positioned at the back side or in any area of operation that is not visible to the operator and should be in continuous visual or radio contact with the operator.
- Apply hydraulic pressure and extend the push cylinders, one at a time, until the cylinder support wedge plate fully engages in the track ratchet and 500-1000 psi (35-69 bar) pressure is reached on the pressure gauge for each cylinder. This ensures the cylinders will move in unison when skidding operations commence.
- Check the complete system setup and ensure that the push cylinders are properly engaged and that there are no hydraulic leaks.
- Continue to extend the push cylinders to near full stroke making sure that they extend in unison so they do not jam in the track, which could damage the system. If possible, avoid fully extending the push cylinders, and avoid full pressurization when extended as this can cause serious damage to the cylinder internals.
- Retract the push cylinders until they and drop into the next ratchet slot in the tracks.
- Continue to extend and retract the push cylinders as above until the load reaches the desired position.
- If the load has been moved too far, disconnect the pin and remove the cylinder assembly from the track. Again, do not lift the cylinder assembly using the hydraulic lines or fittings as this could damage them.
- Turn the cylinder assembly over 180 degrees and reconnect the pin. The cylinder is now configured in pull mode to move the load backwards.

Note: When the skidding system will be used to pull the load, the track should be securely anchored to a rigid surface to prevent damage due to lifting of the track.

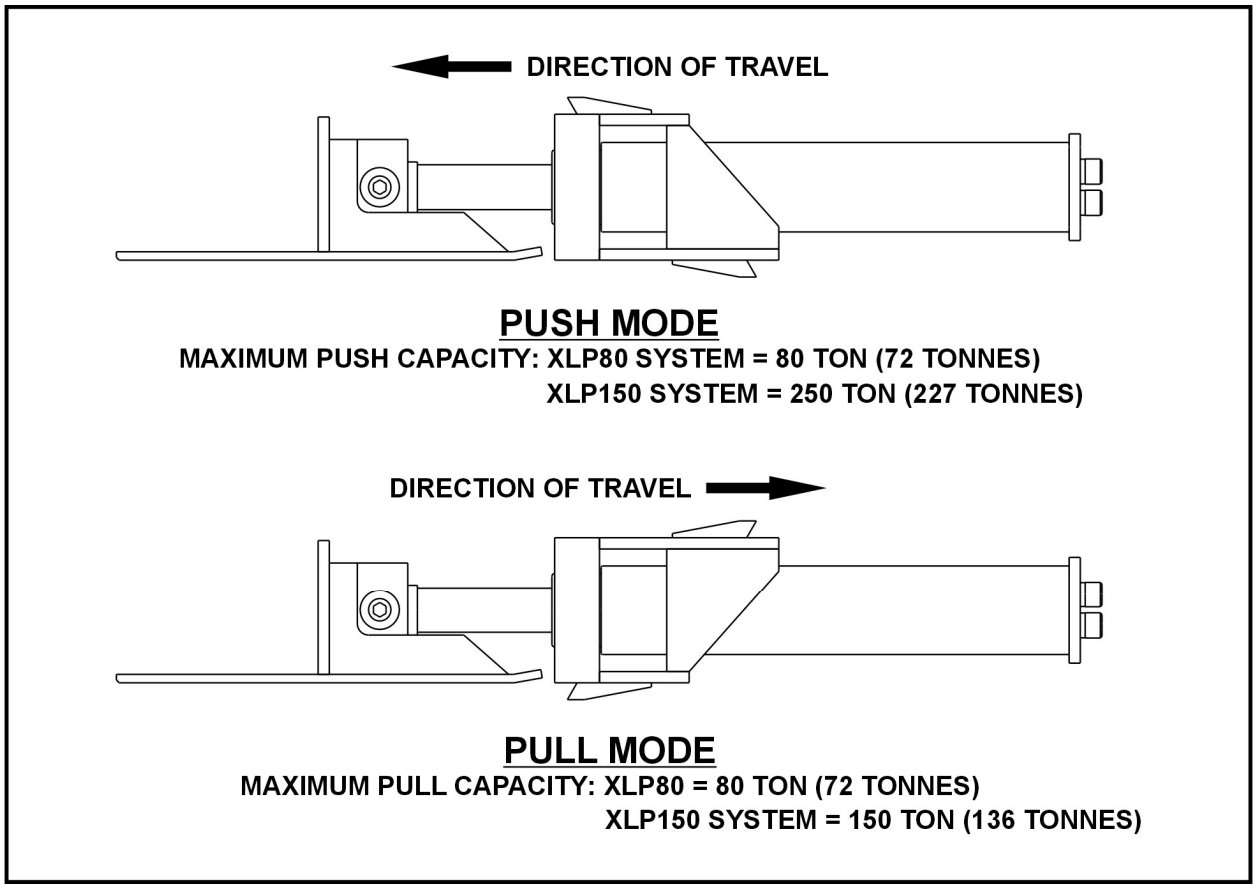


Figure 8: XLP80/150 Push Mode and Pull Mode Configurations

- When the desired position is reached, raise the load (using other means) to a sufficient height to remove the skid system, and then lower the load into place.

4 - MAINTENANCE AND ADJUSTMENTS

4.1 Preventive Maintenance

- When not in use, store all skid system components in the supplied storage box, in a dry location and protected from damage. Take special care of all hydraulic components and fittings.
- Keep skidding surfaces clean and dry. Wipe the skidding surfaces occasionally using an oily rag, but do not apply excess oil, grease, or any other lubricants. A nominal friction contact surface is required for safe operation.
- Repair or replace any broken, worn or damaged components. Contact Hydra-Slide Ltd. for replacement parts.
- Keep cylinder rods fully retracted when not in use.
- Keep coupler threads clean and well-lubricated, and secure the protective dust caps on all couplers when not in use.

4.2 Troubleshooting

Symptom	Probable Cause	Recommended Action
Push cylinder will not extend, or extends only partially	Coupler is not fully engaged Load exceeds capacity Skid shoe is jamming in track	Check and tighten all couplers Reduce load Realign track
Push cylinder will not extend and oil is coming from pressure relief valve or top of cylinder	Coupler is not fully engaged	Check and tighten all couplers
Cylinders exhibit jerky, sporadic movement when extending	Air in hydraulic system	Bleed the hydraulic system
Push cylinder will not retract	Coupler is not fully engaged	Check and tighten all couplers
Load does not move straight	Track is not set up equidistant from edge of load Cylinders are not extending in unison	Reposition track Use a synchronous pump unit or some other means to provide equal oil flow.

5 - TRANSPORTATION, HANDLING, AND STORAGE

- Individual components should be handled separately and with care. Weights are indicated on the nameplates of each component part.
- Lift all components using the attached handles; we recommend employing two personnel to handle track sections.
- Transport and handle in a safe manner and always ensure that parts are properly secured and prevented from unexpected movement.
- When not in use, store the skidding system in a covered, dry location, protected from damage. Take special care of all hydraulic components, hoses and fittings, etc.
- Wipe clean the inside and outside of all hose couplers using a clean, non-fibrous cloth before connecting; always replace protective caps when couplers are not in use.

APPENDIX 1 – TRACK CAPACITY AND SUPPORT

With the XLP150 skidding systems, the tracks are constructed of thin plates that have negligible resistance to bending. Structural capacities are based on the contact pressure between the sliding surfaces. For full capacity, the load must be evenly distributed over the entire length of the skid shoe plate *and* the track must be adequately supported over its entire length. For lighter loads, it may be possible to have less than full distribution of the load over the skid shoes provided that the contact pressures do not exceed certain values. It is always good practice to support under the track connections and to minimize unsupported spans as much as possible.

The recommended maximum contact pressure is given below:

XLP150 – 10 tons per foot of length (29.8 tonne per meter of length)

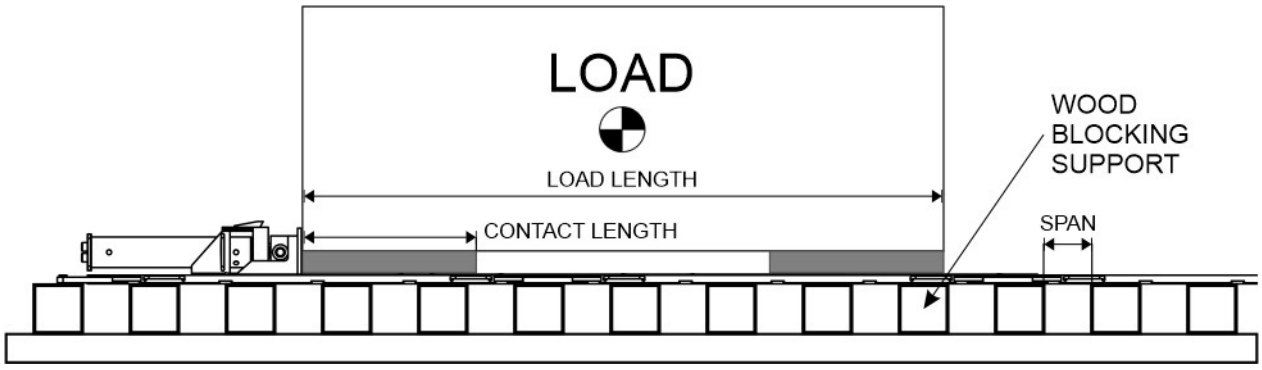
Notes:

1. The contact length is determined by the minimum distance where the track and slider plates are sandwiched between a rigid load contact area and the track support area. Contact pressures may be affected by an offset center of gravity of the load.
2. The following examples are only applicable to Hydra-Slide XLP150 system. See respective manual for other Hydra-Slide low profile systems.

When using Blocking Support:

1. The load is assumed to be sufficiently rigid to support itself over the blocking span.
2. The spanning length should not exceed 6" (0.15m) and must be no greater than a third of the load length.

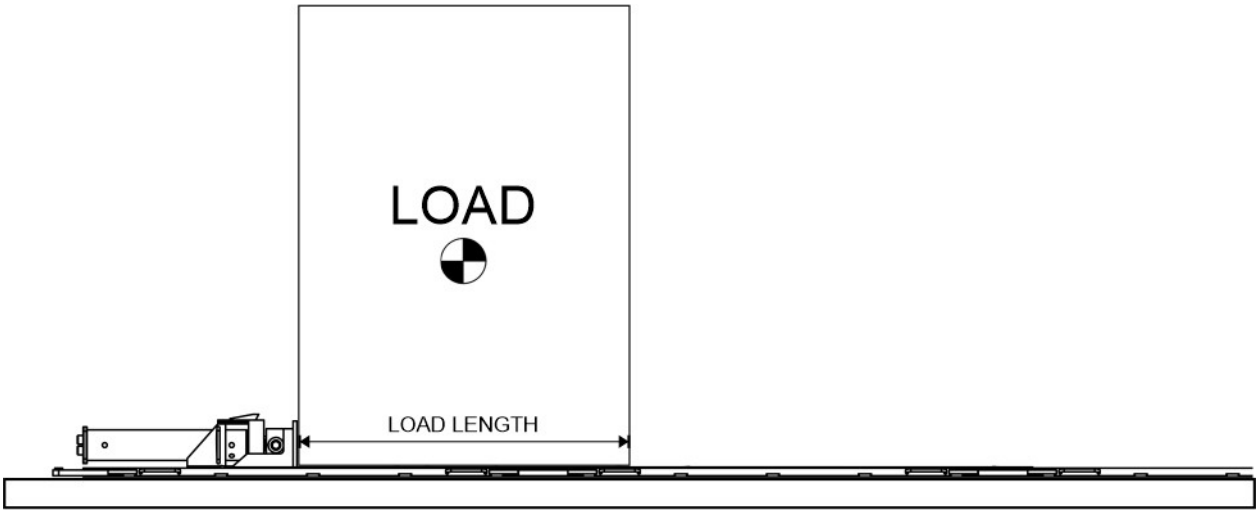
Example 1: The load is distributed equally onto four total contact surfaces placed on slider plates. The track sections are partially supported by timbers with 7 timbers under load (see Figure below):



Assumptions (imperial):	**Assumptions (metric):**
• The load is assumed to be sufficiently rigid to support itself over the blocking span • Center of Gravity is at the center of the load in all planes • The top surface of the slider plate surface and load supports are fully contacting each other	• The load is assumed to be sufficiently rigid to support itself over the blocking span • Center of Gravity is at the center of the load in all planes • The top surface of the slider plate surface and load supports are fully contacting each other
Given Values:	**Given Values:**
Total Load Weight = 45 tons	Total Load Weight = 40.8 tonnes
Load Length = 54in or 4.5ft	Load Length = 1.4m
Wood blocking span = 4in	Wood blocking span = 0.1m

Contact Length = 1.5ft (1 of 4 points of contact) Total Contact Length Between Track and Blocking = 4in x 7 timbers = 28in or 2.3ft Max. Allowable Contact Pressure = 10 ton/ft **Calculations:** i) Check if weight of load per ft of contact between load and slider plates is less than 10 ton/ft 45 tons / 4 contact surfaces = 11.25 tons 11.25 tons / 1.5ft = 7.5 ton/ft < 10 ton/ft (acceptable) ii) Check if weight of load per foot of contact between track section and wood blocking is less than 10 ton/ft 45 tons / 2 = 22.5 tons per track line 22.5 tons / 2.3ft = 9.8 ton/ft < 10 ton/ft (acceptable) iii) Check if a third of the load length is greater than the span between blocking Load length / 3 > Span 54in / 3 > 4in 18in > 4in (acceptable) **Conclusion:** According to calculations all checks pass – proceed with rigging plan.	Contact Length = 0.5m (1 of 4 points of contact) Total Contact Length Between Track and Blocking = 0.1m x 7 timbers = 0.7m Max. Allowable Contact pressure = 29.8 tonnes/m **Calculations:** iv) Check if weight of load per ft of contact between load and slider plates is less than 29.8 tonnes/m 40.8 tons / 4 contact surfaces = 10.2 tonnes 10.2 tonnes / 0.5m = 20.4 ton/ft < 29.8 tonnes/m (acceptable) v) Check if weight of load per foot of contact between track section and wood blocking is less than 29.8 tonnes/m 40.8 tonnes / 2 = 20.4 tonnes per track line 20.4 tonnes / 0.7m = 29.1 tonnes/m < 29.8 tonnes/m (acceptable) vi) Check if a third of the load length is greater than the span between blocking Load length / 3 > Span 1.4m / 3 > 0.1m 0.5m > 0.1m (acceptable) **Conclusion:** According to calculations all checks pass – proceed with rigging plan.

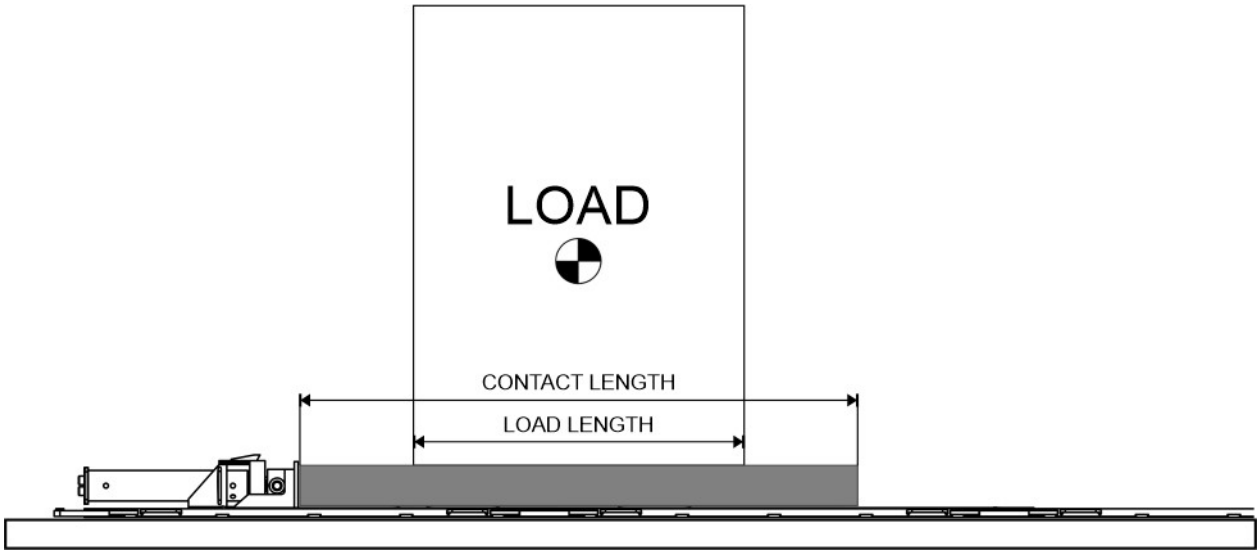
Example 2.a: The load is in full contact with the slider plates and the track sections are fully supported by ground floor (see Figure below)



Assumptions (imperial): The load is fully contacting the slider plates Center of Gravity is at the center of the load in all planes **Given Values:**	**Assumptions (metric):** The load is fully contacting the slider plates Center of Gravity is at the center of the load in all planes **Given Values:**

Total Load Weight = 90 tons Load Length (Contact length)= 4ft Max. Allowable Contact pressure = 10 ton/ft **Calculations:** i) Check if weight of load per ft of contact between load and slider plates is less than 10 ton/ft 90 tons / 2 track lines = 45 tons 45 tons / 4 ft = 11.25 ton/ft > 10 ton/ft **(not acceptable)** **Conclusion:** We will have to change our rigging plan in order to accommodate the 10 ton/ft requirement. This can be done by increasing the contact surface between the load and the slider plate which will distribute the weight more and avoid loading concentrations (See next example).	Total Load Weight = 81.6 tonnes Load Length (Contact length)= 1.2m Max. Allowable Contact pressure= 29.8 tonnes/m **Calculations:** ii) Check if weight of load per ft of contact between load and slider plates is less than 29.8 tonnes/m 81.6 tonnes / 2 track lines = 40.8 tons 40.8 tonnes / 1.2m = 34 tonnes/m > 29.8 tonnes/m **(not acceptable)** **Conclusion:** We will have to change our rigging plan in order to accommodate the 29.8 tonnes/m requirement. This can be done by increasing the contact surface between the load and the slider plate which will distribute the weight more and avoid loading concentrations (See next example).

Example 2.b: The load is in full contact with the load support and the track sections are fully supported by ground floor (see Figure below)



Assumptions (imperial): The load is fully contacting and centered on the load support Center of Gravity is at the center of the load in all planes **Given Values:** Total Load Weight = 90 tons Load Length = 4ft Contact Length = 6ft Max. Allowable Contact pressure = 10 ton/ft **Calculations:**	**Assumptions (metric):** The load is fully contacting and centered on the load support Center of Gravity is at the center of the load in all planes **Given Values:** Total Load Weight = 81.6 tonnes Load Length = 1.2m Contact Length = 1.8m Max. Allowable Contact pressure = 29.8 tonnes/m **Calculations:**

i) Check if weight of load per ft of contact between load and slider plates is less than 10 ton/ft 90 tons / 2 track lines = 45 tons 45 tons / 6 ft = 7.5 ton/ft < 10 ton/ft **(acceptable)** **Conclusion:** According to calculations all checks pass – proceed with skidding plan.	ii) Check if weight of load per ft of contact between load and slider plates is less than 29.8 tonnes/m 81.6 tonnes / 2 track lines = 40.8 tonnes 40.8 tonnes / 1.8 m = 22.7 tonnes/m < 29.8 ton/ft **(acceptable)** **Conclusion:** According to calculations all checks pass – proceed with skidding plan.

APPENDIX 2 – EC DECLARATION OF CONFORMITY

Manufacturer

Hydra-Slide Ltd.
84 Royal Road
Guelph, Ontario, Canada
N1H 1G3

We declare that the **Hydra-Slide XLP80/150 Extreme Low Profile Skidding System** is in accordance with the following Harmonized Standards:

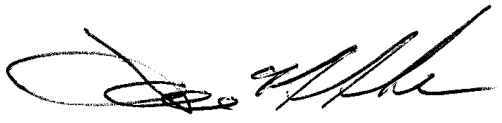
EN ISO 12100:2010	Safety of machinery – General principles for design - Risk assessment and risk reduction
EN 4413:2010	Hydraulic fluid power – General rules and safety requirements for systems and their components

And in accordance with the EC Guidelines of:

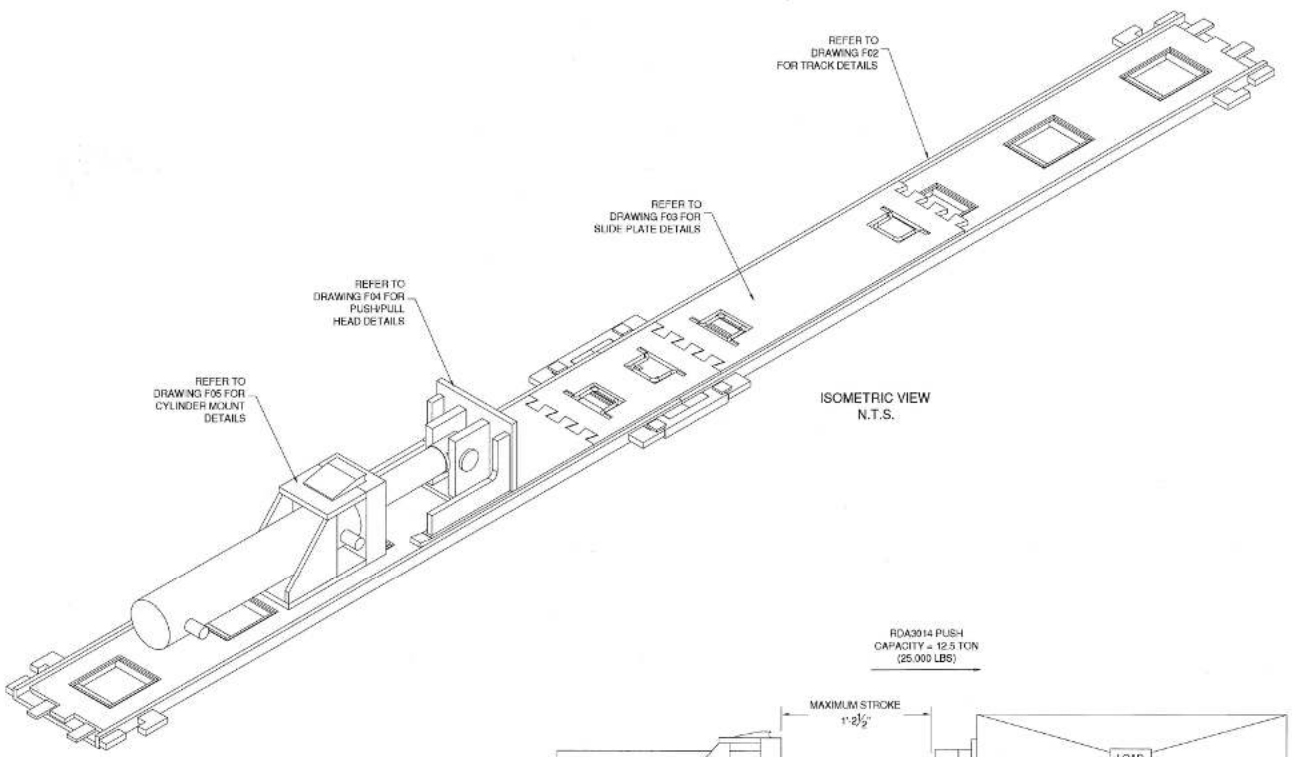
2006/42/EC –	Machinery Directive

Documentation supporting this declaration is kept on file at the address listed above.

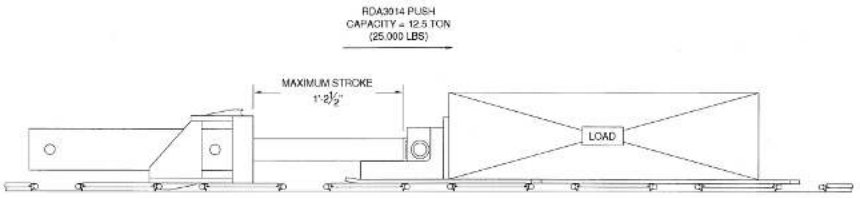
Hydra-Slide Ltd. February 18, 2017



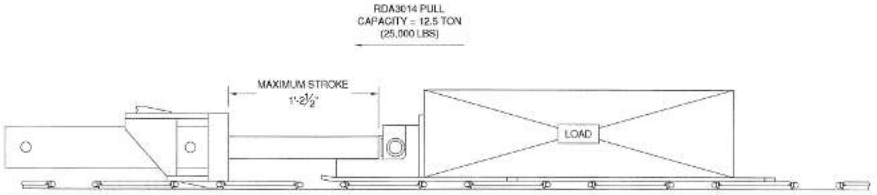
Don Mahnke P. Eng
President



ISOMETRIC VIEW
N.T.S.



PUSH DETAIL



PULL DETAIL

REFERENCE DRAWINGS:

1) REFER TO DRAWING 12-00140-F02 FOR TRACK SECTION DETAILS.
2) REFER TO DRAWING 12-00140-F03 FOR SLIDE PLATE DETAILS.
3) REFER TO DRAWING 12-00140-F04 FOR PUSH/PULL HEAD DETAILS.
4) REFER TO DRAWING 12-00140-F05 FOR CYLINDER MOUNT DETAILS.

PROFESSIONAL ENGINEER ALBERTA
PAUL HENDERSON

02-APR-2013

2H ENGINEERING APEGA PERMIT #P06719

REV	DD-MM-YY	DESCRIPTION	BY	CHK
02	02-04-13	ISSUED FOR CONSTRUCTION	PH	
01	05-02-13	REV ISO VIEW/PUSH CAPACITY	PH	
00	11-01-13	PRELIMINARY RELEASE	PH	

2H ENGINEERING
9143 - 39 AVENUE
EDMONTON, AB T6E 5Y2
(780) 988-6060

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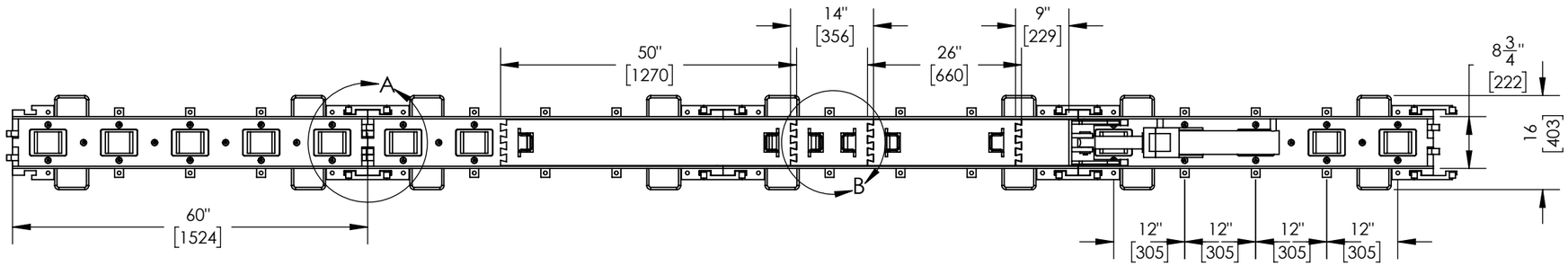
CLIENT: HYDRA-SLIDE LTD

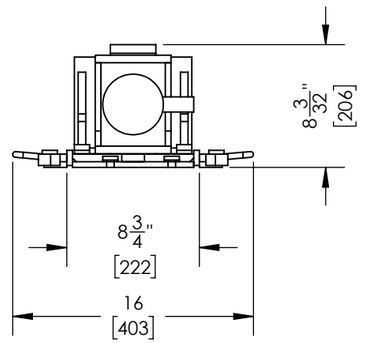
PROJECT: LP150 SKID SYSTEM

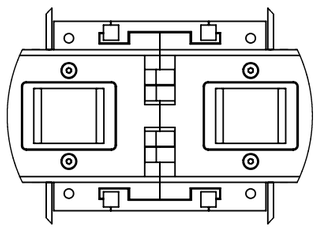
DRAWING TITLE:
FABRICATION DETAILS
LP150 SKID SYSTEM
GENERAL ARRANGEMENT

PROJECT NUMBER:	DWG NUMBER:	SHEET:	REV:
12-00140	F01	1 OF 1	02

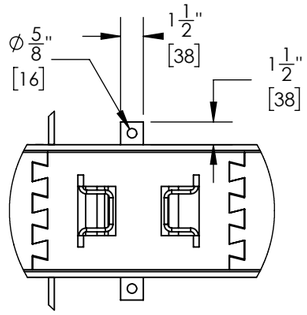
SCALE 1" (25.4mm)



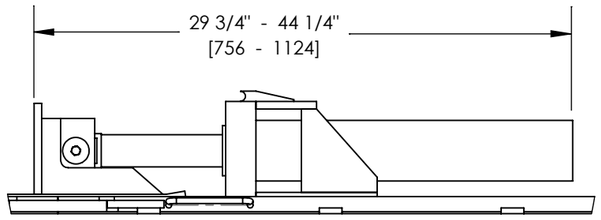




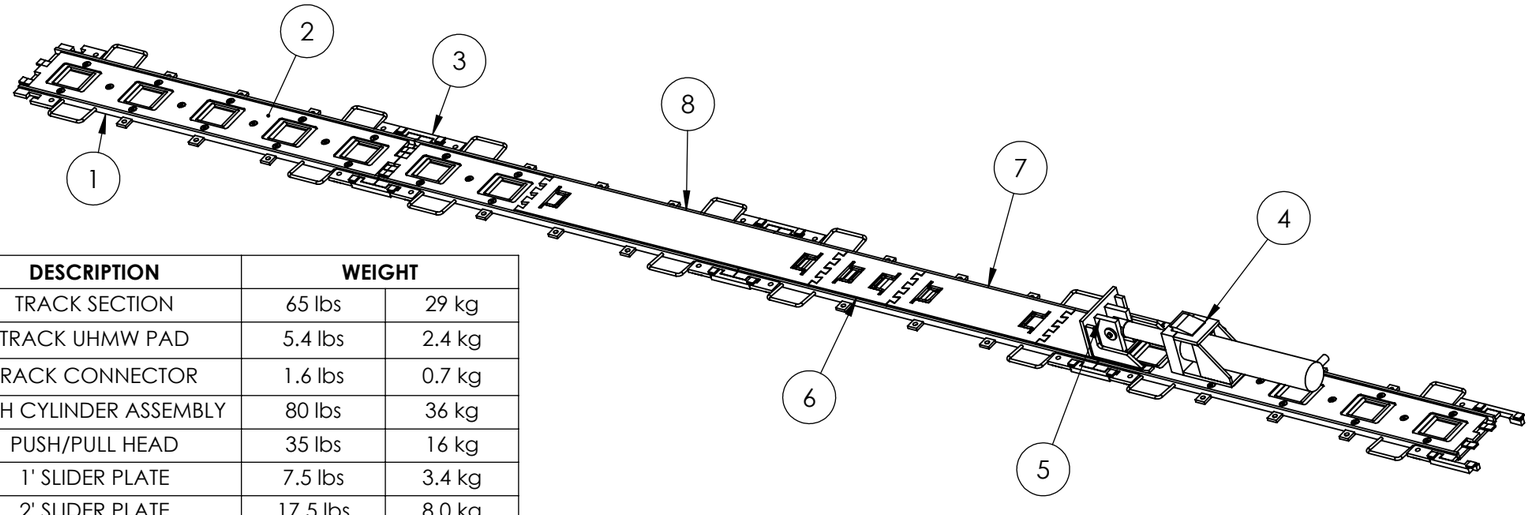
DETAIL A



DETAIL B



DETAIL C



ITEM NO.	PART NUMBER	DESCRIPTION	WEIGHT	
1	XLP150-01	TRACK SECTION	65 lbs	29 kg
2	XLP150-01-07	TRACK UHMW PAD	5.4 lbs	2.4 kg
3	XLP150-02	TRACK CONNECTOR	1.6 lbs	0.7 kg
4	XLP150-03	PUSH CYLINDER ASSEMBLY	80 lbs	36 kg
5	XLP150-04	PUSH/PULL HEAD	35 lbs	16 kg
6	XLP150-05	1' SLIDER PLATE	7.5 lbs	3.4 kg
7	XLP150-06	2' SLIDER PLATE	17.5 lbs	8.0 kg
8	XLP150-07	4' SLIDER PLATE	40 lbs	18 kg

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HYDRA-SLIDE
SKIDDING | RIGGING | HYDRAULICS

TITLE:

XLP150 SYSTEM GENERAL ASSEMBLY DRAWING

SIZE	DWG. NO.	REV
B	XLP150-GA	02
DRAWN BY:	D.M.	SHEET 1 OF 1

Power Team®
SPXFLOW®

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powerteam.com

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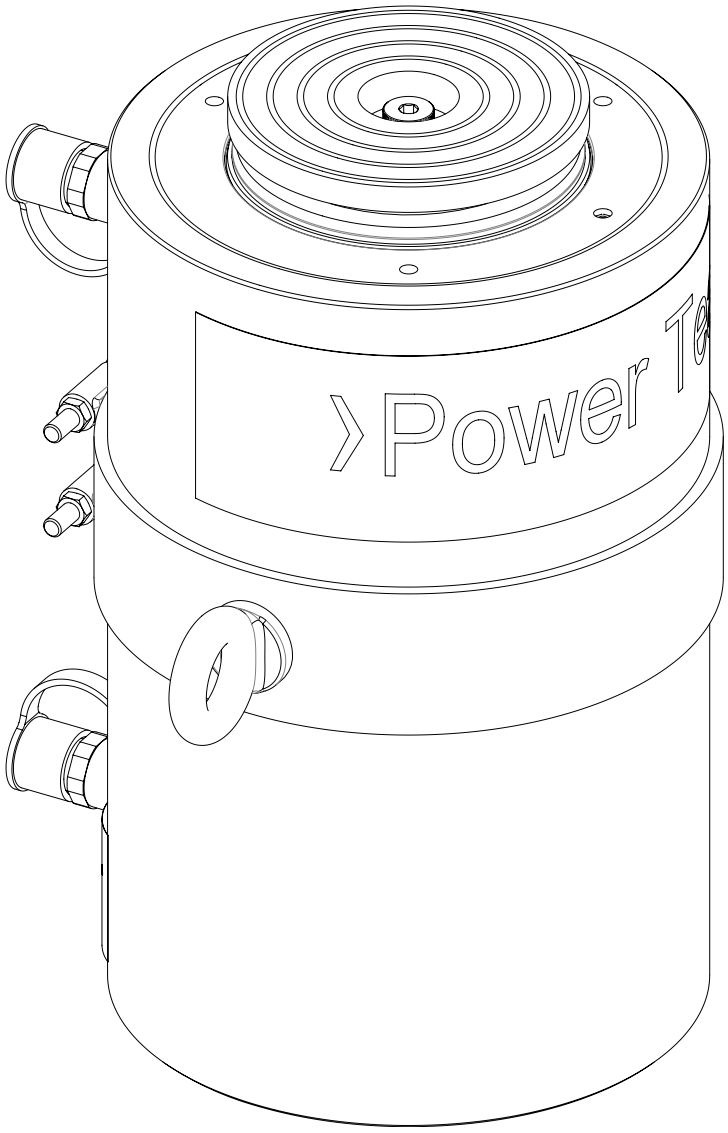
Fax: (800) 765-8326
Order Entry: (800) 541-1418
Fax: (800) 288-7031

Operating Instructions For:

Single-acting and
Double-acting Rams and Cylinders
(Various Capacities)

HYDRAULIC CYLINDERS

All cylinders are marked with maximum pressure setting



MODEL SHOWN FOR RDG600

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Form No. 102397
Rev. 11 Sep. 25, 2023

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INTRODUCTION

These instructions are written to help you, the user, more effectively use and maintain your single-acting or double-acting cylinders and rams. If any questions, please call your nearest Power Team facility (see listing).

Some of the information included in these instructions was selected from ASME B30.1 and applies to the construction, installation, operation, inspection and maintenance of hydraulic cylinders. It is strongly recommended that you read ASME B30.1 to answer any questions not covered in these instructions. The complete ASME B30.1 standard which contains additional information can be obtained at a nominal cost from the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th, New York, New York 10017.

An inspection checklist (Form No. 105503) is available on request from your nearest Power Team facility.

DEFINITIONS

Authorized - appointed by a duly constituted administrative or regulatory authority.

Authorized Service Center - independent service facility designated by the manufacturer to repair and test products.

Cylinders, Rams, and Jacks - used to apply force in a linear motion through the use of hydraulic fluid under pressure confined in a pressure vessel (body) with moveable pressure vessel (piston).

Designated - selected by the employer or employer's representative as being qualified to perform specific duties.

Extension - a device to increase the cylinder's, ram's or jack's retracted length.

Load - the total weight or force to be overcome by the cylinder, ram or jack.

Qualified - a person who, by possession of a recognized degree, certificate, professional standing or who by extensive knowledge, training and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter or work, or who is filled or suited for a given purpose or function. Competent.

Operator - a person qualified to operate or use a device or machine.

Rated Capacity - the maximum load for which the cylinder, ram, or jack is designed and built.

Service, Normal - cylinders, rams or jacks used under controlled or known consistent loads at less than 85% of rated capacity except for isolated instances.

Service, Severe - cylinders, rams or jacks used under conditions not rated as normal service.

Travel - linear extending or retracting movement of the cylinder, ram or jack.

SAFETY SYMBOLS AND DEFINITIONS

Safety symbols are used to identify any action or lack of action that can cause personal injury. Your reading and understanding of these safety symbols is very important.

⚠ DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION: Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

IMPORTANT: Important is used when action or lack of action can cause equipment failure, either immediate or over a long period of time.

SAFETY PRECAUTIONS

These instructions are intended for end-user application needs. For a detailed parts list or to locate a Power Team Authorized Hydraulic Service Center contact your nearest Power Team facility. A list of all Power Team facilities is located at the end of this document.

⚠ WARNING: All WARNING statements must be carefully observed to help prevent personal injury.

- **The following procedures must be performed by qualified, trained personnel who are familiar with this equipment. Operators must read and understand all safety precautions and operating instructions included with the device. If the operator cannot read these instructions, operating instructions and safety precautions must be read and discussed in the operator's native language.**
- **These components are designed for general use in normal environments. These components are not specifically designed for lifting and moving people, agri-food machinery, certain types of mobile machinery or special work environments such as: explosive, flammable, or corrosive. Only the user can decide the suitability of this machinery in these conditions or extreme environments. Power Team will supply information necessary to help make these decisions. Consult your nearest Power Team facility.**

General

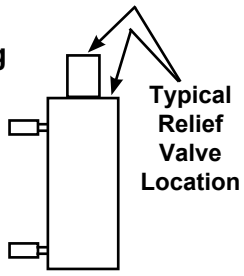
- **Safety glasses must be worn at all times by the operator and anyone within sight of the unit. Additional personal protection equipment may include: face shield, goggles, gloves, apron, hard hat, safety shoes, and hearing protection.**
- **Operation, repair, or maintenance of hydraulic equipment should be performed by a qualified person who understands the proper function of hydraulic equipment per local directives and standards.**
- **Read and understand all safety and warning decals and instructions.**
- **Use only approved accessories and approved hydraulic fluid. Hoses, seals and all components used in a system must be compatible with the hydraulic fluid used.**

Safety Precautions Continued

Cylinder

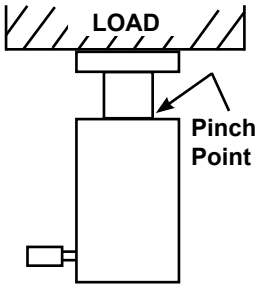
⚠ DANGER : A double-acting cylinder or ram must have both hoses and all couplers securely connected to both ports. If one of the two ports is restricted or becomes disconnected, pressure will build and the cylinder, hose or coupler can burst, possibly causing serious injury or death.

- **When extending double-acting cylinders or rams, the retract port must not be restricted. A restricted retract port will prevent pressure from being released and the cylinder can burst, possibly causing serious injury or death.**
- **DO NOT attempt to adjust or service the rod end relief valve on a double-acting cylinder or ram. If oil leakage is detected from this relief valve, discontinue use of the cylinder or ram immediately and contact your nearest Authorized Hydraulic Service Center. If improperly adjusted, the cylinder or ram could develop excessive pressure and cause the cylinder, hose or couplers to burst which could cause serious injury or death.**

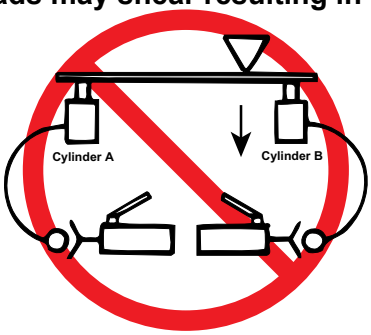


- **When extending a cylinder or ram under load, always insure that the coupler(s) or port thread(s) has (have) not been damaged or do(es) not come in contact with any rigid obstruction. If this condition does occur, the coupler's attaching threads may become stripped or pulled from the cylinder or ram resulting in the instantaneous release of high pressure hydraulic fluid, flying objects, and loss of the load. All of these possible results could cause serious injury or death.**
- **When using a center-hole cylinder or ram, always support the base against a rigid, flat surface at least 75% as large as the cylinder or ram base. Failure to do so can damage the center standpipe resulting in the instantaneous release of high pressure hydraulic fluid and loss of load which can possibly cause serious injury or death.**
- **Avoid off-center loads which could damage the cylinder or ram and/or cause loss of the load, possibly causing serious injury or death.**
- **Control the load at all times. Do not drop the load. Especially on locking collar cylinders or rams because the threads may shear and cause loss of the load.**
- **Properly rated adapters must be installed and used correctly for each application.**
- **Cylinders with weep hole stroke limiters will expel high pressure oil through the bleed hole to the atmosphere if extended beyond the visual maximum stroke indication. If this occurs, seals must be replaced.**
- **When lifting cylinders with eyebolts, always follow safe rigging practices outlined in the Machinery Directive 2006/42/EC in connection with the latest revision of DIN 580 and DIN 582 [ASME B30.26].**
- **Do not exceed the rated capacities of the cylinders. Excess pressure can result in personal injury.**
- **Inspect each cylinder and coupler before each shift or usage to prevent unsafe conditions from developing.**
- **Do not use cylinders if they are damaged, altered or in poor condition.**
- **Do not use cylinders with bent or damaged couplers or damaged port threads.**
- **Under certain conditions, the use of an extension with a hydraulic cylinder may not be advisable and could present a dangerous condition.**

- **Avoid pinch points or crush points that can be created by the load or parts of the cylinder.**
- **To help prevent material fatigue if the cylinder is to be used in a continuous application, the load should not exceed 85% of the rated capacity or stroke.**



- **The RT1004 cylinder has an internal stroke limiting device which may be damaged by sudden movement of the piston rods. If damage is suspected, have the stroke limiting plunger and spring inspected/replaced by a qualified person.**
- **Cylinder must be on a stable base which is able to support the load while pushing or lifting.**
- **To help prevent personal injury, use shims, friction material or constraints to prevent slippage of the base or load.**
- **Do not set poorly-balanced or off-center loads on a cylinder. The load can tip or the cylinder can "kick out" and cause personal injury.**
- **Do not use the locking collar on a threaded piston as a stop. The threads may shear resulting in loss of the load.**



- **Do not create an uneven fulcrum and lever condition or overload condition where force exerted by one cylinder on a lever will intensify downward force on a pressure-checked cylinder at the other end of the lever.** For example: If straightening an axle as illustrated, when cylinder A extends, and uneven fulcrum and lever condition will intensify force downward on pressure-checked cylinder "B". The pressure created in cylinder "B" will be increased to dangerously high levels.
- **If this component is used to lift or lower loads, be certain that the load is under operator control at all times and that others are clear of the load. Do not drop the load.**
- **As the load is lifted, use blocking and cribbing to guard against a falling load.**
- **To help prevent personal injury, do not allow personnel to go under or work on a load before it is properly cribbed or blocked. All personnel must be clear of the load before lowering.**
- **Never use extreme heat to disassemble a hydraulic cylinder or ram. Metal fatigue and/or seal damage will result and can lead to unsafe operating conditions.**
- **Use extreme caution when disassembling a spring return cylinder. All springs can store energy which can be released suddenly and cause personal injury. Mechanically restrain the gland nut or end cap when disassembling any compressed or extended cylinders which have an internally compressed spring. Consult the parts list to determine the type of spring loading. Observe all warnings and cautions.**

Hydraulic Hoses and Fluid Transmission Lines

- **Avoid straight line tubing connections in short runs. Straight line runs do not provide for expansion and contraction due to pressure and/or temperature changes. See fig. 1. "Hose and Tubing Connections" under section "Hydraulic Connections" of this form.**
- **Eliminate stress in the tube lines. Long tubing runs should be supported by brackets or clips. Tubes through bulkheads must have bulkhead fittings. This makes easy removal possible and helps support the tubing.**

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- **Before operating the pump, all hose connections must be tightened with the proper tools. Do not overtighten. Connections should only be tightened securely and leak-free. Overtightening can cause premature thread failure or high pressure fittings to split at pressures lower than their rated capacities.**

- **Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut off the pump and release all pressure. Never attempt to grasp a leaking pressurized hose with your hands. The force of escaping hydraulic fluid could cause serious injury.**
- **Do not subject the hose to potential hazard such as fire, sharp surfaces, extreme heat or cold, or heavy impact. Do not allow the hose to kink, twist, curl, crush, cut, or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear, because any of these conditions can damage the hose and possibly result in personal injury. Never repair with tape.**
- **Do not use the hose to move attached equipment. Stress can damage the hose and possibly cause personal injury.**
- **Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive materials such as creosote-impregnated objects and some paints. Hose deterioration due to corrosive materials can result in personal injury. Consult the manufacturer before painting a hose. Never paint a coupler.**

IMPORTANT:

- **Keep the cylinder clean at all times.**
- **While at a job site, when the cylinder is not in use, keep the piston rod fully retracted and upside down.**
- **Use an approved, high-grade pipe thread sealant to seal all hydraulic connections. PTFE tape can be used if only one layer of tape is used and it is applied carefully (two threads back) to prevent the tape from being pinched by the coupler and broken off inside the pipe end. Any loose pieces of tape could travel through the system and obstruct the flow of fluid or cause jamming of precision-fit parts.**
- **Always use protective covers on disconnected quick couplers.**
- **When mounting cylinders or rams using the internal piston rod threads, collar threads, threaded tie rods or base mounting holes, the threads must be fully engaged. Always use SAE grade 8 or better fasteners when attaching components to cylinders or rams and tighten securely.**
- **Limiting the stroke on spring return cylinders will prolong spring life.**
- **Limiting the stroke and pressure on all cylinders will prolong their life.**

Hydraulic Fluids

- **Properly dispose of all fluids, components and assemblies at the end of their useful life according to the applicable local waste-treatment and environmental regulations.**
- **Hydraulic fluid should be compatible with all hydraulic components.**

Transport

- **Do not lift hydraulic cylinder by any hose or coupler. To safely transport, always use the carrying handle, roll cage or suitable lifting aid, along with assistance and proper lifting techniques.**

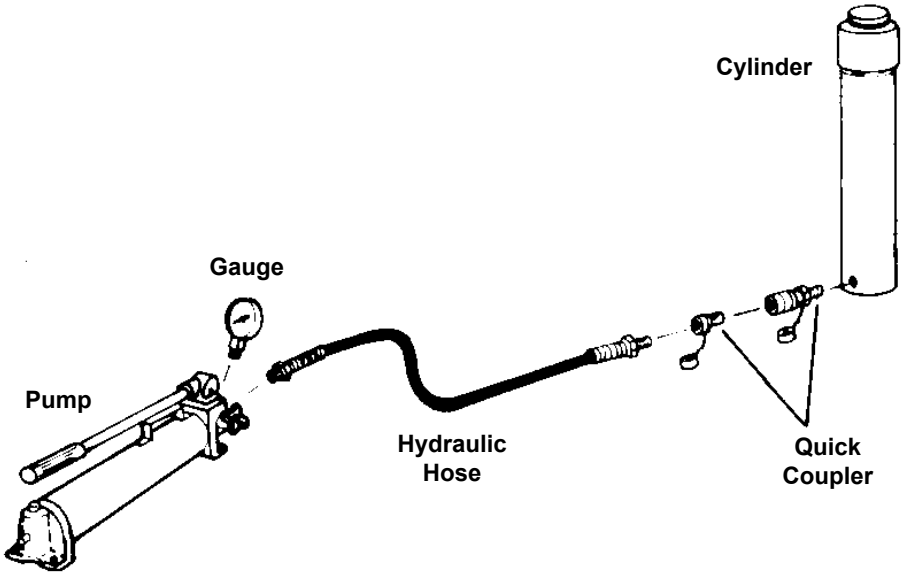
NOTE: The guide cannot cover every hazard or situation so always do the job with SAFETY FIRST.

1. Single-Acting Hydraulic Systems

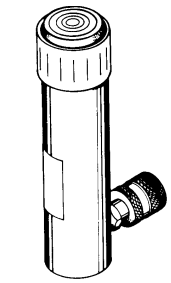
A basic single-acting hydraulic system consists of a manual or power pump that moves the hydraulic fluid, a hydraulic hose that carries the fluid, and a cylinder or ram that the fluid moves to do a job.

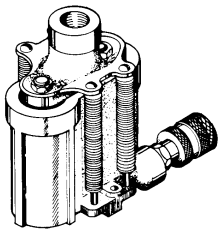
Typical Installation:

Since the single-acting cylinders have only one hose going to the cylinder, the cylinder can only apply force to extend (pull cylinders retract) its rod. The return stroke is accomplished by gravity or spring force.

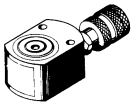


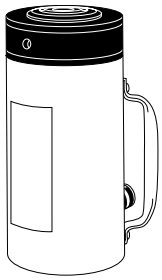
VARIOUS TYPES OF SINGLE-ACTING CYLINDERS


Spring Return, Gravity Return


Center Hole, Twin Cylinder Spring Return

Center Hole Spring Return


Spring Return


Locking Collar

Pull Cylinder

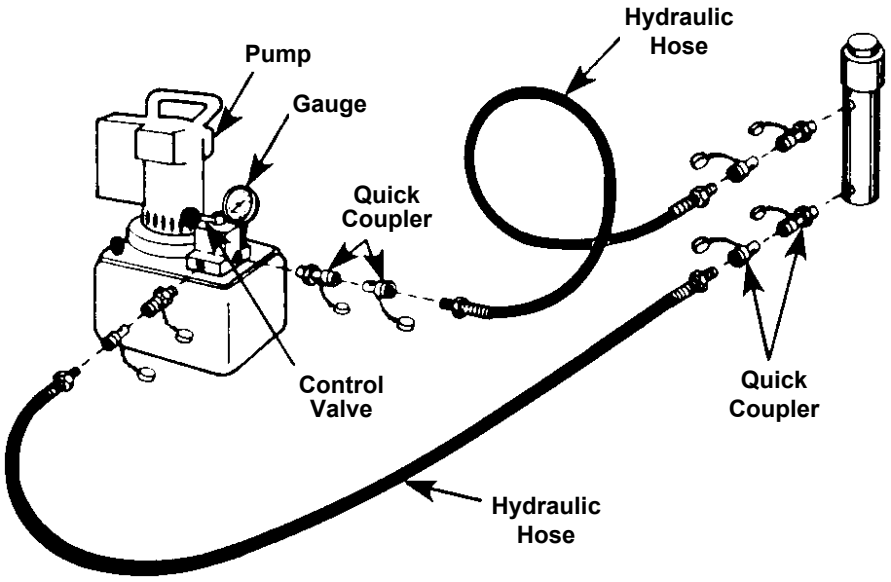
2. Double-Acting Hydraulic Systems

A basic double-acting hydraulic system consists of a pump (which moves the hydraulic fluid), a double-acting cylinder or ram (to do the work), a hydraulic hose (which routes the fluid to the advance cylinder or ram port), a second hydraulic hose (which routes the fluid to the retract cylinder or ram port), and a control valve which can change the direction of the hydraulic fluid.

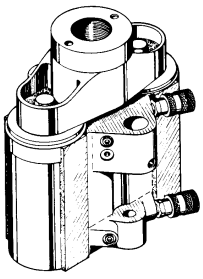
Typical Installation:

A double-acting cylinder or ram can be either extended or retracted hydraulically.

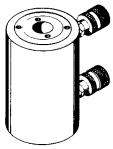
Most double-acting cylinders or rams are classed as “differential cylinders” because of the different sized areas that the hydraulic fluid pushes against during the extend and retract strokes. Because of this difference, the extend stroke can exert more force than the retract stroke.



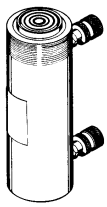
VARIOUS TYPES OF DOUBLE-ACTING CYLINDERS



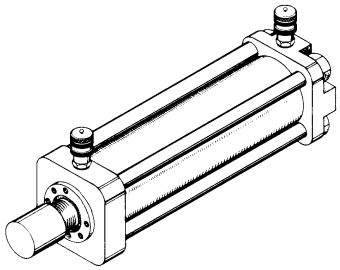
Center Hole, Twin Cylinder



Center Hole Cylinder



Basic Double-acting Cylinder



Tie Rod Cylinder

NOTE: The capacity of a hydraulic system is determined by the effective area of the cylinder and the system pressure.

3. Hydraulic Connections

Remove the thread protectors or dust covers from the hydraulic ports if applicable. Clean the areas around the fluid ports of the pump and cylinder. Inspect all threads and fittings for signs of wear or damage, and replace as needed. Clean all hose ends, couplers and union ends. Connect all hose assemblies to the pump and cylinder. Use an approved, high-grade pipe sealant (such as Power Team HTS6) to seal all hydraulic connections. Tighten securely and leak-free but do not overtighten.

Hydraulic lines and fittings can act as restrictors as the tool retracts. The restricting or slowing of the fluid flow causes back pressure that slows the tool's return. Return speed also varies because of the application, condition of the tool, inside diameter of hose or fitting, length of the hose, and the temperature and viscosity of the hydraulic fluid.

⚠CAUTION: To prevent personal injury from leaking hydraulic fluid, seal all hydraulic connections with a high-quality, non-hardening, pipe thread sealant.

IMPORTANT: Sealant tape or non-hardening sealer tape can be used to seal hydraulic connections if only one layer of tape is used. Apply tape carefully, two threads back, to prevent it from being pinched by the coupler and broken off inside the system. Loose pieces of sealant could travel through the system and obstruct the flow of fluid or cause jamming of precision-fit parts.

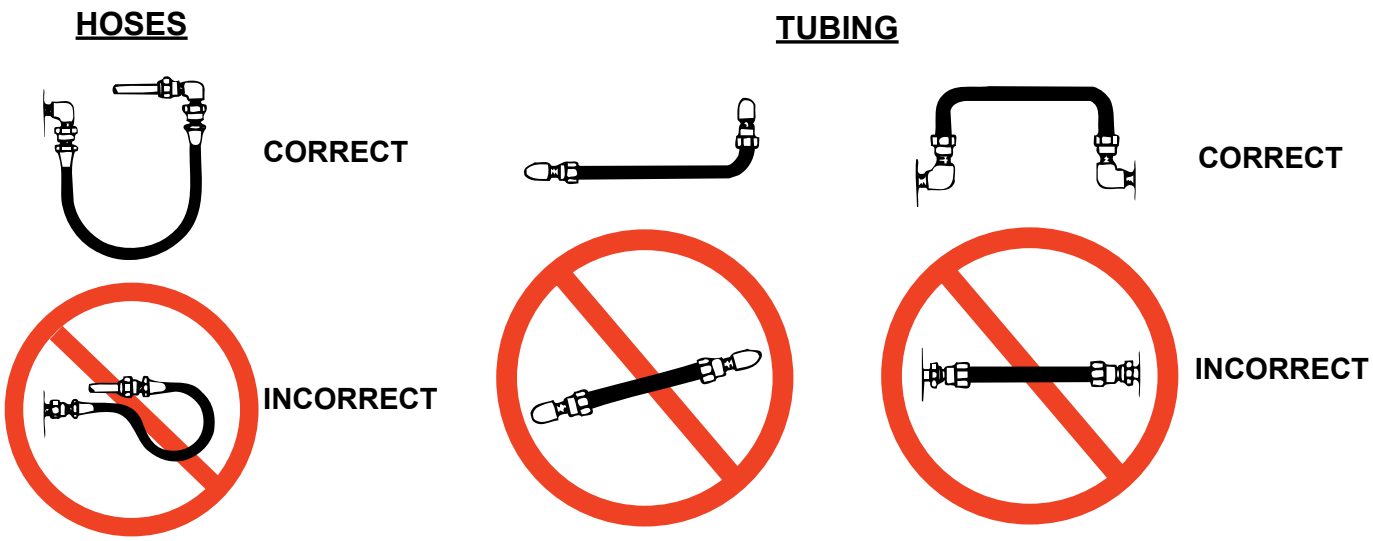


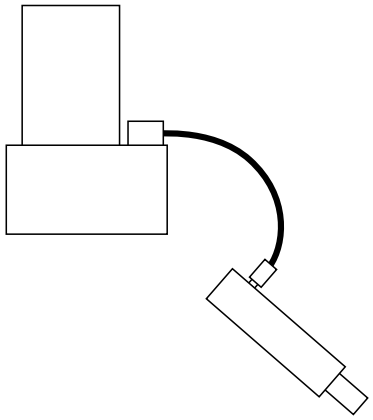
Fig. 1. Hoses and Tubing Connections

4. Bleeding Air from the System

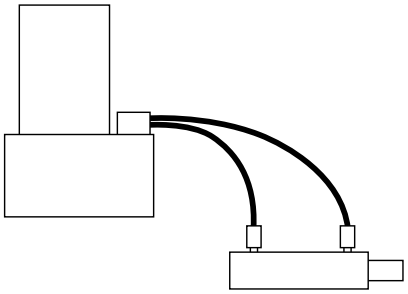
After all connections are made, the hydraulic system must be bled of any trapped air. Refer to the diagrams below.

With no load on the system and the pump vented and positioned higher than the cylinder or ram, cycle the system several times. If you are in doubt about venting your pump, read the operating instructions for your pump. Check the reservoir for possible low fluid level and fill to proper level with approved, compatible hydraulic fluid as necessary.

IMPORTANT: Some spring return cylinders, or rams have a cavity in the rod which forms an air pocket. This type of cylinder or ram should be bled when positioned upside down or lying on its side with the port facing upward.



System with a single-acting cylinder



System with a double-acting cylinder

PREVENTIVE MAINTENANCE

- **Always use clean, approved hydraulic fluid and change as needed.**
- **Any exposed threads (male or female) must be cleaned and lubricated regularly, and protected from damage.**
- **If a cylinder or ram has been exposed to rain, snow, sand, grit-laden air, or any corrosive environment it must be cleaned, lubricated, and protected immediately after exposure.**
- **Yearly or sooner, if the cylinder or ram condition suggests damage - visual examination by the operator or other designated personnel with a dated and signed equipment record.**

1. System Evaluation

The components of your hydraulic system — Cylinder, Hose(s), Couplings and Pump — all must be:

- Rated for the same maximum operating pressure.
- Correctly connected.
- Compatible with the hydraulic fluid used.

A system that does not meet these requirements can fail, possibly resulting in serious injury. If you are in doubt about the components of your hydraulic system, contact Power Team Technical Support.

2. Inspection

Before each use, visually inspect for the following items:

- Cracked or damaged cylinder
- Excessive wear, bending, damage, or insufficient thread engagement
- Leaking hydraulic fluid
- Scored or damaged piston rod
- Improperly functioning swivel heads and caps
- Loose bolts
- Damaged or improperly assembled accessory equipment
- Modified, welded, or altered equipment
- Bent or damaged couplers or port threads

3. Periodic Cleaning

⚠ WARNING: Contamination of the hydraulic fluid could cause the valve to malfunction.

A routine should be established to keep the hydraulic system as free from dirt as possible.

- All unused couplers must be sealed with dust covers.
- All hose connections must be free of dirt and grime.
- Any equipment attached to the cylinder must be kept clean.
- Use only Power Team hydraulic fluid and change as recommended or sooner if the fluid becomes contaminated (never exceed 300 hours).

4. Storage

Single-acting and Center Hole Cylinders

Single-acting and center hole cylinders and rams should be stored in a vertical position with the rod end down in a dry, well-protected area where they will not be exposed to corrosive vapors, dust or other harmful elements.

When a single-acting cylinder or ram has not been used for a period of three (3) months it should be connected to a pump and be fully extended and then retracted. This cycle will lubricate the cylinder walls thereby reducing the potential for rust formation on the cylinder walls.

Double-acting Cylinders

Double-acting cylinders and rams should be stored in a vertical position with the rod end down in a dry, well-protected area where they will not be exposed to corrosive vapors, dust or other harmful elements.

If a double-acting cylinder or ram has been stored for a year or more, it must be thoroughly inspected before it is used.

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TROUBLESHOOTING GUIDE

IMPORTANT: The following trouble-shooting and repair procedures should be performed by qualified personnel familiar with this equipment. Use the proper equipment when trouble-shooting!

NOTE: All the following statements may not apply to your particular model of cylinder or ram. Use the guide as a general reference for trouble-shooting.

PROBLEM	CAUSE	SOLUTION
Erratic action	1. Air in system or pump cavitation	1. Add fluid, bleed air and check for leaks
	2. Internal leakage in double-acting cylinders or external leakage in single-acting cylinders	2. Replace worn packings. Check for excessive contamination or wear. Replace contaminated fluid as necessary.
	3. Cylinder sticking or binding	3. Check for dirt or leaks. Check for bent, misaligned, worn parts or defective packings.
Cylinder/Ram does not move	1. Loose coupler	1. Tighten couplers
	2. Faulty coupler	2. Verify that female coupler is not locked up (ball wedged into seat). Replace both female and male couplers.
	3. Improper valve position	3. Close release valve or shift to new position
	4. Low or no hydraulic fluid in pump reservoir	4. Fill and bleed the system
	5. Air-locked pump	5. Prime pump per pump operating instructions
	6. Pump not operating	6. Check pump's operating instructions
	7. Load is above the capacity of the system	7. Use the correct equipment
	8. Fluid leaks out of rod end relief valve (double-acting cylinders only)	8. Make sure all couplers are fully coupled. Contact your nearest Authorized Hydraulic Service Center.
Cylinder/Ram extends only partially	1. Pump reservoir is low on hydraulic fluid	1. Fill and bleed the system
	2. Load is above the capacity of the system	2. Use the correct equipment
	3. Cylinder piston rod binding	3. Check for dirt or leaks. Check for bent, misaligned, worn parts or defective packings.
Cylinder/Ram moves slower than normal	1. Loose connection or coupler	1. Tighten
	2. Restricted hydraulic line or fitting	2. Clean and replace if damaged
	3. Pump not working correctly	3. Check pump operating instructions
	4. Cylinder seals leaking	4. Replace worn seals. Check for excessive contamination or wear

TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
Cylinder/Ram moves but does not maintain pressure	1. Leaky connection	1. Clean, reseal with thread sealant and tighten connection
	2. Cylinder seals leaking	2. Replace worn seals. Check for excessive contamination or wear. Replace contaminated fluid as necessary.
	3. Pump or valve malfunctioning	3. Check pump or valve operating instructions
Cylinder/Ram leaks hydraulic fluid	1. Worn or damaged seals	1. Replace worn seals. Check for excessive contamination or wear. Replace contaminated fluid as necessary.
	2. Loose connections	2. Clean, reseal with thread sealant and tighten connection
	3. Rod end relief valve has activated (double-acting cylinders only)	3. Make sure all couplers are fully coupled. a. If relief valve is still leaking, do not attempt to service this component. Contact your nearest Authorized Hydraulic Service Center.
Cylinder/Ram will not retract or retracts slower than normal	1. Pump release valve closed	1. Open pump release valve
	2. Loose couplers	2. Tighten couplers
	3. Blocked hydraulic lines	3. Clean and flush
	4. Weak or broken retraction springs	4. Send to service center for repair
	5. Cylinder damaged internally	5. Send to service center for repair
	6. Pump reservoir too full	6. Drain hydraulic fluid to correct level

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English Original

DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

We, Hydraulic Technologies Netherlands B.V. as the Authorized Representative of the Manufacturer SPX FLOW US, LLC in Rockford, IL, declare under our sole responsibility that our Single-acting, spring return / single-acting, gravity return / locking collar / hollow piston as well as double acting hydraulic ram or cylinder Models:

1. C series	**2. RA series**
3. RLS series	**4. RSS series**
5. RH series	**6. RP series**
7. RT series	**8. RD series**
9. R series	**10. RDG series**
11. RGG series	**12. RGL series**
13. RGP series	**14. PLC series**

to which this declaration relates, are in conformity with all relevant provisions of the following:

EN, EN-ISO, ISO standards	**Title**
Per the provisions of the Machinery Safety Directive	**2006/42 EC**
EN_ISO 12100:2010	Safety of machinery, basic concepts, general principles for design, risk assessment & risk reduction
EN 4413:2010	Hydraulic Fluid Power – general rules and safety requirements for systems & their components

We, Hydraulic Technologies Netherlands B.V. as the Authorized Representative of the Manufacturer SPX FLOW US, LLC in Rockford, IL, hereby declare that the equipment specified above conforms to the relevant provisions of the above-mentioned European Community Directive(s) and harmonized Standard(s).

This product must not be put into service until the final machine into which it is to be incorporated has been declared in conformity with the provisions of these Directives, where appropriate.

SPX FLOW US LLC
5885 11th Street
Rockford, IL 61109-3699
United States of America

Hydraulic Technologies Netherlands B.V.
Albert Thijsstraat 12
NL-6471 WX Eygelshoven
The Netherlands

The Netherlands September 21st 2023

Andreas J. Klemm, PhD

English Original

UKCA DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

We, SPX FLOW Europe Ltd. as the Authorized Representative of the Manufacturer SPX FLOW US, LLC in Rockford, IL, declare under our sole responsibility that our Single-acting, spring return / single-acting, gravity return / locking collar / hollow piston as well as double acting hydraulic ram or cylinder Models:

1. C series	**2. RA series**
3. RLS series	**4. RSS series**
5. RH series	**6. RP series**
7. RT series	**8. RD series**
9. R series	**10. RDG series**
11. RGG series	**12. RGL series**
13. RGP series	**14. PLC series**

to which this declaration relates, are in conformity with all relevant provisions of the following:

EN, EN-ISO, ISO standards	**Title**
The Supply of Machinery (Safety) Regulations 2008 No. 1597 and amendments	
EN_ISO 12100	Safety of machinery, basic concepts, general principles for design, risk assessment & risk reduction
EN 4413	Hydraulic Fluid Power – general rules and safety requirements for systems & their components

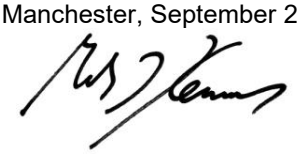
We hereby declare that the equipment specified under * conforms to the above quoted UK Legislation and international Standard(s) as per the currently valid revision.
SPX FLOW Europe Ltd. is certified and registered to ISO 9001: 2015.

This product must not be put into service until the final machine into which it is to be incorporated has been declared in conformity with the provisions of these Directives, where appropriate.

SPX FLOW US, LLC
5885 11th Street
Rockford, IL 61109-3699
United States of America

SPX FLOW Europe Ltd.
Alexander House
4 Station Road
Cheadle Hulme
SK3 5AE

Manchester, September 21st 2023



Andreas J. Klemm, PhD

QUADRANT

ENGINEERED PLASTIC PRODUCTS

Subcategory: Polyethylene;Polymer;Thermoplastic

Physical Properties	Metric	English	Comments
SpecificGravity	0.93g/cc	0.0336lb/in³	ASTMD792
WaterAbsorption	Max0.01%	Max0.01%	Immersion,24hr;ASTMD570(2)
WaterAbsorptionatSaturation	Max0.01%	Max0.01%	Immersion;ASTMD570(2)
Mechanical Properties			
Hardness,ShoreD	66	66	ASTMD2240
TensileStrength,Ultimate	40MPa	5800psi	ASTMD638
ElongationatBreak	300%	300%	ASTMD638
TensileModulus	0.689GPa	100ksi	ASTMD638
FlexuralModulus	0.758GPa	110ksi	ASTMD790
FlexuralYieldStrength	24.1MPa	3500psi	ASTMD790
CompressiveStrength	20.7MPa	3000psi	10%Def.,73°F;ASTMD695
CompressiveModulus	0.552GPa	80ksi	ASTMD695
ShearStrength	33.1MPa	4800psi	ASTMD732
CoefficientofFriction	0.12	0.12	Dryvs.Steel;QTM55007
LimitingPressureVelocity	0.0701MPa Bm/sec	2000psiBft/min	4:1safetyfactor;QTM55007
IzodImpact,Notched	NB	NB	ASTMD256TypeA
Electrical Properties			
SurfaceResistivityperSquare	Min1e+015ohm	Min1e+015ohm	ASTMD257
DielectricConstant	2.3	2.3	(1MHz);ASTMD150
DielectricStrength	90.6kV/mm	2300V/mil	ShortTerm;ASTMD149
DissipationFactor	0.0005	0.0005	(1MHz);ASTMD150
Thermal Properties			
CTE,linear68°F	216 Fm/mB°C	120Fin/inB°F	(B40°Fto300°F);ASTME831
ThermalConductivity	0.409W/m BK	2.84BTUBin/hrBft²B°F	
MeltingPoint	135°C	275°F	Crystalline,Peak;ASTMD3418
MaximumServiceTemperature,Air	82.2°C	180°F	LongTerm
DeflectionTemperatureat1.8MPa(264psi)	46.7°C	116°F	ASTMD648
Flammability,UL94(EstimatedRating)	HB	HB	1/8inch
Qualitative Processing Properties			
ComplianceBFDA	Compliant		
Machinability	3		1B10,1=EasiertoMachine
ServiceinAlcohols	Acceptable		
ServiceinAliphaticHydrocarbons	Acceptable		
ServiceinAromaticHydrocarbons	Unacceptable		
ServiceinChlorinatedSolvents	Acceptable		
ServiceinEthers	Limited		
ServiceinKetones	Limited		
ServiceinStrongAcids	Limited		
ServiceinStrongAlkalies	Acceptable		
ServiceinSunlight	Limited		
ServiceinWeakAcids	Acceptable		
ServiceinWeakAlkalies	Acceptable		

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Fax: (800) 955-8329
Order Entry: (507) 455-1480
Fax: (800) 283-8665
International Sales: (507) 455-7223
Fax: (507) 455-7746

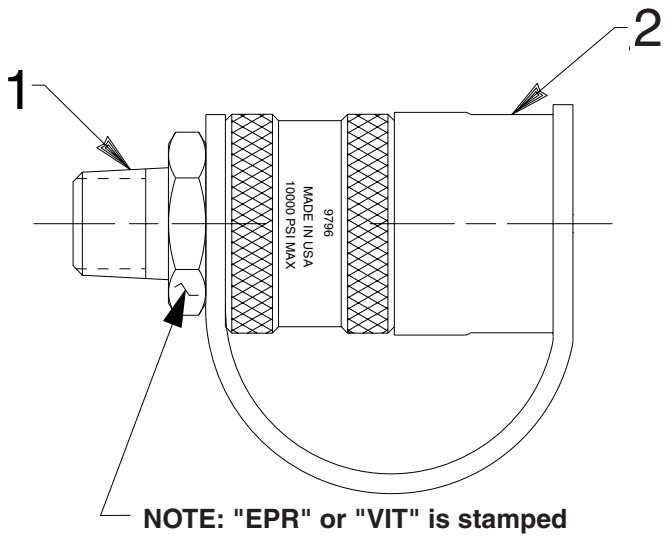
Form No. 100363

Parts List for:

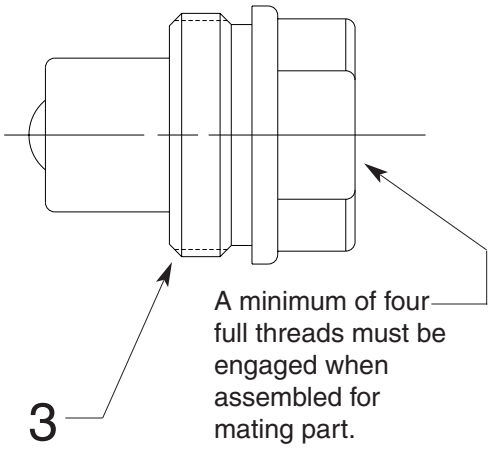
	9798
9795	**25599**
9796	**25600**
9796-E	**C38**
9796-V	**Y-25**

QUICK COUPLER ASSEMBLY

RAM AND HOSE HALVES - 3/8 NPTF



NOTE: "EPR" or "VIT" is stamped on a hex flat to designate a coupler with EPR or Viton seals.



Item No.	Part No.	No. Req'd	Description
1	**9796**	1	Ram Half Coupler w/ Plastic Dust Cap (Item 2)
	9796-E	1	Ram Half Coupler w/ EPR Seals (Includes #9797 metal dust cap)
	9796-V	1	Ram Half Coupler w/ Viton Seals (Includes #9797 metal dust cap)
2	**9800**	1	Plastic Dust Cap
3	**9798**	1	Hose Half Coupler

PARTS INCLUDED BUT NOT SHOWN

209100	1	O-ring (1" x 3/4 x 1/8; Disogrin; Standard)
251880	1	O-ring (1" x 3/4 x 1/8; Buna-n; Option on std. for humid conditions)

OPTIONS

9797	1	Metal Dust Cap (Ram Half)
9799	1	Metal Dust Cap (Hose Half)

NOTE: #9795 is a complete coupler assembly consisting of items #1 & #3, a disogrin o-ring and (2) of item #2.

© Hydraulic Technologies

ENERPAC

English Metric

CT-604 Safety Tool

- Enerpac coupler bleed tool eliminates unsafe pressure relieving and bleeding activities such as:
  using a hammer and punch to unseat check balls, cones & poppets using a wrench to 'loosen' a coupler.
- Designed to connect to Enerpac C604, CH604 and CR400 High Flow couplers (male & female halves).
- Coupler Bleed Tool will also work with competitive equivalents.
- Comes in a convenient storage box that keeps the parts together.
- Enerpac engineered safe for use at 10,000 psi (700bar).

Coupler Bleed Tool Model Number	Fits on High Flow Couplers		Maximum Operating Pressure	
	Female Half	Male Half		
			psi	bar
CT-604	CR-400	CH-604	10000	700

ENERPAC
POWERFUL SOLUTIONS. GLOBAL FORCE.

Instruction Sheet

CT-604 Hydraulic Coupler Bleed Tool

L2755 Rev. C 02/11

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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.

2.0 INTENDED USE

The Enerpac CT-604 coupler bleed tool is designed to safely relieve pressure from hydraulically locked high-flow hydraulic couplers, Enerpac coupler models CH-604 (male half), CR-400 (female half) and C-604 (male and female set).

3.0 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.

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.

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.

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 with 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.

4.0 INSTRUCTIONS

DANGER: Never attempt to relieve hydraulic pressure by loosening a coupler. Trapped hydraulic pressure can cause a loosened coupler to dislodge unexpectedly with great force. Serious personal injury or death will result if the coupler becomes a projectile and strikes persons working in the area.

WARNING! Loosening a coupler may result in an escape of high pressure oil that can penetrate the skin. Serious personal injury or death can result. Always use coupler bleed tool to safely depressurize and remove couplers.

WARNING! Be sure that loads are supported with blocking and cribbing before using bleed tool. Actuator movement may occur when hydraulic pressure is relieved. Serious personal injury or death could occur if load shifts or drops.

WARNING! The CT-604 coupler bleed tool is designed for a maximum hydraulic pressure of 10,000 psi [700 bar]. Do not use the tool on systems and components operating at higher pressures.

Depressurize a hydraulically-locked coupler as described in the following steps:

1. If the hydraulic device is supporting a load, block and crib the load as required, so that the load will not shift or drop when hydraulic pressure is relieved.
2. Check that the threads on the coupler half to be depressurized are clean and in good condition. Do not attempt to bleed a coupler if threads are damaged.
3. Check that all threads on the bleed tool main body and cap/bolt assemblies are clean and in good condition. Do not use bleed tool if threads are damaged.

Note: Hand-tighten the bleed tool main body onto the coupler half as described in steps 4 and 5. See Figure 1, below.

Note: The bleed tool main body is marked “male coupler” on one end and “female coupler” on the other. Be sure to use the proper end.

4. If bleeding a male coupler half: Thread the bleed tool main body onto the male coupler half and tighten it hand-tight.
5. If bleeding a female coupler half: Thread the bleed tool main body into the retaining collar of the female coupler half. Tighten the retaining collar hand-tight.
6. The bleed tool includes two cap/bolt assemblies as shown in Figure 1, below. Be sure to use the correct one:

- For MALE coupler halves, use the cap/bolt assembly with the SHORT bolt.
- For FEMALE coupler halves, use the cap/bolt assembly with the LONG bolt.

Note: Before proceeding, ensure that the cap is tight on the bolt.

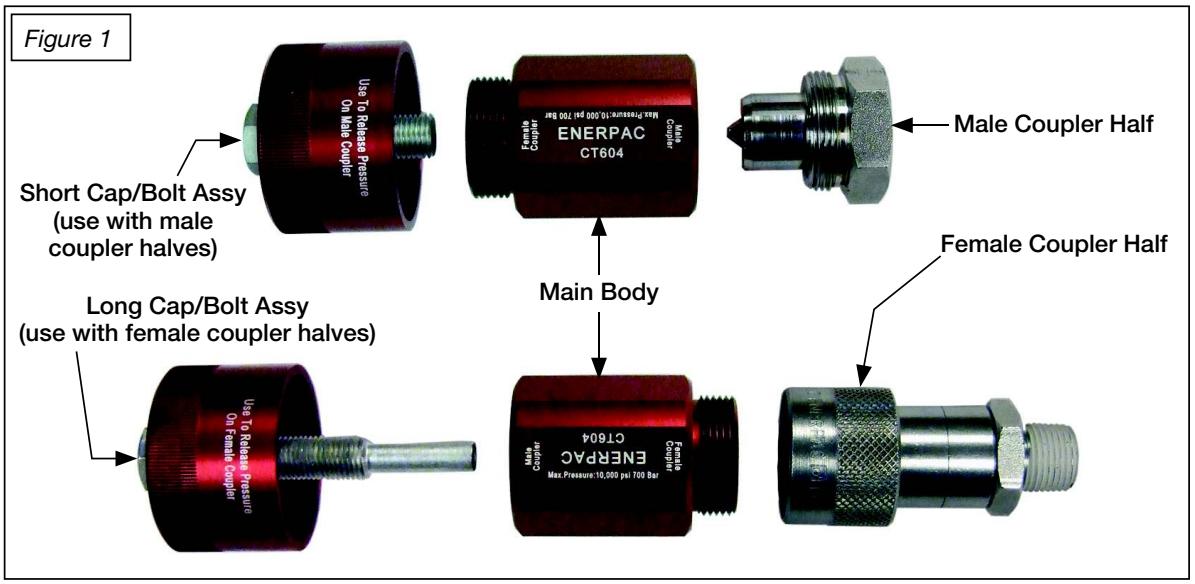
7. Thread the cap/bolt assembly into the bleed tool main body. Slowly turn the cap/bolt assembly clockwise until the coupler check ball opens and hydraulic pressure is relieved. If necessary, use an adjustable wrench on the bolt.

Note: When the cap/bolt assembly is tightened, pressurized hydraulic oil will flow through the bleed tool main body and into the cap. Allow any excess oil to drain into a suitable container.

8. Remove coupler half, main body and cap/bolt assembly from the hydraulic device (manifold, cylinder, etc.) as a complete unit. **Important:** Keep bleed tool parts installed on coupler while it is being loosened and removed.
9. Disassemble bleed tool components from the coupler half. Clean bleed tool components and store in provided container.

CAUTION: Discard the coupler half removed in the previous steps. Never attempt to repair or reuse a worn or damaged coupler!

Figure 1



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