

**MINER ENTERPRISES**  
Technical Services Department  
**Operating Instructions For Draft Gear Removal Jack**  
Form No. TS 101

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11/18/10

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Prepared by:  
PAI

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## **SAFETY INFORMATION**

**YOUR SAFETY IS IMPORTANT TO MINER.**  
**PLEASE FOLLOW ALL APPROPRIATE SAFTEY MEASURES PROVIDED BY YOUR RAILROAD OR SHOP. USE EXTREME CAUTION DURING USAGE.**

**WARNING!** BE AWARE THAT THE DRAFT GEAR AND YOKE ASSEMBLY CAN FALL OUT OF THE POCKET UNEXPECTEDLY WHILE THE GEAR IS BEING SHORTENED BY A DRAFT GEAR REMOVAL JACK.

**WARNING!** CHECK AND DOUBLE CHECK TO MAKE SURE THE LOAD IS PROPERLY SUPPORTED WHILE REMOVING THE DRAFT GEAR, ESPECIALLY WHEN REMOVING THE FASTENERS FROM THE CARRIER PLATES.

**CAUTION!** MAKE SURE THE HOSE WILL NOT BE PINCHED OR DAMAGED WHEN THE GEAR AND YOKE ARE LOWERED FROM THE CAR POCKET. HYDRAULIC FLUID UNDER HIGH PRESSURE CAN PENETRATE THE SKIN.

**CAUTION!** BE CAREFUL OF YOUR HANDS. WEAR YOUR GLOVES. THERE ARE MANY POTENTIAL PINCH POINTS WHEN HANDLING A HEAVY DRAFT GEAR, THE YOKE, AND THE FOLLOWER PLATE.

**HYDRAULIC EQUIPMENT MUST BE PROPERLY MAINTAINED. INSPECT THE HOSE AND FITTINGS FREQUENTLY, AND REPLACE DAMAGED ITEMS IMMEDIATELY.**



**Warning – Follow all appropriate safety measures addressed within this document.**

**Miner Enterprises Inc. is not responsible for any harm occurred while using the draft gear removal jack.**

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## **INTRODUCTION TO THE MINER DRAFT GEAR REMOVAL JACK**

When a draft gear with follower plate is installed into a normal length pocket of a freight car, the gear has ample initial spring load to ensure a tight fit in the pocket. This is known as the “preload” of the draft gear.

When removing a draft gear from the pocket of the car, it is necessary to overcome the preload by compressing the follower and the draft gear at least 1/8”, to allow the gear and follower to clear the front and rear stops of the pocket. Then the gear, follower, and yoke can be safely lowered to the ground. A draft gear removal jack is used to compress the gear. The Miner draft gear removal jack has one inch of stroke, and will produce 180,000 lbs. of force at full pump pressure.

## **COMPONENTS INCLUDED IN THE DRAFT GEAR REMOVAL JACK KIT**

1. A draft gear removal jack, with a hydraulic jack fitting.
2. A 10,000 psi. hydraulic hand pump, hose fitting, and handle.
3. 6 feet of hydraulic hose with end fittings.
4. A flat support plate, an “E” key, and shims for “E” type yokes.
5. A curved support plate, an “F” pin, and shims for “F” type yokes.
6. A “red fitting” for easier draft gear removals.

## **USE OF THE “RED FITTING”**

The red fitting functions as a check valve. The red fitting allows hydraulic fluid to flow into the jack, but will not allow fluid to flow out. When the draft gear has compressed enough for removal, the pump hand valve can be opened to relieve pressure in the hose. The jack will remain pressurized and hold the draft gear in the compressed condition. The hose and red fitting can be removed for the removal of the draft gear.

## **Normal Operating Procedure – See Figures 1 & 2**

1. Remove the E cross key or F pin, and the coupler.
2. Apply wheel chocks and safely jack the end of the car.
3. Install the appropriate support plate for the type of yoke.
4. Connect the red fitting to the jack.
5. Place the fully compressed jack on its side on top of the support plate, with the jack fitting toward the top or bottom of the yoke for an E type and to one side for an F type.
6. Connect one end of the hose to the red fitting.
7. Apply the appropriate removal key (“E” yokes) or pin (“F” yokes).
8. Add sufficient shims between the key or pin and the yoke head to take up almost all of the clearance. DO NOT force the shims in place.
9. Connect the other end of the hose to the hand pump and close the pump hand valve.
10. **WARNING!** Make sure the gear, yoke, and carrier plate(s) are safely supported with a lift table, fork truck carrier, or the equivalent.

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11. Begin pumping to compress the gear in the pocket until at least 1/8" clearance is visible between the front stops and the follower plate.
12. Open the pump hand valve to release pressure in the hose.
13. Disconnect the hose and red fitting from the jack
14. Remove the remaining fasteners on the carrier plate(s), and lower the gear and yoke to ground level.
15. Reconnect the hose to the hydraulic jack. With pressure remaining in the jack, it will take two wrenches to fully engage the hose and jack fittings. The jack fitting requires a 1 ½" wrench, and the hose fitting requires a 15/16" wrench. With the fittings properly connected, release the pressure in the jack by opening the hand valve on the pump. The gear will return to its full length in the yoke, partially compressing the jack.
16. If the follower and gear are still snug in the yoke, use a small bar to pry the jack back and forth. This will compress the jack further and allow removal of the follower and the draft gear from the yoke.
17. Remove the jack from the head of the yoke, stand it upright on a solid surface, and stand on it for a minute or two with the hand valve on the pump open. This will return hydraulic fluid to the pump and fully compress the jack, preparing it for the next use.

## **For Installation of a Draft Gear using the Draft Gear Removal Jack**

The draft gear removal jack can be used to install a draft gear into a pocket. Insert the draft gear and follower into a yoke. Make sure to align the draft gear and follower so it will fit into the pocket. Center the draft gear and follower in the yoke.

1. Install the appropriate support plate for the type of yoke.
2. Connect the red fitting to the jack.
3. Place the fully compressed jack on its side on top of the support plate, with the jack fitting toward the top or bottom of the yoke for an E type and to one side for an F type.
4. Connect one end of the hose to the red fitting.
5. Apply the appropriate removal key ("E" yokes) or pin ("F" yokes).
6. Add sufficient shims between the key or pin and the yoke head to take up almost all of the clearance. DO NOT force the shims in place.
7. Connect the other end of the hose to the hand pump and close the pump hand valve.
8. Begin pumping to compress the gear to a length at least 1/8" less than that the pocket length.
9. Open the pump hand valve to release pressure in the hose.
10. Disconnect the hose and red fitting from the hydraulic jack.
11. Raise the assembly into the pocket.
12. Install carrier plate(s)
13. Connect hose to jack fitting (wrenches required) and release the hydraulic pressure from the jack. The draft gear assembly should be tight in the pocket.
14. Remove jack, and leveler, shims.
15. Install coupler and cross key or pin.

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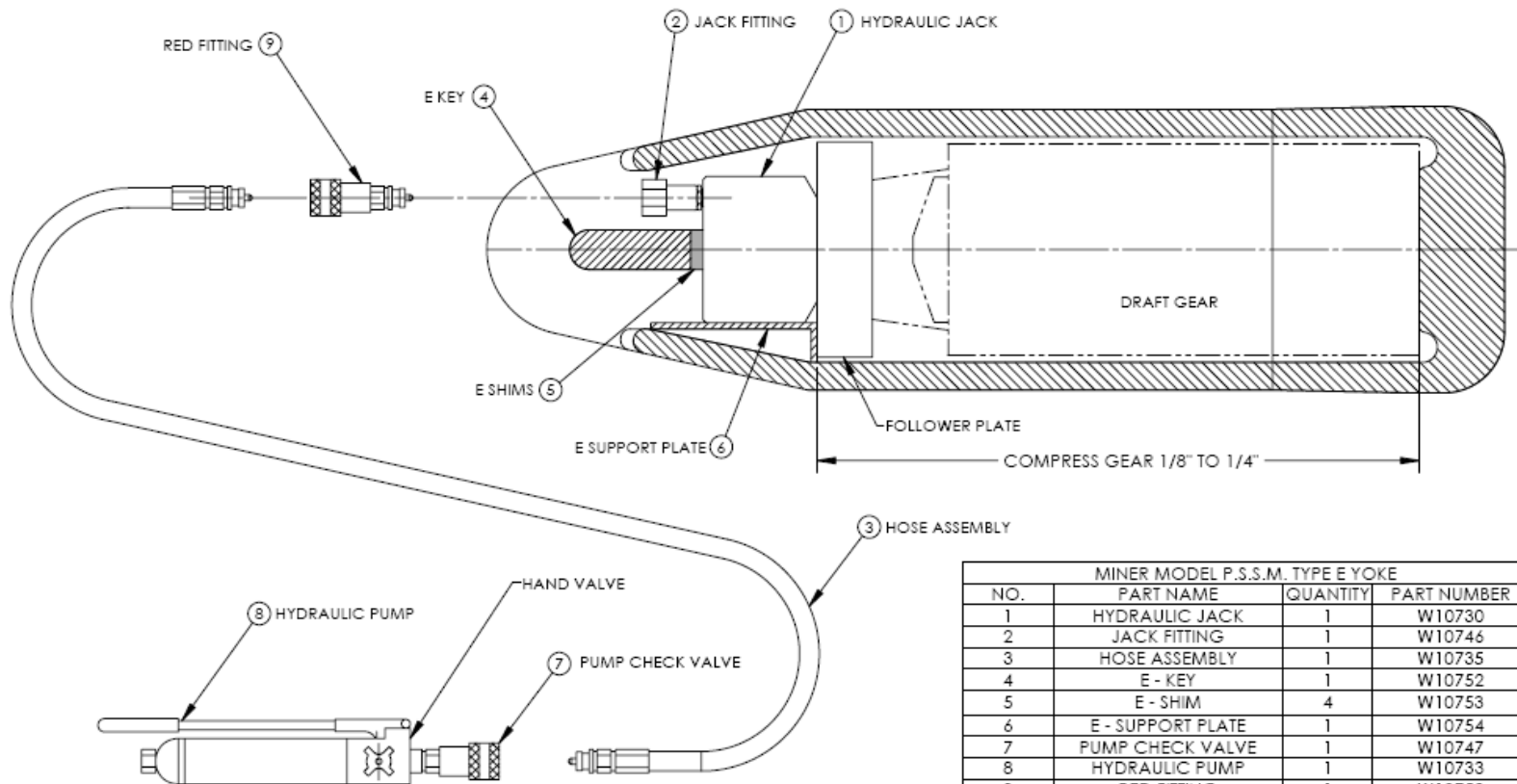
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MINER DRAFT GEAR REMOVAL JACK - TYPE E YOKE

FIGURE 2



MINER MODEL P.S.S.M. TYPE E YOKE			
NO.	PART NAME	QUANTITY	PART NUMBER
1	HYDRAULIC JACK	1	W10730
2	JACK FITTING	1	W10746
3	HOSE ASSEMBLY	1	W10735
4	E - KEY	1	W10752
5	E - SHIM	4	W10753
6	E - SUPPORT PLATE	1	W10754
7	PUMP CHECK VALVE	1	W10747
8	HYDRAULIC PUMP	1	W10733
9	RED FITTING	1	W10750

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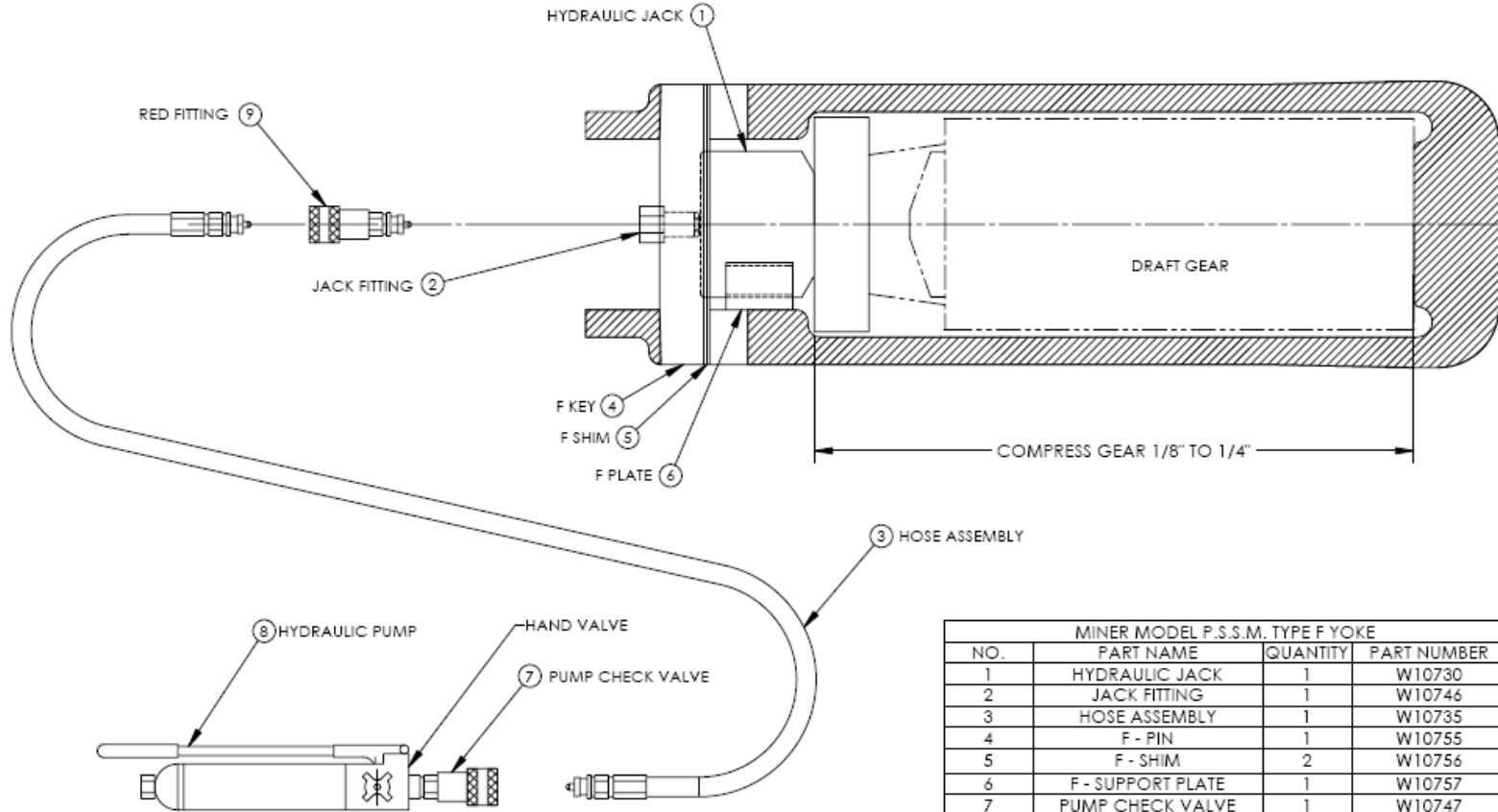
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MINER DRAFT GEAR REMOVAL JACK - TYPE F YOKE

FIGURE 1



MINER MODEL P.S.S.M. TYPE F YOKE			
NO.	PART NAME	QUANTITY	PART NUMBER
1	HYDRAULIC JACK	1	W10730
2	JACK FITTING	1	W10746
3	HOSE ASSEMBLY	1	W10735
4	F - PIN	1	W10755
5	F - SHIM	2	W10756
6	F - SUPPORT PLATE	1	W10757
7	PUMP CHECK VALVE	1	W10747
8	HYDRAULIC PUMP	1	W10733
9	RED FITTING	1	W10750