



HandiFueler™

Pumping System

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HANDIFUELER™

TECHNICAL MANUAL

Model Number R400EA

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SI AVIATION

Spokane, Washington

400 GALLON HandiFueler™ “R” Series

ONE YEAR LIMITED WARRANTY

Seller warrants its 400 Gallon HandiFueler™ tank to be free from defects in material and workmanship under the normal use and service for which the unit is intended if, but only if the unit has been properly operated, maintained and stored in accordance with printed directions contained in the product manual. Our obligation under this Warranty shall be limited to the repair or exchange of SI manufactured equipment and parts which may prove defective within one year of the date the unit is put into service but shall in no event extend beyond a date three years from the date the unit is shipped from our plant. All transportation charges on parts returned to SI for replacement under this warranty must be returned prepaid.

Other manufacturers' components warranties apply as their warranty reads.

This warranty does not extend to damage caused by environmental factors varying from normal design conditions, whether natural or man-made, or to units subjected to misuse, negligence or accident. This warranty likewise does not extend to the unit or any parts thereof which have been repaired or altered improperly or in any way so as to effect adversely its stability or reliability. This warranty does not cover parts or labor required to repair or replace parts whose usefulness is exhausted due to normal operation of the unit.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE NOT SET FORTH IN WRITING SIGNED BY AN AUTHORIZED REPRESENTATIVE OR SELLER. SELLER SHALL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL LOSS OR DAMAGE RESULTING FROM THE USE OR LOSS OF USE OF THE UNIT.

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Section 1.0 Introduction

- 1.1 The instructions in this manual cover the operation, maintenance and specifications the SI HandiFueler™
- 1.2 Purpose
 - a. The HandiFueler™ is designed to provide a portable, clean, safe, self contained and efficient fueling system for the aviation industry.
- 1.3 Description
 - a. Refer to Figure 1 for location and identification of major components. The HandiFueler™ consists of a tank assembly, an undercarriage, and a pumping module.
- 1.4 Table 1.1

Leading Particulars

Length with Tow Bar Extended.....	217"
Length	160"
Width	75-1/4"
Height	47-3/4"
Weight Full	4250 lbs
Weight Empty	1450 lbs
Environmental Conditions	
Operating temperatures	-20 F to +110 F
Tank capacity	400 Gallons
Unit standards	NFPA-407
1" Pump flow	16.6 GPM
Electric Pump HP	1/4 HP
Pump Voltage.....	12V DC
Pump Amp.....	22
Battery (2 EA).....	12V GRP 27-31 Deep cycle 160 min reserve #HT250
Charger Output.....	12V-10 Amp on board type
Charger Input.....	100-130V AC-2 Amp's 50/60HZ
Circuit Breaker.....	30 Amp Thermal Reset
Fuel Filter	1 Micron solids, 5PPM water 60GPM
Fuel Hose	1-1/4 in. x 50 Ft.
Brakes	7" x 1-3/4" drum type
Tire size	20.5 x 10 x 8 Load Range "E"
Tire inflation	90 PSI cold
Hitch	2-5/16 Ball or Luennette

Section 2.0 Safety

2.1 Summary

- a. This manual contains suggested safety procedures, in addition the end user must comply with all International, Federal, state, local, and company safety and environmental regulations.
- b. **WARNING** and **CAUTION** statements have been inserted throughout this publication and are essential to the protection of personnel (**WARNING**) or equipment or property (**CAUTION**)
- c. Prior to operating this equipment all **WARNINGS** and **CAUTIONS** in this publication must be reviewed and understood.

2.2 Definitions

- a. **WARNING**: an operation or maintenance procedure that if not observed could result in injury or death to personnel.
- b. **CAUTION**: an operation or maintenance procedure that if not observed could result in damage or destruction to equipment

2.3 General Safety Precautions

- a. This section covers general safety precautions that may or may not be related to any other specific procedures located elsewhere in this manual.
- b. Cleaners/Chemicals
 - (1) Some cleaners, chemicals, solvents, fuels, paints, etc. may have adverse effects on eyes, skin and respiration. Observe all manufacturers warnings and read the manufacturers safety data sheets (MSDS) to ensure proper handling, storage, and disposal, and safety directives.
- c. Confined Space
 - (1) Personnel that work in a confined space (limited openings for entry and exit) or unfavorable ventilation or space not intended for humans or contains any recognized safety hazards shall comply with all International, Federal, state, local, and company safety and environmental regulations. (Confined space entry permit may be required). Never service or adjust equipment alone. Do not attempt internal service or adjustment of equipment unless another capable person is present to provide rescue in the event of injury.

d. Lifting and Handling

- (1) To ensure safety use the proper amount of personnel when lifting or handling equipment

e. Lockout/Tagout

- (1) Personnel shall be aware of the hazards associated with equipment, Lockout/Tagout any energy source prior to performing any repairs, adjustments or any procedures that could bypass safety devices. Comply with all International, Federal, state, local, and company safety and environmental regulations.

f.. Finger rings/jewelry

- (1) Prior to operating, repairing, or maintaining equipment remove watches rings and jewelry, unless specifically allowed by local procedures.

g. Spring loaded mechanisms/cables

- (1) Spring loaded mechanisms and cables can cause injury if released or activated in an uncontrolled manner. Always be careful when adjusting or maintaining these devices.

h. Personal Protective Equipment (PPE)

- (1) Always ensure personnel are equipped with and wear the proper PPE prior to operating, adjusting or maintaining equipment.
- (2) Comply with all International, Federal, state, local and company safety and environmental regulations.

i. Weather Conditions

- (1) Use extreme caution operating HandiFueler™ during adverse weather conditions (i.e...ice, snow, rain, strong and gusting winds)

Section 3.0 Special Tools & Test Equipment

3.1 No special tools or test equipment are required to service or maintain this equipment.

Section 4.0 Preparation for Use

- 4.1 To obtain optimum benefit from your equipment, it is recommended that all personnel operating it read and understand this manual prior to operation. (pay special attention to the **WARNINGS** and **CAUTIONS** in this manual)
- 4.2 Upon receipt of the HandiFueler™, a visual inspection should be made to determine that it is complete and has not sustained any damage during transportation
- 4.3 Always perform the safety check on this equipment prior to using. Refer to paragraphs 5.2 and 5.3

Section 5.0 Safety Check

- 5.1 Inspection of tires, brakes, undercarriage, tow hitch, valves, hoses, pumps, liquid level gauge, reflectors, safety labels, etc., These should be inspected on a periodic basis. It is recommended these inspections be performed daily.
- 5.2 Pre-Towing Safety Checks
 - a) Tires properly inflated
 - b) Visual check of all tank mounting hardware
 - c) Visual check of the unit undercarriage
 - d) Visual check for any fuel leaks from tank or plumbing
 - e) All hoses and nozzles, static ground wires, properly stowed
 - f) All valves and switches in the off position
 - g) All cabinet doors closed and locked
 - h) All 3 lever operators in full forward position
 - i) Top manway on tank closed and latched
 - j) Tow hitch properly secured to towing vehicle
 - k) Parking brakes released
- 5.3 Pre-Operation safety check
 - a) Parking brakes set
 - b) Static discharge grounding wires attached to a proper ground
 - c) Visual check for any fuel leaks from tank or plumbing
 - d) Sample low point water drains and sump daily **See Fig 6.2 & 6.7**
 - e) Pump compartment should be open during operation for proper ventilation

Section 6.0 Operation

6.1 Introduction

- a. The instructions contained in this manual provide step by step procedures for operating this equipment. Personnel using this equipment should familiarize themselves with this manual prior to equipment operation. Improper operation presents extreme hazards to personnel and equipment.

6.2 General Precautions

- a. **WARNING**

- (1) Always apply parking brake prior to any fuel servicing operations, maintenance repairs or when the unit is left unattended. **See Fig 6.1**
- (2) Always connect static discharge ground cables to an approved ground prior to performing any fuel servicing.
- (3) Do not carry or smoke lighted cigars, cigarettes, pipes or any other device capable of lighting fuel vapors on or near the HandiFueler.
- (4) **Never leave the pump unit running when left unattended. Always turn pump motor off after fueling takes place.**
- (5) Do not allow smoking, sparks, or flames within 50 feet of unit.

- b. **CAUTION**

- (1) The HandiFueler™ unit should never be used inside of an enclosed area. Proper ventilation is required at all times.
- (2) Never defeat the operation of the 3-way lever operator. All of the functions must work in order to meet the NFPA requirements.

Table 6.1: Controls and Indicators.

Name	Function
3 lever operator	Sets parking brake, locks & unlocks fuel nozzle, opens bottom tank outlet valve. Inboard lever controls the parking brake. Middle lever controls fuel nozzle locks. Outboard lever controls bottom drain valve. See Fig 6.1
Liquid level gauge, top mounted	Determines the amount of liquid in the tank.
Tank Sump Valve	Drains water condensate that collects on the tank bottom. See Fig 6.2
3" Internal Valve	This is a DOT approved internal spring loaded valve operated by the outer lever of the 3 lever operator. This valve has a built in shear joint so the internal part of the valve stays inside the tank in case of an accident. It is equipped with a fusible frangible connector that in the event of a fire the valve closes.
Pump control switches	Controls the motor to the pump.
Fuel nozzle	Used to fill the fuel tank.
Filter Differential Pressure Indicator	Indicates filter pressure differential and when to change the filter element. See Fig 6.7

6.3 HandiFueler™ Fueling Checklist:

NOTE: These are general instructions that are recommended for proper operation of the HandiFueler™ and in no way over-rides local policies and directives

CAUTION: Before any operation of the HandiFueler™ ensure you are familiar with its operation and features. Review the operator's manual to familiarize yourself with sections 5, 6, and 8. Operate within applicable guidelines according to manufacturer's recommendations and local directives and policies

CAUTION: Do not attempt to bottom fill this unit, this unit is designed to top fill through the 10" fill hatch, through the 2" fill tube. Bottom filling may cause overfilling of tank and lead to fuel spillage.

WARNING: Never leave the unit unattended during any operation. You must stay vigilant for possible malfunctions, overfill and other emergency situations

To refuel the HandiFueler™ accomplish the following:

1. Park HandiFueler™
2. Apply HandiFueler™ parking brake by pulling the inboard lever on the 3 lever operator rearward **See Fig 6.1**
3. Ensure fire bottle are serviceable
4. Connect the static ground cables to approved grounding points
5. Open top manway 10" fill hatch
6. Connect nozzle ground clip & insert nozzle in to 2" fill tube
7. Begin filling the HandiFueler™
8. Fill Handifueler to approx 92%, 5" below manway to allow for expansion
9. Remove nozzle & disconnect nozzle ground clip
10. Disconnect static ground clamps and walk cables back to the reels
11. Remove parking brake by pushing the inboard lever on the 3-lever operator to its full forward position.
NOTE: All 3 levers should be in the full forward position, if not then place in proper position **See Fig 6.1**

CAUTION: to secure the nozzle, you must first push down on the nozzle so that the nozzle is properly aligned to allow lock pin to slide inside of nozzle handle before moving middle lever to the full forward position. See Fig 6.5 & 6.6

6.4 Operation of HandiFueler™ During Aircraft Refueling

NOTE: These are general instructions that are recommended for proper operation of the HandiFueler™ and in no way over-rides local policies and directives

CAUTION: Before any operation of this unit ensure you are familiar with its operation and features. Review the operator's manual to familiarize yourself with sections 5, 6, and 8. Operate within applicable guidelines according to manufacturer's recommendations and local directives and policies

WARNING: Never leave the unit unattended during any operation. You must stay vigilant for possible malfunctions and possible overfill and other emergency situations

1. Park HandiFueler™
2. Connect static ground cables to approved grounding points
3. Apply HandiFueler™ parking brake by pulling the inboard lever on the 3 lever operator rearward
4. Unlock and open the pump box
5. Ensure fire bottles are serviceable
6. Apply HandiFueler™ parking brake, unlock fuel nozzle and open 3" internal valve by pulling the middle lever on the 3-lever operator to the full rearward position, all three levers should move together **See Fig's 6.3 & 6.4 lever operation 1 & 2**
7. Drain low points and sump daily or before use
8. Turn on the pump motor (See section 9 of manufactures instructions)
 - a. Turn battery selector switch to the desired position, either battery 1, battery 2 or both. Note: it is best to drain on battery at a time, allowing the backup battery to be used onces the primary battery is weak. **See Fig 6.13**
 - b. Open pump suction inlet valve.
 - c. Turn on the pump lever switch.
9. Optional vehicle power
 - a. When the battery selector switch is in the off position you may attach the 2 prong pigtail located at the front of the HandiFueler™, to an automotive vehicle that supplies at least 22 Amps of 12V DC power
 - b. Open pump suction inlet valve
 - c. Turn on the pump lever switch
10. Zero out meter and insert ticket (if applicable)

WARNING: Nozzle ground clip must be connected prior to placing nozzle into aircraft fuel port

11. Pull nozzle and hose to the aircraft fuel port
12. Connect the nozzle ground clip to the aircraft
13. Place nozzle into the aircraft fuel port.
14. Begin fueling by pulling nozzle trigger
15. When aircraft fuel port is full release the nozzle trigger
16. Remove the nozzle from the aircraft fuel port
17. Disconnect the nozzle ground clip from the aircraft
18. Walk hose back to reel and stow nozzle into the holster

19. Turn off the pump motor **See Fig 6.13**
 - a. Turn off the pump lever switch
 - b. Turn battery selector switch to the off position
 - c. Close pump suction inlet valve
20. Close and lock pump box
21. Disconnect and walk the static ground cables back to the reels
22. Release parking brake, lock fuel nozzle and close tank outlet valve by pushing each of the levers on the 3-lever operator to the full forward position. Pay special attention to the middle lever that locks the nozzle into its holster. Nozzle and holster must be pushed full down to allow the lock pin to slide in behind nozzle handle before moving middle lever to the full forward position **See Fig's 6.5 & 6.6**

CAUTION: to secure the nozzle, you must first push down on the nozzle so that the nozzle is properly aligned to allow lock pin to slide inside of nozzle handle before moving middle lever to the full forward position. See Fig's 6.5 & 6.6

6.5 Basic Operations

- a. Parking Brake: The unit is equipped with a mechanically operated parking brake. The brake must be applied prior to disengaging tow hitch and when filling, or draining tank, or whenever the unit is left unattended. To activate parking brake pull inboard lever operator handle rearward. To release parking brake push the inboard lever operator forward. **See Fig 6.1**
- b. Tires: Tire inflation should be checked and maintained as directed by the manufacturer.
- c. Before Towing: Follow checklist 5.3. Make sure the unit is securely attached to the towing vehicle. Check to see the parking brake is disengaged, grounding reel and hoses are disconnected and properly stowed, rear pump module cabinet is closed and locked, valves are closed, and all manways and covers are closed and latched tight. **CAUTION:** Maximum allowable towing speed is 15 MPH
- d. Grounding Reels: The unit is supplied with two (2) grounding reels. Before filling, draining, or when unit is unattended, the grounding reels must be attached to an appropriate ground.
- e. NFPA Standards: This tank was designed and built to meet the NFPA 407 standards. Safeguards must be in operational condition if not discontinue use immediately. No work around of emergency mechanism/safeguards are authorized.
- f. Emergency shutoff: There are two emergency remote shut off levers located on both sides of the unit. In case of an emergency where fuel flow needs to stop, pull one of the two Levers to close the bottom tank drain valve. (Note: the emergency lock out box will need to be reset prior to using the unit) **See Paragraph 6.7**

- g. Empty low point drains and drain tank sump as needed or daily
- h. Tow Bar & Undercarriage
 1. The unit is equipped with steerable front wheels controlled by the tow bar
 2. Care should be taken not to jackknife the unit when backing up.
 3. Tire inflation should be checked and maintained as described in the maintenance section
 4. The unit is equipped with a tow bar latch to hold it in the upright position

6.6 Priming the Pump

NOTE: Pump is Self-Priming; however, there could be times where you might have to prime the pump. Follow these instructions for priming.

CAUTION: Make sure the bottom drain 2" ball valve is shut before opening the tank valve **See Fig 6.2**

- 1) Open Tank Bottom drain valve by moving the outboard lever on the 3-way actuator rearward **See Fig 6.1**
- 2) Open the pump suction valve on inlet side of pump
- 3) Open air vent in the top of the filter housing until all the air exits. **See Fig 6.7**
- 4) Your pump cavity should now be fully primed. Pump should not have to primed except when ran dry

6.7 Emergency lock out box: In the event one of the emergency shut off levers are pulled the emergency lock out box will need to be reset.

WARNING: Only trained and certified personell should reset after emergency situation is resolved and HandiFueler™ is safe to operate.

- 1) Unlock and open the emergency lockout box **See Fig 6.8**
- 2) Find the released loose cable end and reinsert it back into the socket while you hold the spring loaded lock latch open **See Fig 6.9**
- 3) Line up the slot in the cable end plug with the slot in the socket **See Fig 6.9**
- 4) Release the spring loaded latch back into the slotted opening on the socket **See Fig 6.10**
- 5) Check cables to make sure they are tight, secure and in place **See Fig 6.11**
- 6) Close and lock emergency lockout box **See Fig 6.12**

6.8 Battery Condition

- a. Turn battery selector switch to battery 1 or battery 2 position **See Fig 6.14**
- b. Observe the LED battery fuel meter located on the rear outside of the battery containment box. (This will indicate the battery condition)
- c. If the LED battery fuel meter indicates a low charged battery then it will need to be recharged before using the unit. (See the maintenances section for charging information.

6.9 See the following section (Section 9) for manufacturers operations on all purchased out components, such as the pump, meter, hose reel, etc...

Section 7.0 Maintenance

7.1 Tank

- a. The tank is constructed from ASTM-A-240 T-304 Stainless steel, with a little care it will last for many years. Never use harsh chemicals such as chlorine, bromine, or acids for cleaning the tank.
- b. Inspections
 1. Inspection of tires, undercarriage, tow bar, vents, valves, hoses, liquid level gauge, reflectors, safety labels, etc., should be inspected on a periodic basis. It is recommended these inspections be performed weekly.
 2. Internal inspection will be necessary to insure structural integrity and cleanliness. It is recommended that interval inspections be performed at least every (6) six months.

7.2 Under Carriage and Tow Bar

- a. The unit is equipped with steerable front wheels, fixed rear wheels, and a tow bar.
- b. Maintenance should consist of the following:
 1. King pin bushing, turning bushings and tie rod ends are self lubricating and need no additional maintenance
 2. Pack wheel bearing at intervals not to exceed three (3) months
 3. Check tire pressure weekly. Pressure should be maintained at 90 PSI
- c. Tow bar pivot pin and luennette should be inspected monthly for excessive wear or cracks.

7.3 Parking Brake

- a. The unit is equipped with a parking brake assembly consisting of a 7" diameter brake drum with 1-3/4" wide brake shoes
- b. The shoes are activated with a mechanical linkage, pull cable and lever
- c. Adjustment may be necessary as the shoes wear
 1. Tightening is accomplished by removing the bolt through one yoke and screwing yoke in to shorten connecting rod.
 2. Do not over tighten or brakes may drag when released
- d. Replacement of shoes
 1. Remove shoes
 2. Remove nut retaining hub and drum assembly
 3. Disconnect actuating rod
 4. Remove shoe retainers
 5. Install new shoes
 6. Replace shoe retainers
 7. Adjust actuator rod length
 8. Replace wheel
- e. Check the 3 lever operator and the cables weekly for signs of wear. Replace as required

7.4 Delivery Hose

- a. The Fueling hose should be inspected monthly for cracks. Any sudden loss of flow may indicate a crack in the hose. Replace as required.

7.5 Grounding Reels

- a. Grounding reel cables should be pulled out, cleaned and inspected monthly. Cable clamps and ends should be inspected for loose connections monthly.
- b. Continuity between ground clamp, plug and unit chassis should be checked monthly. Remove & clean any corrosion that prevents continuity.

7.6 Battery Charging

- a. Turn battery selector switch to the off position
- b. Connect static ground cables to approved grounding points.
- c. Plug the on board charger cable into an 115V AC power source
- d. The charger is automatic and will indicate with a Red LED light (stage 1) that the charger is putting out 10Amps of current.
- e. When both Red and Green LED lights are on, the charger is in (stage 2) indicating a 3 to 9 AMP charge
- f. When the Green LED light is on, the charger is in (stage 3) indicating a floating maintenance charge of less than 3 AMPS. The charger will gradually reduce to 0.1 Amps as the batteries reach 100% charge and can be kept at full charge without overcharging.

7.7 Other Maintenance

- a. See Section 9.0 for manufacturers' operation and maintenance procedures on all purchased out components.
- b. Internal inspection will be necessary to insure structural integrity and cleanliness. It is recommended that interval inspections be performed at least every (6) six months.

WARNING: When entering confined spaces such as the interior of the tank, provide proper breathing equipment and a second person dedicated solely to safetywatch the person inside. Comply with all International, Federal, state, local and company safety and environmental standards.

Model R400EA Trouble Shooting

<u>Symptom</u>	<u>Probable Cause</u>	<u>Possible Correction</u>
Parking brake does not work	Cable or operator tension too loose	Adjust cable tension as required
	Bad brake shoes	Replace as required
3" Internal valve will not open	Emergency lock out box triggered	Re-set as described in section 6.7
	Cable or operator tension too loose	Adjust cable tension as required
3" Internal valve will not close	A foreign object stuck in valve	Remove object
	Cable or operator tension too tight	Adjust cable tension as required
	Bad valve spring or seal	replace as required (see section 9.0)
Nozzle holster will not lift up	broken lift spring	replace as required
No fluid flow through fueling nozzle	Tank empty	Refuel HandiFueler as described in section 6.3
	3" Internal valve closed	Open valve
	2" Pump suction valve closed	Open valve
	Emergency lock out box triggered	Re-set as described in section 6.7
	Pump lost prime	Re-prime pump as described in section 6.6
Unit does not track or steer correctly or steers loosely	Clogged filter element	Replace element (see section 9.0)
	bent king pin housing	replace king pin housing
	defective tie rod end	replace tie rod end
Toe bar does not stay in the upright position	loose or worn bushings	replace as needed
	broken or defective spring	replace as needed
Pump Motor does not run	dead batteries	charge batteries



Fig 6.1

- ① Outboard lever shown in full forward position. Operates the 3" internal valve.
- ② Middle lever shown in full forward position. Locks fuel nozzle in holster
- ③ Inboard lever shown in full forward position. Operates parking brake.

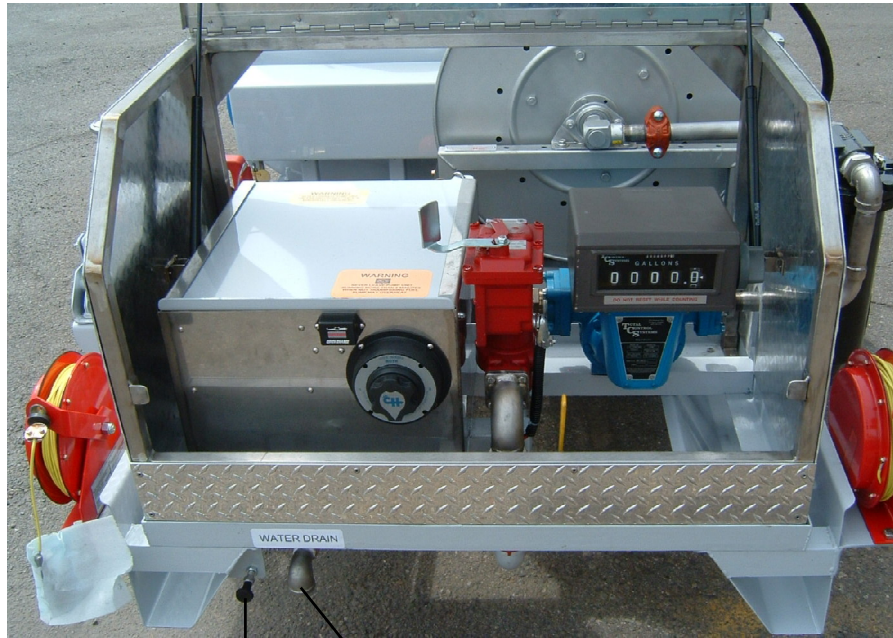


Fig 6.2

Condensation Drain
Pull Cable

Tank Sump
Condensation Drain



Fig 6.3



Fig 6.4



Fig 6.5



Fig 6.6

Rotate center handle full forward to lock down nozzle

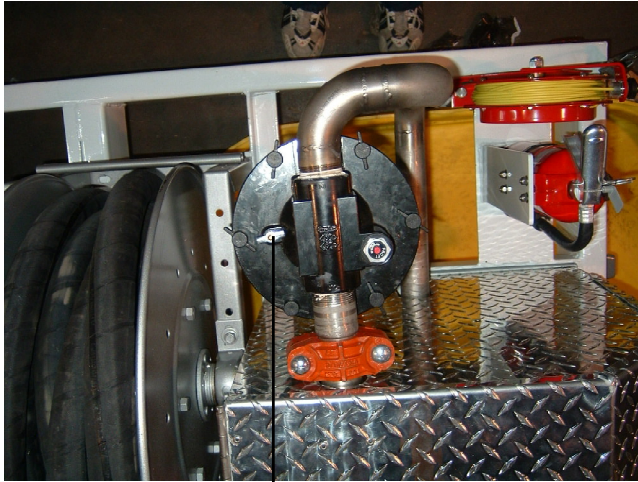


Fig 6.7A

Filter Air Vent & Bleed Air Vent for Priming Pump



Fig 6.7B

Differential Pressure Indicator



Fig 6.7C

Filter Condensation & Low Point Drain

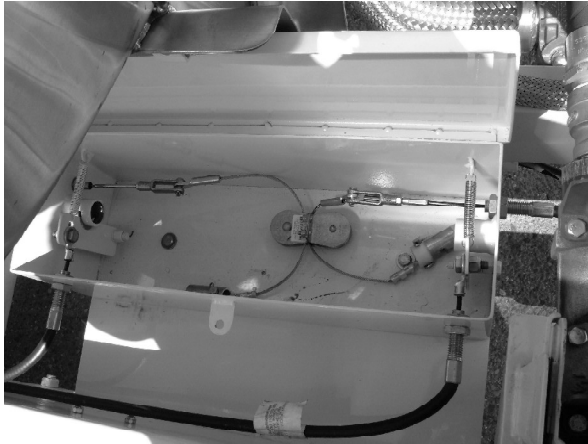


Fig 6.8 (Step 1)



Fig 6.9 (Steps 2 & 3)



Fig 6.10 (Step 4)

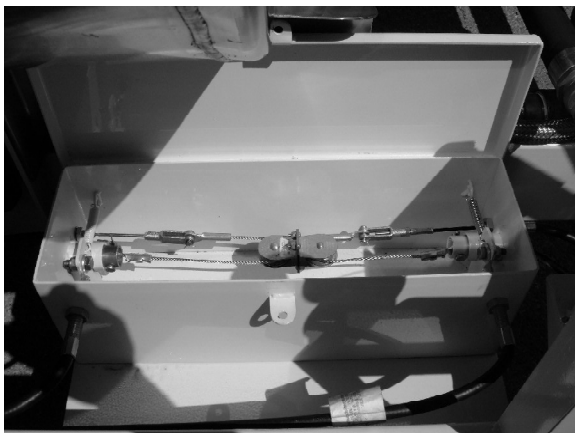


Fig 6.11 (Step 5)

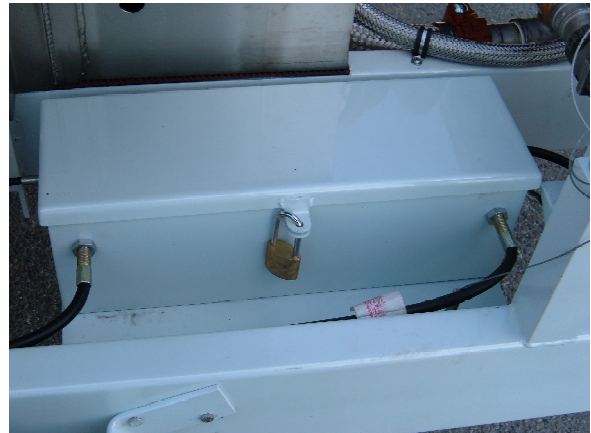
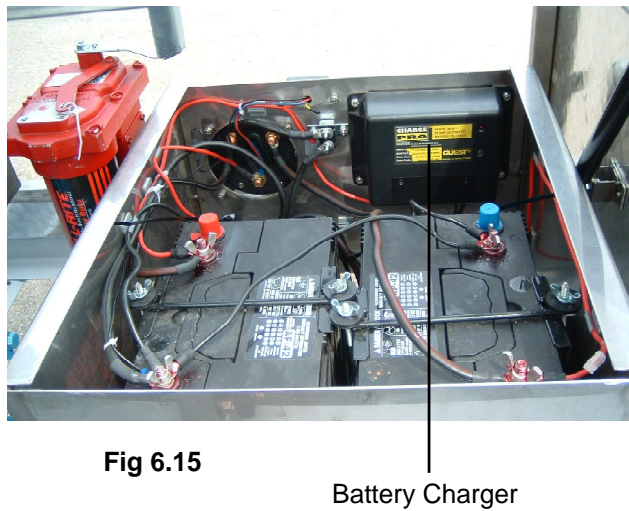
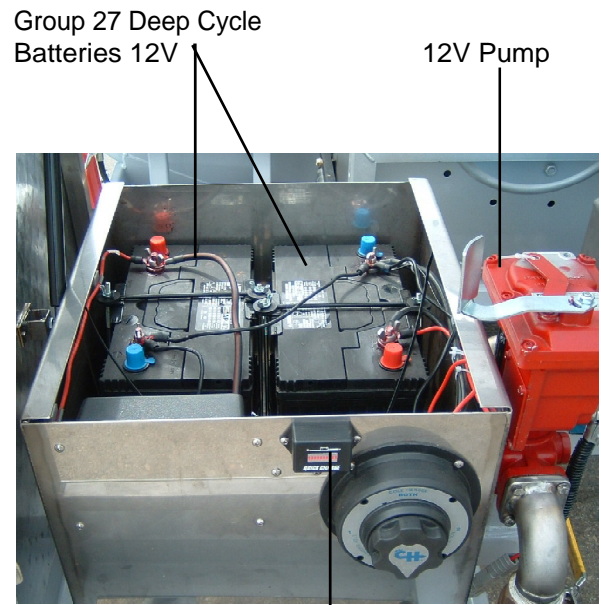
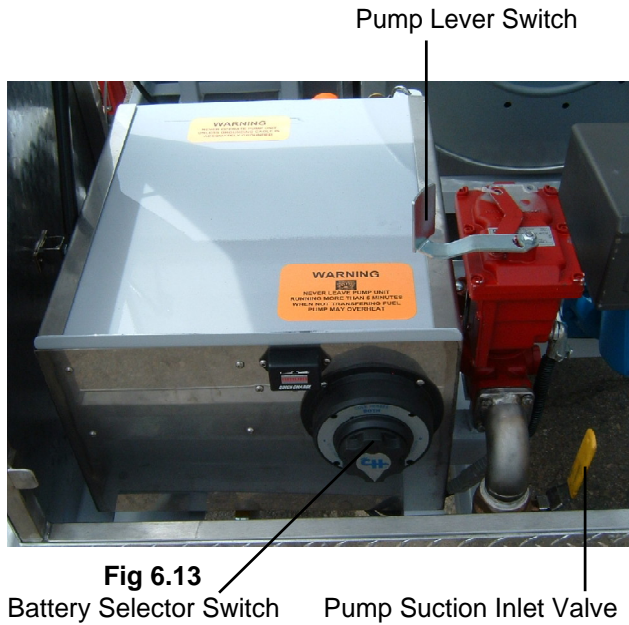


Fig 6.12 (Step 6)





HandiFueler™

Pumping System

Section 8.0 Replacement Parts

This section provides information for identification of parts for ordering. To order, it is important to have the Model Number, Subassembly Number, Part Number and Description. Parts may be ordered by calling or writing to:

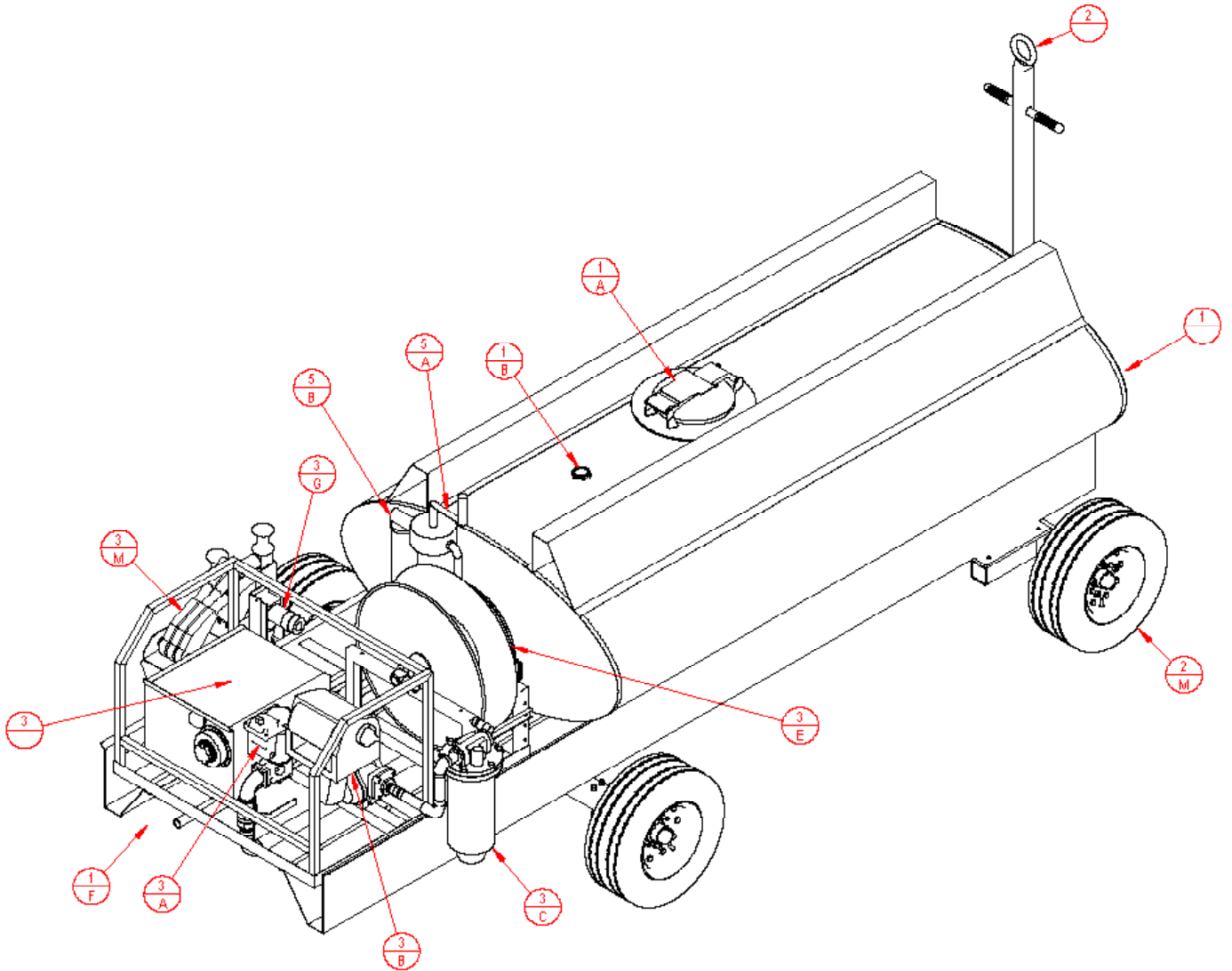
**Spokane Industries, Inc.
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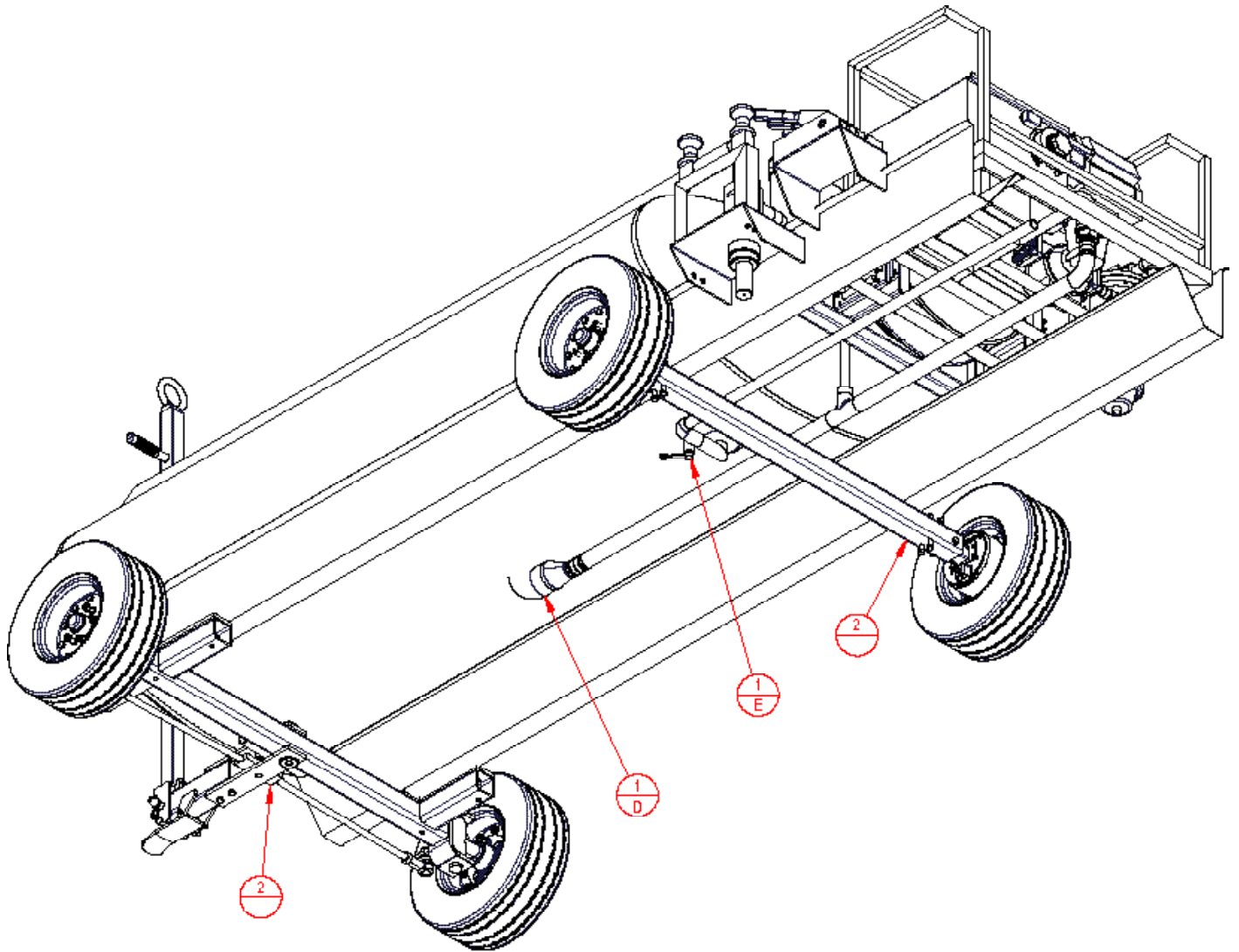
Table 8.1 R400EA Bill of Materials

1	400 Gallon Cart style Tank	SMP 24X52X96
1a	16" DOT Manway self latching	04-2716
1b	1-1/2" Liquid Level Gauge	04-01541
1d	3" internal emergency valve	04-2524
1e	1" Internal condensate drain valve	04-2532
1f	Condensate drain valve cable assembly	SK-949-8
1g	1" condensate ball valve	04-10315
2	Undercarriage	SMP STD
2a	Lunette Eye	04-1052
2d	Parking brake cable	SK-949-3
2e	Remote Emergency shut off lever (both sides)	04-25222
2g	2 EA Fire extinguishers (20 B:C purple K)	04-0700
2k	Grounding reels	04-10361
2m	20.5 x 8 x 10 Load range "E" tires	04-10221
3	Electric 12V DC "EA" pump module	SMP # EA
3a	Pump, tuthill/FillRite 1" 20 GPM 12V DC 22 Amps	PD
3b	Meter 1-1/2" 5-60 GPM Max (TCS)	04-0144
3c	Facet 1-1/2" 50 GPM filter/seperator	04-0240
3d	Filter element, sediment and water	04-0250
3e	Hose reel, hannay 1"	04-2224
3f	1" x 50' Lg. aircraft fueling hose	04-0190
3g	1" Overwing nozzle	04-1260
3k	Roller/spool assembly	04-2230
3m	3 way Lever actuator/operator	04-25225
3n	Batteries, Group 27 Deep Cycle, 160 Min Reserve	PD
3p	30 Amp, thermal reset breaker, Cole-Hersee	PD
3q	Battery charger, Guest 10 Amp on board type	PD
3r	Battery Switch, 4 way Cole-Herse M-751	PD
3s	LED Battery Condition Meter	PD
3t	Optional Remote Power cord 12V DC off vehicle	PD
4	Emergency lock out box	07-1044
4a	Lock box internal cable, lever side	SK-949-7
4b	Lock box internal cable, valve side	SK-949-6
4c	Pulley assembly	04-2110
4d	Lock box to drain valve cable assembly	SK-949-1
4e	Lever actuator to lock box cable assembly	SK-949-2
4f	Drivers side emergency shut off cable	SK-949-4
4g	Passenger side emergency shut off cable	SK-949-5
4h	Latch springs (2 each)	04-10542
4k	Clevis pin (2 each)	SK-949-8
4m	Cotter pin (2 each)	SK-949-9
4n	Latch bar (2 each)	01-85955
4p	Latch pug cable end (2each)	01-85956
4q	Latch support bolt (2 each)	SK-949-10
4r	Latch support nuts (6 each)	SK-949-11
4s	Latch support washers (4 each)	SK-949-12
4t	Latch cable bolt (2 each)	SK-949-13
4u	Latch cble unt (2 each)	SK-949-14
5	Optional hand operated pump	N/A
5a	Hand crank pump, 3/4" NPT	#210A
5b	Filter, Velcon, 1" NPT	VF-31E
5c	Element, Velcon	AC-2100L
5d	Hose, aircraft fueling, 1/2" x 25'	06-10166
5e	Nozzle, 3/4 Top Gun	PD

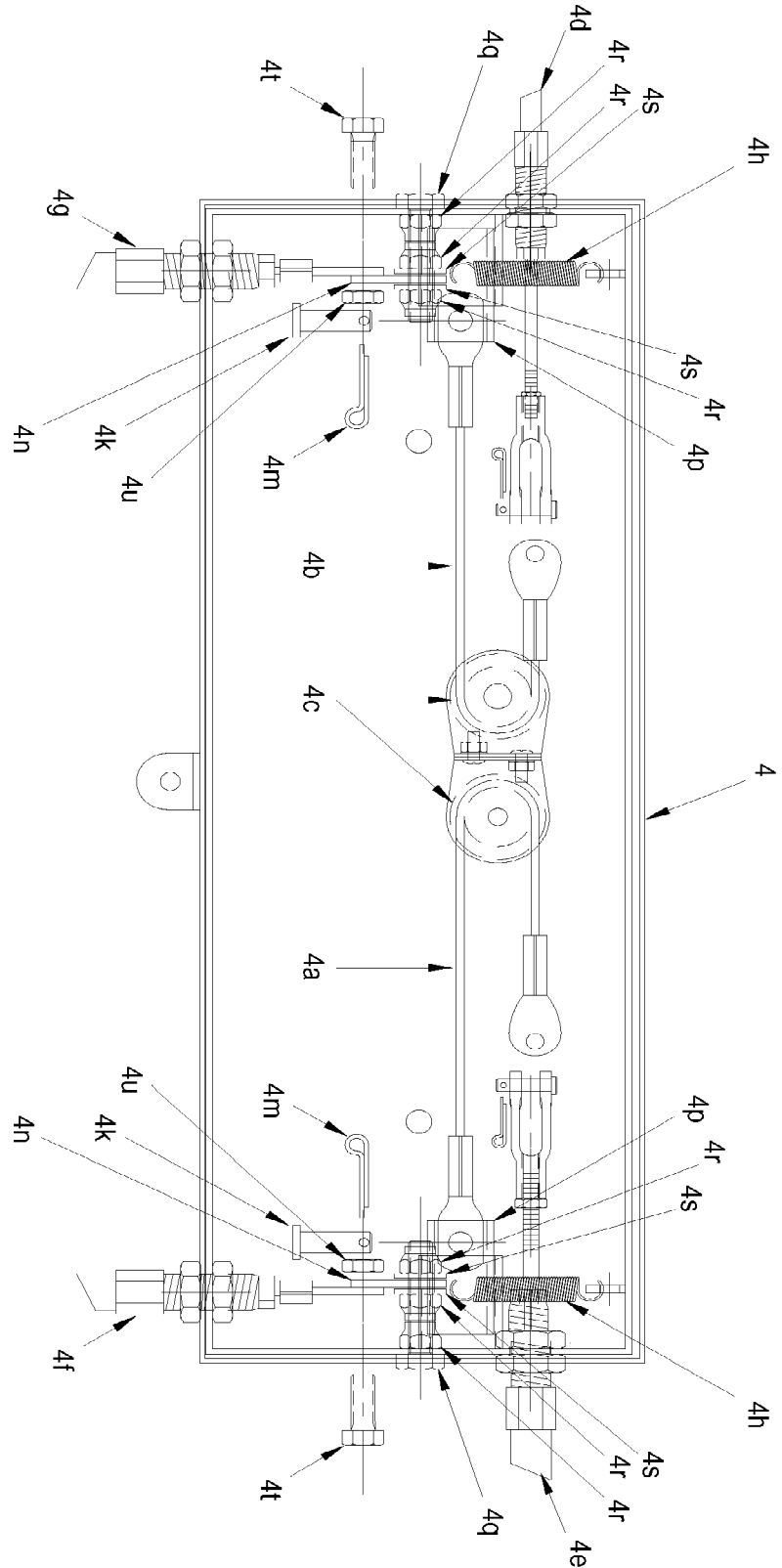
R-DA Top View
Fig. 8.0



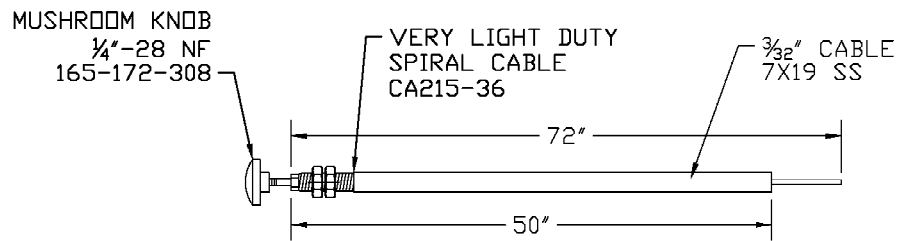
R-DA Bottom View
Fig 8.1



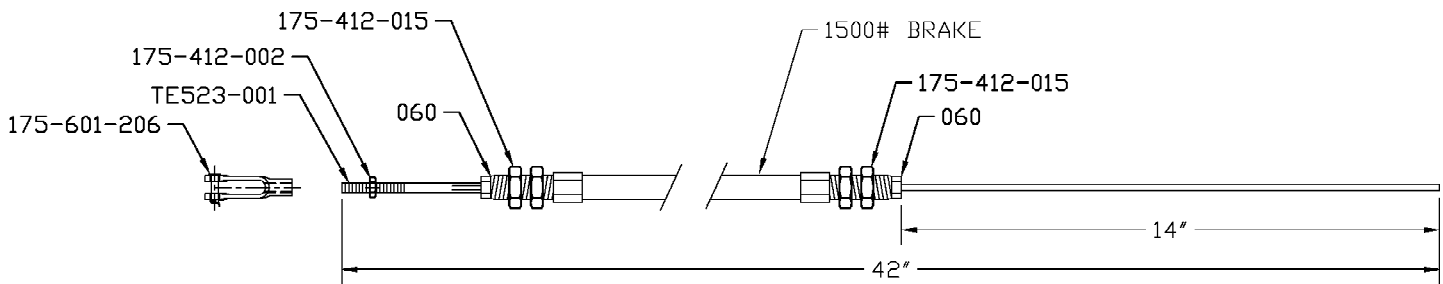
R-EA Emergency Lock Box
Fig 8.3



R400EA Cable
Fig 8.4

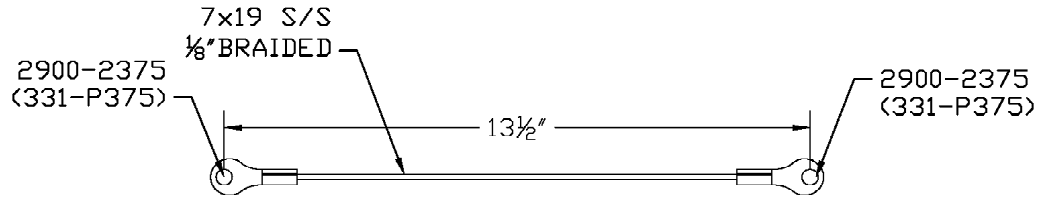


①f LOW POINT WATER DRAIN OFF CABLE (TANK SUMP THROUGH SKID)

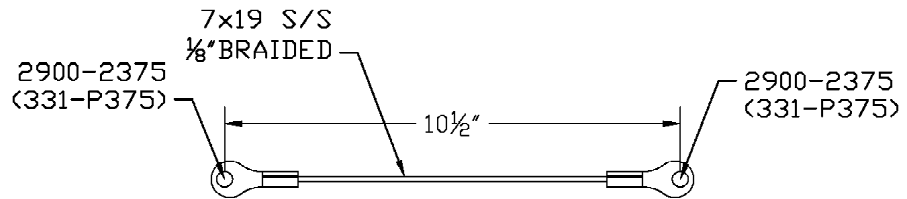


②d LEVER OPERATOR TO EMERGENCY TRAILOR EMERGENCY BRAKES
NOTE: PROVIDE 14" OF TRAVEL

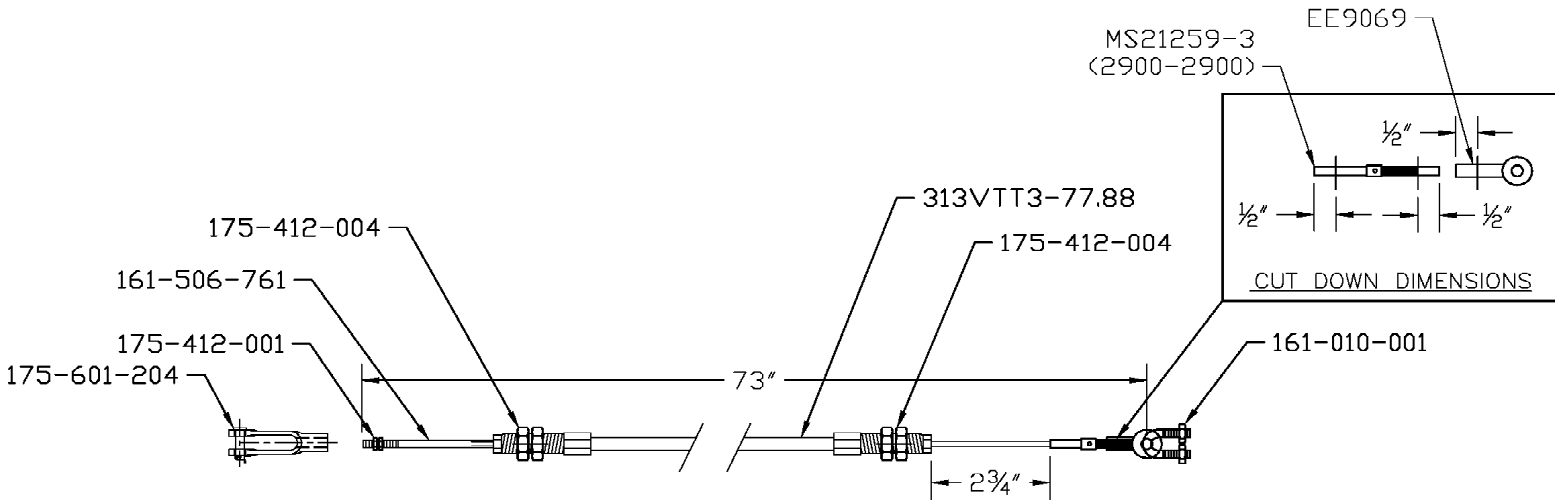
R400EA Cable
Fig 8.5



④ LOCK BOX INTERNAL CABLE (LEVER OPERATOR SIDE)

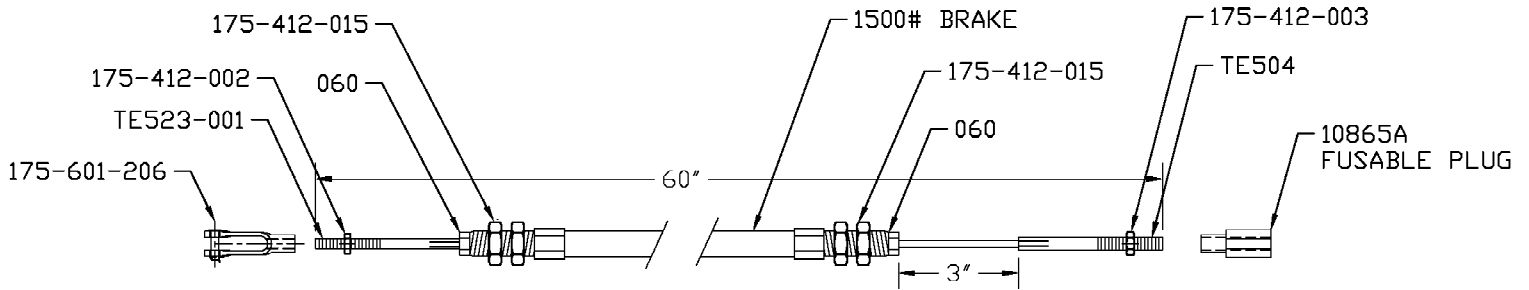


④ LOCK BOX INTERNAL CABLE (TANK BOTTOM DRAIN VALVE SIDE)

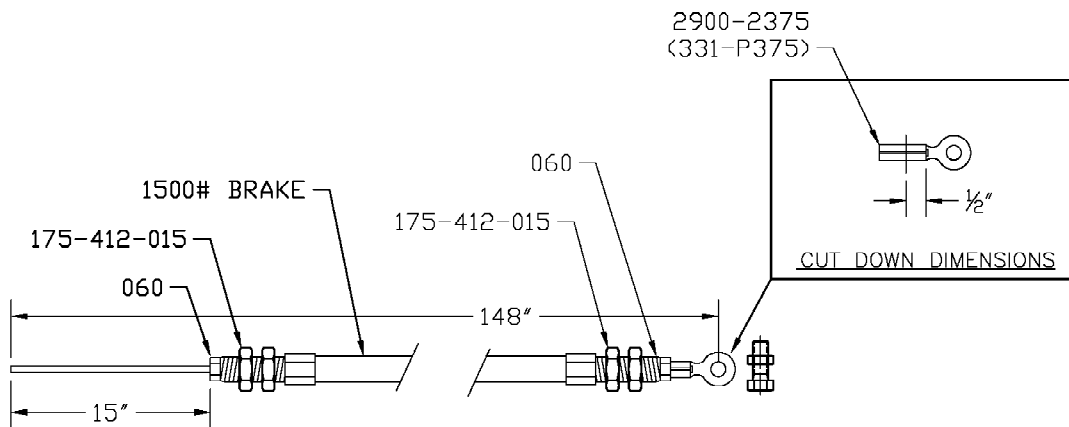


④ TANK BOTTOM DRAIN VALVE TO LOCK BOX
NOTE: PROVIDE 2 3/4" OF TRAVEL

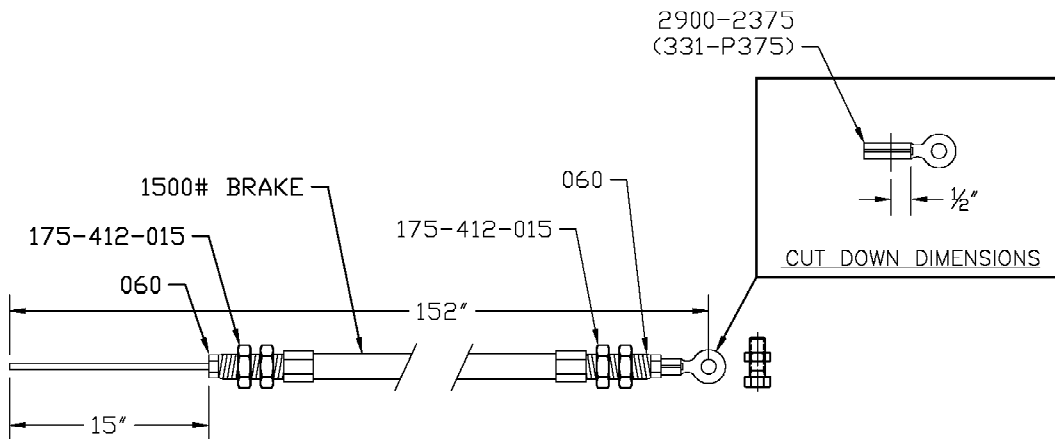
R400EA Cable
Fig 8.6



④e LOCK BOX TO LEVER OPERATOR (TANK BOTTOM DRAIN VALVE)
NOTE: PROVIDE 3" OF TRAVEL



④f DRIVERS SIDE REMOTE SHUT OFF OPERATOR (TANK BOTTOM DRAIN VALVE)
NOTE: PROVIDE 15" OF TRAVEL



④g PASSENGER SIDE REMOTE SHUT OFF OPERATOR (TANK BOTTOM DRAIN VALVE)
NOTE: PROVIDE 15" OF TRAVEL



HandiFueler™
Pumping System

Fig 8.7



HandiFueler™
Pumping System

Fig 8.8



HandiFueler™
Pumping System

Fig 8.9



HandiFueler™
Pumping System

Fig 8.10

Fig 8.11

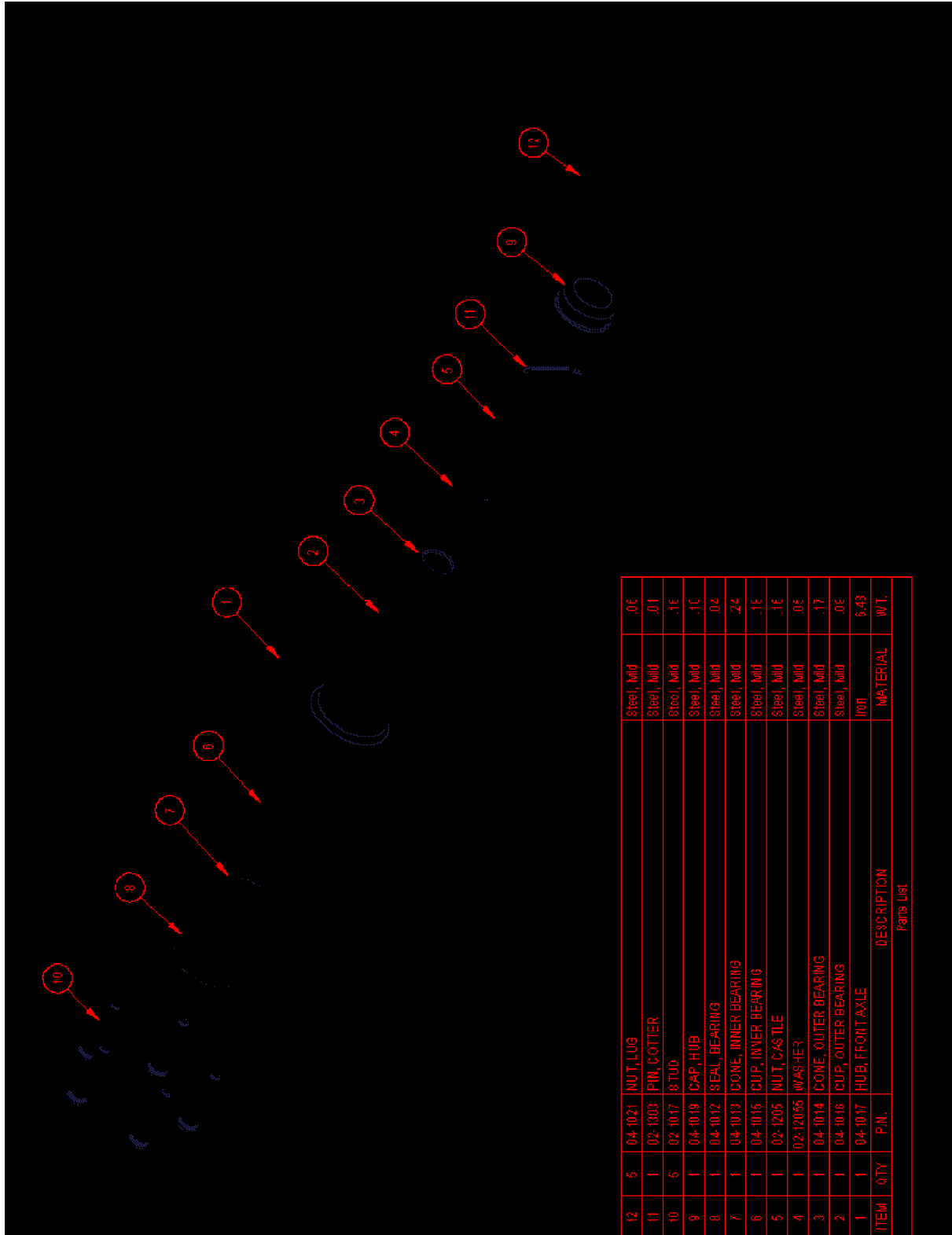


Fig 8.12

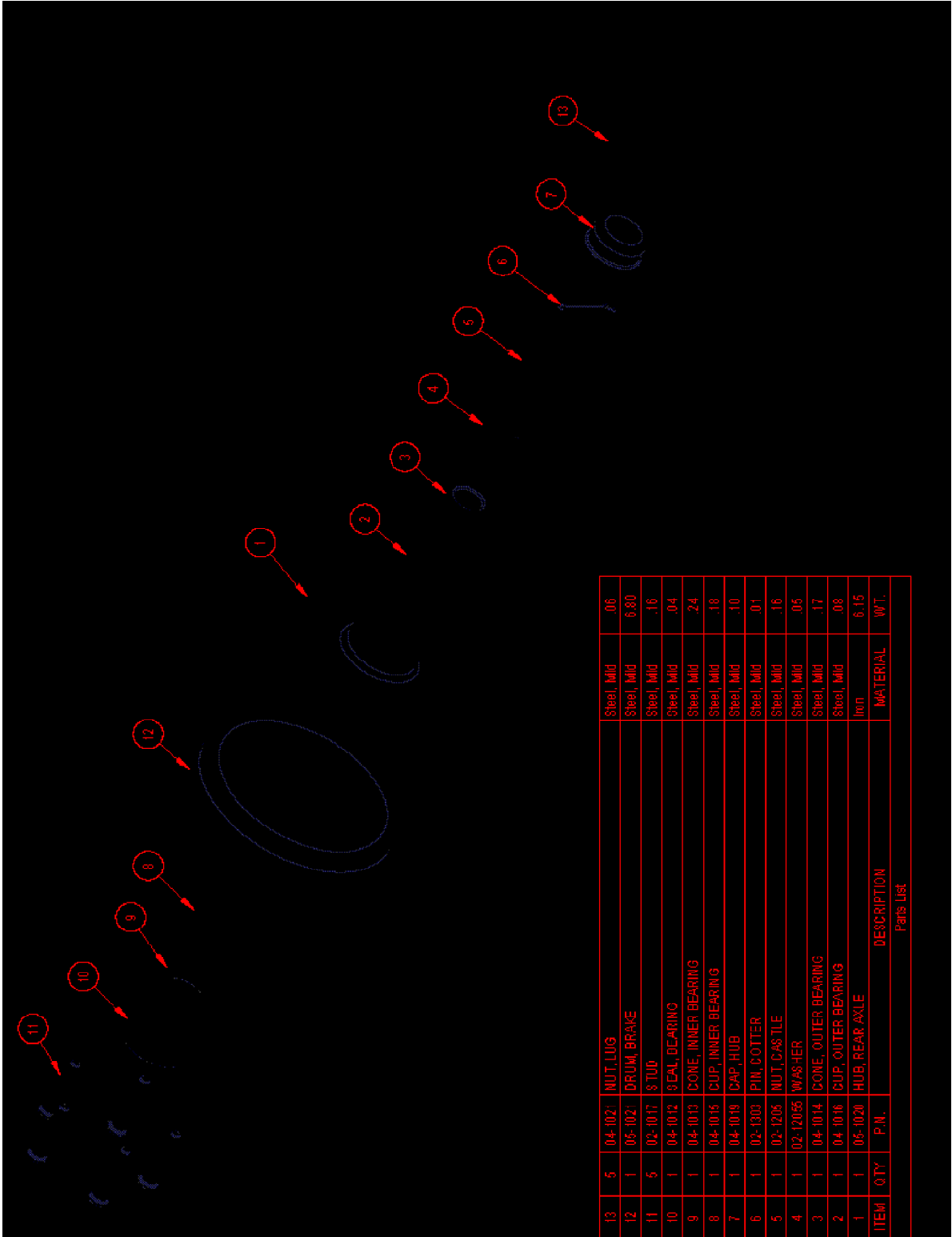


Fig 8.13

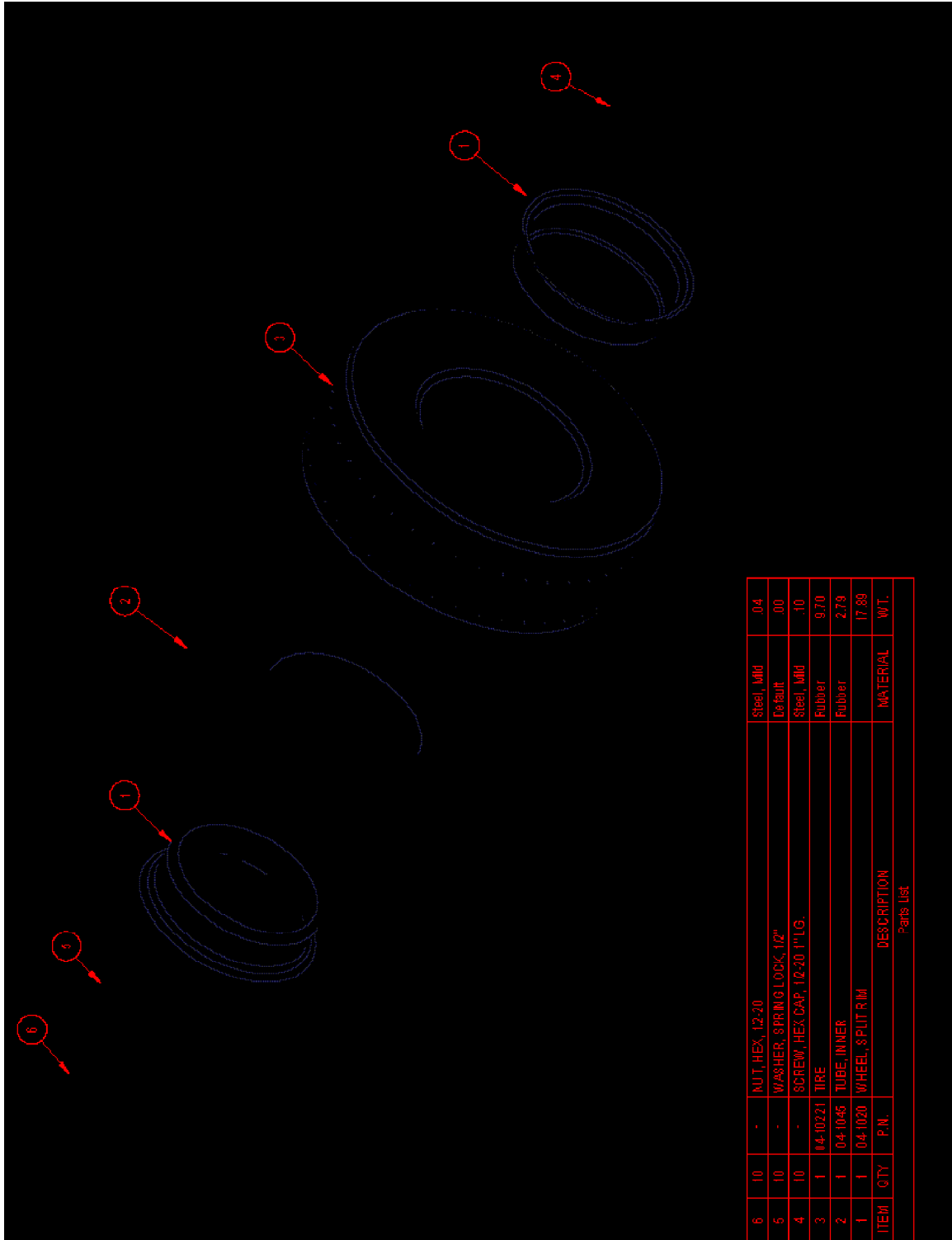
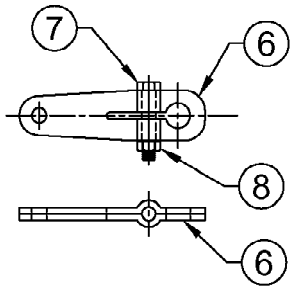
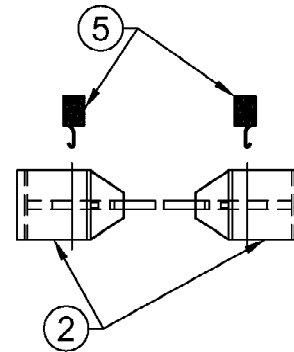


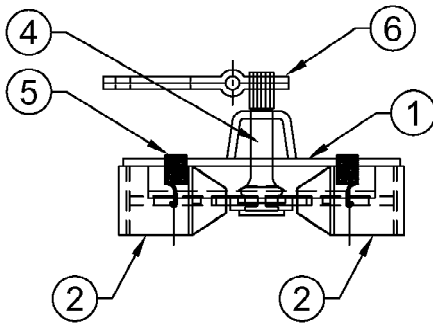
Fig 8.14



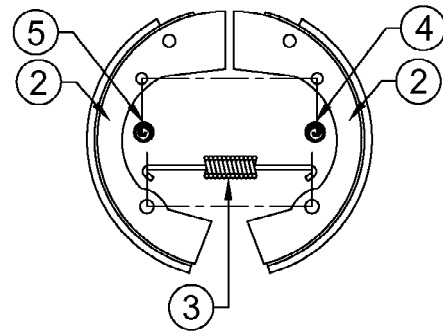
CAM LEVER OPERATOR DETAIL



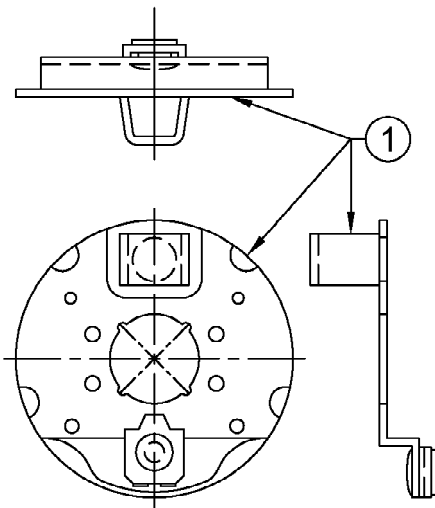
BRAKE SHOE / HOLD DOWN SPRING DETAIL



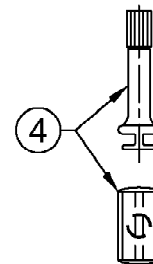
BRAKE/CAM/LEVER/BACKING PLATE ASSY



BRAKE SHOE / SPRING ORIENTATION
RETURN SPRING

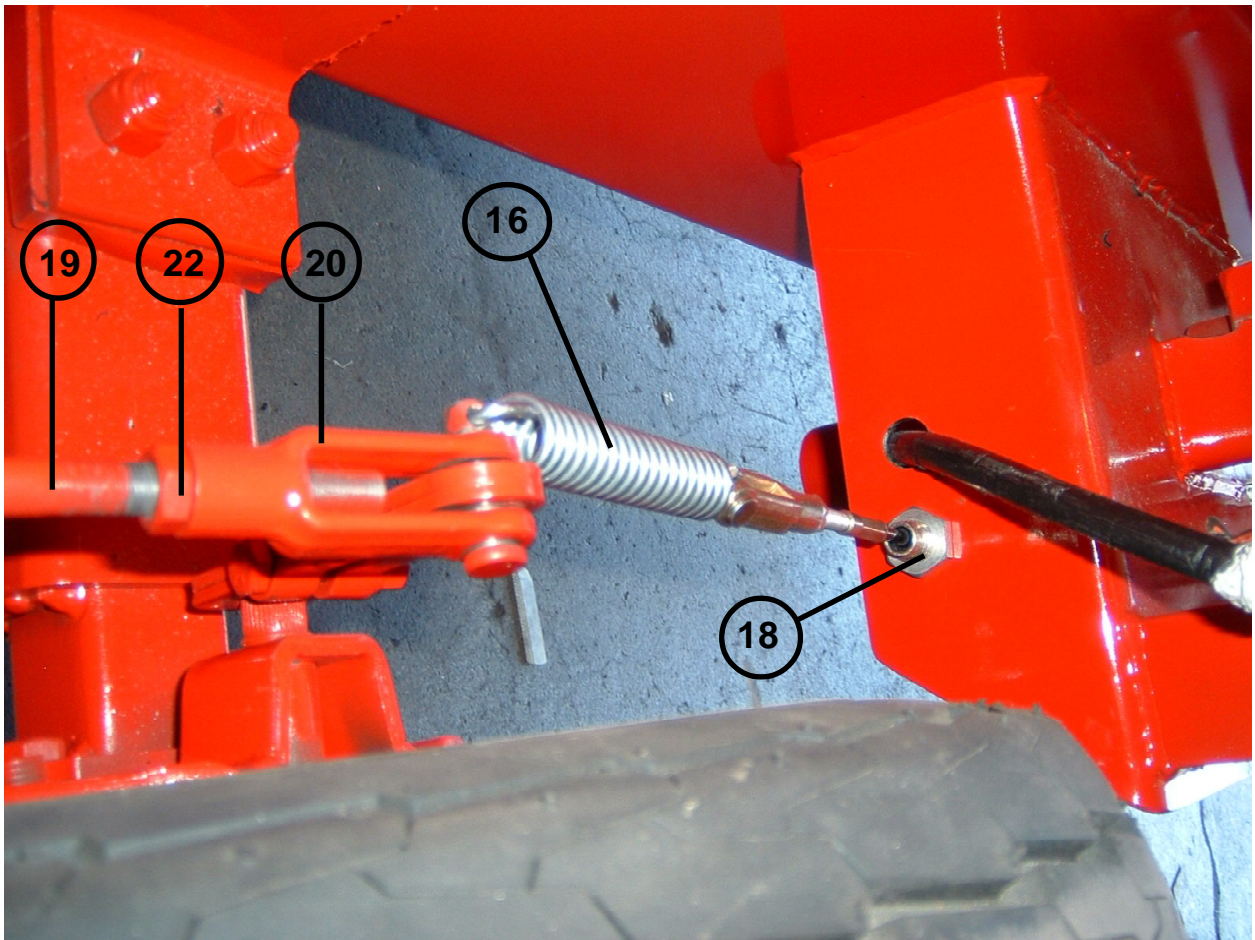


BACKING PLATE DETAIL



CAM DETAIL

Fig 8.16





MAJOR ASSEMBLY-BRAKE, PARKING

<u>Sub Assy.</u>	<u>Item</u>	<u>Part No.</u>	<u>Qty</u>	<u>Description</u>	<u>Wt#</u>
08-1007R		04-1063		Brake Assembly (2 Req.)	4.4
	1	04-1064R	1	Backing Plate Assembly	1.4
	2	04-1065R	2	Brake Shoe Assembly	1.6
	3	04-10265R	1	Return Spring	.04
	4	04-1026R	2	Hold Down Spring	.06
	5	04-1028R	1	Cam	0.5
	6	04-1030R	1	Cam Lever	0.7
	7	02-10017R	1	Cam Bolt	.07
	8	02-12012	1	Cam Nut	.03
				Brake Linkage Assembly	14.8
	13	05-1025SP	1	Cam, Brake Linkage	1.4
	14	02-10012	1	Bolt	0.4
	15	02-12021	1	Nut	0.1
	16	04-1054	1	Spring	
	18	SK948-3	1	Em Brake Cable Assy	
	19	05-1026	1	Rod, Brake Linkage	1.0
	20	04-2516	4	Yoke Ends	0.5
	21	03-1020	2	Grease Fitting	0.5
	22	02-100231	4	Jam Nut	0.5

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