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AGSE-E036-G01 (9C6025P01)

Up-Lift Propulsor Air/Truck Shipping Stand

For GE90-94B Engine

ORIGINAL MANUAL DATED 04/16/98

LATEST MANUAL REVISION LEVEL 8/31/2023 (REV K)

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NOTICE

1. Alteration, Modification, Reengineering, or Reproduction of Equipment

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These modifications include but are not limited to:

- Structural changes to AGSE-supplied parts
- Substitution of AGSE-supplied parts, including hardware, with an alternate source or supplier
- Reverse engineering of AGSE equipment and parts.

Requests for modifications should be submitted to AGSE for review – please send modification requests to support@agsecorp.com.

Once reviewed by our Engineering team, a Customer Support Letter (Subject: No Technical Objection) will be issued for any approved modifications.

NOTE

Modifications executed without prior authorization by AGSE may result in a non-compliant product that is unsafe for operation.

Unauthorized modifications void AGSE's and the OEM's (Engine and/or Airframer) approval and authority to use the product for its intended application.

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1.0 – Revisions

The following is an itemized record of all changes from previous revision.

PAGE	REV	DESCRIPTION OF CHANGE	DATE
Cover	K	Updated Cover	8/31/2023
3.0	K	Revised Section 3.1	8/31/2023
5.4	K	Revised Section 5.5	8/31/2023
5.8	K	Revised Section 5.8	8/31/2023

2.0 – Illustration

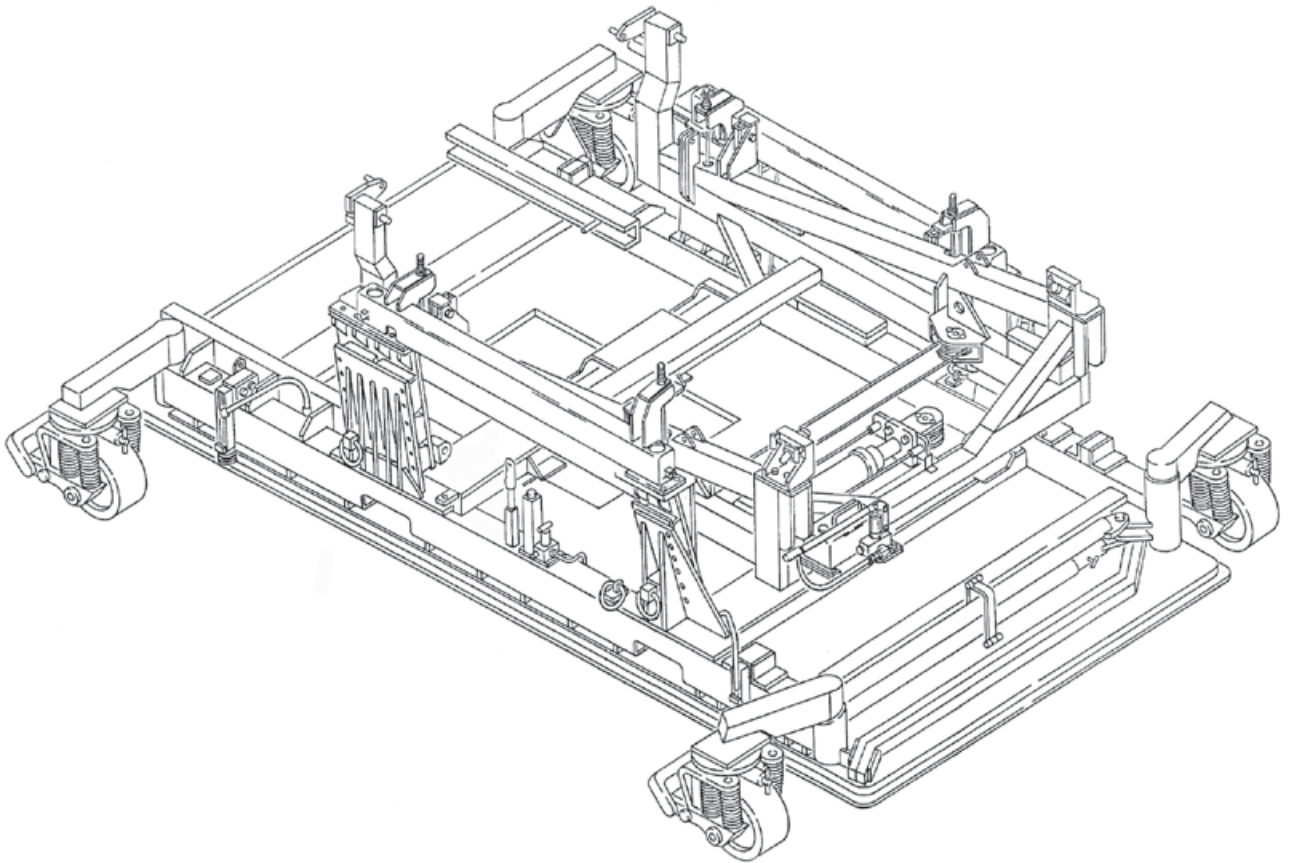


Figure 2.0-1 Cradle Shown in Raised Position

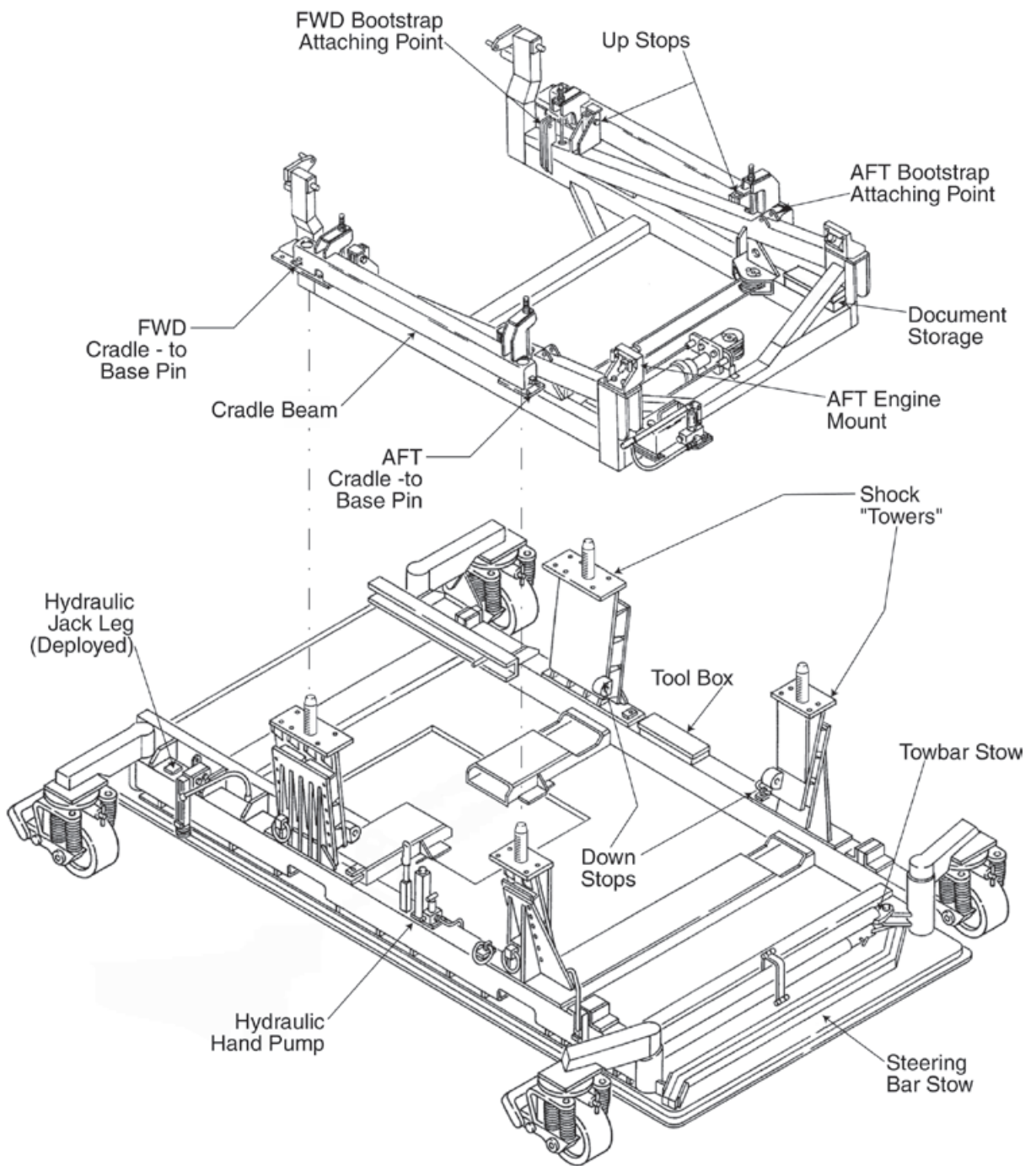


Figure 2.0-2 Cradle Detached from Base

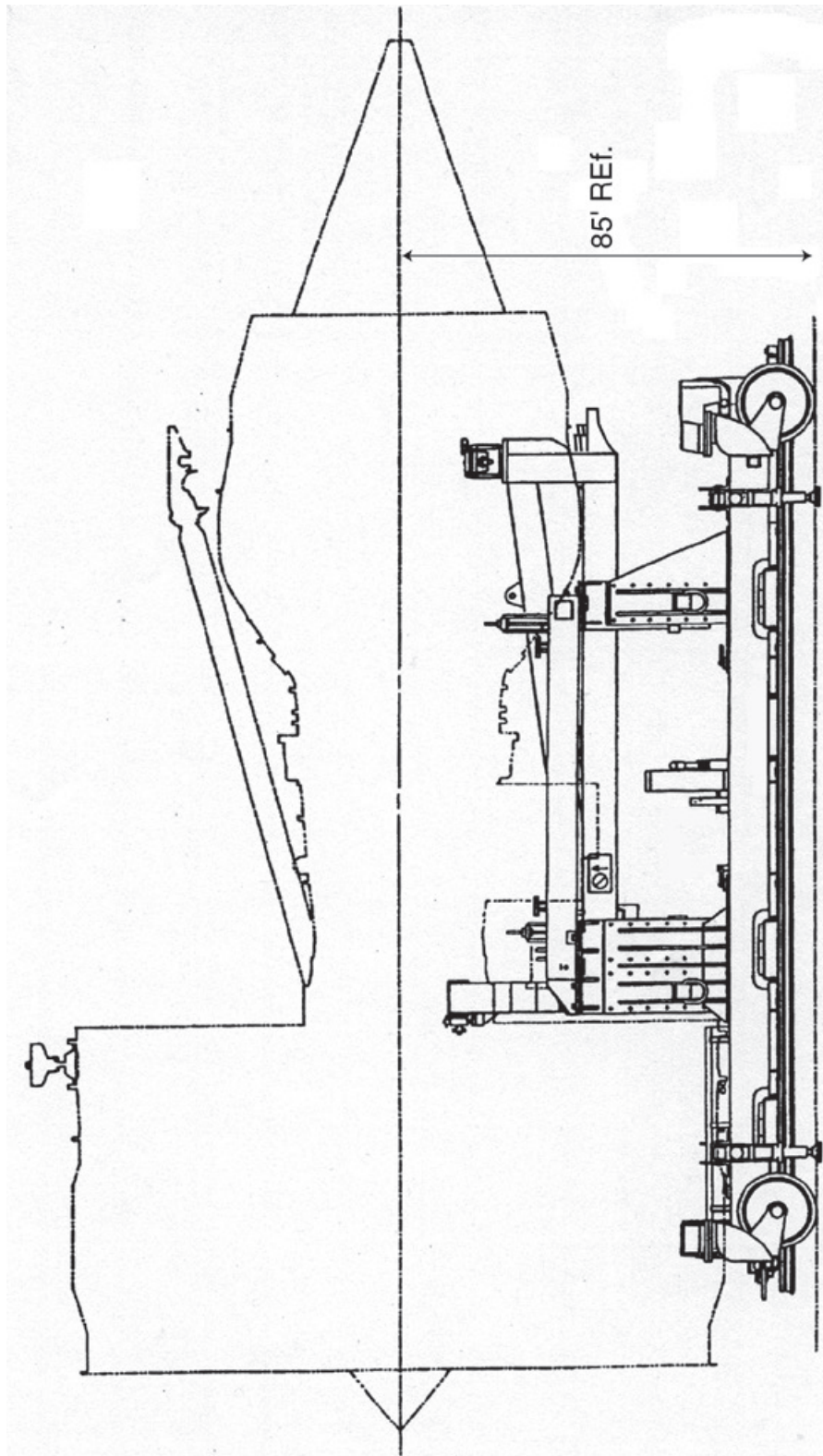


Figure 2.0-3 Propulsor Stand with Engine

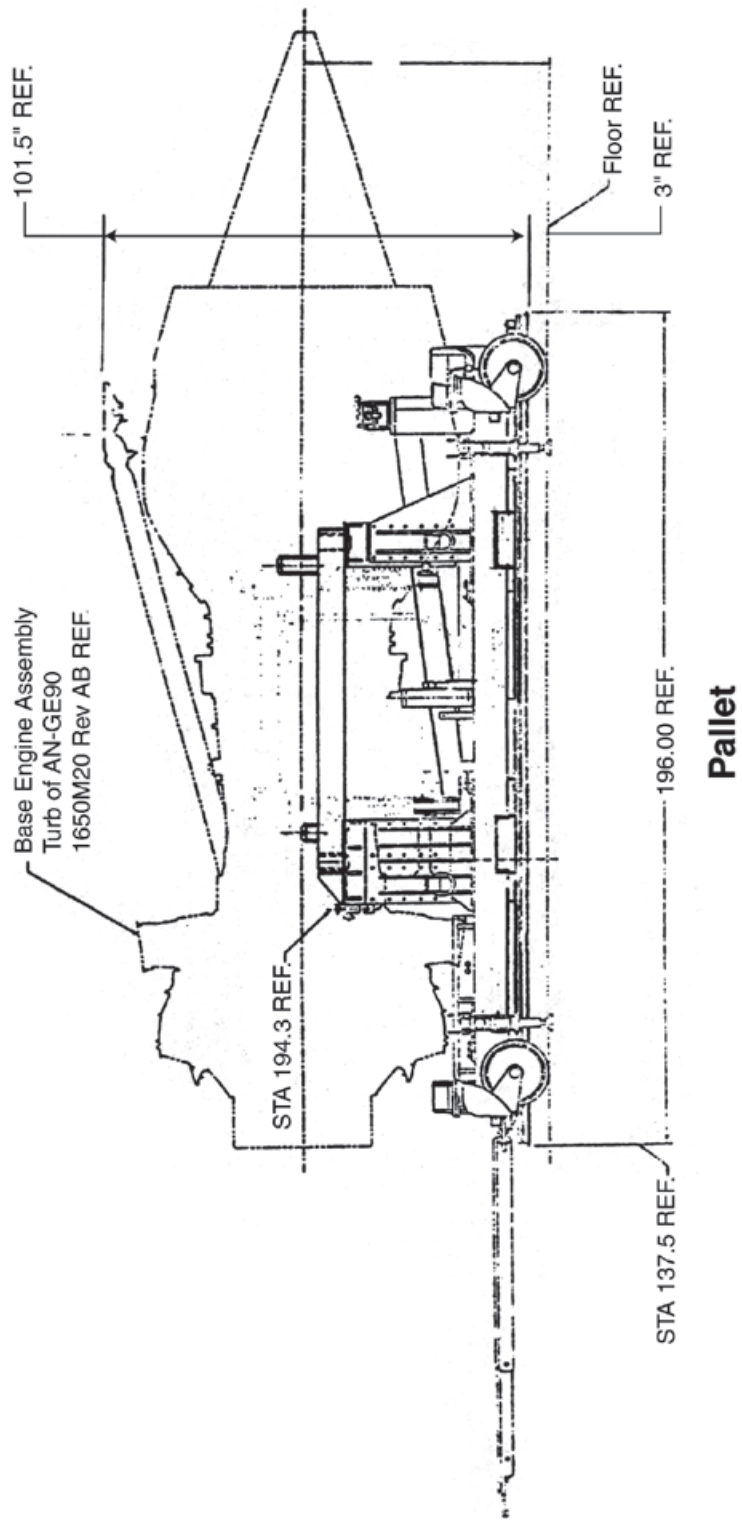


Figure 2.0-4 Propulsor Stand with Propulsor only

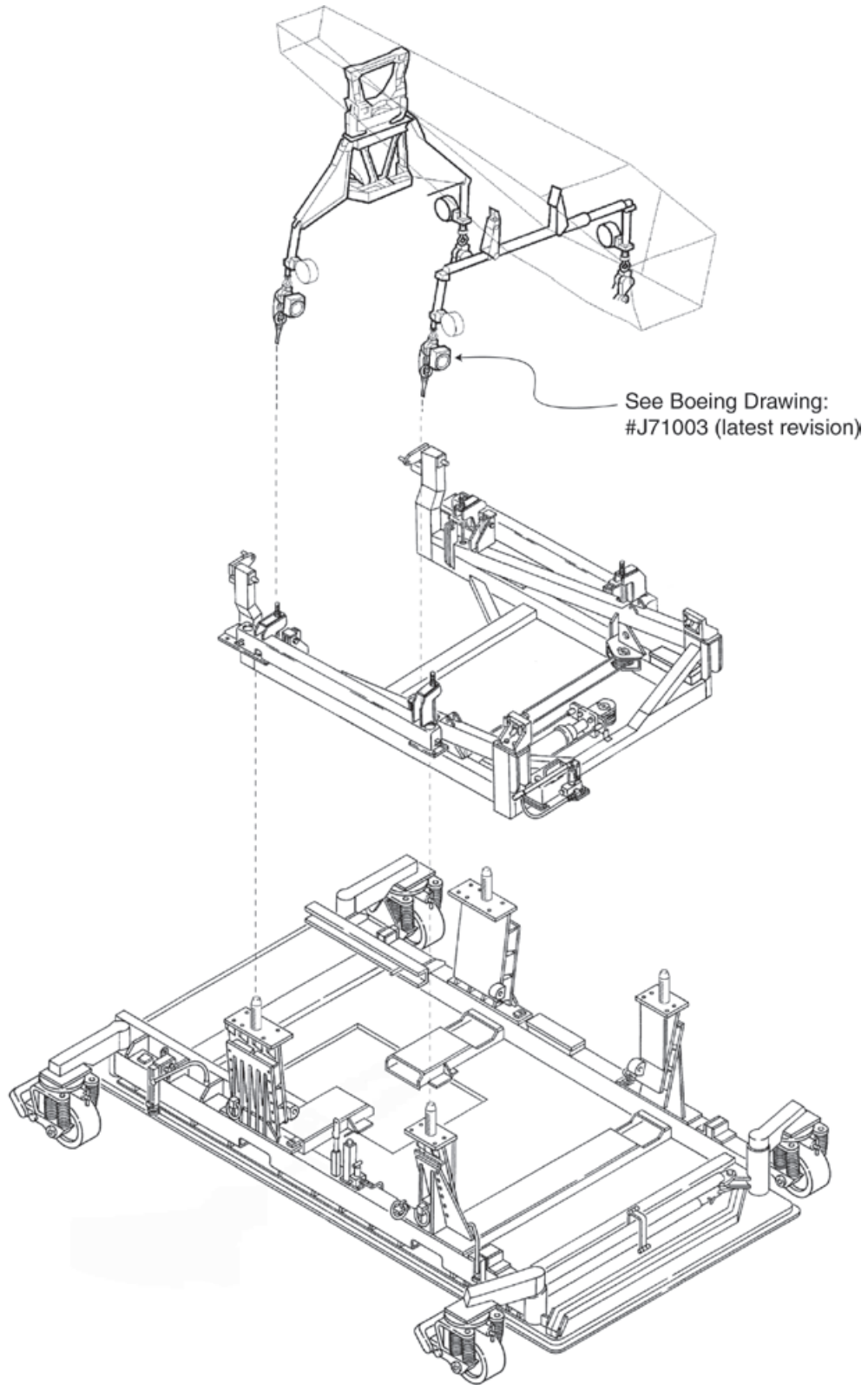


Figure 2.0-5 Bootstrap System

3.0 – Specification

3.1 General

The AGSE-E036-G01 (9C6025-P01) Up-Lift Propulsor Stand is designed to transport, and/or store the General Electric GE90-94B Engine. The stand accommodates fan separation (with or without inlet cowl), and is compatible with 9C6002 (Fan Case/Inlet Transportation Stand) and 9C6017 (Fan Transfer Dolly). Transfer rails mounted to the stand provide support for the 9C6017 Dolly. The stand is capable of bootstrapping the full GE90-94B Engine on B777 Aircraft. The stand (with propulsor) is suitable for air transport on the main deck of B747 Freighter Aircraft. A document container is located on the AFT end of the cradle for all manuals and documents.

3.2 Mobility

The stand consists of a separable base and cradle weldment, with the base supported by four shock absorbing caster assemblies. Each caster assembly offers a 5 inch wide by 16 inch diameter wheel for easy mobility and a weight capacity of 6,500 pounds each. Shock absorbing polyurethane tread wheels, position locks, and face brakes are standard. All four caster assemblies are designed to pin in an elevated position for air/truck transport of the entire stand. The stand is towable from both ends, and includes towbar storage. Maximum towing speed for entire stand (with full engine or propulsor) is 5 Km/h (3 MPH). Integral truck shipping shock mounts cushion transportation and rough handling vibrations and shocks.

CAUTION

Failure to unlock the lead casters (towbar end) during towing of the stand will result in flat spots being worn into the caster tread.

There are tie down rings located on the base to secure the stand to a truck trailer for truck shipment.

NOTICE

If unit is to be transported by truck and trailer, it is “MANDATORY” that both the truck and trailer be equipped with “air-ride” type suspension.

3.3 Design

The 9C6025-P01 Cradle consists of a steel welded frame with removable ground handling mounts compatible with the GE90-94B Engine. The mounts attach to the turbine rear exit case and intermediate fan case. Tubular arms support the engine handling mounts. A transverse mounted hydraulic cylinder and wire cables allows the cradle to raise and lower (depending on air/truck shipment or fan case separation). The cradle pins securely to the base in either position. Expanded steel covers the hydraulic cylinder and wire cables. The hydraulic system is powered by a hand pump. An optional air driven hydraulic pump is available.

The 9C6025 (AGSE-E036) Base consists of a steel welded frame with integral shock mounts to dampen ground handling shocks and vibrations when transporting the engine propulsor. A 96 inch x 196 inch pallet with relief cutout for fan case clearance is included. Retractable shock absorbing casters are included with stand. The base contains fork channels located to allow fork lifting of the stand with the cradle in the lowered position. The fork tines must have a minimum length of eight feet. Hydraulic jacking legs are located at four places on the base frame to provide a means of leveling the stand and deployment of the retractable sixteen inch diameter casters. The tie-down rings on the base may be used for lifting/maneuvering the stand with engine in place.

3.4 Fabrication and Finish

The stand is fabricated from structural steel shapes conforming to ASTM A500, A513, and A36 materials. All bolted connections use A325 structural bolts or SAE Grade 5 commercial hardware. Unit is primed and painted with high-grade, Skydrol resistant enamel, with color optional. Pins and miscellaneous hardware are manufactured from corrosion resistant materials, or plated as required.

3.5 Characteristics

Note: All dimensions are with casters retracted.

	With Propulsor (Air/Truck Ship Config.) Casters Up	With QEC Engine On Casters	Without Engine
Height (IN.)	101.6	170.5 6	64.0 u
Width (IN.)	102.0	154.0	102.0
Length (IN.)	252.0 r	319.0	210.0
Engine CL Height (IN.)	55.0	85.0	N/A
Weight (Total, Lbs.)	21,480 s	26,080 l	8,080

u Cradle in raised position

r Includes exhaust nozzle assembly

s Based on 13,400 pound propulsor weight

l Based on 18,000 QEC engine weight

6 Includes thumbnail fairing and fan cowl support beam

4.0 – Maintenance and Inspection

4.1 General

Life expectancy of this unit can be extended if it is properly maintained. By design, there is only minimal periodic servicing required. Annual inspections for damage, weld cracks, or corrosion are recommended. Prior to each use, the stand should be inspected for obvious signs of abuse or shipping damage. Observed damage should require complete inspection of the affected area to ensure stand integrity is not compromised.

4.2 Cleaning and Painting

The stand should be periodically cleaned with a soap and water solution and rinsed thoroughly.

CAUTION

Re-lubricate any mechanically moving parts and friction points where needed (bearings, shafts, grease zerk fittings etc.) after cleaning this equipment.

Damaged paint should be touched-up with Skydrol resistant high-grade enamel paint. Superficial scratches are expected during normal usage and will not affect function.

4.3 Scheduled Service

All zerk fittings on the casters and sheave axles should be lubricated every 90 days with the following extreme pressure grease or equivalent grease:

Manufacturer	Product
Mobil Oil Company	Mobilplex E.P. #1
Texaco Oil Company	Texaco E.P. #1
Gulf Oil Corporation	Gulf Crown E.P. #1
Shell Oil Company	Shell Alavania E.P. #1

The hydraulic cylinder reservoir level should be checked every 90 days and refilled as necessary with the following hydraulic oil:

Manufacturer	Product
Commercial	Dextron III (ATF)
Commercial	SAE 5W

The wire cables should be lubricated every 90 days with Ever Lube 9002, lead free wire and cable lubricant, or equivalent.

Visual inspection of the swivel locks and brakes should occur with the scheduled lubrication. All non-painted machined surfaces should have a light grade oil spray as required. Spray with rust inhibitor LPS-3 (MIL-C-16173D, Gr. 2) or equivalent.

4.4 Scheduled Inspection

CAUTION

Prior to each use, this equipment should be inspected for obvious signs of abuse or shipping damage. Observed damage should require complete inspection of the affected area to ensure structural integrity is not compromised.

Annual inspections of machined surfaces, pins, fasteners and structure are recommended. The machined surfaces (wheels, axles, pivots) are to be visually inspected for signs of wear or corrosion. Action is to be taken immediately if areas are determined to be potentially dangerous to operating personnel, or a detriment to the equipment. Pins and fasteners are to be visually inspected for cracks, damage, or corrosion. Loose fasteners should be tightened. The structure is to be visually inspected for damage, weld cracks, or corrosion.

CAUTION

AGSE recommends that shock mounts be replaced every five (5) years. Additionally, periodic inspections should be performed and any of the following conditions are proper cause for replacement of the shock mounts prior to their expiration:

- 1. Visible evidence of cracks.**
- 2. Discoloration: visible damage caused by solvents.**
- 3. Permanent deformation.**
- 4. Mount does not flex during engine loading/unloading.**
- 5. Significant corrosion on shock attach-plate.**

The following exposures can reduce the life of shock mounts and it is recommended to avoid them where possible.

- High humidity and/or salty air
- Direct sunlight
- Solvent, corrosive liquids, and fumes
- Oils, jet fuel, or Skydrol hydraulic fluid
- Extreme temperatures
- Ozone or engine exhaust

4.5 General Maintenance Schedule

NOTE:

This Maintenance Schedule does not supersede the maintenance described in the equipment manual or by Customers' Company Maintenance Policy. Intervals indicated are recommendations only and should be altered to take into consideration usage factors and environmental conditions.

Component	Task to be Performed	Maintenance Intervals			
		Monthly	3 Months	6 Months	Yearly
General	Inspect for missing parts	1*			
	Inspect paint/plating finish			I	
	Inspect exposed/bare metal for rust		H		
	Function check equipment				2*
	Inspect all stencils/placards/stamps			I	
Casters	Check wheel condition			I	
	Tighten mounting bolts			T	
	Check swivel lock/brake			I	
	Lubricate bearings			L	
Structure	Inspect frame for damage/cracked welds			I	
	Tighten all bolts		T		
	Lubricate/protect moving joints		H	L	
Pins	Inspect for damaged/bent/worn pins			I	
	Inspect for broken/cracked pin handles			I	
	Inspect for broken/cut lanyards			I	
Shock Isolators	Check date				3*
	Inspect rubber for cracking/deformation			I	
	Inspect for permanent set/deformation			I	
Manual	Check manual is present/readable			4*	
	Check manual revision is current				5*

1* - Inspection for missing parts before every use.

2* - Carry out function test if equipment has not been used for extended period of time.

3* - AGSE recommends that shock mounts be replaced within five (5) years.

4* - Check that manual is present before every use.

5* - Latest manuals are available from www.agsecorp.com or call (562) 906-9300.

Legend

I - Inspect/Check

T - Tighten

L - Lubricate

H - Spray with rust inhibitor

R - Replace

Recommended Lubricant: Chevron Dura-Lith Grease EP, NLGI2 or equivalent.

5.0 – Operation

5.1 Caster Deployment

- 1) Inspect stand for obvious damage.
- 2) Raise stand with forklift to an elevation greater than 3 inches or deploy hydraulic legs (refer to Section 5.4 also)
- 3) Remove the caster mount pin located on the caster arm support tube and rotate the caster support arm into the outboard position. Replace the caster mount pin when holes align. Repeat this procedure on all four casters and set caster brakes.

CAUTION

Mount assemblies are heavy and move quickly into place. Recommended that two people deploy and/or retract casters.

5.2 Tow Bar Deployment

- 1) Remove tow bars from their stowed location at the AFT end of the base.
- 2) Locate the telescopic towbars at either the forward or AFT end of the base and safety pin between the mounting plates provided.
- 3) Extend tow bars equally and pin with safety pins provided.
- 4) Lay one of the large tow bar eyelets centered over the other and attach to a suitable tow motor.

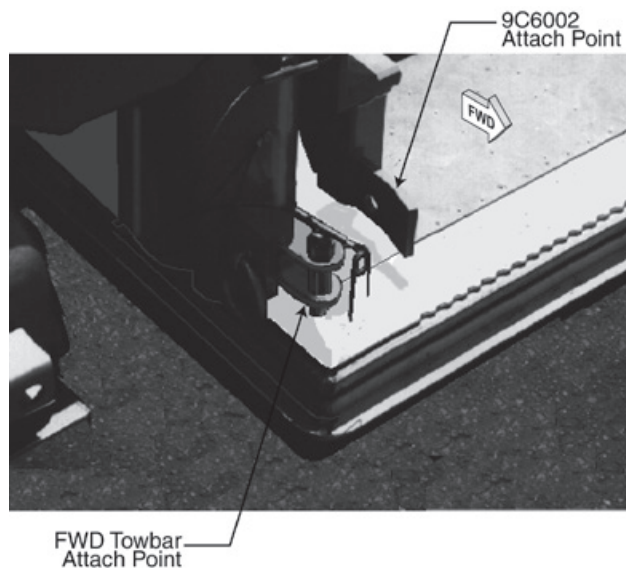


Figure 5.2-1 Tow Bar Attach Point

5.3 Towing of Stand

- 1) Release the caster swivel lock pins (on the two casters nearest the towbar) and set them in the unlocked position.
- 2) Release the caster brakes
- 3) The stand may be towed at a maximum speed of 3 MPH.
- 4) Individual casters may be rotated when in the stopped position with steering bars located on the base frame at the aft end of the base. Single wheeled casters require the round rod end of steering bar, whereas the dual wheeled caster require the square end of the bar. The steering bars are inserted into receptacles located on the caster yolks.

5.4 Hydraulic Leg Deployment

Note: This feature can be used to level and/or stabilize the stand during fan separation/mate or raise/lower engine stand for caster deployment. Because the weight center is not centered between the hydraulic legs, the forward end of the stand will raise first. When lowering the stand the aft end will lower first.

CAUTION

Keep feet away from stand when raising or lowering.

- 1) Unpin, rotate, and swing the four hydraulic jacking legs into the tow position and lock with stowage safety pins and clips.
- 2) Open the forward and aft leg control valves. These are the two red handles on the hydraulic line behind the jack (see figure 5.4-1).
- 3) Turn valve on hand pump clockwise to close and begin pumping. The legs will begin to lower
- 4) Leveling of the stand from forward to aft is accomplished by opening and closing the leg control valves corresponding to the side needing adjustment.

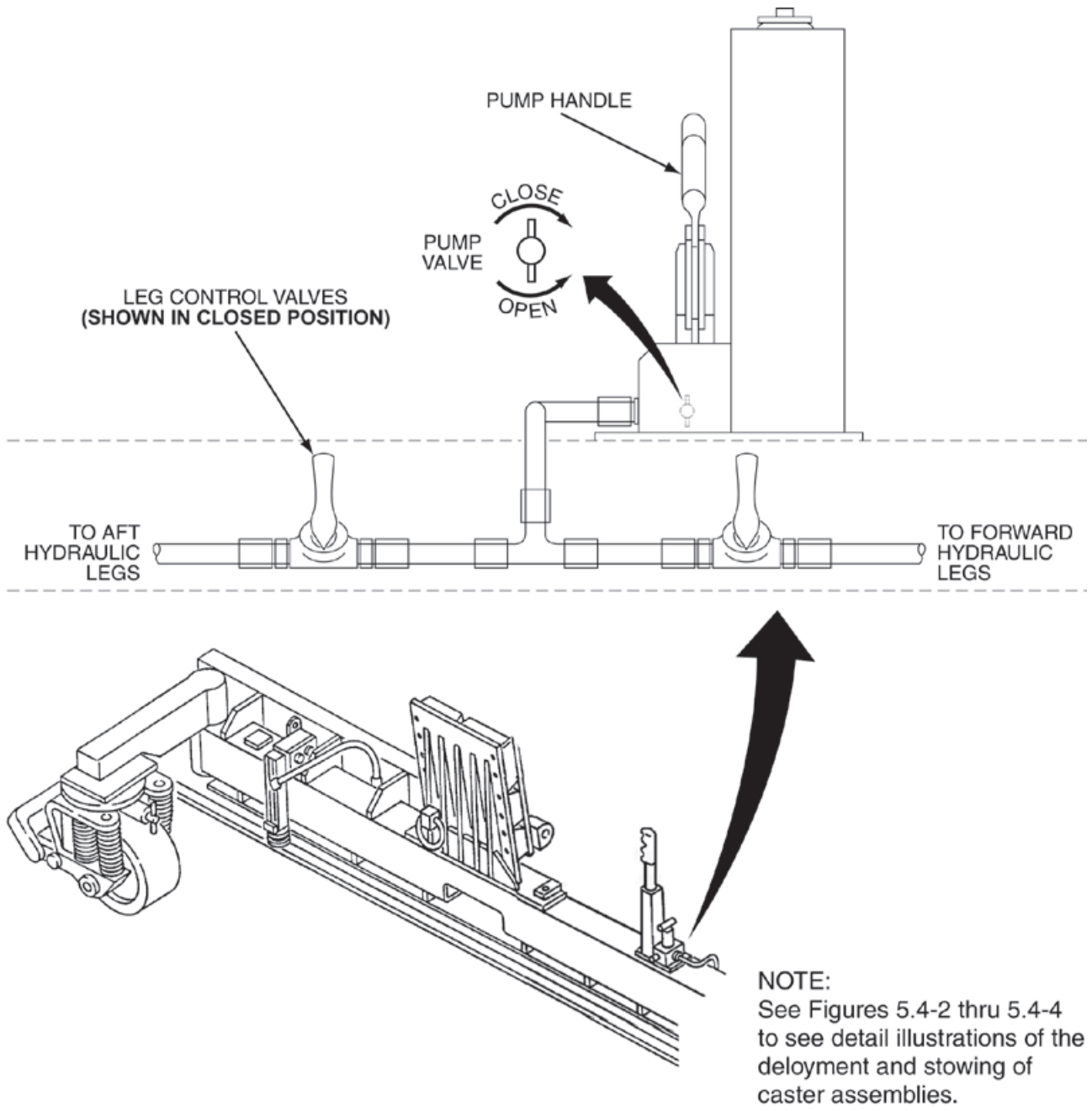


Figure 5.4-1 Hydraulic Leg Pump Operation



Figure 5.4-2

In order to rotate the four caster assemblies into either their “deployed or “stowed positions, it will be necessary to utilize the hydraulic lift mechanism for adequate pallet-to-ground clearance.

Figure 5.4-3

Unpin and rotate each hydraulic cylinder “out” and “down”. Pin in place.



Figure 5.4-4

After making sure all four deployed hydraulic cylinders are securely pinned in place, you may now actuate the hydraulic hand pump.

5.5 Raising Cradle to Fan Mate Position

- 1) Using the hydraulic powered system (see step 2 for using the optional air powered system).

CAUTION

The GE90-94B Up-Lift Propulsor Stand must be level and stabilized using the the leveling jack legs before raising or lowering the propulsor to minimize cradle lifting. If the propulsor is to be raised or lowered on an inclined surface, the stand should be located such that the FWD and AFT ends are directed parallel with the incline slope. The leveling jacks should be used in all cases for leveling and stabilizing the stand.

- a) Level the stand using the hydraulic jacks described in section 5.4.
- b) Remove the four (4) lower position locking pins located near the base of the shock towers. This may require the cradle to be raised slightly to unload the locking pins.
- c) Close the pump control valve by turning the round hydraulic hand pump control valve clockwise (see figure 5.5-1).
- d) Cycle the hand pump to pressurize the system and to raise the cradle.

Note 1: The hydraulic cylinder is a 2 stage telescoping cylinder. When the second stage engages the force to operate the pump handle will increase, approximately 2 times, suddenly. The pressure gauge will show 2400 to 2600psi. Raising the cradle requires approximately 400 pumps.

Note 2: As the cradle raises and lowers some contact between cradle and base shock mounts and cable beam will occur. This is expected in normal operation.

Note 3: All up-stop or down-stop pins may not align simultaneously. Insert each pin as the holes/slots align.

Note 4: Hand pump has an internal pressure relief valve set at approximately 3000 psi. If the cradle does not lift, check the pressure gauge. Reset pressure relief valve as required. (see Figure 5.4-1).

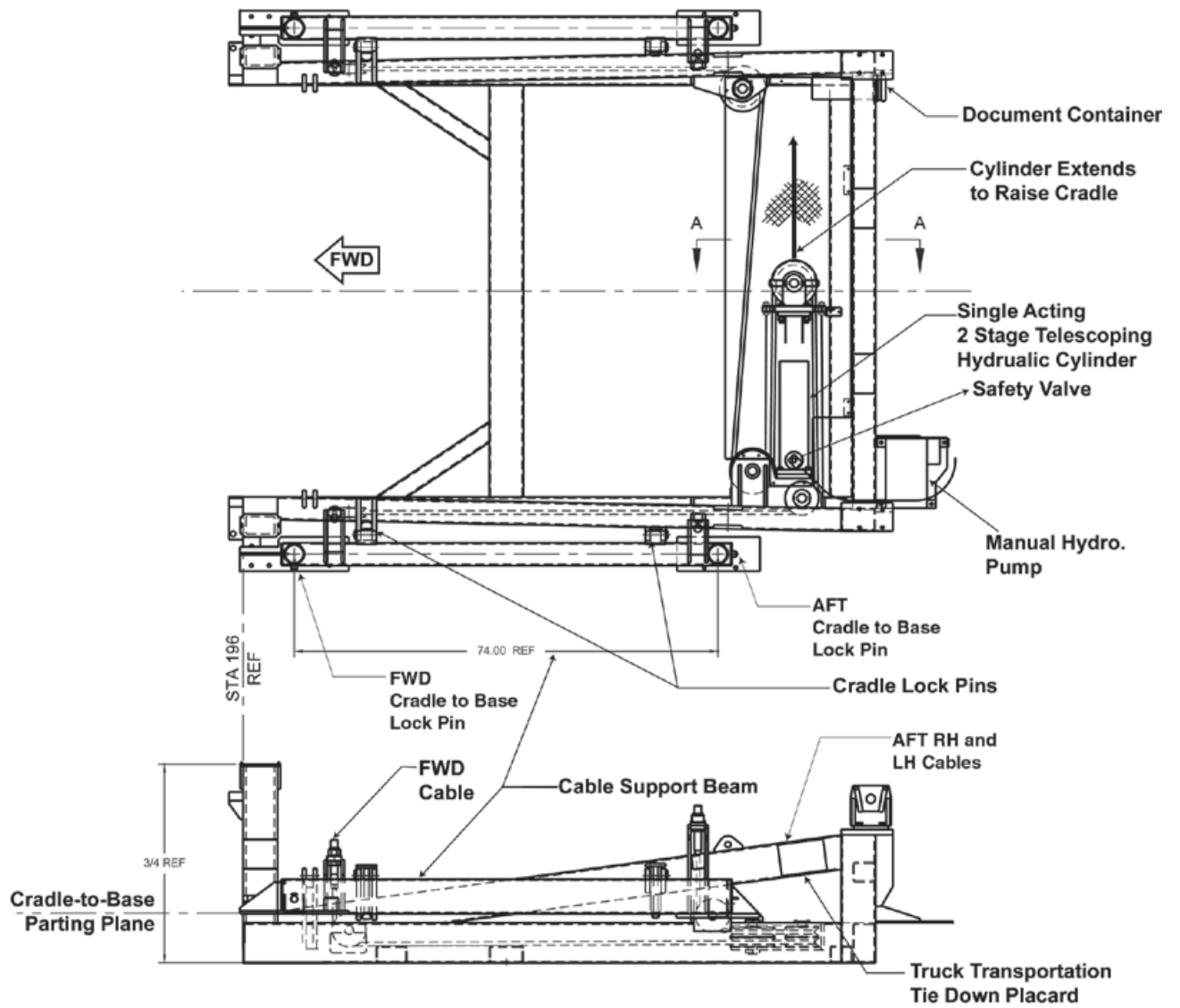
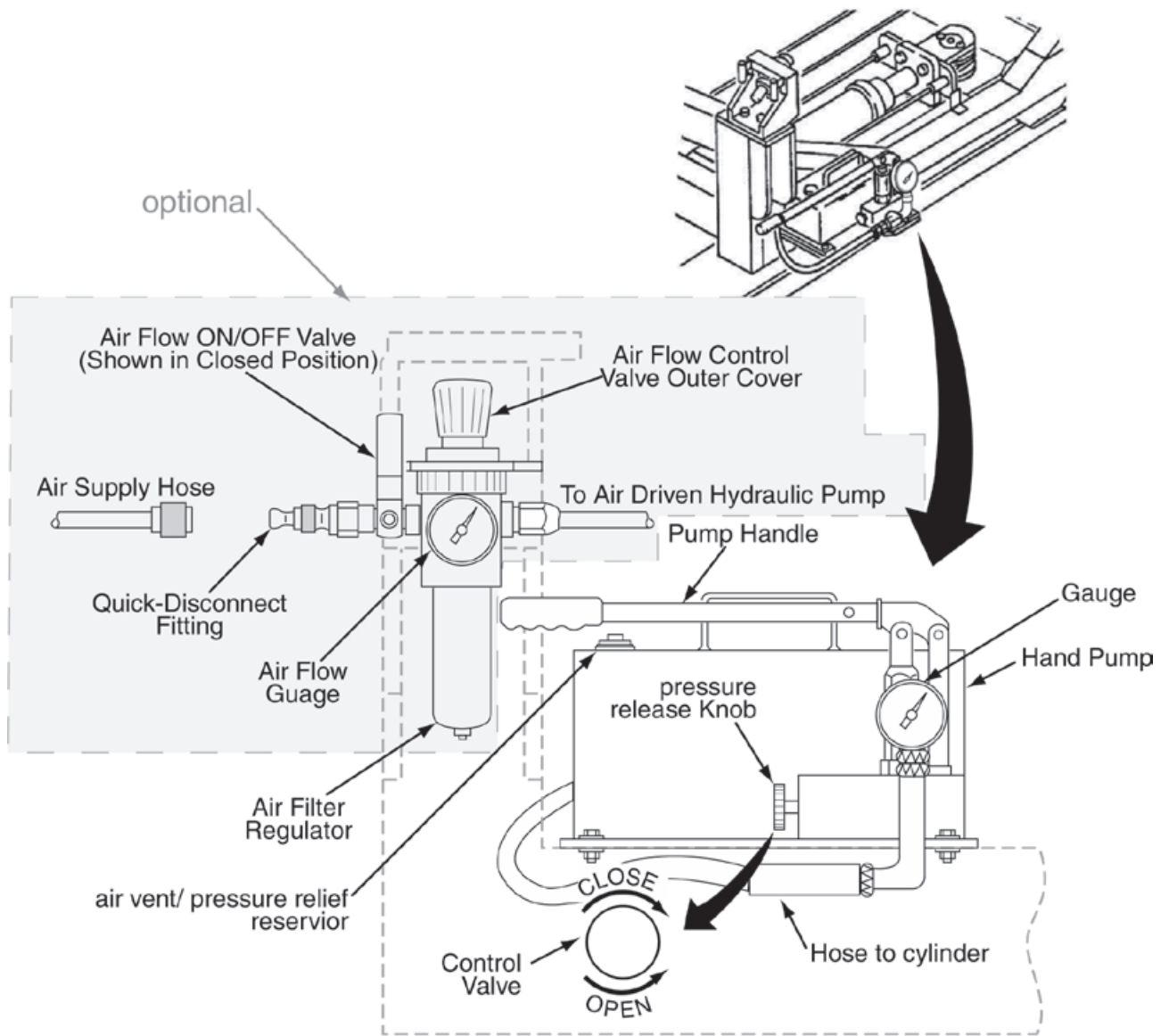


Figure 5.5-1: Cradle Lift System



NOTE: To convert existing manual pump system to dual air/hydraulic system requires modification of manual pump reservoir.

Figure 5.5-2. Cradle Pump Operation.

CAUTION

Minimal clearance exists between the propulsor and stand.

WARNING

The operator is responsible to ensure the engine does not contact the stand. This may require the removal or adjustment of engine components.

WARNING

Stand clear when raising the cradle. Severe pinch may cause harm to personnel as the cradle is raised.

Using the optional air powered system

Note: Level the stand and use the hand pump to release pressure on the pins to allow them to be removed. Use the air pump to raise the cradle. When the cradle approaches the UP-stops, shut off air supply and use hand pump to install pins in upper position. Air pump must have zero back pressure to begin operation.

- a) Place the pump handle in the down position.
 - b) Close the compressed air inlet handle located at the filter regulator by turning the handle up, clockwise (see figure 5.5-2).
 - c) Connect a 100 psi compressed air supply hose to the quick disconnect fitting located on the inlet side of the filter regulator.
 - d) Raise cradle by slowly turning the compressed air inlet handle down, counter clockwise. The air driven hydraulic pump will start and the cradle will begin to raise.
 - e) Adjust the air flow at the filter regulator by lifting up on the outer cover on top, and turning to a maximum pressure of 90 psi (approximately 2700 psi hydraulic pressure). The gauge hand will fluctuate with the cycling of the air pump operation.
 - f) Once the propulsor and cradle have reached the raised position, close the air supply valve by turning the handle up, clockwise.
- 3) Replace the safety pins removed from the lower position to lock the propulsor and cradle into the shock system. Once one or two safety pins are installed additional adjustment maybe required to install the remaining pins. Use the hand pump and control knob to raise and lower the propulsor and cradle as required.
 - 4) Release all hydraulic pressure from system by turning the control knob on hand pump counter clockwise to allow locking pins to support entire weight of propulsor or complete engine.

5.6 Lowering Cradle to Shipping Position

CAUTION

The GE90-94B Up-Lift Propulsor Stand must be level and stabilized using the leveling jack legs before raising or lowering the propulsor to minimize cradle lifting. If the propulsor is to be raised or lowered on an inclined surface, the stand should be located such that the FWD and AFT ends are directed parallel with the incline slope. The leveling jacks should be used in all cases for leveling and stabilizing the stand.

- 1) Inspect stand for obvious damage.
- 2) Configure the propulsor for shipment in accordance with GE Engine Shipping Manual. This will require the fan case assembly to be removed.
- 3) Level and stabilize the base and cradle system with the hydraulic jacking legs as described in Section 5.4.
- 4) Pressurize the hydraulic system by turning the round knob controlling the valve at the hand pump completely clockwise. (See figure 5.5-2)
- 5) Raise the cradle slightly to free the safety pins that support the cradle in the raised position.
- 6) Remove the four (4) safety pins holding the cradle in the up position.
- 7) Slowly open the round control valve knob on the pump and the propulsor and cradle will begin to descend. Continue to control the start, stop, and speed with the round control knob.

CAUTION

Open the control valve slowly. If opened quickly, the flow fuse on the cylinder may activate and stop the cradle from lowering. If this occurs, close the control valve and raise the cradle slightly using the hand pump. This will release the back pressure on the flow fuse and reset it.

WARNING

Stand clear when lowering the cradle. Severe pinch may cause harm to personnel as the cradle is lowered.

- 9) Once the propulsor and cradle have indexed on the lower stops install the four (4) safety pins.
- 10) Fully open the round hydraulic control knob at the hand pump, to release all hydraulic pressure.
- 11) Close the hydraulic control valve.
- 12) The propulsor is now in position for air/truck shipment.

5.7 Engine Installation into Stand Using Overhead Sling

- 1) Inspect stand for obvious damage.
- 2) If the cradle is not raised, raise cradle to the fan mate position by removing the safety pins and cycling the hydraulic pump until the cradle can be pinned in the raised position (reference section 5.5). Note that stand must always be in raised position for engine/propulsor installation.
- 3) Configure engine for shipping in accordance with GE Engine Shipping Manual.
- 4) Remove AFT engine ground handling mounts from the engine stand and install on the engine LPT using the hardware provided. The safety wire on the mount pins must be removed to adjust the extension of the pins. (See Figure 5.7-1)
- 5) Remove the forward ground handling mount adapters from the engine stand and install on the engine using the pins provided. Install the safety pin clips after pins are inserted. (See Figure 5.7-2)
- 6) Position the stand beneath the engine and set the caster brakes.

CAUTION

Minimal clearance exists between the engine and stand. The operator is responsible to ensure the engine does not contact the stand. This may require the removal or adjustment of engine components.

CAUTION

Care must be taken when working near suspended loads. Personnel should never stand beneath the suspended load.

- 7) Lower engine into stand while supporting the aft mount blocks by hand. Guide the AFT mounting blocks into the saddles on the stand as required (this may require the extension of the pins to be adjusted). To adjust the AFT pins loosen the threaded collars and rotate the pins. Continue to lower the engine until the FWD mount adapters are aligned with the index pins on the engine stand.
- 8) Side index pin forward into adapter and secure with ball lock pin. Install the FWD safety pins and retainer clips. Continue to lower the engine until the AFT mounts are fully seated and the retainer on the AFT mounts can be pinned closed. Install the retainer clips.
- 9) Continue to lower the engine until the stand supports the full weight of the engine.
- 10) Remove engine sling.
- 11) Adjust set screws on FWD mounts and tighten jam nuts.
- 12) Install safety wire on the AFT mount pins.

CAUTION

Safety wire must be installed to prevent the AFT mounting pins from loosening during engine transportation.

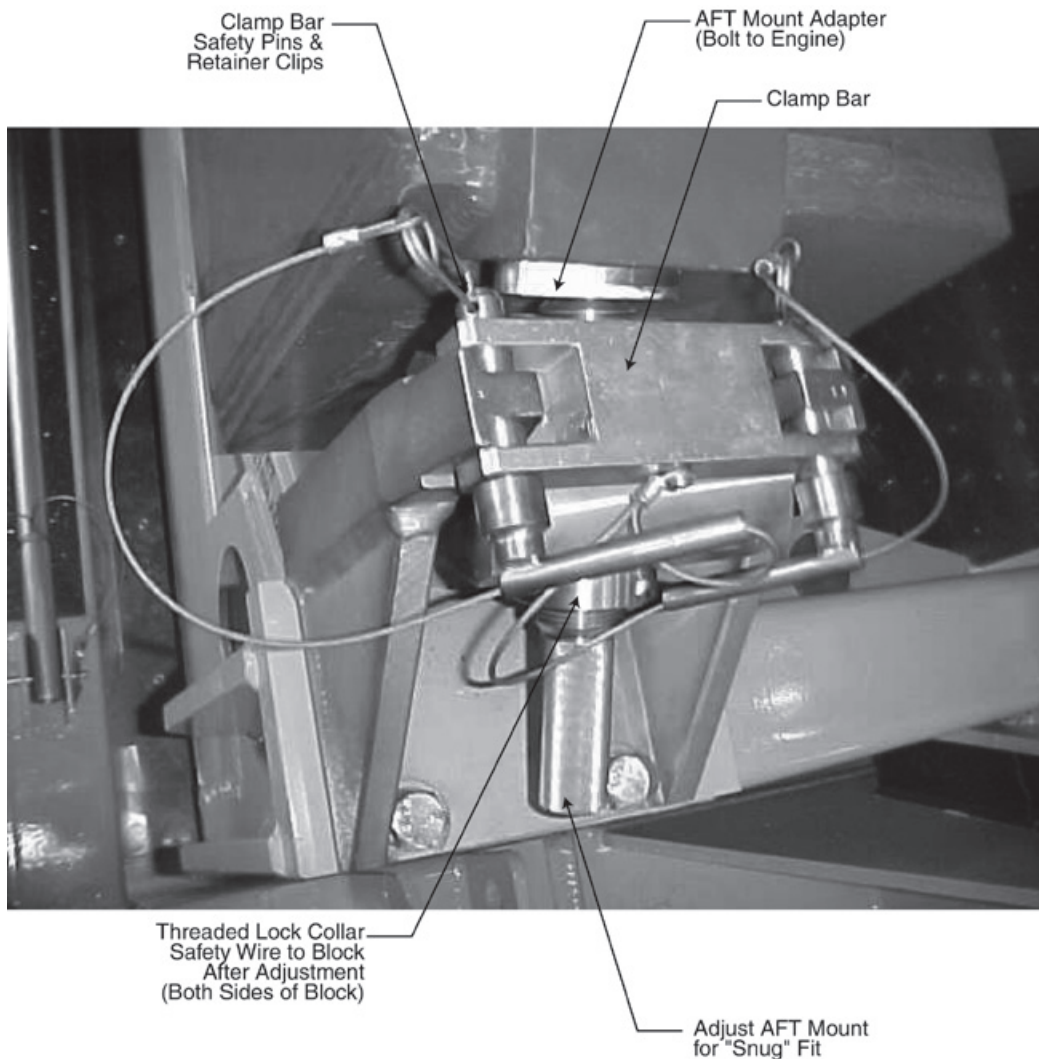


Figure 5.7-1

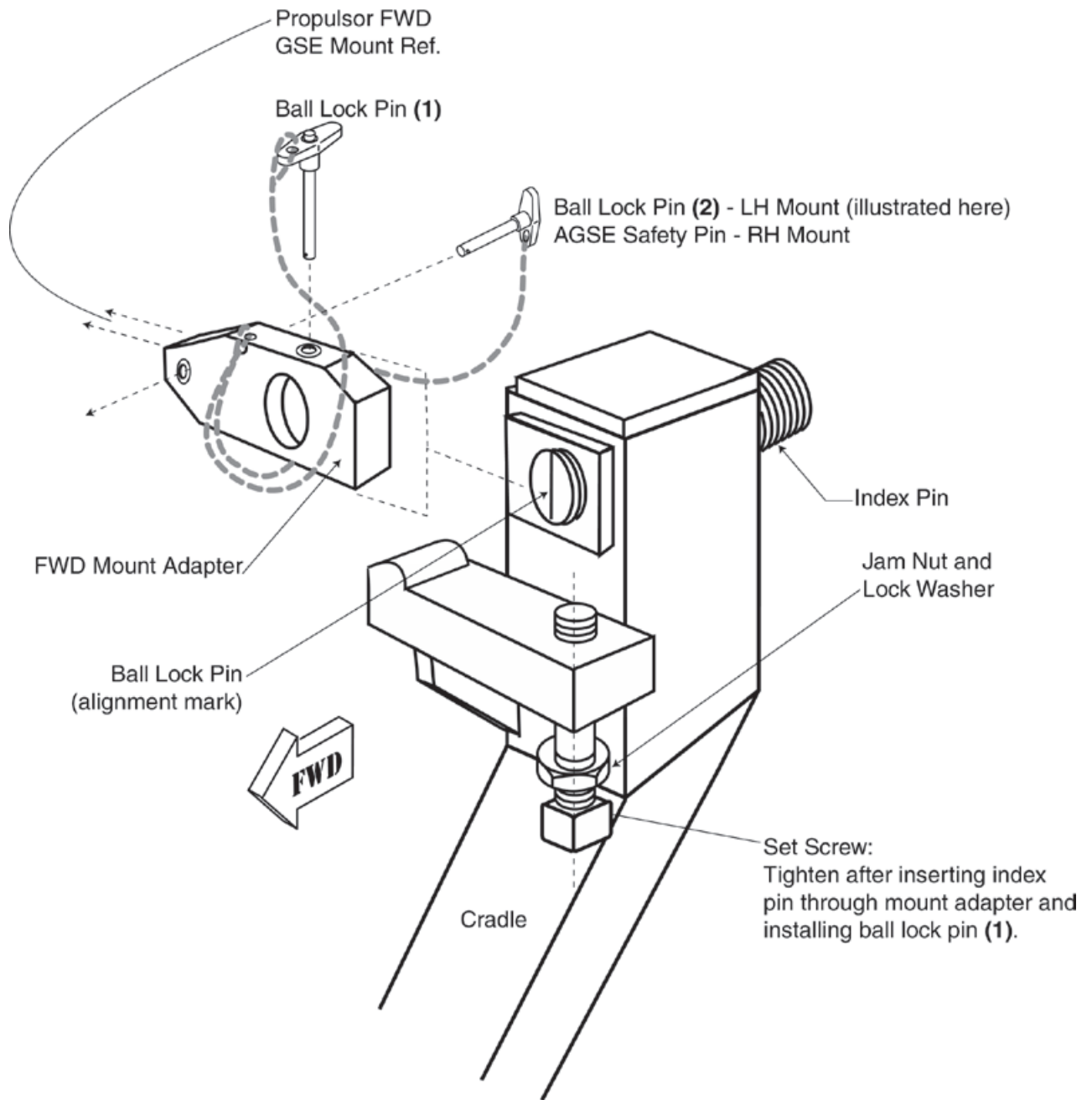


Figure 5.7-2. Exploded View showing Ground Handling Mount Assembly

5.8 Engine Bootstrapping

CAUTION

This procedure is intended to supplement the Boeing Bootstrap Procedure. It identifies the required steps to configure and use the equipment during engine bootstrapping. It shall not be used as a replacement for engine installation or removal.

- 1) The cradle must be secured in the truck ship position.
- 2) Position the engine stand beneath the aircraft wing with the stand centered about the pylon.
- 3) Attach the Boeing bootstrap adapters to the cradle and the bootstrap beams to the aircraft.
- 4) Raise stand slightly using the Boeing bootstrap system to center the stand under the pylon.

CAUTION

The rear casters must touch the ground first when lowering the stand.

- 5) Lower the stand until the casters support the full weight of the engine.
- 6) Unbolt the cable beam from the base shock towers. Pull out the cable beam-to-shock mount pins.
- 7) Raise the cradle and engine, and secure engine to the aircraft pylon.
- 8) Release the engine handling mounts and lower the empty cradle using the Boeing bootstrap system.
- 9) Lower the cradle until the cable beam can be bolted to the base shock towers. Torque the bolts to **TBD** Foot-Pounds. Install the the pins and safety clips.
- 10) Remove the engine ground handling mounts from the engine and install them on the cradle.
- 11) Remove the bootstrap system from the aircraft and cradle.

5.9 Fan Separation

~ Refer to the GE Fan Separation Procedure ~

6.0 – SAFETY

6.1 Stress

Design stress safety factors are compliant with applicable GE Specifications. The equipment is provided with safety devices and guards to properly operate the equipment.

6.2 General

Most accidents are the result of violating standard safety rules in operation or improper servicing and maintenance of equipment.

Many safety features have been incorporated into the design to assist in safe operation of this equipment. These items do not fool-proof the equipment nor do they replace the operator's responsibility to operate the equipment in a safe manner.

6.3 Prevention

A good preventative maintenance program should include periodic lubrication, adjustment, and immediate correction of defects revealed through inspections. Preventive maintenance will not only contribute to safe operation, but will also extend useful service life as well.

7.0 - Warranty

7.1 Statement of Warranty

Advanced Ground Systems Engineering LLC (AGSE) warrants to original purchasers that its products will be free of defects in material and workmanship under normal use and conditions for claims received within a period of one year from date of purchase (final billing date), and to the extent that if any AGSE product fails in operation because of such defect, the company will replace or repair, at its option, the defective article. Prior to the repair or replacement of any defective product, the company shall be notified in writing as to the nature of the defect. The company shall assume no liability for freight, disassembly, removal, refitting and installation charges on any article returned unless such charge(s) is approved by AGSE in writing prior to the return. On component items purchased by AGSE for incorporation into an AGSE manufactured product, only the component manufacturer's warranty (if any) shall apply to that component. Said manufacturer's warranty shall be passed on to AGSE's customer to the extent permitted. This warranty is applicable only when AGSE products are operated for intended purposes within the recommended procedures, load limits, properly maintained, not damaged or abused, etc., including as indicated in company manuals, catalogs, and drawings. All warranty claims must be applied for within sixty days from when the defect becomes known. The foregoing warranty is in lieu of all other warranties, or liabilities, either expressed or implied, and AGSE expressly excludes all implied warranties of merchantability and fitness for a particular purpose and all non-infringement warranties as well as disclaims all liabilities to third parties. In no event shall AGSE be liable for any amounts in excess of the purchase price of the product.

CAUTION

Failure to conduct periodic inspections, routine maintenance, or improper operation will result in the voiding of the warranty.

8.0 – Parts Breakdown

8.1 General

The following pages can be used in the identification of components used in the product described in this manual. Parts Lists are broken down by “ITEM,” “PART NUMBER,” “QTY,” and “DESCRIPTION.”

NOTICE

“ITEM” numbers are for reference to the Illustrated Parts Breakdown (IPB) only. Do not order replacement parts by “ITEM” number. Order parts by “PART NUMBER” only.

8.2 Illustrated Parts Breakdown

IPB Figure 1 - AGSE-E036-G01 Up-Lift Propulsor Stand

ITEM	PART NUMBER	QTY	PART DESCRIPTION
1	E036P01	1	Assembly
2	E036P02	1	Base Frame
4	E036P04	1	Mount Shock,, FWD LH
5	E036P05	1	Mount Shock, FWD RH
6	E036P06	1	Mount Shock,, AFT LH
7	E036P07	1	Mount Shock, AFT RH
13	E036P13	2	Bar, Tow, Outer
14	E036P14	2	Bar, Tow, Inner
24	E036P24	16	Washer Pallet, Attachment
25	E036P25	8	Pin Pivot, Hyd. Jack
26	E036P26	4	Block Pivot Hyd. Jack
27	E036P27	4	Support, Hyd. Jack
28	E036P28	4	Foot, Jack
29	E036P29	4	Pump, Hyd. Jack
30	E036P30	1	Cradle, Frame
31	E036P31	2	Spanner, Large
32	E036P32	2	Spanner, Small
33	E036P33	1	Clamp, Arm, Tow Bar Storage
34	E036P34	2	Bar Steering
35	E036P35	1	Box, Storage, Tool
35	E036P35	1	Box, Storage, Tool
36	E036P36	4	Pin, Stop
38	E036P38	1	Mount, FWD LH Propulsor
39	E036P39	1	Mount, FWD RH Propulsor
43	E036P43	4	Collar, Lock
44	E036P44	4	Pin, Retaining, Jack to Shock
45	E036P45	4	Cap

IPB Figure 1 - AGSE-E036-G01 Up-Lift Propulsor Stand (Continued)

ITEM	PART NUMBER	QTY	PART DESCRIPTION
46	E036P46	1	Shaft, Tow Bar Storage
47	E036P47	16	Fitting Attach Pallet
51	E036P51	4	Hose Hyd. 4000 psi, Ø.375
52	E036P52	1	Pin Ball Lock, T-Handle
53	E036P53	2	Pin Ball Lock, T-Handle
54	9426M25GO1	2	Base Mount
55	9426M24P20	2	Pin Index, Mount-FWD Propulsor
63	PMP10111	14	Ring, Tie Down (zinc pltd)
64	50043-004	ALT	Pallet Special 196" x 96"
65	P33160-513	1	Pallet Special 196" x 96"
68	RC106	4	Cylinder, Hyd
69	7115F4Y	2	Valve, Ball
70	6-6FBTX	5	Fitting Hyd, Male Connector
71	6JBTX	3	Fitting Hyd, Union
72	6FBTX	4	Fitting Hyd, Male Connector
73	6HBTX	3	Fitting, Hyd. Union
74	3254T3	9	Clamp Tubing, Cushioned
78	670T53	AR	Tape, Anti-slip, 6" Wide
79	6970T51	AR	Tape, Anti-slip, 4" Wide
80	91324A610	13	Screw, Self Drilling, [.250-20 UNC-2A] x [.75] Lg
81	91610A410	1	Pin, Roll, M3 x 20, DIN 1481
82	92373A183	2	Pin, Roll, Ø 0.125" x 1" LG
84	10SF16	2	Bearing, Spherical, Plain
87	TCL24-12SS	4	Collar Lock-Threaded Clamping
88	J-6332-121	18	Shock Absorber
89	AM-2079-7	4	Caster, Assembly
91	AM-2787-8	2	Placard Tie Down

IPB Figure 1 - AGSE-E036-G01 Up-Lift Propulsor Stand (Continued)

ITEM	PART NUMBER	QTY	PART DESCRIPTION
92	AM-2720-301	2	Mount Assembly Caster FWD
93	AM-2720-315	1	Mount Assembly Caster AFT LH
94	AM-2720-316	1	Mount Assembly Caster AFT RH
95	AM-91000-152T	2	Pin, Safety Assembly
96	23930-6-6	4	Fitting-Reusable Hose, 90° Elbow
97	20630-6-6	4	Fitting, Straight. Reusable Hose
98	AM90250-80T	1	Pin, Safety Assembly
99	AM90375-66T	1	Pin, Safety Assembly
100	AM90620-24T-H900	1	Pin, Safety Assembly
102	AM90750-58T	2	Pin, Safety Assembly
103	AM91000-48T	2	Pin, Safety Assembly
104	AM91000-58T	2	Pin, Safety Assembly
105	AM91000-74T	4	Pin, Safety Assembly
106	AM91000-130T	4	Pin, Safety Assembly
107	AM-9623-L-Special	4	Pin, Safety Assembly
108	91410A920	2	Screw Set 1-8" UNC x 4" Lg
109	-----	AR	Wire Safety, Ø[.032]
110	-----	AR	Tubing Hyd., [.38] OD x [.035] Wall x [360] Lg
111	-----	4	Screw, Cap. Skt Hd, 0.190-32 UNF-2A x 0.75" Lg
112	-----	4	Screw, Cap. Skt Hd, 0.250-20 UNC-2A x 0.50" Lg
113	-----	4	Screw, Cap. Skt Hd, 0.250-20 UNC-2A x 1" Lg
114	E036P114	4	Caster Spacer Plate
116	-----	8	Screw, Flt Hd, Hex Skt.,.500-13 UNC-2B x 1" Lg
121	E036P121	16	Screw, Cap, Hex Hd, 625-11 UNC-2A x 2.75" Lg
125	TA485-12	1	"AGM" Document Holder
129	-----	8	Nut, Hex, 0.500-13 UNC-28
137	E036P137	2	UHMW, Polyethelene, Bar
138	E036P138	2	Sheet 3.0 [.1345]

IPB Figure 1 - AGSE-E036-G01 Up-Lift Propulsor Stand (Continued)

ITEM	PART NUMBER	QTY	PART DESCRIPTION
139	-----	32	Washer, Lock, Spring, 0.625" ID
143	-----	12	Washer Lock, 0.500 ID, Zinc Pltd.
144	-----	4	Screw, Cap, Skt HD, .500-13 UNC x 1.5"Lg. Zc.Ptd.
145	FQEA-XAK-DAC	1	Fuse, "Sun-Flow", 50 NPTF Ports at 2.5GPM
146	0101-8-8	1	1/2-14NPT x 1/2-14 NPT Pipe Nipple
147	0102-16-8	1	1-11½NPT x 1-2-14NPT Reducer
148	5603-06-08	1	37° JIC3/4-16 x 3/8NPT 90° Elbow
149	0101-6-6	1	3/8" x 3/8" Male, Pipe Nipple
150	0202-6-6	1	3/8" x 3/8" Male, Pipe Connector
152	E036P152	1	Drive Cylinder Sheave
153	E036P153	1	Lift Support Beam (as shown)
154	E036P154	1	Lift Support Beam (opp. Hd)
155	E036P155	1	Sheave Shaft
156	E036P156	2	Sheave Shaft
157	E036P157	2	Sheave Shaft
158	E036P158	2	Sheave Shaft
160	E036P160	1	5/8" Ø Wire Rope Assembly., SS Spec. SA155-20, Ends 410" Long
161	E036P161	1	5/8" Ø Wire Rope Assembly., SS Spec SA155-20, Ends 170" Long
162	E036P162	1	5/8" Ø Wire Rope Assembly., SS Spec SA155-20, Ends 106" Long
163	100-6-450-SP3	1	Hyd. Hand Pump, 3000PSI Range
164	E036P164	1	2 Stage Single Acting Hyd. Cylinder/Dwg. 3373
165	473268	5	Sheaves 8"OD 1.497Ø Shaft Size
166	472697	6	Sheaves 6"OD 1.497Ø Shaft Size
167	TT-2008	8	"Oilite" Bronze Thrust Bearing, 1.5"ID x 2"OD
168	E036P0168	2	1.25"Ø Flat Washer
169	-----	12	Screw, Cap, Hex Hd, 1/4-20 UNC x 3/4 LG, Zinc Pltd.
170	-----	4	Screw, Cap, Hex Hd, 1/4-20 UNC x 1/2 LG, Zinc Pltd.
171	-----	16	1/4Ø Lock Washer, Zinc Pltd. w/nylon Insert, Zinc Pltd.
173	-----	6	1.25-7 UNC Self Locking Hex. Nut

**IPB Figure 1 - AGSE-E036-G01
Up-Lift Propulsor Stand (Continued)**

ITEM	PART NUMBER	QTY	PART DESCRIPTION
174	-----	4	1.25-7 UNC Jam Nuts, Zinc Pltd.
175	-----	4	Screw, Cap, 5/8-11 UNC x 3" LG, Zinc Pltd.
176	-----	4	5/8-11 UNC Self Locking Hex Nut, w/ nylon Insert, Zinc Pltd.
177	-----	4	Screw, Cap, Hex Hd, 3/8-16 UNC x 1.5"Lg, Zinc Pltd.
178	-----	4	3/8-16 UNC Self Locking Hex Nut w/ Nylon Insert Zinc Pltd.
179	-----	8	3/8"Ø Flat Washer, Zinc Pltd.
180	E036P180	1	Wire Rope Cover
184	E036P184	1	48" Type 3D1-8 Hose Assembly
186	E036P186	1	Special Shaft
187	E036P187	1	Wire Rope Guard (as shown)
188	E036P188	1	Wire Rope Guard (opp. Hd.)
191	E036P191	1	Cradle, Lift Handle
192	E036P192	1	Pin, Safety Assembly, special
195	-----	8	Screw, Cap, Hex Hd, 5/8-11 UNC x 2.5"Lg
196	-----	8	5/8-11 UNC Hex Nut
197	-----	16	5/8"Ø Flat Washer
198	AM-9000A	1	Pin, Safety Assembly, special
199	-----	4	Screw, Cap, Hex Hd, 3/8-16 UNC x 1" Lg, Zinc Pltd.
200	-----	4	3/8-16 UNC Hex Nut, Zinc Pltd.
201	-----	4	3/8" Ø Flat Washer, Zinc Pltd.
202	ISTC-150-15-S	2	1.5-12 Threaded SS Split Set Collar

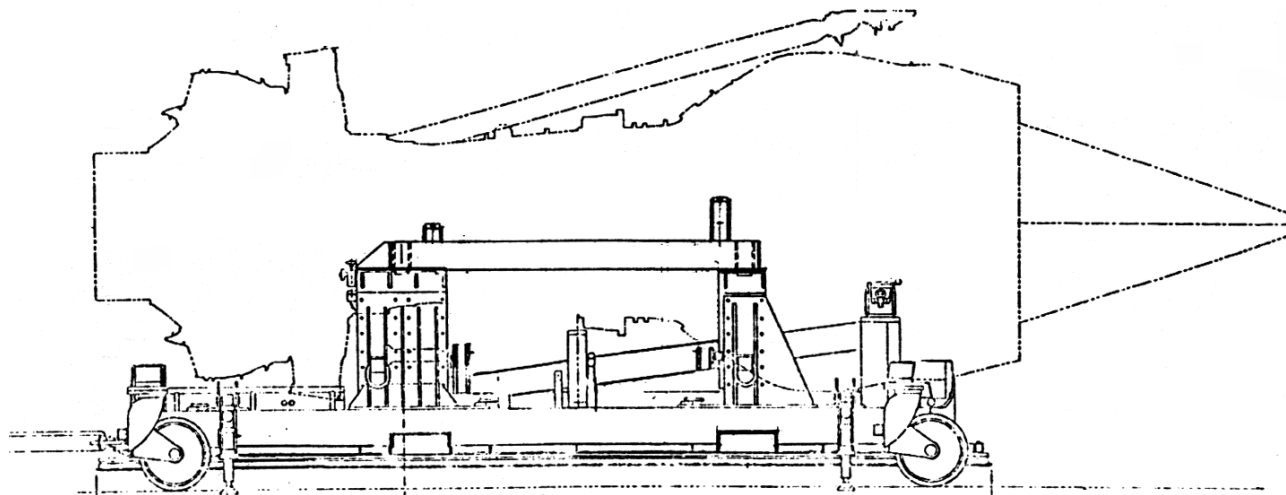
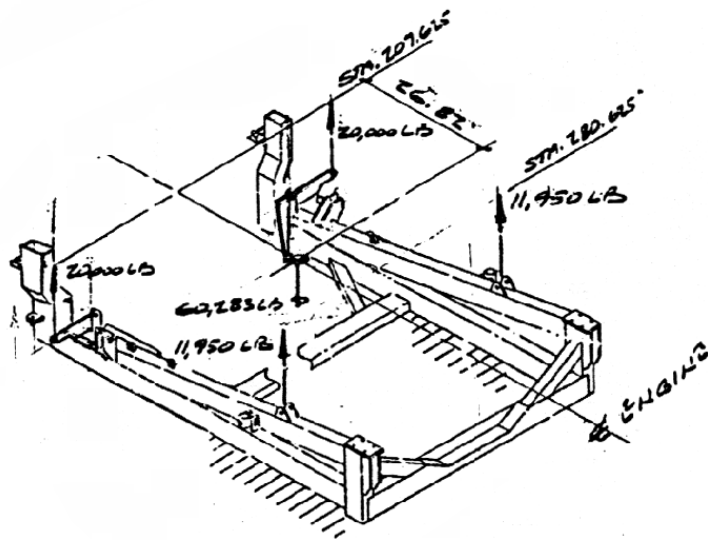


Figure 8.2-1

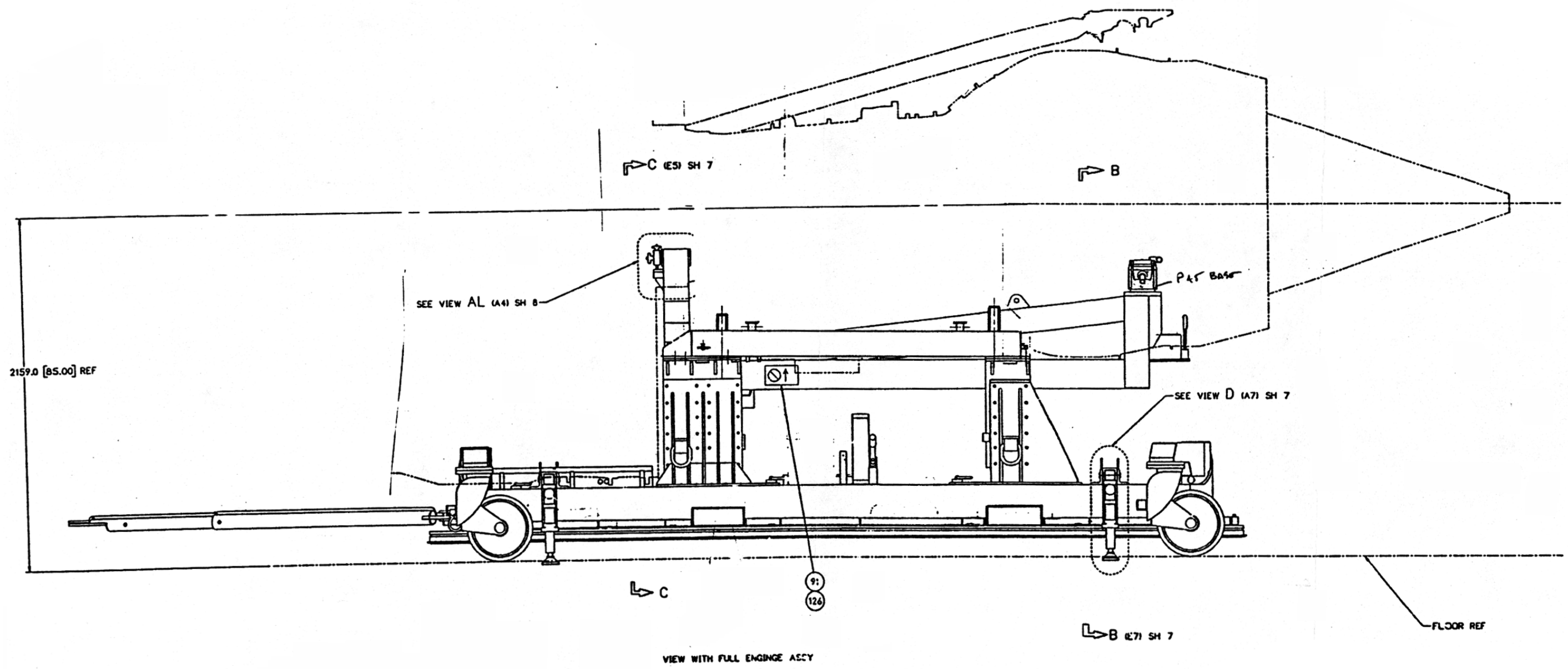


Figure 8.2-2

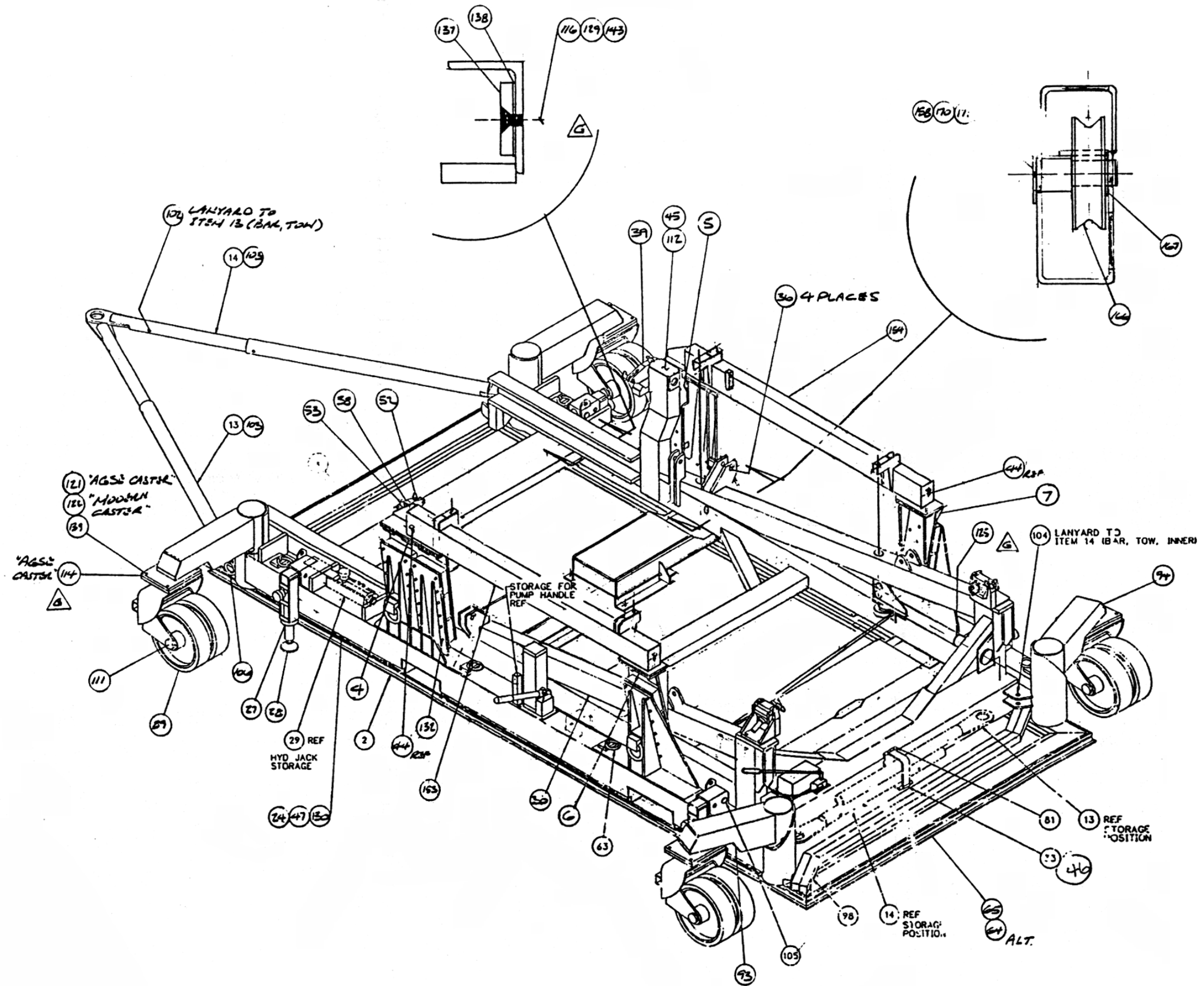


Figure 8.2-3

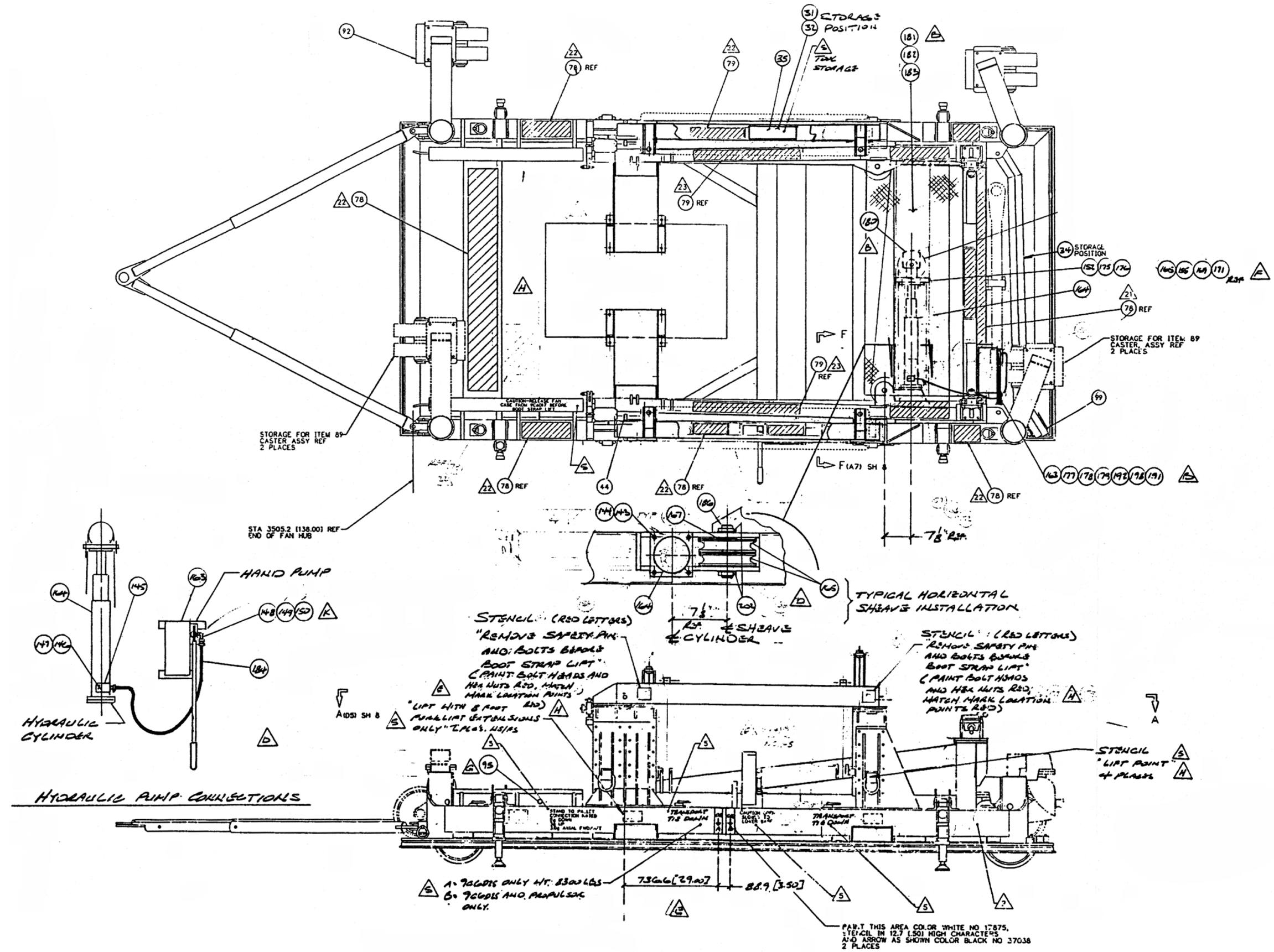


Figure 8.2-4

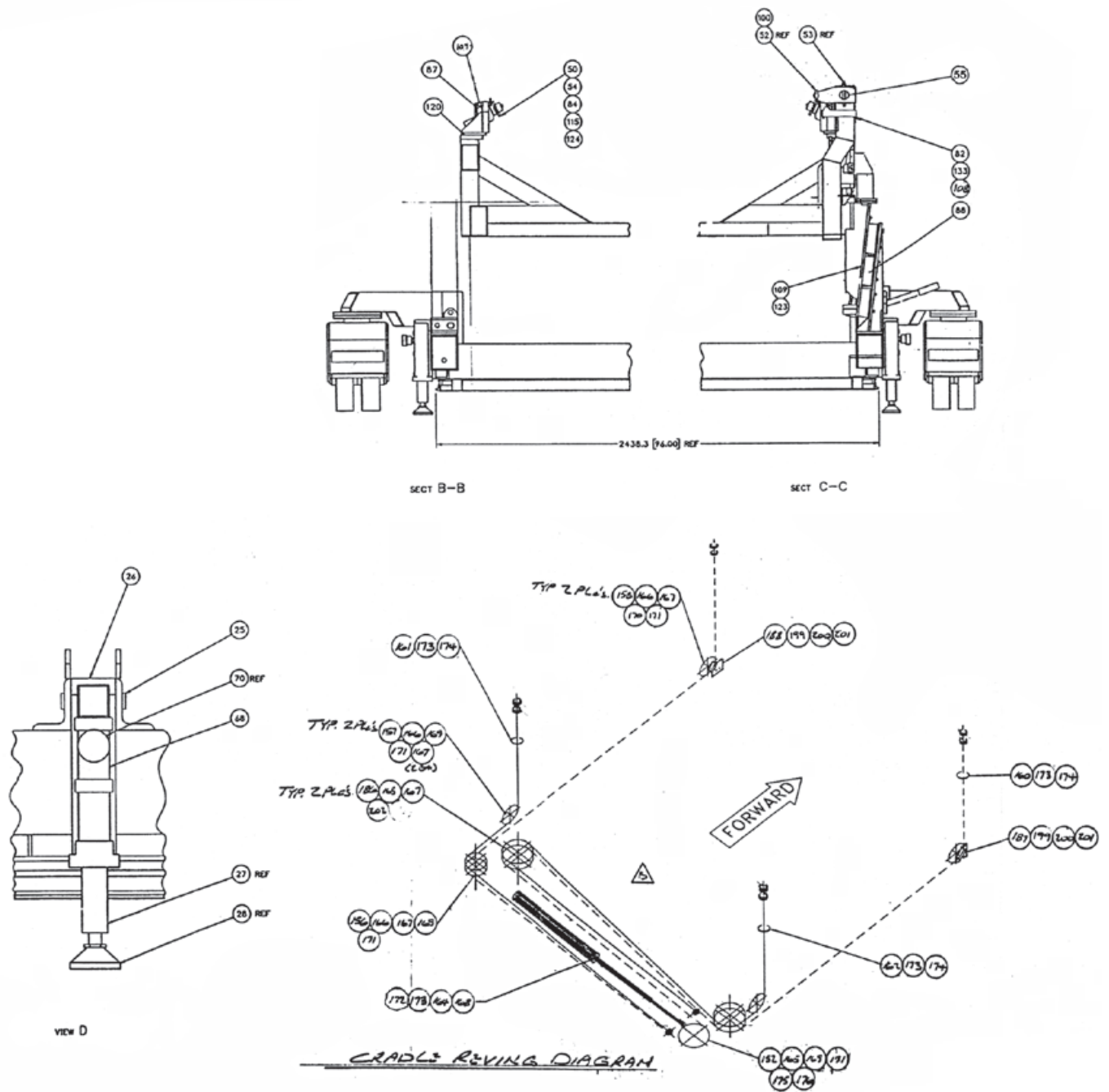


Figure 8.2-5

9.0 – Stencils, Decals, and Placards

9.1 General

Various stencils, decals, and placards are added to the equipment to provide warnings, cautions, and general information. These items should be reviewed and understood by maintenance and user personnel. The preceding drawings in section 8.0 identify all stencils, decals, and placards used on this equipment.

10.0 – Recommended Spares

10.1 Critical Items

AGSE defines “critical” items as those items, if broken or missing, that would render the equipment inoperable or severely impair equipment operation. Since most of these items are also long leads, it is AGSE’s recommendation that such items be identified, purchased, and stocked by the customer. In the remote event of “critical” item failure, the equipment can be quickly repaired and placed back in service with minimal down time.

AGSE does not typically stock all components used with the equipment, so immediate shipment of “critical” items may not always be possible. AGSE will respond to customer requests for quotation on any spare parts, and expedite orders for spare parts as required. The customer should never assume immediate delivery is always possible.

It is the responsibility of the operator of the equipment to review the recommended spares list and balance costs against equipment down-time. The list can be adjusted by the operator based on the actual service life of components experienced during equipment usage.

Part Number	Qty	Description
472697	2	6” OD Sheave (Wire Rope)
473268	2	8” OD Sheave (Wire Rope)
Stock	1	5/8” Dia 6 x 36 IWRC Type 304 Stainless Steel w/Special “MacWhyte” #SAISS-20 Threaded Sleeves, Both Ends ‘B’ Dim.= 6”, 410” Length
Stock	1	5/8” Dia 6 x 36 IWRC Type 304 Stainless Steel w/Special “MacWhyte” #SAISS-20 Threaded Sleeves, One End, Special #SAISS-20 Other End, ‘B’ Dim.= 6”, 106” Length

Part Number	Qty	Description
Stock	1	5/8" Dia Wire Rope Assembly (Same as Above w/170" Length)
FQEA-XAN-DAC	1	Flow Fuse Cartridge Set to 2.5 GPM, & 90° Body
TCL24-12SS	2	Lock Collar (1-1/2"-12UNF)
10SF16	2	Spherical Bearing
91410A920	2	1-8UNC x 4" Lg Set Screw
5000-85	1	Stainless Steel Hydraulic Hand Pump Barrel Assembly for Jack Pad Hand Pump
500022	1	Seal Kit 100-6-140/150S
5000-86	1	Stainless Steel Hydraulic Hand Pump Barrel Assembly for Cradle Lift Pump
500119	1	Seal Kit 100-6-4505P3
CL-8-BLPT-1.50-5	1	"T" Handle Ball Lock Pin
CL-10-BLPT-1.50-5	1	"T" Handle Ball Lock Pin
Stock	8	1-1/4"UNC Self-Locking Hex Nuts 1/Nylon Insert, (Zinc Plate)
E036-36 (9C6011-P36)	2	Safety Pin to Lock Down Cradle