

# **MAT-3 MT70-I TREE UNIT SPECIFICATION**

**MAT-3, INC.  
IXONIA, WISCONSIN**

## **MAT-3 MT70-I TREE UNIT SPECIFICATIONS**

THE MAT-3 MT70-I TREE UNIT IS A NON-OVERCENTER AERIAL DEVICE CHARACTERIZED BY A FIXED LENGTH STEEL STUB AND TWO SECTION TELESCOPIC INSULATED FIBER-GLASS UPPER BOOM, A STEEL LOWER BOOM SECTION WITH INSULATED FIBERGLASS INSERT, A FOUR BAR LINKAGE ELBOW MECHANISM, AND A HEAVY DUTY TURNTABLE ASSEMBLY.

### **MOUNTING TYPES :**

THE STANDARD UNIT MOUNTS DIRECTLY ON TOP OF A FLAT BED, WITH THE REAR OUTRIGGERS LOCATED 36" BEHIND THE CENTERLINE OF THE REAR AXLE.

### **OUTRIGGERS :**

- FOUR BOX A-FRAME HYDRAULICALLY ACTUATED OUTRIGGERS.
- OUTRIGGER SPREAD : 7' - 11" RETRACTED  
12' - 0" EXTENDED
- OUTER TUBE : 8" x 6" x 3/8" WALL A-500 GR. B MECHANICAL TUBING
- INNER TUBE : 7" x 5" x 3/8" WALL A-500 GR. B MECHANICAL TUBING
- OUTRIGGER CYLINDER : 3-1/4" DIA. BORE x 3/8" WALL TUBING  
2" DIA. ROD, HARD CHROME PLATED  
34" STROKE 44-3/4" CLOSED LENGTH  
78-3/4" EXTENDED LENGTH
- 1" DIA. HIGH STRENGTH STEEL HINGE PINS ON BOTH ENDS OF CYLINDER.
- HOLDING VALVES ON BOTH ENDS OF THE CYLINDER.
- CYLINDER DESIGN MEETS ANSI A92.2-1990, REF. 4.2, 4.6, & 4.7
- SELF ACTUATING MECHANICAL DETENT TO HOLD OUTRIGGER IN THE STOWED POSITION.
- OUTRIGGER DOWN AUDIBLE ALARM TO ALERT PERSONNEL IN THE IMMEDIATE AREA TO STAND CLEAR OF MOVING OUTRIGGERS.
- INTERLOCK SWITCHES ON EACH OUTRIGGER TO PREVENT OPERATION OF THE AERIAL DEVICE UNLESS BOTH OF THE OUTRIGGERS ARE LOWERED.
- INDIVIDUAL CONTROLS FOR OUTRIGGERS ON THE LEFT AND RIGHT SIDES OF THE TRUCK.
- QUARTER-TURN SHUT-OFF VALVES ACT AS A REDUNDANT SAFETY LOCK FOR EACH OUTRIGGER CYLINDER.

# **MAT-3 MT70-I TREE UNIT SPECIFICATION**

## **PEDESTAL :**

- HEAVY DUTY, 34"LG x 34"W x 36"H, WELDED BOX FRAME.
- 3/4" THICK, A-36 STRUCTURAL STEEL TOP PLATE. MACHINED FLAT FOR SUPERIOR BEARING PERFORMANCE.
- 3" SQUARE x 1/4" WALL STRUCTURAL STEEL TUBULAR LEGS.
- 6" x 16# CHANNEL FRAME TOP & BOTTOM.
- ACCESS TO THE INSIDE OF THE PEDESTAL IS PROVIDED BY REMOVABLE PANELS ON THREE SIDES.
- HYDRAULIC RESERVOIR, FILTERS, THROTTLE SENSE VALVES, AND HYDRAULIC SWIVEL JOINT LOCATED INSIDE PEDESTAL.

## **TURNTABLE ROTATION BEARING :**

- LARGE DIAMETER, FOUR POINT CONTACT, SHEAR BALL TYPE ROTEK TURNTABLE BEARING.
- 34" RACEWAY DIAMETER, 37-5/16" OUTSIDE DIAMETER
- 3/4" DIA. STEEL BALLS WITH SPACERS, WITH GROUND RACEWAY.
- 18 @ 5/8"-11UNC BOLTS ON 31.75" DIA. INNER RACE BOLT CIRCLE
- 18 @ 5/8"-11UNC BOLTS ON 36.25" DIA. OUTER RACE BOLT CIRCLE
- INTERNAL BULL GEAR : 89 TEETH  
3.00" DIAMETRAL PITCH  
20 DEG. INVOLUTE STUB TOOTH  
1.75" FACE WIDTH
- RATED WORKING CAPACITY : 150,000 FT- LBS O.T. MOMENT  
3.15 FACTOR-OF-SAFETY

## **TURNTABLE CAP :**

- WELDED STEEL FABRICATED CAP, CONSTRUCTED OF A-36 STRUCTURAL STEEL PLATE.
- LARGE DIAMETER CAP ( 38" DIA. )
- THICK, BUILT-UP BASEPLATE. ( 1/2" PLATE & 1-1/4" THICK RING )
- MACHINED FLAT FOR IMPROVED BEARING PERFORMANCE.
- HEAVY DUTY, 1/2" THICK A-36 STEEL PLATE BOOM CLEVIS EARS.

## **ROTATION GEARBOX :**

- GEAR PRODUCTS MODEL 104 PLANETARY GEARBOX WITH SPRING SET / HYDRAULICALLY RELEASED PARKING BRAKE.
- RATIO : 28.85 TO 1
- OUTPUT TORQUE RATING : 20,000 IN. LBS.
- OUTPUT SPEED : 5.93 RPM
- OUTPUT PINION : 15 TOOTH, 3.0" D.P., 20 DEG. INV. STUB TOOTH,  
2.25" FACE WIDTH
- ROTATION GEARBOX MOUNTED ON THE TOP OF THE TURNTABLE CAP FOR EASY ACCESS AND SERVICEABILITY.

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## **ROTATION MOTOR :**

- PARKER TB SERIES ROLLER VANE HYDRAULIC MOTOR
- 4.0 CU. IN. DISPLACEMENT
- 1" DIA. SAE 6B SPLINED SHAFT
- SUN DUAL PILOT CHECK MANIFOLD BLOCK HOLDING VALVE WITH BRAKE RELEASE SHUTTLE VALVE PORT.
- OUTPUT SPEED : 180 RPM @ 4.0 GPM FLOW RATE

## **LOWER BOOM :**

- ARTICULATION : 95 DEG. ABOVE HORIZONTAL  
0 DEG. BELOW HORIZONTAL
- LOWER BOOM LENGTH : 23' - 0"
- LOWER BOOM BASE SECTION : WELDED STEEL FABRICATION USING 12" x 12" x 1/4" WALL STRUCTURAL STEEL TUBING.
- LOWER BOOM TIP SECTION : WELDED STEEL FABRICATION USING 12" x 12" x 1/4" WALL STRUCTURAL STEEL TUBING.
- FIBERGLASS INSERT : HAND LAY-UP POLYESTER RESIN AND TRIAXIAL GLASS LAMINATE APPLIED DIRECTLY TO THE STEEL BASE AND TIP SECTIONS. 13-1/2" x 13-1/2" x 3/4" FIBERGLASS BOX SECTION.
- 24" NET INSULATION GAP.
- 15" FIBERGLASS-TO-STEEL OVERLAP ON EACH END OF INSERT.
- SIXTEEN 1/2"-13UNC AIRCRAFT TYPE BUTTONHEAD SOCKET CAP SCREWS PER END, AS MECHANICAL JOINT FASTENERS.
- MAIN HINGEPIN : 2-1/2" DIA. HIGH STRENGTH ALLOY STEEL PIN, HARD CHROME PLATED; WITH GAR-MAX SELF-LUBRICATED SLEEVE BEARINGS MOUNTED INSIDE HUBS OF LOWERBOOM.

## **LOWER BOOM CYLINDER :**

- HEAVY DUTY, DOUBLE-ACTING HYDRAULIC CYLINDER
- CYLINDER DATA : 6.00" DIA. BORE x 0.375" WALL  
2.50" DIA. HARD CHROME PLATED ROD  
37.50" STROKE  
54.00" CLOSED LENGTH / 91.50" EXTENDED
- BASE-END PIN : 2.25" DIA. HIGH STRENGTH ALLOY PIN, CHROME PLATED, BRONZE SLEEVE BEARING.
- ROD-END PIN : 2.00" DIA. HIGH STRENGTH ALLOY PIN, CHROME PLATED, BRONZE SLEEVE BEARING.
- DUAL VENTED COUNTER-BALANCE LOCK VALVES TO HOLD THE LOAD IN THE EVENT OF A LINE FAILURE.
- MEETS ANSI A92.2-2001 - SECTION 4.7

# **MAT-3 MT70-I TREE UNIT SPECIFICATION**

## **UPPER BOOM :**

- UPPER BOOM LENGTH : 26' - 6" RETRACTED / 41' - 6" EXTENDED
- UPPER BOOM STUB SECTION : WELDED STEEL BOX FABRICATION USING 1/4" WALL FORMED A-242 STRUCTURAL STEEL PLATE.
- UPPER BOOM TIP INSERT : WELDED STEEL FABRICATION USING A-36 STRUCTURAL STEEL PLATE.
- OUTER FIBERGLASS BOOM : HAND LAY-UP POLYESTER RESIN AND TRIAXIAL AND WOVEN ROVING GLASS LAMINATE. BOOM HAS A SMOOTH HIGH-GLOSS WHITE, NON-POROUS, EXTERIOR SURFACE OF PIGMENTED RESIN GEL-COAT.
  - FIBERGLASS CROSS SECTION :  
13-3/4" DEEP x 13" WIDE x 1/2" THICK WALLS
  - FIBERGLASS BOOM IS BOTH EPOXY BONDED AND BOLTED TO THE UPPER BOOM STUB. 18" OVERLAP OF FIBERGLASS AT STUB END. SIXTEEN 1/2"-13UNC BUTTONHEAD SOCKET CAP SCREWS ( FOUR PER SIDE ) ATTACH FIBERGLASS TO STEEL STUB.
- INNER FIBERGLASS BOOM : SPIRAL WOUND EPOXY RESIN AND FIBERGLASS LAMINATE. BOOM HAS A SMOOTH HIGH-GLOSS WHITE, NON-POROUS, EXTERIOR SURFACE OF PIGMENTED URETHANE GEL COAT.
  - FIBERGLASS CROSS SECTION : 9.00" O.D. x 1/2" THICK WALL
  - 6' - 0" MINIMUM NET INSULATION GAP.
- INNER FIBERGLASS BOOM EXTENDS ON PLASTIC ROLLERS ON EACH END OF THE BOOM.

## **UPPER BOOM EXTENSION :**

- HEAVY DUTY, DOUBLE-ACTING HYDRAULIC CYLINDER
- CYLINDER DATA : 2.50" DIA. BORE x 0.25" WALL  
2.00"O.D. x 1.00" I.D. CHROME PLATED ROD  
180" STROKE  
194.00" CLOSED LENGTH / 374.00" EXTENDED
- GLAND-END : 4 BOLT FLANGE MOUNTED WITH 3/8"-16UNC SOCKET HEAD CAPSCREWS.
- ROD-END PIN : 0.75" DIA. HIGH STRENGTH ALLOY PIN, CHROME PLATED.
- DUAL VENTED COUNTER-BALANCE LOCK VALVES TO HOLD THE LOAD IN THE EVENT OF A LINE FAILURE.
- MEETS ANSI A92.2-2001 - SECTION 4.7

# **MAT-3 MT70-I TREE UNIT SPECIFICATION**

## **UPPER BOOM ARTICULATION :**

- METHOD OF ARTICULATION : FOUR-BAR LINKAGE STACKED BOOMS.
- ARTICULATION : 165 DEG. ABOVE CENTERLINE OF LOWER BOOM  
0 DEG. BELOW CENTERLINE OF LOWER BOOM
- MAXIMUM UPPER BOOM ANGLE : 70 DEG. RELATIVE TO  
HORIZONTAL

## **UPPER BOOM CYLINDER :**

- HEAVY DUTY, DOUBLE-ACTING HYDRAULIC CYLINDER
- CYLINDER DATA : 6.50" DIA. BORE x 0.375" WALL  
3.00" DIA. HARD CHROME PLATED ROD  
34.00" STROKE  
50.00" CLOSED LENGTH / 84.00" EXTENDED
- BLIND-END PIN : 2.25" DIA. HIGH STRENGTH ALLOY PIN, CHROME  
PLATED, BRONZE SLEEVE BEARING.
- ROD-END PIN : 2.25" DIA. HIGH STRENGTH ALLOY PIN, CHROME  
PLATED, BRONZE SLEEVE BEARING.
- DUAL VENTED COUNTER-BALANCE LOCK VALVES TO HOLD THE  
LOAD IN THE EVENT OF A LINE FAILURE.
- MEETS ANSI A92.2-2001 - SECTION 4.7

## **LOWER BOOM LINK :**

- HEAVY DUTY WELDED "DOG-BONE" SHAPED STEEL LINK.
  - BASE-END PIN : 2.00" DIA. HIGH STRENGTH ALLOY PIN,  
CHROME PLATED, GAR-MAX SLEEVE BEARING.
- LINK-TO-LINK PIN : 2.25" DIA. HIGH STRENGTH ALLOY PIN,  
CHROME PLATED, GAR-MAX SLEEVE BEARING.

## **UPPER BOOM LINK :**

- HEAVY DUTY WELDED "DOG-BONE" SHAPED STEEL LINK.
  - BASE-END PIN : 2.00" DIA. HIGH STRENGTH ALLOY PIN,  
CHROME PLATED, GAR-MAX SLEEVE BEARING.
- LINK-TO-LINK PIN : 2.25" DIA. HIGH STRENGTH ALLOY PIN,  
CHROME PLATED, GAR-MAX SLEEVE BEARING.

## **ELBOW BEARING :**

- ELBOW PIN : 2.25" DIA. HIGH STRENGTH ALLOY PIN, CHROME  
PLATED.
- ELBOW BEARING : GAR-MAX SELF-LUBRICATED SLEEVE BEARINGS  
MOUNTED INSIDE HUBS OF UPPER BOOM STUB  
WELDMENT.

# **MAT-3 MT70-I TREE UNIT SPECIFICATION**

## **PLATFORM :**

- 24" x 30" x 42" DEEP END HUNG FIBERGLASS BUCKET, ELECTRICALLY TESTED AT 30,000 VOLTS AC.
- BUCKET IS ATTACHED TO THE END OF THE UPPER BOOM BY A STEEL INSERT MOLDED INTO THE BACK WALL OF THE BUCKET.
- MINIMUM WALL THICKNESS OF THE BUCKET IS 1/4".
- BOLTED ON POD STYLE FIBERGLASS GUARD FOR PROTECTION OF THE CONTROL HEAD MECHANISM.
- EXTERIOR SURFACE OF BUCKET HAS A SMOOTH, HIGH GLOSS WHITE, NON-POROUS, GEL-COAT FINISH.
- TWO EXTERIOR ACCESS STEPS WITH ANTI-SLIP SURFACE.
- PLATFORM CAPACITY : 350 LBS

## **PLATFORM LEVELING SYSTEM :**

- MAT-3 PATENTED MASTER-SLAVE, POSITIVE DISPLACEMENT HYDRAULIC LEVELING SYSTEM. BOOM MOVEMENTS BACK DRIVE THE LEVELING ACTUATORS AT THE LOWERBOOM HINGEPIN PIVOT OR THE ELBOW PIVOT LOCATION CAUSING THE PLATFORM ACTUATOR TO ROTATE THE EQUIVALENT ANGULAR DISPLACEMENT, KEEPING THE PLATFORM LEVEL.
- UPPERBOOM TIP ACTUATOR : HELAC MODEL HBI-25K  
42.00 CU.IN. DISPLACEMENT  
180 DEG ROTATION
- ELBOW ACTUATOR : HELAC MODEL HBI-25K  
42.00 CU.IN. DISPLACEMENT  
180 DEG ROTATION
- ELBOW CHAIN DRIVE : RC100 ROLLER CHAIN WITH PERFECT COAT  
18 TOOTH SPROCKET @ ELBOW HINGEPIN  
18 TOOTH SPROCKET @ ELBOW HELAC
- LOWER BOOM ACTUATOR : DOUBLE ROD ENDED CYLINDER  
2.50" DIA. BORE x 1.25" DIA. ROD  
7.00" STROKE
- LOWER BOOM CAM DRIVE : 4-1/8" RADIUS x 45 DEGREE OFFSET CAM  
TWO 3/8" x 1-1/2" x 8-7/16" LINK ARMS  
1/2" DIAMETER SHOULDER BOLT EACH  
END OF LINK ARM.
- UPPERBOOM TIP ACTUATOR HAS A GRESEN MHB HOLDING VALVE ASSEMBLY HARD PLUMBED TO THE ACTUATOR TO HOLD THE PLATFORM STATIONARY IN THE EVENT OF A LINE FAILURE.
- LEVELING SYSTEM ACTIVATES ONLY WHEN ACTUATING A TOWER MOVEMENT.
- PLATFORM TILT VALVE LOCATED IN THE PEDESTAL BASE, TO ALLOW BASKET DEBRIS CLEAN-OUT OR PERSONNEL RESCUE.

# **MAT-3 MT70-I TREE UNIT SPECIFICATION**

## **CONTROL SYSTEM :**

### **-UPPER CONTROL :**

- THE PLATFORM CONTROL CONSISTS OF A POWER-ASSIST, SINGLE-LEVERED JOY STICK CONTROLLER FOR THE SIX TOWER MOVEMENTS; UPPER BOOM ARTICULATION UP & DOWN, LOWER BOOM ARTICULATION UP & DOWN, AND TURNTABLE ROTATION CLOCKWISE & COUNTER-CLOCKWISE.
- AUXILIARY POWER-ASSIST EXTENSION CONTROLLER MOUNTED IN THE SHEAVE GUARD BEHIND THE PLATFORM CONTROLS UPPER BOOM EXTEND & RETRACT MOTION.
- THE POWER-ASSIST CONTROL SYSTEM UTILIZES A LOW PRESSURE PILOT SIGNAL THRU 1/4" DIAMETER NYLON PILOT LINES TO OPERATE THE LOWER CONTROL VALVE.
- AUTOMATIC PURGE SYSTEM, TO FLUSH THE PILOT LINES AND REMOVE ANY REMNANTS OF AIR FROM THE LINES WITHOUT THE MESS OF BLEEDING IS OPTIONAL.

### **-LOWER CONTROL :**

- THE LOWER CONTROL LOCATED AT THE BASE END OF THE LOWER BOOM, CONSISTS OF A FOUR SECTION CONTROL VALVE ASSEMBLY. EACH VALVE SECTION IS A CLOSED CENTER, FOUR-WAY SPOOL TYPE; SPRING CENTERED OF THE SPOOL IS NORMALLY CLOSED IN THE NEUTRAL POSITION. VALVE SPOOLS ARE OF THE METERING TYPE, ALLOWING THE OPERATOR TO ADJUST THE SPEED OF THE MOVEMENTS BY HOW FAR HE MOVES THE HANDLE.
- PORTS LOCATED ON THE ENDS OF EACH OF THE VALVE SECTIONS ARE CONNECTED TO THE PILOT LINES WHICH ALLOW THE PLATFORM CONTROL ACTUATOR TO SHIFT THE SPOOLS REMOTELY.
- HANDLES LOCATED AT EACH VALVE SECTION DIRECTLY OPERATE THE CONTROL VALVE SPOOL FOR EMERGENCY MANUAL OVER-RIDE OF THE PLATFORM CONTROL.

## **SAFETY INTERLOCK SYSTEM :**

- A NORMALLY-CLOSED SOLENOID VALVE IN THE MAIN HYDRAULIC SUPPLY SYSTEM IN CONJUNCTION WITH TWO ACTUATORS, ONE LOCATED AT THE LOWER CONTROL VALVE STATION AND THE OTHER ONE LOCATED AT THE PLATFORM CONTROL. UNLESS THE SOLENOID VALVE IS OPENED, MOVEMENT OF THE AERIAL DEVICE IS IMPOSSIBLE, SINCE HYDRAULIC PRESSURE IS NOT AVAILABLE TO THE CONTROL VALVE.

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- AT THE LOWER CONTROL VALVE STATION, THE INTERLOCK ACTUATOR IS A SPRING-LOADED, NORMALLY-OPEN PALM SWITCH, REQUIRING CONTINUED HAND PRESSURE FOR ACTUATION.
- AT THE PLATFORM CONTROL, THE INTERLOCK ACTUATOR IS A TRIGGER ON THE UNDERSIDE OF THE JOYSTICK CONTROL HANDLE. DEPRESSING THE TRIGGER ACTUATES A CAPTIVE AIR PISTON WHICH IS CONNECTED TO A PRESSURE SWITCH LOCATED AT THE ELBOW OF THE UPPER BOOM THRU AN 1/8" DIAMETER NYLON TUBE. THE TRIGGER MUST BE HELD DEPRESSED IN ORDER FOR THE SOLENOID VALVE TO BE OPEN.
- THE FOUR OUTRIGGERS ARE SUPPLIED WITH LIMIT SWITCHES CONNECTED IN SERIES, SO THAT ALL FOUR OUTRIGGERS MUST BE DOWN BEFORE THE INTERLOCK SYSTEM IS ACTIVATED.
- ELECTRICAL ANALYZER BOX LOCATED IN THE REAR OF THE PEDESTAL INDICATES WHICH OUTRIGGER CIRCUITS ARE ACTIVATED AND WHICH OUTRIGGER CIRCUITS ARE NOT LOWERED PROPERLY.

### **HYDRAULIC SYSTEM :**

- THE HYDRAULIC SYSTEM IS A CLOSED CENTERED, PRESSURE COMPENSATED, VARIABLE VOLUME SYSTEM.
- **PUMP :** VICKERS PVE19, PRESSURE COMPENSATED, VARIABLE DISPLACEMENT, AXIAL PISTON PUMP.
  - DISPLACEMENT = 2.50 CU.IN./REV.
  - SYSTEM OPERATING PRESSURE = 2100 psi
  - SYSTEM FLOW = 10 GPM
  - SAE "B" 2-BOLT MOUNT WITH 13 TOOTH - 16/32 DP x 7/8" DIA. SPLINED SHAFT.
- **HYDRAULIC RESERVOIR :**
  - 25 GALLON CAPACITY
  - LOCATED INSIDE PEDESTAL.
  - SUCTION & RETURN LINES SEPARATED BY A BAFFLE.
  - VISUAL SIGHT GAGE, SHOWING "FULL" AND "ADD" LEVELS.
  - 10 MICRON BREATHER CAP ON TOP OF TANK.
  - CLEAN-OUT COVER ON TOP OF TANK
  - CHECK VALVES IN RETURN PORTS TO PREVENT LEAKAGE WHEN CHANGING RETURN LINE HOSES OR FILTER.

## **MAT-3 MT70-I TREE UNIT SPECIFICATION**

### **- FILTRATION :**

- FILL TUBE HAS 200 MESH SCREEN ( 50 MICRON) STRAINER.
- 6 MICRON HIGH PRESSURE FILTER WITH POP-OUT VISUAL DIRT INDICATOR WITH THERMAL RELIEF.
- 10 MICRON RETURN FILTER .

### **- HYDRAULIC FLUID :** MIL-H-5606 AIRCRAFT TYPE

### **- HOSE ASSEMBLIES :**

- PARKER 431 COMPACT NO-SKIVE HOSE ( SAE 100R16 TYPE ) WITH PERMANENT SWAGED-ON FITTINGS.
- PARKER 518-C NON-CONDUCTIVE HOSE (SAE 100R7) WITH PERMANENT SWAGED-ON FITTINGS.
- STANDARD JIC TYPE SWIVEL FITTINGS.

### **- THROTTLE CONTROL :**

- AUTOMATIC ADVANCE OF TRUCK ENGINE SPEED FROM IDLE TO PUMP FLOW SETTING SPEED ON FLOW DEMAND FROM THE AERIAL TOWER.

### **- HYDRAULIC TOOL LINES (OPTIONAL):**

- TWO SETS OF HYDRAULIC TOOL COUPLINGS LOCATED AT THE TIP END OF THE UPPER BOOM WITH PRESSURE RELIEVING SHUT-OFF VALVE ASSEMBLY.
- ONE SET OF HYDRAULIC TOOL COUPLINGS LOCATED AT THE PEDESTAL WITH QUARTER-TURN SHUT-OFF.

### **VACUUM FLASH-OVER PROTECTION :**

- INSTALLATION OF A CHECK VALVE AND BREATHER FILTER IN HYDRAULIC LINES WHICH RUN THE LENGTH OF THE INSULATION GAP, WHICH ALLOW THE ENTRANCE OF AIR IN THE LINES IN THE EVENT THAT A VACUUM TRIES TO FORM.
- CONTROL HEAD ASSEMBLY HAS A VACUUM FLASH-OVER CHECK ( 1 PSI CRACKING PRESSURE ) VALVE AND BREATHER.
- CONTROL HEAD ASSEMBLY DRAIN HOSE HAS AN IN-LINE CHECK VALVE TO HOLD THE COLUMN OF OIL WITHIN THE HOSE. ( 25 PSI CRACKING PRESSURE )
- CONTROL HEAD ASSEMBLY PRESSURE HOSE HAS AN IN-LINE CHECK VALVE TO HOLD THE COLUMN OF OIL WITHIN THE HOSE. ( 5 PSI CRACKING PRESSURE )

## **MAT-3 MT70-I TREE UNIT SPECIFICATION**

- HYDRAULIC TOOL LINES HAVE A VACUUM FLASH-OVER CHECK VALVE ( 1 PSI CRACKING PRESSURE ) AND BREATHER ON BOTH THE PRESSURE COUPLINGS AND RETURN COUPLINGS. THE PRESSURE HOSE HAS A 5 PSI CRACKING CHECK VALVE IN LINE TO HOLD THE COLUMN OF OIL WITHIN THE HOSE . THE RETURN LINE HOSE HAS A 45 PSI CRACKING CHECK VALVE IN LINE TO HOLD ITS COLUMN OF OIL WITHIN THE HOSE.

### **BOOM SUPPORT :**

- A STRUCTURAL STEEL BOOM SUPPORT, IS FURNISHED. THIS SUPPORT IS INSTALLED ON THE FRONT BUMPER OR CAB GUARD.
- THE UPPER BOOM RESTS ON A BOOM SUPPORT MOUNTED ON THE TOP OF THE LOWER BOOM STUB WELDMENT ADJACENT TO THE MAIN HINGEPIN.
- UPPER BOOM HOLD DOWN STRAP WITH OVER-CENTER TOGGLE TAKE-UP TO HOLD DOWN THE UPPER BOOM DURING ROAD TRAVEL.

### **SAFETY BELTS :**

- EACH AERIAL DEVICE IS PROVIDED WITH ONE MILLER DURAFLEX MODEL E650 FALL-ARREST HARNESS.
- LANYARD IS A 6 FOOT LONG DECELERATION UNIT WITH SNAP-LOK HOOKS ON EACH END.
- ATTACHMENT OF LANYARD ROPE IS LOCATED AT THE TIP OF THE UPPER BOOM.

### **PAINT :**

- ONE COAT OF RUST INHIBITIVE PRIMER
- ALL STRUCTURAL STEEL PARTS ARE SAND-BLASTED CLEAN PRIOR TO PRIME PAINTING.

### **WELDING :**

- ALL CRITICAL WELDING IS PERFORMED BY WELDERS CERTIFIED UNDER THE AMERICAN WELDING SOCIETY STANDARDS.
- ALL WELDS ARE IN ACCORDANCE WITH AWS D1.1 LATEST EDITION.
- ALL CRITICAL WELDS ARE MAGNETIC-PARTICLE INSPECTED FOR CRACKS, POROSITY, AND OTHER DEFECTS.

### **MANUALS :**

- SERVICE & OPERATIONS MANUALS ARE FURNISHED WITH EACH UNIT.

# **MAT-3 MT70-I TREE UNIT SPECIFICATION**

## **DESIGN SAFETY FACTORS :**

- THIS UNIT IS DESIGNED TO MEET AND EXCEED THE REQUIREMENTS OF ANSI A92.2-2001.
- ALL DUCTILE STEEL LOAD BEARING COMPONENTS ARE DESIGNED WITH A MINIMUM FACTOR-OF-SAFETY OF 2.5 to 1 AGAINST YIELD STRESS.
- ALL NON-DUCTILE LOAD BEARING COMPONENTS ARE DESIGNED WITH A MINIMUM FACTOR-OF-SAFETY OF 6 to 1 AGAINST ULTIMATE TENSILE STRESS.
- ALL LOAD BEARING FIBERGLASS COMPONENTS ARE DESIGNED WITH A MINIMUM FACTOR-OF-SAFETY OF 7 to 1 AGAINST ULTIMATE FLEXURAL STRENGTH OF THE COMPOSITE MATERIAL.
- ALL COMPRESSION ELEMENTS ARE DESIGNED WITH A MINIMUM FACTOR-OF-SAFETY OF 2.5 to 1 AGAINST CRITICAL BUCKLING STRESS.
- ALL HYDRAULIC COMPONENTS ARE DESIGNED WITH A MINIMUM FACTOR-OF-SAFETY OF 4 to 1 AGAINST BURST PRESSURE.

## **TESTING :**

- EACH UNIT IS TESTED FOR STRUCTURAL STRENGTH WITH AN OVERLOAD OF 2.0 TIMES RATED PLATFORM CAPACITY APPLIED AT THE PLATFORM WITH THE UNIT IN THE MAXIMUM OUTREACH POSITION.
- EACH UNIT IS PERFORMANCE TESTED TO VERIFY OPERATIONAL RANGE OF MOTION AND OPERATING SPEEDS.
- EACH UNIT IS DIELECTRICALLY TESTED FOR COMPLIANCE WITH ANSI A92.2-2001 CATEGORY "C" QUALIFICATION RATING FOR 46 KV VOLTAGE & BELOW.
- EACH UNIT IS STABILITY TESTED AT THE MAXIMUM HORIZONTAL OUTREACH POSITION WITH 1.5 TIMES PLATFORM CAPACITY ON A LEVEL SURFACE.
- EACH UNIT IS STABILITY TESTED AT THE IN THE LEAST STABLE POSITION WITH 1.33 TIMES PLATFORM CAPACITY ON A 5 DEG. CROSS-SLOPED SURFACE.

# MAT-3 MT70-I TREE UNIT SPECIFICATION

## DIMENSIONAL SPECIFICATION

<b>GROUND TO BOTTOM OF PLATFORM :</b>	<b>STANDARD MOUNT</b>
MINIMUM ELEVATION .....	- 9'- 0"
MAXIMUM ELEVATION .....	70'- 0"
WORKING HEIGHT .....	75'- 0"
MAXIMUM HORIZONTAL REACH .....	48'- 0"
<b>ROAD CLEARANCE :</b>	
FOLDED HEIGHT .....	12'- 2"
OVERALL LENGTH .....	30'- 6"
FOLDED WIDTH .....	8'- 0"
OUTRIGGER SPREAD .....	12'- 0"
<b>BOOM LENGTH BETWEEN PIVOTS :</b>	
LOWER BOOM .....	23'- 0"
UPPER BOOM .....(RETRACTED)	26'- 6"
.....(EXTENDED)	41'- 6"
<b>BOOM TRAVEL :</b>	
LOWER BOOM .....	95 DEG.
UPPER BOOM .....	165 DEG.
<b>TURNTABLE ROTATION .....</b>	<b>360 DEG. CONTINUOUS</b>
<b>PLATFORM CAPACITY .....</b>	<b>350 LBS</b>
<b>TOWER ASSEMBLY WEIGHT .....</b>	<b>6,800 LBS</b>
<b>OPERATING SPEEDS :</b>	
LOWER BOOM (95 DEG. TRAVEL) .....	35 sec. -to- 45 sec.
UPPER BOOM (165 DEG. TRAVEL) .....	35 sec. -to- 45 sec.
TURNTABLE ROTATION (360 DEG) .....	55 sec. -to- 65 sec.
OUTRIGGERS (LOWER BOTH) .....	15 sec. -to- 20 sec.
<b>OPERATING SYSTEM PRESSURE .....</b>	<b>2100 PSI</b>
<b>HYDRAULIC PUMP OUTPUT .....</b>	<b>10 GPM</b>
<b>HYDRAULIC RESERVOIR CAPACITY .....</b>	<b>25 GAL</b>
<b>ELECTRICAL SYSTEM VOLTAGE .....</b>	<b>12 VDC</b>
<b>RATED DESIGN LINE VOLTAGE .....</b>	<b>46 KV</b>
<b>MANUFACTURED ELECTRICAL QUALIFICATION .....</b>	<b>46 KV</b>

# MAT-3 MT70-I TREE UNIT SPECIFICATION

## STANDARD MOUNT OVER REAR AXLE VEHICLE SPECIFICATION

- FRONT GROSS AXLE WEIGHT RATING ( GAWR FRONT) ..... 12,000 LBS
- REAR GROSS AXLE WEIGHT RATING (GAWR REAR) ..... 19,000 LBS
- GROSS VEHICLE WEIGHT RATING (GVWR) ..... 31,000 LBS
- MINIMUM TRUCK CURB WEIGHT ..... 25,000 LBS
  
- FRAME SECTION MODULUS ..... 26.0 CU.IN.
- YIELD STRENGTH OF VEHICLE FRAME ..... 50,000 PSI
- FRAME RESISTING BENDING MOMENT (RBM) ..... 1,300,000 IN.LB.
  
- WHEELBASE DIMENSION (WB) ..... 188"
- CAB -to- REAR AXLE CENTERLINE DIMENSION (CA) ..... 120"
- AFTER FRAME DIMENSION (AF) ..... 75"
- FRAME HEIGHT (UNLOADED) ..... 39"
  
- TRUCK ELECTRICAL SYSTEM ..... 12 VDC

### MAT-3 70-I TREE UNIT WEIGHT DISTRIBUTION

- FRONT AXLE WEIGHT ..... 2,500 LBS
- REAR AXLE WEIGHT ..... 5,800 LBS
  
- TOTAL WEIGHT ..... 8,300 LBS

### FLAT BED WEIGHT DISTRIBUTION

- FRONT AXLE WEIGHT ..... 500 LBS
- REAR AXLE WEIGHT ..... 2800 LBS

### CAB GUARD WEIGHT DISTRIBUTION

- FRONT AXLE WEIGHT ..... 575 LBS
- REAR AXLE WEIGHT ..... 75 LBS

### TYPICAL MT70-I TRUCK WEIGHT DISTRIBUTION

- FRONT AXLE WEIGHT .....10,200 LBS
- REAR AXLE WEIGHT .....15,200 LBS
  
- TOTAL WEIGHT ..... 25,400 LBS