

**SPECIFICATIONS**  
**HOLMES MODEL 600R ROTATING HYDRAULIC WRECKER**  
**TWO STAGE BOOM**

**1.0 GENERAL DESCRIPTION**

The wrecker shall consist of a recovery boom, mast frame, a subframe for mounting to chassis and an underlift system for suspended towing

- 1.1 The wrecker shall have a two stage recovery boom with dual hydraulic planetary gear winches. The two stage boom shall be hydraulically powered for raising, lowering, extending and retracting under load. The winches shall be mounted to the boom and be hydraulically powered for winding the winch cable in and out under load.
- 1.2 The wrecker shall be capable of 270 degrees rotation. The wrecker mast shall provide a means of mounting the recovery boom.
- 1.3 Modular type wrecker body assembly shall be a heavy-duty design consisting of two major components: A driver's side tool compartment and passenger side tool compartment. Tool compartments shall have ample room for storing equipment used in recovery and towing operation. All compartment interiors will be illuminated.
- 1.4 The wrecker Subframe shall be designed to provide a means of mounting the recovery boom and wrecker frame to the truck chassis. It will also accept the mounting of the modular type bodies. A hydraulic front outrigger and manual rear outrigger/spade system will be an integral part of the Subframe assembly.
- 1.5 The front and rear outrigger/spade system shall be hydraulically powered for raising and lowering, to assist in stabilizing the wrecker in recovery operations. The front outriggers shall be either hydraulic or manual extended and retracted, the rear outriggers shall be manual extended and retracted. They may be operated independent of each other and all other wrecker functions.
- 1.6 Hydraulic power shall be provided by means of hydraulic pumps mounted directly to a "Power Take-Off" attachment, and shall be driven by the truck engine.
- 1.7 A control shall be provided in the cab of the truck for engaging and disengaging the "Power Take-Off" attachment. This control shall be an "Air Shift" system.
- 1.8 Controls for operating hydraulic functions will be enclosed in the rear most compartments.
- 1.9 Lubrication fittings shall be provided where required to assure positive lubrication, except where self-lubricated journals may be used.

1.10 Workmanship shall be consistent with first class manufacturing practice. Manufacturing shall be performed in a manner that ensures interchangeability of all parts and sub-assemblies.

1.11 Two snatch blocks, suitable for use with the winch cables shall be furnished when required

## 2.0 GENERAL REQUIREMENTS

2.1 The recovery boom shall consist of four major components: Outer boom, inner boom, and two "Thru Center" side by side boom end swivels. The boom sections shall be fabricated from high tensile steel plate to form rectangle sections. The inner boom shall also have provisions for attachment of two "Thru Center" side by side boom end swivels. The "Thru Center" boom end swivels shall incorporate bronze bushed sheaves, cable guides and allow for 360 degree sheave rotation, permitting pulls to be made in any direction. Two double acting cylinders shall connect the recovery boom and mast frame to be used to raise and lower said boom. All hydraulic hoses shall be routed to provide maximum protection.

2.2 The mast frame shall be capable of rotating by hydraulic power thru 270 degrees, 135 degrees in both clockwise and counter-clockwise direction. There will be a mechanical mast lock to lock the mast/boom assembly for travel, The rotation shall be held in position by a spring applied brake. There shall be a built in relief system to prevent overloads imposed on pinion and swing gearbox. There shall be two hydraulic solenoid valves and switches to limit the rotation to 135 degrees in both directions. There shall be mechanical stops to limit the rotation in the event the solenoid valves mis-function

2.3 The mast frame shall be high tensile steel welded into a single frame assembly with provisions for installation onto the Subframe. It shall incorporate provisions for mounting the recovery boom, and hydraulic lift cylinders. The mast frame shall be capable of withstanding all imposed forces resulting from rated loads being applied to end of boom.

2.4 The Recovery Boom shall have dual variable speed planetary gear winches. The winches shall be hydraulically powered for winding the winch cables in and out under load. Winches shall have the capability of disengaging the cable drum "Air Free Spool" and cable tensioners to prevent "bird nesting" of winch cables.

2.5 The separate underlift system shall be capable of lifting and securing a medium duty truck or bus by the axle, bumper, frame or springs, and tires, and shall transport said vehicle safely and damage free.

The underlift device shall be installed into the rear of the subframe. The underlift device shall have of a fixed tower attached to the rear of the subframe, and a sliding tower to hydraulically raise and lower the underlift lifting arm assembly

The underlift shall have a lifting arm, cross bar, a set of lifting forks and wheel lift grid assemblies

The lifting arms are able to power tilt up and down by means of hydraulic tilt cylinder. The two stage lifting arm shall be hydraulically powered for extending and retracting under load. The lifting arm shall also have the capability of being hydraulically folded into a stowed position when not in use and not interfere with the operation of recovery boom. The lifting arm shall be equipped with a pivoting crossbar and a set of lifting attachments.

- 2.6 The modular type wrecker aluminum body assembly shall be 92.5" wide over compartments and 96" wide over rubber fenderettes. All compartment doors shall be held in its open position by means of a door link or air struts. Each door opening shall have a rain channel and dust seal around the perimeter of the opening. All tool compartment doors shall be secured by a lockable latch. Recessed area for stop, turn, tail, back-up and clearance lights are provided in each tool compartment assembly. Each tool compartment shall be mounted to the wrecker Subframe with four rubber mounts so toolbox assemblies are completely isolated from deflection of chassis and wrecker structure. All tool compartment cavities shall have illuminator lights connected to a sealed wiring harness. All wiring shall meet at a common junction box so many inline splices can be eliminated. Flexible rubber fenderettes shall be standard.
- 2.7 Controls for the rotation, winch, boom, and hydraulic spades/outriggers functions shall be located in rear most compartments of the modular body. Controls shall be provided in the left and right side of bodies. Control handles shall automatically return to their "Off" or neutral position when released. When handles are in neutral position, the hydraulic winches and all hydraulic cylinders shall automatically lock and hold their load, even when the "Power Take-Off" is disengaged or in the event of hydraulic malfunction. The operating speed of all hydraulic functions shall be controlled by the amount of handle movement. Controls are grouped by function to permit operation of two controls with one hand. Operation is finger-tip easy regardless of load. Control handles shall be connected to control valve by means of control cables. Provisions for proper adjustment of control handle positions shall be provided.
- 2.8 Hydraulic pressure gauges (two) shall be located in control panel, next to wrecker control. Each pressure gauge shall sense hydraulic system pressure on each hydraulic pump section. All pressure gauges must be glycerin filled.
- 2.9 The wrecker Subframe shall be one entity fabricated out of high tensile steel welded into a single frame assembly with provisions for installation of the wrecker frame assembly and modular type wrecker bodies. The Subframe shall be capable of withstanding all imposed forces resulting from a rated load being applied to end of boom or underlift. Tailgate shall be forwardly offset to provide clearance when towing a vehicle.
- 2.10 The wrecker Subframe shall have provisions for mounting the wrecker frame. The wrecker frame mounting area shall have a weld on mounting ring for the bolt-on swivel bearing and reinforced to support rated loads through the 210 degrees of rotation.

- 2.11 The wrecker Subframe shall incorporate a front outrigger and rear outrigger/spade system used in leveling and stabilizing the wrecker unit in recovery operations. The outrigger/spade system shall be hydraulically powered for raising and lowering, to assist in stabilizing the wrecker in recovery operations. The front outriggers shall be either hydraulic or manual extended and retracted, the rear outriggers shall be manual extended and retracted. They may be operated independent of each other and all other wrecker functions.
- 2.12 The outrigger system shall be fabricated of high tensile steel The outrigger system shall be an integral part of the wrecker Subframe assembly. The outrigger system shall be capable of withstanding all imposed forces resulting from a rated load being applied to end of recovery boom.
- 2.13 The wrecker mounting plates shall be so designed that drilling will be done only through the side of the truck frame in accordance with truck manufacturers warranty.

**3.0 DETAILED SPECIFICATIONS**

Basic Recovery Boom.....	16 Tons (32,000 lbs.)
Boom Structural Rating:	
Retracted w/boom @ 30° elevation (TEMA).....	13 Tons (26,000 lbs.)
Extended w/boom @ 30° elevation (TEMA).....	8.3 Tons (16,600 lbs)
Boom Maximum Elevation.....	50°
Boom Reach Past Tailgate:	
Retracted & Horizontal.....	8.25"
Extended & Horizontal.....	84.25"
Boom Reach Past Tailgate:	
Fully Extended w/boom @ 30°	56.5"
Fully Extended w/boom @ 50°	13"
Boom Maximum Working Height:	
Extended w/boom @ 49.5° elevation above horizontal.....	222"
Extended w/boom @ 30° elevation above horizontal.....	170"
Two Boom Elevation Cylinders:	
Bore.....	5"
Rod Diameter.....	2"

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Stroke.....	33"
<b>Boom Extension Cylinder:</b>	
Bore.....	3"
Rod Diameter.....	1.75"
Stroke.....	76"
<b>Four Outrigger Cylinders: Raise/Lower</b>	
Bore.....	3"
Rod Diameter.....	1.5"
Stroke.....	18"
<b>Two Front Outrigger Cylinders: Extend/Retract (horizontal)</b>	
Bore.....	2"
Rod Diameter.....	1.5"
Stroke.....	38.75"
<b>Winch:</b>	
Capacity.....	15,000 lbs.
Type.....	Planetary Gear
Gear Ratio.....	29.37:1
Drum Diameter.....	4.5"
Drum Length.....	12.5"
Flange Diameter.....	9.38"
Provisions for Free Spooling.....	Air Kick-Out
Brake.....	Hydraulic Disc Brake
Line Speed (Brake Drum).....	28'/Min @ 12 GPM
<b>Winch Motor:</b>	
Type.....	Low Speed - High Torque
Displacement.....	4 Cubic Inches
<b>Winch Cable:</b>	
Type.....	6 x 37 IWRC, XIPS
Diameter.....	1/2"
Length.....	150'
Working Limit.....	7,500 Lbs.
Minimum Breaking Limit.....	26,600 Lbs.

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## DETAILED SPECIFICATIONS (Underlift):

### Lift Rating:

Retracted.....	12,000 Lbs.
Extended.....	8,500 Lbs.

Tilting Arc..... 80° Positive/ 8° Negative

### Lifting Arm Reach Past Tailgate: (lowered and horizontal)

Fully Retracted Distance From Tailgate To Center of Lift Fork.....	56"
Fully Extended Distance From Tailgate To Center of Lift Fork.....	90

### Lifting Arm Reach Past Tailgate using Wheel Lift Grids (lowered and horizontal)

Fully Retracted Distance From Tailgate To Center of wheel.....	69" approx.
Fully Extended Distance From Tailgate To Center of wheel.....	103" approx.

Crossbar Width..... 44.25"

### Extension Cylinder:

Bore (Piggyback).....	3"
Rod Diameter.....	1.5"
Stroke.....	34"

### Tilting Cylinder:

Bore .....	5"
Rod Diameter.....	2"
Stroke.....	17.5"

### Two Lift Cylinders:

Bore .....	3"
Rod Diameter.....	1.5"
Stroke.....	21.5"

### Slewing System

4 point contact ball radial bearing	117 teeth
Hydraulic Planetary drive with spring loaded brake	100,000 in lb torque-17 teeth
Hydraulic motor	10 in3 / rev.
Hydraulic Motor Mounted Control valve (with counterbalance valves and sequence valves)	

## **IMPORTANT NOTICE**

All ratings specified are based on structural factors only not by winch cable strength or chassis capability.

## DETAILED SPECIFICATIONS (Hydraulic System):

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Maximum System Pressure.....	3,000 PSI
System Protection.....	Relief Valve
Safety Provisions for Holding Load.....	Counterbalance Valve, Hydraulic Disc Brake Hydraulic
Fluid.....	Texaco Rando HD46 or Equal
Hydraulic Pump:	
Type.....	Tandem Gear
Capacity.....	13 GPM @ 1,000 RPM
Each Section	
Displacement.....	2.96 Cu. In. Per Revolution
Control Valve: Front	
Capacity.....	18.5 GPM
Number of Spools.....	8 Spool
Spool Type.....	Metering, Spring Return to Neutral
Control Valve Rear	
Capacity.....	18.5 GPM
Number of Spools.....	6 Spool
Spool Type.....	Metering, Spring Return to Neutral
Hoses:	
High Pressure.....	3,000 PSI Working Pressure
Return.....	1,250 PSI Working Pressure
Suction.....	SAE 100 R4
Two Reservoirs:	
Capacity.(each tank).....	15 Gallons
System Capacity (Approx.).....	45 Gallons approx.
Hydraulic Filtering System.....	(4) Return Line 10 Micron Filters