

# **SPECIFICATIONS**

## **RT-28 CARRIER (Rail Car)**

The RT-28 electric powered rail car is for general purpose material handling applications. It is 70ft long with a cab at one end, and a model ARA0309 Arva Crane at the other end. Outriggers are an integral part of the car frame.

## **OUTRIGGERS**

Due to car-truck load limitation, two (2) outriggers bearing directly onto the running rails and two (2) outriggers providing out and down stability are supplied to prevent truck overload, (65,000 pound limit), and to provide stability for over the side lifting. A load limiting system limits over the side lifting when out and down outriggers are not deployed.

Outriggers bearing on running rail are vertically mounted, controlled by one (1) solenoid operated valve section, and have a predetermined extension length to prevent lifting truck clear of rail.

Out and down outriggers have individual control for left and right extension and for left or right deployment. Outriggers clear third rail cover board when fully retracted and O.R. pads have been removed. Outrigger pads (12" x 12") are stowed on rail car for travel.

## **MOUNTING**

The crane end of the car is reinforced to withstand the crane loading and incorporates the crane pedestal support. The crane is mounted on an eight (8) inch high pedestal (above car deck), which extends downward becoming an

integral part of the rail car frame. The pedestal-mounting flange is round, matching the bolt pattern required by the 36" OD swing bearing.

## **BOOM**

The boom is four section telescopic full power hydraulic.

The four (4) boom sections are fabricated utilizing a rectangular box section design. The steel used in fabrication is designed for operation in cold ambient temperatures of -40° C.

The boom extension cylinders are connected in a parallel circuit and are controlled by a single lever thereby eliminating the requirement for hose reels or feed festoons. A pilot operated holding valve is incorporated in the boom extend circuit.

The boom extension cylinders are sized to permit telescoping with rated load to maximum extension. Replaceable nylatron wear pads are used on the top and bottom of each boom section. Adjustable, replaceable, nylatron, side thrust wear pads are used on the outer end of the base, and mid sections.

## **BOOM LIFT**

The boom lift function is powered by two (2) cylinders, vertically positioned, to give maximum clearance when handling loads with fully retracted minus 20° boom.

Holding valves are bolted to the cylinders to prevent accidental boom lowering due to hose or tube damage.

Boom extension cylinders have double holding valves for positioning of boom for either positive or negative boom angles.

## **SWING**

The swing function utilizes a shear ball type swing bearing. A high torque Gerotor style motor driving through a planetary gear reduction provides smooth positive swing operation.

A fail safe, spring applied, hydraulically released disc brake is located between the drive motor and gear reduction. The brake is an integral part of the gear reduction. (Ref Section 8, SP-6).

A multi port hydraulic swivel and electrical collector located at centre of rotation permits 360 degrees continuous swing function.

High strength bolts hold the upper turret structure to the shear ball bearing and to the base pedestal.

Swing function is 360 degrees continuous as hydraulic swivel and electrical collector are utilized. (Ref Section 8, SP-21 for drawing)

## **CONTROLS**

The weatherproof remote control console may be used with shoulder straps for mobile remote operation or set in position for operator to plug in for operation from operator's seat located on rotating upper structure (turret). A 25ft cable is provided for remote operation (Ref Section 9, fig 6-2).

Crane functions are controlled by joystick-type controllers. Swing is

controlled by a single axis controller. Boom lift and telescope are controlled by a dual axis non-gated controller. Controls are infinitely variable.

Outriggers are deployed or retracted by depressing outrigger function required (button switch selecting outrigger location and direction) and movement of toggle switch selecting extension or retract.

Power Unit start-stop control switch is mounted on left side of control console. Throttle control low or high speed is located on upper right of remote control console. Engine temperature gauge, oil pressure gauge and temperature gauges are located on power unit enclosure. Control console is designed to operate on 12 volt DC power.

## **CONTROL VALVE**

The directional control valve utilized is a 12 volt electric-hydraulic proportional valve with individual section pressure compensation and circuit relief valves installed where required. (See hydraulic schematic Section 7 of this manual).

A solenoid operated five (5) section valve is utilized to deploy or retract outriggers.

Control valving is located at the crane end of the car. Electric-proportional valve permits manual operation of the crane in the event of control console failure.

## **POWER SOURCE**

A Deutz Diesel Engine Model 1011F naturally aspirated engine having 50 HP at 2,500 RPM powers the crane. The engine drives a pressure and flow compensated pump Eaton Model 70423. The power unit with hydraulics is located on the car deck behind the car operator's cab. Incorporated as part of the power unit assembly is a 12VDC powered pump for use when main power unit is not operational. The main power unit is equipped with two (2) size 8-D 12 volt batteries connected in parallel supplying 12VDC power for engine starting and emergency hydraulic pump power supply.

The power unit includes;

- 40 gal fuel tank mounted under deck.
- Electric fuel pump mounted near tank.
- Fuel gauge mounted on engine panel.
- Hydraulic tank to reservoir 30 gal. with filter screens and breather are mounted within engine enclosure.
- Emergency pump and switch are also mounted within engine enclosure.

## **OVERLOAD SYSTEM**

To prevent the car wheel loading from exceeding 65,000 pounds per wheel pair, and to prevent tipping of car, outriggers and an overload system are utilized.

Circuit relief valve settings in conjunction with load monitor system, limit the capacity over car, car sides, and to rear of car, to approximately 110 percent of rated capacity. The load monitor system which incorporates boom length and boom angle indicators in conjunction with the hook load sensing shaft, limits lifting capacity over

boom length and angle.

Full lifting capacity over car sides is permitted with fully deployed out and down outriggers. See capacity charts at the end of this section from boom position and radius.

Lifting capacity over car side is limited to 75% of car overturning moment.

Running rail outriggers must be down to operate crane from remote controls. For details on load monitor system refer to section 8, SP-15 of this manual.

## **HOOK**

A 14,000 pound anti-friction bearing mounted swivel hook is supplied. The length of the hook assembly is twenty (20) inches.

## **GENERAL**

Boom horizontal;

Extended radius: 30'-0"

Retracted radius: 9'-11"

Height overall: 6'-0" (Boom horizontal from car deck)

Length overall: 10'-4" (Boom retracted) Permitting 180° swing within car width with load

Function speeds and times based on 24 GPM system flow:

Swing speed: 1 rpm

Boom luffing(-20° to +60°): 20sec

Boom extension(min-max): 60sec

Swing: 360 degrees continuous

Boom elevation: minus 20 to plus 60 degrees.

Boom tip height @ full extension: 32' above car deck

Weight (approx): 7,560 lbs  
Fuel Tank Capacity – 40 gal US  
Hydraulic Reservoir Capacity–30 gal US

Pedestal Height: 8" above deck

Outrigger Spread: 13'-10"

Out & Down Outrigger penetration below top of running rail: 6"

Running Rail Outriggers have limited travel so as not to lift car truck wheels off the track.