

## SPECIFICATIONS AND FEATURES FOR AN OSHKOSH SPECIALTY VEHICLES TRI-AXLE MAGNETIC RESONANCE IMAGING SYSTEM

Certified and approved mobile MRI units are designed and manufactured by the Oshkosh Specialty Vehicles in accordance with the site plan requirements of the medical equipment manufacturer selected by the customer. The following features apply:

### I. CHASSIS

- Chassis: The foundation of every mobile MRI unit is a custom designed chassis consisting of two (2) 17" deep welded aluminum I-beams, with 8" outer "C" channels and 6" cross member "C" channels. All structural members are welded and gusseted together, yielding the strongest and most durable medical trailer chassis on the market.
- Axles: MRI trailers include three (3) heavy-duty 20,000 lb. capacity axles.
- Hub-O-Meter: A Hub-O-Meter is installed on the left side rear lead axle to allow the driver to maintain a record of the trailer movement.
- Air Ride Suspension System: The axles are installed on an automatic air ride suspension system. The proper ride height is set at the factory.
- Air Ride Kingpin Bolster Plate: A low profile air ride kingpin bolster plate is installed on the front of each chassis to provide air-cushioning support for the sensitive electronics installed in the mobile unit.
- Mounting Plates: Aluminum plates for the MRI system magnet and the electronics cabinets are welded in place, ensuring that critical components will be secure during transport.



## **I. CHASSIS** (Continued)

- **Radial Tires:** Twelve (12) premium quality radial tires are provided for durability and extended service life.
  
- **Aluminum Wheels:** The Radial tires are mounted on twelve (6 outer) aluminum rims: which are polished aluminum and the six (6) inner rims are machined steel.
  
- **Portable Support Stands:** Two (2) portable support stands are included to stabilize the rear of the Mobile unit at the site.
  
- **Landing Legs:** Two (2) electro-hydraulic landing legs with security stabilizing pins are installed on the front of the trailer, to both offload the trailer from the tractor and to assure positive fixed height of the unit at the operating site. Landing leg controls are conveniently housed in an underbody compartment, shielding them from weather and road grime for reduced repair cost and extended operational life.

## **II. STRUCTURAL**

- **Body Structure and Framing:** Specifically designed and constructed aluminum body for MRI use only, consisting of extruded aluminum tubing and aluminum tubing, welded into an incredibly strong framework, yielding a 102" overall width. This conservative approach yields an exceptionally strong, rigid super structure for the installation of magnetic shielding, doorframes, platform lift and exterior body panels.
  
- **Body Panels:** The exterior skin of the trailer consists of commercially available aluminum panels that are mechanically fastened in place.

## II. STRUCTURAL (Continued)

- Insulation: The walls, floors, ceiling, and underbody compartment are fully insulated with, sprayed in, expanding polyurethane foam. This produces an effective vapor and insulation barrier for heat, cold, and exterior noise.
- Vapor Barrier: A vapor barrier, installed along the full length of the trailer floor, prevents moisture and odors from emanating into the trailer.
- Underbody Compartments: The underbody storage compartment is manufactured of welded aluminum. It is insulated, heated and coated with a commercially available spray-on bed liner. This results in a coating that is easy to clean, reduces maintenance, increases sound attenuation, and provides an excellent appearance.

## III. EXTERIOR

- Painted Surface: The entire trailer body is painted with DuPont™ Imron™ paint process that is certified and carries a limited 5 year warranty. This ensures the aluminum exterior panels, compartment and entry doors, air conditioner and generator are all the same shade.
- Platform lift: A high capacity, vertical movement platform lift with hand rails is installed on the right side of the mobile unit. The lift is stowed on the side of the mobile unit for transport, thus yielding additional underbody compartment space. Two (2) security storage pins are mounted on the lift gate cradle to lock the lift platform in place during transport from one location to the next. The front edge of the lift platform is fitted with a high-density plastic scratch guard and two rubber feet on the rear to prevent the paint from being chipped by stones and uneven pavement at the site.

### III. EXTERIOR (Continued)

- Platform lift Controls: The platform lift can be controlled by either a flexible, handheld, low voltage, waterproof toggle switch assembly or switches located near the patient roll door. This allows the attendant, while on the platform lift, to effortlessly raise or lower the platform lift as required.
- Platform lift Canopy: A canvas and aluminum rollout canopy is positioned above the patient roll door to help protect against bright sunlight, rain, snow, etc.
- Roll Door The insulated roll door permits easy patient access from the lift into the mobile unit Control Room. The door can be controlled from pushbutton switches located both in the control room and on the outside of the Unit. It is powder coated for lasting durability. For security purposes the door has an on/off switch located inside the unit.
- Roll Door Emergency Release: A cable operated, roll door emergency release mechanism is installed above the roll door controls. When pulled the emergency release will disengage the roll door clutch motor allowing the roll door to be opened manually by the staff.
- Main Entry Door: A high quality, all aluminum, insulated main entry door with door closer and window is installed. The door is fitted with an adjustable privacy blind on the window. The exterior handle and deadbolt lock is located 80 in. from the ground, there is one footstep on the side for entry door entrance allowing easy access to the lock without the entry stairs being deployed.
- Drip Rails: Drip rails are installed over the main entry door, rear access door and the front emergency exit service door and also along the roofline on all sides of the mobile unit.

### III. EXTERIOR (Continued)

- Aluminum Stair Assembly: An aluminum stair with large top step assembly with a handrail for staff entry into the control area is provided. The stairs include two (2) adjustable feet to assist with leveling the stairs at the site.
- Emergency Exit/Service Door: A 36 inch wide positive latching, insulated emergency exit/service door is installed on the left side of the trailer in the equipment room.
- Footstep and Grab Handle, Rear Service Door: Three (3) heavy-duty, flip down stainless steel footsteps and a chrome finished grab handle are installed on the rear of the trailer to facilitate entry into the rear of the trailer (behind the magnet).
- Underbody Compartment Doors: The underbody compartment doors are:

  - Aluminum construction, corrosion resistant
  - Insulated
  - Recessed to prevent moisture from entering
  - Double sealed
  - Lockable
  - Hinged at the top
  - Opened with gas assist cylinders
- Level Gauges: Three (3) permanently mounted level gauges, 1 in the front, 1 on the left side and 1 on the rear are provided to assist with leveling the unit.
- Scene Lighting: Recessed scene lighting is placed on the back and each side of the trailer to assist with sighting the trailer at night. The lights are on a 30-minute timer that is housed in the underbody compartment.
- Reflective Tape: Red and white striped reflective DOT tape is installed around the perimeter of the trailer. OSV exceeds the DOT safety standards, increasing nighttime visibility and safety.

### III. EXTERIOR (Continued)

- Lockbox: A weather proof steel combination lockbox in a protective rubber boot is mounted on the front of the trailer to store keys.
- Exterior Graphics: An allowance of \$1,150.00 is included in the price of the mobile unit for the provision and installation of custom vinyl graphics on the exterior of the mobile unit.

### IV. INTERIOR

- Magnetic Shielding: The MRI unit is equipped with magnetic shielding. The exclusion zone for cardiac pacemakers, nerostimulators, and other biostimulation devices is recommended at 5 gauss (0.5mT). Signs provided by the medical equipment manufacturer, must be posted to alert all who approach the unit of this requirement. The appropriate warning signs are permanently attached to the scan room doors.

The 1.0T and 1.5T magnet systems exclusion zone (5) gauss is restricted to within 6” of the exterior of the mobile unit.

- RFI Shielding: The R.F. shield is included with the MRI system and will provide minimum level of attenuation: GE 10Mhz – 100Mhz, 85 db (plane wave, electronic field, magnetic wave; SIEMENS 15Mhz - 128Mhz, 90 db; PHILIPS 10 Mhz – 100Mhz, 100 db
- RF Windows: RF windows are installed in the partition wall and scan room door. This allows easy patient monitoring from either a standing position or a sitting position at the operator’s console.
- Equipment Room Partition Wall: The equipment room is separated from the control room by a partition wall and a positive latched interior door with a deadbolt lock for transport.

## IV. INTERIOR (Continued)

- ❑ **Solid Surface Countertops:** An ergonomically designed solid surface Corian™ countertop is installed in the Control and Scan areas. This provides a tough wearing surface that will look great for years and adds a pleasant touch to the working environment. These surfaces are provided in blue or green colors.
- ❑ **Ceilings:** The ceiling in the mobile unit is constructed with highly reflective, insulated acoustical tiles for reduced noise. To enhance the work area, a combination of lighting is installed throughout the mobile unit.
- ❑ **Storage Cabinets:** Decorative laminated storage cabinets, featuring coordinating edge banding to match the Corian™ countertops, include adjustable shelving and positive cam latches. The cabinetry is optimized in the scan and control areas to accommodate customer needs and the storage of phantoms, coils, etc.
- ❑ **Under Cabinet Lighting:** Dimmable under cabinet lighting provides working light for the technicians work area.
- ❑ **Changing Curtain:** A patient changing area in the control room provides a private, heated and lighted space for changing into a gown.
- ❑ **Crash Rail:** A color coordinating crash rail is provided on the walls of the scan room to help protect the wall from being damaged by a gurney.
- ❑ **Artwork:** One (1) decorative art print in high quality frames is placed in the scan room to enhance the interior ambiance.

## IV. INTERIOR (Continued)

- **Wall Coverings:** The mobile unit incorporates extensive use of high quality hospital grade wall coverings. All materials have been selected for ease of cleaning and durability. Particular attention has been paid to the selection of color schemes to insure proper contrast and compatibility with the medical equipment.
- **Floor Covering:** An attractive hospital grade, easy clean, durable vinyl flooring is provided throughout the mobile unit. This single piece flooring is easy to keep clean, eliminating the build-up of dirt in seams.
- **A/C Discharge Louvers:** Ceiling mounted air-conditioning discharge louvers are configured to minimize downdrafts while providing the proper airflow to maintain specified ambient environmental conditions.
- **Stereo System:** An AM/FM Stereo receiver with built-in CD player is installed in the control room wall below the storage cabinets. High quality ceiling mounted speakers are installed in the control room ceiling providing a comfortable working atmosphere.
- **I.V. Track:** A ceiling mounted I.V. drip holder rail track is installed in the scan room.
- **Backlit Film Illuminator:** A backlit, film illuminator is mounted in the control room above the solid surface countertop.

## V. ELECTRICAL & ENVIRONMENTAL SYSTEMS

- **Main Electrical Disconnect Panel:** The main 480V electrical incoming power disconnect panel is located in the left side underbody storage compartment.





## V. ELECTRICAL & ENVIRONMENTAL SYSTEMS (Continued)

- **Electrical Distribution Panel:** An electrical distribution panel is located in the equipment room. This panel provides the ability to isolate the certain sections of the unit for maintenance and service.
- **Power Selection Switch:** The mobile unit status panel includes a voltage selector switch that lets you select shore power, off or generator power. This panel is located in the equipment room. LED voltage level; indicator warning lights for voltage and chiller operation.
- **Warning Lights:** The mobile unit status panel, located in the equipment room, provides three warning lights. The first one should be illuminated letting you know that your unit is receiving 480 v power; the second light will light if your power connection is out of phase; third light will illuminate when your humidifier water supply is low.
- **Roll Door On/off Switch:** An on/off security switch for the roll door is mounted on the interior wall near the entrance to enhance the security and safety of the mobile unit.
- **Platform lift Position Indicator Light:** A green indicator light lets you know when the platform lift is in the up position. This provides safeguards against opening the roll door when the lift is in the down position. The light is conveniently located near the control door controls to ensure safety of the patient and operator.
- **Emergency Lighting Inside the Unit:** An automatic emergency lighting system is installed in the mobile unit to provide light, when the power supply is disconnected.
- **Underbody Compartment Low Voltage Lighting System:** A manually operated, low voltage lighting system is located in the underbody compartment, providing light during set-up of the unit. The light is operated by a 30 minute timer for your convenience. Lighting system is not available in the fuel and cryogen compressor compartments.

## V. ELECTRICAL & ENVIRONMENTAL SYSTEMS (Continued)

- **Lighting Controls:** Separate lighting system controls for the scan room and control area permit the operator to individually control the lighting in each area.
- **Service Outlets:** One (1) GFCI 120 VAC duplex service outlet is installed on each side of the underbody compartments.
- **Marker Lights:** L.E.D. type marker and side turn signal lights are installed on the trailer body to assist the driver with maneuvering the trailer.
- **Cable Reel Service Light:** A cable reel service light is installed in the equipment room. This retractable light comes in handy for servicing the system cabinets
- **Main Entry Door Light:** An exterior surface mounted, weatherproof light fixture is mounted on the wall adjacent to the staff entry door and platform lift.
- **DC power supplies:** One DC power supply is located in the underbody to maintain the 12 VDC lighting. The other DC power supply consists of a 1.5 amp trickle charger mounted on the generator to charge the generator batteries.
- **Air Filters:** Replaceable air filters are mounted in the air plenum in the Equipment Room of the mobile unit and in the down stream blowers.
- **Air Conditioning / Heating Systems with chiller:** A custom designed, high performance air conditioning system with an integrated water chiller gives you piece of mind with its electronic interface panel. This interface panel provides self-diagnostics, telephone interface and a computer interface to monitor performance and pinpoint service issues. The system provides close tolerance temperature levels to assure proper MRI system function as well as staff and patient comfort.



## V. ELECTRICAL & ENVIRONMENTAL SYSTEMS (Continued)

- Thermostats: Adjustable temperature, “Penn Controls” are set by OSV to the OEM requirements to ensure the proper operating temperature ranges for the medical equipment and staff. The placement of the controls above the ceiling eliminates the operators from adjusting temperatures that could result in damage to the system electronics and reduced performance.
- HVAC Distribution: Separate air supplies for the equipment and scan rooms ensure an adequate air supply to the temperature sensitive medical equipment.
- A/C Ductwork: The air conditioning ductwork is lined with a sound absorbent material for reduced noise and operator and patient comfort.
- Environmental Testing: OSV mobile Units are environmentally tested and certified for operation at temperatures ranging from  $-20^{\circ}$  F to  $+110^{\circ}$  F.
- Generator: A sound attenuated 60KW diesel generator, with engine block heater, is installed on the front of the mobile unit in a corrosion resistant cabinet to keep the generator out of the elements. The generator maintains the environmental control system, magnet shield cooler, and service equipment while the mobile unit is in transit or in set-up/take-down mode.
- Water Chiller System: A custom designed water chiller system is integrated into the air conditioning system, freeing up additional storage space in the underbody compartment.
- Fuel Tank: A 70-gallon fuel tank with level indicator is installed in a separate underbody compartment.

## V. ELECTRICAL & ENVIRONMENTAL SYSTEMS (Continued)

- Humidifier: A packaged steam humidifier system with a water storage tank is installed in the equipment room. It interfaces with the air conditioning ductwork to provide consistent humidity levels throughout the mobile unit. Maintaining humidity levels to medical equipment manufactures specifications is critical to proper operation and reduced downtime.
- Main Power Cable and Connector: A flexible, five (5) core, fifty (50') long electrical power cable with a weather resistant RussellStoll DS2504MP connector with protective rubber collar is provided and stored in the underbody storage compartment. The cable can be deployed from either side of the underbody compartment.
- Telephone and Data Connections: Three (3) telephone, Three (3) CAT5 data connection and the A/C chiller data cable is installed in the control room of the mobile unit. A/C Data goes directly from the OSV unit to the Belly Compartment.

Three (3) Hubbell type telephone and Three (3) data connections, with three (3) fifty (50') weatherproof Hubbell-cords are installed in the underbody compartment.
- Certification: The OSV trailer and installation of the medical equipment is “certified” by the MRI system equipment manufacturer.
- Medical Equipment Installation: The MRI magnet, system components and cabling are all installed by experienced OSV installers.

## VI. ADDITIONAL FEATURES and SERVICES

- **Site Planning:** OSV mobile unit site planning guides are available upon request. This comprehensive guide provides essential dimensions and specifications to prepare your site pad, electrical connections and communications connections.
  
- **Manuals:** Every new mobile MRI unit comes with a set of operator maintenance and service manuals.
  
- **Training Program:** OSV offers a product orientation and training program for key personnel with the delivery of each mobile MRI unit. This four (4) hour training session is available at the manufacturing facility at the time of delivery. If you prefer to have the training at your facility, one of our Field Service Technicians can perform this for an additional charge.

## VII. SAFETY FEATURES

- **Common Floor Height:** The patient entry, personnel entry and operating interior floor are all at the same height for safety.
  
- **Entry Lighting:** An exterior light fixture is installed near the entry door and patient for safety.
  
- **Emergency Off:** A medical system “Emergency Off” button is conveniently located near the entry door.
  
- **Platform lift Pins:** Two safety, locking, pins are located near the platform lift cradle. These two pins, when properly installed, prevent the platform lift from coming loose and deploying during transit.

## VII. SAFETY FEATURES (Continued)

- ❑ **Emergency Lighting:** Exit signs and emergency lighting are placed in key areas of the mobile unit to help in an evacuation upon a power failure.
- ❑ **ABS Braking System:** An approved anti-lock braking system is installed for increased safety.
- ❑ **Fire Extinguisher:** Two (2) hand-held ABC all-purpose, dry chemical non-ferrous fire extinguishers are provided. One is installed in control room, the other in the equipment room.
- ❑ **Integrated Transport Warning System:** An integrated warning light assembly is located on the left side of the trailer, providing easy visibility for the driver from his position in the tractor. The comprehensive warning lights provide warnings for the following conditions:

  - 480V power is on.
  - The Platform lift is not properly stowed.
  - An air suspension warning light alerts the driver that the air pressure in the suspension system is low.
  - The Anti-Lock Braking System is not working correctly.
- ❑ **Platform lift Position Indicator Light:** A green indicator light lets you know when the platform lift is in the up position. This safeguards against opening the patient roll door when the lift is in the down position. The light is conveniently located near the control door controls to ensure safety of the patient and operator.

## VIII. CUSTOMER SERVICE and WARRANTY

- Customer Service Center: OSV's Service Solutions operates a toll free Customer Service Hotline, 1-800-839-0630, for all of your service, parts and warranty issues. The hotline is answered 24 hours a day, 7 days a week, 365 days a year.
- Warranty: A one (1) year warranty is standard on all of our mobile units. However, OSV does offer extended service contracts if you're interested.
- Parts: We carry a large inventory of replacement parts for your OSV mobile unit. We also offer on-line part ordering on our web site.
- Field Service: OSV Service Solutions is provided by a combination of OSV Technicians, original equipment manufacturers and authorized third-party service centers.

## IX. OPTIONS

- Patient Sound: A Patient Sound system is installed in the scan room prior to the delivery of the mobile unit.

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- Sinks: OSV offers two sink options to satisfy either an operational or a state requirement. A stainless steel sink is available in either a fixed configuration or as a fully self-contained portable sink.
- Patient Gurney: A non-ferrous metal, padded patient gurney can be added to your order.
- Fire Suppression System: The entire mobile unit can be protected with a fire suppression system. The system tanks are installed in the equipment room to minimize its effect on operating space in the control room. Contacts for remote operation in belly of unit.



## IX. OPTIONS (Continued)

- ❑ **Fire Detection System:** An automatic fire detection system is installed in the scan, control and equipment rooms. Contacts for connection to a remote fire alarm enunciator panel are provided in the underbody compartment.
- ❑ **Bottled Gas Connections:** Oxygen and suction connections can be located in the scan room, allowing the use of facility gases and suction eliminating the need to carry bottles on the unit.
- ❑ **Roll Door Curtain:** A thermal barrier curtain is available to help shield the interior of the trailer from sudden changes in temperature when the patient roll door is open.
- ❑ **Intrusion Alarm:** An intrusion alarm system can be installed to monitor activity in the underbody compartments and in the operator's area.
- ❑ **Wall Murals:** A 48"H x 146" wall mural of mounted flat on the wall of the scan room. This high quality photographic print is mounted 1/8" Centra with a luster laminate to protect the image from everyday wear and tear. OSV offers you several images to choose from.  
Note: If Mural is selected, the standard wall art is omitted.
- ❑ **Custom Exteriors:** OSV offers custom painted exteriors or bus wrapped exteriors to help you with your branding campaign or to simply get your marketing message out to the public. If you wish to make your mobile unit a rolling billboard we can help you develop the paint or graphics scheme to get your message across.
- ❑ **Injectors:** OSV offers the installation of patient injectors in the scan room.
- ❑ **Interior Colors:** OSV offers the option of two different interior color schemes; green or blue.  
Note: The selection of a color that is not in stock may cause a delay in delivering a unit.





## IX. OPTIONS (Continued)

- ❑ Cold Weather Package:
  - Full and extra foam under the trailer.
  - Aircraft fluid in the landing legs and lift gate.
  - Vinyl Velcro cover over the equipment room door, rear RFI door and hatch.
  - Curtain by the roll door.
  - 50/50 glycol mix in primary water cooling circuit.
  - Extra under body compartment heater by the fuel tank.
  - Weather covers for compartment door locks.

## X. SITE PLAN HIGHLIGHTS

- ❑ Tractor Specifications:
  - Tractor weight of 17,000 pounds or less
  - Air ride suspension
  - 82" swing clearance between kingpin and cab
  - 34,000 lb. rear bogie rating
  - 12,000 lb. front axle rating
- ❑ Site Pad Requirements:
  - Recommended size 12' x 52'
  - Pad thickness based on local soil conditions
  - Pad levelness should be not less than 1/8" per 10 feet.
- ❑ Mobile Unit Specifications:
  - Overall length: 51'-3"
  - Overall width: 8'-6"
  - Overall height: 13'-6"
  - Power requirements: 480 V, 3Ø fused at 150 amps
  - Personnel door width: 44" O.D. 40<sup>3</sup>/<sub>4</sub>" I.D.
  - Platform lift Entry Width: 78<sup>3</sup>/<sub>4</sub>" O.D. 76<sup>1</sup>/<sub>4</sub>" I.D.
- ❑ Water and Plumbing: A water tank for the humidifier is located in the equipment room. The tank is fitted with a standard garden hose connection for convenience.



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## X. SITE PLAN HIGHLIGHTS Continued

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| □ Telephone and Data: | There are three phone and data cable connections located in the underbody, near the main power cable. The telephone connections are standard marine type, Hubbell connections. The data connections utilize the RJ-45 outlets.<br>Note: The customer is required to purchase data cables. |
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