



Elliott
Machine Works, Inc.

Custom Manufacturers of Mobile Service Equipment

Total Quality Since 1948



LOCOMOTIVE SERVICE UNIT

The "Locomotive Service Unit" provides on-site maintenance of motive power within the severe, off-road environment typical of railroad service facilities. It meets all current requirements for fuel transport outlined in "The Code of Federal Regulations Title 49" Section (178.345) (Dot-406).

'ELLIOTT MACHINE WORKS, INC.', IS A CERTIFIED HAZARDOUS MATERIALS CARGO TANK MANUFACTURER AND ASSEMBLER. CURRENT FEDERAL REGISTRATION "CT-5770".

The "Locomotive Service Unit" consists of the following major systems and components installed to a truck chassis furnished by Peterbilt:

- (1) Ea: Recommended truck chassis, customer-furnished.
- (1) Ea: Group: Estimated weights and dimensions.

- (1) Ea: Diesel fuel tank, (3,500) U.S. gallons, 'DOT-406' certified.
- (1) Ea: Main platform assembly, all-steel, all-welded construction.
- (1) Ea: Rear platform assembly, all-steel, all-welded construction.
- (1) Ea: Equipment compartment, rear, w/ aluminum roll-up door.

- (1) Ea: Product tank, (200) U.S. gallons, "Lubricant" service.
- (1) Ea: Product tank, (200) U.S. gallons, "Water" service.

- (1) Ea: Sand hopper, pressurized, (80) cubic-foot capacity.

- (1) Ea: Group: Body mounting, "Diesel Fuel" tank.
- (1) Ea: Group: Mounting group, platform body.

- (2) Ea: Storage cabinet, under-body.

- (1) Ea: Group: Accessories.
- (1) Ea: Group: Finish coatings, oven-baked acrylic urethane.

- (1) Ea: Hydraulic system, "central", open-loop.
- (1) Ea: Diesel fuel system, hydraulic-powered.
- (1) Ea: Hydraulic oil dispensing system, hydraulic-powered.
- (1) Ea: Water dispensing system, air-powered.
- (1) Ea: Air distribution system.
- (1) Ea: Sand dispensing system, air-powered.

August 6, 2013

SPECIFICATIONS: LOCOMOTIVE SERVICE UNIT

RECOMMENDED TRUCK CHASSIS (Customer-furnished)

Type: Conventional cab, (6x4) w/ auxiliary lift-axle.
Make/ model: 'Peterbilt' model 348 or equal
GVWR: (86,000) Lb w/ lift-axle
Capacity, rear axle: (46,000) Lb.
Capacity, lift-axle: (20,000) Lb.

Wheelbase, factory: (282.00) Inches
Cab-trunnion: (212.00) Inches
Capacity, front axle: (20,000) Lb.
Engine: High-idle speed control.
Transmission: PTO provisions.

GROUP: ESTIMATED WEIGHTS AND DIMENSIONS

Gross weight: (77,101) Pounds
Front axle, loaded: (19,647) Pounds
Rear axle, loaded: (35,454) Pounds
Lift-axle pressure: (18,000) Pounds

Width, overall: (96.00) Inches
Length behind cab: (329.00) Inches
Height above truck frame: (93.00) Inches

DIESEL FUEL TANK

Type: "Diesel Fuel", single-compartment, all-steel, all-welded construction, 'DOT-406' certification.
Volume: (3,500) U.S. gallons, plus (3%) expansion volume.
Tank heads: Flanged and dished, (0.1345") high-strength, low-alloy steel, ASTM A607-50.
Welded (100%) full-perimeter inside and outside.
Tank baffle: (3) Each, flanged and dished, (0.1345") high-strength, low-alloy steel, ASTM A607-50.
Tank shell: Upper: (0.1345") high-strength, low-alloy steel, ASTM A607-50.
Lower: (0.1875") high-strength, low-alloy steel, ASTM A607-50.
Long sills: Full-length, formed steel box-type.
Bolsters: Front and rear, cover tank long sills.
Mid ship, reinforces long sills to tank shell at cross-baffle location.
ROPS: Rollover protection system, top-mounted, full-length w/ catwalk between rails.
End caps with fluid drain hose included.
Manhole: Top-mounted, (20") diameter w/ (10") hinged and vented fill cover.
Outlet: Tank bottom, (3") TTMA sump assembly.
Brackets: Tank mounting, structural steel (ASTM A36).
Fill port: Top, 'Houston-Weber' #HW-1023
Pilot valve: 'Houston-Weber' #HW-1042A
Dust cap: 'Houston-Weber' #HW-1024
Hose ass'y: 'Houston-Weber' #1025-30
Internal valve: Top, (4") emergency valve, remote-actuated.
Bottom, (3") emergency valve, remote-actuated.
Top fitting: 'Buckeye', (1-1/4")
Ladder: Street side rear w/ upper service platform, accessible from main platform.

NOTES Tank is certified to all current U.S. Federal DOT-406 regulations.
Tank is top-filled through the 'Houston-Weber' fittings.
Top-fill group uses an internal emergency valve, remote-actuated.
Top manhole includes a hinged (10") cover.
Truck chassis parking brakes "apply" when (10") manhole cover is opened.

PLATFORM ASSEMBLY - MAIN

Type: All-steel, all-welded construction.
Dimension: Length: (102.00) Inches
Width: (96.00) Inches
Long sills: Full-length, rectangular steel tubing, ASTM A500-B.
Cross members: Structural steel, spaced on (16") centers.

August 6, 2013

SPECIFICATIONS: LOCOMOTIVE SERVICE UNIT

PLATFORM ASSEMBLY - MAIN - Continued

Side rails: Full-length, rectangular steel tubing, ASTM A500-B.
Floor: Steel, safety diamond plate, (0.1875").
Gussets: Attach cross members and long sills at each contact point.
Light brackets: Recessed.
Mud guards: Steel, integrated with platform.
Walkway: Galvanized steel grip-strut.

PLATFORM - REAR

Location: Rear of service unit; Reinforced to truck chassis frame and "Main Platform".
Function: Lowers dispensing equipment controls.
Fabrication: All-steel, all-welded construction.
Cross members: Full-width, rectangular steel tubing.
Rear bumper: Conforms to U.S. Federal 'DOT-406' regulations.
Rear lamps: Stop-Tail-Turn, integral w/ platform including expanded steel covers.

EQUIPMENT COMPARTMENT - REAR

Type: All-steel, all-welded construction.
Location: Installed to "Rear Platform".
Material: (0.1046") AISI 1018-1020 HRS.
Door: Aluminum, shutter-style, roll-up w/ keyed lock.
Reel fixture: Multi-level w/ sloped floor and fluid catch tray w/ manual drain port.
Lighting: Interior, (2) each, (12VDC), illuminate dispensing equipment.
Nozzle hooks: (4) Each, installed at rear, (2) each side.

GROUP: PRODUCT TANKS

(1) Ea: (200) U.S. gallons, "Lubricant" service, stainless steel construction.
(1) Ea: (200) U.S. gallons, "Water" service, stainless steel construction.

Type: Rectangular construction, designed for "lubricant" and "water" service.
Fabrication: Large-radius formed corners reduce stresses; Large-flange end panels provide "double wall" corners.
Mounting: Structural steel (ASTM A-36).
Fill port: (4") nominal diameter, non-vented, quick-opening w/ 'O' ring seal.
Vent: Top-mounted, filtered to (10) microns, raised to prevent spillage during vehicle travel.
Drain(s): Bottom w/ gate valve and plugged outlet; Accessible from side of "Service Unit".
Baffle: Interior, controls fluid surging.
Level gauge: (3) Each, glass-eye type w/ expanded metal guard (finish-coated "MATTE BLACK").
Material: Stainless steel, Type 304-2B.

NOTE: TANKS ARE TESTED IN ACCORDANCE TO 'CODE OF FEDERAL REGULATIONS TITLE 49' SECTION (178.345) "PNEUMATIC TEST" METHOD. TEST RECORDS ARE KEPT ON PERMANENT FILE FOLLOWING UNIT COMPLETION.

GROUND-FILL GROUP

Function: Fills "Water Tank" from a pressurized outside source.
Air gap: Anti-siphon at top of "Water Tank" prevents back-siphon into water supply.
Shield: Weather, stainless steel, installed above tank ground-fill opening.
Fill coupler: Standard, garden hose, (3/4") male with dust cap.

August 6, 2013

SPECIFICATIONS: LOCOMOTIVE SERVICE UNIT

SAND HOPPER

Certification: 'ASME' ('U' Stamp), pressure vessel.
Pressure: Working: (150) PSI

Test: (225) PSI
 Volume: (80) Cubic feet, (8,000) Pounds
 Shape: Cylindrical cross-section.
 Fill port: Top, (4") diameter w/ threaded fill cap.
 Portal(s): Top inspection, (12" x 16") 'ASME' certified.
 Lower street side, (12" x 16") 'ASME' certified.
 Outlet: Bottom, (3") 'ASME' flange-type.
 Relief valve: Pressure, (1-1/2") 'ASME' top-mounted.
 Vent line: (1-1/2") nominal diameter front top to below platform level.
 Shut-off valve, (1-1/2") located at top vent port.
 Shut-off valve, (1-1/2") located at main platform level.
 Inlet port: Air pressure, top-mounted, (1-1/2").
 Ladder: Tubular steel w/ grip-strut steps.
 Platform: Service, accessible at top of ladder; Includes (4") high toe rail.

GROUP: SPRING-LOADED -DIESEL FUEL TANK

Isolators: Combination steel-backed rubber pad and composite rubber, full-length of tank.
 Separates body long sills from truck chassis frame.
 Mounting: Spring-loaded w/ 'Elliott' "H" bracket alignment bracket(s); Each side.
 "Fixed Position" mounting assemblies are NOT used.
 Guides: Lateral, structural steel, (1) each side.

GROUP: SPRING-LOADED - PLATFORM BODY

Isolators: Combination steel-backed rubber pad and composite rubber, full-length of platform.
 Separates body long sills from truck chassis frame.
 Mounting: Spring-loaded w/ 'Elliott' "H" bracket alignment bracket(s); (1) Each side.
 "Fixed Position" mounting assemblies: (2) Each side.
 Guides: Lateral, structural steel, (1) each side.

STORAGE CABINETS

Type: Rectangular, all-steel, all-welded construction.
 Fabrication: Cabinet body: (0.1046") stainless steel.
 Door(s): (0.0747") stainless steel.
 Hinges: Strap-type, polished stainless steel.
 Door seal: Full-perimeter, automotive-type, closed-cell.
 Door latch: Bar-type, over-center w/ cam-style retainers.
 Floor cover: Corrosion-proof, "Dri-Deck" floor tiles.

(1) Ea: Street side front, under-body, (32") L x (24") H x (26") D.
 (1) Ea: Street side rear, under-body, (36") L x (18") H x (26") D.
 (1) Ea: Curb side front, under-body, (36") L x (18") H x (26") D.
 (1) Ea: Curb side front, under-body, ~~DELETED~~.
 (1) Ea: Curb side rear, under-body, (36") L x (18") H x (26") D.

August 6, 2013

SPECIFICATIONS: LOCOMOTIVE SERVICE UNIT

GROUP: ACCESSORIES

Lighting: Exterior, marker lamps, stop-tail-turn-reverse, 'Truck Lite' (LED) per FMVSS-108.
 Wiring: (14) gage, (19) strand, thermal-insulated protected by convoluted loom.
 Connector: From truck chassis to body, 'Deutsch' weather-sealed.

Bumper: Rear, steel U.S. Federal 'DOT-406' certified.
 Placards: 'Federal DOT' hazardous material identification number '1993'.
 Mud flaps: Rubber, heavy-duty w/ anti-sail brackets.
 Extinguisher: Fire, Type 'ABC', (20) lb w/ bracket and weather cover.
 Fire, Type 'ABC', (5) lb w/ bracket and weather cover.
 Manuals: (1) Set, operation/ parts, ENGLISH only.
 Alarm: Reverse, (12VDC), electronic mono-tone.
 Work lights: (2) Each, installed at rear of unit, (12VDC), halogen; Manually-adjustable; Switched from cab.
 Striping: Sides and rear, conspicuity red/ white.
 Tow hooks: Rear, rated to vehicle 'GVWR'.
 Steps: Rear under-bumper, flexible cable-type.
 Street side, folding w/ LH & RH assist bars.
 Extension: Rear wheel, covers full-width of truck chassis' rear running gear.
 ID tags: Installed to each product tank and hose reel.

FLUID CATCH TANK

Function: Captures fluids from "Diesel Tank" catwalk and flow meter air eliminators.
 Location: Installed under-body w/ easily accessible drain valve.
 Material: All-steel, all-welded construction.
 Vent: Atmospheric, filtered to (10) microns.

GROUP: BODY ELECTRICAL

Truck chassis: STOP-TAIL-TURN and MARKER lamps: "Truck Lite" LED.
 Installation: ALL lamps are recessed and protected.
 Power source: Truck chassis' body builder's wiring harness.

Work lamps: (12VDC) halogen operated in pairs from operator's position in chassis cab.
 (2) Each: Installed at front of "Diesel Fuel" tank; (1) Each side.
 (2) Each: Installed toward rear of "Diesel Fuel" tank; (1) Each side.
 (2) Each: Installed to top, front, of "Equipment Compartment"; (1) Each side.
 (2) Each: Installed to top, rear, of "Equipment Compartment"; (1) Each side.

Reverse lamps: (2) Each: (12VDC) halogen, installed at top, rear of "Equipment Compartment".
 (1) Each side; Includes load-carrying electrical relay(s); Control circuit limited to (0.75) amperes.

Rear lamps: (12VDC) halogen installed in rear "Equipment Compartment".
 (2) Each: Installed to direct light toward hose reels and dispensing equipment.
 Load-carrying relay limits control circuit amperage to (0.75).
 Truck chassis dash-mounted indicator lamp (RED) illuminates when compartment lamps are on.

Cabinet lamps: (12VDC) LED installed in under-body "Storage Cabinets".
 (2) Each: Installed in each "Storage Cabinet".
 Lamps function when truck chassis headlamps are "on".

August 6, 2013

SPECIFICATIONS: LOCOMOTIVE SERVICE UNIT

GROUP: FINISH COATINGS

Type: Primer, 'PPG' high-build, electro-statically-charged, epoxy, oven-baked.
 Finish, 'PPG' "Essential", oven-baked, acrylic-urethane.
 Color: ONE COLOR, customer-choice.
 Preparation: All coated services are mechanically-cleaned, chemically-washed, and air-dried.

NOTES: INTERIOR SURFACES OF PRODUCT TANKS ARE NOT FINISH-COATED.

TWO-STAGE OR CUSTOM COLORS AVAILABLE AT EXTRA CHARGE.

HYDRAULIC SYSTEM - CENTRAL

Type: Open-loop, gear-type hydraulic pump direct-coupled to the transmission power take-off (PTO).
Function: Powers "Diesel Fuel" and "Hydraulic Oil" dispensing system(s).
PTO: Front-mount, engine crankshaft driven w/ (12VDC) cab-controlled clutch.
Reservoir: (30) U.S. gallons, minimum, w/ return oil filtration (10 microns), pump isolator valve, visual fluid level indicator/ thermometer.
Control(s): Toggle switch control operates hydraulic pump clutch.
Pump: Hydraulic, gear-type, "dri-valve".
Motor(s): Hydraulic gear-type, direct-coupled to "Diesel Fuel" and "Hydraulic Oil" dispensing pumps.
Valve(s): Hydraulic, manual directional control w/ proportional feature; Includes pressure relief valve.
Conduit: Hydraulic lines from back of chassis to rear of service unit are steel tubing.

NOTES: Galvanized steel pipe/ fittings are NOT used; Steel pipe and fittings are BLACK IRON.
Truck chassis' parking brakes apply when hydraulic clutch pump is engaged.

DISPENSING SYSTEM - DIESEL FUEL

Type: Vane-type pump, hydraulic-powered w/ direct-coupled hydraulic motor.
Pump: 'Blackmer' model TXD-3E w/ integral pressure relief valve.
Flow rate: (190) GPM measured at the fuel pump outlet port.
Pump base: Structural steel, all-welded.
Strainer: Pump suction, basket-type (40 mesh), easily accessible for maintenance.
Service hose: Non-collapsible, (2" x 75'-0") long w/ crimped ends (NPT).
Valve: Fuel dispense, 'Wiggins' (1-1/2") automatic shut-off w. inlet swivel.
Hose reel: 'Hannay' electric-rewind (12VDC) w/ auxiliary manual rewind and hose stop.
Flow meter: Equipped w/ "friction-type" drum brake: Rewind motor produces (1/2) HP @ (400-450) RPM.
Mechanical, "Liquid Controls" (3") model #M15-CL1 (200 GPM).
Air eliminator, mechanical register (GALLONS): Air eliminator by-passes to under-body fluid catch tank.
E-valve: Internal emergency valve, (3"), DOT-approved, remote-actuated.
"RED" indicator lamp illuminates when e-valve is open; Indicator lamp is located in rear "Equipment Compartment" adjacent to the e-valve operator.
Piping: Combination steel pipe and hard rubber hose.
Catch tank: Steel, captures discharge fluid from flow meter air eliminator.

LUBRICANT SYSTEM - HYDRAULIC POWERED

Quantity: (1) Each.
Type: Hydraulic-powered,
Pump: Vane-type, direct-coupled to the hydraulic motor, 'Blackmer' model #TXV-2-1/2A.
Equipped with integral pressure relief valve, "high clearance" rotor and bronze vanes.
Strainer: Installed in pump suction line.
Service hose: (1-1/4" x 75'-0") long w/ crimped ends (NPT).
Hose reel: 'Hannay' spring-return w/ hose ball stop.
Control: High-volume manual.
Output: (9-12) GPM at dispense valve outlet.

NOTES: Galvanized steel pipe/ fittings are NOT used; Steel pipe and fittings are BLACK IRON.

August 6, 2013

SPECIFICATIONS: LOCOMOTIVE SERVICE UNIT

WATER SYSTEM

Type: Air-powered, diaphragm-type pump (1:1) ratio.
Pump: 'Graco' model (236251).
Service hose: (1/2" x 50'-0") long w/ crimped ends, "WATER" service.
Hose reel: 'Hannay' spring return w/ hose ball stop.
Control: 'Graco' #222-413.
Isolator: (1/4) turn installed at water pump inlet port.
Regulator: Air pressure w/ gauge installed at water pump inlet port.

Drain valve: Tank and dispensing system equipped with central drain system using (1) valve.

AIR DISTRIBUTION SYSTEM

Source: Air system uses locomotive air supply.
Hose reel: (1) Each, 'Hannay' spring-return w/ hose ball stop.
Service hose: (1) Each, (1/2" x 75'-0") long w/ female quick-disconnect coupling.
Manifold: Air distribution, aluminum billet-style.

NOTES: Galvanized steel pipe/ fittings are NOT used; Steel pipe and fittings are BLACK IRON.

SAND DISPENSING SYSTEM

Function: Transfers sand from the "Sand Hopper" to the locomotive sand boxes using compressed air.
Service hose: (1-1/4" x 75'-0") long w/ NPT(M) crimped ends.
Hose reel: 'Hannay' (12VDC) electric rewind w/ auxiliary manual rewind w/ friction-type drum brake.
Rewind motor is (1/2) HP @ (650) RPM producing (100) pound-feet of torque.

Operation: Locomotive air pressure is introduced into top of "Sand Hopper".
Unidirectional check valve, moisture separator/ filter and air pressure regulator installed at "Sand Hopper" air inlet port; Air pressure regulator/ gauge accessible from ground level.

"Venturi" system uses air pressure/ flow across bottom sand outlet port of "Sand Hopper".
Includes unidirectional check valve, moisture separator/ filter, and regulator/ gauge.
Regulator/ gauge accessible from ground level.

NOTES: Galvanized steel pipe/ fittings are NOT used; Steel pipe and fittings are BLACK IRON.

ESTIMATED WEIGHTS 13-1667

Based on using a previous units incomplete weight (truck and body less liquid weights) the unit weighed 36,380 lbs. Adding 3,500 gallons of fuel, 8,000 lbs. of sand, and 400 gallons of oil; the gross vehicle weight will be 73,835 lbs. Allowable bridge weight calculation with a pusher axle shows: 59,167 lbs. Putting the unit over weight by 14,668 lbs.

Leaving the tank capacities and lengths the same, but changing the fuel weight to 2,500 gallons, sand to 2,000 lbs., and leaving the oil at 400 gallons; the gross vehicle weight would be 60,635 lbs.

Attached are the calculation sheets

EQUIPMENT OPTIONS

Change fuel tank construction to aluminum saving approximately 3,000 lbs. (allowing an additional 400 gallons of fuel to be carried while meeting bridge law) \$9,000.00