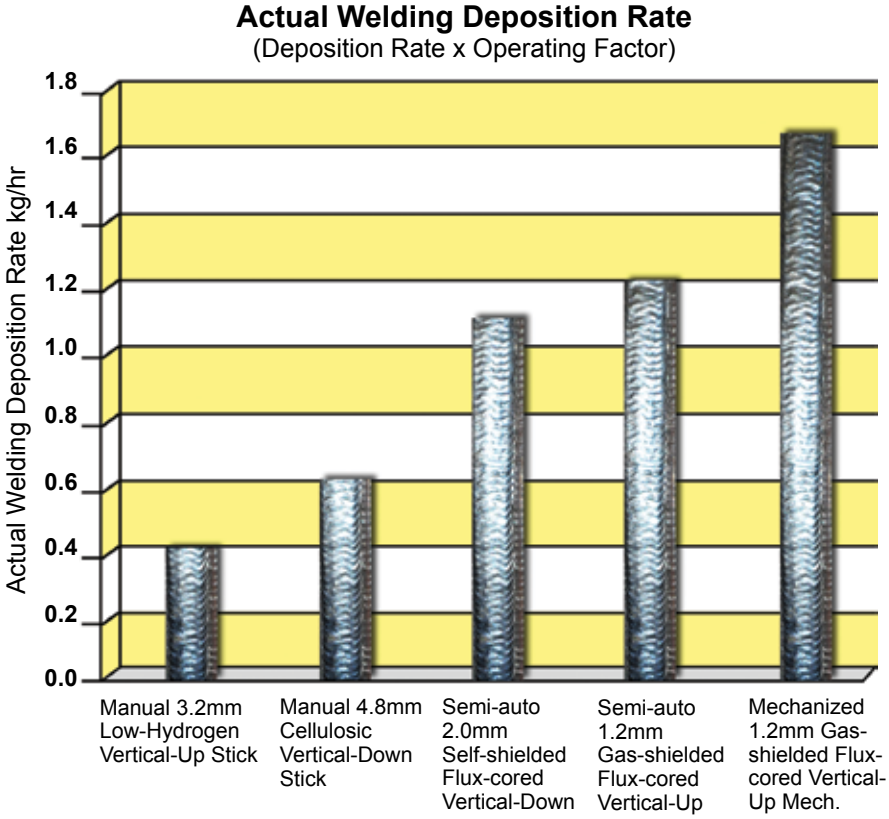
Mechanized Pipe Welding System from Bug-O

412-331-1776 www.bugo.com

Bug-O Systems is guided by honesty, integrity and ethics in service to our customers and in all we do.

PIPER-BUG MECHANIZED PIPE WELDING SYSTEM



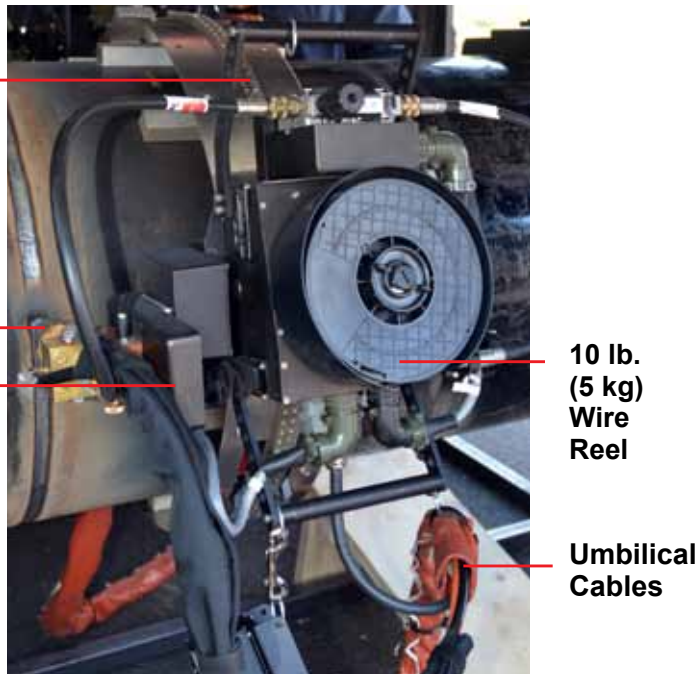
The **PIPER-BUG** is a self contained, digitally controlled, mechanized pipe welding system, producing high deposition rates with excellent weld quality to reduce pipe welding costs. Increased duty cycle and arc-on time provide significant improvements in productivity. All welding parameters, including voltage, wire feed speed, current, travel and oscillation are programmable and digitally controlled with the Piper-Bug.

Manual pipe welding requires a high level of training and skill. As skilled pipe welders become more difficult to find, mechanized welding is an economical alternative. Less welder skill and physical effort are required using mechanized welding. Handheld wire welding results in a typical operating factor (or percent arc-on time) of 40-50%, mechanizing increases the operating factor to 70% or higher. The increased arc on time reduces the number of welders and welding stations required. Also, the precise procedure control and excellent repeatability ensures consistent weld quality around each pipe joint and from one joint to the next.

Piper-Bug Overview

The **BUG-O PIPER-BUG** is a complete Pipe Welding System that includes the welding power source.

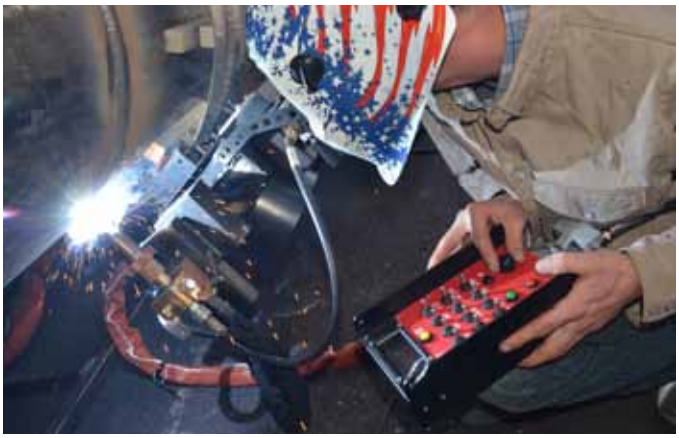
- Unique digital control box.
- Quick release mechanism for easy mounting to rail
- Microprocessor controlled panel with graphic and pendant user interfaces.
- Available with 10 lb (5 kg) spool on board or 33 lb (15 kg) separate spool on floor.
- Two pendant user options.
- Quick attach aluminum rigid ring rail with spring loaded supports or flexible stainless steel rail with adjustable feet and latch assembly.
- Lincoln Electric welding power source.
- Lincoln Electric supported welding procedures.
- Built tough for demanding environments. Rated for operating temperatures from -4°F (-20°C) to 122°F (50°C) and up to 100% relative humidity.



PIPER-BUG MECHANIZED PIPE WELDING SYSTEM

Features:

- Closed loop feedback
- Distinctive on-board current monitoring and adjustments
- Programmed for exact multi-parameter output
- Supervisor set operating limits of every adjustable parameter
- Pre-programming of an infinite number of procedures and weld passes
- Air-cooled or optional water-cooled torch



Benefits:

- Travel speed can be calibrated to provide actual travel speed on pipe O.D
- Maintains constant torch height, ensuring stable welding arc and consistent heat input
- Wire feed input can be tuned to deliver the exact amount of wire at the arc
- Accurate process control
- Allows for many different weld geometries and material thicknesses
- Water cooled torch can be used for heavy wall pipe applications

Piper-Bug Pipe Welding Kit

Each **PWS-2150 Kit** includes the following:

- Drive Unit
- Control Box
- Pendants
- Invertec® V350-PRO Welding Power Source
- Gas Regulator
- Cables
- Size Specific Drive Roll Kit

PWS-2150

Bug-O Rail

Bug-O rail systems are lightweight and durable providing versatility for all kinds of applications beyond Pipeline applications. All rail and tractors utilize rack and pinion positive drives. All carriages can be installed and removed from any point of the rail. Our Aluminum Rigid Rail design was first developed in 1948, and it has stood the test of time serving clients around the world for over 60 years, and the new Stainless Steel Rail provides even more stability and durability.

Features:

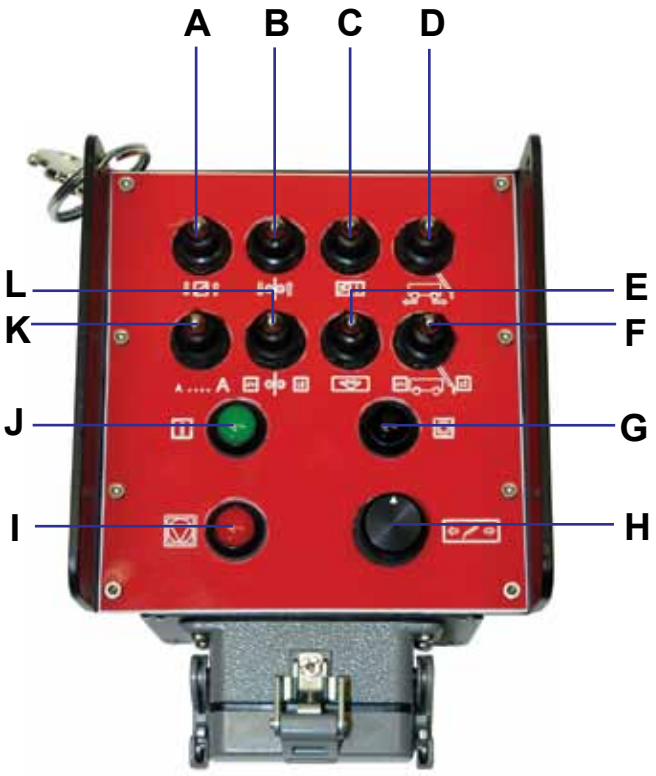
- Quick attach ring rail mounts quickly and easily to the pipe
- Spacer bars adjust and center the ring to the pipe surface
- Powerful latches lock the rail into position
- Machine mounts quickly to the rail using standoffs and a split carriage
- Accommodates pipes with a minimum outside diameter of 16" (406 mm) or larger

Benefits:

- Lightweight and easy to move from pipe to pipe
- Fast, repeatable setup
- Fast removal
- Large surface area on support bars protects the pipe surface

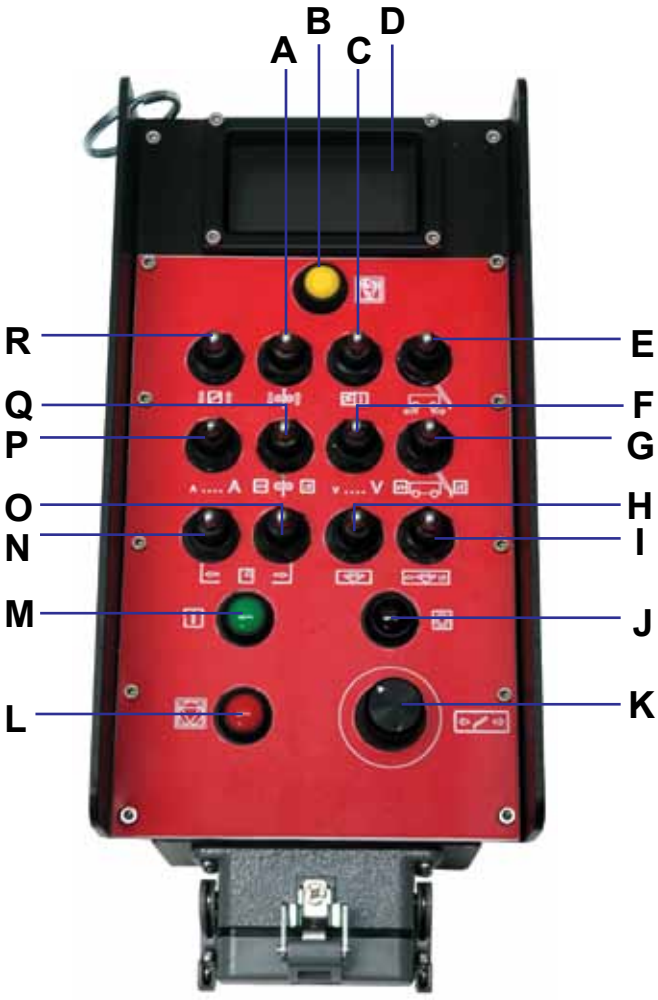
PSR-2000-XX (Piper Steel Rail)
Flexible stainless steel 6" in width designed for specific pipe outside diameters. Equipped with Rigidly Adjustable Feet and Latch Assembly. (XX= Diameter specified by customer including coating if applicable.)

BRR-3250-XX (Bent Rigid Rail)
Aluminum extrusion rolled to custom dimensions for a specific pipe outside diameter for your specific application, utilizes a hinge and locking clamps with spring loaded supports for quick removal and relocation. (XX= Diameter specified by customer including coating if applicable.)



Limited Function Pendant:

A. Torch Jog - Up/Down
B. Wire Feed Jog – In/Out
C. Oscillation Check
D. Travel Jog – Forward/Reverse
E. Welding Voltage – Increase/Decrease
F. Tractor Travel Speed – Increase/Decrease
G. Cycle Stop (Gas Purge in Jog Mode)
H. Torch Position Steering
I. Emergency Stop
J. Cycle Start
K. Welding Current – Increase/Decrease
(Adjusts torch height while welding)
L. Wire Feed Speed – Increase/Decrease



Full Function Pendant:

A. Wire Feed Jog – In/Out
B. Welding Pass Select
C. Oscillation Check
D. Display Screen - Provides selected welding parameter information to the operator
E. Travel Jog – Forward/Reverse
F. Welding Voltage – Increase/Decrease
G. Tractor Travel Speed – Increase/Decrease
H. Oscillation Width – Increase/Decrease
I. Oscillation Speed - Increase/Decrease
J. Cycle Stop (Gas Purge in Jog Mode)
K. Torch Position Steering
L. Emergency Stop
M. Cycle Start
N. Oscillation Dwell Time Left - Increase/Decrease
O. Oscillation Dwell Time Right - Increase/Decrease
P. Welding Current – Increase/Decrease
(Adjusts torch height while welding)
Q. Wire Feed Speed – Increase/Decrease
R. Torch Jog - Up/Down

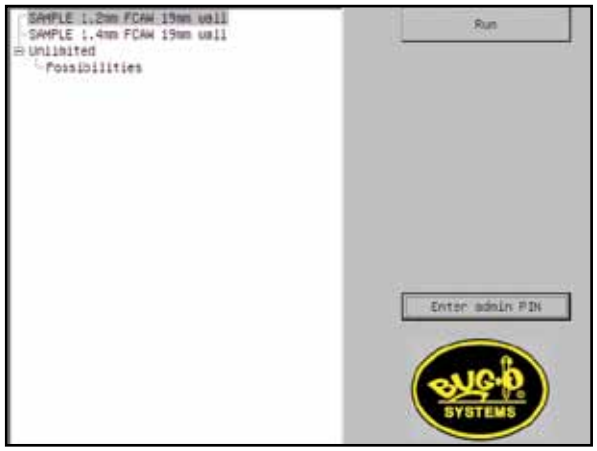
Control Box

Features:

- Microprocessor controlled panel with graphic and pendant user interfaces
- The large LCD panel allows quick viewing of large groups of related information
- Intuitive parameter input using a touch mouse and keypad
- USB port for program transport between systems

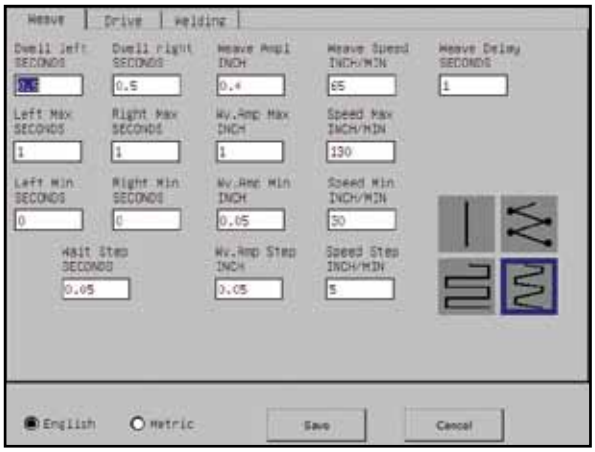
Control Box Programming:

Note: Numbers shown on the following screenshots are for display purposes only and are not intended for actual welding procedures.



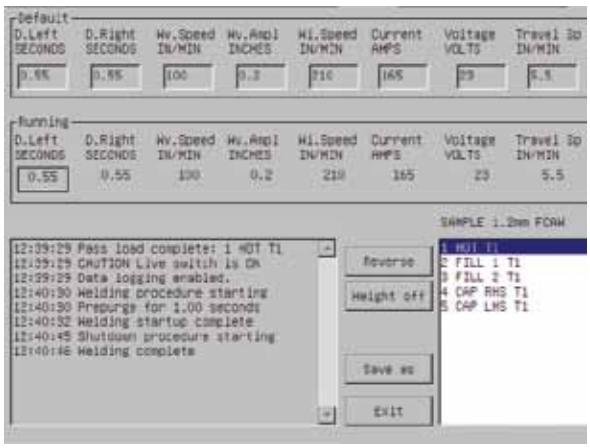
Primary Organization Screen

Allows project managers the ability to organize and modify information for each application. This information is password protected. Limited access ensures repeatability and accountability.



Parameter Input Screen

All data for the weld pass is input here. Unique tabs are supplied in this screen for Weave Data, Drive Travel Data, and Welding Parameter Data. Data is input with upper and lower limits for each individual parameter thus ensuring that the resulting weld is within specifications.



Operating Screen

This screen is displayed during operation. The pre-set data for the pass is displayed along with the actual data being used. The message screen in the lower left corner displays the operation sequence as they occur and also displays error messages. The lower right screen displays the weld pass that is active along with all other passes that are available to be selected.

PIPER-BUG MECHANIZED PIPE WELDING SYSTEM

Interfaced Power Source

Features:

Lincoln Electric Invertec® V350-PRO

- Multi-process inverter, MIG, Stick, TIG, Arc Gouging
- 425 amp power source; 300 amps 100% duty cycle
- Smart robust design
- Portable

Benefits:

- Flexibility with processes when not used on the pipeline
- Energy efficient
- Rough handling - tried and tested all over the pipeline world
- Easy to use controls

PIPER-BUG PART NUMBER CONVENTION

PWS-ABCD-EF

Cooling Type
AC = Air Cooled
WC = Water Cooled

D = European Conformance*
0 = 120 VAC control box, NON-CE power source
2 = 240 VAC control box, NON-CE power source

C = Wire Feeder & Power Source
0 = Wire Feeder – NO Welding Power System
5 = Wire Feeder & Welding Power System

B = Rail Type
1 = BRR – bent rigid
2 = PSR – stainless

A = System
2 = Piper
5 = Piper-Plus (See Piper-Plus Brochure)

CONSUMABLE KITS

PWS-ABCD-0.0-E00F

Tip Shape
T = Tapered
S = Standard

Nozzle Opening Diameter
16 – 5/8" (16 mm) opening
19 – 3/4" (19 mm) opening

Drive roll type
K = cored wire knurled V groove

Wire Diameter (mm)
1.0, 1.2, 1.4, 1.6

1600 Consumable Kit

RING RAILS

PSR-ABCD-XX

Pipe O.D. (inches or mm)
16,18,20, etc

2000 Piper Stainless Rail

BRR-3250-XX

Pipe O.D. (inches or mm)
16,18,20, etc.

*All of our Piper-Bug control boxes are CE compliant.

PIPER-BUG MECHANIZED PIPE WELDING SYSTEM

Power Requirements:
120/240 VAC/50-60/1

Linear Speed:
0-80 ipm (0-2000 mm/m), +/-1%

Weave Speed:
5-130 ipm (125-3300 mm/m), +/- 1%

Wire Feed Speed:
50-450 ipm (125 – 1150 cm/m), +/- 1%

Wire Size:
0.035 – 1/16" (0.9 – 1.6 mm)

Dwell Times:
0-10 seconds left & right, independent

Weave Width:
.01-2" (.25-50 mm)

Steering:
2" (50 mm) left &
right of center,
4" (100 mm) total

Load Capacity:
60 lbs. (27 kg) total.

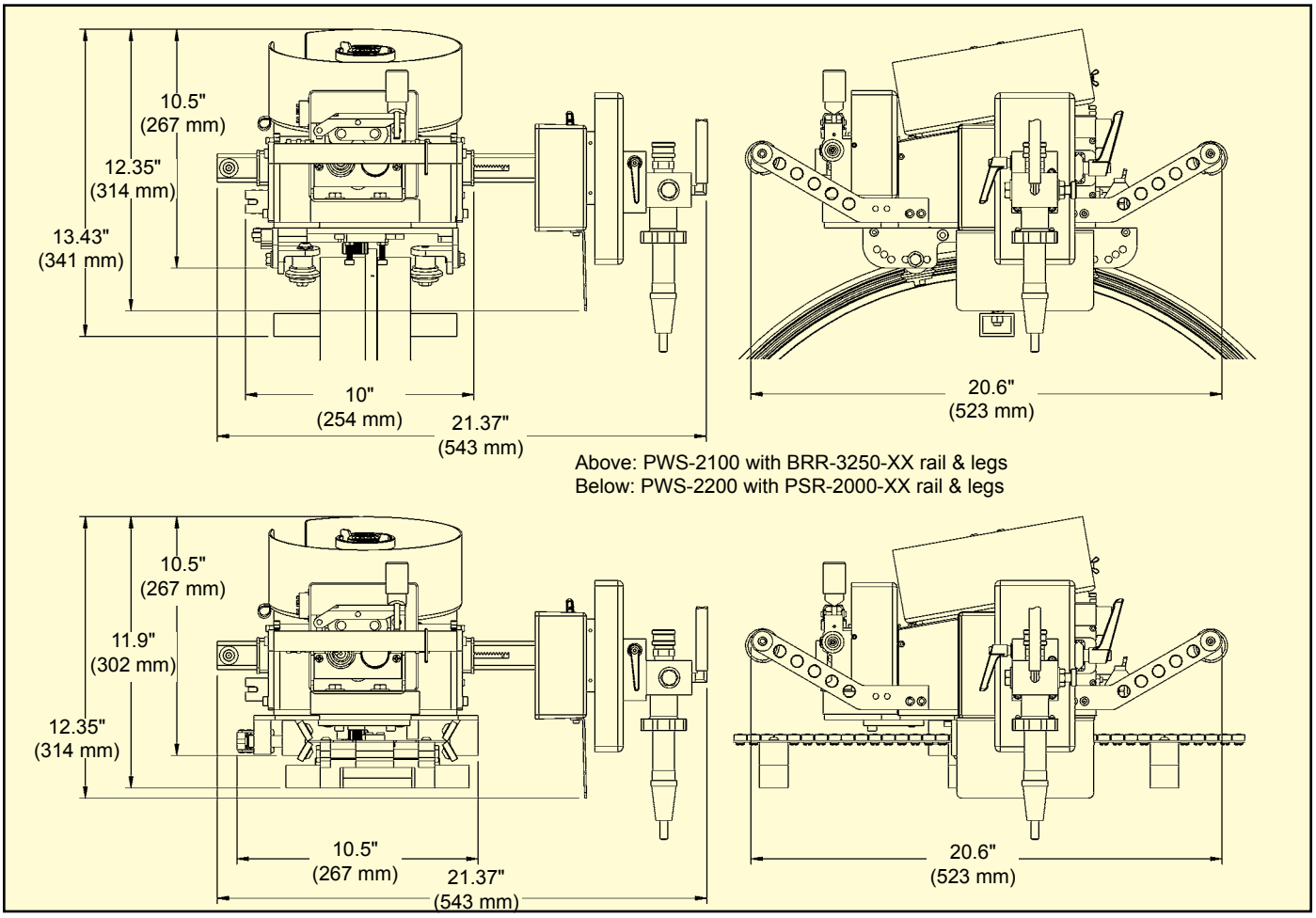
Net Weight (w/o spool):
Tractor Only 37.7 lbs. (17.1 kg) Spool on Head
(Optional) 36.1 lbs. (16.4 kg) Spool on Floor

Dimensions:
20.6" x 21.37" x 12.35" (523 x 543 x 314 mm)

Shipping Weight:
190 lbs. (87 kg)*
This includes drive unit, control box,
pendant and cables
*requires multiple boxes

Operating Temperature Range:
-4°F to 122°F (-20°C to 50°C)

Dimensions:



Above: PWS-2100 with BRR-3250-XX rail & legs
Below: PWS-2200 with PSR-2000-XX rail & legs