

# WORTHINGTON STEEL SPECIFICATIONS

## IMPERIAL

\*Red indicates a currently unavailable model

In Sea Water with Valve	LP27	LP77	LP85	LP95	LP108	LP121	X7-65	X7-80	X7-100	X7-120	X8-119	X8-130
Service Pressure	2400+ psi	2400+ psi	2400+ psi	2400+ psi	2400+ psi	2400+ psi	3442 psi	3442 psi	3442 psi	3442 psi	3442 psi	3442 psi
True Capacity @ 2640 psi	27.0 cuft	77.0 cuft	82.9 cuft	93.3 cuft	108.6 cuft	120.0 cuft	66.4 cuft	81.0 cuft	99.5 cuft	120.6 cuft	123.0 cuft	131.4 cuft
Buoyancy *FULL	- 3.0 lbs	- 6.8 lbs	- 7.1 lbs	- 10.1 lbs	- 10.7 lbs	- 11.1 lbs	- 8.7 lbs	- 9.0 lbs	- 10.0 lbs	- 11.0 lbs	- 10.9 lbs	- 11.7 lbs
Buoyancy *EMPTY	- 1.0 lbs	-1.0 lbs	- 0.7 lbs	- 3.0 lbs	- 2.6 lbs	- 2.0 lbs	- 3.9 lbs	- 3.0 lbs	- 2.5 lbs	- 2.0 lbs	- 2.0 lbs	- 2.0 lbs
Weight Empty	11.9 lbs	32.5 lbs	36.8 lbs	41.9 lbs	45.95 lbs	49.9 lbs	25.1 lbs	29.9 lbs	33.1 lbs	39.7 lbs	42.5 lbs	44.7 lbs
Outside Diameter	5.5 in	7.25 in	7.25 in	8.0 in	8.0 in	8.0 in	7.25 in	7.25 in	7.25 in	7.25 in	8.0 in	8.0 in
Length +/- 0.125"	14.5 in	23.2 in	24.7 in	23.7 in	26.5 in	29.2 in	16.7 in	19.8 in	22.7 in	27.7 in	23.9 in	25.3 in
REE	18.7 cc	58.5 cc	62 cc	73 cc	85 cc	93 cc	46.6 cc	59.5 cc	75.3 cc	94 cc	92 cc	100 cc

## METRIC

\*Red indicates a currently unavailable model

In Sea Water with Valve	LP27	LP77	LP85	LP95	LP108	LP121	X7-65	X7-80	X7-100	X7-120	X8-119	X8-130
Service Pressure	166+ bar	166+ bar	166+ bar	166+ bar	166+ bar	166+ bar	230 bar	230 bar	230 bar	230 bar	230 bar	230 bar
Water Capacity	4.3 liters	12.0 liters	12.8 liters	14.8 liters	16.8 liters	18.9 liters	8.2 liters	10.1 liters	12.2 liters	15.3 liters	14.8 liters	16.0 liters
Buoyancy *FULL	- 1.4 kg	- 2.7 kg	- 2.7 kg	- 3.6 kg	- 3.6 kg	- 4.1 kg	- 3.9 kg	- 4.1 kg	- 4.5 kg	- 4.9 kg	- 4.9 kg	- 5.3 kg
Buoyancy *EMPTY	- 0.5 kg	- 1.0 kg	- 1.0 kg	- 1.5 kg	- 0.5 kg	- 0.5 kg	- 1.8 kg	- 1.4 kg	- 1.1 kg	- 0.9 kg	- 0.9 kg	- 0.9 kg
Weight Empty	5.4 kg	15.6 kg	16.7 kg	18.5 kg	20.2 kg	22.0 kg	11.4 kg	13.1 kg	15.0 kg	17.2 kg	19.0 kg	19.5 kg
Outside Diameter	140 mm	184 mm	184 mm	203 mm	203 mm	203 mm	184 mm	184 mm	184 mm	184 mm	203 mm	203 mm
Length +/- 3.2mm	36.8 cm	65.3 cm	65.3 cm	60.1 cm	67.9 cm	75.0 cm	42.4 cm	50.0 cm	60.1 cm	71.1 cm	60.1 cm	64.8 cm
REE	18.7 cc	58.9 cc	62 cc	73 cc	85 cc	93 cc	46.6 cc	59.5 cc	75.3 cc	94 cc	92 cc	100 cc

### HYDRO DATES ON NEW WORTHINGTON STEEL CYLINDERS

We ship cylinders with the "freshest" possible hydro date. We are limited in some models because of high manufacturing quantities and relatively low sales volume. Please understand, that steel cylinders shipped to your location within 18 months from date of manufacture are considered "current hydro" and not subject to further discounts.

### OXYGEN USE WITH WORTHINGTON STEEL CYLINDERS

Worthington Steel Cylinders are clean for oxygen and oxygen-enriched service at the factory. If you intend to use this cylinder for oxygen or oxygen enriched service (i.e., with any gas containing oxygen concentrations of 23.5% or more), all components used with the cylinder must be oxygen compatible. It is the responsibility of the cylinder user to insure that the cylinder and all components are maintained in a proper state of oxygen cleanliness in strict accordance with regulatory requirements and industry standards.

### TWIN STEEL CYLINDERS - MATCHED SETS

The manufacturing process of steel cylinders does not produce cylinders with the exact same lengths within the same model cylinder. Because of a stack-up between the hot spinning process and machining operations, the tolerance in the height of steel scuba cylinders is within +/- 0.125". This will allow for a potential 0.25" in total height variance between two cylinders within the same model. For this reason, we ask that when placing an order for steel cylinders that will be used as twins to advise our customer service for a "matched set." This request is not necessary when purchasing Twin Steel Packages. The request for a "matched set" will not incur an additional cost, though it may delay the shipping date by a day. A "matched set" will have total height variance of 0.125" or less. Note that a "matched set" does not ensure that the two cylinders will have the same original hydro date.

### SP14157 - THE RULES HAVE CHANGED

On July 31, 2011, the Department of Transportation changed the Worthington Special Permit 15157. This permit covers the X-Series 3442 HP steel cylinders. The change to SP14157 pertains to how the cylinder is evaluated for pass/fail at the time of the re-qualification hydro test. These cylinders are no longer evaluated by the percentage of Permanent Expansion. They are now evaluated for pass/fail by the REE (Rejection Elastic Expansion). Specifically, the Elastic Expansion (EE) cannot exceed the Rejection Elastic Expansion. The REE is stamped into the shoulder of every X-Series Worthington cylinder and it is located on the chart above.

A similar change has also occurred to Transport Canada's TC-SU 4957 Equivalency Certificate.

Please note that this change does not have any effect on the Worthington LP Series DOT 3AA steel cylinders or Worthington aluminum 3AL aluminum cylinders. These cylinders will continue to be evaluated for pass/fail based on the percentage of Permanent Expansion.

Worthington Cylinders continues to recommend that the Hydrostatic Requalification Procedures (Doc. RQ-1) released May 2010 are followed for all Worthington steel cylinders.

Please help to inform your hydro retester of the latest release of DOT SP14157 or TC-SU 4957 when retesting these cylinders. Complete information can be found on our website at [http://www.xsscuba.com/cylinder\\_info.html](http://www.xsscuba.com/cylinder_info.html)