

91 Series Actuators

Shore Western's 91 Series actuators are our most popular; with their proven design and performance they are the choice of thousands of engineers worldwide. These fatigue rated linear actuators come standard with either 6 inch (150 mm) or 10 inch (250 mm) stroke lengths and force ratings from 1.1 KIP (5 kN) to 330 KIP (1500 kN). Typical applications include

- **Structural fatigue testing**
- **Fatigue testing of structures and components**
- **Vehicle durability testing**

91 Series Actuators set the standard for actuator design unmatched in extreme and grueling test conditions. Advanced design, quality components, and variety of options makes the 91 Series Actuator your best choice for testing applications.

Features

Bonded polymer bearings

Shore Western utilizes non metallic bearing surfaces for all bearings to provide long life and resist bearing-to-rod galling failures. Bonded polymer bearings offer high side-load and high velocity.

Sideload tolerance

If the forces acting on an actuator piston rod are not aligned with the direction of piston rod motion side loading occurs. Side loading mars test results and reduces the actuator life. Large bearings and the application of proprietary materials give the 91 Series Actuators high side load capabilities.

Displacement transducer

All actuators have a coaxially mounted LVDT in the piston rod. Actuators can be configured with either an open housing or a closed housing for attaching a swivel or pedestal base. Typical component or structural test applications call for a closed housing and swivel base and rod end.

Hydraulic cushions

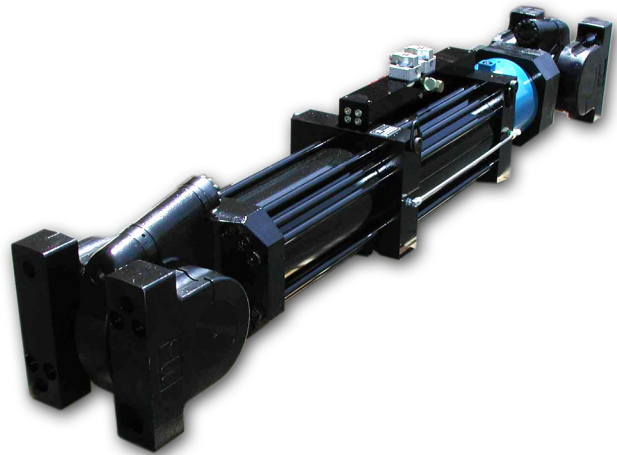
The piston and end caps are protected during full stroke or high-velocity operations by hydraulic cushions.

Large diameter piston rod

91 Series Actuators use hollow, large diameter, one piece piston rods made of 100,000 psi yield material for infinite fatigue life, providing strength and maximum lateral stiffness. The chrome plated piston rod is micro ground and super-polished to minimize friction in severe service and extend seal and bearing life.

High pressure seals

91 Series actuators come standard with high-pressure seals designed for low friction, long life, and outstanding performance in high-frequency/low-displacement applications. For applications where reduced frictions is a requirement an actuator can be supplied for operation without high pressure seals.



Piston rod wiper/seal

A low-pressure wiper/seal provides for both a hydraulic seal and a rod scraper to help eliminate external contamination of the bearings and internal seals.

Options

Flow options

Servo valve manifolds with oversize ports and provisions for interfacing to a variety of servo valves and service manifolds are available. Their design provides for fluid conditioning and low/high pressure control and allows the actuator to accept a number of servo-valves. Optional dual servo valve and three-stage servo valve configurations are available.

Swivels and base ends

The 98 Series Rod End Swivels, 99 Series Base Ends or Shore Western's Ball Swivels can help reduce side loads and force alignment problems and eliminate backlash in test setups.

Load washers

Load washers preload force train element connections to avoid backlash and fatigue failure between attached components. Available in varying thickness load washers let you quickly preload attached components.

Stroke lengths

91 Series Actuators may be adapted to test requirements not served by the standard strokes of 6 and 10 inches (150 and 250 mm). Custom stroke lengths are available upon request. Custom stroke length actuators may also require a custom LVDT.

Load cells

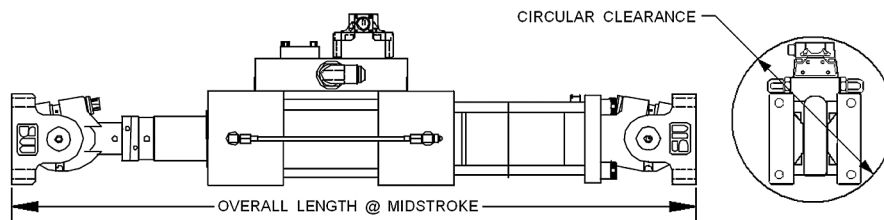
Load cells and differential pressure sensors are available for every force rating.

Trunnion and gimbals fixtures

Are available for testing applications requiring a controlled or restricted range of motion.

MODEL NUMBER	RATING KIP	ROD DIA. INCHES	AREA IN ²	FORCE @ 3000 PSI LBF	OVERALL LENGTH 6" STROKE @ MIDSTROKE	OVERALL LENGTH 10" STROKE @ MIDSTROKE	CIRCULAR CLEARANCE INCHES
910	1.1	1.12	0.37	1111	34.9	44.9	7.3
910	2.2	1.12	0.77	2310	34.9	44.9	7.3
910	3.2	1.12	1.08	3240	34.9	44.9	7.3
911	3.3	1.75	1.14	3424	38.6	48.6	9.3
911	5.5	1.75	2.02	6075	38.6	48.6	9.3
911	7.5	1.75	2.5	7510	43.1	53.1	12.1
912	11	2.75	3.68	11045	43.1	53.1	12.1
912	15	2.75	5.11	15315	43.1	53.1	12.1
912	22	2.75	7.42	22273	47.9	57.9	13.1
912	35	2.75	11.78	35343	47.9	57.9	13.1
913	55	3.75	19.63	58905	55.8	65.8	15.5
913	75	3.75	24.74	74220	55.8	65.8	15.5
914	110	5.25	38.48	115454	64.7	74.7	20.8
914	165	5.25	56.89	170677	68.5	78.5	23
915	220	6	75.59	226784	78.1	88.1	26
916	330	8	114.86	344593	85	95	28

MODEL NUMBER	RATING kN	ROD DIA. MM	AREA MM ²	FORCE @ 3000 PSI kN	OVERALL LENGTH 150MM STROKE @ MIDSTROKE	OVERALL LENGTH 250MM STROKE @ MIDSTROKE	CIRCULAR CLEARANCE MM
910	5	28.6	239	4.94	886	1140	185
910	10	28.6	497	10.28	886	1140	185
910	14	28.6	697	14.41	886	1140	185
911	15	44.5	735	15.23	980	1234	236
911	27	44.5	1303	27.02	980	1234	236
911	33	44.6	1613	33.41	1095	1349	307
912	50	69.9	2374	49.13	1095	1349	307
912	65	69.9	3297	68.13	1095	1349	307
912	100	69.9	4790	99.08	1217	1471	333
912	150	69.9	7600	157.22	1217	1471	333
913	250	95.3	12664	262.03	1417	1671	394
913	330	95.3	15961	330.15	1417	1671	394
914	500	133.4	24826	513.59	1643	1897	528
914	750	133.4	36703	759.21	1740	1994	584
915	1000	152.4	48768	1008.83	1984	2238	660
916	1500	203.2	74103	1532.89	2159	2413	711



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