

302 Series Load Frames

Rigid two-column cost effective fatigue-rated axial load frames with polymer bearings for material or component characterization.

BIA West 302 load frames are versatile test systems used for a variety of applications, **from simple monotonic proof tests to highly complex Thermo Mechanical Fatigue (TMF) experiments.** The system can be configured to run standard ASTM tests as well as your unique custom protocols. The load frames are paired with our industry leading controller, hydraulic actuator, manifold, servo valves, and Whisperpak® pump to create a highly accurate and durable test instrument.

The load frame structure is specifically designed to provide **maximum rigidity.** The Series 302 load frames feature 2-column symmetrical construction with a fixed-platen and moveable crosshead on **hydraulic lifts.** On these free-standing units, the actuator is mounted below the platen with the load cell affixed to the crosshead.

Note that we **also build load frames with hydrostatic bearings** for more exacting test requirements (see our 303 line) and **larger 4-column frames** (see our model 304 frames). We also build frames with **crosshead mounted actuators** and floor-level T-Slotted bases. Our 301 series frames are **tabletop units.**

The 302 Series load frames come in standard configurations (below) with **other force combinations and configurations available on request.**

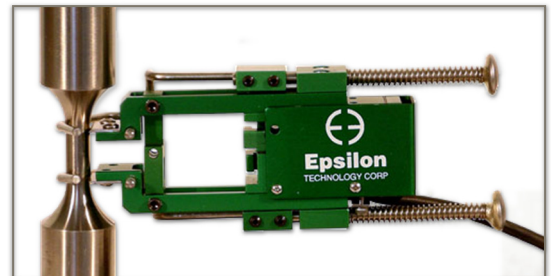
All units are delivered fully equipped including a linear actuator, servo valve, service manifold, load cell, and LVDT.

The 302 Series Load Frame can be supplied with a **variety of accessories** such as hydraulic crosshead locks, load cells, grips, furnaces, environmental chambers, and extensometers to meet your specific testing needs.



Features

- Chrome plated columns. The 302 utilizes two smooth, chrome plated precision ground columns to provide long life and low friction crosshead position changes with high alignment accuracy.
- Hydraulic Crosshead controls. The crosshead is vertically adjustable with infinite resolution using hydraulic lifts via a simple control panel. Position of the crosshead is maintained backlash free by torque wrench tightened bolts or optional hydraulic locks. The failsafe design ensures a sudden loss of hydraulic power will not result in any unwanted crosshead motion, and the crosshead will remain locked.
- Accurate alignment. The actuator rod and load cell are concentric within .0015 in (0.038mm) @ 15 inches (380mm) and .002in/ft (0.05mm per 300mm) thereafter.
- Integrated displacement measurement. The linear actuator includes a co-axially mounted LVDT in the piston rod.
- Rigid construction. No intermediate threaded joints or compression joints are utilized and the load is transmitted directly into the crosshead during testing.
- High quality servo hydraulic components. The system is designed using BIA West hydraulics, renowned for providing years of trouble-free operation, and the result of over 40 years of experience.



Options

- Hydraulic crosshead locks. Hydraulically operated crosshead locks are available on all models
- Vibration isolation mounts. Dynamic testing can produce unwanted vibration that can be transmitted to the laboratory floor. Isolation pads under the load frame help reduce noise and dampen vibrations.
- Safety enclosure. A safety enclosure can be fitted around the test area to protect the operator during destructive testing.
- Actuator sizing. Different actuator displacements and valves are available, as well as custom force ratings. Service Manifolds, servo-valves and hydraulic power supplies are sized based on your application.
- Accessories. Choose from a wide variety of grips, fixtures, extensometers, furnaces, environmental chambers, larger power supplies and various load cell force ratings.

Specifications

Updated 6/30/2014	Ref.	Model 302.2		Model 302.3		Model 302.4	
		in	cm	in	cm	in	cm
Column Diameter	F	3.0	7.6	3.0	7.6	4.0	10.2
Column Spacing	E	21.0	53.3	25.0	63.5	30.0	76.2
Height (Overall) (1)	A	102.0	259.1	121.5	308.6	143.4	364.2
Max Clearance (1)	C	57.3	145.0	73.3	186.0	91.3	232.0
Min Test Length (1)(2)(3)	D	7.7	19.4	13.3	33.7	19.7	50.0
Max Test Length (1)(2)(3)	D	51.6	131.1	66.7	169.4	83.6	212.3
Platen Height	B	35.0	88.9	36.0	91.4	36.9	93.7
Platen Depth	L	10.0	25.4	12.0	30.5	15.0	38.1
Min Actuator Extension (3)	M	2.1	5.4	2.0	5.1	1.1	2.9
Base Width	G	28.0	71.1	32.5	82.6	40.0	101.6
Width (with lifts)	H	36.3	92.1	40.8	103.5	48.3	122.6
Base Depth	I	24.0	61.0	30.0	76.2	36.0	91.4
Bolt Circle Dia.	K	8.0	20.3	10.0	25.4	13.0	33.0
Bolt Holes (8 ea.)	J	1/2-13 UNC		5/8-11 UNC		7/8-9 UNC	
Deflection at Rated Load (4)		0.008	0.019	0.017	0.042	0.024	0.060

Stiffness (lbf/in)		2.9E+06		3.3E+06		4.6E+06	
Stiffness (N/mm)		5E+05		6E+05		8E+05	
Weight (lb)		1250		1900		3800	
Weight (kg)		567		862		1720	
Force Rating (kip)		11 or 22		55		110	
Force Rating (kN)		50 or 100		250		500	

(1) Based on standard column length, optional lengths available

(2) Based on standard load cell, without alignment fixture, without grips.

(3) Actuator retracted to end of dynamic stroke.

(4) At rated load with exposed column length of 29.5 inches for 302.2, 35.5 inches for 302.3 and 50 inches for 302.4.

The actuator rod and load cell are concentric within 0.0015 inches @ 15 inches of separation (0.002 in/ft thereafter).

Note: Service manifold, servo valves and hydraulic power supplies are sized and selected based on application.

Specifications subject to change without notice.

