

# Seismic Spring Mount Type XLM-2

25mm Nominal Static Deflection

## APPLICATION

Where equipment requires the use of a spring type mount for a high degree of isolation under normal operating conditions, but with the facility to restrain the equipment from excessive motion in any direction due to displacement inputs imparted by the foundation through earthquake activity.

## DESCRIPTION

An integrated, stand-alone six direction restrained twin spring mount with cup located springs and internal adjustment. XLM-2 mounts are rated to the static force restraint requirements of:

- AS 1170.4 for Australian seismic zones
- NZS 4219 for New Zealand seismic zones
- Most international seismic codes

## FEATURES

- Heavy duty stable steel spring
- Acoustically isolating location cup
- Internal leveling bolts
- Single adjustable central vertical restraint bolt
- Replaceable shock absorbing rubber snubbers

## CONSTRUCTION

Hot dipped galvanised steel housing, oil-resistant high-frequency spring base isolation cup. All other components including spring are zinc plated.

## RESTRAINT CAPACITY

Restraint capacity is given as a maximum static force. The following can be applied simultaneously in one lateral direction and vertically up or down:

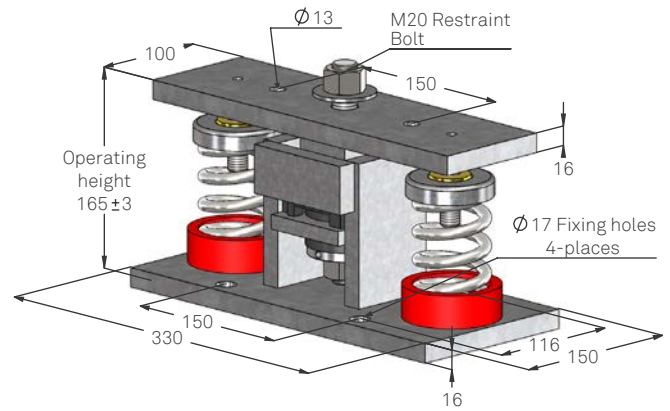
Vertical: 34kN

Lateral: 20kN

At maximum restraint loads, the displacement from normal operating position is approximately 10mm.

## DESIGN

XLM-2 Mounts are designed with spring horizontal to vertical stiffness ratios between 0.7 and 0.9 at rated loads; ratio of spring diameter to loaded height minimum 0.8; and a rated maximum static operating deflection 2/3 deflection to solid.



**XLM-2 DIMENSIONS**

## XLM-2 PRODUCT GUIDE

Type	Max Load kg	Static Defl. mm	Spring Constant kg/mm	Spring Colours	
				Outer	Inner
XLM-2-89	20	40	0.5	White	-
XLM-2-90	40	38	1.06	Violet	-
XLM-2-91	70	35	2.0	Violet/Black	-
XLM-2-92	100	33	3.0	Yellow	-
XLM-2-93	200	33	6.0	Brown	-
XLM-2-94	300	30	10.0	Blue	-
XLM-2-95	400	30	13.4	Black	-
XLM-2-96	500	28	17.8	Red	-
XLM-2-97	600	28	21.4	Green	-
XLM-2-98	800	25	32.0	Grey	-
XLM-2-99	1,100	23	47.8	Orange	-
XLM-2-100	1,300	20	65.0	Orange/Black	-
XLM-2-101	1,550	20	77.4	Orange	Green
XLM-2-102	1,900	20	95.0	Orange/Black	Green

## ACOUSTICAL ISOLATION

Although steel spring mounts provide particularly effective isolation of mechanical vibration, the spring itself, depending on its physical geometry, may transmit certain audible level frequencies.

To minimise these audible level transmissions, all mounts are fitted with a resilient rubber base cup. For type XLM-2 mounts, the standard cup has a theoretical effectiveness of over 95% in isolating such transmissions.

## MOUNT SELECTION

When selecting mounts, it is recommended that a safety factor of 10-20% is applied to the calculated mass of equipment to avoid overloading of any mounts. If maximum rated deflections are required, then equipment should be weighed and an accurate assessment of point loads made.

For equipment using more than four mounts, endeavour to distribute them so that each mount has equal loading. If this cannot be done, mount selection must be made on the basis of matching static deflections as closely as possible.

## RESTRAINT SYSTEM

These mounts incorporate replaceable resilient rubber snubbers for both vertical and lateral restraint. Vertical restraints have a normal design clearance of 3mm (gaps X and Y) in both directions and are adjustable  $\pm 3$ mm in conjunction with level adjustments. Lateral restraints have a fixed clearance of nominal 3mm.

## INSTALLATION

### 1. HORIZONTAL ALIGNMENT

- The geometric centre of the housing hold down bolts must be aligned  $\pm 1$ mm with respect to the central restraining bolt i.e. the attachment point to the equipment, on all mounts.

### 2. BOLTING DOWN

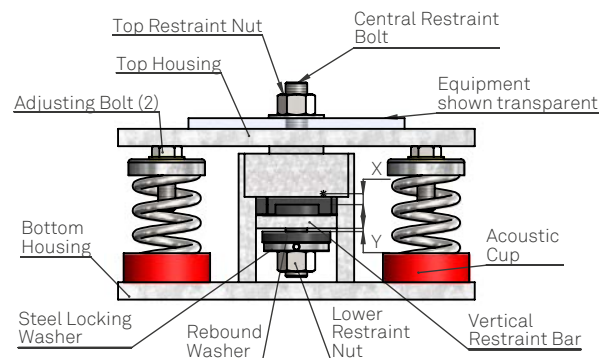
- Foundation: Place housings in position and drill through housing base holes for fastening.
- The XLM-2 mount is designed to take M16 fastenings.
- Housing fastenings should be torqued to the maximum value recommended by the fastener manufacturer.
- Equipment: A clearance hole for the central restraint bolt must be provided for the equipment base. The base must be designed to withstand the maximum restraint forces generated.
- The equipment base must be at least 100mm wide by 100mm long.

### 3. PLACING EQUIPMENT

- Assemble the rest of the mount with restraint nut removed.
- Place equipment on mounts. Equipment load maybe temporarily taken on the top of the vertical restraint bar via the upper pad.

### 4. ADJUSTMENT AND LOCKING

- Fit the restraint nut but leave loose. Loosen rebound washer and lower nut.
- Load the springs alternately by winding the adjusting nut anticlockwise a maximum of two turns until the equipment is floating on the springs. Hold the compression plate stationary while winding.
- Check for level and adjust if necessary.
- Lift further until gap  $X=3\text{mm} \pm 2\text{mm}$  on all mounts.
- Adjust rebound washer so that gap  $Y=3\text{mm} \pm 1\text{mm}$ .
- Set hole in edge of rebound washer to the front. Insert pin punch in hole to hold it in position.
- If gap Y is outside tolerance, hold rebound washer stationary and rotate the restraining bolt to adjust.
- Lock steel washer and lower restraint nut together tightly.
- Tighten the restraint nut hard against the equipment.



**XLM-2 PARTS & INSTALLATION**

## TECHNICAL ASSISTANCE

All Embelton offices can provide detailed technical assistance on the use of this product in specific applications.

## CONDITIONS OF SALE

These products are sold subject to the published Embelton General Conditions of Sale, copies of which maybe inspected on request.

## SPECIFICATION

Spring mounts shall permit freedom of equipment motion at normal operating conditions, but restrain the equipment from excessive motion when subjected to foundation displacement in any direction. A single central vertical restraint bolt shall be used, which also locks the equipment to the mount. Springs shall be free standing and laterally stable with an acoustically isolating base cup. They shall have a minimum additional travel of 50% rated deflection to solid and a diameter not less than 0.8 of loaded height; they shall be type XLM-2 as supplied by Embelton.