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NATO APPROVED NAVAL "X" MOUNTS

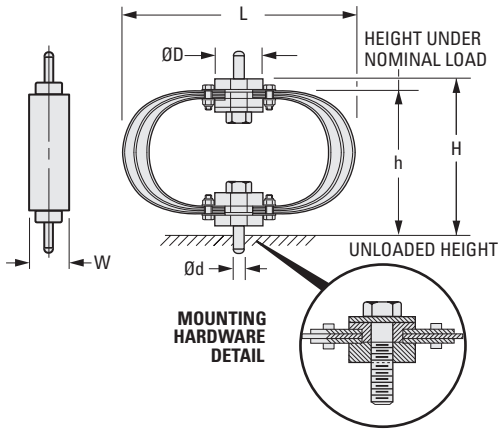
› MATERIAL:

Leaves - 304 Stainless Steel
Washers - Nylon and Stainless Steel
Damping Compound - Polymer

› OPERATING TEMPERATURE:

+50°F to +86°F (+10°C to +30°C)

VIBRATION MODES:	
VERTICAL:	
HORIZONTAL 1:	
HORIZONTAL 2:	



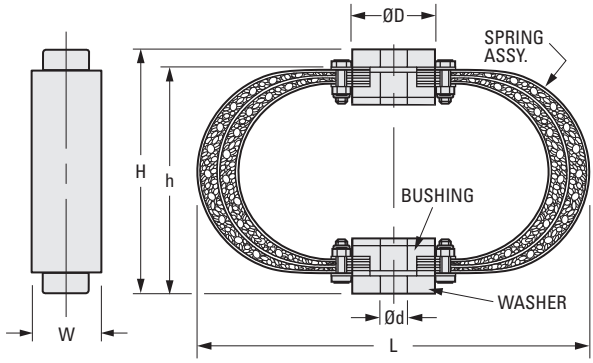
NATO APPROVED NAVAL "XM" MOUNTS FOR EXTREME ENVIRONMENTAL CONDITIONS

› MATERIAL:

Leaves - 304 Stainless Steel
Washers - Nylon and Stainless Steel
Damping Compound - Stainless Steel Mesh

› OPERATING TEMPERATURE:

+238°F to +752°F (-150°C to +400°C)



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NATO APPROVED NAVAL "X" and "XM" MOUNTS

NATO Stock Numbers listed for "X" Mounts
NATO Stock Numbers not available for "XM" Mounts

Dimensions in ( ) are mm.

INCH COMPONENT		INCH COMPONENT			
Catalog Number X Mounts	NATO Stock Number X Mounts (Ref.)	Catalog Number XM Mounts	Nominal Load lbf (kgf)	Load Range lbf	Load Range kgf
A10Y15-57170025	5340-99-923-5717	A10Y15-5717M0025	22 (10)	20 – 40	9 – 18
A10Y15-57180050	5340-99-923-5718	A10Y15-5718M0050	44 (20)	40 – 77	18 – 35
A10Y15-57190100	5340-99-923-5719	A10Y15-5719M0100	99 (45)	77 – 121	35 – 55
A10Y15-57200150	5340-99-923-5720	A10Y15-5720M0150	154 (70)	121 – 198	55 – 90
A10Y15-57210250	5340-99-923-5721	A10Y15-5721M0250	242 (110)	198 – 298	90 – 135
A10Y15-84290400	5340-99-520-8429	A10Y15-8429M0400	397 (180)	298 – 551	135 – 250
A10Y15-84280700	5340-99-520-8428	A10Y15-8428M0700	705 (320)	551 – 838	250 – 380
A10Y15-84271000	5340-99-520-8427	A10Y15-8427M1000	992 (450)	838 – 1212	380 – 550

Catalog Number (Ref.)	L Length in. (mm)	W Width in. (mm)	H Height Unloaded With Washers in. (mm)	h Height Loaded with Washers in. (mm)	D Dia. Washers in. (mm)	d Dia. Bolt Hole in. (mm)	Bolt Size UNF in. (nearest metric)
A10Y15-5717...	8 (203)	2 (51)	4.5 (114)	4.21 (107)	1.25 (31.75)	.354 (9)	5/16 (8)
A10Y15-5718...	8 (203)	2 (51)	4.5 (114)	4.17 (106)	1.25 (31.75)	.354 (9)	5/16 (8)
A10Y15-5719...	8.5 (216)	2 (51)	5.25 (133)	4.88 (124)	1.25 (31.75)	.512 (13)	1/2 (12)
A10Y15-5720...	8.5 (216)	2 (51)	5.25 (133)	4.88 (124)	1.25 (31.75)	.512 (13)	1/2 (12)
A10Y15-5721...	11.7 (297)	4 (102)	7.5 (190)	4.8 (122)	1.25 (31.75)	.512 (13)	1/2 (12)
A10Y15-8429...	11.7 (297)	4 (102)	7.5 (190)	7.28 (185)	2.5 (63.5)	.827 (21)	3/4 (20)
A10Y15-8428...	11.7 (297)	4 (102)	7.5 (190)	7.32 (186)	2.5 (63.5)	.827 (21)	3/4 (20)
A10Y15-8427...	11.7 (297)	4 (102)	7.5 (190)	7.24 (184)	2.5 (63.5)	.827 (21)	3/4 (20)

Catalog Number (Ref.)	Weight lb. (kg)	Static Stiffness			Natural Frequencies		
		Vertical lbf / in. (kgf / cm)	Horizontal 1 lbf / in. (kgf / cm)	Horizontal 2 lbf / in. (kgf / cm)	Vertical Hz	Horizontal 1 Hz	Horizontal 2 Hz
A10Y15-5717...	1.5 (0.68)	75 (13.39)	40 (7.14)	100 (17.88)	7.5	4.5	5.5
A10Y15-5718...	1.75 (0.8)	150 (26.79)	80 (14.29)	200 (35.72)	7.5	4.5	5.5
A10Y15-5719...	2.25 (1.02)	250 (44.65)	135 (24.11)	330 (58.93)	7.5	4.5	5.5
A10Y15-5720...	2.5 (1.13)	400 (71.43)	220 (39.29)	520 (92.86)	7.5	4.5	5.5
A10Y15-5721...	2.75 (1.25)	650 (116.08)	350 (62.5)	850 (151.8)	7.5	4.5	5.5
A10Y15-8429...	13 (5.9)	2300 (410.74)	620 (110.72)	3070 (548.25)	10.5	4.5	5.5
A10Y15-8428...	14.5 (6.58)	3000 (535.75)	760 (135.72)	2700 (482.17)	7.5	4.0	5.0
A10Y15-8427...	16 (7.26)	4800 (857.2)	1100 (196.44)	4000 (714.33)	7.5	4.0	5.0

ELLIPTIC LEAF SPRING MOUNTING (NAVAL "X" TYPE)

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This type of vibration and shock isolator was designed specifically for shipboard or mobile applications. They are particularly suitable to protect delicate shipboard equipment from shock due to underwater explosions or sudden stoppage of vehicles for vehicle mounted equipment.

All materials used are impervious to corrosion and will operate efficiently under a wide range of temperature, making the units well-suited for naval or aircraft applications. Their basic design employs two or more high-tensile stainless steel "U" formed leaves, situated at each end, forming an elliptical shape when joined together in the center portion with face plates. The spaces between the "U" formed leaves are filled with a specially developed polymer or stainless steel mesh.

Nonmetallic collars backed by stainless steel washers are supplied for load attachment, while providing noise reduction. Inch size or metric size bolts may be used for fastening of the equipment to the base or foundation.

Low transmitted shock accelerations are obtained by combining large permitted static deflection in every direction with a high energy loss within the mount. The high damping efficiency is obtained by the polymer which has a very low static stiffness. The load bearing characteristics are determined by the metal construction of the mountings. These mounts may be used in tension as well as compression.

The "X" Mount is one of those rare breeds which gives both vibration isolation and shock protection. Its low frequency ensures effective vibration isolation, except where the resonant frequency of the surrounding structure may be sympathetic with the mount's natural frequency. Similarly, care must be taken during transportation of equipment supported by "X" Mounts.

The main disadvantage of the mount is that transmissibility at resonance is high. In most applications this is not critical as the "X" Mounts are placed in areas that do not coincide with its resonant frequency. This special applications mount may be of particular interest not only for its improved vibration performance at low temperature, but also its lower natural frequency at room temperatures. This may avoid the need of trying to reduce the natural frequency by means of adding a rubber washer in tandem, as this procedure also increases the transmissibility at resonance of the system.

Shock protection of the new design has the added benefit of durability under repeated shocks at low temperatures.

› INSTALLATION OF "X" MOUNTS

Due to the sophisticated nature of the "X" Mounts, it is essential that they be correctly loaded. Incorrect loading will mean inadequate shock protection (this is true even in underloaded situations).

Bad Practice

Due to the shape and size of the "X" Mount, there is a strong tendency to use the space created as storage. Needless to say, any such placement can render the shock protection useless.

Preferred Systems

Mounts supporting the system underneath only, with the center of gravity in the lower third of the unit, is preferred. When this is impossible, a fully suspended method should be used. Top steadies can be used where it is difficult to choose mounts to support the weight using a fully suspended configuration.

The practice of combining units on one raft is often carried out to ensure that a suitable loading is obtained. This practice is especially important for operator-controlled equipment; the seat can be mounted on the raft as well.

Orientation

Where possible, the horizontal roll axis should be fore and aft, to minimize equipment movement due to ship roll, but any orientation is acceptable for shock protection. It is advisable to place mounts on any one piece of equipment in the same direction.

› TYPICAL APPLICATIONS INCLUDE:

Heavy Machine Tools
Air Compressors
Engine Suspension
Machine Mounting
Machine Craft Installations
Laboratory Equipment
Electric Motors
Factory Test Gear
Seat Suspension in Aircraft and Vehicles
Radar Communications Equipment
Electronic Control Equipment
Equipment Mountings in Tanks and Other Military Vehicles
Bomb and Other Lifting Gear
Refrigeration Compressors
Mobile Vehicles
Fuel Tanks
Blowers and Fans
Pumps

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NATO APPROVED NAVAL "X" MOUNTS
LIGHTWEIGHT

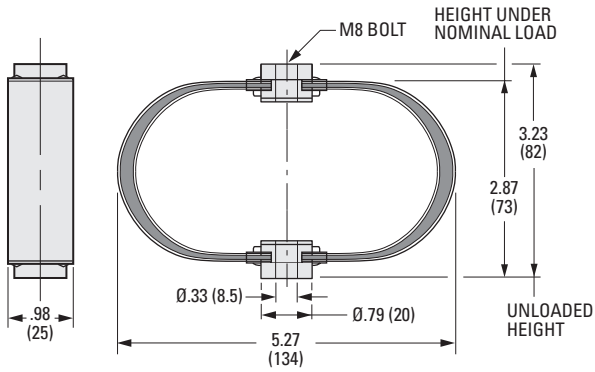
Inch
0 1

MATERIAL:
Leaves - 304 Stainless Steel
Washers - Nylon and Stainless Steel
Damping Compound - Polymer

OPERATING TEMPERATURE:
+50°F to +86°F (+10°C to +30°C)

FEATURES:
The 13.2 lbf (6 kgf) Mount is designed to isolate lightweight equipment (i.e. computers, printers, electronics panels, etc.) from shock and vibration and has similar properties to the present range of 'X' mounts with some reduction in the available deflection under shock conditions.

VIBRATION MODES:	
VERTICAL:	
HORIZONTAL 1:	
HORIZONTAL 2:	



NOTE: Dimensions in ( ) are mm.

INCH COMPONENT

Catalog Number	Nominal Load lbf (kgf)	Load Range lbf (kgf)	Bolt Size UNF in. (nearest metric)	Weight Excluding Bolt lb. (kg)
*A10Y15-39210013	13.2 (6)	8.8 – 13.2 (4 – 6)	5/16 (8)	.29 (0.13)

Catalog Number (Ref.)	Static Stiffness			Natural Frequencies		
	Vertical lbf / in. (kgf / cm)	Horizontal 1 lbf / in. (kgf / cm)	Horizontal 2 lbf / in. (kgf / cm)	Vertical Hz	Horizontal 1 Hz	Horizontal 2 Hz
A10Y15-39210013	33 (5.91)	43 (7.68)	18 (3.25)	7.2 – 8.9	8.3 – 10.1	5.4 – 6.6

* NATO Stock Number: 5340-99-665-3921

ELLIPTIC LEAF SPRING MOUNT TEST DATA

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Inch
0 1

› TRANSMISSIBILITY / TEMPERATURE / RESONANCE:

	Temp °C	f_n (Hz)	Q
a	41.6	6.2	10.2
b	29.9	6.6	6.1
c	19.7	7.6	2.8
d	10.2	13.0	2.2
e	0.5	22.0	4.0
f	–16.1	29.6	22.7