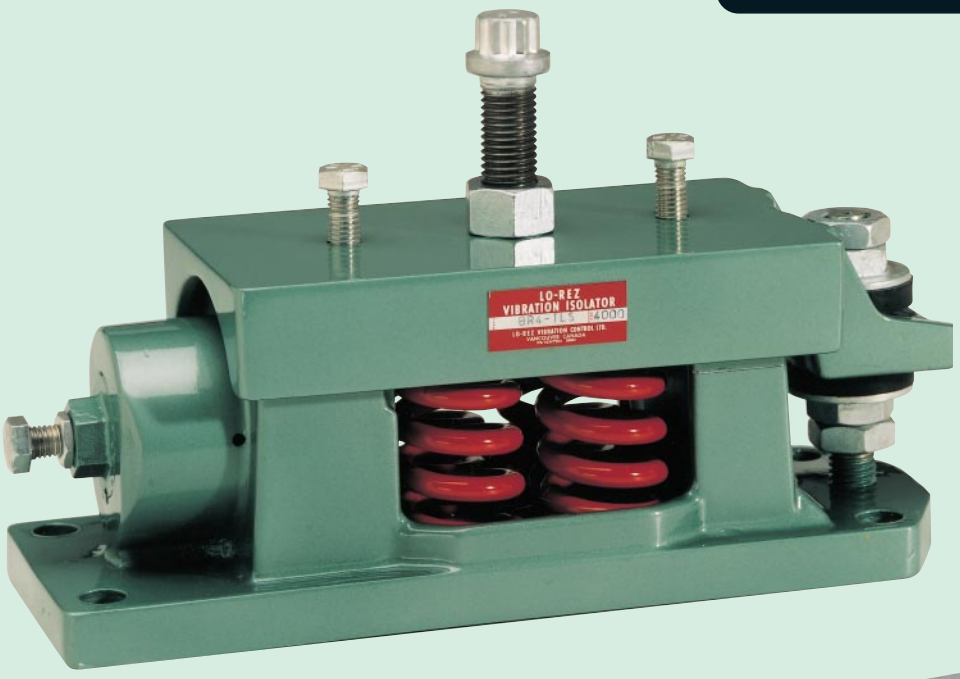
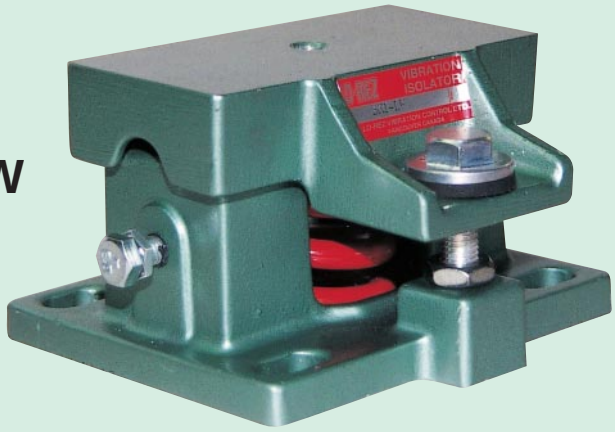
LO-REZ

Isolators designed for high horizontal and vertical loads

STEEL-SPRING VIBRATION ISOLATORS



BR4 -TLS



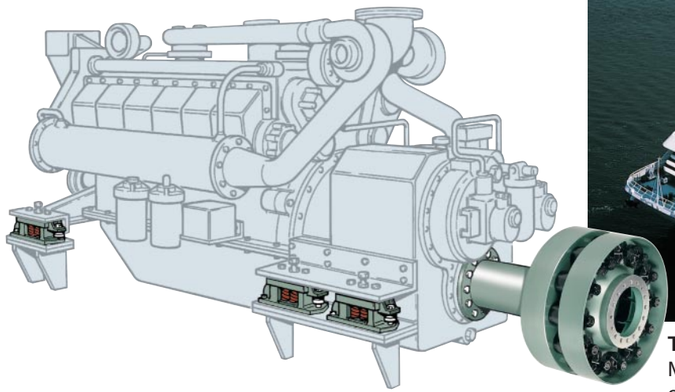
BR1-LW

BR4-LS

LO-REZ VIBRATION CONTROL LTD.

186 West 8th Avenue, Vancouver, B.C. Canada V5Y 1N2 Tel: (604) 879-2974 Fax: (604) 879-6588
E-mail: lo-rez@LO-REZ.com Web: www.LO-REZ.com

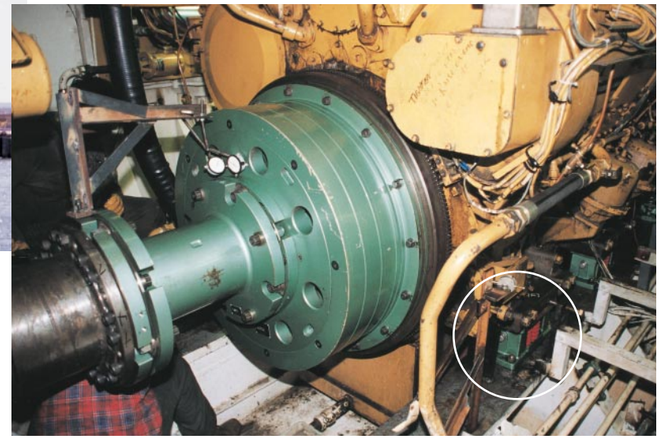
Lo-Rez BR4-HS Isolators under one of twelve 4,000 HP EMD 16-cylinder Model 710 Diesel Generators, 110,000 Lbs. each. Supplied for (3) Washington State “Jumbo Mark II” ferries (MV **Puyallup** shown).



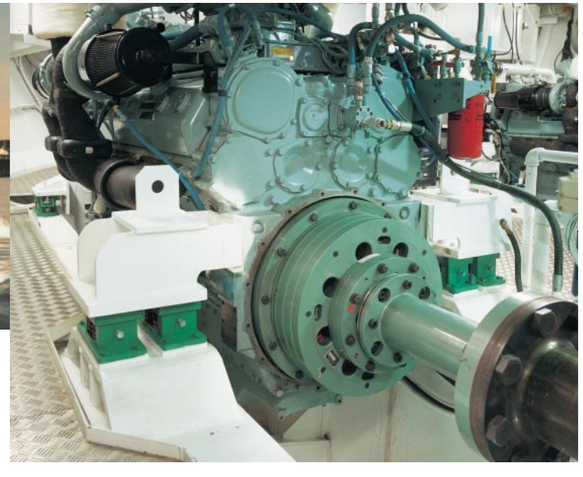
Trump Princess Casino Boat
Main propulsion engines, Detroit 12V149 mounted on BR4-TMS Isolators and 30RT Couplings. Generators, Detroit 16V149 (not shown) mounted on BR4-LS Isolators.

CAT. D399 Generator sits on LO-REZ LR4-LS Isolators. Westcoast Transmission Building, Vancouver

MV **Teleost**
Main propulsion, Caterpillar 3612 engine mounted on BR4-HS Isolators. Couplings used I/SF steel spring & 16HLF laminated disc.



Tugboat **Vancouver**
Main propulsion Detroit 16V149 mounted on BR4-LS Isolators. Couplings used F/SF steel spring & 8HLF laminated disc.



BR4-TLS, -TEHS, -TELS
Thrust Type Isolators

LO-REZ

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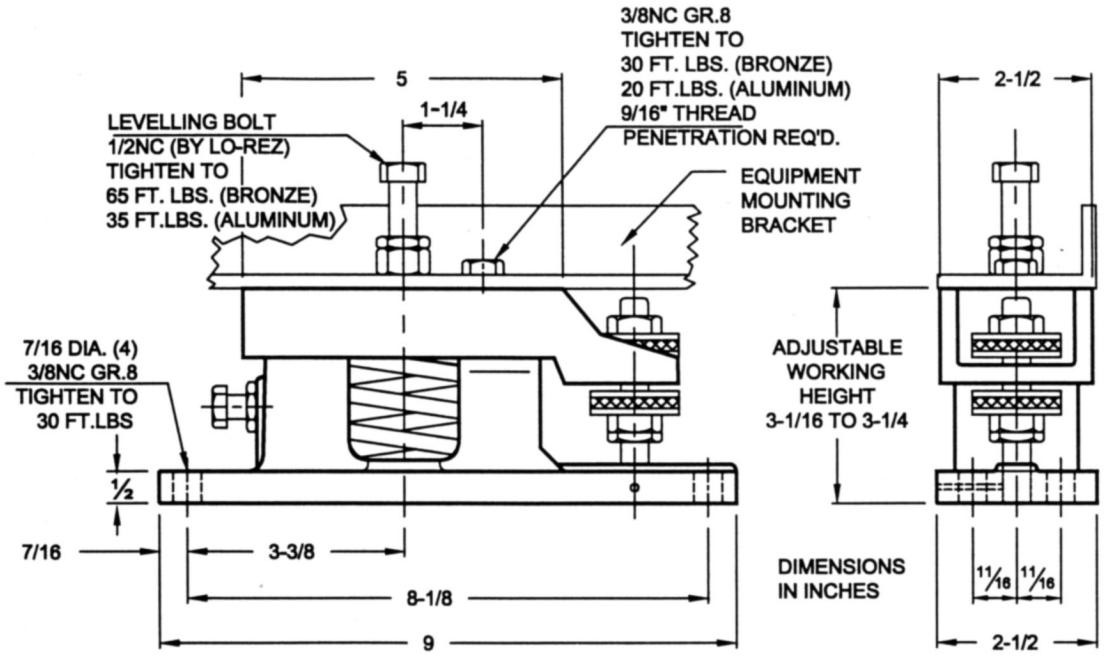
BR1-L ISOLATOR

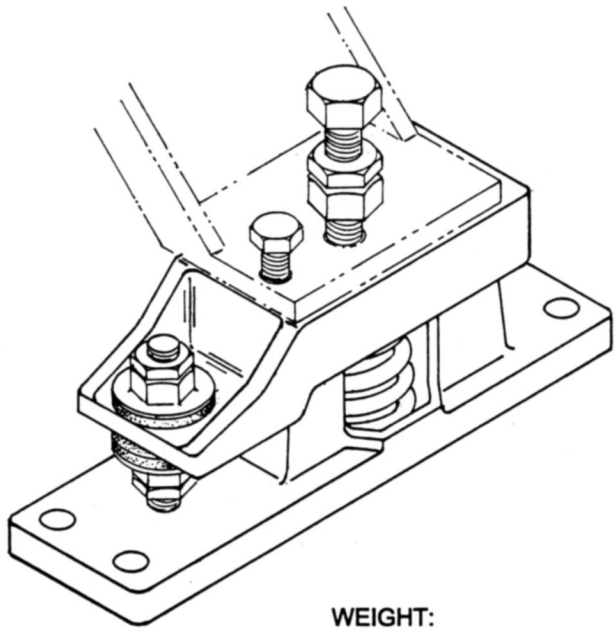


The BR1-L isolator incorporates a limit stop to prevent excessive vertical motion and rocking motion of isolated equipment in ships, locomotives, trailers, etc. It is a useful isolator also where high lateral loading of stationary equipment may occur due to wind and/or earthquake loading. The neoprene bumpers can be easily adjusted to accommodate the actual working height of the isolator (shown here in the mid position) as well as to limit the random motions to any desired degree (± 1/16" shown).

The 1/2" levelling screw and the additional 3/8" cap screw securely fasten the equipment sub-base to the top of the isolator. As with all LO-REZ isolators there are neoprene dampers inside each end of the isolator (adjustable at one end) to withstand lateral (including crash) forces - so obviating the need for any external chocks.

CAPACITY AND DEFLECTION

RATED LOAD CAPACITY (Lbs)	STATIC DEFLECTION, d, AT RATED LOAD (Inches)	NATURAL FREQUENCY, Fn, AT RATED LOAD (CPM)
65	1.00	188
100	1.00	188
125	.95	193
150	.95	193
175	.95	193
200	.90	198
250	.85	204
300	.80	210
350	.80	210
400	.70	225
500	.65	233
650	.55	254
800	.55	254
1000	.55	254
1200	.45	280



WEIGHT:
BRONZE 8-1/4 LBS.
ALUMINUM 3-7/8 LBS.

LO-REZ VIBRATION CONTROL LTD.
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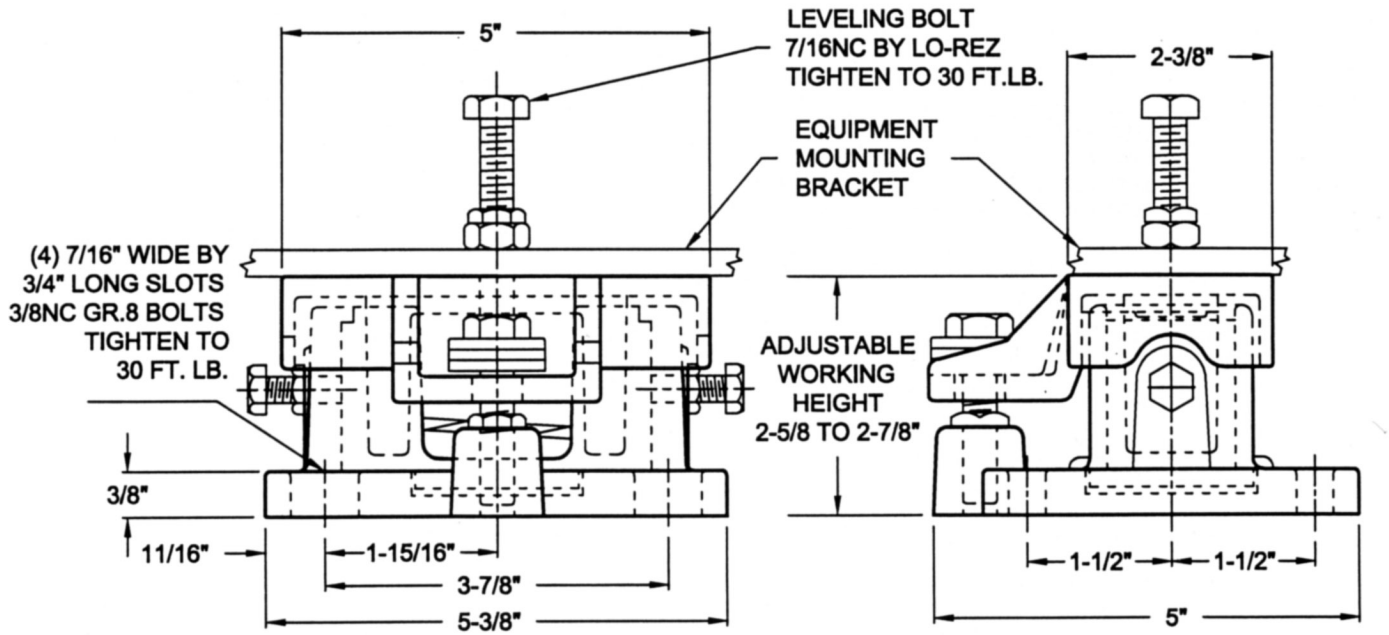
WEB: www.LO-REZ.COM E-MAIL: lo-rez@LO-REZ.COM

BR1-LW ISOLATOR



The BR1-LW isolator incorporates a limit stop to prevent excessive vertical motion and rocking motion of isolated equipment in ships, locomotives, trailers, etc. It is a useful isolator also where high lateral loading of stationary equipment may occur due to wind and/or earthquake loading. The neoprene bumper can be easily adjusted to accommodate the actual working height of the isolator (shown here in the mid position) as well as to limit the random motions to any desired degree (± 1/16" shown).

The 1/2" levelling screw and the additional 3/8" cap screw securely fasten the equipment sub-base to the top of the isolator. As with all LO-REZ isolators there are neoprene dampers inside each end of the isolator (adjustable at one end) to withstand lateral (including crash) forces - so obviating the need for any external chocks.

CAPACITY AND DEFLECTION

RATED LOAD CAPACITY (Lbs)	STATIC DEFLECTION, d, AT RATED LOAD (inches)	NATURAL FREQUENCY, Fn, AT RATED LOAD (CPM)
65	1.00	188
100	1.00	188
125	.95	193
150	.95	193
175	.95	193
200	.90	198
250	.85	204
300	.80	210
350	.80	210
400	.70	225
500	.65	233
650	.55	254
800	.55	254
1000	.55	254
1200	.45	280

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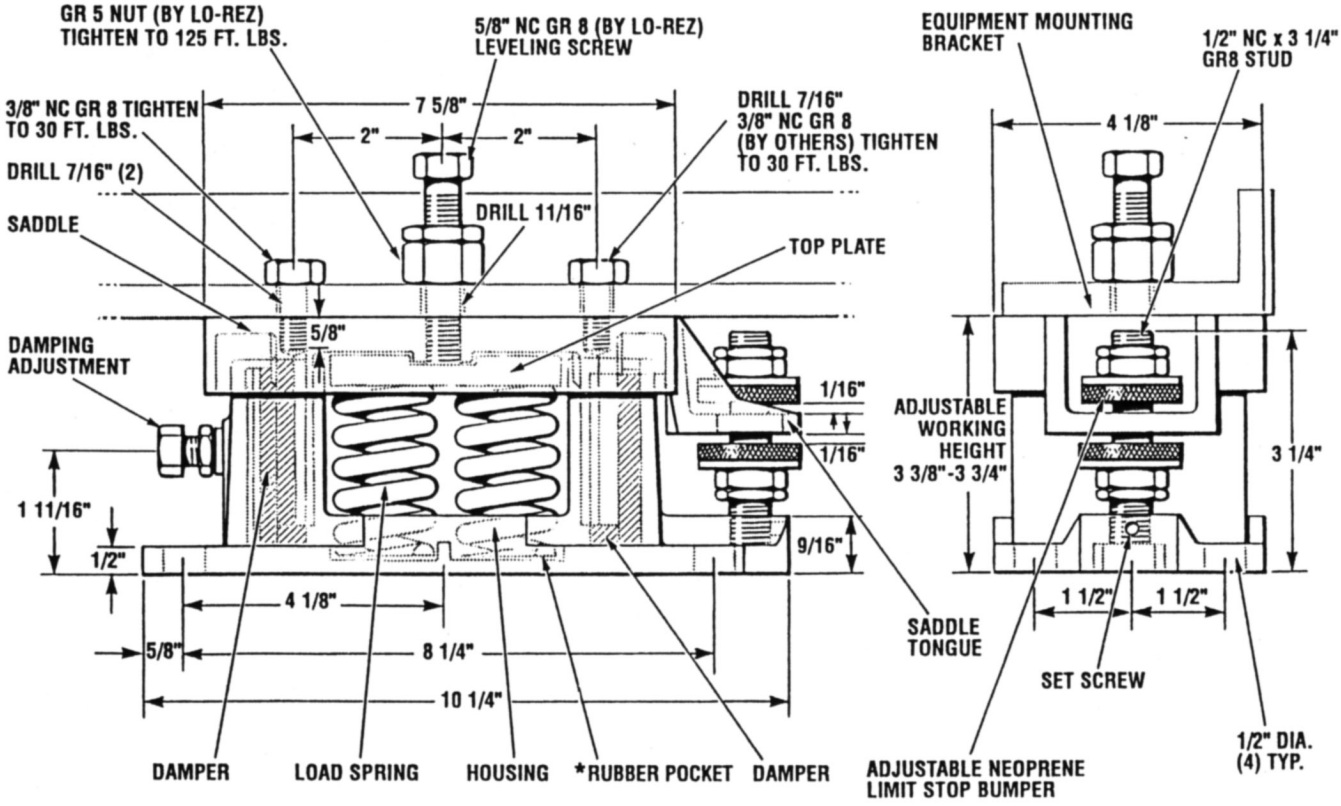
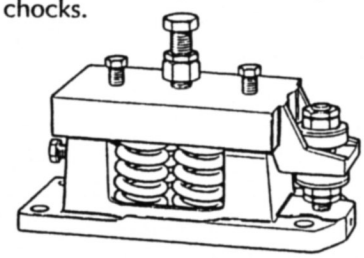
BR4-ELS ISOLATOR

WITH INTEGRAL LIMIT STOP



The **BR4-ELS** isolator incorporates a limit stop to prevent excessive vertical motion and rocking motion of isolated equipment in ships, locomotives, trailers, etc. It is a useful isolator also where high horizontal and tipping loading of stationary equipment may occur due to wind and/or earthquake loading. The neoprene bumpers can be easily adjusted to accommodate the actual working height of the isolator (shown here in the lowest position) as well as to limit the random motions to any desired degree (± 1/16" shown).

The 5/8" leveling screw and the additional 3/8" cap screws securely fasten the equipment sub-base to the top of the isolator. As with all **LO-REZ** isolators there are neoprene dampers inside each end of the isolator (adjustable at one end) to withstand longitudinal and lateral (including crash) forces - so obviating need for any external chocks.



CAPACITY AND DEFLECTION

RATED LOAD CAPACITY (lbs)	STATIC DEFLECTION d, AT RATED LOAD (INCHES)		NATURAL FREQ., Fn, AT RATED LOAD	
BR4-ELS	LOW RANGE	HIGH RANGE	LOW RANGE	HIGH RANGE
800	0.60	2.00	243CPM	133CPM
1000	0.60	2.00	243	133
1200	0.60	2.00	243	133
1600	0.60	2.00	243	133
1800	0.60	2.00	243	133
2000	0.60	2.00	243	133
2200	0.60	1.80	243	140
2400	0.60	1.50	243	149
2600	0.60	1.40	243	159
2800	0.60	1.20	243	172
3000	0.60	1.00	243	188
3200	0.60	1.00	243	188

* Load springs are seated in rubber pockets. There is no metal-to-metal contact between saddle and housing.

LO-REZ
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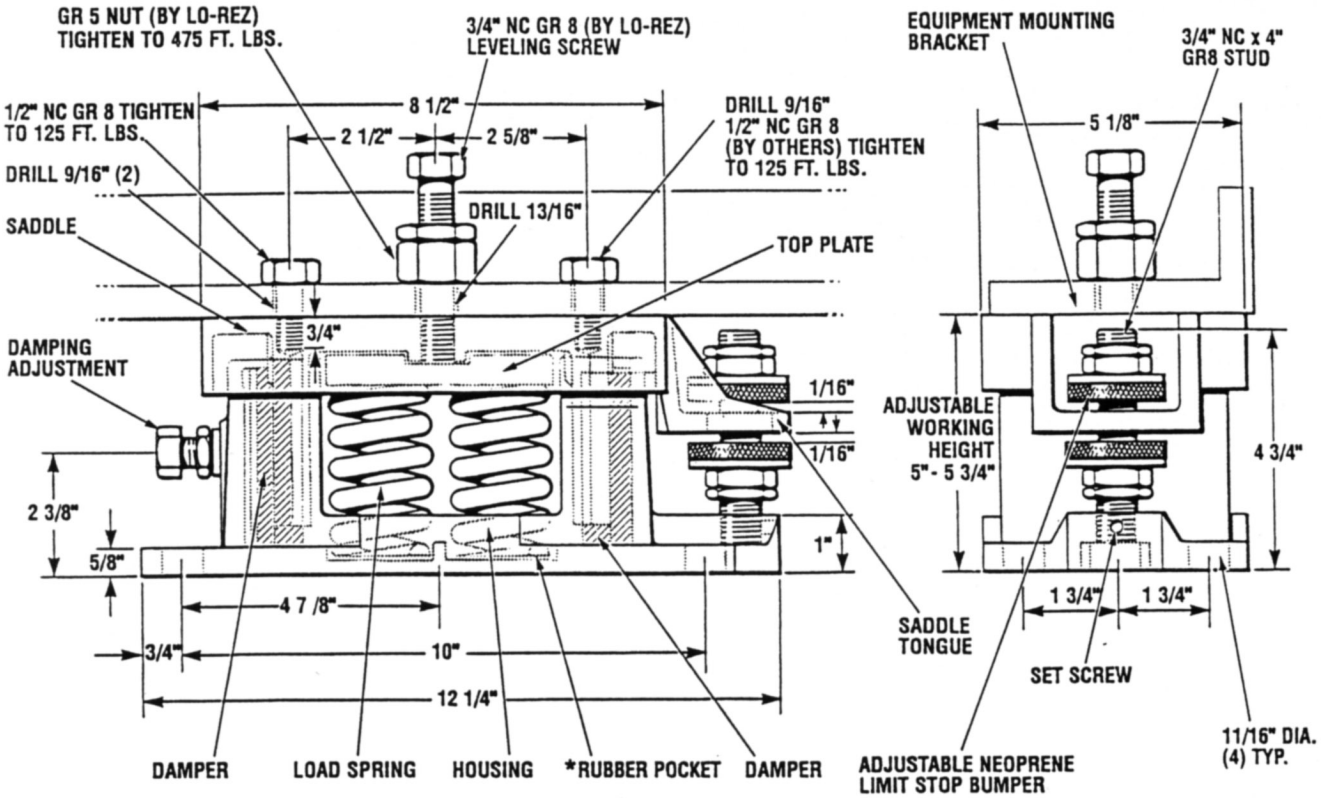
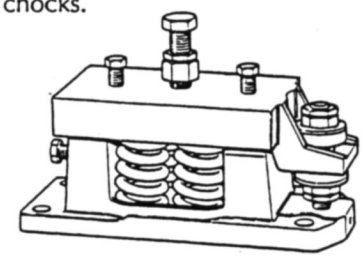
BR4-LS ISOLATOR

WITH INTEGRAL LIMIT STOP



The **BR4-LS** isolator incorporates a limit stop to prevent excessive vertical motion and rocking motion of isolated equipment in ships, locomotives, trailers, etc. It is a useful isolator also where high horizontal and tipping loading of stationary equipment may occur due to wind and/or earthquake loading. The neoprene bumpers can be easily adjusted to accommodate the actual working height of the isolator (shown here in the lowest position) as well as to limit the random motions to any desired degree (± 1/16" shown).

The 3/4" leveling screw and the additional 1/2" cap screws securely fasten the equipment sub-base to the top of the isolator. As with all **LO-REZ** isolators there are neoprene dampers inside each end of the isolator (adjustable at one end) to withstand longitudinal and lateral (including crash) forces - so obviating need for any external chocks.



CAPACITY AND DEFLECTION

RATED LOAD CAPACITY (lbs)	STATIC DEFLECTION d, AT RATED LOAD (Inches)	NATURAL FREQ., Fn, AT RATED LOAD
1000	1.00	188CPM
1200	1.00	188
1400	1.00	188
1600	1.00	188
1600	1.00	188
1800	1.00	188
2000	1.00	188
2400	1.00	188
2600	1.00	188
2800	1.00	188
3000	1.00	188
3200	0.76	215
3600	0.76	215
4000	0.60	243
4400	0.60	243
4800	0.60	243

* Load springs are seated in rubber pockets. There is no metal-to-metal contact between saddle and housing.

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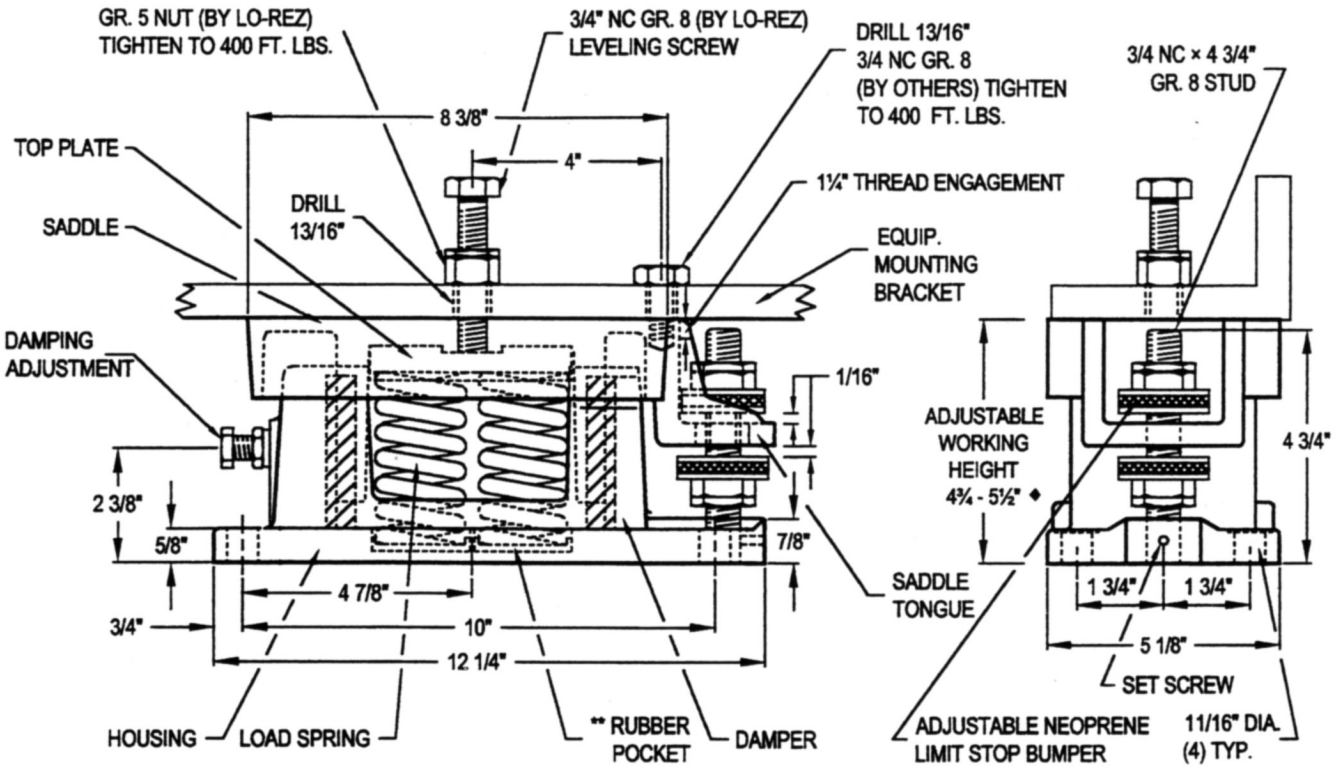
BR4-LSC* ISOLATOR

WITH INTEGRAL LIMIT STOP



◆ DESIGN EQUIPMENT MOUNTING BRACKETS FOR A WORKING HEIGHT OF 5-3/8"

The **BR4-LSC** isolator incorporates a limit stop to prevent excessive vertical motion and rocking motion of isolated equipment in ships, locomotives, trailers, etc. It is a useful isolator also where high horizontal and tipping loading of stationary equipment may occur due to wind and/or earthquake loading. The neoprene bumpers can be easily adjusted to accommodate the actual working height of the isolator (shown here in the lowest position) as well as to limit the random motions to any desired degree (± 1/16" shown).

The 3/4" leveling screw and the additional 3/4" cap screw securely fasten the equipment sub-base to the top of the isolater. As with all **LO-REZ** isolators there are neoprene dampers inside each end of the isolator (adjustable at one end) to withstand longitudinal and lateral (including crash) forces - so obviating need for any external chocks.

CAPACITY AND DEFLECTION

RATED LOAD CAPACITY (lbs)	STATIC DEFLECTION d, AT RATED LOAD (Inches)	NATURAL FREQ., Fn, AT RATED LOAD
1000	1.00	188
1200	1.00	188
1400	1.00	188
1600	1.00	188
1800	1.00	188
2000	1.00	188
2400	1.00	188
2600	1.00	188
2800	1.00	188
3000	1.00	188
3200	0.76	215
3600	0.76	215
4000	0.60	243
4400	0.60	243
4800	0.60	243

** Load springs are seated in rubber pockets. There is no metal-to-metal contact between saddle and housing.

***CATERPILLAR MODEL**

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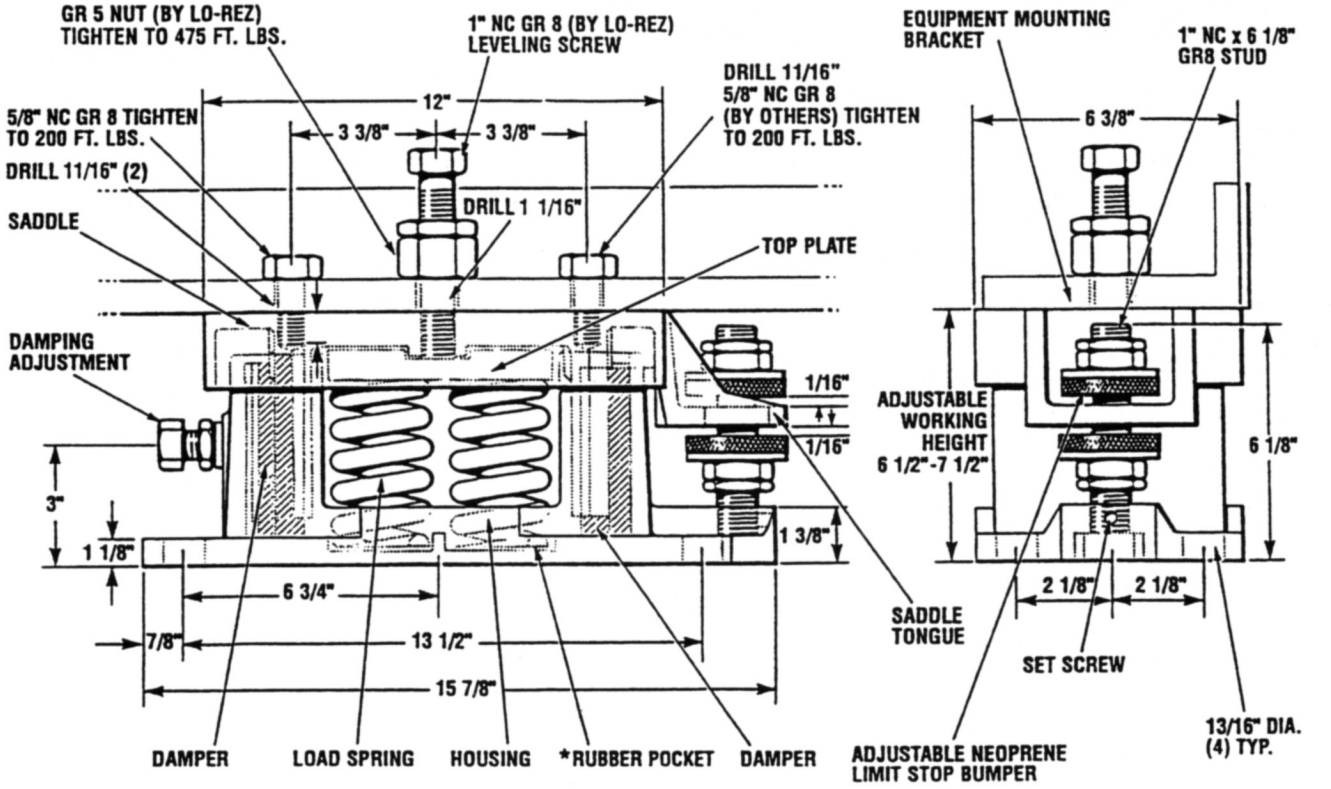
Web: www.LO-REZ.COM E.mail: lo-rez@LO-REZ.COM

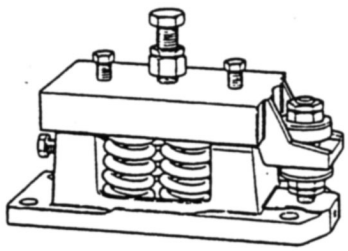
BR4-MS ISOLATOR

WITH INTEGRAL LIMIT STOP



The **BR4-MS** isolator incorporates a limit stop to prevent excessive vertical motion and rocking motion of isolated equipment in ships, locomotives, trailers, etc. It is a useful isolator also where high horizontal and tipping loading of stationary equipment may occur due to wind and/or earthquake loading. The neoprene bumpers can be easily adjusted to accommodate the actual working height of the isolator (shown here in the lowest position) as well as to limit the random motions to any desired degree (± 1/16" shown).

The 1" leveling screw and the additional 5/8" cap screws securely fasten the equipment sub-base to the top of the isolator. As with all **LO-REZ** isolators there are neoprene dampers inside each end of the isolator (adjustable at one end) to withstand longitudinal and lateral (including crash) forces - so obviating need for any external chocks.



CAPACITY AND DEFLECTION

RATED LOAD CAPACITY (lbs)	STATIC DEFLECTION d, AT RATED LOAD (Inches)		NATURAL FREQ., Fn, AT RATED LOAD	
BR4-MS	LOW RANGE	HIGH RANGE	LOW RANGE	HIGH RANGE
4000	1.00	3.00	188CPM	108CPM
4500	1.00	2.90	188	110
5000	1.00	2.60	188	115
5500	1.00	2.50	188	119
6000	1.00	2.20	188	127
6500	1.00	2.00	188	133
7000	1.00	1.80	188	140
7500	1.00	1.50	188	149
8000	1.00	1.40	188	159
8500	1.00	1.20	188	172
9000	1.00	1.00	188	188
10000	0.76	1.00	215	188
11000	0.60	0.96	243	192
12000	0.60	0.81	243	208

* Load springs are seated in rubber pockets. There is no metal-to-metal contact between saddle and housing.

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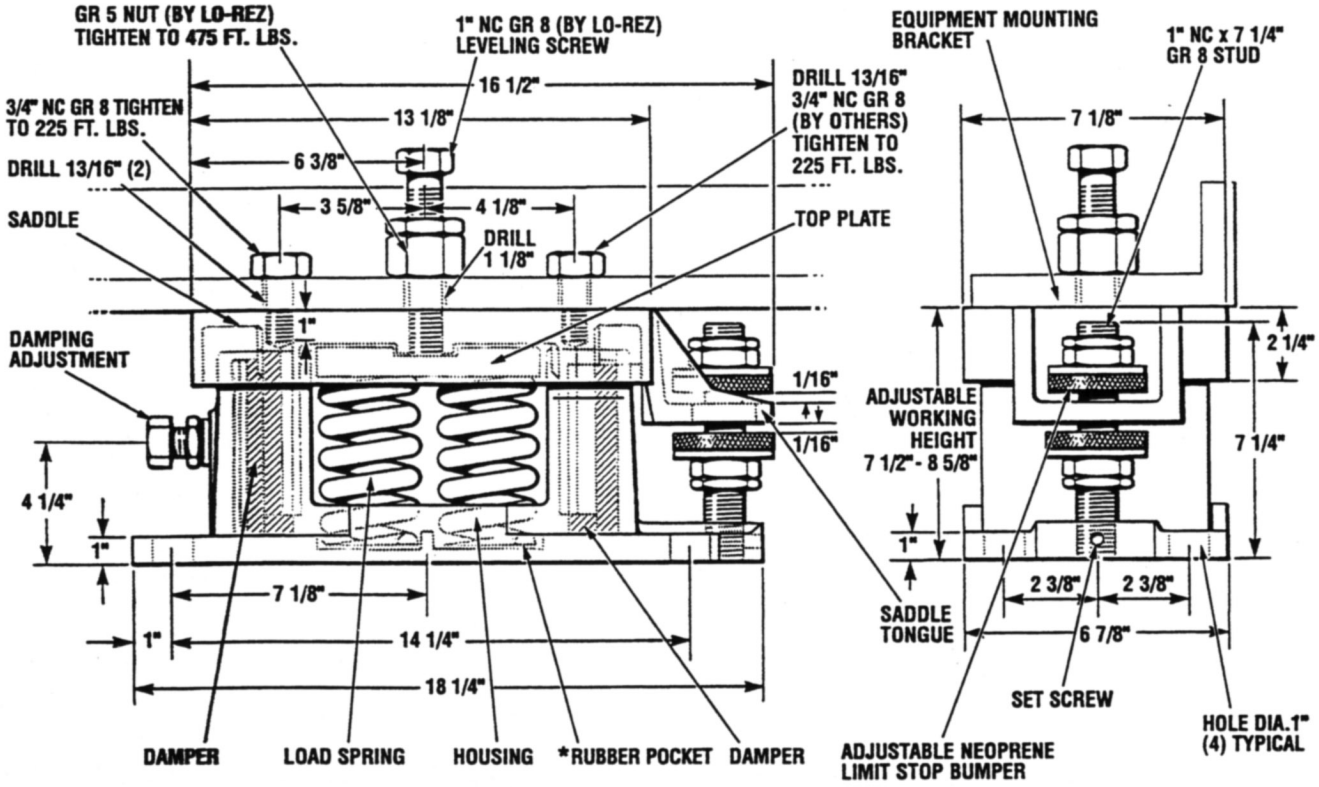
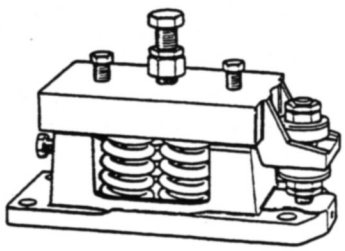
BR4-HS ISOLATOR

WITH INTEGRAL LIMIT STOP



The **BR4-HS** isolator incorporates a limit stop to prevent excessive vertical motion and rocking motion of isolated equipment in ships, locomotives, trailers, etc. It is a useful isolator also where high horizontal and tipping loading of stationary equipment may occur due to wind and/or earthquake loading. The neoprene bumpers can be easily adjusted to accommodate the actual working height of the isolator (shown here in the lowest position) as well as to limit the random motions to any desired degree (± 1/16" shown).

The 1" leveling screw and the additional 3/4" cap screws securely fasten the equipment sub-base to the top of the isolator. As with all **LO-REZ** isolators there are neoprene dampers inside each end of the isolator (adjustable at one end) to withstand longitudinal and lateral (including crash) forces - so obviating need for any external chocks.



CAPACITY AND DEFLECTION

RATED LOAD CAPACITY (lbs)	STATIC DEFLECTION d, AT RATED LOAD (Inches)	NATURAL FREQ., Fn, AT RATED LOAD
2000	1.00	188CPM
2600	1.00	188
3200	1.00	188
4000	1.00	188
5000	1.00	188
6000	1.00	188
7000	1.00	188
8000	1.00	188
10000	1.00	188
12000	0.86	203
14000	0.86	203

* Load springs are seated in rubber pockets. There is no metal-to-metal contact between saddle and housing.

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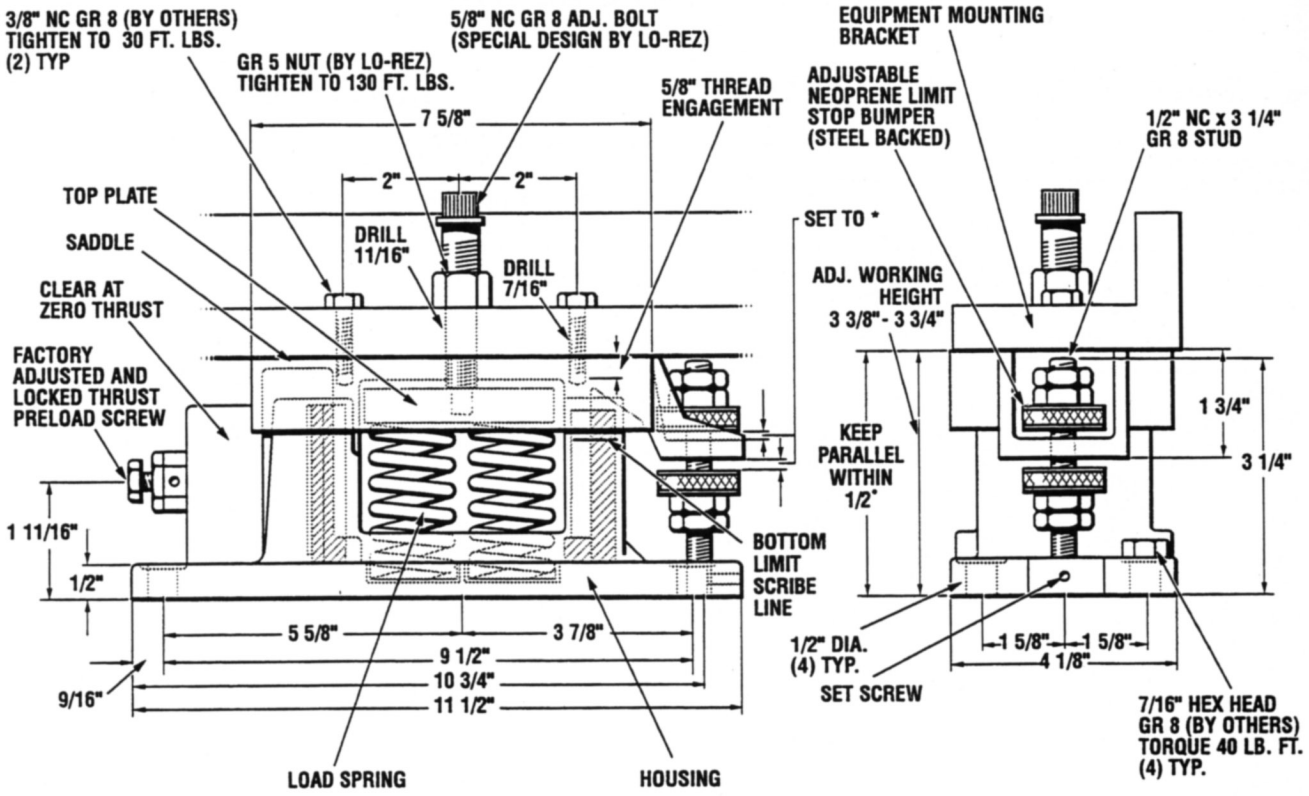
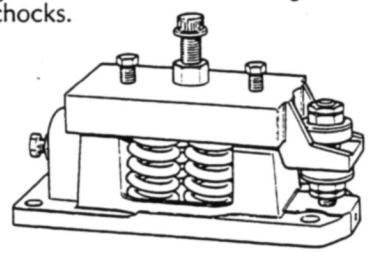
BR4-TELS ISOLATOR



The **BR4-TELS** isolator incorporates a limit stop to prevent excessive vertical motion and rocking motion of isolated equipment in ships, locomotives, trailers, etc. It is a useful isolator also where high lateral loading of stationary equipment may occur due to wind and/or earthquake loading. The neoprene bumpers can be easily adjusted to accommodate the actual working height of the isolator (shown here in the lowest position) as well as to limit the random motions to any desired degree (± 1/16" shown).

The **LO-REZ BR-T** isolators have special thrust carrying devices which permit them to carry full thrust load without "locking up" so that they are capable of providing effective isolation of the engine-generated vibration over the entire speed range.

The 5/8" leveling screw and the additional 3/8" cap screw securely fasten the equipment sub-base to the top of the isolator. As with all **LO-REZ** isolators there are neoprene dampers inside each end of the isolator to withstand lateral (including crash) forces - so obviating need for any external chocks.



CAPACITY AND DEFLECTION

RATED LOAD CAPACITY (lbs)	STATIC DEFLECTION d, AT RATED LOAD (INCHES)		NATURAL FREQ., Fn, AT RATED LOAD	
BR4-TELS	LOW RANGE	HIGH RANGE	LOW RANGE	HIGH RANGE
800	0.60	2.00	243CPM	133CPM
1000	0.60	2.00	243	133
1200	0.60	2.00	243	133
1600	0.60	2.00	243	133
1800	0.60	2.00	243	133
2000	0.60	2.00	243	133
2200	0.60	1.80	243	140
2400	0.60	1.50	243	149
2600	0.60	1.40	243	159
2800	0.60	1.20	243	172
3000	0.60	1.00	243	188
3200	0.60	1.00	243	188

* As indicated in applicable instruction manual.

Design equipment mounting brackets for a working height of 3-9/16".

Load springs are seated in rubber pockets. There is no metal-to-metal contact between saddle & housing.

LO-REZ
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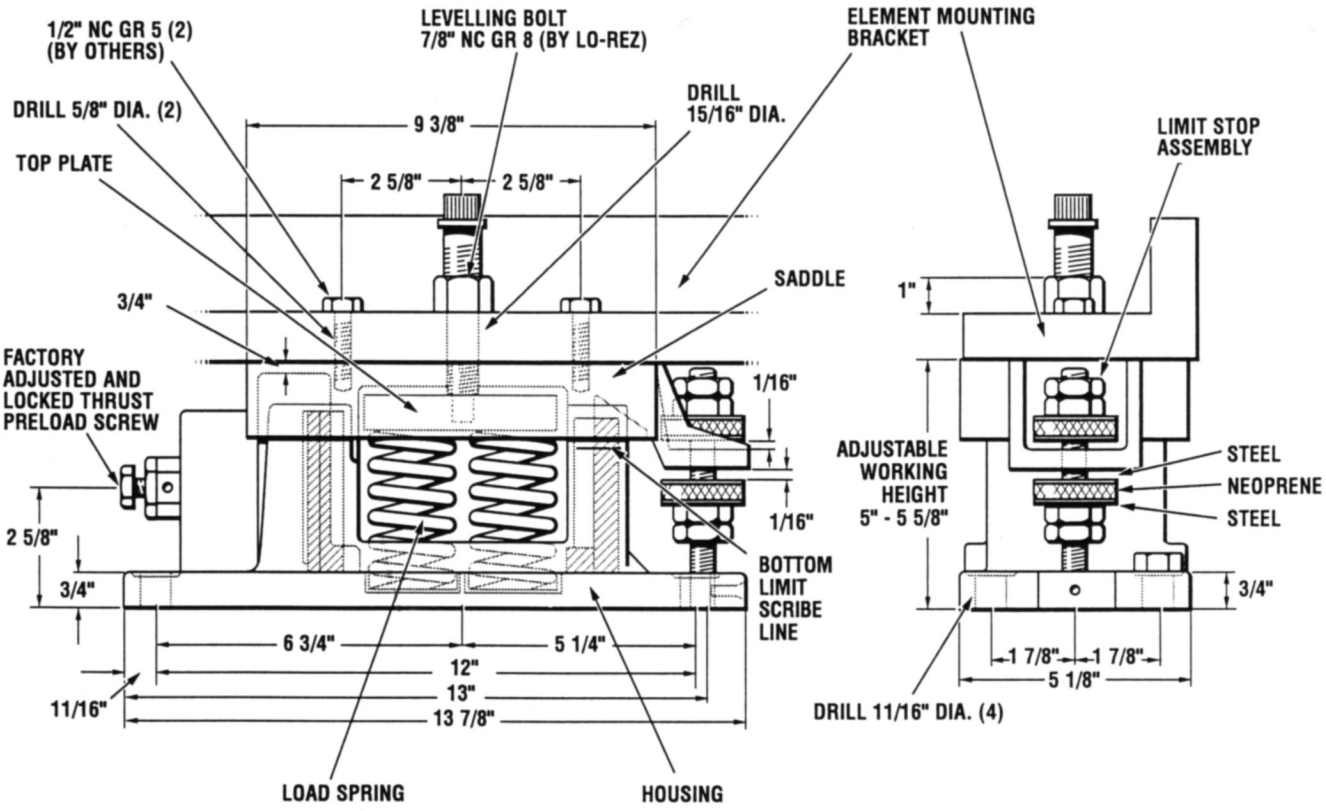
BR4-TLS ISOLATOR



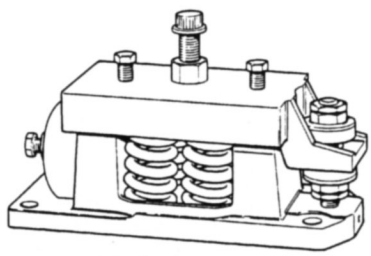
The **BR4-TLS** isolator incorporates a limit stop to prevent excessive vertical motion and rocking motion of isolated equipment in ships, locomotives, trailers, etc. It is a useful isolator also where high lateral loading of stationary equipment may occur due to wind and/or earthquake loading. The neoprene bumpers can be easily adjusted to accommodate the actual working height of the isolator (shown here in the lowest position) as well as to limit the random motions to any desired degree (± 1/16" shown).

The **LO-REZ BR-T** isolators have special thrust carrying devices which permit them to carry full thrust load without "locking up" so that they are capable of providing effective isolation of the engine-generated vibration over the entire speed range.

The 7/8" leveling screw and the additional 1/2" cap screw securely fasten the equipment sub-base to the top of the isolator. As with all **LO-REZ** isolators there are neoprene dampers inside each end of the isolator to withstand lateral (including crash) forces - so obviating need for any external chocks.

CAPACITY AND DEFLECTION

RATED LOAD CAPACITY (lbs)	STATIC DEFLECTION d, AT RATED LOAD (Inches)	NATURAL FREQ., Fn, AT RATED LOAD
1000	0.60	243CPM
1200	0.60	243
1400	0.60	243
1600	0.60	243
2000	0.60	243
2600	0.60	243
3200	0.60	243
4000	0.60	243
4800	0.60	243



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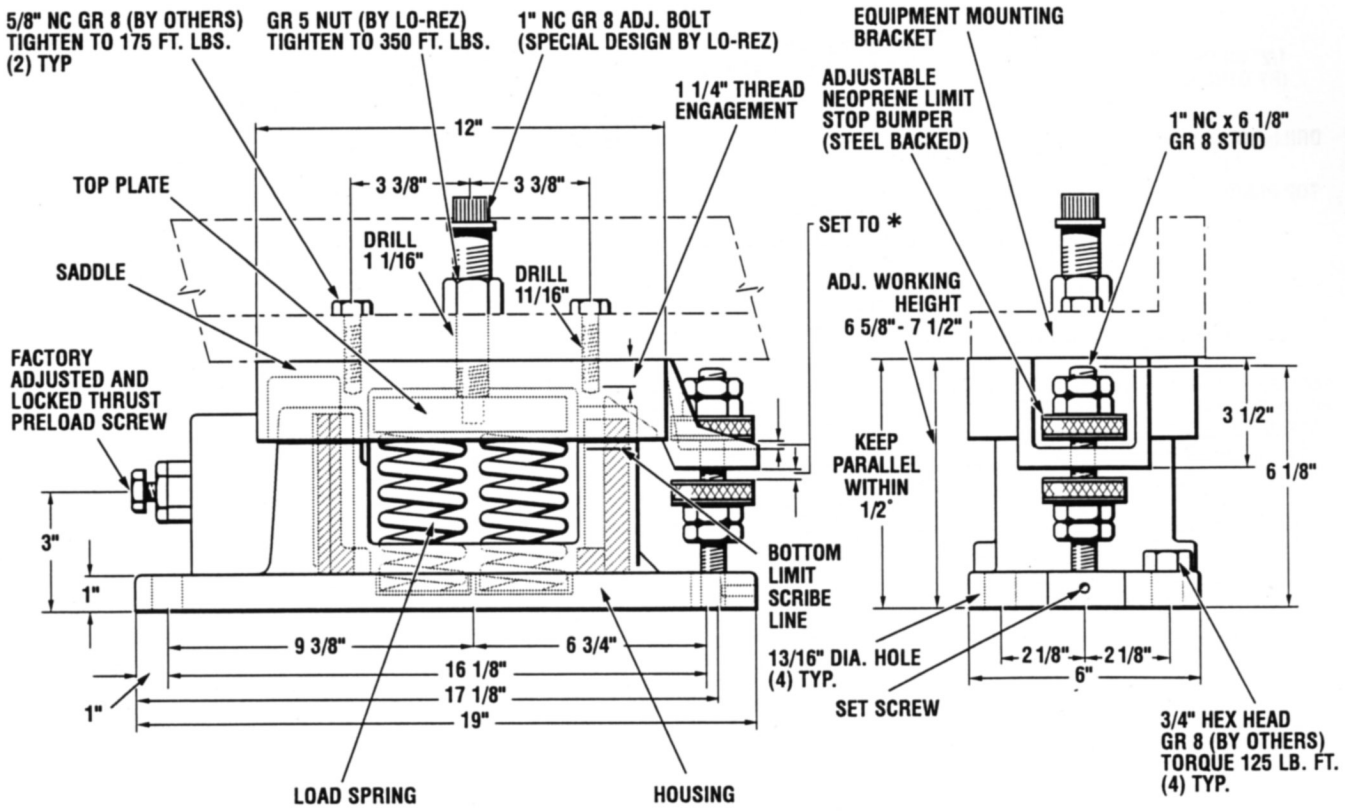
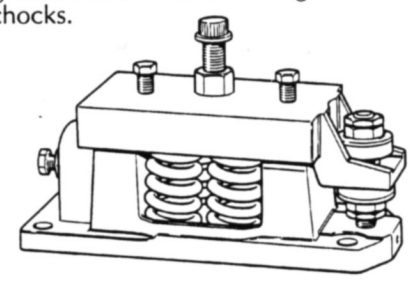
BR4-TMS ISOLATOR



The **BR4-TMS** isolator incorporates limit stop bumpers to prevent excessive vertical motion and rocking motion of isolated equipment in ships, locomotives, trailers, etc. It is a useful isolator also where high lateral loading of stationary equipment may occur due to wind and/or earthquake loading. The neoprene bumpers can be easily adjusted to accommodate the actual working height of the isolator (shown here in the lowest position) as well as to limit the random motions to any desired degree (± 1/16" shown).

The **LO-REZ BR-T** isolators have special thrust carrying devices which permit them to carry full thrust load without "locking up" so that they are capable of providing effective isolation of the engine-generated vibration over the entire speed range.

The 1" adjusting bolt and the additional 5/8" cap screw securely fasten the equipment sub-base to the top of the isolator. As with all **LO-REZ** isolators there are neoprene dampers inside each end of the isolator to withstand lateral (including crash) forces - so obviating need for any external chocks.



CAPACITY AND DEFLECTION

RATED LOAD CAPACITY (lbs)	STATIC DEFLECTION d, AT RATED LOAD (INCHES)		NATURAL FREQ., Fn, AT RATED LOAD	
BR4-TMS	LOW RANGE	HIGH RANGE	LOW RANGE	HIGH RANGE
4000	1.00	3.00	188CPM	108CPM
4500	1.00	2.90	188	110
5000	1.00	2.60	188	115
5500	1.00	2.50	188	119
6000	1.00	2.20	188	127
6500	1.00	2.00	188	133
7000	1.00	1.80	188	140
7500	1.00	1.50	188	149
8000	1.00	1.40	188	159
8500	1.00	1.20	188	172
9000	1.00	1.00	188	188
10000	0.76	1.00	215	188
11000	0.60	0.96	243	192
12000	0.60	0.81	243	208

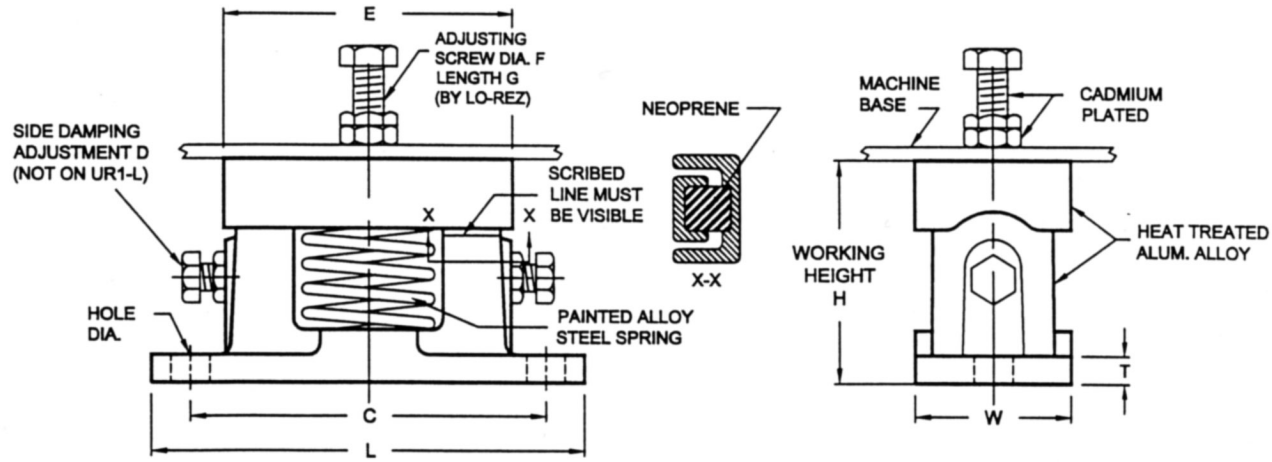
* As indicated in applicable instruction manual.

Design equipment mounting brackets for a working height of 7".

Load springs are seated in rubber pockets. There is no metal-to-metal contact between saddle & housing.

LO-REZ
DESIGNED AND MANUFACTURED BY:
LO-REZ VIBRATION CONTROL LTD.
186 WEST 8TH AVE., VANCOUVER, B.C., CANADA. V5Y 1N2
TEL: (604) 879-2974 FAX: (604) 879-6588

UR1 - L / TR1 - L(A) ISOLATORS



These isolators are intended primarily for applications involving high lateral thrusts (marine, railroad, pump sets, etc.) and/or where disturbing frequencies are fairly high. The UR1-L and TR1-L(A) isolators have a thrust capacity in the longitudinal direction of 400 lbs. continuous, 800 lbs. instantaneous.

DIMENSIONS (Inches)

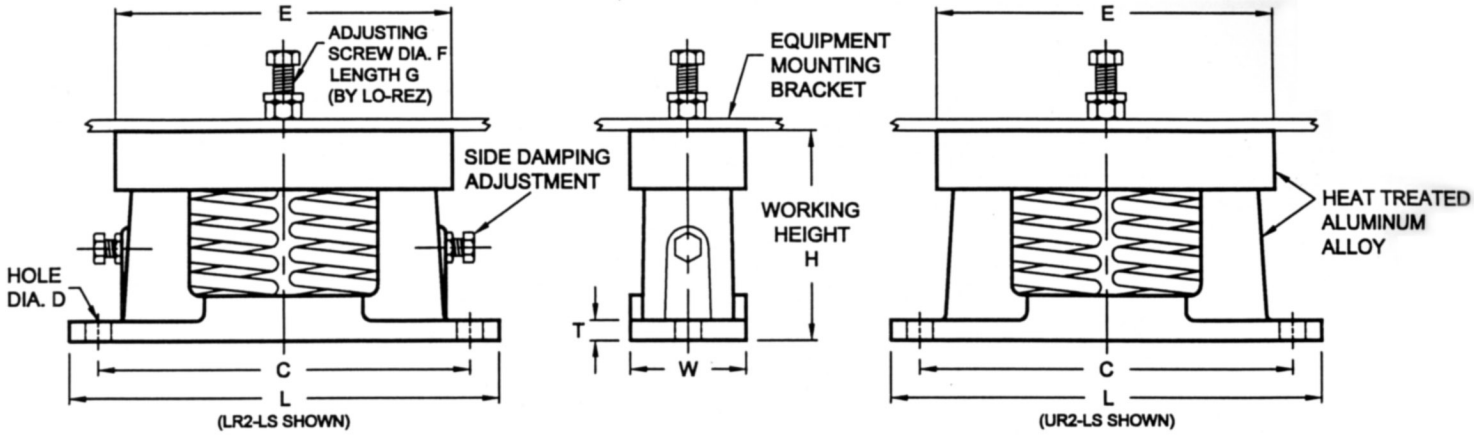
	C	D	E	F	G	T	L	W	APPROX. WEIGHT (LBS.)	WORKING HT. - H	
										MIN.	MAX.
UR1 - L	6	9/16	4-3/8	7/16	2-1/2	7/16	7-1/8	2-1/4	2	2-1/2	3
TR1 - L(A)	6-3/4	9/16	4-3/8	1/2	2-1/2	7/16	7-3/4	2-1/4	2-1/2	2-1/2	3

CAPACITY AND DEFLECTION

RATED LOAD CAPACITY (Lbs.)	STATIC DEFLECTION, d, AT RATED LOAD (Inches)	NATURAL FREQUENCY, Fn, AT RATED LOAD (CPM)
100	1.00	188
125	.95	193
150	.95	193
175	.95	193
200	.90	198
250	.85	204
300	.80	210
350	.80	210
400	.70	225
500	.65	233
650	.55	254
800	.55	254
1000	.55	254
1200	.45	280

Example: The UR1-L-350 isolator, having non-adjustable side damping, has a static deflection of .80" and natural frequency of 210 cycles per minute when carrying its rated load of 350 lbs.

UR-LS, LR-LS ISOLATORS



LR-LS and UR-LS Isolators have the same capacities, dimensions, and deflections, the only difference being that the LR-LS Isolators have side damping adjustment. Both the LR-LS and the UR-LS are provided in two deflection ranges, "Standard" and "Special".

Isolators with large deflections (over 1" approximately) are pre-loaded, with an exclusive internal preloading device, to within 1" of the minimum working height.

DIMENSIONS (Inches)

	C	D	E	F	G	T	L	W	APPROX. WEIGHT (LBS.)	WORKING HT. - H	
										MIN.	MAX.
UR1-LS LR1-LS	5-3/4	9/16	4-5/8	7/16	2-1/2	3/8	7	2-3/8	2-1/2	3-5/8	4-3/8
UR2-LS LR2-LS	8	9/16	7-1/4	1/2	3	7/16	9-1/4	2-1/2	4-1/2	4-1/8	4-7/8
UR4-LS LR4-LS	9-1/2	5/8	8-3/8	5/8	3-1/2	1/2	10-3/4	4-7/8	13	4-3/8	5-1/8
UR6-LS LR6-LS	12	13/16	10-7/8	3/4	4	9/16	13-1/2	5	18	4-5/8	5-1/2

CAPACITY AND DEFLECTION

RATED LOAD CAPACITY - (Lbs)				STATIC DEFLECTION AT RATED LOAD (Inches)		NATURAL FREQ., Fn, AT RATED LOAD (CPM)	
UR1-LS LR1-LS	**UR2-LS LR2-LS**	**UR4-LS LR4-LS**	**UR6-LS LR6-LS**	**Standard Isolators**	**Special Isolators**	**Standard Isolators**	**Special Isolators**
100	200	400	600	3.00	5.00	108	84
125	250	500	750	2.90	4.50	110	89
150	300	600	900	2.60	4.00	116	94
175	350	700	1050	2.50	3.50	119	100
200	400	800	1200	2.20	3.30	127	103
250	500	1000	1500	2.00	3.20	133	105
300	600	1200	1800	1.80	3.00	140	108
350	700	1400	2100	1.60	2.40	149	121
400	800	1600	2400	1.40	2.14	159	128
500	1000	2000	3000	1.20	1.88	172	137
650	1300	2600	3900	1.00	1.44	188	156
800	1600	3200	4800	.76	1.23	215	169
1000	2000	4000	6000	.72	.96	222	192
1200	2400	4800	7200	.60	.81	243	208
1500	3000	6000	9000	.60	.81	243	208

Example: The LR6-LS-1800 Special Isolator is a six spring unit with side adjustments. Its load capacity is 1800 lbs., static deflection 3.00 inches, and natural frequency 108 cycles per minute.

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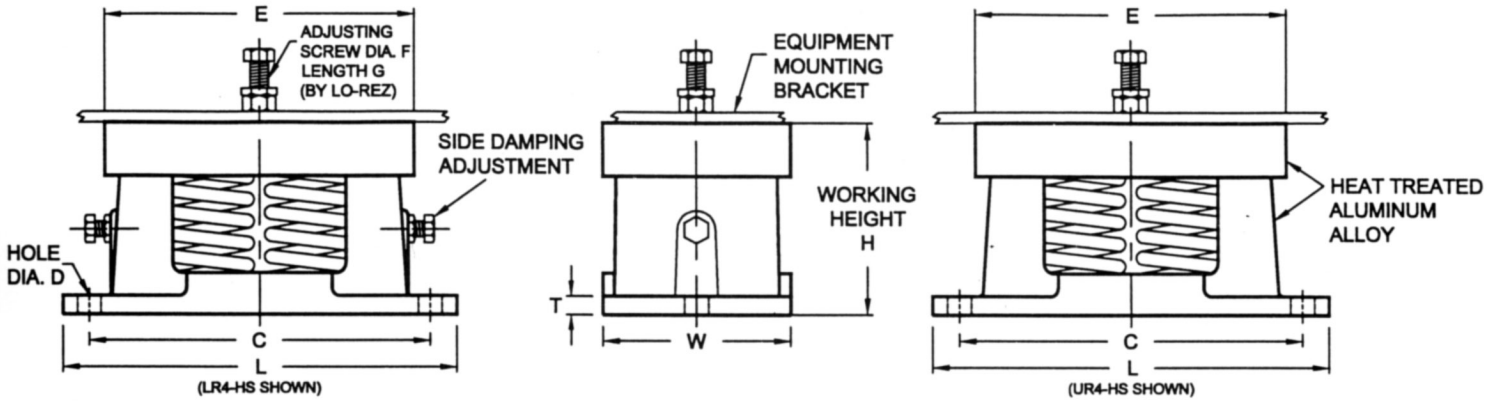
UR-HS, LR-HS ISOLATORS



LR-HS and UR-HS Isolators have the same capacities, dimensions, and deflections, the only difference being that the LR-HS Isolators have side damping adjustment. Both the LR-HS and the UR-HS are provided in two deflection ranges, "Standard" and "Special".

Isolators with large deflections (over 1" approximately) are pre-loaded, with an exclusive internal preloading device, to within 1" of the minimum working height.

DIMENSIONS (Inches)

	C	D	E	F	G	T	L	W	APPROX. WEIGHT (LBS.)	WORKING HT. - H	
										MIN.	MAX.
UR1-HS LR1-HS	7-3/4	5/8	7	5/8	4	7/16	9	3-1/4	10	6-1/2	7-1/4
UR4-HS LR4-HS	14-1/4	7/8	12-3/8	7/8	5	9/16	15-7/8	6-1/2	45	7-1/4	8-3/8
UR6-HS LR6-HS	17-1/4	1	15-1/4	1	5	5/8	19-1/8	6-1/2	55	7-1/4	8-3/8

CAPACITY AND DEFLECTION

RATED LOAD CAPACITY - (Lbs)			STATIC DEFLECTION AT RATED LOAD (Inches)		NATURAL FREQ., Fn, AT RATED LOAD (CPM)	
UR1-HS LR1-HS	**UR4-HS LR4-HS**	**UR6-HS LR6-HS**	**Standard Isolators**	**Special Isolators**	**Standard Isolators**	**Special Isolators**
200	800	1200	5.00	6.15	84	76
250	1000	1500	4.80	6.15	86	76
300	1200	1800	4.70	6.15	87	76
350	1400	2100	4.60	6.15	88	76
400	1600	2400	4.20	5.50	92	80
500	2000	3000	3.65	5.00	98	84
650	2600	3900	2.95	4.42	109	89
800	3200	4800	2.85	3.90	111	95
1000	4000	6000	2.20	3.40	127	102
1250	5000	7500	1.95	2.90	135	110
1500	6000	9000	1.70	2.50	144	119
1750	7000	10500	1.40	2.25	159	125
2000	8000	12000	1.12	2.00	178	133
2500	10000	15000	1.12	1.75	178	142
3000	12000	18000	.86	1.62	203	148
3500	14000	21000	.86	1.32	203	163

Example: The LR6-HS-3000 Special Isolator is a six spring unit with side adjustments. Its load capacity is 3000 lbs., static deflection 5.00 inches, and natural frequency 84 cycles per minute at rated load.

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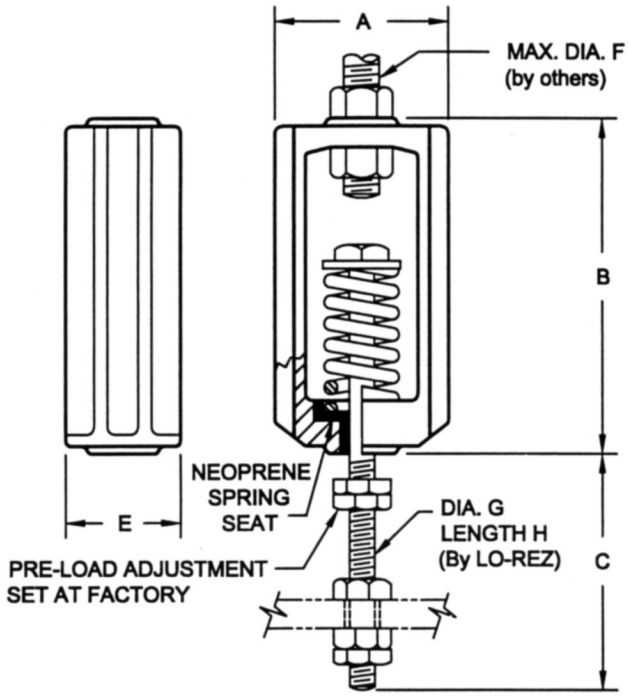
HR1-EEL, -EL, -LS, -MS ISOLATORS

SPRING HANGER



DIMENSIONS (Inches)

	HR1-EEL	HR1-EL	HR1-LS	HR1-MS
A	1-3/4	2-1/2	3-3/8	4-1/4
B	3	4-3/4	7-3/8	9-1/2
C	2	4	4	5
E	1-1/4	1-5/8	2-1/2	3
F	3/8	1/2	3/4	1
G*	5/16	3/8	1/2	5/8
H	4	6	8	10
Approx. Weight (lbs)	3/4	1-1/4	3	6

* High alloy bolts as required.

HANGER MATERIAL: Hi-tensile cast aluminum alloy - standard; Ferrous alloy for special applications.

Hanger isolators are completely factory assembled - no field assembly required.

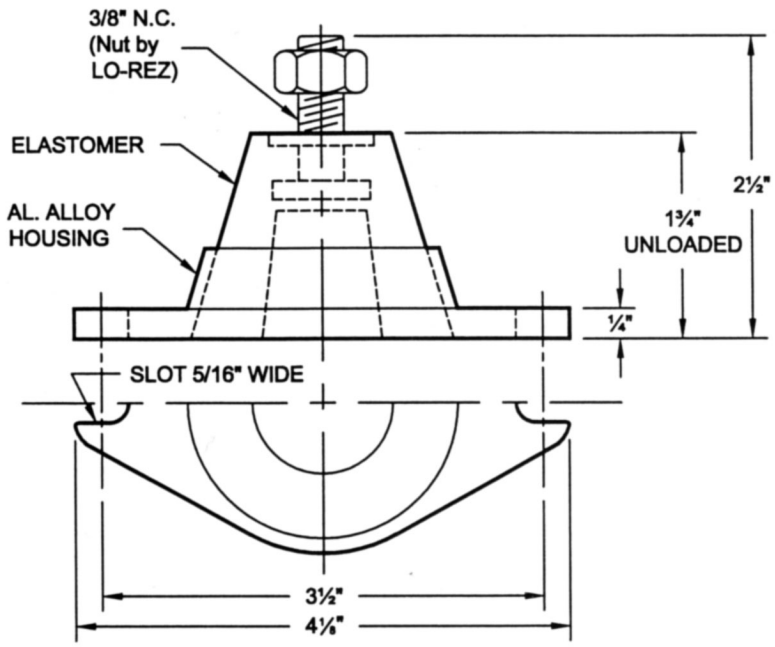
CAPACITY AND DEFLECTION

SERIES HR1-EEL			SERIES HR1-EL			SERIES HR1-LS			SERIES HR1-MS		
RATED LOAD CAPACITY (LBS)	d (Inches)	Fn (CPM)	RATED LOAD CAPACITY (LBS)	d (Inches)	Fn (CPM)	RATED LOAD CAPACITY (LBS)	d (Inches)	Fn (CPM)	RATED LOAD CAPACITY (LBS)	d (Inches)	Fn (CPM)
25	1.65	146	50	1.85	138	100	3.00	108	200	4.00	94
30	1.45	156	60	1.75	142	125	2.90	110	250	3.68	98
40	1.20	172	75	1.35	162	150	2.60	116	300	3.18	105
50	1.00	188	100	1.15	175	175	2.50	119	350	2.74	113
60	.80	210	125	1.10	179	200	2.20	127	400	2.42	121
80	.60	243	150	1.00	188	250	2.00	133	500	2.25	125
100	.50	266	175	.85	204	300	1.80	140	650	1.81	140
125	.45	280	200	.78	213	350	1.60	149	800	1.65	146
150	.40	297	250	.60	243	400	1.40	159	1000	1.33	163
175	.35	317	300	.55	254	500	1.20	172	1250	1.04	184
200	.30	342	350	.48	271	650	1.00	188	1500	.73	220
			400	.40	297	800	.76	215	1750	.73	220
			500	.38	305	1000	.72	222	2000	.73	220
						1200	.60	243			
						1500	.60	243			

d = Static deflection at rated load
Fn = Natural frequency at rated load

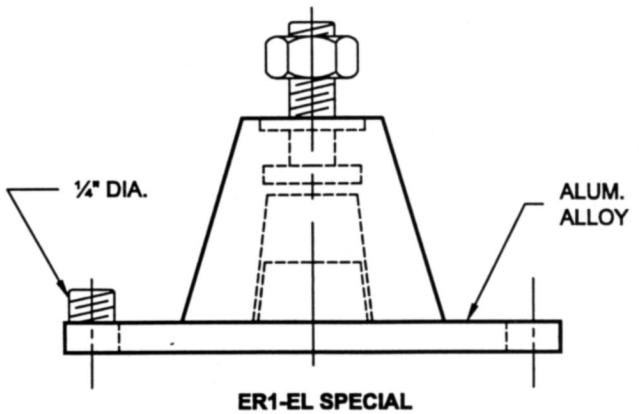
Example: The HR1-LS-650 is a spring hanger isolator having a rated load capacity of 650 lbs., a static deflection of 1.00" at its rated load, and a natural frequency of 188 C.P.M. when carrying its rated load.

ER1 - EL ELASTOMER ISOLATOR



ER1-EL STANDARD

The ER1-EL Standard Elastomer Isolator shown at the left utilizes an aluminum alloy housing which enables the Isolator to withstand the horizontal thrusts encountered in such isolated equipment as pumps, fans, mobile generating sets, etc. The housing also offers resistance to upward forces which may occur in ship-mounted equipment and other mobile equipment.



ER1-EL SPECIAL

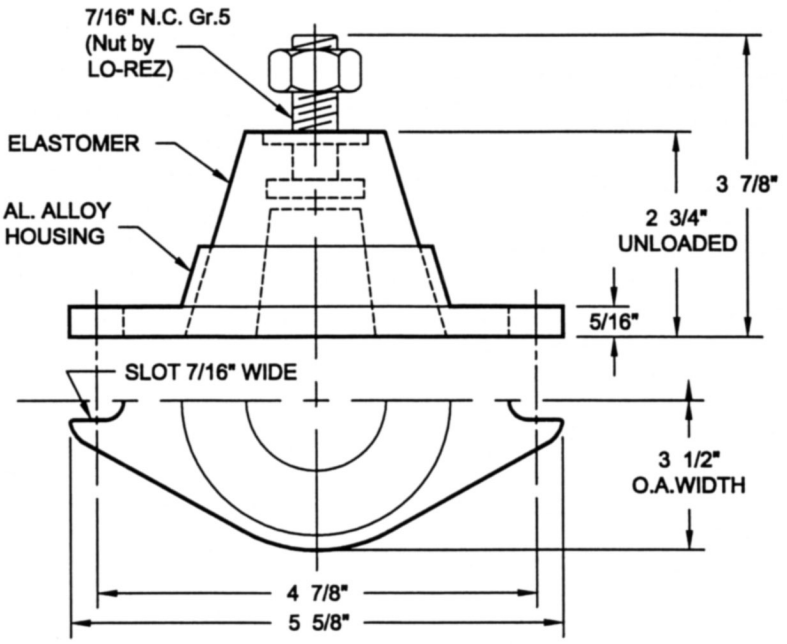
Where substantial side thrusts or upward forces do not exist, for example under stationary engine generating sets, the ER1-EL Special Isolator may be used. Not having the enclosing aluminum housing, the static deflections of the Elastomer element are greater. There are no dimensional differences.

CAPACITY AND DEFLECTION

DESIGNATION	RATED CAPACITY (lbs.)	COLOR CODE	STATIC DEFLECTION, d, AT RATED LOAD		NATURAL FREQUENCY, Fn , AT RATED LOAD	
			STANDARD	SPECIAL	STANDARD	SPECIAL
ER1-EL-50	50	Black	.30"	.50"	343 CPM	266 CPM
ER1-EL-75	75	Blue	.30	.50	343	266
ER1-EL-150	150	Yellow	.28	.40	355	297
ER1-EL-250	250	Orange	.26	.38	369	305
ER1-EL-400	400	White	.24	.36	384	313
ER1-EL-600	600	Silver	.24	.36	384	313
ER1-EL-800	800	Gold	.24	.36	384	313

Example: What is the isolation efficiency of an ER1-EL-600 Sp. when loaded to 500 lbs. and where the disturbing frequency is 1000 CPM? Static deflection is .36 × 500/600 = .30". From "Isolation Efficiency Data" sheet the natural frequency Fn = 343 CPM. Therefore Fd/Fn = 1000/343 = 2.91 and the isolation efficiency from Curve B is (100-22) = 78% and from Curve C is (100-31) = 69%.

ER1-M ELASTOMER ISOLATOR



ER1-M STANDARD

The ER1-M Standard Elastomer Isolator shown above, utilizes an aluminum alloy housing which enables the Isolator to withstand the horizontal thrusts encountered in such isolated equipment as pumps, fans, mobile generating sets, etc. The housing also offers resistance to upward forces which may occur in ship-mounted and other mobile equipment.

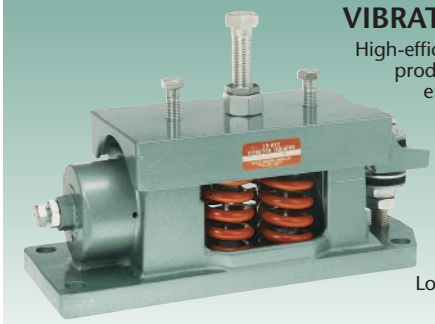
CAPACITY AND DEFLECTION

DESIGNATION	STATIC DEFLECTION 'd' AT RATED LOAD (Inches)	CODE COLOR	NATURAL FREQUENCY 'Fn' AT RATED LOAD (CPM)
ER1-M-200	.50	SILVER	266
ER1-M-400	.50	BLACK	266
ER1-M-600	.50	BLUE	266
ER1-M-800	.50	YELLOW	266
ER1-M-1000	.50	ORANGE	266
ER1-M-1200	.50	WHITE	266
ER1-M-1600	.50	GREEN	266
ER1-M-2000	.50	GOLD	266

Example: What is the isolation efficiency of an ER1-M-600 when loaded to 500 lbs. and where the disturbing frequency is 1000 CPM? Static deflection is .50 × 500/600 = .42". From "Isolation Efficiency Data" sheet the natural frequency Fn = 290 CPM. Therefore Fd/Fn = 1000/290 = 3.45 and the isolation efficiency from Curve B is approx.(100-15) = 85% and from Curve C is (100-22) = 78%.

LO-REZ VIBRATION CONTROL LTD. has been dedicated to the design and manufacture of vibration control equipment since the 1950's. Our commitment to research and design as well as high quality and exacting standards in manufacture, means we are meeting the challenge of new technology with systems that are state of the art in the 1990's.
For example the LO-REZ SOFT-MOUNT® SYSTEM, in place in over 375 marine propulsion applications around the world, produces typical vibration isolation efficiency of 97% with noise levels of 62-70dBA.
Committed to system performance LO-REZ provides extensive services and test facilities, providing certification prior and subsequent to overhaul when required.
Comprehensive technical specifications and performance data is available upon request on all LO-REZ systems and components.

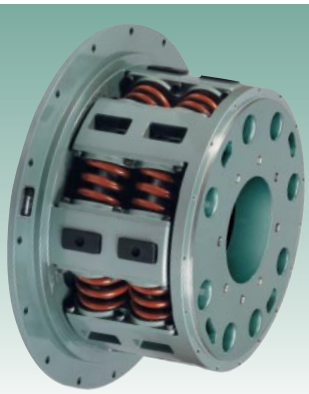
BR-T STEEL-SPRING VIBRATION ISOLATORS



High-efficiency control of vibration produced by diesel propulsion engines in ships, trains and industrial equipment.
A number of models and sizes, as well as a non-propulsion series are available to accommodate specific load requirements.
An integral part of the Lo-Rez Soft-Mount® System.

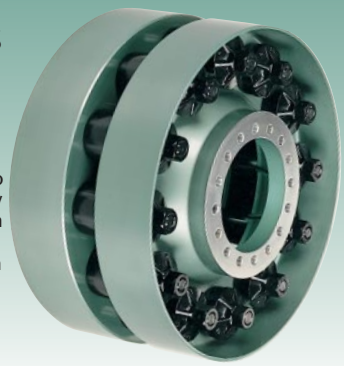
SS STEEL-SPRING FLEXIBLE COUPLINGS

Providing low, constant and accurate torsional stiffness (±8%) for precise tuning control in geared propulsion, reciprocating compressor and other critical systems. Features include; no lubrication, easy inspection of internal working parts and easily adjustable damping.
A number of models (including a single row series) and sizes are available to suit specific system requirements.
(Shown with cover removed.)



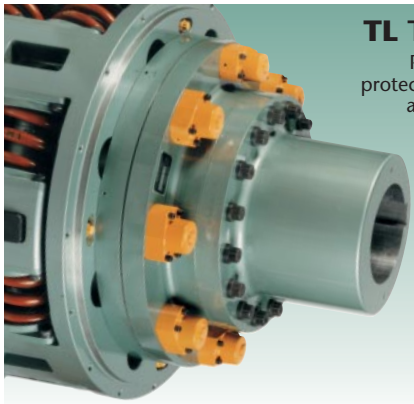
RT STEEL BOLTED RUBBER COUPLINGS

Torsionally flexible and capable of accommodating axial load, these couplings are ideal for any propulsion application. Featuring; reverse thrust capability, noise attenuation, no thrust bearing requirement, low stiffness, non-lubricated and high damping.
Available in various sizes and an integral part of the Lo-Rez Soft-Mount® System.



HLF LAMINATED DISC COUPLINGS

These High Lateral Flexibility disc couplings significantly impede a propulsion engine's linear/torsional vibration and noise from entering any hard mounted gear box.
*(Shown here attached to a Lo-Rez **RT** coupling and its integral spool spacer).*

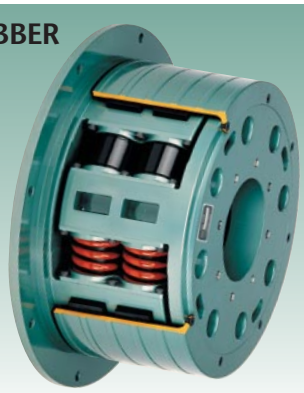


TL TORQUE LIMITERS

Providing optimum overload protection. With low maintenance and easily reset, these torque limiters keep downtime to a very minimum.
A number of models and sizes are available to suit any system requirement.
(Shown here attached to a Lo-Rez Steel-Spring Flexible coupling/cover removed).

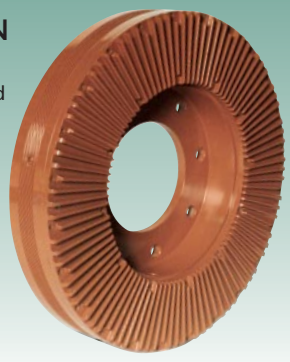
SS-R STEEL-SPRING/RUBBER FLEXIBLE COUPLINGS

A variation of the steel-spring coupling, incorporating a high damping ability while retaining some torsional stiffness accuracy (±15-20%) for tuning control. Features include; no lubrication, easy inspection of internal working parts and easily adjustable damping.
A number of models (including a single-row series) and sizes are available to suit specific system requirements.



VTD VISCOUS TORSIONAL VIBRATION DAMPERS

Tuned, double tuned and non-tuned patented Viscous Dampers.
Available in a wide range of sizes, providing optimum damping coefficients, custom designed particularly to suit custom requirements. A vital part of crankshaft, gear train and bearing protection.



Designed & Manufactured By:
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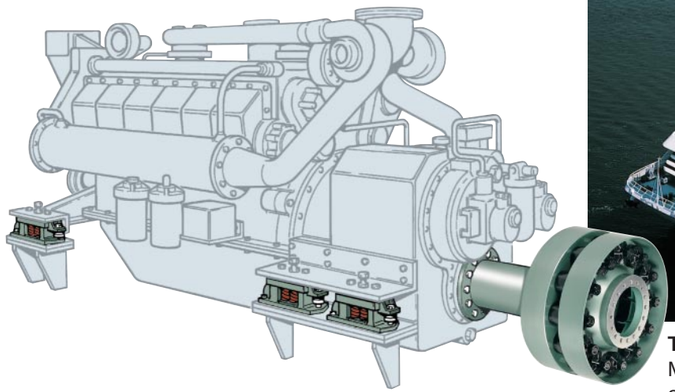
E-mail: lo-rez@LO-REZ.com **Web: www.LO-REZ.com**

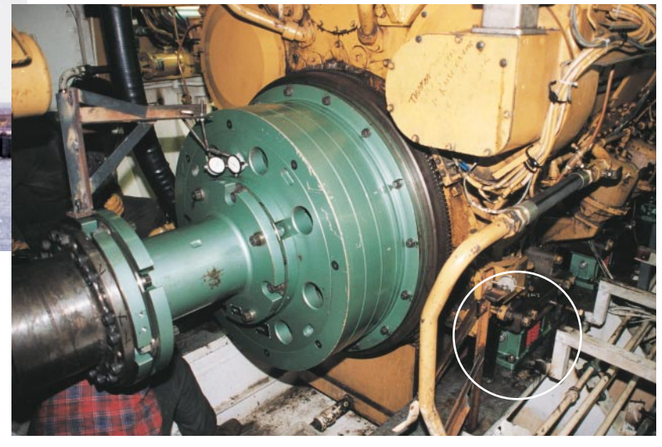
Lo-Rez BR4-HS Isolators under one of twelve 4,000 HP EMD 16-cylinder Model 710 Diesel Generators, 110,000 Lbs. each. Supplied for (3) Washington State “Jumbo Mark II” ferries (MV **Puyallup** shown).



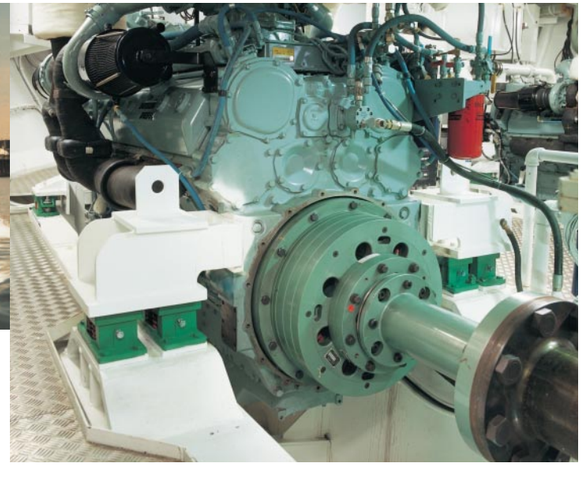
Trump Princess Casino Boat
Main propulsion engines, Detroit 12V149 mounted on BR4-TMS Isolators and 30RT Couplings. Generators, Detroit 16V149 (not shown) mounted on BR4-LS Isolators.

CAT. D399 Generator sits on LO-REZ LR4-LS Isolators. Westcoast Transmission Building, Vancouver

MV **Teleost**
Main propulsion, Caterpillar 3612 engine mounted on BR4-HS Isolators. Couplings used I/SF steel spring & 16HLF laminated disc.



Tugboat **Vancouver**
Main propulsion Detroit 16V149 mounted on BR4-LS Isolators. Couplings used F/SF steel spring & 8HLF laminated disc.



BR4-TLS, -TEHS, -TELS
Thrust Type Isolators

LO-REZ