

HEAD EXPANDER

Head expander is a solid, lightweight metal platform bolted onto a vibration shaker.

Here is the simple breakdown of why it is used:

The Problem: A standard vibration machine has a very small, circular top surface. Big test items (like a large car battery or an aerospace component) won't fit on it.

The Solution: The head expander acts like a table-top extension. It bolts onto that small circle and provides a much larger, flat square or round surface.

The Benefit: It allows engineers to test oversized products or bolt down multiple smaller items at the same time to speed up testing.



Magnesium Alloy Head Expander

[Features](#)

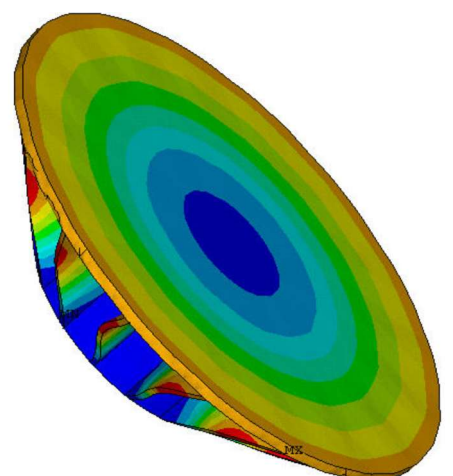
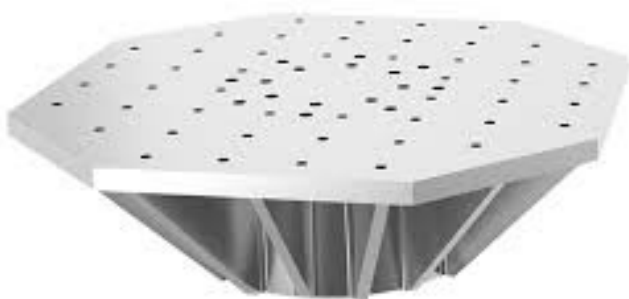
Magnesium Head Expander provide vertical test mounting surface larger than the shaker armature provides. They are fabricated from casting ZM5 (equivalent to AZ91). To protect the magnesium, all the bottoms of bolt counter bore holes are fitted with thick stainless-steel washers, pressed into the place. To prevent oxidation, the head expander's surface is anodized. Stainless inserts are used for the specimen mounting.

The magnesium has characteristics of high specific stiffness and specific strength which are very useful for fabricating shaker head expander. Due to the design by FEMA (Finite Element and Modal Analysis), the head expander can get higher useable frequency with low mass to make the shaker output force effective.

There are three kinds of top surface. They are octagon (Due to the flapping of the 4 corners of square top surface, the 4 corners will be cut becoming octagon shape to get the higher uniformity and usable frequency), round and square (mostly used in Welding style head expander).

Aluminum Alloy is optional to be used to fabricate the head expander in case of the testing needs higher useable frequency and the head expander mass is not a critical factor. In this case, the mass will be about 1.5 times of magnesium ones', the usable frequency will be 1.1 times of magnesium ones'.

The useable frequency means the max controllable frequency when the control point is located at the center and transferring shaker's rated force. The controllable frequency depends on the location of the control point and force.



Octagon Head Expander Specifications

Armature Dia. (mm)	150		230/240		335/340		440/445/450		550		650/670	
HE Model												
HE300CM	7	60	10	55					Mass (Mg) kg		Height (mm)	
	2000		2000						Useable Frequency (Hz)			
HE400CM	9	150	12	150								
	2000		2000									
HE500CM	16	200	21	200	22	150						
	1800		2000		2000							
HE600CM	18	200	25	200	33	200	35	150				
	600		1600		2000		2000					
HE700CM	24	250	36	250	45	200	45	200				
	1000		1000		1800		1500					
HE800CM			45	250	48	250	55	250	86	250		
			1000		1300		1500		1800			
HE900CM			50	250	70	300	68	270	90	250		
			600		1200		1200		1200			
HE1000CM			55	250	90	300	135	350	140	350	150	350
			400		900		900		900		1200	
HE1200CM					160	350	165	350	180	350	190	350
					500		500		500		450	
HE1500CM							245	400	280	400	285	400
							400		400		500	
NOTE	1. HE300CM means the top size of the HE is 300×300mm with 4-corner-cut, Magnesium casting alloy. 2. Standard insert pattern of 50×50mm to HE500RM, 100×100mm from HE600RM. 3. Optional Load Support and Guide under the head expander. 4. Optional Magnesium alloy welding head expander. 5. Optional Thermal Barrier (TB) for combination with Chamber.											

Round Head Expander Specifications

Armature Dia. (mm)	150		230/240		335/340		440/445/450		550		650/670	
HE Model												
HE300RM	5	100	7	50					Mass (Mg) kg		Height (mm)	
	2000		2000						Useable Frequency (Hz)			
HE400RM	10	150	10	100	13	50						
	2000		2500		2000							
HE500RM	14	180	17	150	20	150						
	2000		2000		2000							
HE600RM	20	250	20	150	24	150	25	120				
	800		1200		2000		2000					
HE700RM			31	200	45	250	45	200				
			900		2000		2000					
HE800RM			40	250	48	250	55	200	56	200		
			1100		1400		1500		1800			
HE900RM					65	300	60	240	65	240		
					1200		1200		1200			
HE1000RM					90	300	95	350	104	350	117	350
					1000		1200		1100		1100	
HE1200RM							163	400	169	400	189	400
							500		600		600	
HE1500RM							220	400	230	400	310	400
							400		400		400	
NOTE	1. HE300RM means the top size of the HE is 300mm Round diameter, Magnesium casting alloy. 2. Standard insert pattern of 50×50mm to HE500RM, 100×100mm from HE600RM. 3. Optional Load Support and Guide under the head expander. 4. Optional Magnesium alloy welding head expander. 5. Optional Thermal Barrier (TB) for combination with Chamber.											

SLIP TABLES

A slip table is a flat metal platform used to test products horizontally (sideways).

How it works: The main vibration machine is turned 90° on its side and bolted to the edge of the slip table.

The "Slip" Secret: The heavy plate floats on a microscopic cushion of high-pressure oil. This eliminates friction so the plate can slide back and forth perfectly straight.

Why it's used: It allows engineers to simulate real-world sideways forces—like a car slamming on its brakes or a rocket launching—on large, heavy items that can't be tested vertically.

MT & T-Guide Oil Film Slip Table & Hydrostatic Bearings Slip Table

Typical Application

Slip Table is used to meet your needs whether it is strenuous vibration testing or a production line application. It is ideally suited for sequential 3-axis tests. There are four (4) kinds of slip table in guidance method of using Mechanical linear bearings (MT), T guide (GT, instead of conventional V guide), hydrostatic Journal bearings (BTJ) and hydrostatic T shape bearings (BTT).

Most slip tables are configured with the Centering Back System (CBS) to help the slip table return to the nature center during vibration.

Features

Integrated and Combo Design

The slip table is integrated into a shaker by "combo" base designs. This feature results in permanent and easy repeating alignment, long-term reliability & durability, performance, structural integrity and simple operation.

Convenient Operating

A unique trunnion and guidance bearing assembly provides simple shaker rotation capability and body vibration isolation. The electrodynamic shaker can be rotated to the vertical position for one axis and then to the horizontal position where it is connected to a horizontal slip plate for the other two axis testing.

Optional Pneumatic drive tilting the shaker between vertical and horizontal mold is available.

Mechanical linear bearings Guide Slip Tables - MT Series

The smaller slip tables up to 400X400mm use mechanical linear bearings instead of oil film to make the system more compact and easier with less maintenance.

T-Guide Oil Film Slip Tables - GT Series

T-Guide Oil-Film Slip Tables are designed with precision granite and are combined with a magnesium or high-grade aluminum slip plate to provide the most cost-effective way to perform general horizontal testing. The slip plate is guided by T-Shape Oil-Film guides by one or two or more located front and back base to provide high restraint during high moment operation. Conventional V-Shape guide can be replaced by this T-Shape guide directly.

Hydrostatic Journal Bearings Oil Film Slip Tables - BTJ Series

Hydrostatic Journal Bearing Slip Tables are designed for high over-tuning-moment and cross axial restraint. The design combines magnesium or high-grade aluminum slip plate, precision flat granite and hydrostatic journal bearings applied by 17.5 Mpa high pressure oil to provide a very high dynamic moment restraint while preserving the damping characteristics of the oil film. This slip table allows testing of heavy products with high centers of gravity by reacting moments through the hydrostatic bearings. Multiple bearings can be configured to restrain huge over-turning-moments.

Hydrostatic T Shape Bearings Slip Tables - BTT Series

This slip table applies medium oil pressure of 4 Mpa to T shape hydrostatic bearings. Normally, the T shape bearings are arranged in matrix to anchor and hold the slip plate in matrix points to prevent the deformation in bending. Customized distribution of the T shape bearings can fasten the circle type fixture for standing cylinder object horizontal testing more robustly. This supply will be discussed case by case.



MT Slip table



T-Guide Oil Film Slip Table-GT



Hydrostatic Bearings Slip Table-BTJ or BTT

MT & T-Guide Oil Film Slip Table Specifications														
Thickness (mm)	Useable Frequency (Hz)		Armature diameter											
Effective (Nominal) (kg) (Aluminum / Magnesium)	Moving	Mass	120/150		230/240		335/340		440/445/450		550		650/670	
MT200	25	2000												
	10 / 8													
MT300	30	2000												
	16 / 12													
MT400	30	2000	30	2000										
	25 / 18		28 / 21											
GT500	40	2000	40	2000	40	2000	40	2000	40	2000				
	39 / 26		45 / 32		47 / 34		50 / 39							
GT600	40	2000	40	2000	40	2000	40	2000	40	2000	40	2000	40	2000
	54 / 36		60 / 42		62 / 44		67 / 49		77 / 59		92 / 74			
GT700	40	2000	40	2000	40	2000	40	2000	40	2000	40	2000	40	2000
	71 / 47		74 / 50		79 / 55		84/ 60		94 / 70		109 / 85			
GT800			45	2000	45	2000	45	2000	45	2000	45	2000	45	2000
			105 / 72		110 / 75		115 / 80		125 / 90		140 / 105			
GT900			45	2000	45	2000	45	2000	45	2000	45	2000	45	2000
			130 / 86		135 / 91		140 / 96		150 / 106		165 / 121			
GT1000			45	2000	45	2000	45	2000	45	2000	45	2000	45	2000
			158 / 110		163 / 110		168 / 114		178 / 124		193 / 139			
GT1100					45	2000	45	2000	45	2000	45	2000	45	2000
					194 / 129		199 / 134		209 / 144		224 / 159			
GT1200					45	2000	45	2000	45	2000	45	2000	45	2000
					227 / 151		232 / 156		242 / 166		257 / 181			
GT1300					50	2000	50	2000	50	2000	50	2000	50	2000
					291/192		296/ 197		306/ 207		321/ 222			
GT1400					50	2000	50	2000	50	2000	50	2000	50	2000
					335/220		340/ 225		350/ 235		365/ 250			
GT1500					50	2000	50	2000	50	2000	50	2000	50	2000
					381 / 250		386 / 255		396 / 265		411 / 280			
System Environmental Requirement			Operating Room Temperature					5 to 40 degree C						
			Humidity					0 to 90%, non-condensing						
NOTE			1. Effective Moving Mass (nominal) includes Slip Plate, Mechanical linear bearings or T-Guide moving element and Drive Bar, except Armature. 2. GT1000M means the working area of the table is 1000×1000mm, Magnesium alloy slip plate. If the slip plate is Aluminum alloy, A is instead of the M. 3. There is only one (1) T Guide in GT when the slip table size is equal to or less than 600X600mm. 4. There are two (2) T Guides in GT when the slip table size is equal to or bigger than 700X700mm up to 1200X1200mm. 5. There are four (4) T-Guides in GT when the slip table size is equal to or bigger than 1300X1300mm up to 1500X1500mm. 6. MT200M~GT500M: 50×50mm insert grid pattern. GT600M~GT1500M: 100×100 mm insert grid pattern. Armature footprint inserts are configured on the slip plate and they are prior to grid pattern if there is any interference between the two kids of inserts pattern. 7. Optional Thermal Barrier (TB) for combination with Chamber.											

NOTE: In keeping with our commitment to continuous product improvement, the information herein is subject to change.

Hydrostatic Journal or T shape Bearing Slip Table Specifications										
Thickness (mm)	Useable Frequency (Hz)		Armature diameter							
Effective Moving Mass (Nominal) (kg) (Aluminum / Magnesium)	335/340		440/445/450		550		650/670		870	
BTJ700 BTT700 (Except 4” stroke)	45	2000	45	2000						
	88 / 60		93 / 65							
BTJ800 BTT800	45	2000	45	2000	45	2000	45	2000	45	2000
	110 / 75		115 / 80		125 / 90		140 / 105		180 / 145	
BTJ900 BTT900	45	2000	45	2000	45	2000	45	2000	45	2000
	135 / 91		140 / 96		150 / 106		165 / 121		205 / 161	
BTJ1000 BTT1000	45	2000	45	2000	45	2000	45	2000	45	2000
	163 / 109		168 / 114		178 / 124		193 / 139		233 / 179	
BTJ1100 BTT1100	45	2000	45	2000	45	2000	45	2000	45	2000
	194 / 129		199 / 134		209 / 144		224 / 159		264 / 199	
BTJ1200 BTT1200	45	2000	45	2000	45	2000	45	2000	45	2000
	227 / 151		232 / 156		242 / 166		257 / 181		297 / 221	
BTJ1300 BTT1300	50	2000	50	2000	50	2000	50	2000	50	2000
	291 / 192		296 / 197		306 / 207		321 / 222		361 / 262	
BTJ1400 BTT1400	50	1600	50	1600	50	1600	50	1600	50	1600
	335 / 220		340 / 225		350 / 235		365 / 250		405 / 290	
BTJ1500 BTT1500	50	1200	50	1200	50	1200	50	1200	50	1200
	381 / 250		386 / 255		396 / 265		411 / 280		451 / 320	
BTJ1600 BTT1600	50	1000	50	1000	50	1000	50	1000	50	1000
	430 / 282		435 / 287		445 / 297		460 / 312		500 / 352	
BTJ1700 BTT1700	50	1000	50	1000	50	1000	50	1000	50	1000
	483 / 316		488 / 321		498 / 331		513 / 346		553 / 386	
BTJ1800 BTT1800	50	1000	50	1000	50	1000	50	1000	50	1000
	539 / 352		544 / 357		554 / 367		569 / 382		609 / 422	
BTJ1900 BTT1900	50	1000	50	1000	50	1000	50	1000	50	1000
	597 / 390		602 / 395		612 / 405		627 / 420		667 / 460	
BTJ2000 BTT2000	50	1000	50	1000	50	1000	50	1000	50	1000
	659 / 430		664 / 435		674 / 445		689 / 460		729 / 500	
System Environmental Requirement	Operating Room Temperature						5 to 40 degree C			
	Humidity						0 to 90%, non-condensing			
NOTE	1. Effective Moving Mass (nominal) includes Slip Plate and Drive Bar, except Armature & Bearings. The bearing quantity depends on the required overturning moments, the moving mass of bearings will be added into the total moving mass. 2. Every Journal bearing’s effective mass, including damping, is 5 kg. Every T shape bearing’s effective mass, including damping, is 6.0 kg. 3. If with “M”, Magnesium alloy slip plate, if with “A”, Aluminum alloy slip plate. 4. The random frequency band is up to 2000Hz. 5. BTJ800 or BTT800 means the working area of the slip plate is 800×800mm. 6. 100×100mm insert grid pattern to 1500x1500 table. 200×200mm insert grid pattern from 1600x1600 table. Armature footprint inserts are configured on the slip plate and they are prior to grid pattern if there is any interference between the two kids of inserts pattern. 7. Optional Thermal Barrier (TB) for combination with Chamber, only for BTT.									

NOTE: In keeping with our commitment to continuous product improvement, the information herein is subject to change.