

CENTROTECNICA S.r.l.

RT TABLE

Innovative horizontal table for three axis vibration testing:
guided by top technology bearings, light and high damping effect



*Fig. 1: 74 kN Air Cooled Shaker
with RT 1050*

INTRODUCTION

The RT table (RT) represents a significant innovation in the horizontal axis testing.

Centrotecnica's experience in fixture design and manufacturing gave us the knowledge to conceive an impressive damped table with a very high damping factor based on a technology which wasn't possible in the past.

The main innovation consists in the use of **recirculating balls guideways** and a **particular damping technology based on the "constrained layer" principle**.

The innovative system is characterized by high reliability and excellent performances, the result of a long direct field experience.

TABLE FABRICATION DESCRIPTION

The table is composed of **4 different layers**

(please see figure 1):

The first and last layer fulfill a strong damping effect on cross axis resonances.

Between these two layers there is a strong "specially-designed" central core, composed by two plates of aluminum alloy.

Both plates are later worked and then coupled in order to obtain a single internally lightened

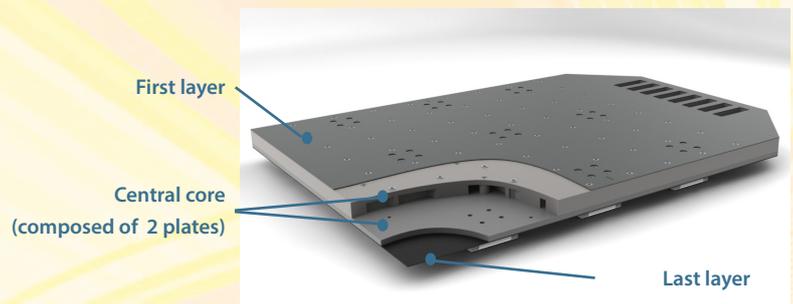


Fig. 2: Table in detail

plate. The special working procedure of the plates maximize the rigidity-to-weight ratio.

This special design allows maximum rigidity and low weight.

WORKING PRINCIPLE

Building a slip table by using mechanical bearings used to be considered not feasible in the past because of following technical problems:

- bearings wear
- lack of damping effect under the table
- table block because of thermal expansion
- noise caused by the bearings

The evolution of the mechanical technology allowed to have new generation special bearings which stands out for their long lasting working time and for the low acoustic emissions.

Moreover, the design of the rt Table finally solved the seizing risk caused by the thermal expansion of the table (by giving flexibility to the bearings supports along the table expansion axis).

This solution does not affect neither table rigidity nor on the maximum allowed overturning moment.

THERMAL EXPANSION

If the aluminum table is subjected to heating and cooling processes, the thermal expansion could stop the bearings from working properly.

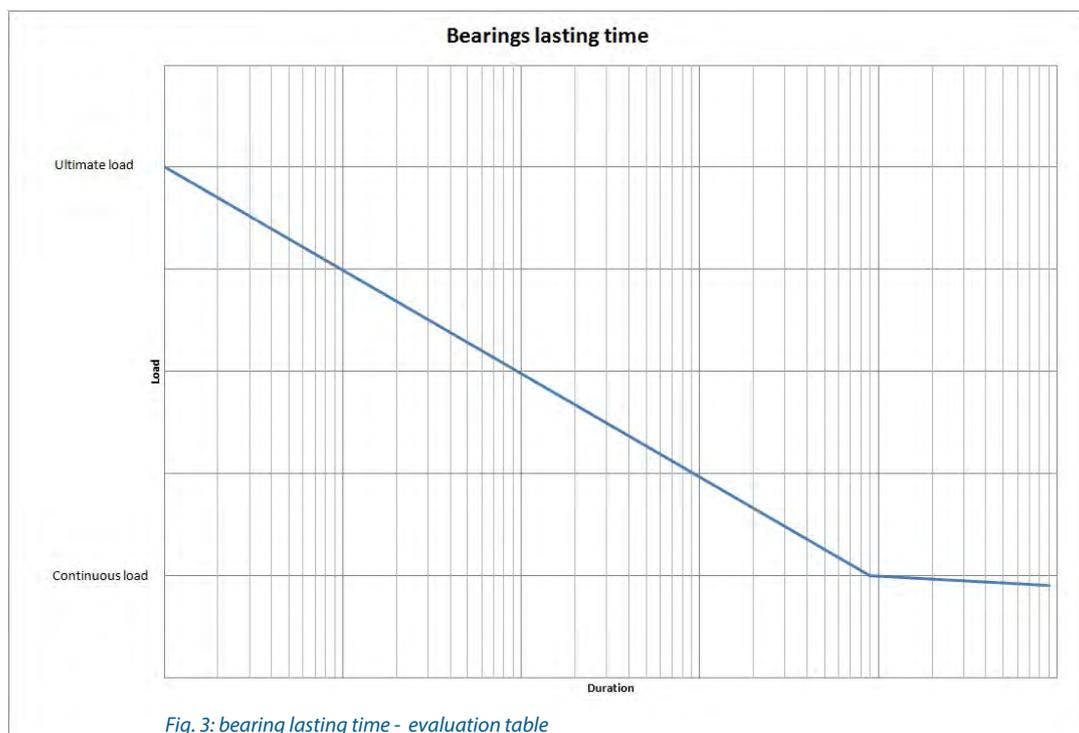
The design of the RT Table solves this problem since the bearings supports are structured in order to compensate the force generated by the expansion.

BEARING LASTING TIME

The high technical level of the RT Table led to an extension of the working time between each maintenance.

Before the test start, the customer could easily calculate the table bearable test load and, by comparing the “continuous” and “ultimate” load values, assesses the wear level which the test will cause to the table and consequently the economic impact of the maintenance (please see the table in figure 2).

Important: the maintenance is a very simple operation since it consists in the mere substitution of the bearings.



SYSTEM MAIN ADVANTAGES

- easily to use
- no oil
- no electrical power
- no compressed air
- long stroke
- robust and longlasting
- easily to repair and mantain
- very good dynamic performances
- oxidation resistance

TECHNICAL DATA

TABLE SIZE (mm)*		450X450	600X600	750X750	900x900	1050x1050
WEIGHT (kg)	Aluminium	30	50	68	96	125
	Magnesium	23	40	53	75	98
MOMENTS (kNm)	Pitch continuous	1,7	5,7	7,4	16,2	19,3
	Pitch ultimate	22,3	71,6	93,0	203,4	241,4
	Roll continuous	1,3	4,7	6,5	14,6	17,6
	Roll ultimate	17,1	59,9	81,3	182,5	220,6
	Yaw continuous	1,7	5,7	7,4	16,2	19,3
	Yaw ultimate	22,3	71,6	93,0	203,4	241,4
MAX DISPLACEMENT (mm _{pk-pk})		160	160	160	160	160
MAX PAYLOAD (kg)		414	620	931	1241	1654
USABLE RANGE (Hz)		2000	2000	2000	2000	2000
FIRST RESONANCE (Hz)		1400	1250	1050	950	830
STANDARD INSERT PATTERN	(100 mm grid)	25	36	64	81	121
DRIVER BAR WEIGHT (kg)	Aluminium	15	15	15	15	15

* SPECIAL SIZES AVAILABLE ON REQUEST

** TBC ACCORDING TO THE ARMATURE

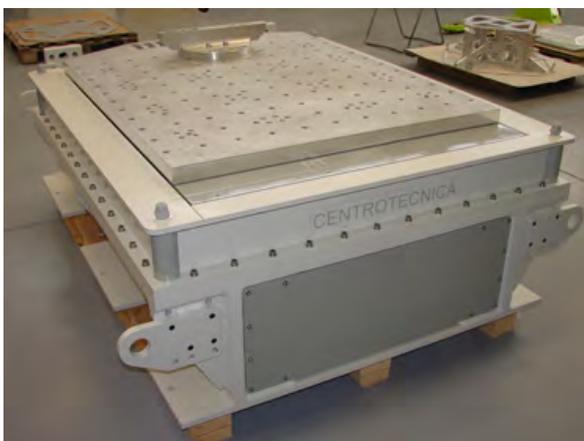


Fig. 4 RT 900

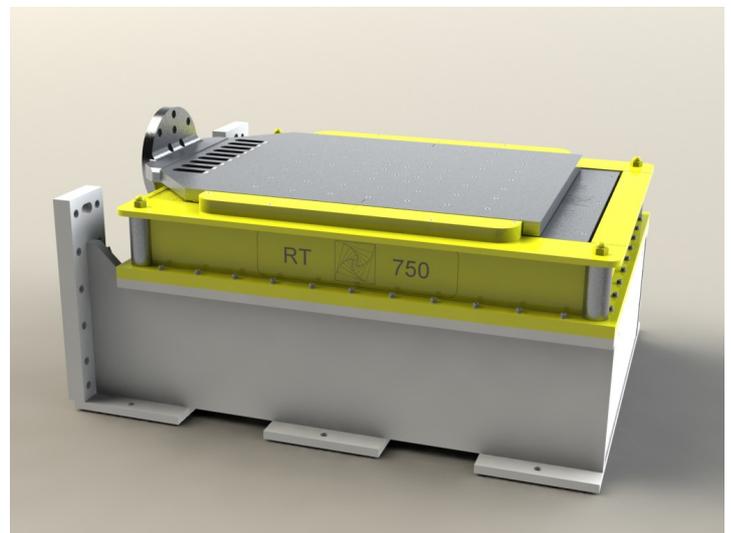
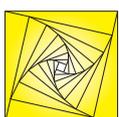


Fig. 5: RT 750

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COMMERCIAL SHEET



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