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BULLETIN

LITERATURE FILE NO.

**HCOM-SB-2**

**GENERAL  
SERVICE BULLETIN**

Since the Trane Company has a policy of continuous product improvement, it reserves the right to change specifications and design without notice. The installation and servicing of the equipment referred to in this booklet should be done by qualified, experienced technicians.

11/17/75  
Reviewed 7/1/81

SUBJECT: MODEL "M" COMPRESSOR, CYLINDER HEAD IDENTIFICATION AND UNLOADING SEQUENCE

### INTRODUCTION

The purpose of this bulletin is to aid proper cylinder head identification and positioning for Model M compressors and to provide Model M cylinder unloading sequences.

### DISCUSSION

There has been some question concerning location and positioning of the Model M cylinder heads during replacement. This bulletin provides a means of correctly identifying and repositioning the cylinder heads during installation.

### NON-UNLOADING (PLAIN) CYLINDER HEADS

A plain head (non-loading) installed on the right hand bank will have the insignia TRANE right side up.

A plain head (non-loading) installed on the left hand bank will have the insignia TRANE up side down.

It is impossible to put the center cylinder head on incorrectly, due to the difference in cylinder head bolt arrangement. Bolt alignment will not be achieved without proper positioning of the head.

### MODEL "M" COMPRESSOR WITH UNLOADING CYLINDERS

Facing the compressor at the oil pump bearing end, the left hand bank, center bank, and right hand bank may be identified. (See Figure 2).

All right hand heads equipped with unloading mechanisms, unload only one cylinder, and are now used only on 3 and 4 cylinder compressors. The left hand head equipped with unloading mechanisms, unload two cylinders, except on the 3 cylinder compressor which has only one piston in that bank, see Figure 5.

Regardless of the number of cylinder(s) being unloaded, all unloading cylinder head mechanisms and solenoid valves must be on top - displaying the word TRANE (in the casting) right side up. If this positioning is not evident, the head assemblies are on the wrong cylinders. (See Figures 3 and 4).

Old 6 cylinder Model "M" compressors with 3 cylinder unloading (50%) utilize a left cylinder head with unloading mechanism to unload cylinders 1 and 4. A right cylinder head with unloading mechanism unloads cylinder 5. The center head is a non-unloading cylinder head. (See Figure 7).

On new Model "M" compressors now in production, the unloading arrangement of the six cylinder compressor has been revised to further reduce compressor vibration level.

The change consists of using a left hand cylinder head on cylinders, numbers 3 and 6. (The center cylinder bank). This permits two cylinder unloading on cylinder numbers 3 and 6 first. (See Figure 8).

Changing to the new arrangement of 4 cylinder unloading on the 6 cylinder Model "M" is recommended when an old style Model "M" compressor is reworked on a rebuild. The unloading sequence change eliminates some gas pulsation vibrations in the unloaded mode.

The following tables illustrate the cylinder number and unloading sequence of the Model "M" compressor.

TABLE 1  
6 CYLINDER COMPRESSOR  
UNLOADING SEQUENCE

<u>Unloading Description</u>	<u>Step Number</u>	<u>% of Full Load</u>	<u>Loaded Cylinders</u>	<u>Unloaded Cylinders</u>
No Unloaders	1	100	1,2,3,4,5,6	-
One Unloader	1	100	1,2,3,4,5,6	-
	2	66	1,2,4,5	3,6
Two Unloaders (Sequence A)	1	100	1,2,3,4,5,6	-
	2	66	1,2,4,5	3,6
	3	33	2,5	3,6,1,4
Two Unloaders (Sequence B)	1	100	1,2,3,4,5,6	-
	2	83	1,2,3,4,6	5
	3	50	2,3,6	5,1,4

TABLE 2  
5 CYLINDER COMPRESSOR  
UNLOADING SEQUENCE

<u>Unloading Description</u>	<u>Step Number</u>	<u>% of Full Load</u>	<u>Loaded Cylinders</u>	<u>Unloaded Cylinders</u>
No Unloaders	1	100	1,2,3,4,5	-
Two Unloaders	1	100	1,2,3,4,5	-
	2	80	1,2,4,5	3
	3	40	2,5	3,1,4

TABLE 3  
4 CYLINDER COMPRESSOR  
UNLOADING SEQUENCE

<u>Unloading Description</u>	<u>Step Number</u>	<u>% of Full Load</u>	<u>Loaded Cylinders</u>	<u>Unloaded Cylinders</u>
No Unloaders	1	100	1,2,3,4	-
One Unloader	1	100	1,2,3,4	-
	2	50	2,4	1,3
Two Unloaders	1	100	1,2,3,4	-
	2	50	2,4	1,3
	3	25	2	4,1,3

TABLE 4  
3 CYLINDER COMPRESSOR  
UNLOADING SEQUENCE

<u>Unloading Description</u>	<u>Step Number</u>	<u>% of Full Load</u>	<u>Loaded Cylinders</u>	<u>Unloaded Cylinders</u>
No Unloaders	1	100	1,2,4	-
One Unloader	1	100	1,2,4	-
	2	66	2,4	1
Two Unloaders	1	100	1,2,4	-
	2	66	2,4	1
	3	33	2	1,4

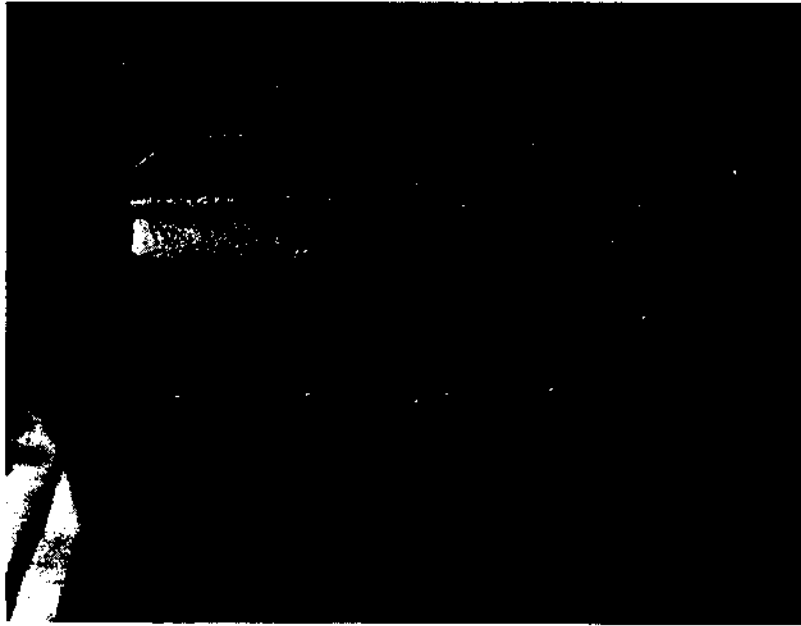


FIGURE 1 - Cylinder Head Installed Correctly (Right Hand Head)

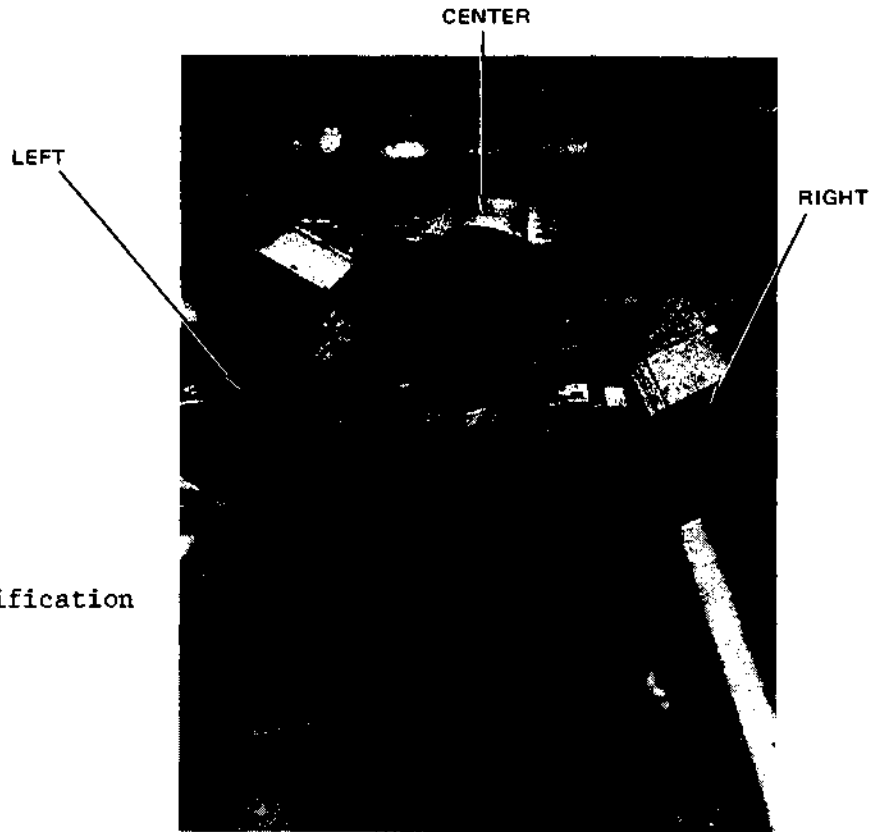


FIGURE 2 - Bank Identification

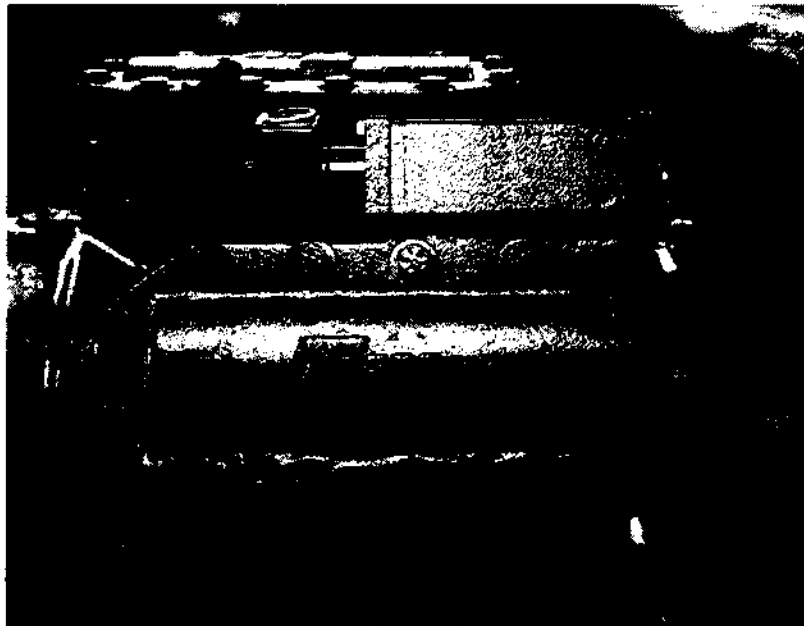


FIGURE 3

The left hand solenoid unloading head which unloads two cylinders can be identified by looking at the head so the name is upright. The check valve is to the right, and the unloader solenoid valve is to the left.

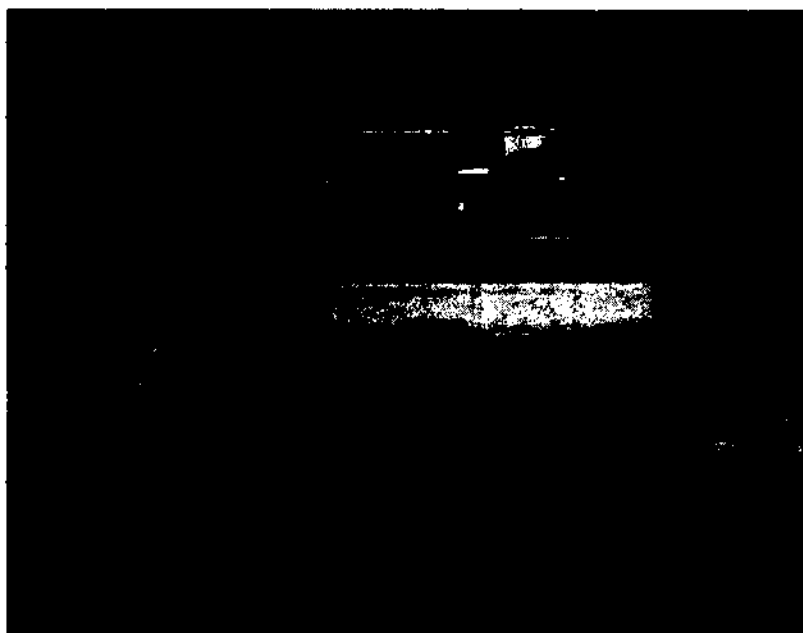
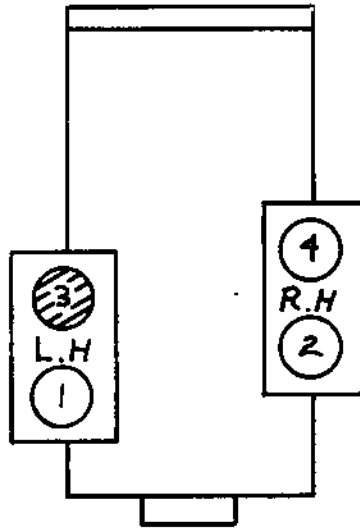


FIGURE 4

The right hand solenoid unloading head that unloads only one cylinder can be identified by looking at the head so the name is upright. The check valve is on the left, and the unloader solenoid is on the right.

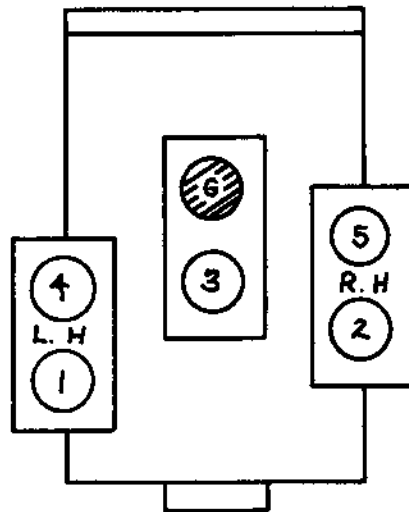


NOTE: Cylinder 3 is removed for the 3 cylinder compressor.

Bearing Head

FIGURE 5

The sketch shows the numbering of the cylinders for the 3 and 4 cylinder compressor.



NOTE: Cylinder 6 is removed for the 5 cylinder compressor

Bearing Head

FIGURE 6

The sketch shows the numbering of the cylinders for the 5 and 6 cylinder compressors.

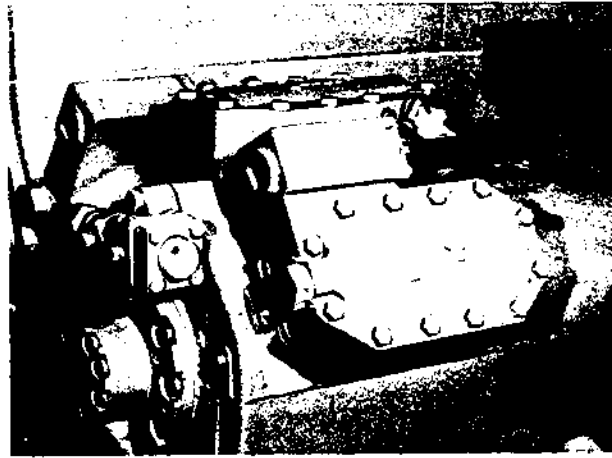


FIGURE 7  
Old 6 Cylinder Model "M"



FIGURE 8  
New 6 Cylinder Model "M"