



**UNITED
TECHNOLOGIES
CARRIER**

Commercial Division
Carrier Corporation

BULLETIN: CA-SB-17-70-17
DATE: 10/23/70
PAGE: 1 OF: 12

SERVICE BULLETIN

SUPERSEDE
BULLETIN:

SUBJECT: CLEARANCES AND FITS

DATE:
PAGE: OF:

Installation, repair and service and equipment referenced in this Service Bulletin should be undertaken only by qualified persons. Carrier Corporation (1) makes no representations or warranties, expressed or implied, concerning the accuracy, completeness or right to use the information contained herein, and (2) disclaims all liability for injuries, damages, infringements and other losses which may arise on account of, or which may result from, the use or application of any information, method or apparatus disclosed herein.

PURPOSE

To transmit a revised list of clearances and fits of the principal compressor parts.

MACHINES AFFECTED

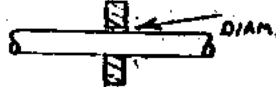



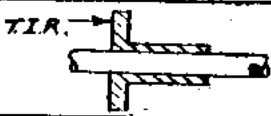
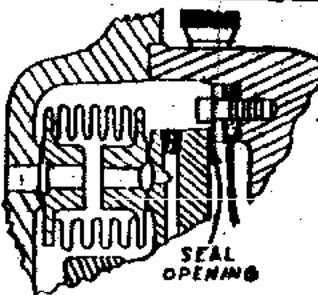
17M,P,S, 17MP 400, 17CA, 17DA, 72M, BZ, CZ, DZ

PROCEDURE

The attached clearances and fits are intended to provide an easy reference for important clearances and fits needed for the assembly of 17 series centrifugal compressors.

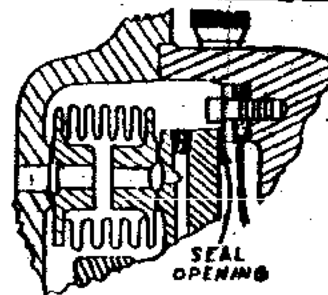
-17M,P,S Bellows Seal

DIMENSIONS & CLEARANCES OF PRINCIPLE PARTS

COMPRESSOR SIZE Tolerances	30		40		50		60		Measurement
	Min	Max	Min	Max	Min	Max	Min	Max	
BELLOWS SEAL									
Inner Floating Seal Ring to Shaft	.0015	.0045	.0015	.0045	.0015	.0045	.0015	.0045	
Intermediate Floating Seal Ring to Rot. Seal Ring	.0015	.0045	.0015	.0045	.0015	.0045	.0015	.0045	
Outer Floating Seal Ring to Rotating Seal Ring	.0015	.0045	.0015	.0045	.0015	.0045	.0015	.0045	
Seal Housing Cover Gasket Thickness	1/32	1/32	1/32	1/32	1/16	1/16	1/16	1/16	TOTAL
Bellows Gasket Thickness	1/32	1/32	1/32	1/32	1/32	1/32	1/32	1/32	TOTAL
Seal Spring Thickness	.125	.150	.125	.150	.125	.150	.125	.150	TOTAL 
Rotating Seal Ring Face Runout	.0000	.0002	.0000	.0002	.0000	.0002	.0000	.0002	T.I.R. 
Seal Opening	.040	.050	.040	.050	.050	.060	.050	.060	

**NOTE: DIAM. = DIAMETRAL
RAD. = RADIAL**

**T.I.R. - TOTAL INDICATED
READING
(USE DIAL MICROMETER)**



UNITED TECHNOLOGIES
CARRIER

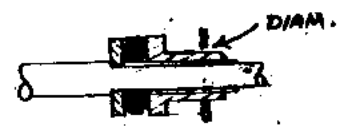
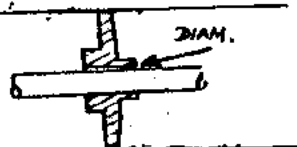
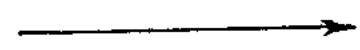

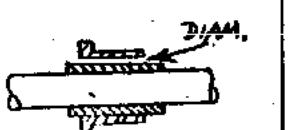
Commercial Division
Carrier Corporation

SERVICE BULLETIN

SUPERSEDE BULLETIN:
DATE:
PAGE: OF:
OF:

BULLETIN: CA-SB-17-70-17
DATE: 10/23/79
PAGE: 2 OF 12

17M,P,S COMPRESSOR WITH CONTACT SEAL

COMPRESSOR SIZE	30		40		50		60		Measurement	
	Min	Max	Min	Max	Min	Max	Min	Max		
Tolerances										
<u>CONTACT SEAL</u>										
Spring Seat To Cont. Sleeve	.064	.066	.064	.066	.064	.066	.064	.066		
Seal Housing Cover Gasket	1/32	1/32	1/32	1/32	1/32	1/32	1/32	1/32	TOTAL	
Seal Housing Gasket	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16	TOTAL	
Guide Ring to Shaft	.006	.008	.006	.008	.006	.008	.006	.008		
Shutdown Carbon Movement	1/16	IN EACH DIRECTION SEE NOTE BELOW								
Rotating Contact Ring Face Runout	.0000	.0002	.0000	.0002	.0000	.0005	.0000	.0005	T.I.R. 	
Shaft Sleeve to Contact Sleeve	.050	.070	.050	.070	.050	.070	.050	.070		

NOTE: With rotating contact ring removed carbon ring must be free to move at least 1/16" each direction.



UNITED TECHNOLOGIES
CARRIER

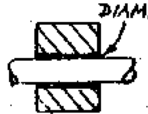

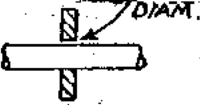
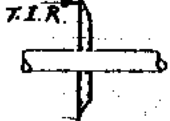
Commercial Division
Carrier Corporation

SERVICE BULLETIN

SUPERSEDE BULLETIN:
DATE: OF:
PAGE: OF:

BULLETIN: CA-SB-17-70-17
DATE: 10/29/70
PAGE: 3 OF 12

17M, P, S COMPRESSORS

COMPRESSOR SIZE Tolerances	30		40		50		60		Measurement
	Min	Max	Min	Max	Min	Max	Min	Max	
SHAFT & BEARINGS									
Journal Bearings to Shaft Soul End	.003	.006	.003	.006	.004	.007	.004	.007	
Journal Bearing to Shaft Thrust End	.003	.006	.003	.006	.004	.007	.004	.007	
Thrust Clearance (Shaft Float) Contact Seal Only	.008	.012	.008	.012	.008	.012	.008	.012	AXIAL
Floating Ring to Shaft (Thrust end)	.0015	.0055	.0015	.0055	.0015	.0055	.0015	.0055	
Thrust Disc Face Runout	.0000	.0005	.0000	.0005	.0000	.0005	.0000	.0005	



UNITED TECHNOLOGIES
CARRIER

Commercial Division
Carrier Corporation

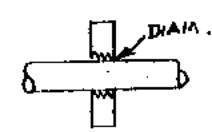
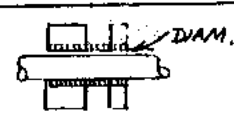
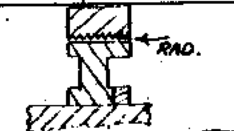
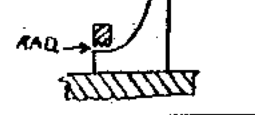

SERVICE BULLETIN

SUPERSIDE
BULLETIN:

DATE:
PAGE: 4 OF 12

BULLETIN: CA-SB-17-70-17
DATE: 10/23/70
PAGE: 4 OF 12

17M, P, S COMPRESSORS

COMPRESSOR SIZE Tolerances	30		40		50		60		Measurement
	Min	Max	Min	Max	Min	Max	Min	Max	
<u>Labyrinth Clearance</u>									
Shaft End Labyrinth To Shaft	.002	.008	.002	.008	.002	.008	.002	.008	
Shaft Labyrinth To Shaft	.002	.006	.002	.006	.002	.006	.002	.006	
Balancing Piston Labyrinth	.001	.0035	.001	.006	.002	.006	.002	.006	
Impeller Eye Labyrinth	.005	.008	.003	.010	.005	.008	.005	.008	
Spacer Labyrinth	.003	.005	.003	.007	.003	.005	.003	.005	



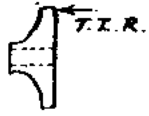


**UNITED
TECHNOLOGIES
CARRIER**

Commercial Division
Carrier Corporation

SERVICE BULLETIN

BULLETIN: CA-SB-17-70-17
 DATE: 10/23/70
 PAGE: 5 OF 12
 SUPERSEDE
 BULLETIN:
 DATE:
 PAGE: OF:
 OF:

17M, P, S COMPRESSORS

COMPRESSOR SIZE	30		40		50		60		Measurement
	Min	Max	Min	Max	Min	Max	Min	Max	
<u>IMPELLER CLEARANCES</u>									
Rotor Assembly Balance	.00 - .03 In.Oz.		.00 - .03 In.Oz.		.00 - .04 In.Oz.		.02 - .05 In.Oz.		
Impeller Rim Wobble	.000	.020	.000	.020	.000	.020	.000	.020	
Inlet Ring Runout	.000	.003	.000	.003	.000	.003	.000	.003	
Impeller Clearance At O.D.	1/16 Each Side		1/16 Each Side		3/32 Each Side		3/32 Each Side		
Impeller Fit To Shaft (Shrink)	.000	.001	.000	.001	.000	.001	.000	.001	DIAM.
Spacer Fit To Shaft (Shrink)	.000	.001	.000	.001	.000	.001	.000	.001	DIAM.



UNITED TECHNOLOGIES
CARRIER


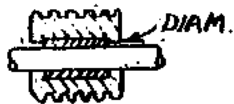
Commercial Division
Carrier Corporation

SERVICE BULLETIN

BULLETIN: CA-SB-17-70-17
 DATE: 10/23/70
 PAGE: 6 OF 12

SUPERSEDE BULLETIN:
 DATE:
 PAGE: OF:

17H,P,S COMPRESSORS

COMPRESSOR SIZE Tolerances	30		40		50		60		Measurement
	Min	Max	Min	Max	Min	Max	Min	Max	
<u>OIL PUMP CLEARANCES</u>									
Oil Pump Backlash (Drive)	.008	.015	.008	.015	.008	.015	.008	.015	TOTAL
Oil Pump Backlash (Gears)	.004	.012	.004	.012	.004	.012	.004	.012	TOTAL
Gears to Oil Pump Housing	.0005	.0015	.0005	.0015	.0005	.0015	.0005	.0015	
Worm Gear Drive to Compressor Shaft	.0000	.0005	.0000	.0005	.0000	.0005	.0000	.0005	



Commercial Division
Carrier Corporation

SERVICE BULLETIN


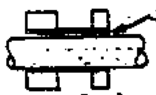



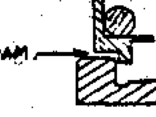




SUPERSEDE
BULLETIN:
DATE:
PAGE: 7 OF 12

BULLETIN: CA-SB-17-70-17
DATE: 10/23/70
PAGE: 7 OF 12

SERVICE BULLETIN

 SUPERSEDE
 BULLETIN:
 DATE:
 PAGE: OF:

17 M.P. 400 MACHINE

<u>LABYRINTH CLEARANCE</u>	<u>Min</u>	<u>Max</u>	
Shaft End Labyrinth	.002	.003	
Shaft Labyrinth	.010	.016	
Balancing Piston Labyrinth	.010	.018	
Wheel Labyrinth	.010	.018	
Spacer Labyrinth	.010	.017	
<u>CONTACT SEAL CLEARANCES</u>			
Retaining Ring to Contact Sleeve	.017	.020	
Seal Housing Gasket	1/16	1/16	TOTAL
Guide Ring To Shaft	.006	.010	
Shutdown Carbon Movement	1/16 Each Direction See Note on Page 2		
Rotating Contact Ring Runout	.0000	.0002	
Shaft Sleeve to Contact Sleeve	.110	.110	



UNITED TECHNOLOGIES CARRIER

Commercial Division
Carrier Corporation

BULLETIN: CA-SB-17-70-17

DATE: 10/23/70

PAGE: 9 OF 12

SERVICE BULLETIN



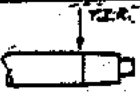


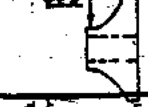

SUPERSEDE

BULLETIN:

DATE:

PAGE: OF:

17 M.P. LOO MACHINE

<u>SHAFT & BEARING CLEARANCES</u>	<u>Min</u>	<u>Max</u>	
Journal To Bearing Liner Seal End	.005	.007	
Journal To Bearing Liner Thrust End	.006	.008	
Thrust Clearance (Shaft Float)	.010	.014	AXIAL
Shaft Runout	.000	.001	
Thrust Disc Face Runout	.0000	.0002	
<u>IMPELLER CLEARANCES</u>			
Impeller Rim Wobble	.000	.020	
Inlet Ring Runout	.000	.002	
Impeller Clearance at O. D.	3/32 Each Side		
Impeller Fit To Shaft	-.001 0	-.004 -.001	TOTAL
Spacer Fit To Shaft Shrink	-.001 0	-.004 -.001	
Rotor Assembly Balance	.00" 02	.02" 02	




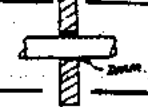
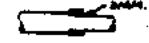
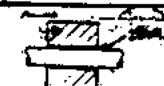

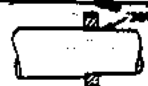

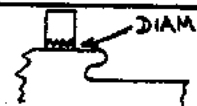


Commercial Division
Carrier Corporation

BULLETIN: CA-SB-17-70-17
DATE: 10/23/70
PAGE: 10 OF 12

SERVICE BULLETIN

SUPERSEDE
BULLETIN:
DATE:
PAGE: OF:

17DA SIZE 7 & SIZE 8 COMPRESSORS

COMPRESSOR	Min	Max	
Shaft End Laby	.001	.004	
Thrust Disc To Shaft	.0005	.0020	
Thrust Disc Spacer To Shaft	.0010	.0025	
Journal Bearing To Shaft Outboard (Thrust End)	.0035	.0055	
Journal Bearing To Shaft Inboard (Seal End)	.0035	.0055	
Rotating Contact Ring To Shaft	.0015	.0040	
Thrust Clearance	.008	.012	AXIAL
Thrust Disc Runout	.0000	.0005	
Seal Housing Laby	.008	.011	
Shaft Movement (Shutdown Seal)	1/16	5/64	
Impeller Eye Laby	.026	.034	



**UNITED
TECHNOLOGIES
CARRIER**

Commercial Division
Carrier Corporation

BULLETIN: CA-SB-17-70-17
DATE: 10/23/70
PAGE: 11 OF 12

SERVICE BULLETIN

SUPERSEDE
BULLETIN:
DATE:
PAGE: OF:

17CA SIZE 61, 71, 81 COMPRESSORS

COMPRESSOR	COMPRESSOR SIZE	Min	Max	
Journal Bearing (Thrust End)	61, 71, 81	.006	.008	
Journal Bearing (Seal End)	61, 71, 81	.002	.004	
Thrust Clearance	61, 71, 81	.010	.014	AXIAL
Guide Ring to Shaft (Contact Seal)	61, 71, 81	.008 .006	.012 .010	
Inner Carbon Movement From Seal Shoulder On Shaft (Each Direction)	61, 71, 81 See Note Page 2		.045 .062	
1st Stage Labyrinth To Impeller	61, 71, 81	.012	.020	
2nd Stage Labyrinth To Impeller	61, 71, 81	.017	.022	
Labyrinth To Impeller Spacer	61, 71, 81	.008	.014	
Impeller To Intake Wall	61, 71, 81	.055	.065	
Seal Oil Ring Orifice (Spray Ring)	61, 71, 81	----	.094	



**UNITED
TECHNOLOGIES
CARRIER**

Commercial Division
Carrier Corporation

BULLETIN: CA-SB-17-70-17
DATE: 10/23/70
PAGE: 12 OF 12

SERVICE BULLETIN

SUPERSEDE
BULLETIN:
DATE:
PAGE: OF:

NOTES:

Left Hand Threads - 17 M,P,S 72M

Top Oil Pump Drive Shaft Lock Nuts

Inner Floating Seal Ring Retainer (Bellows Seal)

Impeller Lock Nut - Suction End

72M Compressors

Same as 17 M,P,S

Z Compressors

<u>Size</u>	<u>Clearances</u>
6½, 7½ CZ	Same as 30, 40 M,P,S
8½, 9½ CZ	Same as 50, 60 M,P,S
10½, 11½ BZ	Same as 50, 60 M,P,S (except for thrust clearances)
8½, 9½, 10½, DZ	Same as 50, 60 M,P,S

BZ - Thrust end shaft bearing and thrust collars -
.010" axial.