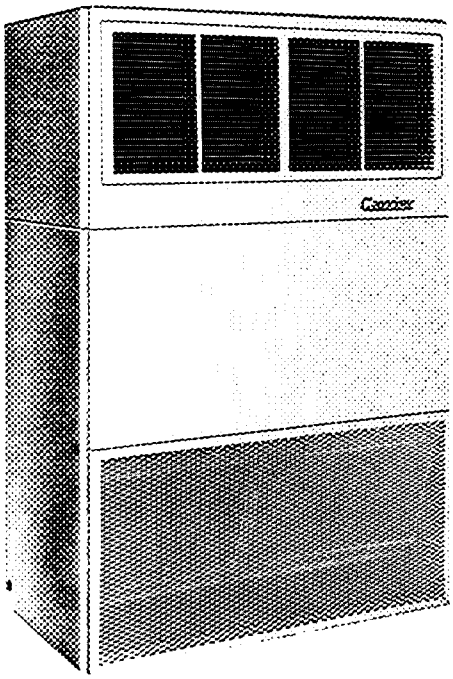
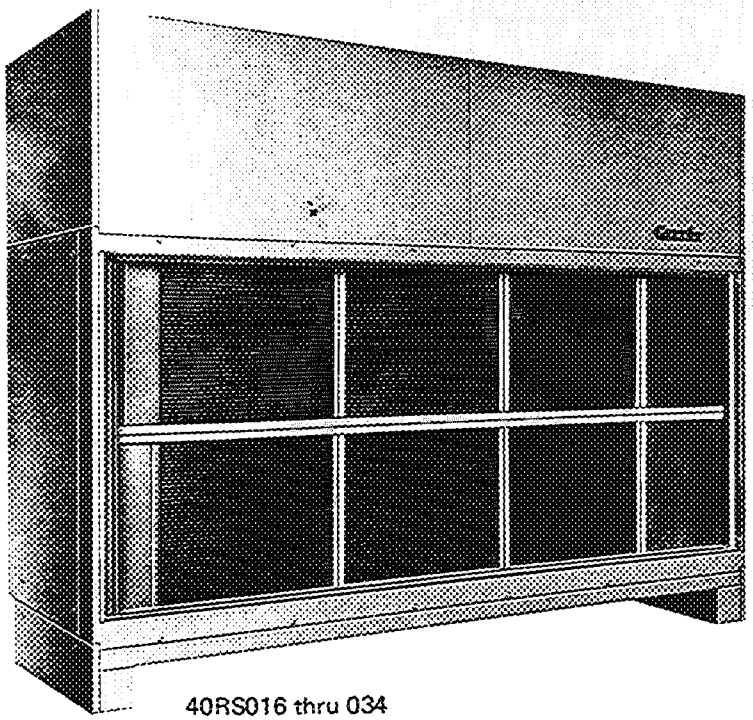
Carrier Packaged Chilled Water Air Handling Units

40RS
2370 – 14,800 Cfm
7½ – 30 Tons



...in 8 popular space-saving sizes

40RS008 thru 014



40RS016 thru 034

Carrier

Who has the industry's most complete line of packaged chilled water air handling units?

Carrier. Of course.

Specify Carrier 40RS Series packaged chilled water air handling units for commercial in-the-space applications in factories, warehouses, offices or stores If a source of chilled water is available, you can't afford to overlook the versatile packaged units of the 40RS Series

These attractive units are available in 8 popular sizes, covering the 2370 — 14,800 Cfm range with nominal cooling capacities from 7½—30 tons Floor mounted or ceiling suspended, 40RS units are real space savers. Their narrow width (less than 3-ft) makes them easy to get into existing spaces Modular construction allows the fan section to be mounted in front of, on top of, or behind the coil section. And the fan section can be rotated for front, top, or rear air discharge, horizontal or vertical, as you like it That's 40RS Series versatility.

Cooling coils are constructed of copper tubes with mechanically bonded, smooth plate fins, offering an efficient high heat transfer surface that's built with years of dependable service in mind You can specify accessory hot water or steam distributing coils, too, for heating capacities up to 768,000 Btuh

The smooth finish baked enamel cabinets are fabricated of rugged, heavy-gage galvanized steel Belt-drive centrifugal fans move large volumes of air quietly and efficiently may be used with ductwork or for free blow (direct discharge) into the conditioned space

Yes, if you're looking for the most in versatility and operating performance in packaged chilled water air handling units, look to the 40RS Series. From Carrier, of course.

Only the 40RS Series offers you

Versatility

- full line of packaged units, 7½—30 tons
- choice of fan section mounting positions
- choice of air discharge arrangements
- free blow or with ductwork

Adaptability

- ceiling suspended or floor mounted
- attractive appearance for use in the space
- fits existing 2- or 4-pipe systems

Dependable Carrier quality

- efficient coil surface
- rugged modular construction
- quiet, belt-drive centrifugal fans

Accessories

Air discharge plenum — with two-way deflection grilles for free-blow applications (40RS008—024)

Return air grille — covers return air inlet when finished appearance is desired (40RS008—024).

Overhead suspension packages — hanger brackets, units 40RS008—014. Package for units 40RS016—034 contains a bottom panel to give unit a finished appearance

Subbase — required on floor-mounted installations to provide access to the condensate connection (40RS016 and 024 only).

→ **Base package** — elevates a floor-mounted vertical unit for return-air applications (40RS008 thru 014).

Horizontal discharge package — required when installing unit in horizontal arrangement (40RS016 and 024)

Heating coils — mount downstream of cooling coil. Choose either 2-row U-bend hot water coils or 1-row steam distributing coils

Drive packages — for units not supplied with a factory-installed motor and drive (40RS016—034)

Fan motor contactor — for 3-phase motors With either 115- or 230-volt holding coil.

Physical data and dimensions

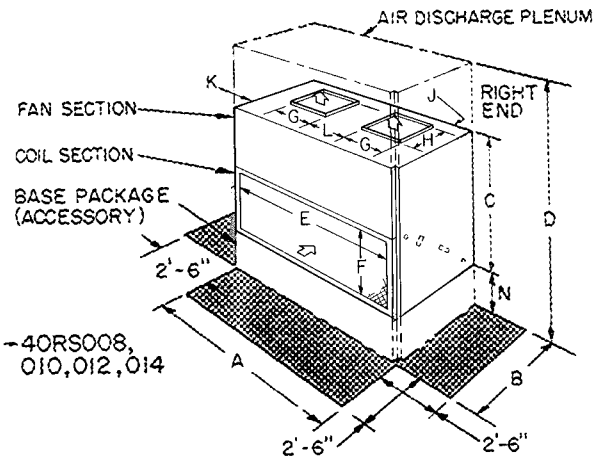
UNIT 40RS		008	010	012	014	016	024	028	034
OPERATING WT (lb)									
Base Unit		365	380	472	490	620	670	1110	1150
Accessory Plenum		97	97	115	115	140	140	–	–
COOLING COILS (no.)		1	1	1	1	*	*	2	2
→ Rows...Fins/in.		3..10.6	4..10 6	3..10.6	4..10 6	3 10 6	4..10.6	4..9 0	4..9 0
Tubes in Face		22	22	22	22	28	30	31	37
Face Area (sq ft)									
Upper Coil		–	–	–	–	8.45	9 6	14.5	14 5
Lower Coil		–	–	–	–	8 45	8 4	8.1	12.4
Total		7 9	7 9	10 7	10 7	16 9	18.0	22.6	26 9
Coil Volume (gal.)		2 2	2.9	3 0	4.0	4.6	6.6	8 3	9 9
AIR QUANTITY (cfm)									
Range		2200-3800		3000-5000		4500-7500	6000-10,000	7500-12,500	9000-15,000
Nominal		3000		4000		6000	8000	10,000	12,000
FAN MOTORS†		Factory Supplied				Field Supplied			
Horsepower		1		2		†		†	†
Speed (rpm)		1750		1750		1750		1750	1750
FANS, NO. ...DIAM (in.)		2 10⅝		2 12⅝		2 15		2 18	
ACCESSORY HEATING COILS‡									
Rows...Total Face Area (sq ft)									
Hot Water		2 5.6		2 7 9		2..15 7		2 20 8	
Nonfreeze Steam		1. 5 5		1 7 6		1 . 13 3	2 12 8	1 . 21.7	
AIR FILTERS		Factory Supplied				Field Supplied			
Type		Low Velocity				High Velocity			
No. ...Size (in.)		2 .16x20x1 2. 16x25x1		6 16x20x1		3 16x25x1 or 16x25x2 3 20x25x1 or 20x25x2	8 . 20x20x2	6 20x25x2 2. 16x20x2	
CONNECTION (in.)		1 each				2 each			
Cooling Coils	Supply	1¼ MPT		1¼ MPT		1½ MPT		2 MPT	
	Return	1¼ MPT		1¼ MPT		1½ MPT		2 MPT	
Hot Water Coils	Supply	1¼ MPT		1¼ MPT		1½ MPT		1½ MPT	
	Return	1¼ MPT		1¼ MPT		1½ MPT		1½ MPT	
Steam Coils	Supply	1¼ MPT		1¼ MPT		1¼ MPT		1½ MPT	
	Return	1¼ MPT		1¼ MPT		1¼ MPT		1¼ MPT	
Condensate		¾ FPT		¾ FPT		1 MPT		1¼ MPT	
Vent and Drain		¼ FPT		¼ FPT		¼ FPT		¼ MPT	

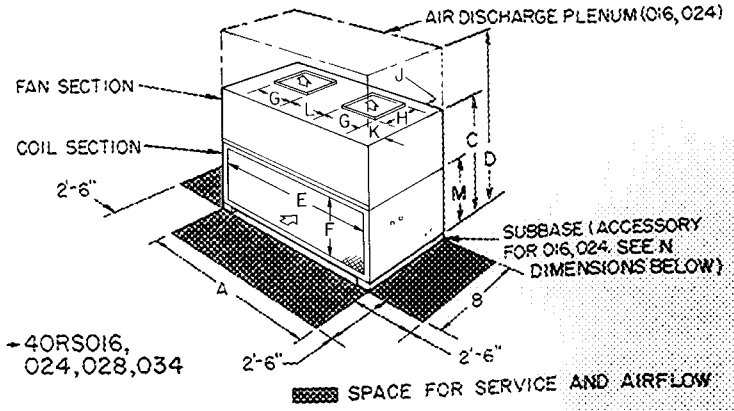
FPT — Female Pipe Thread **MPT** — Male Pipe Thread

*Two separate coils assembled as one unit, face split into an upper and a lower section

†Refer to Fan Motors and Drives table and Drive Selection Data.

‡Maximum operating limits are 200 psig and 400 F





UNIT 40RS	DIMENSIONS (ft–in.)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
008, 010	4–0	2– 1⅝	4–1⅜	8– 1⅞	3– 9	1– 7¾	1–1⅛	1–1⅞	0–3¼	0–6	0–9⅞	–	2–0¾
012, 014	5–2½	2– 1⅝	4–2⅜	8– 1⅞	4–11½	1– 7¾	1–3	1–4½	0–2⅜	0–9	1–2⅝	–	2–0¾
016, 024	6–8	2– 5¼	5–8½*	7–10⅛*	6– 3¾	2–10¼	1–5¼	1–7¼	0–1⅞	1–7	1–4⅛	3–10⅜	0–6
028, 034	7–9¾	2–11¾	6–9⅛	–	7– 4¼	3– 2¼	1–8⅞	1–8⅞	0–2⅜	1–4⅛	1–7⅛	4– 4⅝	0–8

*Includes accessory subbase

Certified dimension drawings available on request.

Physical data (cont)

→ FAN MOTORS AND DRIVES (1750 rpm)

UNIT 40RS	MOTOR		MOTOR PULLEY		FAN PULLEY		BELTS	FSR
	Hp	NEMA Frame Size	PDR (in.)	Bore (in.)	PPD (in.)	Bore (in.)	(No. ... Section)	(Rpm)
008*,010*	1	56	3 4–4 4	5/8	7 0	3/4	1 4L	835–1088
008 ,010	1	143T	3 4–4 4	7/8	7 0	3/4	1 4L	835–1088
012 ,014	2	145T	3.4–4.4	7/8	7.0	1	1 A	835–1088
016	2	56 or 145T	3.4–4.4	7/8	11.0	1	1 A	540– 700
024	3	184	4.0–5.0	1 1/8	10.0	1	2 A	700– 875
028	3 or 5	182T or 184T	4.3–5.3	1 1/8	12.4	1 11/16	2 B	607– 748
034	3 or 5	182T or 184T	4.3–5.3	1 1/8	11.0	1 11/16	2 B	684– 843

Accessory drive packages Others are standard equipment

FSR — Fan Speed Range

PDR — Pitch Diameter Range

PPD — Pulley Pitch Diameter

*Single phase All others are 3 phase

DRIVE SELECTION DATA

UNIT 40RS	MOTOR			BETWEEN SHAFT CTRS (in.)		FAN SHAFT DIAM (in.)
	Hp	NEMA Frame Size	Shaft Diam (in.)	Min	Max	
008,010	1	56	5/8	13 4	15 1	3/4
	1	143T*	7/8			
	2	56†	7/8			
	2	145T	7/8			
012,014	2	145T	7/8	15 3	16 8	1
	3	56‡	7/8			
	3	182T	1 1/8			
016	2	56†	7/8	9 4	11 8	1
	2	145T	7/8	8 3	10 7	
	3	182T	1 1/8	9 4	11.8	
	5	184T	1 1/8	9.4	11.8	
024	2	56†	7/8	9 4	11 8	1
	3	182T	1 1/8	9 4		
	5	184T	1 1/8	9 4		
	7 1/2	213T	1 3/8	8 4		
→ 028,034	3	182T	1 1/8	28 5	32 0	1 11/16
	5	184T	1 1/8	28 5	32 0	
	7 1/2	213T	1 3/8	28 8	34 4	
	10	215T	1 3/8	28 8	34 4	

*Factory available 1 hp — 143T frame; Carrier part no HD52DG852 for 208–230/460-3-60

†Factory available 2 hp — Special 56 frame; Carrier part no HD56AE851 for 208–230/460-3-60.

‡Factory available 3 hp — Special 56 frame; Carrier part no HD58DL851 for 208–230/460-3-60

NOTE: The no 56 frame, 1 hp, motor shaft is 5/8 in. diam x 1 15/16 in long The no 143T frame, 1 hp motor shaft is 7/8 in diam x 2 1/4 in. long The no 56 frame 2 and 3 hp motors have special shaft diameter and special shaft lengths Any motor and drive not furnished with unit may require modification to the motor mount

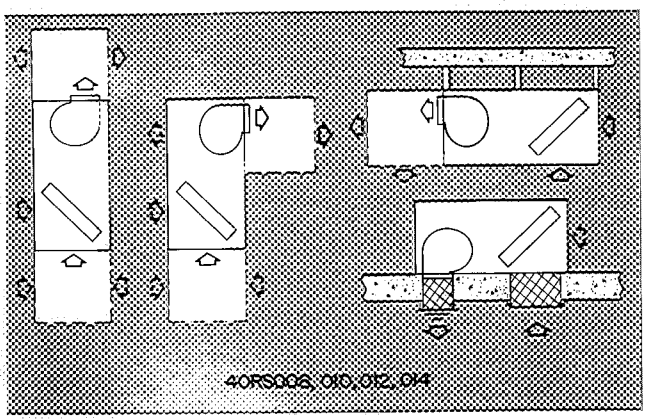
LOCATION OF HEATING COIL CONNECTIONS

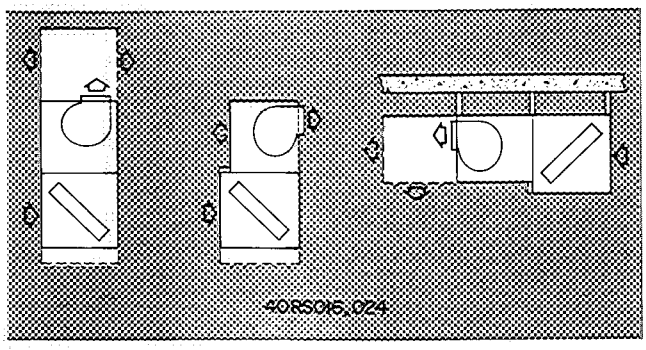
COIL TYPE	ARR	40RS		
		008–014	016,024	028,034
		Connection Location (L or R end)*		
1-Row Steam	Horiz	L or R	L	L or R
	Vert			
2-Row Hot Water	Horiz	L or R	R	L or R
	Vert	Sup — L or R Ret — R		

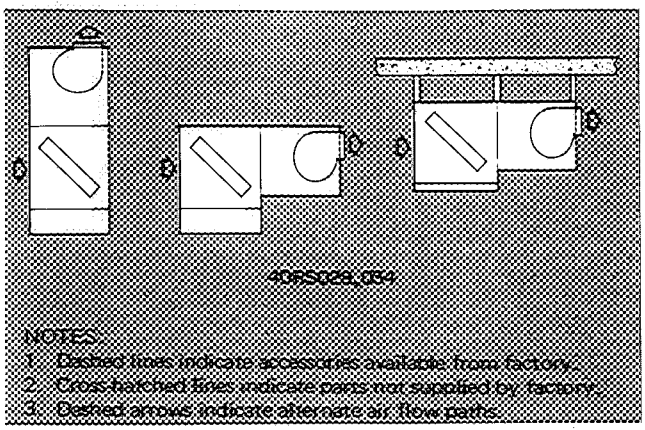
L — Left **R** — Right **Sup** — Supply **Ret** — Return

*When facing return air inlet side

STANDARD DISCHARGE ARRANGEMENTS







Selection procedure (with example)

The cooling coil ratings for the 40RS units are presented in the form of Q curves To find the Q value required, the load entering water temperature and effective coil surface temperature (apparatus dewpoint – adp) must be known A conversion chart is used to find the adp from known entering and leaving air conditions

Heating can be accomplished with the 40RS units by supplying an accessory hot water or steam heating coil

I Determine job requirements.

Given

Dehumidified air quantity	4815 cfm
Entering water temperature	45 F
Entering air temperature dry-bulb (t_{edb})	85 5 F
Entering air temperature wet-bulb (t_{ewb})	65 5 F
Leaving air temperature dry-bulb (t_{ldb})	57.5 F
Leaving air temperature wet-bulb (t_{lwb})	55 0 F
Grand total heat (GTH)	155,000 Btuh
Entering air temperature, winter, dry-bulb (t_{edb})	64.0 F
External static pressure	0 25 in wg

Find

Gpm required for cooling
Pressure drop
Bhp and rpm

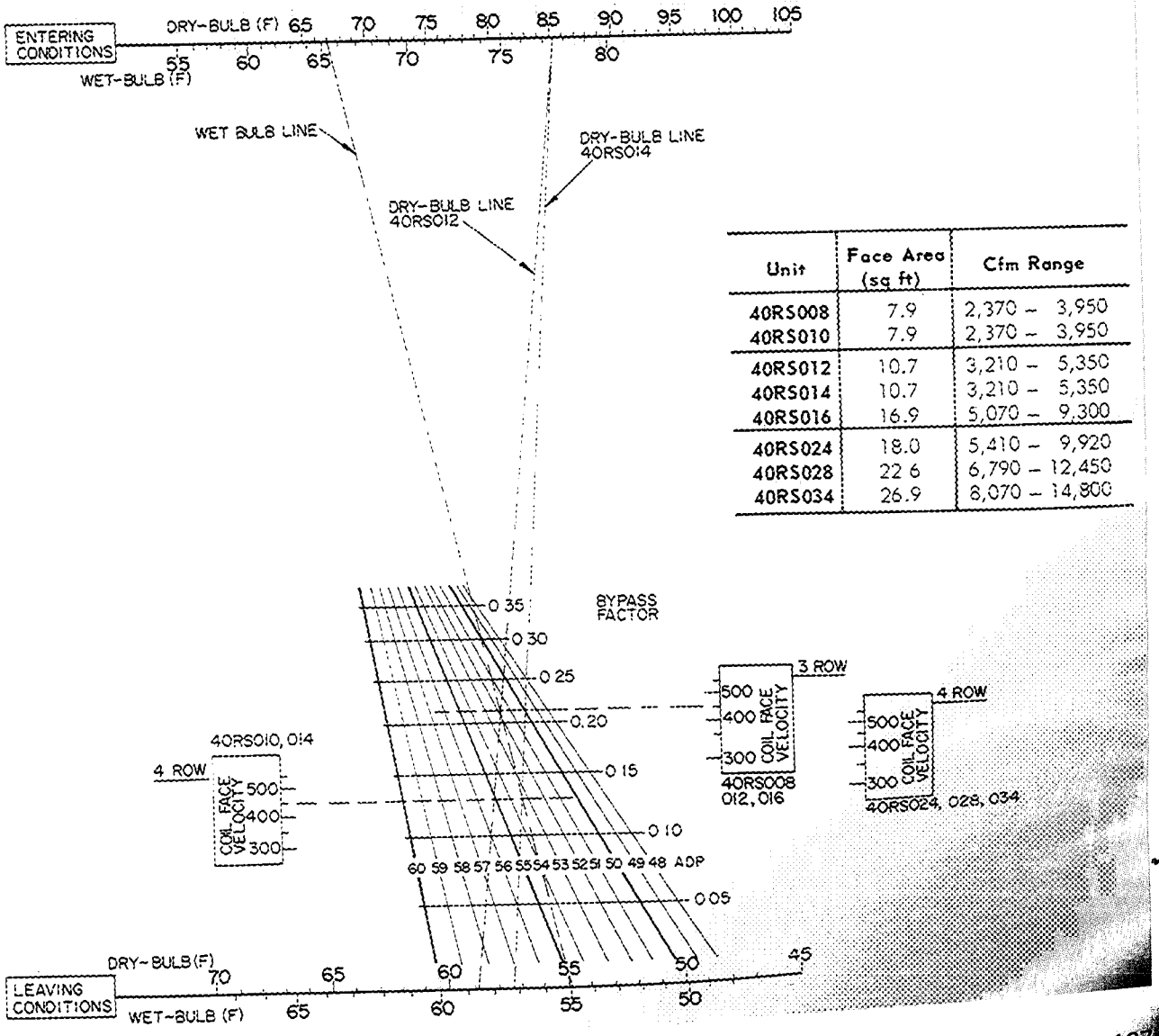
II Select unit size and ADP.

Referring to the Fan Performance data table, page 10, we find a 40RS012 or 014 size unit provides the required 4815 cfm at a coil face velocity of 450 fpm The adp is found on the Conversion Chart, below, as follows

1 Draw a line connecting the entering and leaving wet-bulb temperatures

2 Draw a horizontal line from the coil face velocity until it intersects the first line drawn

CONVERSION CHART



Unit	Face Area (sq ft)	Cfm Range
40RS008	7.9	2,370 – 3,950
40RS010	7.9	2,370 – 3,950
40RS012	10.7	3,210 – 5,350
40RS014	10.7	3,210 – 5,350
40RS016	16.9	5,070 – 9,300
40RS024	18.0	5,410 – 9,920
40RS028	22 6	6,790 – 12,450
40RS034	26.9	8,070 – 14,800

Selection procedure (cont)

3 Read the adp at the intersection of the 2 lines

4. Draw a third line from the entering dry-bulb thru the adp and read the resulting leaving dry-bulb temperature

40RS012	40RS014
adp = 51 9	adp = 53 3
t_{ldb} = 58 8 F	t_{ldb} = 57 3 F

Since the required leaving dry-bulb temperature is 57.5 F, the 40RS014 must be selected

III Find gpm and pressure drop.

$$Q = \frac{GTH\ (1000's)}{t_{adp} - t_{ew}}$$

$$Q = \frac{155}{53\ 3 - 45\ 0} = \frac{155}{8\ 3} = 18.7$$

Entering the 40RS012,014 Q curve with 18.7, read a gpm of 35.5. A pressure drop of 23.0 ft is read from the Pressure Drop curve, page 7.

IV Determine fan performance.

Determine total static pressure (SP) requirements (internal plus external).

Find the internal static pressure loss from the Pressure Loss of Unit Components table, page 9.

Cooling coil (wet) = 0.38
Filters = 0 07
Return air grille = 0.06
0 51 in. wg

→ Add the external static pressure loss of the ductwork (0.25 in wg)

Internal = 0.51
External = 0 25
Total SP = 0 76 in. wg

From the Fan Performance table, by interpolation, find 1 95 bhp and 898 rpm

To select accessory hot water coil

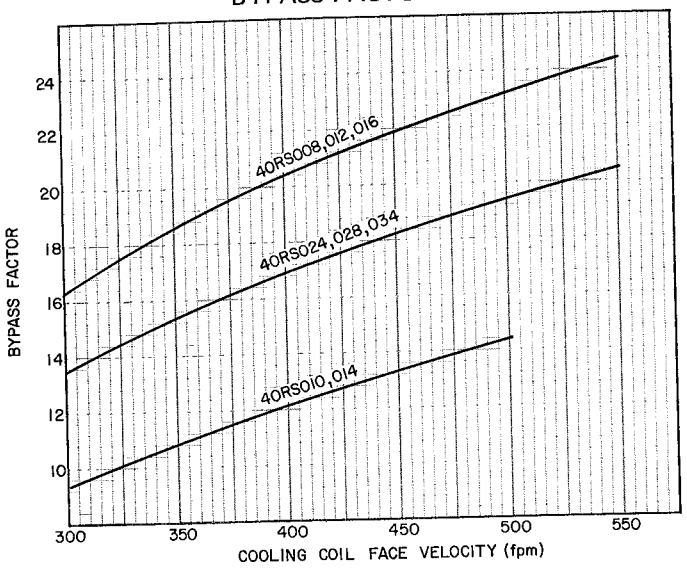
I Given:

Air quantity . . . . . 4815 cfm
Entering air temperature . . . . . 64 F
Heating load . . . . . 272,000 Btuh
Entering water temperature . . . . . 200 F

II Find: capacity, gpm and pressure drop.

Enter Accessory Heating Coil Capacities table with unit size determined in step II (40RS014) and the cfm (4815). By interpolation from the table, the capacity is 278,000 Btuh, the gpm is 30 and the pressure drop is 3 45

BYPASS FACTORS



Performance data

ACCESSORY HEATING COIL CAPACITIES

UNIT 40RS	HOT WATER*					STEAM† 1 Row		STEAM† 2 Row	
	Cfm	Cap.	Ldb	Gpm	PD	Cap.	Ldb	Cap.	Ldb
008	2,370	168	125	18	4 0	100	99	–	–
010	3,160	204	119	22	5 0	120	95	–	–
	3,950	235	115	25	5.9	135	92	–	–
012	3,210	224	124	24	2 8	130	97	–	–
014	4,280	268	118	28	3 1	155	93	–	–
	5,350	308	113	32	3.8	176	90	–	–
016	5,070	409	134	40	2.0	195	104	376	145
	6,760	438	126	45	3 0	229	91	456	122
	9,300	595	119	55	3.8	265	86	550	115
024	5,410	392	127	38	2 0	195	93	373	124
	7,220	483	122	44	2 7	230	89	447	117
	9,920	595	116	58	4 5	268	85	554	112
028	6,790	546	134	53	2 8	297	100	–	–
	9,050	644	125	64	4 0	344	95	–	–
	11,320	735	120	74	5.0	386	91	–	–
	12,450	780	118	79	5.8	405	90	–	–
034	8,070	602	129	60	3 3	315	96	–	–
	10,760	720	122	74	5 0	376	92	–	–
	13,450	819	116	82	6 0	421	89	–	–
	14,800	861	114	86	6 7	441	87	–	–

Cap. – Capacity (1000 Btuh)

Ldb – Leaving air dry-bulb temp (F) = Ent db + $\frac{\text{Cap. (Btuh)}}{1\ 08 \times \text{cfm}}$

PD – Pressure Drop (Ft Water)

Gpm – $\frac{\text{Cap (Btuh)}}{500 \times \text{Water Temp Drop}}$

*Values based on 200 F entering water and 60 F dry-bulb entering air For 50 F entering air, multiply capacity by 1 07; for 70 F entering air, multiply capacity by 928.

† Actual steam coil capacity = Btu constant x coil capacity in Btuh at 2 psig steam pressure and 60 F db entering air

STEAM BTU CONSTANTS

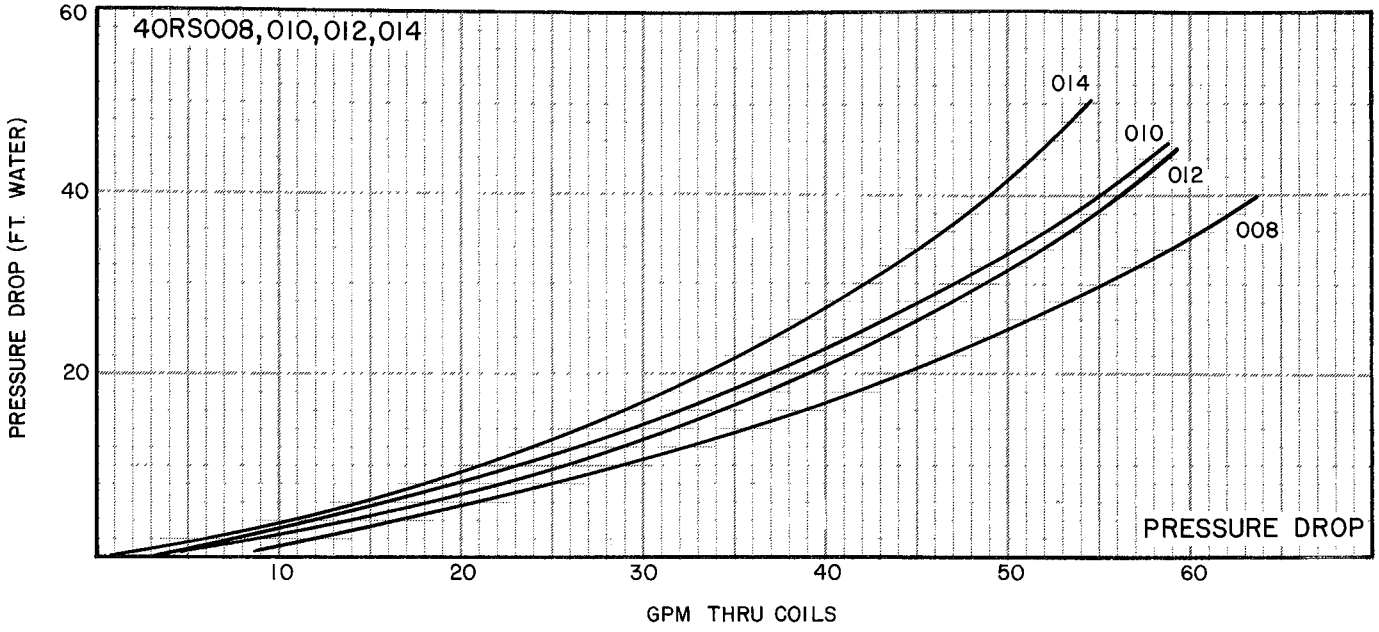
SP	ENT AIR TEMP (F) 50	60	70
0	1 02	96	90
2	1 06	1 00	94
5	1 12	1 06	99
10	1 20	1 13	1 07
15	1 26	1 20	1 13

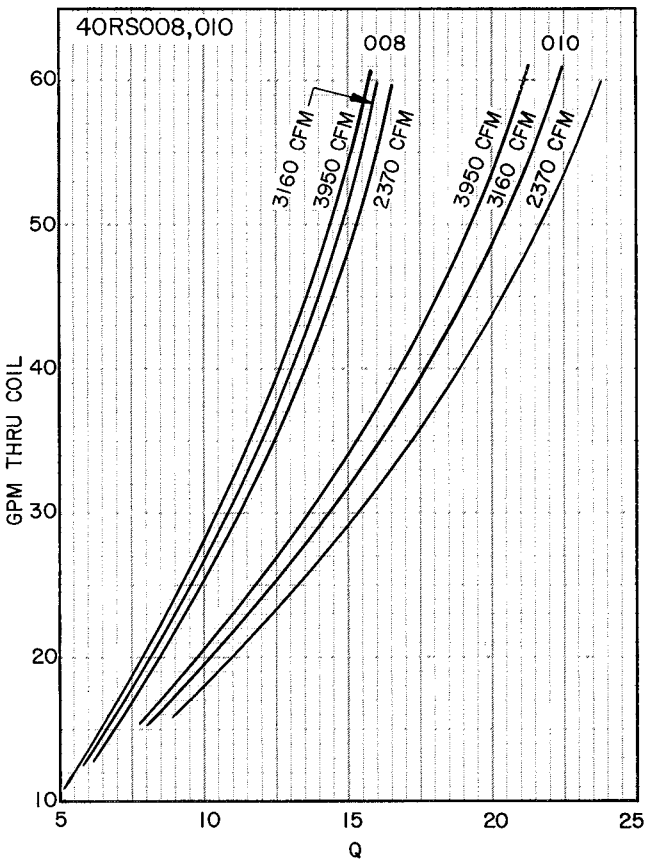
SP – Steam Pressure (psig)

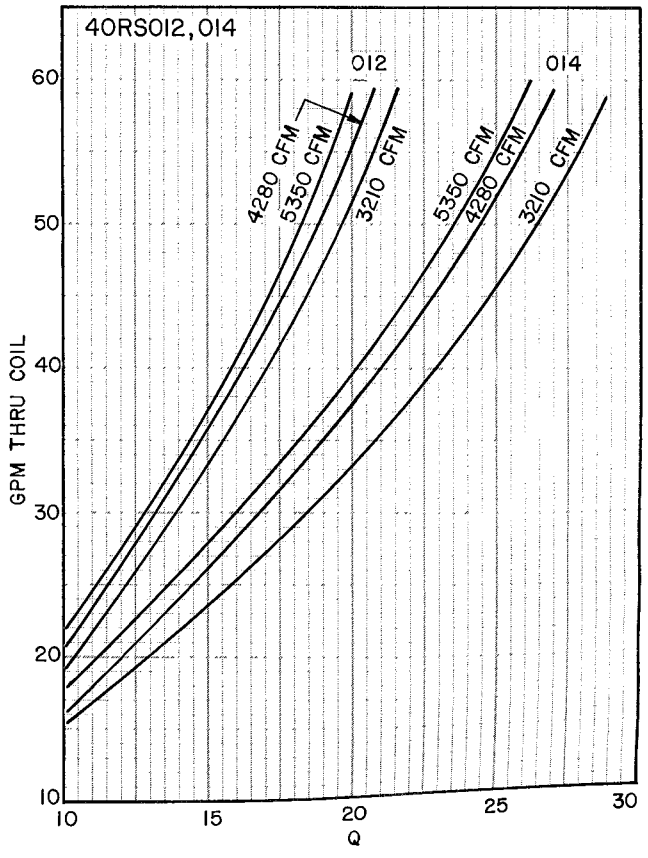
Steam Btu Constants based on 2 psig steam pressure and 60 F dry-bulb

Performance data (cont)

40RS COOLING COIL CAPACITIES



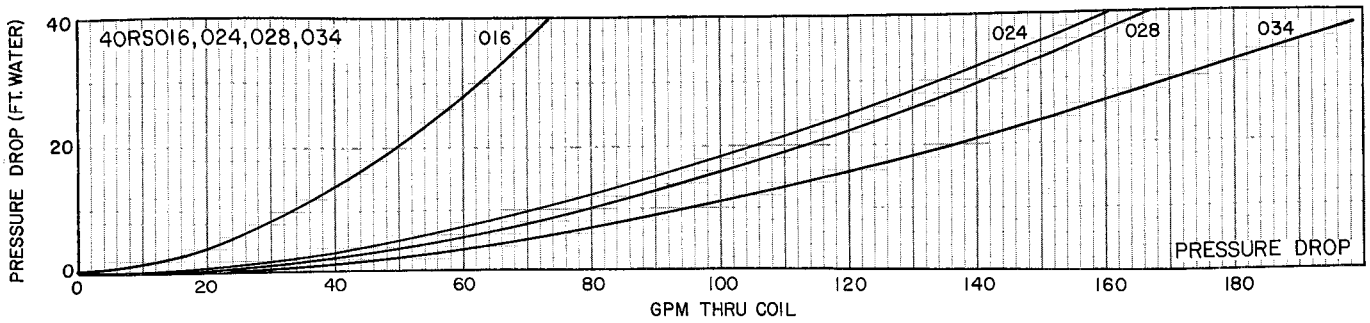


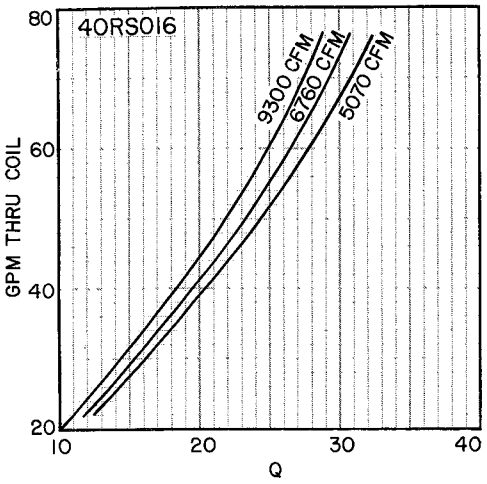


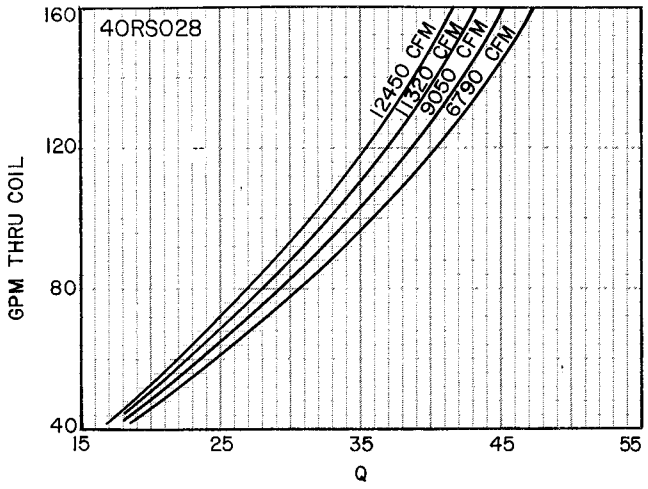
$$Q = \frac{GTH\ (1000)}{t_{adp} - t_{ew}}$$

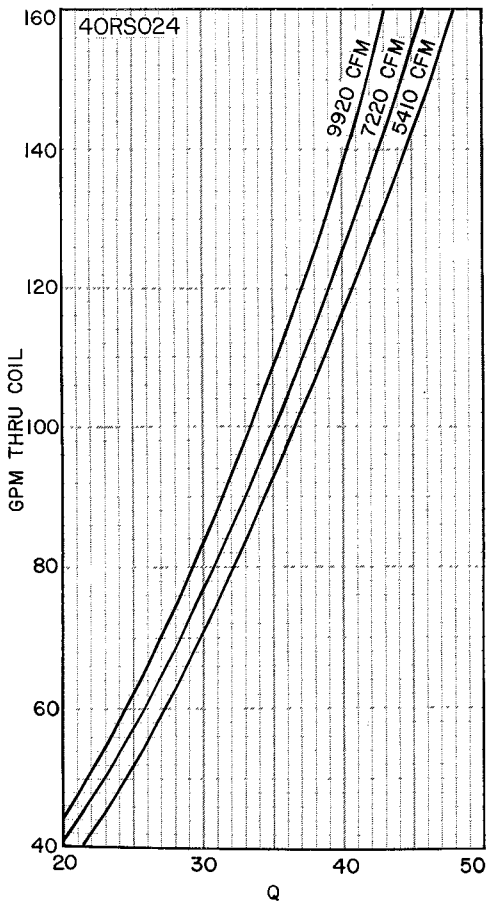
Performance data (cont)

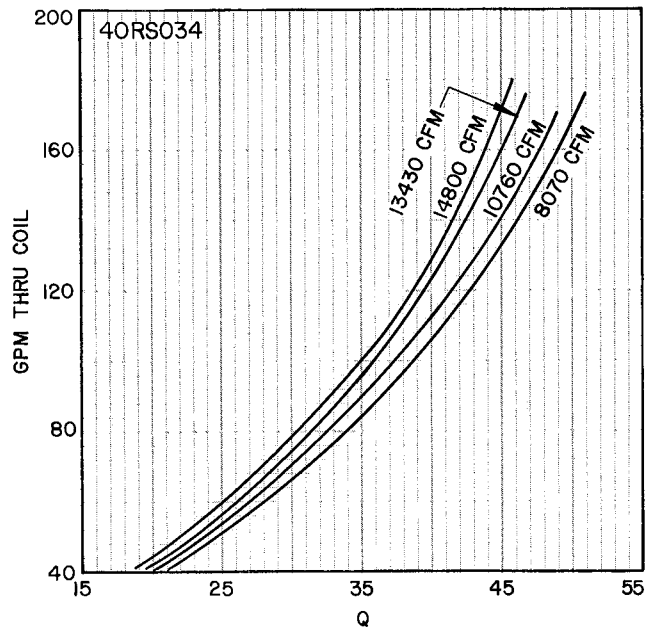
40RS COOLING COIL CAPACITIES











$$Q = \frac{GTH\ (1000)}{t_{adp} - t_{ew}}$$

PRESSURE LOSS OF UNIT COMPONENTS (in. wg)

UNIT 40RS	AIR QTY	COOLING COIL		ACCESSORY HEATING COILS			FILTERS (Note 1)		RETURN AIR GRILLE	AIR DISCHARGE PLENUM & GRILLES	HORIZONTAL FAN DISCHARGE
				Hot Water	Non-Freeze Steam						
	(cfm)	Wet	Dry	2-row	1-row	2-row	1 in.	2 in.			
008	2,370	14	08	05	03		04		03	20	
	2,770	18	11	07	04		06		04	26	
	3,160	23	14	09	04	–	07	–	05	34	Note 3
	3,560	29	17	11	05		08		06	43	
	3,950	35	20	13	06		.09		.06	.52	
010	2,370	18	11	05	03		04		03	20	
	2,770	24	15	07	04		06		04	26	
	3,160	30	18	09	04	–	07	–	05	34	Note 3
	3,560	38	23	11	05		08		06	43	
	3,950	.46	28	13	06		09		.06	.52	
012	3,210	14	08	06	03		05		03	21	
	3,750	18	11	08	04		06		04	28	
	4,280	23	14	10	05	–	07	–	05	35	Note 3
	4,820	29	17	12	06		07		06	45	
	5,350	35	20	14	07		08		07	55	
014	3,210	18	11	06	03		05		03	21	
	3,750	24	15	08	04		06		04	28	
	4,280	30	18	10	05	–	07	–	05	35	Note 3
	4,820	38	23	12	06		07		06	45	
	5,350	46	28	14	07		08		07	55	
016	5,070	14	08	04	01	02	05	10	02	22	04
	5,920	18	11	05	01	03	07	13	03	30	06
	6,760	23	14	07	02	03	08	16	04	39	07
	7,610	29	17	08	02	04	10	20	05	49	08
	8,450	35	20	10	03	05	12	24	06	60	10
	9,300	40	24	12	03	06	14	28	07	71	12
024	5,410	15	10	04	01	02	02	04	02	26	05
	6,310	21	12	05	01	02	03	05	03	34	06
	7,220	25	16	06	02	03	03	07	04	44	08
	8,120	32	19	08	02	04	04	08	05	54	09
	9,020	39	22	09	02	04	06	10	07	68	11
	9,920	47	27	11	03	05	06	12	08	80	13
028	6,790	15	10	06	01			05			01
	7,920	21	12	08	02			06			02
	9,050	25	16	11	02			08			04
	10,180	32	19	13	03	–	–	10	–	–	06
	11,320	39	22	16	04			13			09
	12,450	47	27	18	04			15			13
034	8,070	15	10	06	01			05			02
	9,420	21	12	08	02			06			04
	10,760	.25	16	10	02			08			07
	12,110	32	19	13	03	–	–	10	–	–	12
	13,450	39	22	15	03			11			19
	14,800	47	27	18	04			13			28

NOTES:

1 Filter resistance for 40RS024,028 and 034 units is based on high velocity (permanent-type) filters Resistance for other units is based on low velocity (throwaway-type) filters

2 Dashes indicate that the component is not available or cannot be used

3 No correction is needed for this arrangement

Ethylene Glycol Operation – The 40RS cooling coil capacities and pressure drops (fluid side) apply to fresh water There are applications, however, where ethylene glycol ratings are required The following multipliers, when used with the preceding performance data, will provide an estimate for unit capacity and pressure drops (fluid side) They are applicable to a 6 fps fluid velocity, corresponding to flow rates of 39 gpm for 008 thru 014 sizes, 49 gpm for the 016 size, 105 gpm for the 024 size, 109 gpm for the 028 size, and 130 gpm for the 034 size

ETHYLENE GLYCOL (%)	CAPACITY MULTIPLIER	PRESSURE DROP MULTIPLIER
25%	91	1 14
50%	72	1 34

Performance data (cont)

FAN PERFORMANCE

UNIT 40RS	COOLING COIL FACE VEL (fpm)	AIR QTY (cfm)	EXTERNAL STATIC PRESSURE (in. wg)																	
			0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8	
			Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
008, 010	300	2,370	–	–	715	0.35	843	0 57	950	0 75	1050	0.96	–	–	–	–	–	–	–	–
	350	2,770	600	0.20	750	0.53	875	0 72	980	0 92	1090	1.16	–	–	–	–	–	–	–	–
	400	3,160	695	0.53	800	0.70	915	0.90	1015	1.12	–	–	–	–	–	–	–	–	–	–
	450	3,560	750	0.69	850	0 90	955	1 11	1055	*1.34*	–	–	–	–	–	–	–	–	–	–
	500	3,950	795	0 92	896	1 12	997	*1 35*	1098	*1.70*	–	–	–	–	–	–	–	–	–	–
012, 014	300	3,210	–	–	632	0.53	740	0.75	815	1.00	890	1 26	960	1 52	1030	1 79	–	–	–	–
	350	3,750	575	0.70	671	0.85	760	1.07	845	1 28	925	1 52	990	1 78	1065	2 05	–	–	–	–
	400	4,280	630	0.95	705	1 16	795	1.37	875	1 59	955	1 81	1025	2 13	1085	*2.43*	–	–	–	–
	450	4,820	683	1.33	755	1 52	830	1.73	915	2 00	990	2 29	1065	*2.60*	–	–	–	–	–	–
	500	5,350	740	1.74	805	1.95	870	2 23	955	*2.44*	1030	*2.68*	1098	*2.95*	–	–	–	–	–	–
016	300	5,070	–	–	530	0.70	590	0 90	660	1 16	728	1 45	790	1 75	845	2 00	900	2.30	946	2.35
	350	5,920	–	–	540	0.95	610	1 21	677	1 50	740	1 77	808	2 06	860	2 37	915	2.63	958	2.94
	400	6,760	–	–	558	1.27	628	1 55	695	1 83	760	2 15	820	2 47	872	2 78	923	3.11	970	3.46
	450	7,610	–	–	580	1 62	655	1 90	720	2 27	780	2 58	835	2 93	890	3.29	937	3.64	985	3.98
	500	8,450	–	–	615	2 02	678	2 41	740	2 78	800	3 12	855	3 45	908	3.85	955	4.22	1000	4.63
	550	9,300	–	–	645	2 60	708	2 97	765	3 35	820	3 70	875	4 10	925	4.50	970	4.90	1020	5.30
024	300	5,410	–	–	520	0.80	600	1 00	670	1 30	740	1 57	800	1 86	850	2 12	904	2.42	950	2.70
	350	6,310	–	–	545	1.10	620	1 37	685	1 65	750	1 93	815	2 26	867	2 53	918	2.86	965	3.20
	400	7,220	–	–	570	1 47	642	1 76	708	2 08	770	2 40	827	2 71	880	3.03	930	3.40	978	3.75
	450	8,120	–	–	600	1 85	670	2 20	730	2 56	794	2 91	845	3 26	900	3.64	946	3.97	994	4.42
	500	9,020	–	–	635	2 43	697	2 80	758	3 15	817	3 53	870	3.90	920	4.28	970	4.70	1010	5.10
	550	9,920	–	–	670	3 05	725	3 40	785	3 80	840	4 20	890	4.60	940	5.00	990	5.20	1034	5.75
			0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0		2.2	
028	350	7,920	–	–	600	1 50	653	2 00	708	2 70	755	3 30	804	4 00	846	4.30	889	4.80	931	5.40
	400	9,050	–	–	616	2 20	668	2 80	723	3 40	770	3 90	815	4 40	859	4.80	901	5.50	946	6.20
	450	10,180	–	–	636	2 80	685	3.40	740	4 00	784	4 40	829	4 90	872	5.40	912	6.00	950	6.70
	500	11,320	615	3 10	665	3 70	717	4 20	762	4 70	806	5 10	850	5.70	889	6.30	928	7.00	960	7.60
	550	12,450	648	3 90	693	4 40	741	4 90	783	5 40	828	5 90	868	6.60	907	7.20	945	7.80	–	–
034	300	8,070	–	–	600	1 60	655	2 10	710	2 70	758	3 30	804	3 90	845	4.40	890	4.80	932	5.50
	350	9,420	–	–	622	2 40	673	3 00	730	3 60	775	4 10	821	4 60	863	5.00	905	5.70	945	6.40
	400	10,760	600	2 80	650	3 30	704	3 90	750	4 30	796	4 80	840	5 30	880	5.90	921	6.50	957	7.20
	450	12,110	635	3 60	685	4 20	733	4 70	778	5 10	822	5 70	862	6.30	902	6.90	939	7.60	–	–
	500	13,450	678	4 60	722	5.10	766	5 60	808	6 10	848	6.80	887	7.50	–	–	–	–	–	–
	550	14,800	723	5 90	760	6 20	800	7 10	842	7 60	–	–	–	–	–	–	–	–	–	–

Shaded areas indicate field-supplied drive required

Italics indicates field-supplied motor required (applicable only to units with factory-furnished motors)

→ NOTES:
1 Ratings for units 40RS008 thru 034 do not include any coil or accessory resistances
2 Max allowable fan rpm is 1100

Rpm – Revolutions per minute
Bhp – Brake horsepower input to fan

Converting Bhp to Watts

$$\text{Watts Input} = \frac{\text{Bhp} \times 746}{\text{motor efficiency}}$$

Approximate Motor Efficiencies

1 hp – .79	7½ hp – .85
2 hp – 80	10 hp – .85
3 hp – 81	15 hp – 86
5 hp – .82	20 hp – .87

PLENUM AIR DISTRIBUTION

Front Discharge Only

UNIT 40RS	AIR QTY (cfm)	VERTICAL VANE SETTING (degrees)	LENGTH OF BLOW (ft)	MINIMUM CEILING HT (ft)
008, 010	3000	Straight	80	17
		22½	67	15
		45	49	14
012, 014	4000	Straight	93	20
		22½	79	17
		45	58	16
016, 024	6000	Straight	113	25
		22½	96	21
		45	70	19

NOTES:

1 Length of Blow is the distance from the unit where the velocity of the airstream has been reduced to less than 75 fpm There will be some diffusion of the cooled air beyond this point For the cfm range of the units, Length of Blow is approximately proportional to cfm

2 If the length of the room is less than the blow of the unit, the airstream will impinge on the opposite wall and may cause drafts

3 Minimum Ceiling Height is that height required to distribute the cooled air without causing objectionable air motion in the occupied zone This height is measured from floor to beams, lighting fixtures, or other obstructions

Front Discharge with Two Side-Discharge Grilles

UNIT 40RS	VERTICAL VANE SETTING (degrees)	FRONT		EACH SIDE	
		Length of Blow (ft)	Minimum Ceiling Ht (ft)	Length of Blow (ft)	Minimum Ceiling Ht (ft)
		2800 Cfm		1600 Cfm	
016	Straight	50	14	38	14
	22½	43	13	32	13
	45	31	12	24	12
		4800 Cfm		1600 Cfm	
024	Straight	90	20	38	20
	22½	77	17	32	17
	45	56	16	24	16

4 The values listed in the Front Discharge with Two Side Discharge Grilles table are based on full side discharge areas and

a Center of front discharge area of the 40RS016 blocked off by turning 10 vertical vanes until they are parallel to the front discharge

b Full front discharge area of the 40RS024

5 Plenum with front outlet only not recommended for use at high cfm due to high outlet velocity and long blow Additional field-supplied side outlet grilles should be used

→ Electrical data (60-Hz)

UNIT 40RS	VOLTS	VOLTAGE LIMITS*	FULL LOAD AMPS
008, 010	200–230	187–264	7.7/7.0
	208–230/460	187–253	3.8/1 9
012, 014	208–230/460	187–253	6.3/3.1

Single-phase units; all other units are 3-phase

*Voltage fluctuations should not exceed the allowable limits indicated

NOTE: Fan motors are not supplied with 40RS016 thru 034 units

Guide specifications

Furnish and Install____chilled water air handling unit(s) in the location(s) shown on the plans

Total Cooling Capacity shall be ____ Btuh or more and total room sensible capacity shall be ____ Btuh or more when supplied with ____ gpm of chilled water entering at ____F, leaving at ____ F under the following conditions

Air entering unit ____ F db, ____ F wb
Air leaving unit ____ F db, ____ F wb

The maximum pressure drop thru the coil shall not exceed ____ ft of water

Cooling Coils shall be of nonferrous construction with mechanically bonded smooth plate fins with a total face area of not less than ____ sq ft All tube joints shall be brazed with phosphor copper or silver alloy. Cooling coils → shall be tested for leaks at a pressure of 525 psig

Fan Section shall have forward-curved blades, double-inlet fans mounted on a common shaft. Fans shall be statically and dynamically balanced and shall run on permanently lubricated bearings. Fans shall deliver ____ cfm with ____ in. wg external (or total) static pressure operating at ____ rpm, ____ hp.

Casing shall be made of Galvanneal steel, bonderized and finished with baked enamel.

Unit Construction shall be such that horizontal or vertical discharge may be achieved by relocating the fan section. Provisions shall exist for suspending the unit from an overhead support.

Dimension — Unit cabinet shall be ____ in. wide, ____ in deep and ____ in. high.

Filters (factory supplied on 40RS008 thru 014) shall be standard size and not less than ____ in. thick. They shall have a face area of ____ sq ft or more High velocity permanent (low velocity throwaway) filters shall be used and shall be protected from the cooling coil condensate

Accessories — A hot water (steam distributing) heating coil shall be enclosed in the unit and shall have a capacity of ____ Btuh with an air quantity of ____ cfm entering at ____ F db. Water quantity shall be ____ gpm entering at ____ F (Steam pressure shall be ____ psig)

In addition, the following accessories shall be supplied air discharge plenum, return air grille, overhead suspension package, base or subbase package, fan motor contactor, horizontal discharge package, and drive packages.

Number One
Air Conditioning
Maker

Carrier®

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Book	1	3	4
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Form 40RS-3P Supersedes 40RS-2P Printed in U S.A 689 6-81 PC 111 Catalog No 524-020