

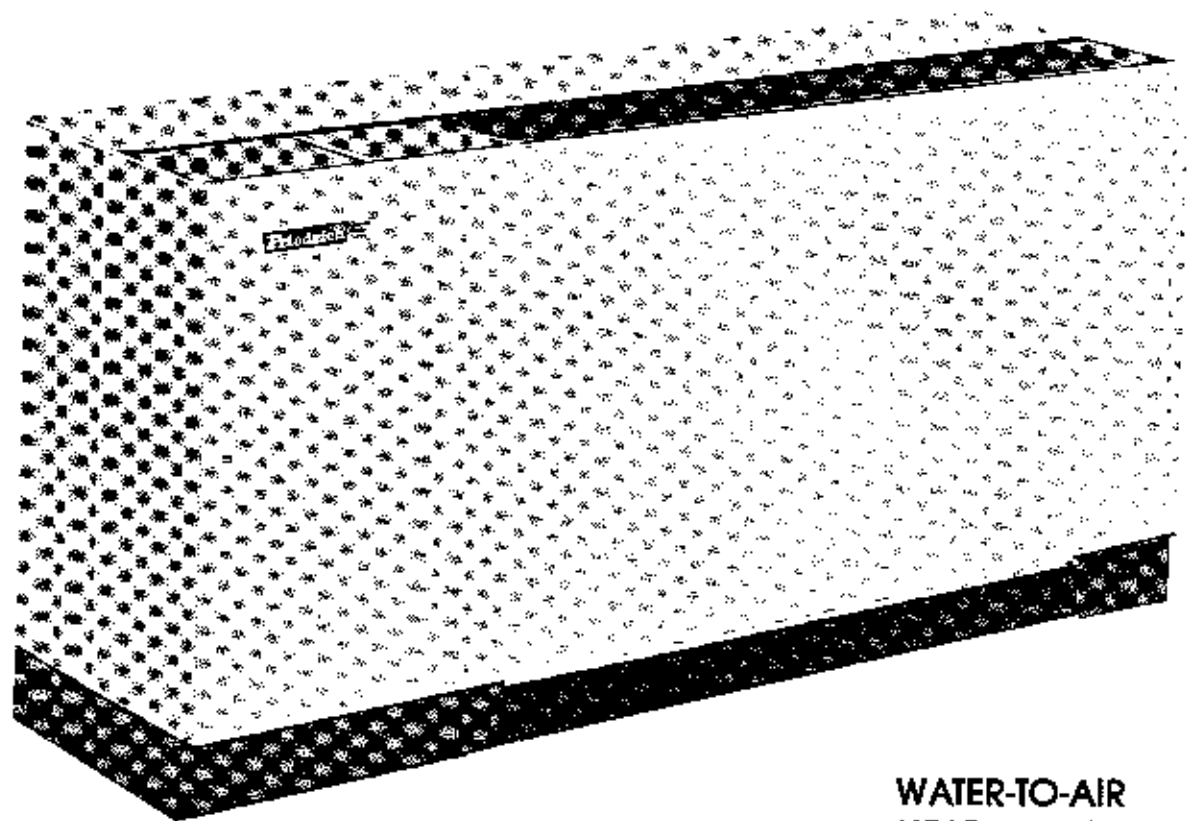
The logo graphic consists of a black triangle on the left and a grey stippled rectangle on the right, both pointing towards the bottom right.

**Friedrich®**

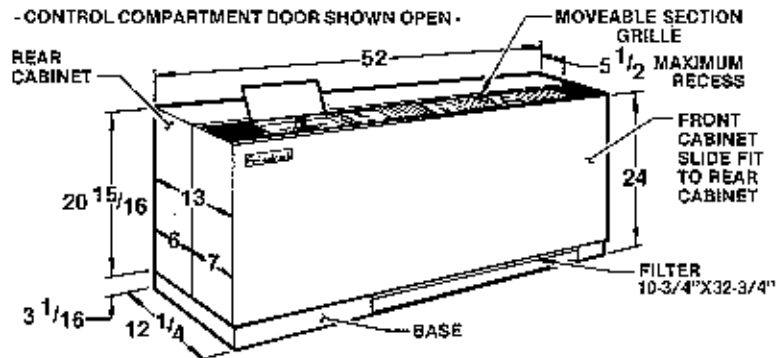
# 801

## SERIES

Heat  
Recovery  
Systems  
Console  
Models

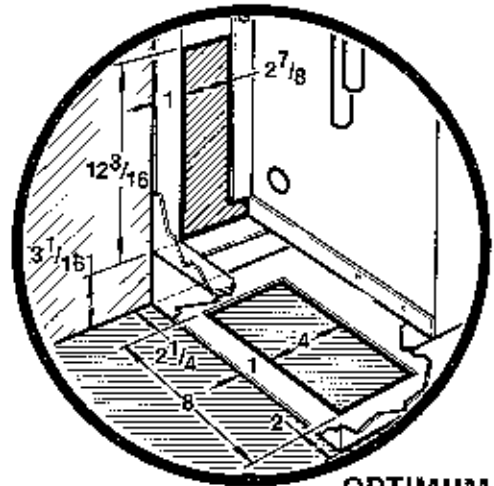


WATER-TO-AIR  
HEAT PUMPS  
ENGINEERING DATA

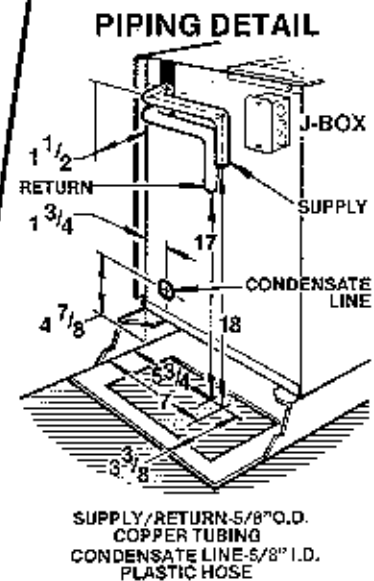
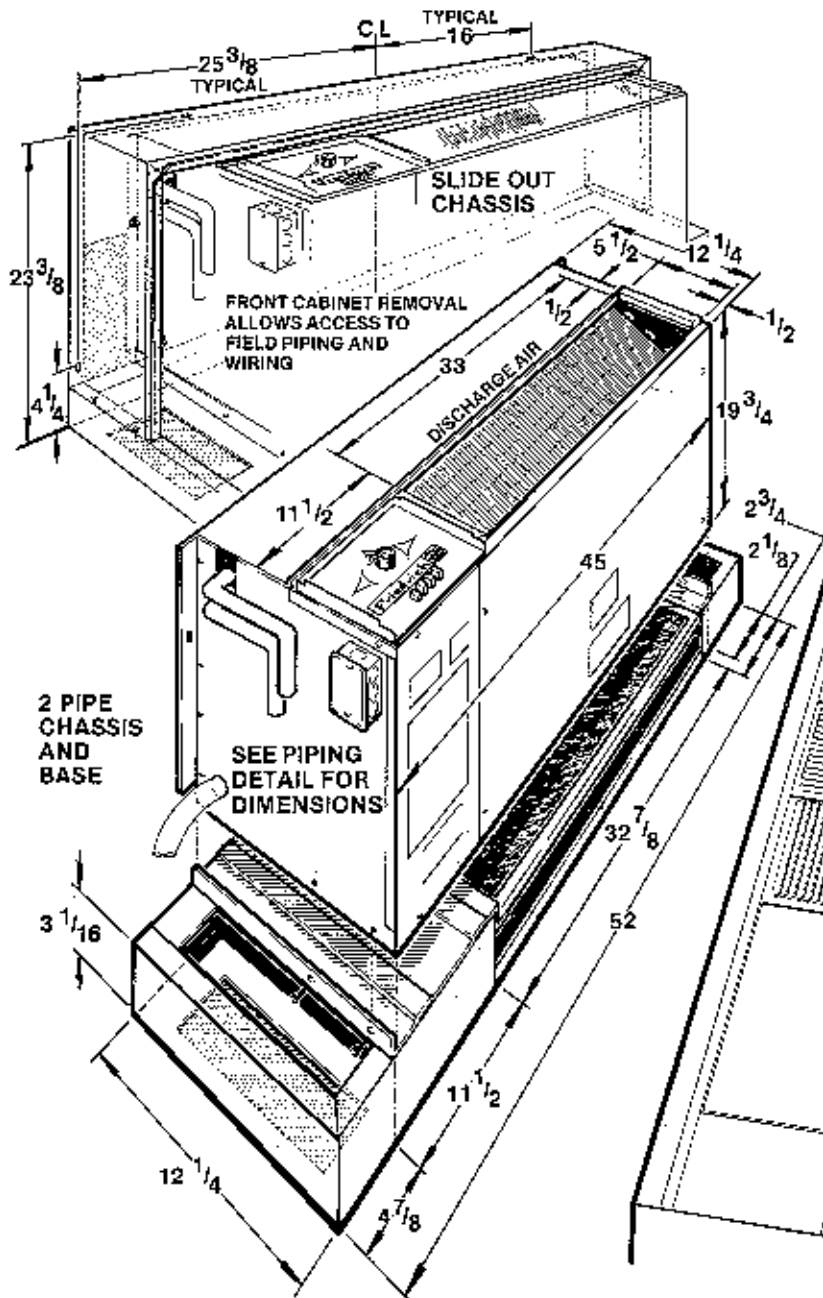


# 801<sup>15</sup><sub>19</sub>

LEFT HAND-2 PIPE



OPTIMUM PIPING LOCATIONS



**Friedrich** Climate Master Series

## 801 SERIES DIMENSIONS

CERTIFICATIONS  
3780

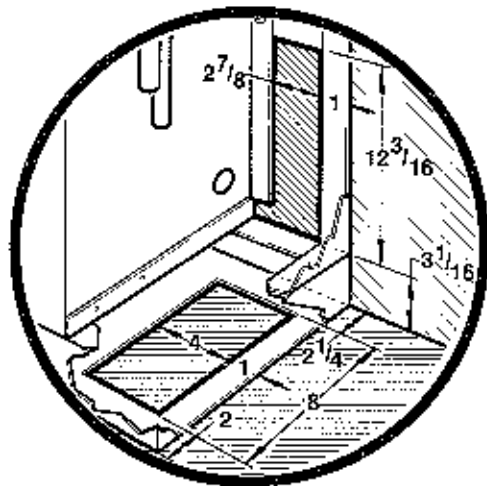


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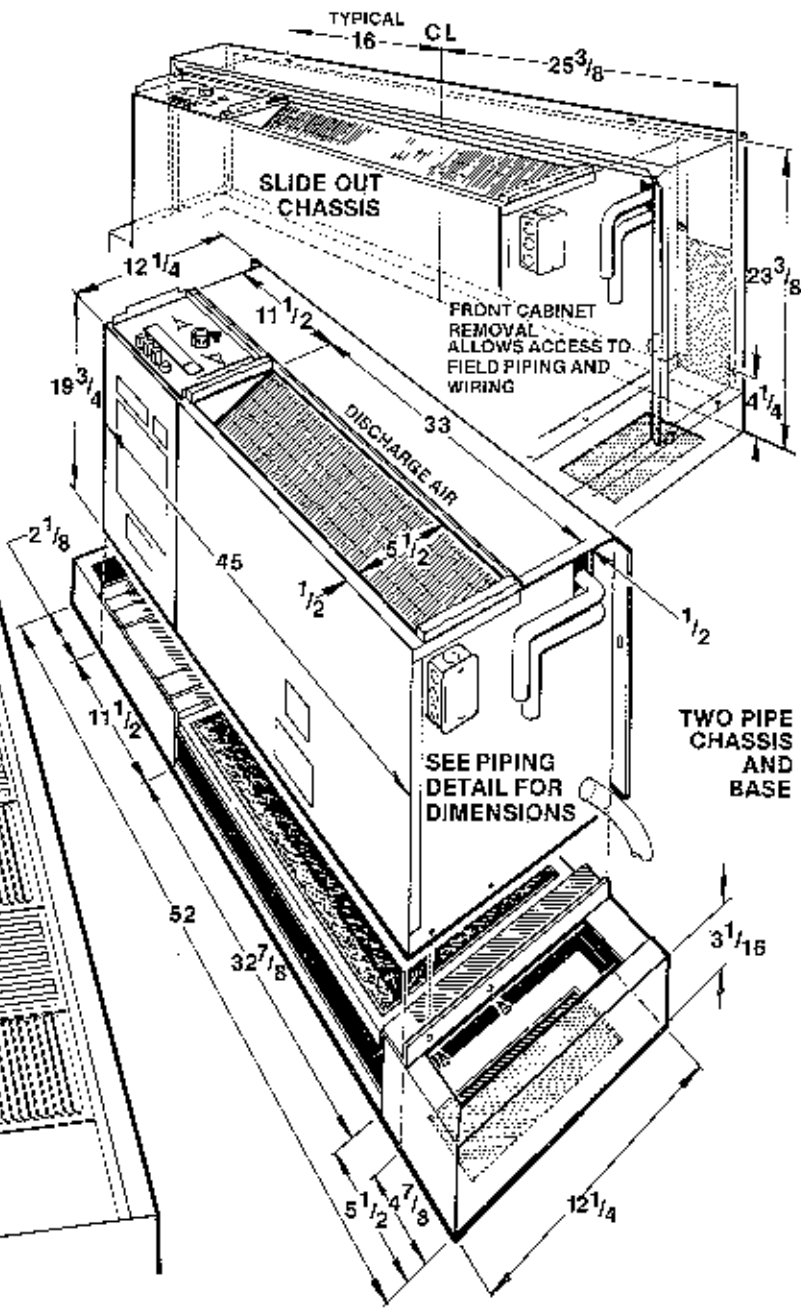
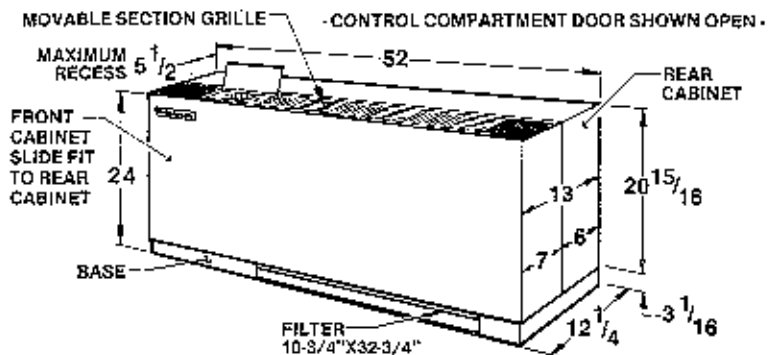
FCM 801-15&19-C

# 801<sup>15</sup><sub>19</sub>

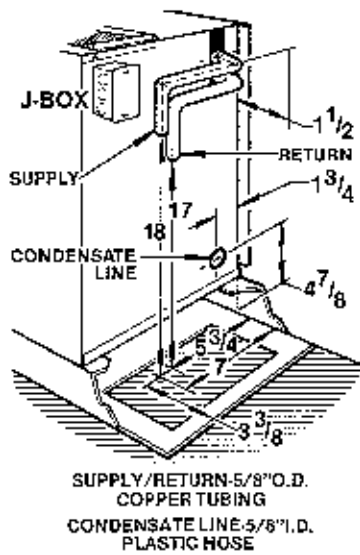
## RIGHT HAND-2 PIPE



**OPTIMUM  
PIPING  
LOCATIONS**



### PIPING DETAIL



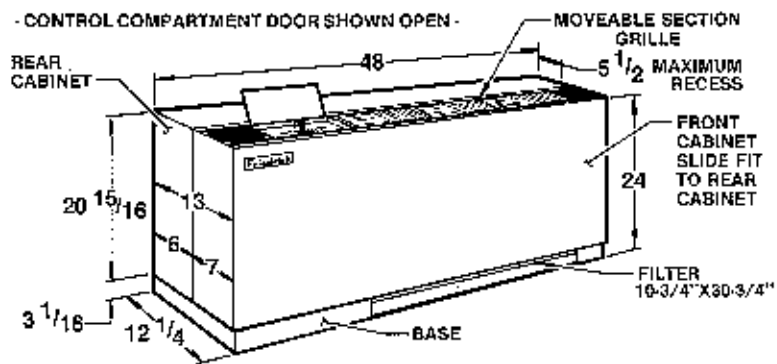
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# 801 SERIES DIMENSIONS

CERTIFICATIONS —    3/80

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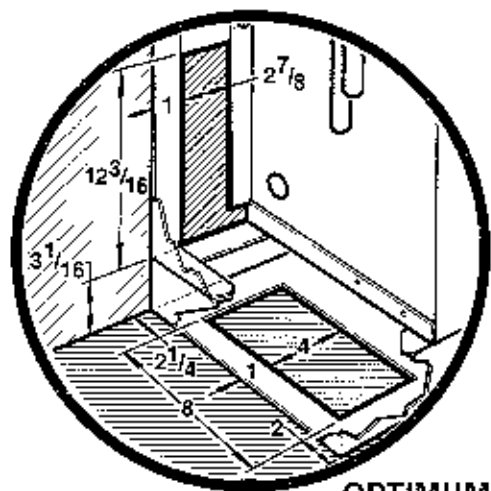
**FCM 801-15 & 19-C1**



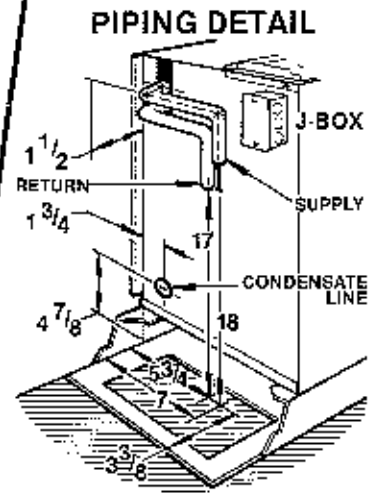
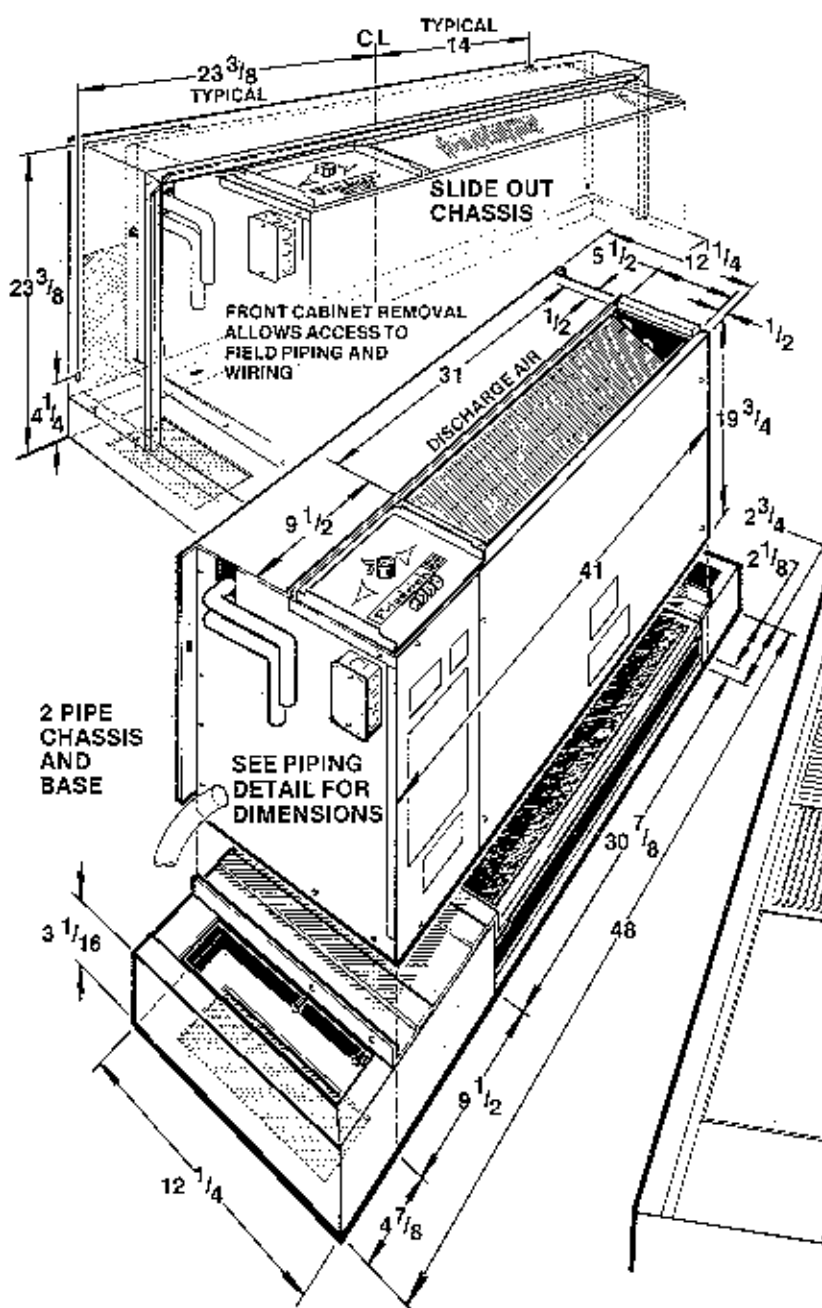
# 801

08  
10  
12

## LEFT HAND-2 PIPE



**OPTIMUM PIPING LOCATIONS**



**PIPING DETAIL**

SUPPLY/RETURN-5/8" O.D. COPPER TUBING  
CONDENSATE LINE-5/8" I.D. PLASTIC HOSE

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# 801 SERIES DIMENSIONS

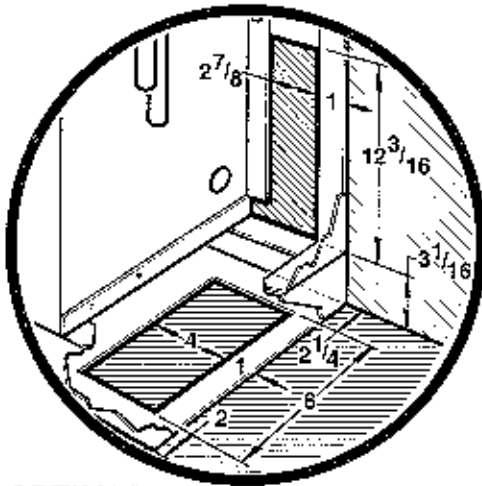
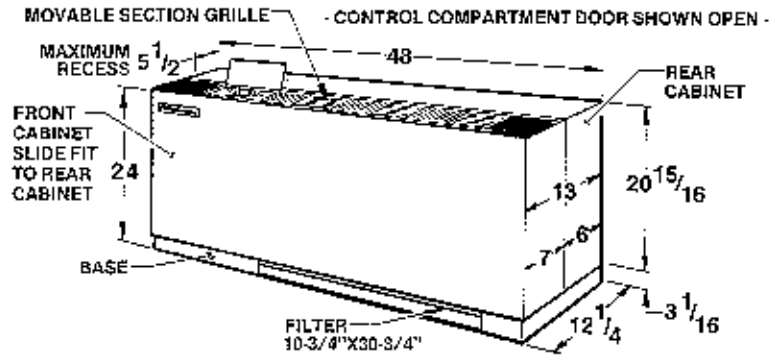


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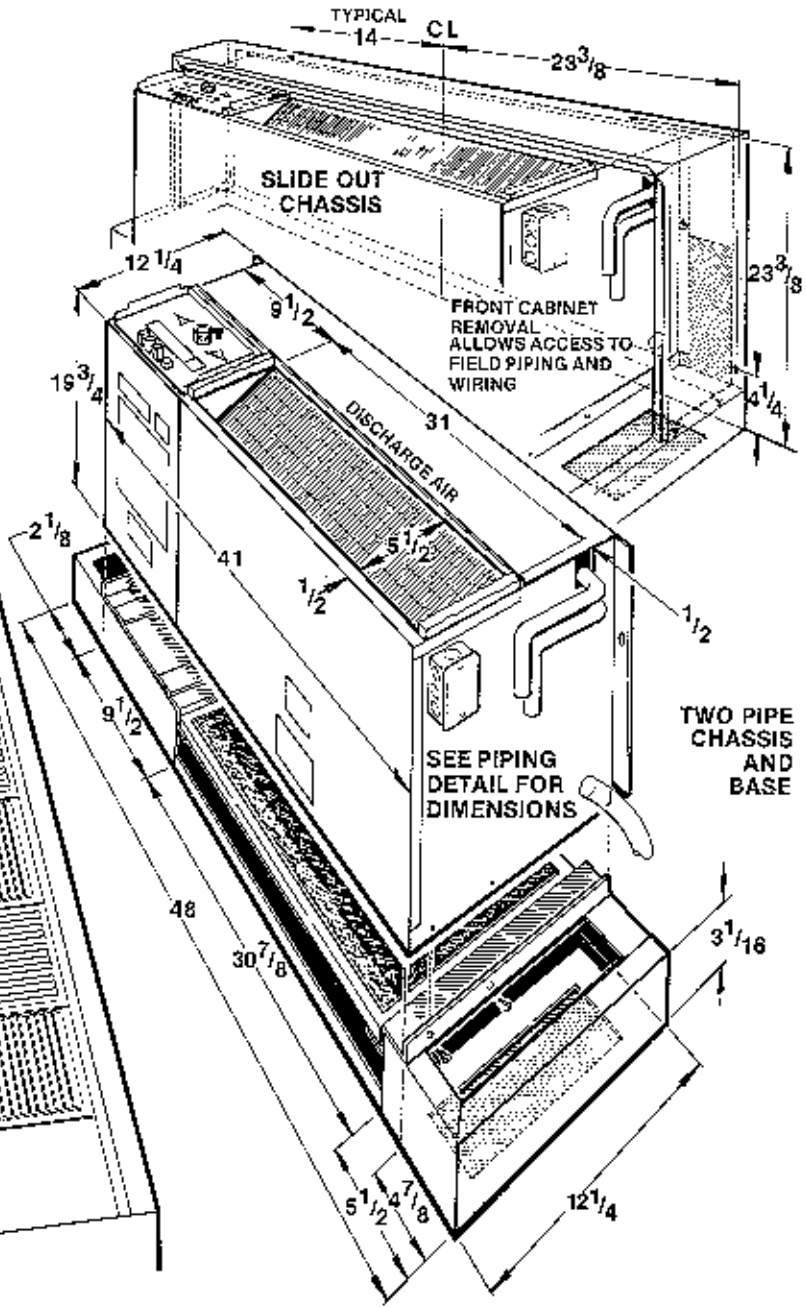
**FCM 801-08,10&12-C**

# 801<sup>08</sup> 10 12

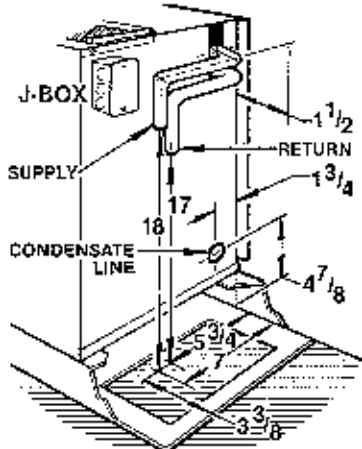
RIGHT HAND-2 PIPE



OPTIMUM PIPING LOCATIONS



PIPING DETAIL



SUPPLY/RETURN-5/8" O.D. COPPER TUBING  
CONDENSATE LINE-5/8" I.D. PLASTIC HOSE

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## 801 SERIES DIMENSIONS

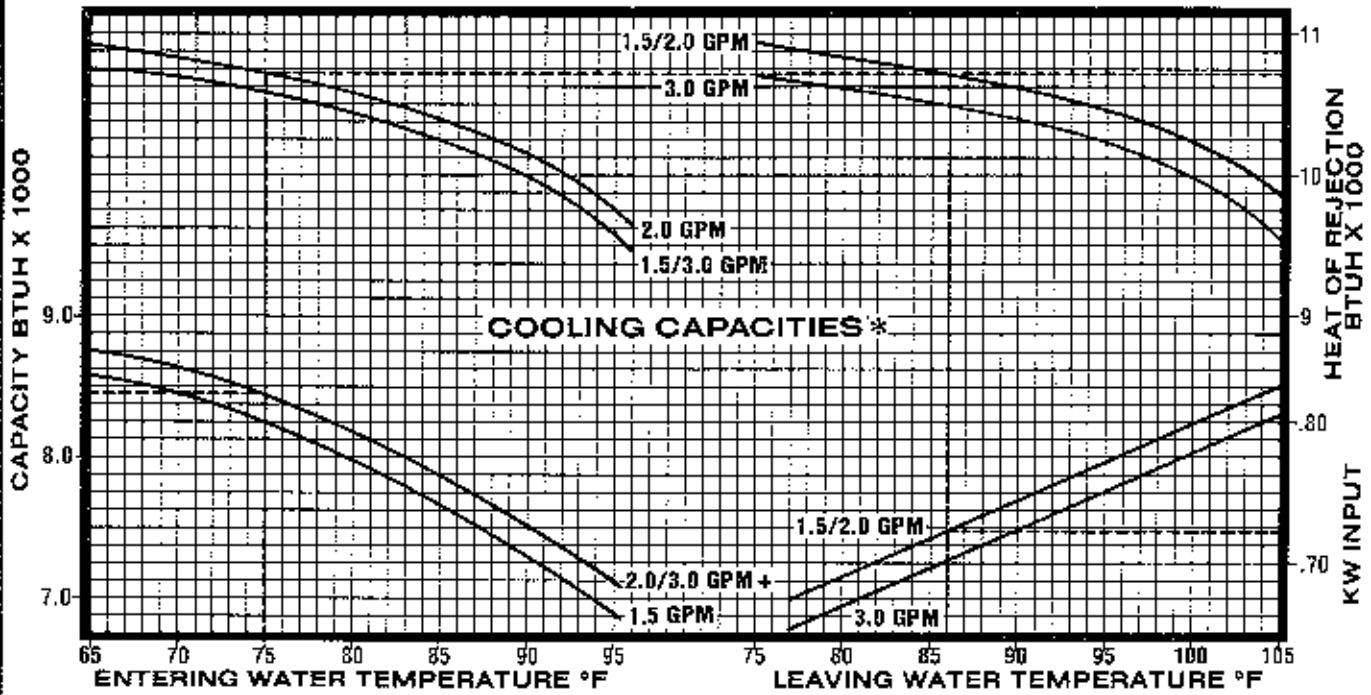
CERTIFICATIONS - 3/80



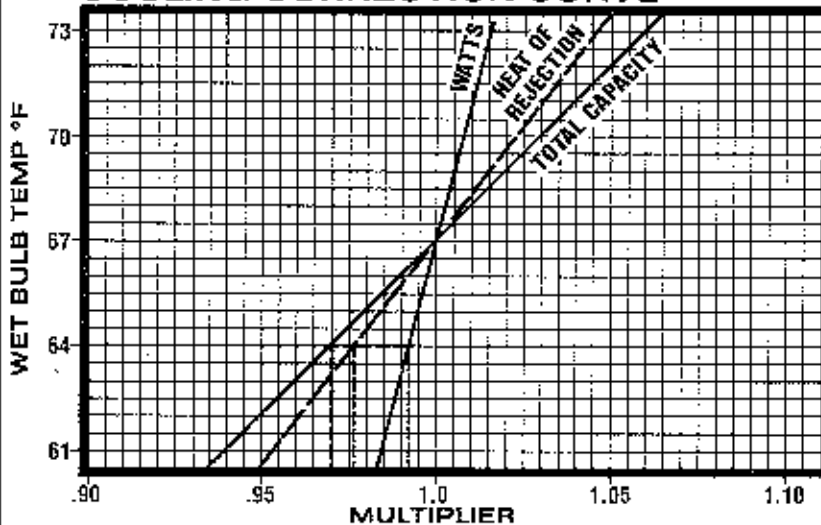
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FCM 801-08, 10 & 12-C1

# COOLING PERFORMANCE CURVE 801-08



## COOLING CORRECTION CURVE \*\*

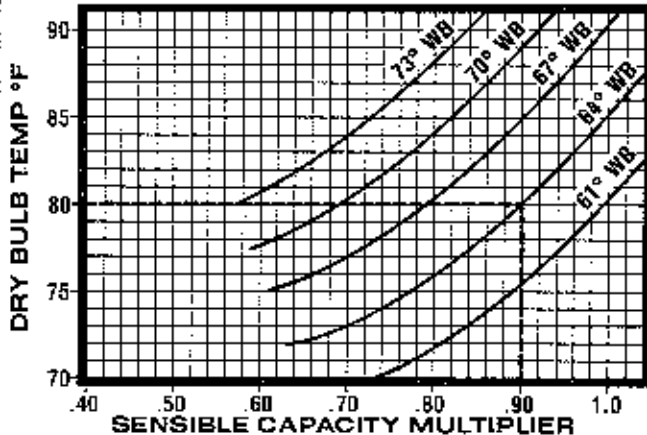


## ARI RATING — COOLING

NET BTUH	8000
POWER INPUT KW	.75
EER	10.7
HEAT OF REJ	10,443
WATER FLOW — GPM	2.1
CFM	350

\*BASED ON: 80°F DB/67°F WB  
 ENTERING AIR: 85°F EWT, 95°F LWT  
 ACCORDING TO ARI STD 320-76.

## SENSIBLE CAPACITY \*\*



\*BASED ON 80°F DB/67°F WB  
 ENTERING AIR TEMP + 2.0 & 3.0  
 GPM COOLING PERFORMANCE  
 EQUIVALENT.

\*\*TO BE APPLIED AS MULTIPLIER  
 TO CORRESPONDING VALUES  
 OBTAINED FROM PERFORMANCE  
 CURVE FOR A GIVEN WATER  
 FLOW RATE AND ENTERING  
 WATER TEMPERATURE

**Friedrich** Climate Master Series

**801-08**

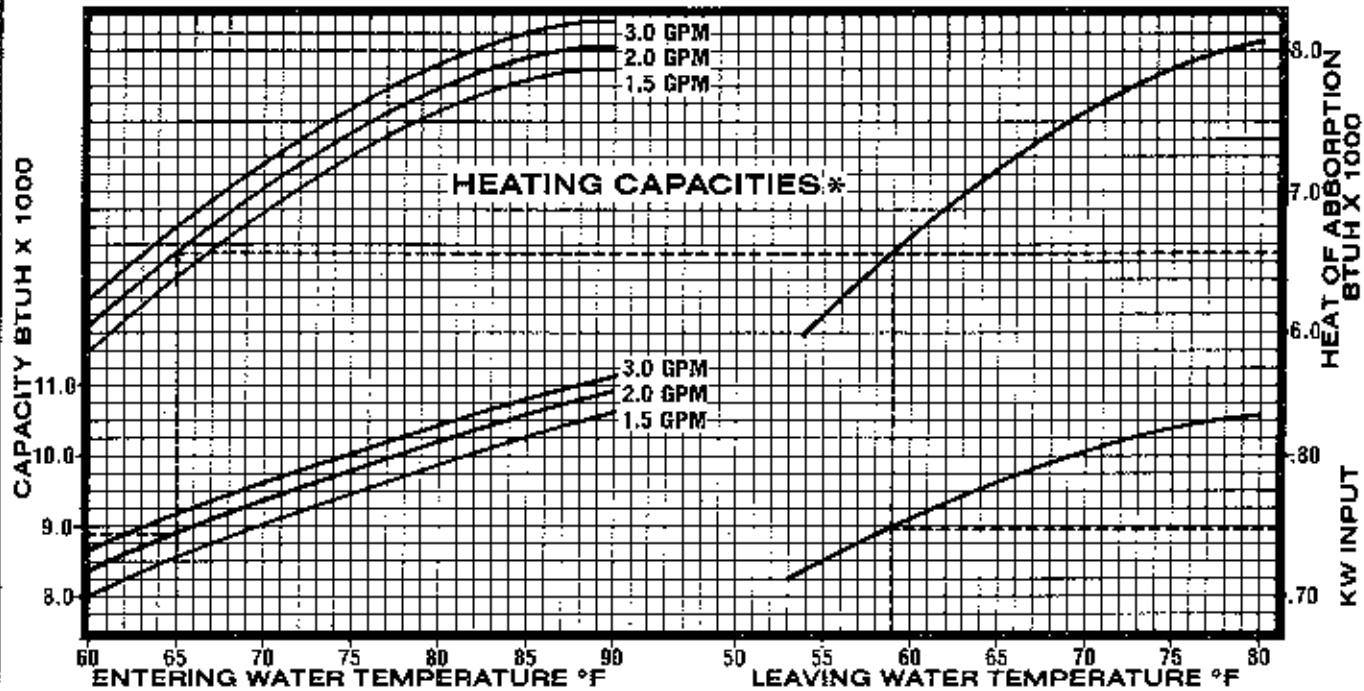
**PERFORMANCE DATA & APPLICATION CURVES**



CONTINUING ENGINEERING RESEARCH RESULTS IN STEADY IMPROVEMENT. THEREFORE, THESE SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. PRINTED IN U.S.A.

**FCM-801-08-A1**

# HEATING PERFORMANCE CURVE 801-08



## ARI RATING — HEATING

NET BTUH	9400
POWER INPUT KW	.775
COP	3.6
HEAT OF ABSORB	6876
WATER FLOW — GPM	2.1
CFM	390

\*BASED ON: 70°F DB ENTERING AIR 70°F EWT ACCORDING TO ARI STD 320-76.

## HEATING PERFORMANCE CORRECTION FACTORS\*\*

ENT AIR DRY BULB °F	CAPACITY	HEAT OF ABSORB	POWER INPUT
60	1.03	1.06	.925
65	1.015	1.03	0.98
70	1.00	1.00	1.00
75	0.98	0.96	1.04

\*BASED ON 70°F ENTERING AIR TEMPERATURE.

\*\*TO BE APPLIED AS MULTIPLIER TO CORRESPONDING VALUES OBTAINED FROM PERFORMANCE CURVE FOR A GIVEN WATER FLOW RATE AND ENTERING WATER TEMPERATURE

## GENERAL DATA

### ELECTRICAL DATA

VOLTS	PHASE	HZ	COMP RLA	COMP LRA	BL FLA	UNIT FLA	MIN WIRE SIZE	MAX FUSE SIZE
208/230	1	60	3.5	22.4	.45	4.0	#14	15A
265	1	60	3.0	19.0	.45	3.5	#14	15A

### WATER PRESSURE DROP

GPM	1.0	1.5	2.0	2.5	3.0
FT. H <sub>2</sub> O	.40	.85	2.3	4.2	6.5

### AIR DELIVERY

BASED ON WET COIL & CLEAN FILTER

HS CFM/RPM	350/1040
LS CFM/RPM	320/1000

## DATA CALCULATION EXAMPLE

SAMPLE PROBLEM — ESTIMATE THE PERFORMANCE OF MODEL 801-08 UNDER THE FOLLOWING CONDITIONS.

- COOLING MODE: HIGH SPEED FAN, RETURN AIR AT 80°F DB/64°F WB, SUPPLY WATER TEMP 75°F, SUPPLY WATER RATE — 2.0 GPM.
- HEATING MODE: IDENTICAL COOLING MODE CONDITIONS EXCEPT AIR TEMPERATURE IS 65°F.

SOLUTION	COOLING TOTAL CAP.	SENSIBLE CAPACITY	HEAT OF REJECT.	POWER	HEATING CAPACITY	HEAT OF ABSORB	POWER
FROM PERF. CURVE	8,450	8,450	10,765	.720	8,850	6,500	.745
ENT. AIR MULTIPLIER	X	X	X	X	X	X	X
FROM CORR. DATA	.97	.90	.9753	.993	1.015	1.03	.96
CORRECTED PERFORMANCE	8,197	7,605	10,500	.715	8,983	6,695	.715

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# 801-08

PERFORMANCE DATA & APPLICATION CURVES

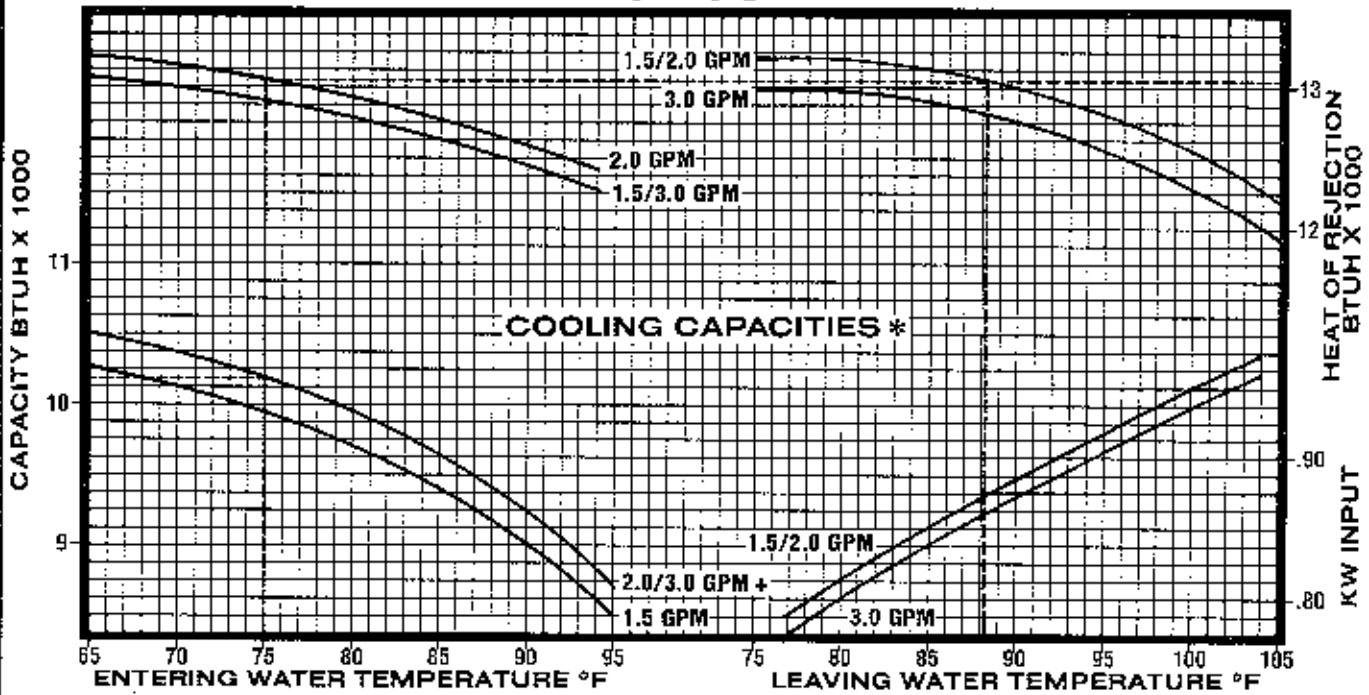
— CERTIFICATIONS —



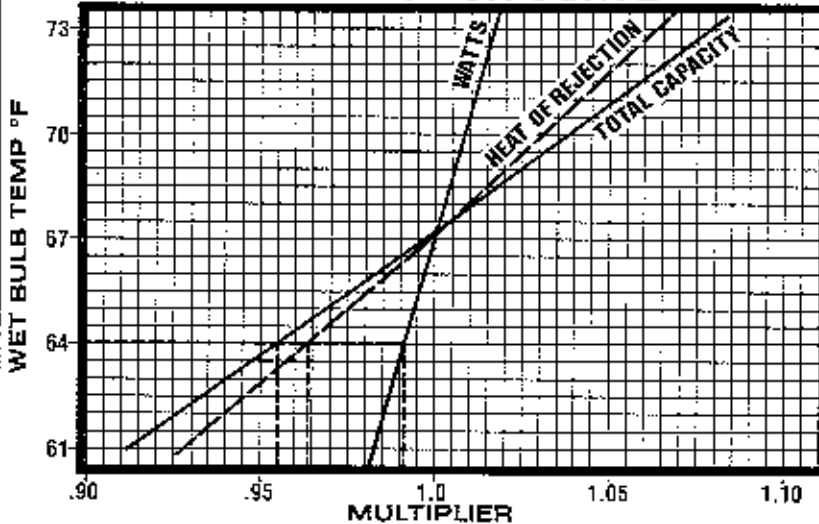
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FCM-801-08-A2

# COOLING PERFORMANCE CURVE 801-10



## COOLING CORRECTION CURVE \*\*

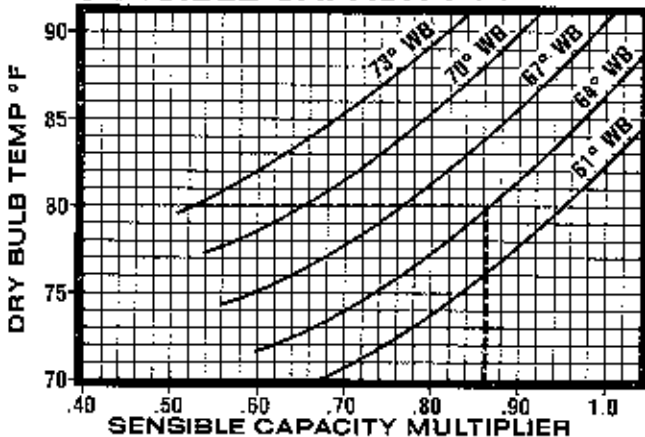


## ARI RATING — COOLING

NET BTUH	10,000
POWER INPUT KW	.90
EER	11.1
HEAT OF REJ	12,929
WATER FLOW — GPM	2.6
CFM	385

\*BASED ON: 80°F DB/67°F WB  
ENTERING AIR. 85°F EWT, 95°F LWT  
ACCORDING TO ARI STD 320-76.

## SENSIBLE CAPACITY \*\*



\*BASED ON 80°F DB/67°F WB  
ENTERING AIR TEMP + 2.0 & 3.0  
GPM COOLING PERFORMANCE  
EQUIVALENT.

\*\* TO BE APPLIED AS MULTIPLIER  
TO CORRESPONDING VALUES  
OBTAINED FROM PERFORMANCE  
CURVE FOR A GIVEN WATER  
FLOW RATE AND ENTERING  
WATER TEMPERATURE

**Friedrich** Climate Master Series

**801-10**

**PERFORMANCE DATA & APPLICATION CURVES**

— CERTIFICATIONS —

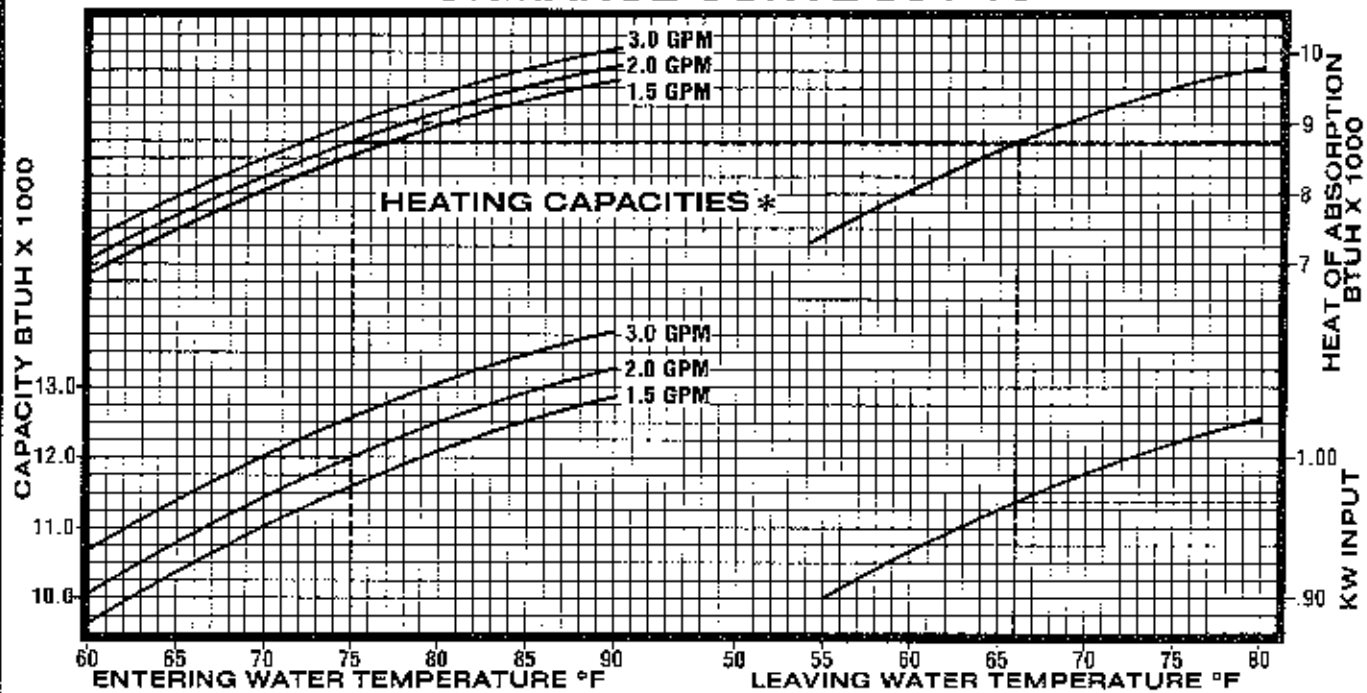


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**FCM 801-10-A1**



# HEATING PERFORMANCE CURVE 801-10



## ARI RATING — HEATING

*NET BTUH	11,600
POWER INPUT KW	.95
COP	3.6
HEAT OF ABSORB	8508
WATER FLOW — GPM	2.6
CFM	415

\*BASED ON: 70°F DB ENTERING AIR 70°F EWT ACCORDING TO ARI STD 320-76.

## HEATING PERFORMANCE CORRECTION FACTORS \*\*

ENT AIR DRY BULB °F	CAPACITY	HEAT OF ABSORB	POWER INPUT
60	1.04	1.08	.930
65	1.02	1.04	.965
70	1.00	1.00	1.00
75	0.98	0.97	1.03

\*BASED ON 70°F ENTERING AIR TEMPERATURE.

\*\*TO BE APPLIED AS MULTIPLIER TO CORRESPONDING VALUES OBTAINED FROM PERFORMANCE CURVE FOR A GIVEN WATER FLOW RATE AND ENTERING WATER TEMPERATURE

## GENERAL DATA

### ELECTRICAL DATA

VOLTS	PHASE	HZ	COMP RLA	COMP LRA	BL FLA	UNIT FLA	MIN WIRE SIZE	MAX FUSE SIZE
208/230	1	60	4.4	21.3	.45	4.9	#14	15A
265	1	60	3.9	22.3	.45	4.4	#14	15A

### WATER PRESSURE DROP

GPM	1.0	1.5	2.0	2.5	3.0
FT. H <sub>2</sub> O	1.75	2.3	3.5	5.6	8.2

### AIR DELIVERY

BASED ON WET COIL & CLEAN FILTER

HS CFM/RPM	385/1010
LS CFM/RPM	355/990

## DATA CALCULATION EXAMPLE

SAMPLE PROBLEM — ESTIMATE THE PERFORMANCE OF MODEL 801-10 UNDER THE FOLLOWING CONDITIONS.

- COOLING MODE: HIGH SPEED FAN, RETURN AIR AT 80°F DB/67°F WB, SUPPLY WATER TEMP 75°F, SUPPLY WATER RATE — 2.0 GPM.
- HEATING MODE: IDENTICAL COOLING MODE CONDITIONS EXCEPT AIR TEMPERATURE IS 65°F.

SOLUTION	COOLING TOTAL CAP.	SENSIBLE CAPACITY	HEAT OF REJECT.	POWER	HEATING CAPACITY	HEAT OF ABSORB	POWER
FROM PERF. CURVE	10,180	10,180	13,100	.875	12,000	8,700	.970
ENT. AIR MULTIPLIER FROM CORR. DATA	X	X	X	X	X	X	X
	.955	.885	.964	.992	1.02	1.04	.965
CORRECTED PERFORMANCE	9,722	8,806	12,628	.868	12,240	9,048	.936

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# 801-10

## PERFORMANCE DATA & APPLICATION CURVES

— CERTIFICATIONS —



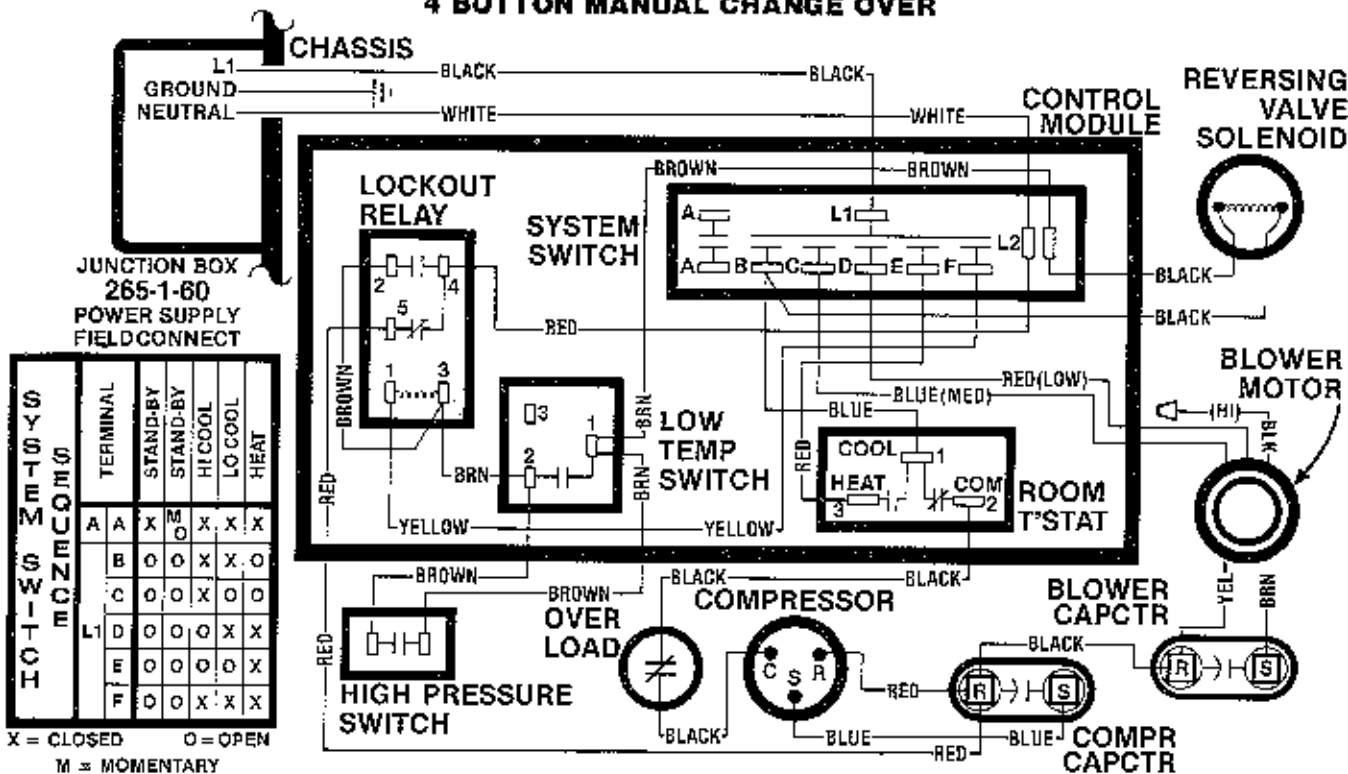
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# FCM 801-10-A2

265V

801-08, 10

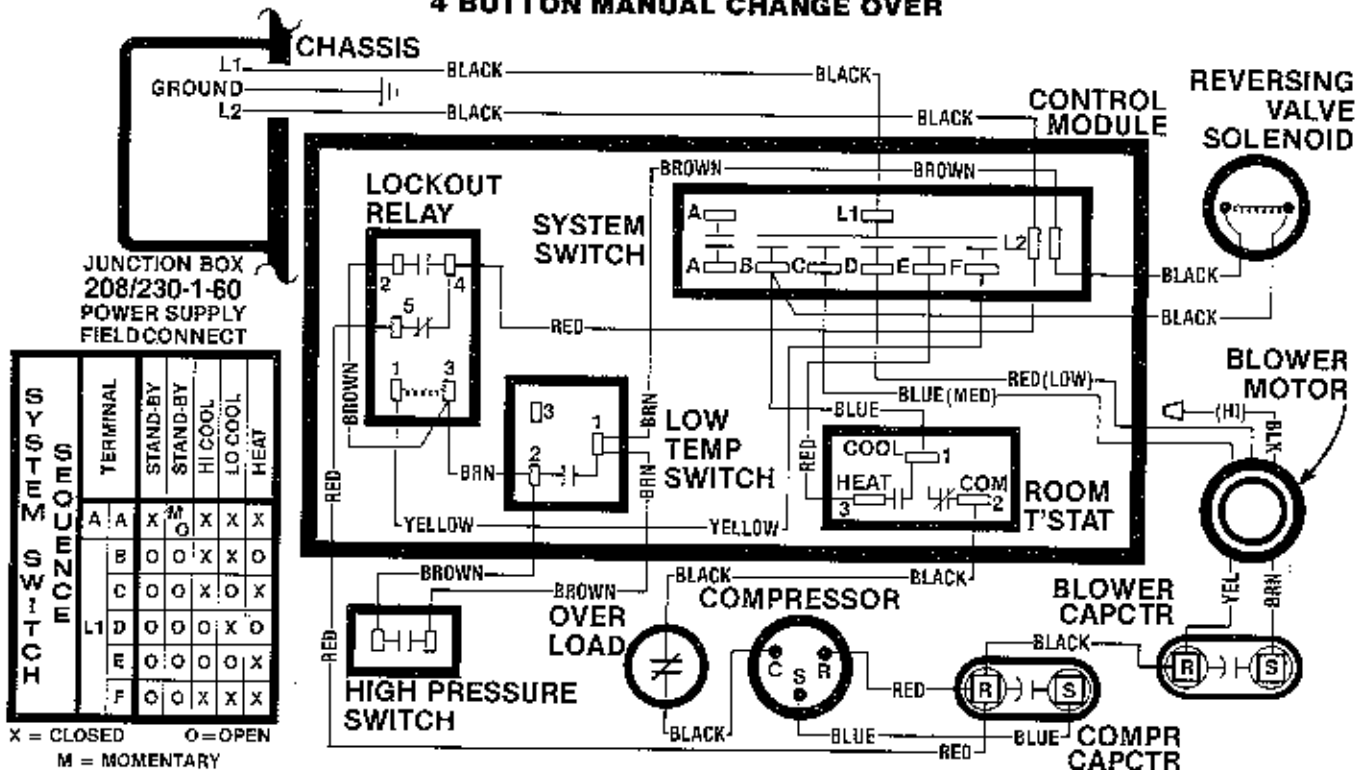
4 BUTTON MANUAL CHANGE OVER



208/230V

801-08, 10

4 BUTTON MANUAL CHANGE OVER



Friedrich Climate Master Series

801-08, 10

WIRING DIAGRAM 1 PH/60 HZ



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FCM 801-08 & 10-D

# 2 BUTTON AUTOMATIC CHANGE OVER WITH SECURITY GUARD AND NITE-SET BACK 208/230V 801-08, 10

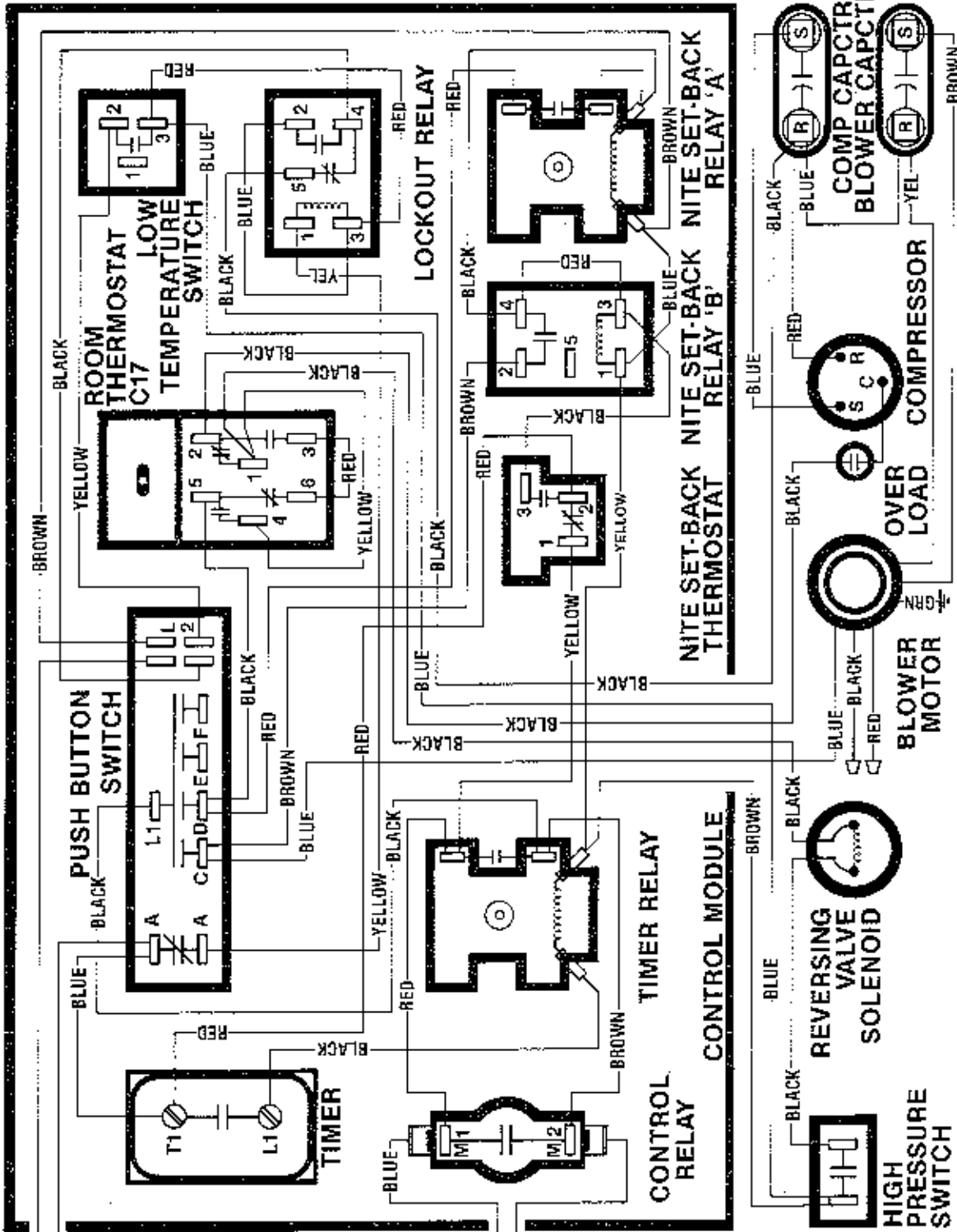
FOR CONTROL GROUP OPTIONS SEE DWG. FCM

SIGNAL TERMINAL BOARD

CONNECT TO N.E.C. CLASS "2" 24V SIGNAL SOURCE

JUNCTION BOX 208/230-1-60 POWER SUPPLY FIELD CONNECT

CHASSIS



**SYSTEM SWITCH SEQUENCE**  
X = CLOSED M = MOMENTARY O = OPEN

TERMINAL	A	C	D	E	F
STAND-BY ↑	X	O	O	O	O
STAND-BY ↓	MO	O	O	O	O
ON	X	X	X	X	X
MODE					

**THERMOSTAT SEQUENCE**  
CR = CLOSE ON RISE C = COMMON  
OR = OPEN ON RISE

	1	2	3	4	5	6
CR	C	OR	OR	CR	C	OR

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**801-08, 10** WIRING DIAGRAM 208/230V/1PH/60HZ

UL SAFETY CERTIFICATIONS 3/80

FCM 801-08&10-D1

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# 2 BUTTON AUTOMATIC CHANGE OVER WITH SECURITY GUARD AND NITE-SET BACK

# 265V 801-08, 10

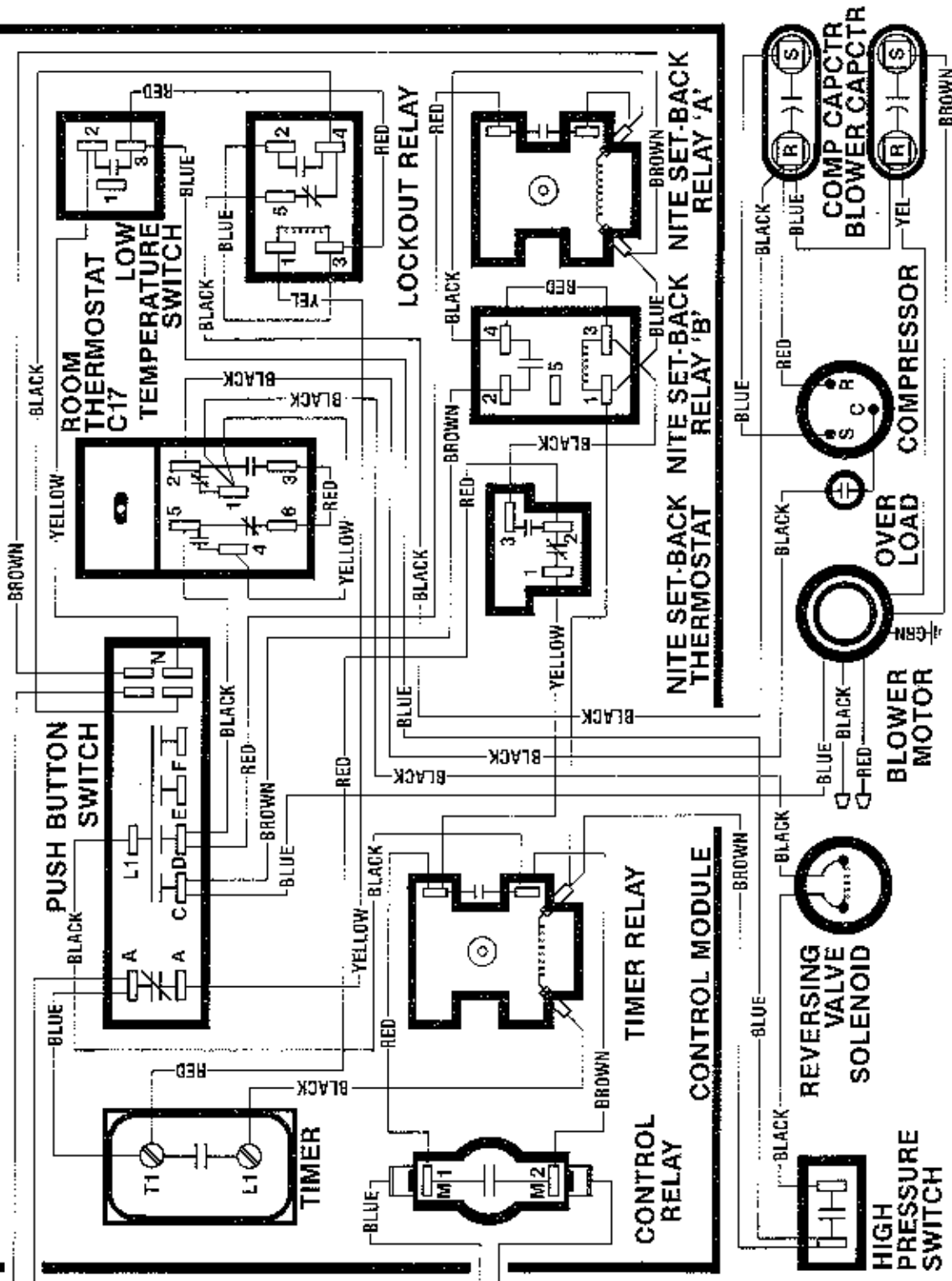
FOR CONTROL GROUP OPTIONS SEE DWG. FCM

SIGNAL TERMINAL BOARD

CONNECT TO N.E.C. CLASS "2" 24V SIGNAL SOURCE

JUNCTION BOX 265-1-60 POWER SUPPLY FIELD CONNECT

CHASSIS



SYSTEM SWITCH SEQUENCE

X = CLOSED M = MOMENTARY O = OPEN

TERMINAL	A	C	D	E	F
STAND-BY 1	X	O	O	O	O
STAND-BY 2	M	O	O	O	O
ON	X	X	X	X	X
MODE					

THERMOSTAT SEQUENCE

CR = CLOSE ON RISE C = COMMON  
OR = OPEN ON RISE

1	2	3	4	5	6
CR	C	OR	C	C	OR

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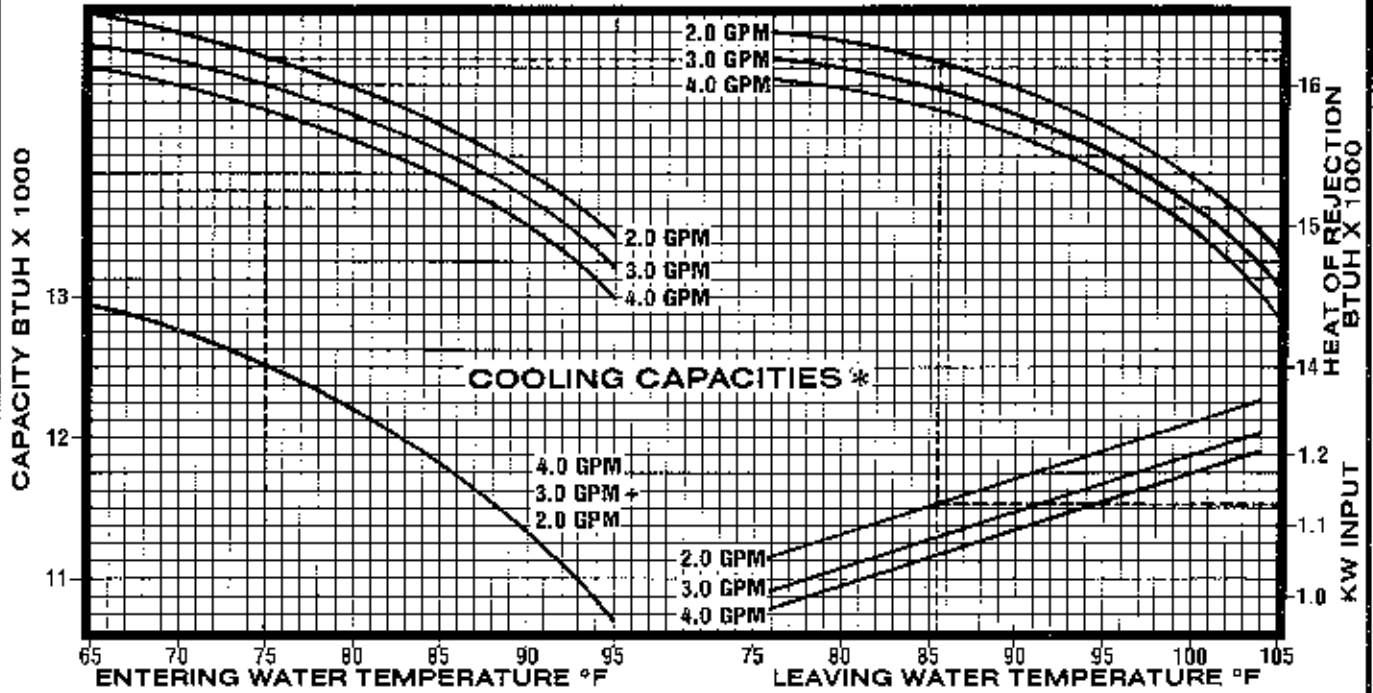
801-08, 10 WIRING DIAGRAM 265V/1PH/60HZ

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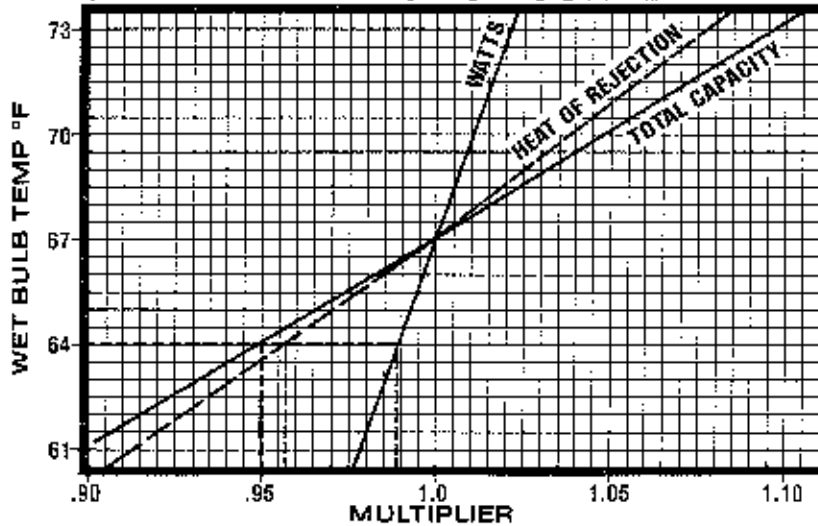
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FCM 801-08&10-D2

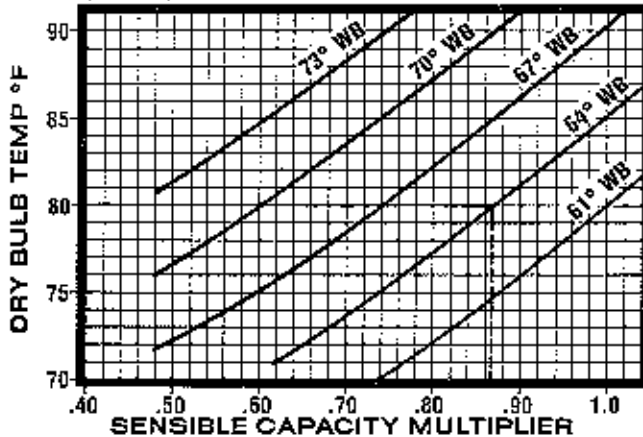
# COOLING PERFORMANCE CURVE 801-12



## COOLING CORRECTION CURVE \*\*



## SENSIBLE CAPACITY \*\*



## ARI RATING — COOLING

NET BTUH	11,900
POWER INPUT KW	1.15
EER	10.3
HEAT OF REJ	15,843
WATER FLOW — GPM	3.2
CFM	375

\*BASED ON: 80°F DB/67°F WB  
ENTERING AIR: 85°F EWT, 95°F LWT  
ACCORDING TO ARI STD 320-76.

\*BASED ON 80°F DB/67°F WB  
ENTERING AIR TEMP + 2.0, 3.0 & 4.0  
GPM COOLING PERFORMANCE  
EQUIVALENT.

\*\*TO BE APPLIED AS MULTIPLIER  
TO CORRESPONDING VALUES  
OBTAINED FROM PERFORMANCE  
CURVE FOR A GIVEN WATER  
FLOW RATE AND ENTERING  
WATER TEMPERATURE

**Friedrich** Climate Master Series

**801-12**

**PERFORMANCE DATA & APPLICATION CURVES**

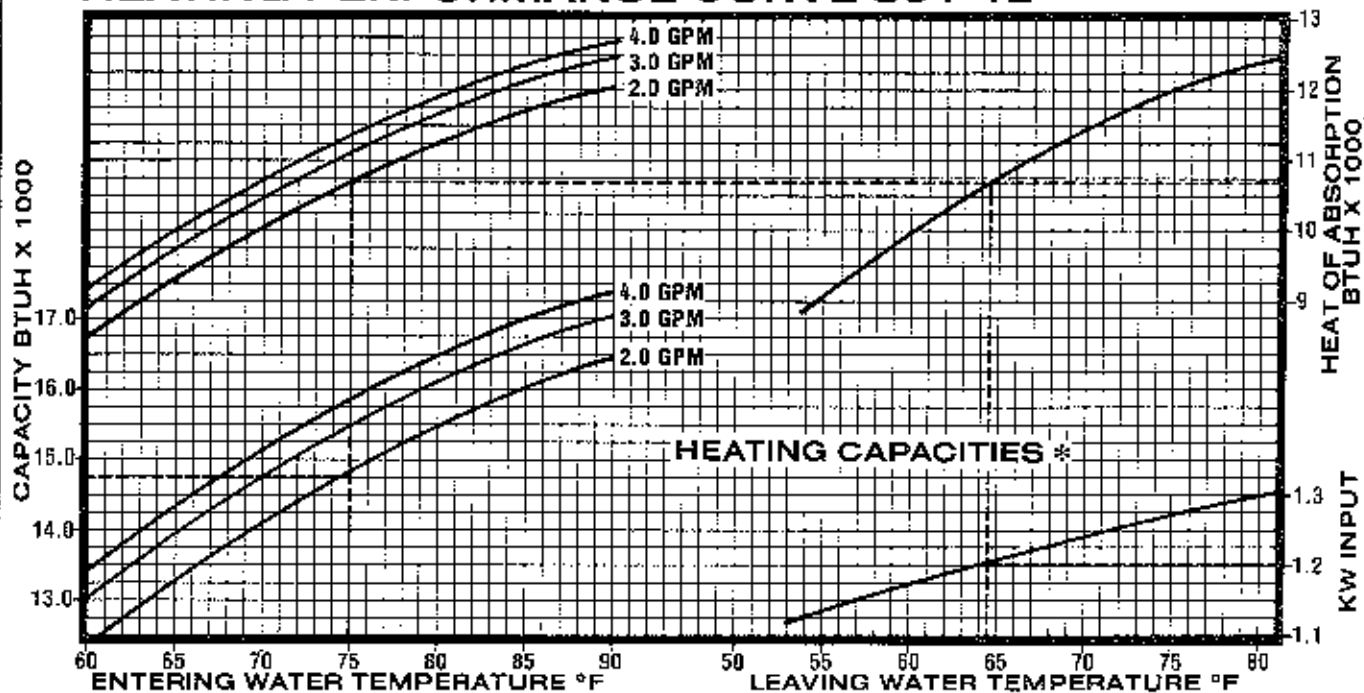
CERTIFICATIONS



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**FCM 801-12-A1**

# HEATING PERFORMANCE CURVE 801-12



## ARI RATING — HEATING

NET BTUH	14,800
POWER INPUT KW	1.2
COP	3.8
HEAT OF ABSORB	10,895
WATER FLOW — GPM	3.2
CFM	440

\*BASED ON: 70°F DB ENTERING AIR 70°F EWT ACCORDING TO ARI STD 320-76.

## HEATING PERFORMANCE CORRECTION FACTORS \*\*

ENT AIR DRY BULB °F	CAPACITY	HEAT OF ABSORB	POWER INPUT
60	1.02	1.046	.913
65	1.01	1.02	.96
70	1.00	1.00	1.00
75	0.98	0.97	1.02

\*BASED ON 70°F ENTERING AIR TEMPERATURE.

\*\*TO BE APPLIED AS MULTIPLIER TO CORRESPONDING VALUES OBTAINED FROM PERFORMANCE CURVE FOR A GIVEN WATER FLOW RATE AND ENTERING WATER TEMPERATURE

## GENERAL DATA

### ELECTRICAL DATA

VOLTS	PHASE	HZ	COMP RLA	COMP LRA	BL FLA	UNIT FLA	MIN WIRE SIZE	MAX FUSE SIZE
208/230	1	60	5.7	28.0	.45	6.2	#14	15A
265	1	60	5.0	27.4	.45	5.5	#14	15A

### WATER PRESSURE DROP

GPM	2.0	2.5	3.0	3.5	4.0
FT. H <sub>2</sub> O	4.6	6.9	13.9	15.6	17.3

### AIR DELIVERY

BASED ON WET COIL & CLEAN FILTER

HS CFM/RPM	375/1130
LS CFM/RPM	350/1035

## DATA CALCULATION EXAMPLE

SAMPLE PROBLEM — ESTIMATE THE PERFORMANCE OF MODEL 801-12 UNDER THE FOLLOWING CONDITIONS.

1. COOLING MODE: HIGH SPEED FAN, RETURN AIR AT 80°F DB/87°F WB, SUPPLY WATER TEMP 75°F, SUPPLY WATER RATE — 2.0 GPM.
2. HEATING MODE: IDENTICAL COOLING MODE CONDITIONS EXCEPT AIR TEMPERATURE IS 65°F.

SOLUTION	COOLING TOTAL CAP.	SENSIBLE CAPACITY	HEAT OF REJECT.	POWER	HEATING CAPACITY	HEAT OF ABSORB	POWER
FROM PERF. CURVE	12,500	12,500	16,150	1.13	14,750	10,700	1200
ENT. AIR MULTIPLIER FROM CORR. DATA	X	X	X	X	X	X	X
	.95	.87	.9575	.989	1.01	1.02	.96
CORRECTED PERFORMANCE	11,875	10,875	15,464	1.118	10,898	10,914	1152

**Friedrich** Climate Master Series

# 801-12

PERFORMANCE DATA & APPLICATION CURVES

— CERTIFICATIONS —



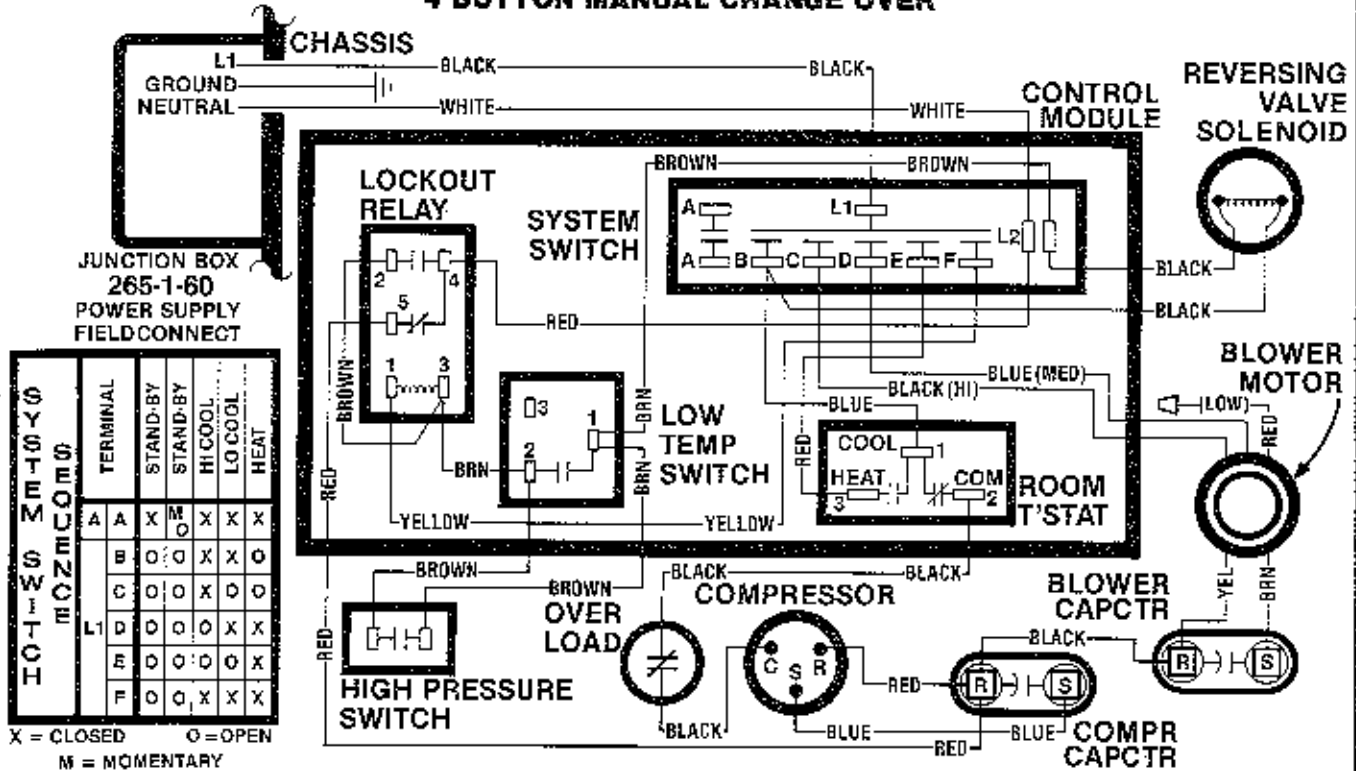
CONTINUING ENGINEERING RESEARCH RESULTS A STEADY IMPROVEMENT. THEREFORE, THESE SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. PRINTED IN U.S.A.

FCM 801-12-A2

265V

801-12

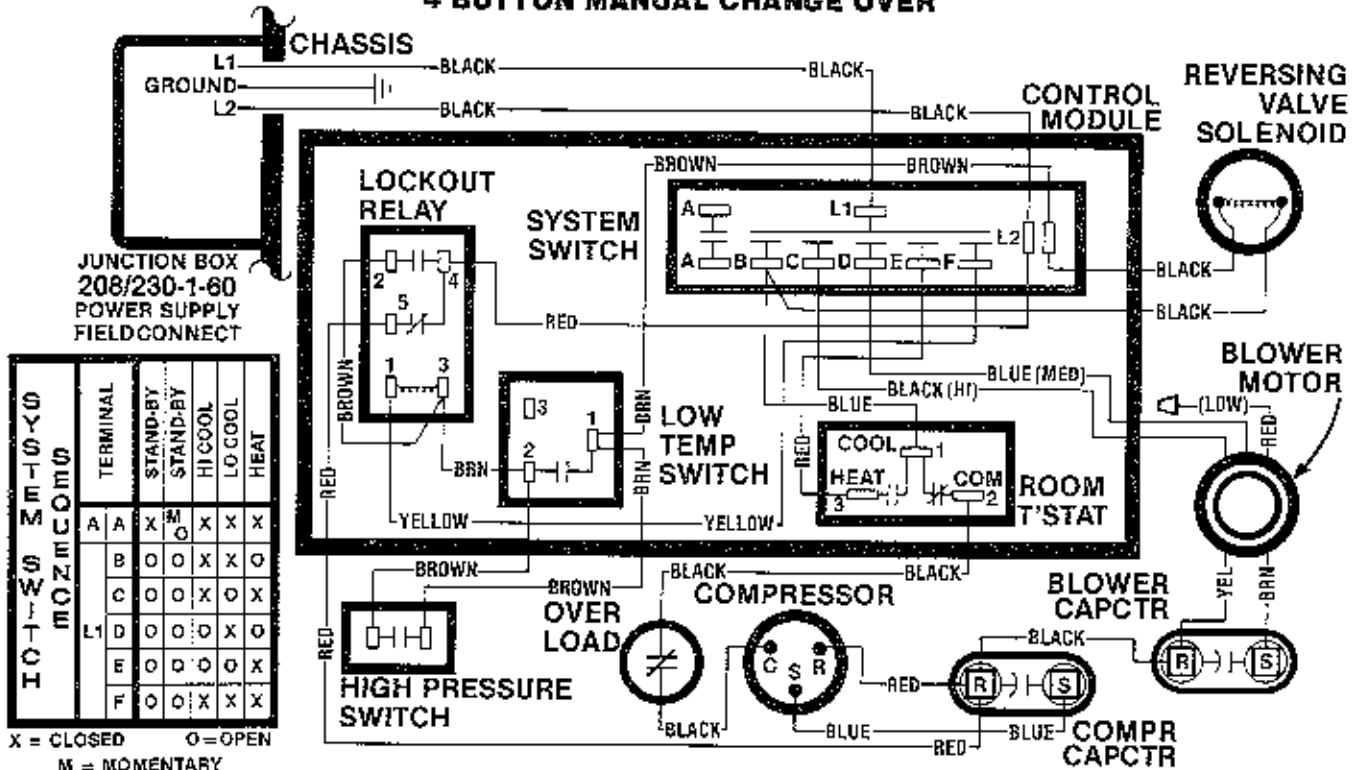
4 BUTTON MANUAL CHANGE OVER



208/230V

801-12

4 BUTTON MANUAL CHANGE OVER



**Friedrich** Climate Master Series

801-12

WIRING DIAGRAM  
1 PH/60 HZ

CERTIFICATIONS



CONTINUING ENGINEERING RESEARCH RESULTS IN STAFF IMPROVEMENT. THEREFORE, THESE SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. PRINTED IN U.S.A.

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