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Distributors and Flow Controls - OEM

Catalog OEM-3, October 2007



ENGINEERING YOUR SUCCESS.

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Distributors and Flow Controls

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Refrigerant Distributors

Refrigerant distributors are of two basic designs, each having certain merits that the design engineer may regard as best for the application. Parker produces both basic types with the largest range of sizes, variations and specials of any manufacturer. (Distributors are made of brass unless aluminum is specified.)

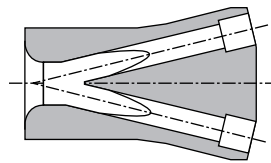
The **nozzle type distributor** has a permanent or replaceable sharp-edged orifice to mix the two-phase fluid before

it enters the coil circuit passageways. By changing nozzles with different orifice sizes, one body type may be used for various refrigerants, loads, and also for different numbers of circuit sizes.

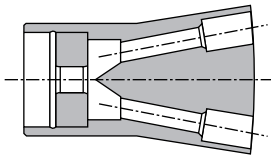
The **Venturi (low pressure drop) distributor** has a machined, contoured throat on the approach side with diverging circuit holes beyond the smallest section of the throat. There is no separate nozzle; therefore the pressure drop

is less than the sharp-edged orifice distributor. The throat size is determined by the number and size of the circuits and cannot be altered.

Nozzles for orifice type distributors for various suction temperatures in °F and refrigerants are listed in the tables starting on page 6. These numbers determine the hole size.



Venturi Distributor



Nozzle Type Distributor



Nozzle Type Distributors

Parker nozzle type distributors depend on the high pressure drop through the orifice and the resulting turbulence to provide equal distribution to all circuits. The illustration below shows that the approaching refrigerant streamlines nearest the pipe wall (W), then it turns radial at the face of the nozzle towards the orifice. This radial flow continues past the edge of the orifice (X) and is moved through the orifice by the center mass of the refrigerant. The refrigerant flow continues through the orifice with a minimum jet area (Y) forming past the nozzle. The uncontrolled expansion in the area just past the nozzle causes a turbulent pattern (Z) to be set-up between the jet area (Y) and the walls, which dissipates the velocity energy. UL Listing 11550.

Sizing Guidelines

Calculating the Orifice Size Needed

To calculate the correct orifice size needed one must know the **refrigerant** that is being used, the **temperature** of the evaporator coil, and the **coil capacity**.

Look at the nozzle sizing table on page 6. Locate the refrigerant that is being used across the top of the table. Locate the temperature of the evaporator coil under the desired refrigerant and go down the column to the capacity of the coil. The required nozzle size is in the first column of the table to the left of the coil capacity.

Specifying the Distributor Body

To calculate the correct orifice size the following information is needed:

1. the **refrigerant** type being used
2. **number of circuits** in the evaporator coil
3. the **temperature** of the evaporator coil
4. the **capacity** of the evaporator coil

Calculating the Circuit Size Tube

After gathering the above information, first calculate the **circuit capacity** by dividing the evaporator coil capacity by the number of circuits in the evaporator coil.

Next calculate the circuit tube size by using the Distributor Tube Circuit Capacities Table on page 5. Find the columns that are headed by the refrigerant that is being used. Under the correct refrigerant header are columns of evapo-

rator column temperatures. Go down the correct temperature column to the **circuit capacity** previously calculated then go the last column on the left to find the **circuit tube size**.

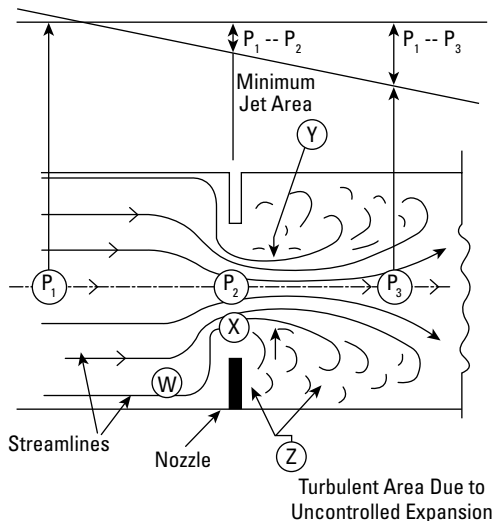


Calculating the Body Type

Using the charts on page 7, look across the row to find the largest “Nozzle” orifice for that body to ensure that the body can support the required orifice. There may be a variety of combinations that will work depending on the inlet O.D. required. There is also a variety of inlet adaptors available such as added copper tubes with 1/2” or 5/8” 45° flare nuts, expanded ends, or straight ends depending on the body selected.

Flow through a nozzle device.

No pressure recovery, high pressure drop.



Distributor Tube Circuit Capacity Table — Tons of Refrigeration

Tube Size inches O.D.	Refrigerant																			
	R-12 / R-134a					R-22					R-404A / R-502 / R-507					R-410A				
	Evaporating Temperature °F																			
	40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°
5/32	0.19	0.14	0.11	0.08	0.06	0.26	0.21	0.16	0.12	0.09	0.18	0.13	0.10	0.07	0.05	—	—	—	—	—
3/16	0.40	0.30	0.23	0.17	0.13	0.53	0.44	0.33	0.24	0.20	0.37	0.28	0.22	0.15	0.12	0.42	0.31	0.23	0.18	0.14
1/4	0.80	0.60	0.45	0.33	0.25	1.10	0.89	0.67	0.49	0.39	0.73	0.58	0.43	0.31	0.23	1.21	0.90	0.68	0.52	0.40
5/16	1.60	1.20	0.90	0.66	0.50	2.20	1.70	1.30	0.98	0.79	1.50	1.10	0.83	0.62	0.46	2.46	1.83	1.39	1.06	0.81
3/8	2.80	2.10	1.60	1.20	0.88	3.70	2.90	2.20	1.70	1.40	2.50	2.00	1.50	1.10	0.80	4.44	3.32	2.51	1.91	1.47

Refrigerants at various evaporator temperatures - Tons of Refrigeration

Capacity per circuit at 10 psi pressure drop. See Distributor Loading vs. Pressure Drop table below for pressure drop at 50% to 200% of this rating.

*Correction Factors for Other Liquid Temperatures for Nozzle and Tubes											
Liquid Temperature °F	50°	60°	70°	80°	90°	100°	110°	120°			
Correction factor	2.10	1.83	1.59	1.37	1.17	1.00	0.85	0.72			
**Correction Factors for Other Distributor Tube Lengths											
Tube Length – Inches	12	18	24	30	36	42	48	54	60	66	72
Correction Factor	1.36	1.16	1.07	1.00	0.95	0.90	0.86	0.82	0.79	0.76	0.73

*100°F liquid entering thermostatic expansion valve.

**For tubing length of 30"

Distributor Loading vs. Pressure Drop

Actual Load as a Percent of Published Rating (corrected for Liquid Temperature and/or Tube Length if needed)	R-12 / R-134a		R-22	
	Δ P Nozzle (psi)	Δ P Tubes and Passages (psi)	Δ P Nozzle (psi)	Δ P Tubes and Passages (psi)
50	4	3	7	3
60	6	4	10	4
70	8	5	13	5
80	10	6	16	6
90	12	8	20	8
100	15	10	25	10
110	18	12	30	12
120	20	14	35	14
130	22	16	38	16
140	24	18	40	18
150	27	21	43	21
160	29	23	46	24
170	31	25	49	27
180	33	27	52	30
190	36	29	54	32
200	38	31	57	34
Actual Load as a Percent of Published Rating (corrected for Liquid Temperature and/or Tube Length if needed)	R-404A / R-502 / R-507		R-410A	
	Δ P Nozzle (psi)	Δ P Tubes and Passages (psi)	Δ P Nozzle (psi)	Δ P Tubes and Passages (psi)
50	7	3	12	3
60	10	4	17	4
70	13	5	21	6
80	16	6	26	7
90	20	8	30	9
100	25	10	35	10
110	30	12	40	12
120	35	14	44	13
130	38	16	49	15
140	40	18	53	16
150	43	21	58	18
160	46	24	62	20
170	49	27	67	21
180	52	30	71	23
190	54	32	76	25
200	57	34	80	26

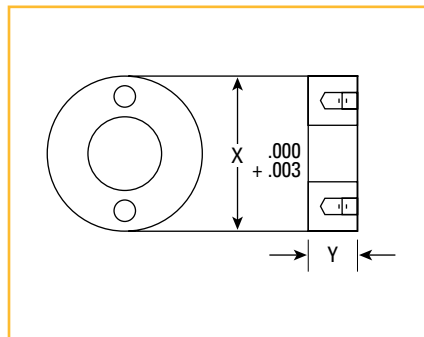
Distributor Nozzle Capacity Table — Tons of Refrigeration

DISTRIBUTOR NOZZLE NUMBER	Refrigerant																		
	R-134a				R-22					R-404A / R-502 / R-507					R-410A				
	Evaporating Temperature °F																		
	40°	20°	0°	-20°	40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°
1/9	0.08	0.06	0.05	0.04	0.14	0.11	0.09	0.07	0.06	0.09	0.07	0.05	0.04	0.04	0.16	0.13	0.10	0.08	0.07
1/6	0.12	0.09	0.07	0.06	0.21	0.16	0.13	0.11	0.09	0.14	0.11	0.08	0.07	0.05	0.25	0.20	0.16	0.13	0.11
1/4	0.20	0.15	0.12	0.10	0.34	0.26	0.21	0.18	0.15	0.23	0.17	0.13	0.11	0.09	0.40	0.31	0.25	0.21	0.17
1/3	0.26	0.20	0.15	0.13	0.44	0.34	0.28	0.23	0.20	0.30	0.23	0.18	0.14	0.11	0.53	0.41	0.33	0.27	0.23
1/2	0.36	0.27	0.21	0.17	0.61	0.48	0.38	0.32	0.27	0.41	0.31	0.24	0.19	0.16	0.73	0.57	0.46	0.37	0.31
3/4	0.54	0.41	0.32	0.26	0.92	0.72	0.58	0.48	0.41	0.62	0.47	0.37	0.29	0.24	1.10	0.86	0.69	0.57	0.47
1	0.72	0.54	0.43	0.35	1.23	0.96	0.78	0.64	0.55	0.83	0.63	0.49	0.39	0.32	1.47	1.15	0.92	0.76	0.64
1-1/2	1.05	0.79	0.63	0.51	1.79	1.40	1.13	0.94	0.80	1.20	0.92	0.71	0.57	0.46	2.14	1.67	1.34	1.10	0.92
2	1.44	1.09	0.86	0.70	2.46	1.92	1.55	1.29	1.10	1.65	1.26	0.98	0.78	0.64	2.93	2.30	1.84	1.51	1.27
2-1/2	1.79	1.35	1.07	0.88	3.07	2.39	1.93	1.60	1.37	2.06	1.57	1.22	0.97	0.79	3.66	2.86	2.30	1.88	1.58
3	2.15	1.63	1.28	1.05	3.68	2.87	2.32	1.93	1.65	2.47	1.88	1.47	1.17	0.95	4.39	3.44	2.76	2.26	1.90
4	2.88	2.18	1.72	1.41	4.92	3.84	3.10	2.58	2.20	3.31	2.52	1.96	1.56	1.27	5.88	4.60	3.69	3.02	2.54
5	3.55	2.68	2.12	1.74	6.07	4.74	3.83	3.18	2.72	4.08	3.11	2.42	1.93	1.57	7.25	5.67	4.55	3.73	3.13
6	4.26	3.22	2.54	2.08	7.28	5.68	4.59	3.81	3.26	4.89	3.72	2.91	2.31	1.88	8.69	6.80	5.45	4.47	3.76
8	5.13	3.88	3.06	2.51	8.77	6.84	5.52	4.59	3.93	5.89	4.49	3.50	2.79	2.27	10.5	8.19	6.57	5.39	4.53
10	5.75	4.35	3.43	2.81	9.83	7.67	6.19	5.15	4.40	6.60	5.03	3.92	3.12	2.54	11.7	9.18	7.36	6.04	5.07
12	7.10	5.37	4.24	3.47	12.1	9.47	7.65	6.36	5.43	8.16	6.21	4.84	3.86	3.14	14.5	11.3	9.09	7.46	6.26
15	8.81	6.65	5.25	4.30	15.1	11.7	9.48	7.88	6.74	10.1	7.70	6.01	4.78	3.89	18.0	14.1	11.3	9.25	7.77
17	9.85	7.44	5.87	4.81	16.8	13.1	10.6	8.81	7.54	11.3	8.61	6.72	5.35	4.35	20.1	15.7	12.6	10.3	8.69
20	11.9	8.97	7.08	5.80	20.3	15.8	12.8	10.6	9.08	13.6	10.4	8.10	6.45	5.24	24.2	19.0	15.2	12.5	10.5
25	14.9	11.3	8.91	7.30	25.5	19.9	16.1	13.4	11.4	17.1	13.1	10.2	8.11	6.60	30.5	23.8	19.1	15.7	13.2
30	17.1	12.9	10.2	8.33	29.2	22.8	18.4	15.3	13.1	19.6	14.9	11.6	9.27	7.54	34.8	27.2	21.8	17.9	15.0
35	20.5	15.5	12.2	10.0	35.1	27.4	22.1	18.4	15.7	23.6	17.9	14.0	11.1	9.07	41.9	32.8	26.3	21.5	18.1
40	23.0	17.4	13.7	11.2	39.3	30.7	24.8	20.6	17.6	26.4	20.1	15.7	12.5	10.2	47.0	36.8	29.5	24.2	20.3
50	29.9	22.5	17.8	14.6	51.0	39.8	32.1	26.7	22.8	34.3	26.1	20.4	16.2	13.2	60.9	47.7	38.2	31.3	26.3

Nozzles & Retainer Rings

Nozzles and rings may be ordered separately. Information required for nozzles is the outside size of the nozzle, which is designated by a letter, and a number which determines the orifice size. Nozzles are interchangeable with several bodies. Rings may be ordered with letter corresponding to the nozzle, i.e., “G” ring would go with a distributor body that takes a “G” nozzle as listed.

NOTE: Nozzle size is approximately equal to the system compressor horsepower (i.e., nozzle 8 equals approximately 8 HP compressor).



Tapped holes available on request. These holes do not alter the function of the nozzle and are seldom used.

Nozzle Dimensions		
	X	Y
L	0.401	0.187
J	0.498	0.250
G	0.735	0.250
E	1.000	0.250
C	1.120	0.250
A	1.375	0.250

Chart A

Type	Curcuit Size	Max. No. of Cicuits	Nozzle	A	B	C	D	E	F
TYPE 107 1604	5/32 3/16 1/4	7 6 4	Largest 6	.812	1.000	.328	.430 .428	.125 .187 .187	15°
TYPE 251 1607	5/32 3/16 1/4 5/16	10 8 6 4	6	1.000	1.375	.330	.430 .428	.125 .187 .187 .275	15°

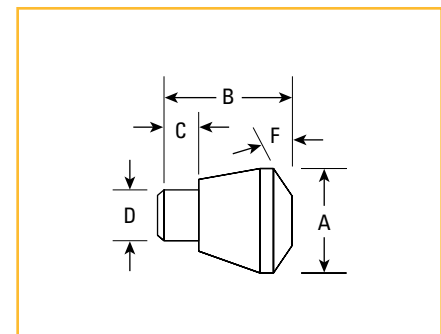
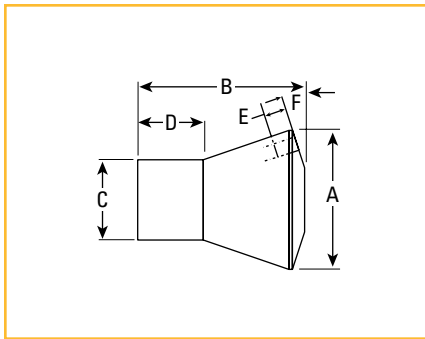


Chart B



TYPE 120

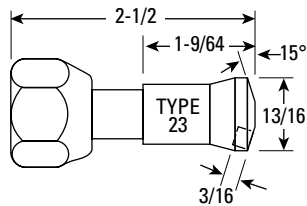
Nomenclature

120	—	6	—	1/4	—	5
Body Style		Number of Holes		Size of Holes		Nozzle Size

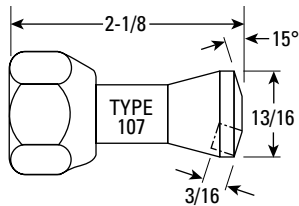
Type	Tube Size	Max. No. of Circuits	Nozzle	A	B	C	D	E	F
TYPE 117 1112	5/32 3/16 1/4 5/16 3/8	8 7 6 4 2	G Largest 50	.906	1.718	.872 .875	1.000	.375 +/- .015	—
TYPE 120 1113	5/32 3/16 1/4 5/16 3/8	14 12 8 6 4	G Largest 50	1.156	1.781	.873 .875	.88	.375 +/- .015	8°
TYPE 130 1115	5/32 3/16 1/4 5/16	19 15 10 8	E Largest 50	1.500	2.437	1.123 1.125	1.125	.375 +/- .015	15°
TYPE 150 1116	5/32 3/16 1/4 5/16 3/8	20 18 14 9 7	E Largest 50	1.750	2.437	1.123 1.125	1.125	.375 +/- .015	17°
TYPE 140 1117	3/16 1/4 5/16 3/8	18 14 9 7	C Largest 50	1.750	2.562	1.373 1.375	1.250	.375 +/- .015	11°
TYPE 160 1126	3/16 1/4 5/16 3/8	24 18 15 12	C Largest 50	2.313	2.812	1.373 1.375	1.125	.375 +/- .015	17°
TYPE 175 1125	3/16 1/4 5/16 3/8	28 24 20 16	A Largest 50	3.000	3.062	1.623 1.625	1.375	.375 +/- .015	25°
TYPE 170 1128	SAME AS 175		C Largest 50	3.000	3.062	1.373 1.375	1.375	.375 +/- .015	25°
TYPE 180 1127	3/16 1/4 5/16 3/8	37 30 26 20	A Largest 50	3.500	3.312	1.623 1.625	1.281	.375 +/- .015	35°
TYPE 190 1143	3/16 1/4 5/16 3/8	40 34 30 24	A Largest 50	4.000	3.670	1.623 1.625	1.438	.375 +/- .015	35°
TYPE 209 D-209	3/16 1/4 5/16	15 10 8	J Largest 10	1.500	2.000	.623 .625	.625	.187 .250	35°
TYPE 23	5/32 3/16 1/4	7 6 4	L 8	.812	1.187	.625 .623	.625	.125 .187 .187	14°
TYPE 24	5/32 3/16 1/4 5/16	10 8 6 4	L 8	1.000	1.625	.625 .623	.625	.125 .187 .187 .275	14°
TYPE 25	5/32 3/16 1/4 5/16 3/8	14 12 8 6 4	L 8	1.156	1.753	.625 .623	.625	.125 .187 .187 .275 .312	14°
TYPE 60 D-147	3/16 1/4 5/16	16 12 9	G Largest 50	1.625	2.125	.872 .875	.906	.187	23°
TYPE 21 1620	5/32 3/16 1/4	7 6 4	J Largest 10	.812	1.187	.623 .625	.625	.125 .187 .187	14°
TYPE 22 1622	5/32 3/16 1/4 5/16	10 8 6 4	J Largest 10	1.000	1.625	.623 .625	.625	.125 .187 .187 .275	14°
TYPE 105 1613	5/32 3/16 1/4	6 6 4	PERMANENT 6 #	.812	1.175	.498 .500	.500	.125 .187 .187	15°
TYPE 20 1616	5/32 3/16 1/4	10 8 6	PERMANENT 6 #	1.000	1.550	.498 .500	.500	.125 .187 .187	14°
TYPE 106 1616	5/32 3/16 1/4	12	PERMANENT 6 #	1.1875	1.75	.498 .500	.45	.125 .187 .187	18°

Flare-Type Distributors with Nozzles (Regular or Frost Free Nut)

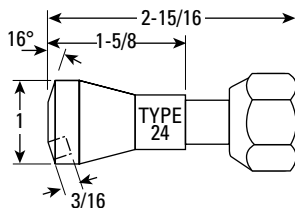
Type 23



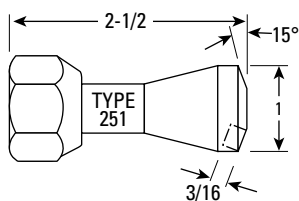
Type 107



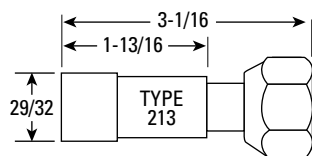
Type 24



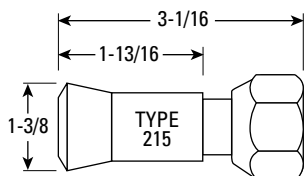
Type 251



Type 213



Type 215



Type	Tube Size	Max. Number Circuits	Largest Orifice	Nozzle & Retainer Ring Size	Expansion Valve Outlet Connection
23-X-X-X-E60 1605	5/32	7	8	L	1/2 SAE Male Flare
	3/16	6			
	1/4	4			
107-X-X-X-E60 1603	5/32	7	4	Permanent Nozzle not Replaceable	1/2 SAE Male Flare
	3/16	6			
	1/4	4			
24-X-X-X-E28 1608	5/32	10	8	L	1/2 SAE Male Flare
	3/16	8			
	1/4	6			
	5/16	4			
251-X-X-X-E60 1606	5/32	10	6	Permanent Nozzle not Replaceable	1/2 SAE Male Flare
	3/16	8			
	1/4	6			
	5/16	4			
213-X-X-X-E19 5/8 Flare 1104	5/32	9	10	Nozzle J	5/8 SAE Male Flare
	3/16	6			
	1/4	6			
215-X-X-X-E19 5/8 Flare 1147	5/32	10	10	Nozzle J	5/8 SAE Male Flare
	3/16	8			
	1/4	6			

Nomenclature

120	—	X	—	X	—	X	—	E-60
Body Style		Number of Circuits		Size of Circuits		Nozzle Size		Various Inlet Adaptor

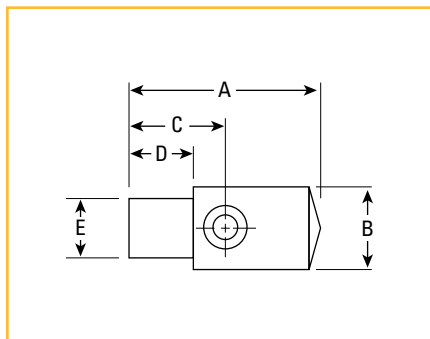


Heat Pump & Hot Gas Defrost Distributors

When ordering heat pump and hot gas distributors, specify number and size of side connections.



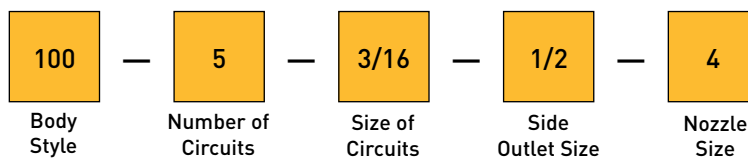
Type 100 - 5 - 3/16 - 1/2



Side Connections Circuits Available

Type	Tube Size	Max. No. Circuits	Nozzle & Retainer Ring	Side Connections		A	B	C	D	E
				Number	Size					
100-X-X-X-X	5/32 3/16 1/4	8 8 4	J	1 or 2	3/8 1/2	2-1/64	7/8	63/64	21/32	.623 .625
1651			Largest 10							
30-X-X-X-X	5/32 3/16 1/4 5/16 3/8	14 12 8 5 4	G	1 or 2	3/8 1/2	2-35/64	1-1/4	1-7/32	29/32	.873 .875
1653			Largest 50							
40-X-X-X-X	5/32 3/16 1/4 5/16 3/8	20 18 12 9 7	E	1 or 2	3/8 1/2 5/8	3-1/4	1-5/8	1-15/32	1-1/6	1.123 1.125
1655			Largest 50							
55-X-X-X-X	5/32 3/16 1/4 5/16 3/8	30 26 18 14 11	C	1 or 2	1/2 5/8 7/8	4-1/4	2-1/4	1-7/8	1-5/16	1.373 1.375
1657			Largest 50							
57-X-X-X-X	1/4 5/16 3/8	15 18 14	A	1 or 2	7/8 1 1/8	4-7/8	2-3/4	2-5/16	1- 5/8	1.623 1.626
1659			Largest 50							

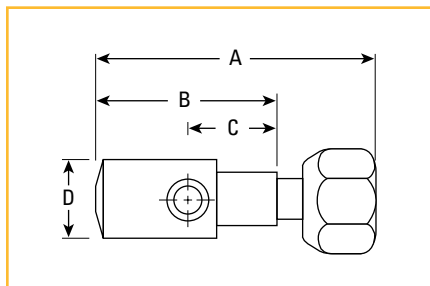
Nomenclature



Flare-Type



Type 100 - 6 - 3/16 - 1/2



NOTE: Nomenclature is same as above with addition of inlet adaptors (as customer requires). Standard inlet adaptors shown.

[illegible]

Venturi Low Pressure Drop Distributors

This style of distributor is designed on the venturi orifice concept. The venturi orifice has basically three sections:

1. the converging inlet
2. the throat area
3. diverging outlet

Based on the continuity equation and Bernoulli equation, as the liquid refrigerant enters section (1) the velocity of the refrigerant begins to increase and the pressure begins to decrease. This continues until a maximum velocity and a minimum pressure is reached in the throat area, section (2). After the refrigerant leaves section (2) and begins to enter section (3), the diverging outlet, the velocity begins to decrease and the pressure increases. The venturi orifice creates a smooth transition from section (1) through section (2) and then back to section (3) resulting in little turbulence. The pressure of the refrigerant after leaving section (3) is only slightly less than the inlet pressure. The pressure loss is caused by frictional losses between the distributor wall and the fluid boundary layer, and some turbulence. Due to the low pressure loss and smooth refrigerant flow pattern, the venturi distributor provides a low pressure loss refrigerant disturbing device. UL Listing 115500.

Capacities

Venturi type distributor capacities are supplied in tons of refrigerant. The



capacity is based on the following conditions:

- a total distributor pressure drop of 15 psi
- liquid refrigerant subcooled 1°F at the expansion device
- a refrigerant tube length of 36" or .91 meters.

Note: Standard operating range is from 1/2 to twice the capacity.

Sizing Suggestions

Required system information:

1. system design capacity in tons of refrigerant
2. system design refrigerant
3. total number of circuits required
4. system design temperature
5. inlet tube size

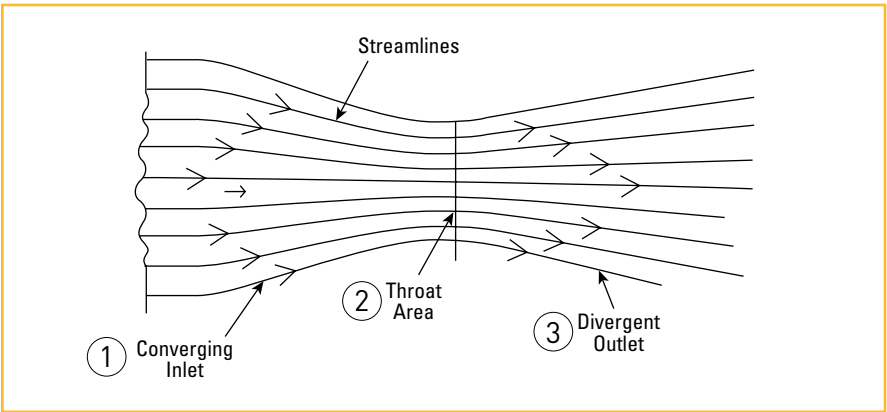
Step A: Select the chart on the following pages that matches the inlet tube size required.

Step B: Select the column that matches the total number of circuits required.

Step C: Using the system capacity, select a distributor that matches both the system refrigerant and design temperature.

Step D: Determine if the system design capacity meets the 1/2 to twice the standard operating capacity requirements.

Step E: If the standard operating capacity requirement is not met, repeat the selection process utilizing either the next size smaller or larger inlet tube size.



Flow through a Venturi low pressure drop distributor.

% Nominal Load	Pressure Drop psi
250	40
150	25
125	20
100	15
75	10
50	7.5

Distributors with 5/32" ODF Circuits

Distributor Capacities — Tons of Refrigeration

Part Number	No. of Outlets	REFRIGERANT														
		R-22					R-134a					R-404A / R-507				
		EVAPORATOR TEMPERATURE °F														
		40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°
*4-2.5-2 *5-2.5-2	2	0.88	0.6	0.4	0.26	0.18	0.6	0.41	0.26	0.17	0.12	0.45	0.31	0.19	0.12	0.09
*4-2.5-3 *5-2.5-3	3	1.32	0.9	0.6	0.39	0.27	0.9	0.6	0.4	0.25	0.18	0.68	0.46	0.29	0.18	0.13
*4-2.5-4 *5-2.5-4	4	1.76	1.2	0.8	0.52	0.36	1.2	0.82	0.53	0.34	0.24	0.9	0.61	0.39	0.25	0.18
*4-2.5-5 *5-2.5-5	5	2.2	1.5	1	0.65	0.45	1.5	1	0.66	0.42	0.3	1.13	0.77	0.49	0.31	0.22
*4-2.5-6 *5-2.5-6	6	2.64	1.8	1.2	0.78	0.54	1.8	1.2	0.79	0.5	0.36	1.35	0.92	0.59	0.37	0.27
*4-2.5-7 *5-2.5-7	7	3.08	2.1	1.4	0.91	0.63	2.1	1.4	0.92	0.59	0.42	1.57	1.07	0.69	0.43	0.31
*4-2.5-8 *5-2.5-8	8	3.52	2.4	1.6	1.04	0.72	2.4	1.6	1.1	0.67	0.48	1.8	1.22	0.79	0.5	0.36
*4-2.5-9 *5-2.5-9	9	3.96	2.7	1.8	1.17	0.81	2.7	1.8	1.2	0.76	0.54	2.03	1.38	0.89	0.56	0.4
*4-2.5-10 *5-2.5-10 7-2.5-10	10	4.40	3.00	2.00	1.30	.90	3.0	2.0	1.3	.84	.60	2.25	1.53	.99	.63	.45
7-2.5-11	11	4.84	3.30	2.20	1.43	.99	3.3	2.3	1.5	.92	.66	2.47	1.68	1.08	.69	.49
F5-2.5-12 7-2.5-12	12	5.28	3.6	2.4	1.56	1.08	3.6	2.4	1.6	1	0.72	2.7	1.84	1.18	0.75	0.54
F5-2.5-13 7-2.5-13	13	5.72	3.9	2.6	1.69	1.17	3.9	2.7	1.7	1.1	0.78	2.93	1.99	1.28	0.81	0.58
F5-2.5-14 7-2.5-14	14	6.16	4.2	2.8	1.82	1.26	4.2	2.9	1.8	1.2	0.84	3.15	2.24	1.38	0.88	0.63
F5-2.5-15 7-2.5-15	15	6.6	4.5	3	1.95	1.35	4.5	3.1	2	1.3	0.9	3.37	2.36	1.48	0.94	0.67
7-2.5-16	16	7.04	4.80	3.20	2.08	1.44	4.8	3.3	2.1	1.3	.96	3.60	2.49	1.58	1.00	.72
7-2.5-17	17	7.48	5.10	3.50	2.21	1.54	5.1	3.5	2.2	1.4	1.0	3.82	2.61	1.68	1.06	.76
7-2.5-18	18	7.92	5.40	3.60	2.34	1.62	5.4	3.7	2.4	1.5	1.1	4.05	2.75	1.78	1.13	.81
7-2.5-19	19	8.36	5.70	3.80	2.47	1.71	5.7	3.9	2.5	1.6	1.1	4.27	2.90	1.83	1.19	.85
7-2.5-20	20	8.80	6.00	4.00	2.60	1.80	6.0	4.1	2.6	1.7	1.2	4.50	3.06	1.98	1.26	.90
7-2.5-21	21	9.25	6.30	4.20	2.73	1.89	6.3	4.3	2.8	1.8	1.3	4.72	3.21	2.07	1.32	.94
7-2.5-22	22	9.70	6.60	4.40	2.86	1.98	6.6	4.5	2.9	1.9	1.3	4.95	3.36	2.17	1.38	.99
7-2.5-23	23	10.15	6.90	4.60	2.99	2.07	6.9	4.7	3.0	1.9	1.4	5.17	3.51	2.27	1.44	1.03
7-2.5-24	24	10.6	7.20	4.80	3.12	2.16	7.2	4.9	3.2	2.0	1.4	5.40	3.67	2.37	1.51	1.08

*Available with flare nut or ODM inlet connections.

**For R-500 capacities, multiply R-12 capacities by 1.2.

"F" available with flare nut only.

Distributors with 3/16" ODF Circuits

Distributor Capacities — Tons of Refrigeration

Part Number	No. of Outlets	REFRIGERANT														
		R-22					R-134a					R-404A / R-507				
		EVAPORATOR TEMPERATURE °F														
		40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°
3-3-2 *4-3-2 *5-3-2	2	1.80	1.20	.79	.53	.37	1.20	.82	.54	.36	.25	.90	.61	.40	.27	.18
3-3-3 *4-3-3 *5-3-3	3	2.60	1.80	1.20	.79	.55	1.80	1.20	.82	.54	.38	1.40	.90	.61	.40	.28
3-3-4 *4-3-4 *5-3-4	4	3.50	2.40	1.60	1.10	.76	2.40	1.70	1.10	.72	.50	1.80	1.30	.81	.54	.37
3-3-5 *4-3-5 *5-3-5 7-3-5	5	4.40	3.00	2.00	1.30	.92	3.0	2.0	1.3	.90	.64	2.30	1.50	.99	.67	.47
3-3-6 *4-3-6 *5-3-6 7-3-6	6	5.30	3.60	2.40	1.60	1.10	3.6	2.40	1.70	1.10	0.76	2.70	1.80	1.30	0.81	0.56
3-3-7 *4-3-7 *5-3-7 7-3-7	7	6.10	4.20	2.80	1.80	1.30	4.20	2.90	1.90	1.30	.89	3.10	2.20	1.40	.99	.66
*4-3-8 *5-3-8 7-3-8 9-3-8	8	7.00	4.80	3.20	2.10	1.50	4.80	3.20	2.20	1.40	1.00	3.60	2.40	1.60	1.10	.75
4-3-9 *5-3-9 7-3-9 9-3-9	9	7.90	5.40	3.60	2.40	1.70	5.40	3.70	2.40	1.70	1.10	4.10	2.80	1.80	1.30	.85
*5-3-10 7-3-10 9-3-10	10	8.80	6.00	3.90	2.60	1.80	6.00	4.10	2.80	1.80	1.30	4.50	3.10	2.10	1.40	0.99
7-3-11 9-3-11	11	9.60	6.50	4.30	2.90	2.00	6.60	4.40	3.00	2.00	1.40	5.00	3.30	2.30	1.50	1.10
*5-3-12 7-3-12 9-3-12	12	10.50	7.10	4.70	3.20	2.20	7.20	4.90	3.20	2.20	1.60	5.40	3.70	2.40	1.60	1.20
F5-3-13 7-3-13 9-3-13	13	11.40	7.70	5.10	3.40	2.40	7.80	5.30	3.50	2.40	1.70	5.90	4.00	2.60	1.80	1.30
7-3-14 9-3-14	14	12.30	8.30	5.50	3.70	2.60	8.40	5.80	3.80	2.50	1.80	6.30	4.30	2.90	1.90	1.40
7-3-15 9-3-15	15	13.10	8.90	5.90	4.00	2.80	9.00	6.10	4.10	2.80	1.90	6.80	4.60	3.10	2.10	1.50
7-3-16 9-3-16	16	14.00	9.50	6.30	4.20	2.90	9.60	6.50	4.30	2.90	2.00	7.20	4.90	3.20	2.20	1.50
7-3-17 9-3-17	17	14.90	10.10	6.70	4.50	3.10	10.20	7.00	4.60	3.10	2.20	7.70	5.20	3.40	2.30	1.60
7-3-18 9-3-18	18	15.80	10.70	7.10	4.70	3.30	10.80	7.30	4.90	3.20	2.30	8.10	5.50	3.70	2.40	1.70
7-3-19 9-3-19	19	16.60	11.30	7.50	5.00	3.50	11.40	7.80	5.20	3.50	2.40	8.60	5.90	3.90	2.60	1.80
7-3-20 9-3-20	20	17.50	11.90	7.90	5.30	3.70	12.00	8.20	5.40	3.60	2.50	9.00	6.10	4.10	2.70	1.90
7-3-21 9-3-21	21	18.40	12.50	8.30	5.50	3.90	12.60	8.50	5.60	3.70	2.60	9.40	6.40	4.30	2.80	2.00
7-3-22 9-3-22	22	19.20	13.10	8.70	5.80	4.00	13.20	9.00	5.90	4.00	2.80	9.90	6.70	4.50	2.90	2.10
7-3-23 9-3-23	23	20.10	13.70	9.10	6.00	4.20	20.10	13.70	9.10	6.00	4.20	10.30	7.00	4.70	3.00	2.20
7-3-24 9-3-24	24	21.00	14.30	9.50	6.30	4.40	21.00	14.30	9.50	6.30	4.40	10.80	7.40	4.90	3.20	2.30

*Available with flare nut or ODM inlet connections.

**For R-500 capacities, multiply R-12 capacities by 1.2.

"F" available with flare nut only.

Distributors with 1/4" ODF Circuits

Distributor Capacities — Tons of Refrigeration

Part Number	No. of Outlets	REFRIGERANT														
		R-22					R-134a					R-404A / R-507				
		EVAPORATOR TEMPERATURE °F														
		40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°
*4-4-2 *5-4-2 7-4-2	2	3.5	2.4	1.6	1.1	.76	2.4	1.7	1.1	.70	.50	1.8	1.3	.81	.54	.37
*4-4-3 *5-4-3 7-4-3	3	5.3	3.6	2.4	1.6	1.1	3.6	2.4	1.7	1.1	.76	2.7	1.8	1.3	.81	.56
*4-4-4 *5-4-4 7-4-4	4	7.0	4.8	3.2	2.1	1.5	4.8	3.2	2.2	1.4	1.0	3.6	2.4	1.6	1.1	.75
*4-4-5 *5-4-5 7-4-5	5	8.8	6.0	3.9	2.6	1.8	6.0	4.1	2.8	1.8	1.3	4.5	3.1	2.1	1.4	.99
*4-4-6 *5-4-6 7-4-6 9-4-6	6	10.5	7.1	4.7	3.2	2.2	7.2	4.9	3.2	2.2	1.6	5.4	3.7	2.4	1.6	1.2
7-4-7 9-4-7	7	10.5	7.1	4.7	3.2	2.2	8.4	5.8	3.8	2.5	1.8	5.4	3.7	2.4	1.6	1.2
5-4-8 7-4-8 9-4-8	8	14.0	9.5	6.3	4.2	2.9	9.6	6.5	4.3	2.9	2.0	7.2	4.9	3.2	2.2	1.5
5-4-9 7-4-9 9-4-9 11-4-9	9	15.8	10.7	7.1	4.7	3.3	10.8	7.3	4.9	3.2	2.3	8.1	5.5	3.7	2.4	1.7
7-4-10 9-4-10 11-4-10	10	17.5	11.9	7.9	5.3	3.7	12.0	8.2	5.4	3.6	2.5	9.0	6.1	4.1	2.7	1.9
7-4-11 11-4-11	11	19.3	13.1	8.7	5.8	4.1	13.2	9.0	6.0	4.0	2.8	9.9	6.8	4.5	3.0	2.1
7-4-12 9-4-12 11-4-12	12	21.0	14.3	9.5	6.3	4.4	14.4	9.8	6.5	4.3	3.0	10.8	7.4	4.9	3.2	2.3
7-4-13 9-4-13 11-4-13	13	22.8	15.5	10.2	6.8	4.8	15.6	10.6	7.1	4.7	3.2	11.7	7.9	5.3	3.5	2.4
7-4-14 9-4-14 11-4-14	14	24.5	16.7	11.0	7.4	5.2	16.8	11.4	7.6	5.0	3.5	12.6	8.6	5.7	3.8	2.6
7-4-15 9-4-15 11-4-15	15	26.3	17.9	11.8	7.9	5.5	18.0	12.2	8.0	5.4	3.8	13.5	9.2	6.0	4.1	2.9
7-4-16 9-4-16 11-4-16	16	28.0	19.0	12.6	8.4	5.9	19.2	13.1	8.7	5.8	4.1	14.4	9.8	6.5	4.3	3.1
7-4-17 11-4-17	17	29.8	20.2	13.4	8.9	6.3	20.4	13.9	9.2	6.1	4.3	15.3	10.4	6.9	4.6	3.2
7-4-18 11-4-18	18	31.5	21.4	14.2	9.5	6.6	21.6	14.6	9.7	6.5	4.6	16.2	11.0	7.3	4.9	3.4
7-4-19 11-4-19	19	33.3	22.6	15.0	10.0	7.0	22.8	15.5	10.3	6.8	4.8	17.1	11.6	7.7	5.1	3.6
7-4-20 11-4-20	20	35.0	23.8	15.8	10.5	7.4	24.0	16.3	10.8	7.2	5.0	18.0	12.2	8.1	5.4	3.8
7-4-21 11-4-21	21	36.8	25.0	16.6	11.1	7.7	25.2	17.2	11.4	7.6	5.3	18.9	12.9	8.6	5.7	4.0
7-4-22 11-4-22	22	38.5	26.2	17.3	11.6	8.1	26.4	18.0	11.9	7.9	5.5	19.8	13.5	8.9	5.9	4.1
7-4-23 11-4-23	23	40.3	27.4	18.1	12.1	8.5	27.6	18.7	12.5	8.3	5.8	20.7	14.0	9.4	6.2	4.3
7-4-24 11-4-24	24	42.0	28.6	18.9	12.6	8.8	28.8	19.6	13.0	8.6	6.0	21.6	14.7	9.7	6.5	4.5

*Available with flare nut or ODM inlet connections.

**For R-500 capacities, multiply R-12 capacities by 1.2.

"F" available with flare nut only.

Distributors with 5/16" ODF Circuits

Distributor Capacities — Tons of Refrigeration

Part Number	No. of Outlets	REFRIGERANT														
		R-22					R-134a					R-404A / R-507				
		EVAPORATOR TEMPERATURE °F														
		40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°
*4-5-2 *5-5-2 7-5-2	2	7.0	4.8	3.2	2.1	1.5	4.8	3.2	2.2	1.4	1.0	3.6	2.4	1.6	1.1	.75
F4-5-3 *5-5-3 7-5-3	3	10.5	7.1	4.7	3.2	2.2	7.2	4.9	3.2	2.2	1.6	5.4	3.7	2.4	1.6	1.2
F4-5-4 *5-5-4 7-5-4	4	14.0	9.5	6.3	4.2	2.9	9.6	6.5	4.3	2.9	2.0	7.2	4.9	3.2	2.2	1.5
7-5-5 9-5-5	5	17.5	11.9	7.9	5.3	3.7	12.0	8.2	5.4	3.6	2.5	9	6.1	4.1	2.7	1.9
7-5-6 9-5-6	6	21	14.3	9.5	6.3	4.4	14.4	9.8	6.5	4.3	3	10.8	7.4	4.9	3.2	2.3
9-5-7 11-5-7	7	34.5	16.7	11	7.4	5.2	16.8	11.4	7.6	5.0	3.5	12.6	8.6	5.7	3.8	2.6
9-5-8 11-5-8	8	28	19	12.6	8.4	5.9	19.2	13.1	8.6	5.8	4.1	14.4	9.8	6.5	4.3	3.1
11-5-9	9	31.5	21.4	14.2	9.5	6.6	21.6	14.6	9.7	6.5	4.6	16.2	11.0	7.3	4.9	3.4
11-5-10	10	35.0	23.8	15.8	10.5	7.4	24.0	16.3	10.8	7.2	5.0	18.0	12.2	8.1	5.4	3.8
11-5-11	11	38.5	26.2	17.3	11.6	8.1	26.4	18.0	11.9	7.9	5.5	19.8	13.5	8.9	5.9	4.1
11-5-12	12	42.0	28.6	18.9	12.6	8.8	28.8	19.6	13.0	8.6	6.0	21.6	14.7	9.7	6.5	4.5
11-5-13	13	45.5	30.9	20.5	13.7	9.6	31.2	21.2	14.0	9.4	6.6	23.4	15.9	10.5	7.0	5.0
11-5-14	14	49.0	33.3	22.1	14.7	10.3	33.6	22.8	15.1	10.1	7.1	25.2	17.1	11.3	7.6	5.3
11-5-15	15	52.5	35.7	23.6	15.8	11.0	36.0	24.5	16.2	10.8	7.6	27.0	18.4	12.2	8.1	5.7
13-5-16	16	56.0	38.1	25.2	16.8	11.8	38.4	26.2	17.3	11.5	8.0	28.8	19.6	13.0	8.6	6.0
13-5-17	17	59.5	40.4	26.8	17.8	12.5	40.8	27.7	18.4	12.2	8.5	30.6	20.8	13.8	9.1	6.4
13-5-18	18	63.0	42.8	28.4	18.9	13.2	43.2	29.4	19.4	13.0	9.1	32.4	22.1	14.6	9.7	6.8
13-5-19	19	66.5	45.2	29.9	20.0	14.0	45.6	31.0	20.5	13.7	9.6	34.2	23.2	15.4	10.3	7.2
13-5-20	20	70.0	47.6	31.4	21.0	14.7	48.0	32.6	21.6	14.4	10.1	36.0	24.5	16.2	10.8	7.7
13-5-21	21	73.5	50.0	32.9	22.0	15.4	50.4	34.3	22.7	15.1	10.6	37.8	25.7	17.0	11.3	7.9
13-5-22	22	77.0	52.5	34.4	23.1	16.1	52.8	36.0	23.8	15.8	11.0	39.6	27.0	17.8	11.9	8.3

*Available with flare nut or ODM inlet connections.

"F" available with flare nut only.

3/8" ODF Distributor with Circuits

Distributor Capacities — Tons of Refrigeration

Part Number	No. of Outlets	REFRIGERANT														
		R-22					R-134a					R-404A / R-507				
		EVAPORATOR TEMPERATURE °F														
		40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°
F4-6-2 7-6-2	2	12.3	8.3	5.5	3.7	2.6	8.4	5.8	3.8	2.5	1.8	6.3	4.3	2.9	1.9	1.4
F5-6-3 7-6-3	3	18.4	12.5	8.3	5.5	3.9	12.6	8.5	5.6	3.8	2.6	9.5	6.4	4.2	2.9	2.0
F5-6-4 7-6-4	4	24.5	16.7	11.1	7.4	5.1	16.8	11.4	7.6	5.0	3.5	12.6	8.6	5.7	3.8	2.6
9-6-5 11-6-5	5	30.6	20.8	13.9	9.2	6.4	21.0	14.3	9.5	6.4	4.4	15.8	10.7	7.1	4.8	3.3
9-6-6 11-6-6	6	36.8	25.0	16.6	11.1	7.7	25.2	17.2	11.4	7.6	5.3	18.9	12.9	8.6	5.7	4.0
11-6-7	7	42.9	29.2	19.4	12.9	9.0	29.4	20.0	13.2	8.9	6.1	22.0	15.0	9.9	6.7	4.6
11-6-8	8	49.0	33.3	22.2	14.7	10.3	33.6	22.8	15.1	10.1	7.1	25.2	17.1	11.3	7.6	5.3
11-6-9	9	55.1	37.5	25.0	16.5	11.6	37.8	25.7	17.0	11.3	7.9	28.3	19.2	12.7	8.5	6.0
11-6-10	10	61.3	41.7	27.7	18.4	12.9	42.0	28.6	19.0	12.6	8.9	31.5	21.4	14.2	9.5	6.7
11-6-11	11	67.4	45.8	30.4	20.2	14.2	46.2	31.4	20.8	13.8	9.7	34.3	23.5	15.6	10.4	7.2
11-6-12	12	73.5	50.0	33.2	22.1	15.5	50.4	34.3	22.7	15.1	10.6	37.8	25.7	17.0	11.3	7.9
13-6-17	17	99.4	67.6	44.8	29.9	21.0	68.2	46.3	30.7	20.5	14.4	51.1	34.7	23.0	15.4	10.8
13-6-18	18	108.5	73.9	49.0	32.7	21.7	74.4	50.6	33.6	22.4	14.9	55.8	37.9	25.2	16.8	11.2

*Available with flare nut or ODM inlet connections.

"F" available with flare nut only.

1/2" ODF Distributor with Circuits

Distributor Capacities — Tons of Refrigeration

Part Number	No. of Outlets	REFRIGERANT														
		R-22					R-134a					R-404A / R-507				
		EVAPORATOR TEMPERATURE °F														
		40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°	40°	20°	0°	-20°	-40°
11-8-2	2	17.5	11.9	7.9	5.3	3.8	12.0	8.2	5.4	3.6	2.5	9.0	6.1	4.1	2.7	1.9
11-8-3	3	26.3	17.9	11.8	7.9	5.5	18.0	12.2	8.2	5.4	4.2	13.5	9.2	6.1	4.1	3.2
11-8-4	4	35.0	23.8	15.8	10.5	7.6	24.0	16.3	10.8	7.2	5.0	18.0	12.2	8.1	5.4	3.8
11-8-5	5	43.8	29.8	19.7	13.2	9.2	30.0	20.4	13.6	9.0	6.4	22.5	15.3	10.2	6.8	4.8
11-8-6	6	52.5	35.7	23.6	15.8	11.0	36.0	24.5	16.2	10.8	7.6	27.0	18.4	12.2	8.1	5.7
11-8-7	7	61.3	41.7	27.6	18.4	12.9	42.0	28.6	19.0	12.6	8.9	31.5	21.4	14.2	9.5	6.7
13-8-8	8	70.0	47.7	31.5	21.1	14.7	48.0	32.6	21.7	14.4	10.2	36.0	24.5	16.3	10.8	7.7
13-8-9	9	78.7	53.7	31.9	23.7	16.5	54.0	36.7	24.4	16.2	11.4	40.5	27.5	18.3	12.1	8.6
13-8-10	10	87.5	59.6	39.4	26.3	18.4	60.0	40.8	27.1	18.0	12.7	45.0	30.6	20.3	13.5	9.5
13-8-11	11	96.3	65.6	43.3	28.9	20.3	66.0	44.9	30.0	19.8	14.0	49.5	33.7	22.4	14.8	10.5
13-8-12	12	105.2	71.5	47.2	31.5	22.1	72.0	49.0	32.6	21.6	15.4	54.0	36.8	24.5	16.2	11.4
13-8-13	13	113.8	77.5	51.2	34.2	24.0	78.0	53.0	35.3	23.4	16.6	58.5	39.8	26.5	17.6	12.4

*Available with flare nut or ODM inlet connections.

"F" available with flare nut only.

NOTE: Capacity shown is the total distributor capacity for the indicated number of outlets with 36" tubes.

Ratings are based on average condensing temperature, 15 psi drop across the distributor, and 1°F subcooled liquid entering the expansion valve.

Dimensions

Part Number	A	B	C	D +/- .015	F	
3-3-2	.375 .373	.812	1.236	.171	.393	
3-3-3						
3-3-4						
3-3-5						
3-3-6						
3-3-8		1.000	1.380	.171	.375	
3-4-2		.812	1.236	.234	.393	
3-4-3						
3-4-4						
3-4-6						
4-2-5-2	.500 .498	—	.708	.125	—	
4-2-5-3		.625	.909		.500	
4-2-5-4					.505	
4-2-5-5						
4-2-5-6						
4-2-5-8		.793	1.263			
4-2-5-9		.970	1.530			
4-3-2		.625	.812		.171	
4-3-3		.656	.906			
4-3-4		.750	1.050			
4-3-5		.812	1.195			
4-3-6		.875	1.359			
4-3-7		.970	1.530			
4-3-8		1.000	1.625			
4-3-9		1.095	1.562		.500	
4-3-10		1.250	2.031			
4-4-2		.830	1.110	.234	.405	
4-4-3					.440	
4-4-4						
4-4-5						
4-4-6						
4-4-7	1.250	1.775	.500			
4-4-8	.625 .623	.960	.125	—		
5-2-5-2				.630		
5-2-5-3						
5-2-5-4						
5-2-5-5						
5-2-5-6						
5-2-5-7						
5-2-5-8						
5-2-5-9						
5-2-5-10					.899	1.496
5-3-2	.812	1.236	.171	—		
5-3-3				.630		
5-3-4						
5-3-5						
5-3-6						
5-3-7						
5-3-8						
5-3-9						
5-3-10						
5-3-11						
5-3-12	1.250	2.031				

Part Number	A	B	C	D +/- .015	F								
5-4-2	.625 .623	.812	1.205	.234	.630								
5-4-3													
5-4-4													
5-4-5													
5-4-6													
5-4-8		1.000	1.498										
5-4-9		1.250	1.875										
5-4-10		1.280	2.030										
5-5-2		1.416	2.518										
5-5-3		.875	1.165	.297	.567								
5-5-4		1.000	1.495										
5-6-2		1.125	1.738										
7-2-5-10	.875	1.125	1.812	.125	.875								
7-2-5-11													
7-2-5-12													
7-2-5-13													
7-2-5-14													
7-2-5-15		1.265	2.219										
7-2-5-16													
7-2-5-18													
7-2-5-20													
7-2-5-24		1.156	2.562										
7-3-5	.875 .873	.890	1.492	.171	.880								
7-3-6													
7-3-7													
7-3-8		1.000	1.659										
7-3-9		1.240	2.101										
7-3-10													
7-3-11													
7-3-12													
7-3-13													
7-3-14		1.625	2.722										
7-3-15		1.609	2.718	.234									
7-3-16													
7-3-17													
7-3-18													
7-3-19													
7-3-20		2.109	3.650										
7-3-24													
7-4-2													
7-4-3							.890	1.331					
7-4-4							1.041	1.581					
7-4-5													
7-4-6													
7-4-7													
7-4-8		1.187	1.812										

Nomenclature

3

Size of
Inlet
in 1/8ths

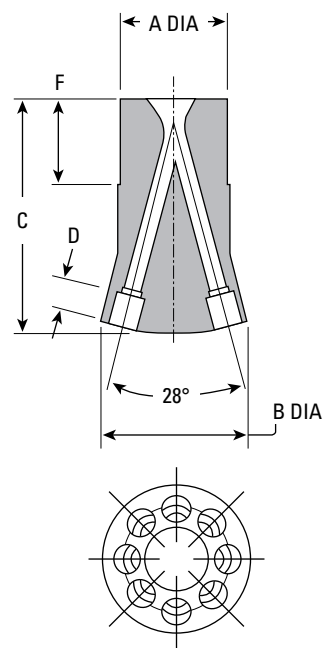
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3

Size of
Outlets
in 1/16ths

—

4

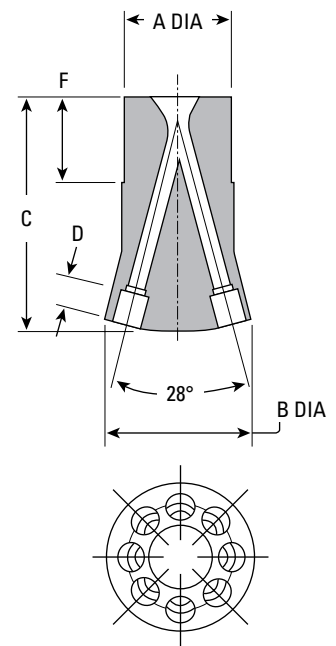
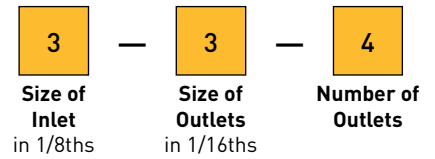
Number of
Outlets

Dimensions

Part Number	A	B	C	D +/- .015	F
7-4-9	.875 .873	1.416	2.247	.234	.880
7-4-10					
7-4-11		1.701	2.698		
7-4-12					
7-4-13		1.800	2.698		
7-4-14					
7-4-15		2.188	3.550		
7-4-16					
7-4-17		2.313	3.378		
7-4-18					
7-4-19		2.705	3.813		
7-4-20					
7-4-21					
7-4-22					
7-4-23					
7-4-24					
7-5-2		.894	1.290		.875
7-5-3		1.063	1.543		.880
7-5-4					
7-5-5		1.250	1.930		
7-5-6					
7-6-2					
7-6-3		1.250	1.930		
7-6-4					
9-3-8	1.125 1.123	1.188	2.050	1.71	1.036
9-3-9					
9-3-10		1.240	2.101		
9-3-11					
9-3-12					
9-3-13		1.680	2.875		
9-3-14					
9-3-15					
9-3-16					
9-3-17					
9-3-18					
9-3-19					
9-3-20					
9-3-21		2.115	3.684		
9-3-22					
9-3-23					
9-3-24					
9-4-6		—	1.878		—
9-4-7		1.285	1.935		1.036
9-4-8					
9-4-9		1.285	2.075		
9-4-10		1.375	2.206		
9-4-11		1.567	2.505		
9-4-12					
9-4-13		2.000			1.031
9-4-14			3.210		1.036
9-4-15		1.980			
9-4-16					
9-5-5		1.250	1.777		
9-5-6					

Part Number	A	B	C	D +/- .015	F	
9-5-7	1.125 1.123	1.438	2.105	.297	1.036	
9-5-8						
9-6-5		1.453	2.109	.312	1.031	
9-6-6						
11-4-8	1.375 1.373	1.415	2.328	.234	1.156	
11-4-9					1.161	
11-4-10		1.500	2.458			
11-4-11		1.688	2.779			
11-4-12		1.183	2.995			
11-4-13		1.875	3.119			
11-4-14		1.988	3.296			
11-4-15		2.180	3.582			1.156
11-4-16		2.313	4.015			1.161
11-4-17						
11-4-18		2.705	4.138			
11-4-19						
11-4-20		1.484	2.218	.247	1.156	
11-4-21					1.161	
11-4-22		1.938	3.033			
11-4-23		2.313	3.649			
11-4-24						
11-5-6		1.375	1.484	2.239	.359	1.156
11-5-7			1.890	2.671		
11-5-8			2.296	3.239		
11-5-9	1.468		2.156			
11-5-10	1.062		2.687	.484	1.156	
11-5-11	2.0625		2.705			
11-5-12						
11-5-13	2.750		4.500	.297		1.280
11-5-14						
11-5-15	2.835		4.859			
11-6-6	3.000	4.281				
11-6-7	2.046	5.781	.359			
11-6-8	2.250	3.140	.359			
11-6-10	2.593	3.765	.484			
11-6-12	3.125	4.750	.484			

Nomenclature



Flare Type Venturi Distributors

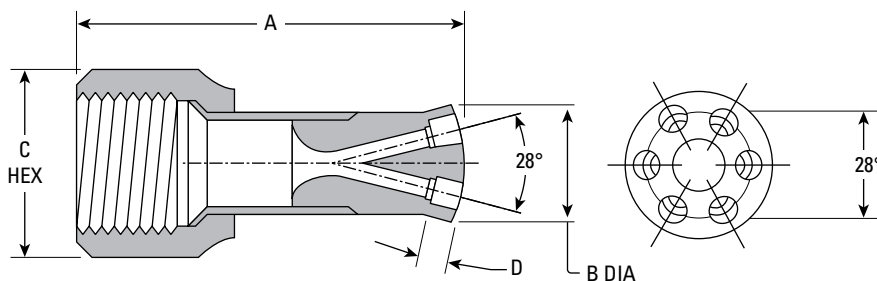
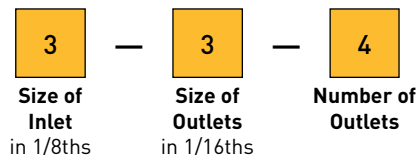
Regular or Frost Free Nut

Outlet Size	No. of Outlets	Type Number	A	B Dia.	C Hex	D	E Dia.
3/16	3	F3-3-3	1-1/16	5/8	7/8	3/16	1/2
	4	F3-3-4		1/2			
	5	F3-3-5	2-3/16	13/16			17/32
	6	F3-3-6					17/32
5/32	2	F4-2.5-2	1-7/8	1/2	1	1/8	9/32
	4	F4-2.5-4	2-13/64	43/64			7/16
	5	F4-2.5-5	2-5/64	39/64			25/64
	6	F4-2.5-6	2-13/16	43/64			7/16
	8	F4-2.5-8	2-17/32	55/64			5/8
3/16	2	F4-3-2	1-29/32	35/64		11/64	5/16
	3	F4-3-3	1-63/64	19/32			11/32
	4	F4-3-4	2-3/8	25/32			17/32
	5	F4-3-5					
	6	F4-3-6					
	8	F4-3-8					2-45/64
1/4	2	F4-4-2	2-7/64	25/32		15/64	13/32
	3	F4-4-3	2-23/64	27/32			33/64
	4	F4-4-4					
	5	F4-4-5	2-47/64	1			11/16
	6	F4-4-6					
5/16	2	F4-5-2	2-27/64	7/8			31/64
	3	F4-5-3	2-23/32	1-1/64		19/64	41/64
3/8	2	F4-6-2	2-5/8	1-1/16		23/64	19/32

Outlet Size	No. of Outlets	Type Number	A	B Dia.	C Hex	D	E Dia.
5/32	4	F5-2.5-4	2-23/64	21/32	1-1/8	1/8	7/16
	6	F5-2.5-6					35/64
	8	F5-2.5-8	2-17/32	25/32			39/64
	9	F5-2.5-9	2-43/64	27/32			31/32
	12	F5-2.5-12	3-5/16	1-7/32			29/32
	13	F5-2.5-13					
	14	F5-2.5-14	3-7/64	1-9/64			
3/16	6	F5-3-6	2-29/64	51/64		11/64	17/32
	8	F5-3-8	2-21/32	59/64			21/32
	9	F5-3-9	2-27/32	1			47/64
	10	F5-3-10	3-7/64	1-15/64			15/16
	12	F5-3-12					
1/4	2	F5-4-2				15/64	
	3	F5-4-3	2-27/64	53/64			33/64
	4	F5-4-4					2-23/32
	5	F5-4-5					
	6	F5-4-6					
5/16	2	F5-5-2	2-25/32	7/8		19/64	31/64
	3	F5-5-3	2-23/32	1-1/64	41/64		

NOTE: To order distributor only drop prefix "F" and substitute inlet size. For example a distributor head to go into 1/2" O.D. copper would be .430 plus size of outlets in 1/16" and number of circuits. 430-3-4 would go into 1/2" tubing and have four 3/16" feeder tube sockets.

Nomenclature



HD(C)E Assembly

Application

Meter refrigerant and distribute two-phase refrigerant to a coil. HD assemblies replace Capillary tubes, Piston (Fixed orifice expansion devices) and check valves while improving SEER as a means of metering refrigerant flow through air-conditioning and heat pump systems.



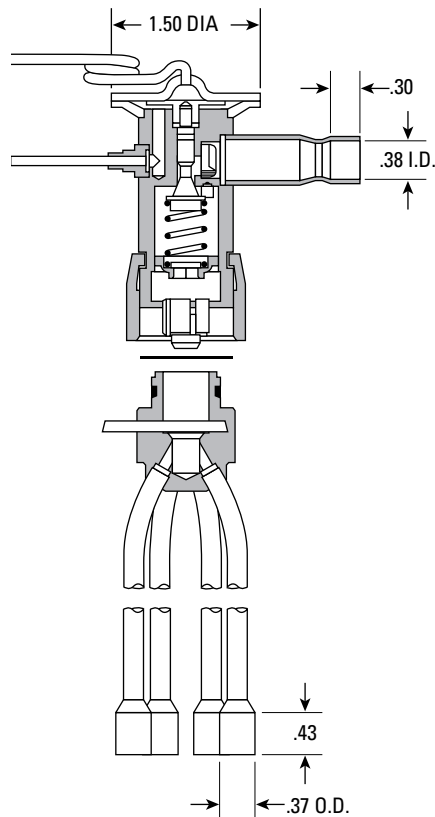
Features and Benefits

- Utilizes existing TEV designs
 - AAA thru D orifice sizes (6) (1/8 through 8 ton)
 - Optional internal check valve
 - Same product "look"
 - Same fitting options - (external equalizer not shown but standard)
- Utilizes existing distributor designs
 - 2 to 10 feeder tubes
 - 0.144 and 3/16" tube sizes

- Floating Piston
 - Various nozzles sizes
 - Reduced reverse flow pressure drop expected
 - No seal required on "nose"
- Dual seal connection
 - Redundant o-ring and coated washer seal
 - Each seal independently capable of providing seal
- Includes H series Improvements
 - R-410A capability

Agency Approvals

UL: SA11699



Parker Plus: Value-Added Components & Custom Brazing

Parker produces up to 40 million trouble-free braze joints a year for HVAC/R companies worldwide. Our customers have discovered that Parker brazed products offer greater integrity, which results in lower on-line leaks and fewer field problems. In addition, most cost evaluations prove Parker is extremely cost effective when compared with in-house methods. Contact Parker for more information.



Flo-Rater Designs

Style F Flo-Raters

- Most versatile and cost effective body style.
- Accepts 5 fluted, 3 fluted and double-headed piston styles.
- Accepts TEVs — no brazing needed.
- 3 sub-models for full range of circuit quantities.
- Flange mount available.
- Full range of circuit sizes and quantities.
- Easy field replaceable restrictor — no brazing required.
- Full line of inlet styles.
- Brass / copper or aluminum feeder tubes and distributor.
- See page 21.



Style A Flo-Raters

- Cost effective.
- 3 sub-models for full range of circuit quantities and sizes.
- PTFE seal on body.
- PTFE or neoprene seal on piston.
- Brass / copper or aluminum feeder tubes and distributor.
- See page 22.



Style FD20 Flo-Raters

- Cost effective.
- Full range of circuit sizes and quantities.
- Easy field replaceable restrictor — no brazing required.
- Accepts TEVs — no brazing required.
- Metal to metal seals (body and piston).
- Flange mount available.
- Full line of inlet styles.
- Requires bullet nose piston FF1913-10-XXX
- See page 23.



Style M Flo-Raters

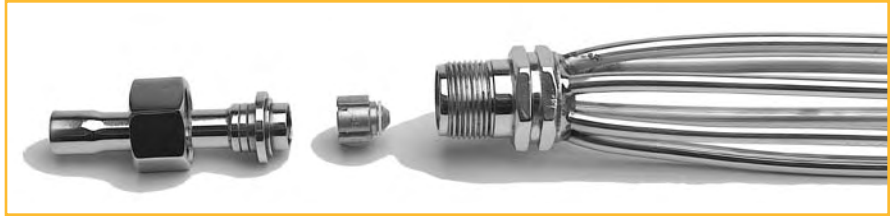
- Heavy duty quality.
- Preferred by OEM users.
- PTFE or neoprene seal on piston.
- Brass / copper or aluminum feeder tubes and distributor.
- See page 24.



Flo-Rater Style F

Application

Meter refrigerant and distribute two-phase refrigerant to a coil. Replaces capillary tubes, TEVs and check valves as a means of metering refrigerant flow through air conditioning and heat pump systems.



Features and Benefits

- Most versatile and cost effective body style.
- Accepts 5 fluted, 3 fluted and double-headed piston styles.
- Accepts TEVs — no brazing required.

- Flange mount available.
- Full range of circuit sizes and quantities.
- Easy field replaceable restrictor — no brazing required.
- Full line of inlet styles.
- Available in brass, copper, and aluminum.

Agency Approvals

UL Recognized; File No: 7511
US Patent No. 5,894,741

Nomenclature

No. 8713602-17-1080 (Example)

87F	—	1	—	3	—	6	—	02	—	17	—	1	—	80
Body Style		Screen		Size of Circuits		Number of Circuits		Inlet Style		Length of Circuit Tubes in Inches		Piston Style		Piston Size in Thousandths
75 = 3/4" hex 87 = 7/8" hex 100 = 1" hex		0 = no screen 1 = with screen		Dia. in 1/16ths				See inlet style chart.				See piston style chart.		See piston size chart.

Circuit Capacity List

- 75 = 0-1/4, 5-3/16, 7-1/8
- 87 = 5-1/4, 7-3/16, 8-1/8
- 100 = 6-1/4, 9-3/16, 12-1/8



75F Body



87F Body



100F Body

Orifice Sizing

See graphs on page 28.

Most Common Inlet Types (Custom Designs Available)

- 00 = No inlet piece included.
- 26 = Flange with 3/8" O.D. x .028 wall x 2" long. With one end expanded to 3/8" I.D.
- 35 = Flange with 3/8" O.D. x .028 wall with 90° bend and one end expanded to 3/8" I.D.



End Piece No. 26 Shown
Custom Engineered
Models Available

Piston Types Available

- 1 = 3 fluted, stepped hole, PTFE gasket
- 5 = 5 fluted, straight hole with no chamfer, PTFE gasket
- 6 = 5 fluted, straight hole with 45 x .010 chamfer, neoprene gasket
- 9 = Doubleheaded piston

Pistons Available



3 Flute



5 Flute

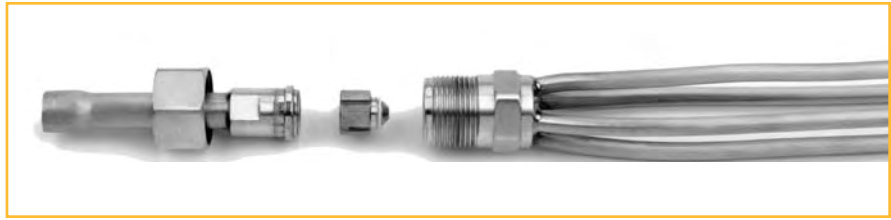


Doubleheaded

Flo-Rater Style A

Application

Meter refrigerant and distribute two-phase refrigerant to a coil. Replaces capillary tubes, TEVs and check valves as a means of metering refrigerant flow through air conditioning and heat pump systems.



Features and Benefits

- Cost effective.
- Full range of circuit sizes and quantities.
- Easy field replaceable restrictor — no brazing required.

- Accepts TEVs — no brazing required.
- Accepts 5 and 3 fluted piston styles.
- Flange mount available.
- Full line of inlet styles.
- Available in brass, copper, and aluminum.

Agency Approvals

UL Recognized; File No: 7511

Nomenclature

No. 8713602-17-1080 (Example)

87	—	1	—	3	—	6	—	02	—	17	—	1	—	80
Body Style		Screen		Size of Circuits		Number of Circuits		Inlet Style		Length of Circuit Tubes in Inches		Piston Style		Piston Size in Thousandths
75 = 3/4" hex 87 = 7/8" hex 100 = 1" hex		0 = no screen 1 = with screen		Dia. in 1/16ths				See inlet style chart.				See piston style chart.		See piston size chart.

Circuit Capacity List

- 75 = 0-1/4, 5-3/16, 7-1/8
- 87 = 5-1/4, 7-3/16, 8-1/8
- 100 = 6-1/4, 9-3/16, 12-1/8

Orifice Sizing

See graphs on page 28.



75 Body



87 Body



100 Body

Most Common Inlet Types (Custom Designs Available)

- 00 = No inlet piece included.
- 01 = Flange with 3/8" O.D. x .028 wall x 2" long. With one end expanded to 3/8" I.D.
- 02 = Flange with 3/8" O.D. x .028 wall x 9" long. Straight.
- 03 = Flange with 3/8" O.D. x .028 wall x 3.5" long. Straight.
- 04 = Flange with 3/8" O.D. x .028 wall x 2.6" long. With one end expanded to 3/8" I.D.
- 27 = Flange with 3/8" O.D. x .028 wall with 90° bend and one end expanded to 3/8" I.D.
- 11 = Flange with 3/8" O.D. x .018 wall x 6.250" long. Straight.
- 18 = Flange with 3/8" O.D. x .028 wall x with 90° bend. Straight.



End Piece No. 01 Shown
Custom Engineered
Models Available

Piston Types Available

- 1 = 3 fluted, stepped hole, PTFE gasket
- 5 = 5 fluted, straight hole with no chamfer, PTFE gasket
- 6 = 5 fluted, straight hole with 45 x .010 chamfer, neoprene gasket



Pistons Available
3 Flute (left)
5 Flute (right)

Flo-Rater Style FD20

Application

Meter refrigerant and distribute two-phase refrigerant to a coil. Replaces capillary tubes, TEVs and check valves as a means of metering refrigerant flow through air conditioning and heat pump systems.



Features and Benefits

- Cost effective.
- Full range of circuit sizes and quantities.
- Easy field replaceable restrictor — no brazing required.
- Accepts TEVs — no brazing required.

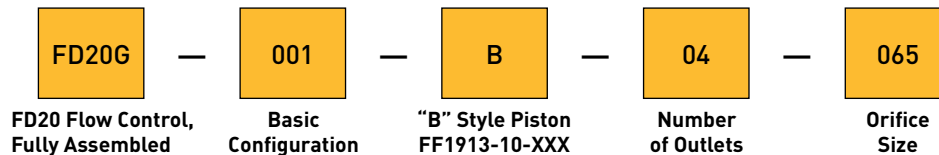
- Metal to metal seals (body and piston).
- Flange mount available.
- Full line of inlet styles.
- Requires bullet nose piston FF1913-10-XXX
- Available in brass, copper, and aluminum.

Agency Approvals

UL Recognized; File No: 2709

Nomenclature

No. FD20G001B04065



Circuit Capacity

- 2-10 circuits



Orifice Sizing

See graphs on page 28.

Most Common Inlet Types (Custom Designs Available)

- Flange with 3/8" O.D. x .028 wall x 1" long.
- Flange with 3/8" O.D. x .028 wall x 4.5" long. With one end expanded to 3/8" I.D.
- Flange with 3/8" O.D. x .028 wall x 1" long. With 90° bend and one end expanded to 3/8" I.D.



FD20 Inlet
Custom Engineered
Models Available

Piston Type

- “B” style bullet nose



Pistons Available
Chamfered

Flo-Rater Style M

Application

Meter refrigerant and distribute two-phase refrigerant to a coil. Replaces capillary tubes, TEVs and check valves as a means of metering refrigerant flow through air conditioning and heat pump systems.



Features and Benefits

- Heavy duty design.
- Full range of circuit sizes and quantities.
- Easy field replaceable restrictor.
- Accepts 5 and 3 fluted piston styles.
- Full line of inlet styles.
- Available in brass, copper, and aluminum.

Agency Approvals

UL Recognized; File No: 115500

Nomenclature

No. 43412-17-3080 (Style M Example)

4	—	3	—	4	—	12	—	17	—	3	—	080
Body Style		Size of Circuits		Number of Circuits		End Piece Style		Length of Circuit Tubes in Inches		Piston Style		Piston Size in Thousandths
4L = 7/8" hex body w/ 1/2-20-2B thds		Dia. in 1/16ths								See piston style chart.		See piston size chart.
4 = 7/8" hex body w/1/2-24-2B thds												
5 = 15/16" hex body												
6 = 15/16" hex body (short)												
7 = 1-1/4" hex body												

Circuit Capacity

- 4MDB = 6-1/4, 8-3/16, 10-1/8
- 7MDB = 11-3/16



4 MDB Body



7 MDB Body

Orifice Sizing

See graphs on page 28.

Most Common Inlet Types

(Custom Designs Available)

- **00** = no inlet piece
- **10** = 3/8" sweat
- **12** = 3/8" sweat with tube brazed in
- **25** = 1/4" flare
- **38** = 3/8" flare
- **50** = 1/2" flare
- **70** = 3/8" flare with 90° 3/8" elbow

■ Piston Types Available

- **1** = 3 fluted, stepped hole, PTFE gasket
- **5** = 5 fluted, straight hole with no chamfer, PTFE gasket
- **6** = 5 fluted, straight hole with 45 x .010 chamfer, neoprene gasket



End Piece No. 12 Shown
Custom Engineered
Models Available



3 Flute



5 Flute

Pistons Available

Flo-Rater Style FD20D

Application

Designed to replace hard-to-handle and easily damaged capillary tubing giving a more predictable pressure drop.



Features and Benefits

- Cost effective alternative to capillary tubes.
- One piece design.
- Versatility in length, end configuration, orifice size and copper tube bend configuration.
- Easy to handle and install.
- Complete range of orifice sizes.

Specifications

- Pressure up to 750 psi operating
- Minimum burst pressure: 3750 psi
- Mass flow rates from 50 lb./hr. to 1200 lb./hr.
- Restrictor sized from .030" to .105" (in .001" increments)

Orifice Sizing

See graphs on page 28.

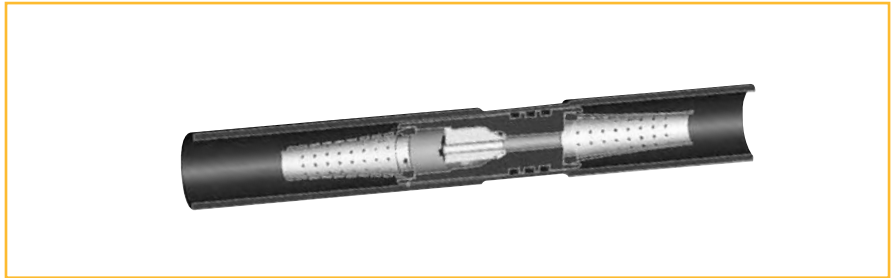
Agency Approvals

UL Recognized; File No: 2709

Flo-Rater Style FD20E

Application

Developed to solve space limitation problems on Packaged Terminal Heat Pumps and mini-split systems. The FD20E utilizes two floating orifices to replace two check valves and two cap tubes along with up to eight brazed joints with one easy to install self-contained unit requiring only two brazed joints.



Features and Benefits

- Cost effective alternative to capillary tubes, check valves and strainers.
- One piece design.
- Bi-directional flow control/filter screen combination.
- Custom end configurations.
- Complete range of orifice sizes.

Specifications

- Pressure up to 750 psi operating
- Minimum burst pressure: 3750 psi
- Operating temperature: +140°F to +250°F (-40°C to +121°C)
- Mass flow rates from 50 lb./hr. to 1200 lb./hr.
- Restrictor sized from .020" to .105" (in .001" increments)
- End configurations: Male 1/4", 5/16", 3/8", 1/2" Female 1/4", 5/16", 3/8", 1/2"

Orifice Sizing

See graphs on page 28.

Agency Approvals

UL Recognized; File No: 2709
US Patent No. 5,265,438

Flo-Rater Style FD20F

Application

Utilizing a floating orifice the FD20F is designed for use on PTAC systems. This eliminates hard-to-handle and easily damaged capillary tubing and check valves giving a more predictable pressure drop.



Features and Benefits

- Cost effective alternative to capillary tubes.
- One piece design.
- Bi-directional flow with filter screen combination.
- Custom end configurations.
- Complete range of orifice sizes.

Specifications

- Pressure up to 750 psi operating
- Minimum burst pressure: 3750 psi
- Operating temperature: +140°F to +250°F (-40°C to +121°C)
- Mass flow rates from 50 lb./hr. to 1200 lb./hr.
- Restrictor sized from .020" to .105" (in .001" increments)

Orifice Sizing

See graphs on page 28.

Agency Approvals

UL Recognized; File No: 2709
US Patent No. 5,265,438

Parker Aluminum

Features and Benefits

- Largest selection.
- Available with or without feeder tubes.
- Proprietary brazing technology.
- Years of experience.



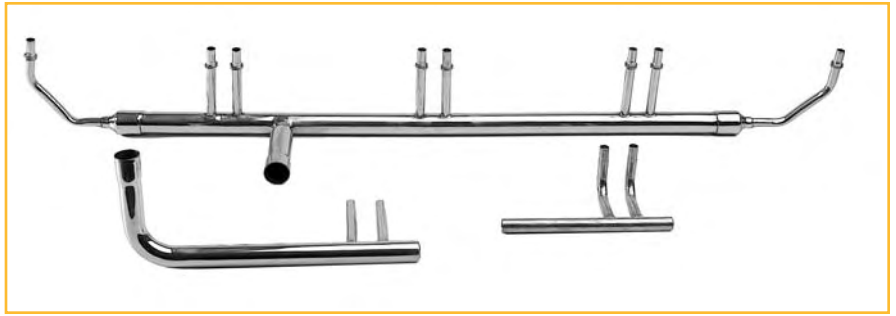
Manifolds

Application

Meter refrigerant and distribute two-phase refrigerant to a coil. Replaces capillary tubes, TEVs and check valves as a means of metering refrigerant flow through air conditioning and heat pump systems.

Features and Benefits

- Custom manifolds are available for optimizing evaporator and condensor coil performance. Individual feeder legs can be equipped with fixed restrictors for air conditioning only or floating restrictors for heat pump applications.



Flo-Rater and Manifold Pistons

Orifice Sizing

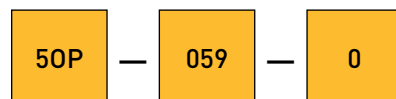
See graphs on page 28.



Piston Style: 5 Fluted (5)

- Use in body style F, A and M

Nomenclature: No. 50PXXX0
(Example)



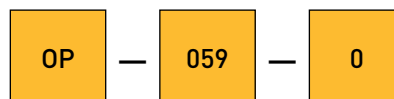
Orifice
Diameter in Thousandths



Piston Style: 3 Fluted (3)

- Use in body style F, A and M

Nomenclature: No. OPXXX0
(Example)



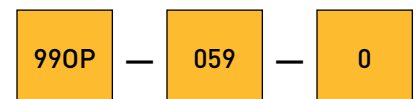
Orifice
Diameter in Thousandths



Piston Style: Doubleheaded (9)

- Use in body style F

Nomenclature: No. 990PXXX0
(Example)

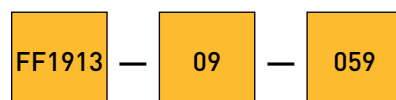


Orifice
Diameter in Thousandths

Piston Style: Blunt Nose (10)

- Use in body style FD20

Nomenclature:
No. FF1913-09-XXX (Example)



Orifice
Diameter in Thousandths



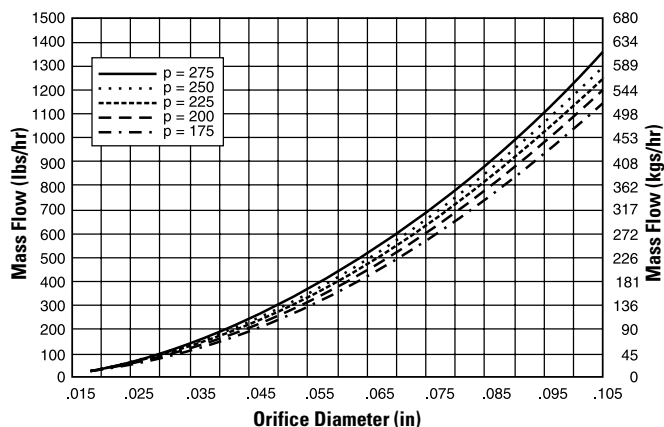
**Pistons Available
Chamfered**

Selecting the Right Orifice for Your Flow Control

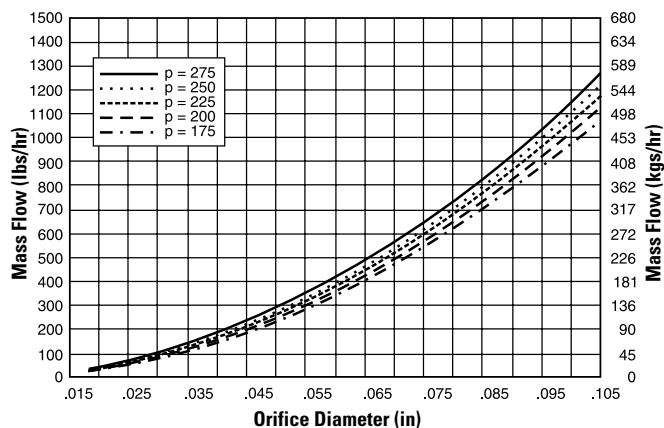
You can use the following graphs to select the correct flow control for your applications:

1. Determine the amount of subcooling desired.
2. Select the graph closest to desired subcooling.
3. Determine design inlet pressure = p .
4. From the selected graph, choose the line with the appropriate pressure.
5. Determine the required mass flow.
6. Draw an imaginary straight line from the desired mass flow to the pressure line chosen, then drop the imaginary line down to the orifice diameter axis.
7. The orifice diameter can be read directly to the nearest thousandth (for example: 0.075 inch).

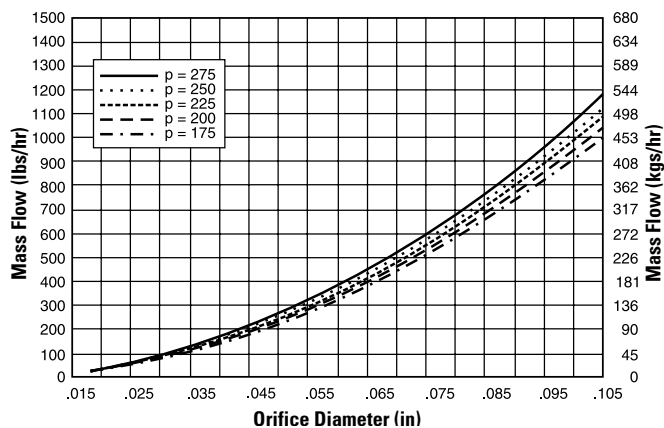
20°F (11°C) Subcooling / 40°F (4.4°C) Evaporator



15°F (8.3°C) Subcooling / 40°F (4.4°C) Evaporator



10°F (5.6°C) Subcooling / 40°F (4.4°C) Evaporator



O-Ring Adaptor Fittings

Features and Benefits

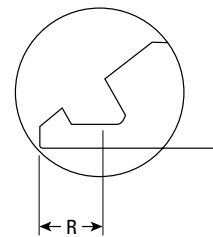
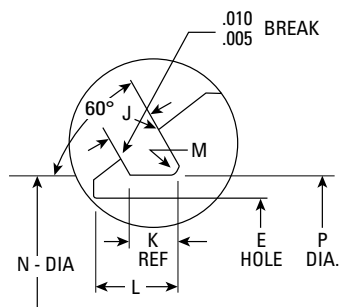
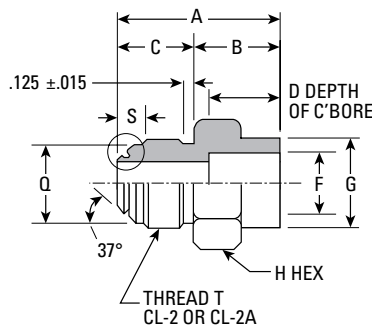
- Variations of length and tube connections available.



Specifications

Part No.	Dash Size	Size Brazed End	O.D. Tube Size	A ±.010	B ±.010	C ±.015	D ±.010	E ±.005	F ±.003	G ±.010	H ±.010	J ±.003	K ±.005	L ±.003	M ±.005	N ±.003	P ±.003	Q ±.005	R ±.005	S ±.015	O-Ring Dash Size	T Thread
BJ-1	8-10	.500	.625	1.59	.375	.758	.688	.446	.506	1.094	1.125	.089	.103	.122	.020	.539	.522	.767	.082	.266	14	7/8 - 14
BJ-2	10-10	.625	.625	1.59	.375	.758	.688	.446	.632	1.094	1.125	.089	.103	.122	.020	.539	.522	.767	.082	.266	14t	7/8 - 14
BJ-3	12-10	.750	.625	1.59	.375	.758	.688	.446	.757	1.094	1.125	.089	.103	.132	.020	.539	.522	.767	.089	.266	14	7/8 - 14
BJ-4	14-10	.875	.625	1.59	.375	.758	.688	.446	.882	1.094	1.125	.089	.103	.132	.020	.539	.522	.767	.089	.266	14	7/8 - 14
BJ-5	10-12	.625	.750	1.10	.438	.864	.812	.575	.632	1.188	1.250	.089	.103	.134	.020	.664	.664	.930	.094	.315	16	1-1/16-12
BJ-6	14-12	.875	.750	1.10	.438	.864	.812	.609	.882	1.188	1.250	.089	.103	.134	.020	.664	.664	.930	.094	.315	16	1-1/16-12
BJ-7	12-16	.750	1.000	2.03	.500	.911	.875	.695	.757	1.344	1.375	.089	.103	.134	.020	.913	.913	1.188	.094	.315	20	1-5/16-12
BJ-8	16-14	.875	1.000	2.03	.500	.911	.875	.745	.882	1.344	1.375	.089	.103	.134	.020	.913	.913	1.188	.094	.315	20	1-5/16-12
BJ-9	16-16	1.000	1.000	2.03	.500	.911	.875	.745	1.007	1.344	1.375	.089	.103	.134	.020	.913	.913	1.188	.094	.315	20	1-5/16-12
BJ-10	18-16	1.125	1.000	2.03	.500	.911	.875	.745	1.133	1.344	1.375	.089	.103	.134	.020	.913	.913	1.188	.094	.315	20	1-5/16-12
BJ-11	18-20	1.125	1.250	2.20	.562	.958	1.000	.955	1.133	1.625	1.750	.089	.103	.159	.020	1.147	1.182	1.50	.118	.367	25	1-5/8-12
BJ-20		1.375	1.375	2.19	.562	1.083	.875	1.245	1.383	1.875	2.000	.111	.128	.181	.030	1.381	1.354	1.76	.121	.378		1-7/8-12
BJ-12	22-20	1.375	1.250	2.20	.562	.958	1.000	.955	1.383	1.625	1.750	.089	.103	.159	.020	1.147	1.182	1.50	.118	.367	25	1-5/8-12

Dimensions



Type-0 Fittings

Features and Benefits

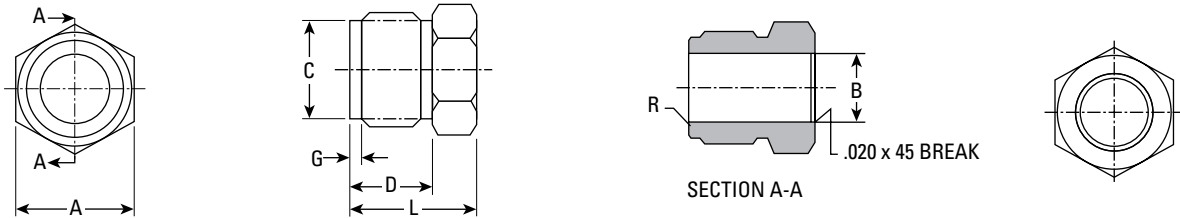
- Modifications of these fittings are available upon request.
- Add suffix "A" for aluminum, "S" for steel.

Male Inverted Swivel Nut Tube (O-Type)

Material

- Brass

Dimensions



Specifications

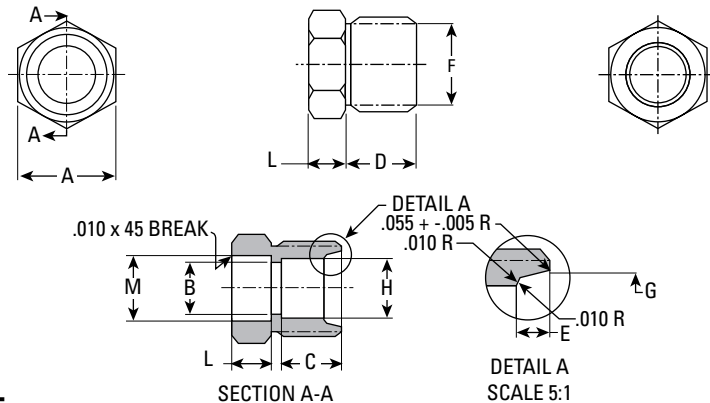
Part No.	Thread Size	Min. Full Thread	Tube O.D.	A Hex.	B Dia.		C Dia.		D	G	L	R
					Max.	Min.	Max.	Min.				
4053	7/16-24 NS-2A	.286	.250	.44	.258	.255	.378	.363	.34	.03	.54	.032
4075	5/8-18 UNF-2A	.356	.375	.62	.383	.380	.548	.533	.44	.06	.70	.032
4056	3/4-18 NS-2A	.413	.500	.75	.508	.505	.673	.658	.51	.06	1.05	.046
4080	7/8-18 NS-2A	.429	.625	.88	.633	.630	.798	.783	.53	.06	.85	.046
4076	1-1/16-16 UN-2A	.500	.750	1.06	.761	.758	.976	.961	.60	.08	.94	.046

Male Swivel Nut Tube (O-Type)

Material

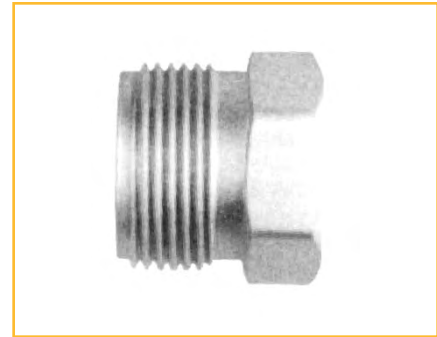
- Brass

Dimensions



Specifications

Part No.	Thread Size	Min. Full Thread	Tube O.D.	Hex.	B	C	D	E	F Dia.		G Dia.		H	L	M
									Max.	Min.	Max.	Min.			
B115	7/16-20 UNF-2A	.34	.250	.44	.189	.26	.44	.121	.370	.360	.271	.265	.198	.19	.254
B116	5/8-18 UNF-2A	.39	.375	.62	.281	.37	.48	.131	.550	.540	.439	.433	.338	.25	.379
B117	3/4-16 UNF-2A	.48	.500	.75	.406	.48	.56	.131	.666	.656	.563	.557	.462	.31	.504
B118	7/8-14 UNF-2A	.58	.625	.88	.500	.48	.70	.131	.780	.770	.672	.666	.571	.38	.629
B119	1-1/16-14 UNF-2A	.70	.750	1.06	.625	.48	.83	.131	.970	.960	.797	.791	.696	.44	.754

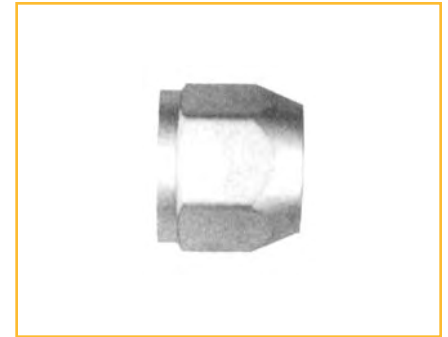
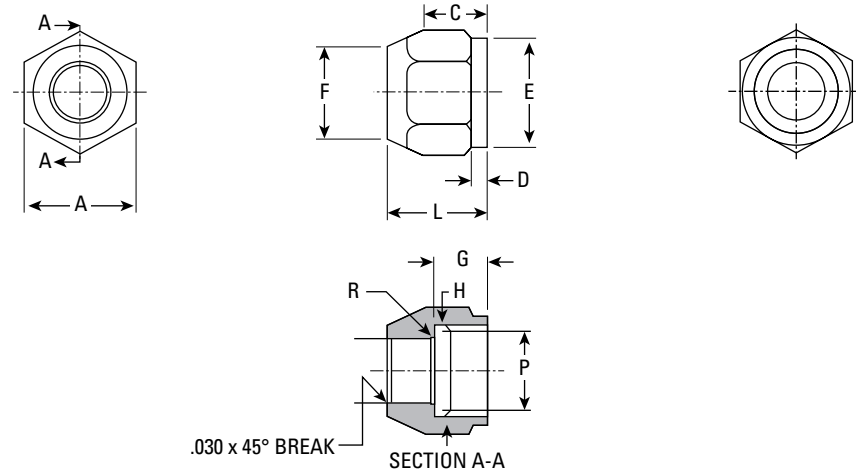


Female Fitting Tube (O-Type)

Material

■ Brass

Dimensions



Specifications

Part No.	Thread Size	Min. Full Thread	Tube O.D.	A Hex.	FDIA		C	D	E Dia.	F Dia.	G	L	M Dia.	N	P Dia.	R
					Max.	Min.										
B046	7/16-20 UNF-2B	.22	.250	.56	.260	.255	.38	.12	.56	.46	.31	.59	.437	.156	.383	.032
B079	5/8-18 UNF-2B	.26	.375	.75	.385	.380	.44	.12	.75	.59	.36	.69	.625	.156	.565	.032
B045	3/4-16 UNF-2B	.32	.500	.88	.510	.505	.50	.12	.88	.75	.45	.81	.750	.187	.682	.046
B052	7/8-14 UNF-2B	.42	.625	1.06	.635	.630	.68	.12	1.00	.93	.54	.94	.875	.187	.798	.046
B047	1-1/16-14 UNF-2B	.54	.750	1.25	.760	.755	.81	.12	1.25	1.12	.67	1.12	1.062	.187	.986	.046

CLIMATE CONTROL

- Accumulators
- CO₂ controls
- Electronic controllers
- Filter-driers
- Hand shut-off valves
- Heat exchangers
- Hose & fittings
- Pressure regulating valves
- Refrigerant distributors
- Safety relief valves
- Solenoid valves
- Thermostatic expansion valves



AEROSPACE

- Flight control systems & components
- Fluid conveyance systems
- Fluid metering delivery & atomization devices
- Fuel systems & components
- Hydraulic systems & components
- Inert nitrogen generating systems
- Pneumatic systems & components
- Wheels & brakes



ELECTROMECHANICAL

- AC/DC drives & systems
- Electric actuators, gantry robots & slides
- Electrohydraulic actuation systems
- Electromechanical actuation systems
- Human machine interfaces
- Linear motors
- Stepper motors, servo motors, drives & controls
- Structural extrusions



FILTRATION

- Analytical gas generators
- Compressed air & gas filters
- Condition monitoring
- Engine air, fuel & oil filtration & systems
- Hydraulic, lubrication & coolant filters
- Process, chemical, water & microfiltration filters
- Nitrogen, hydrogen & zero air generators



FLUID & GAS HANDLING

- Brass fittings & valves
- Diagnostic equipment
- Fluid conveyance systems
- Industrial hose
- PTFE & PFA hose, tubing & plastic fittings
- Quick disconnects
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters



HYDRAULICS

- Diagnostic equipment
- Hydraulic cylinders & accumulators
- Hydraulic motors & pumps
- Hydraulic systems
- Hydraulic valves & controls
- Power take-offs
- Quick disconnects
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters



PNEUMATICS

- Air preparation
- Brass fittings & valves
- Manifolds
- Pneumatic actuators, grippers, valves, controls & accessories
- Quick disconnects
- Rotary actuators
- Rubber & thermoplastic hose & couplings
- Structural extrusions
- Thermoplastic tubing & fittings
- Vacuum generators, cups & sensors



PROCESS CONTROL

- Analytical sample conditioning products & systems
- Fluoropolymer chemical delivery fittings, valves & pumps
- High purity gas delivery fittings, valves & regulators
- Instrumentation fittings, valves & regulators
- Medium pressure fittings & valves
- Process control manifolds



SEALING & SHIELDING

- Dynamic seals
- Elastomeric o-rings
- EMI shielding
- Extruded & precision-cut, fabricated elastomeric seals
- Homogeneous & inserted elastomeric shapes
- High temperature metal seals
- Metal & plastic retained composite seals
- Thermal management



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