

RECIPROCATING COMPRESSORS

F-270 SERIES



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OVERVIEW RECIPROCATING COMPRESSORS

FIL offers the F-270 Series of high-speed piston compressors with water-ammonia-cooled cylinders. All these compressors are run at a maximum of 1800 RPM and minimum 900 RPM, and all are provided with built-in capacity reduction steps (25%, 33%, 66%, 100%) for economical operation on part loads. "Banded" belt and direct coupled connected motor operations are also available with fixed speed and variable speed drive for precise temperature control. These high-speed compressors can operate with almost all refrigerants. It works in extreme applications with upto a 17.2 bar pressure differential. It can be belt-driven or direct-driven all the way upto 150 kW power consumption. This compressor has an in-built safety valve and oil cooler for energy-efficient performance, with a Mcomp of 80%.

MODELS

F 272



No. of Cylinders: 2
Rated RPM: 1450
Bore & Stroke (Inch) (mm): (3 1/4 x 2 3/4) (82.55 x 69.85)
Swept Volume [CFM (m3/hr)]: 38.25 (65)
Suction Connection [in. (mm)]: 2 (50)
Discharge Connection [in. (mm)]: 1 1/2 (40)
Unit Wt Less Motor (Lbs. (kg)): 441 (200)
Oil Charge [Gallons (Ltr.)]: 4.3 (16)

F 274



No. of Cylinders: 4
Rated RPM: 1450
Bore & Stroke (Inch) (mm): (3 1/4 x 2 3/4) (82.55 x 69.85)
Swept Volume [CFM (m3/hr)]: 76.5 (130)
Suction Connection [in. (mm)]: 3 (80)
Discharge Connection [in. (mm)]: 2 (50)
Unit Wt Less Motor (Lbs. (kg)): 661 (300)
Oil Charge [Gallons (Ltr.)]: 5.3 (20)

F 276



No. of Cylinders: 6
Rated RPM: 1450
Bore & Stroke (Inch) (mm): (3 1/4 x 2 3/4) (82.55 x 69.85)
Swept Volume [CFM (m3/hr)]: 114.75 (195)
Suction Connection [in. (mm)]: 3 (80) & 2 (50)
Discharge Connection [in. (mm)]: 2 (50)
Unit Wt Less Motor (Lbs. (kg)): 771 (350)
Oil Charge [Gallons (Ltr.)]: 5.3 (20)

F 276-42



No. of Cylinders: 4 LS / 2 HS
Rated RPM: 1450
Bore & Stroke (Inch) (mm): (3 1/4 x 2 3/4) (82.55 x 69.85)
Swept Volume [CFM (m3/hr)]: 76.5 (130)
Suction Connection [in. (mm)]: 3 (80)
Discharge Connection [in. (mm)]: 2 (50) & 1 1/2 (40)
Unit Wt Less Motor (Lbs. (kg)): 771 (350)
Oil Charge [Gallons (Ltr.)]: 5.3 (20)

AMMONIA vs.HCFCs and CFCs AS REFRIGERANTS

Metric	Ammonia	HCFCs and CFCs
Energy Saving	40% lower energy consumption	High
Maintenance and Operating Cost	Low	High
Compressor Life	Longer working life	Running hours of the compressors are high, which will reduce their shelf life.
Refrigerant Cost	Circulate 7-8 times less refrigerant. Besides, the price of ammonia is approximately 10 times lower	Cost of these refrigerants has skyrocketed because producers have phased out their production, due to which the supply of these refrigerants has dwindled.
Leakage Risk	Low	High
Operational Sensitivity	Can stand these impurities	Very sensitive to any foreign material, such as air, foreign gases, dirt, etc., that operates the system unsatisfactorily
Coefficient of Performance (COP)	ODP and GWP are zero	ODP and GWP is high (Ranging from 12 to 14,800)

FEATURES AND BENEFITS OF F- SERIES COMPRESSOR

- Compact unit with low charge natural refrigerant
- Easily available with rack-type arrangement
- Small compressors with up to 2000 metric tonnes of capacity
- Liquid-resistant safety head
- Protection smooth 100% unloading system
- Ratio of micro-oil filtration
- Natural refrigerant: NH₃, butane, and propane
- Low GWP/ODP refrigerants: R134a, 404A, 407C, R1150
- Inherent variable volume
- Low vibration and less maintenance

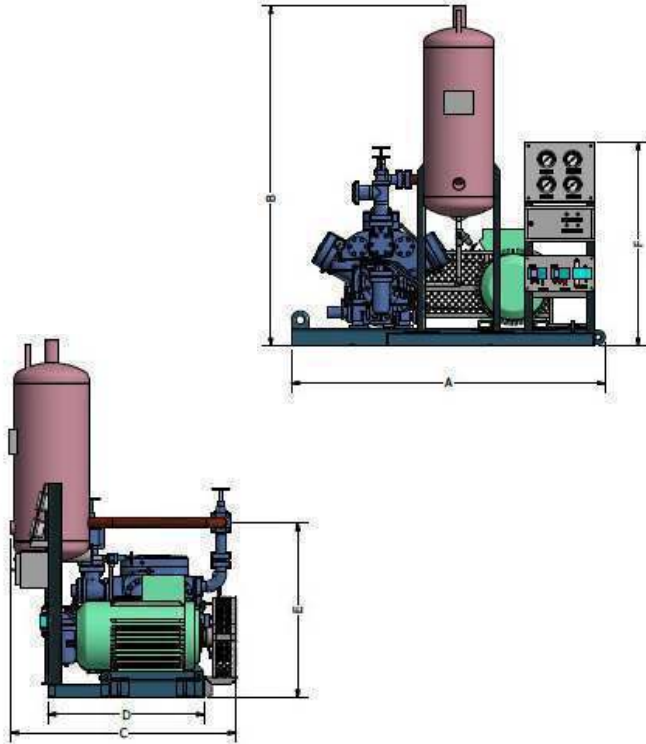


Double Stage Models Performance Rating Chart @ 1450 RPM

Model	Temp (°C)	35 °C Condensing Temperature		40 °C Condensing Temperature	
		Capacity Kw (TR)	Ab. Power kW (BHP)	Capacity Kw (TR)	Ab. Power kW (BHP)
Refrigerant		Ammonia NH3			
276-42	-25	48.94 (13.91)	19.90 (26.68)	48.07 (13.66)	21.16 (28.37)
	-30	38.43 (10.92)	18.15 (24.34)	37.75 (10.73)	19.22 (25.77)
	-35	29.77 (8.46)	16.40 (22.00)	29.19 (8.30)	17.28 (23.17)
	-40	22.57 (6.41)	14.75 (19.78)	22.09 (6.28)	15.53 (20.82)
	-45	16.93 (4.81)	13.10 (17.57)	16.44 (4.67)	13.78 (18.48)
Refrigerant		R-290 (Propane)			
276-42	-25	42.15 (12.06)	20.19 (27.07)	41.86 (11.90)	21.35 (28.63)
	-30	35.58 (10.11)	19.22 (25.77)	35.00 (9.95)	20.29 (27.20)
	-35	29.60 (8.41)	18.05 (24.21)	29.11 (8.27)	18.93 (25.38)
	-40	24.31 (6.91)	16.79 (22.52)	23.82 (6.77)	17.57 (23.56)
	-45	19.70 (5.60)	15.43 (20.69)	19.31 (5.49)	16.11 (21.61)
Refrigerant		R-134a			
276-42	-25	30.21 (8.58)	14.27 (19.13)	29.53 (8.39)	15.04 (20.17)
	-30	24.30 (6.91)	13.30 (17.83)	23.82 (6.77)	13.88 (18.61)
	-35	19.27 (5.47)	12.23 (16.40)	18.78 (5.34)	12.81 (17.18)

SPECIFICATIONS

DESCRIPTION	F-272	F-274	F-276	F-276-42
NUMBER OF CYLINDERS	2	4	6	4 LS/2 HS
RATED (RPM)	1450	1450	1450	1450
MAXIMUM (RPM)	1800	1800	1800	1800
BORE & STROKE(INCH) (MM)	3 1/4X2 3/4 82.55X69.85	3 1/4X2 3/4 82.55X69.85	3 1/4X2 3/4 82.55X69.85	3 1/4X2 3/4 82.55X69.85
SWEPT VOLUME CFM(M3/HR)	38.25 (65)	76.5 (130)	114.75 (195)	76.5 (130)
SUCTION CONNECTION (INCH) (MM)	2 (50)	3 (80)	3 (80)	3 (80) & 2 (50)
DISCHARGE CONNECTION (INCH) (MM)	1 1/2 (40)	2 (50)	2 (50)	2 (50) & 1 1/2 (40)
UNIT WEIGHT LESS MOTOR (LBS) (KG)	441 (200)	661 (300)	661 (300)	771 (350)
OIL CHARGE (GALLONS) (LTRS)	4.3 (16)	5.3 (20)	5.3 (20)	5.3 (20)
STANDARD STEPS(%) OF UNLOADING	0	50/100	33/66/100	50/100



Dimensions

Model	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Weight (Kg)
F 272	1813	1427	1233	856	923	1175	750
F 274	1813	1656	1233	856	923	1175	1020
F 276	1813	1964	1233	856	961	1175	1262
F 276-42	1813	1752	1233	856	863	1175	1368

NOTE: Contact the nearest branch for specialised customization and rack units. Specifications and data about the compressor can be changed without prior notice.

PERFORMANCE RATING CHART @ 1450 RPM

Model	Temp (°C)	35 °C Condensing Temperature		40 °C Condensing Temperature	
		Capacity kW (TR)	Ab. Power kW (BHP)	Capacity kW (TR)	Ab. Power kW (BHP)
Refrigerant		Ammonia NH3			
272	5	75.15 (21.36)	11.48 (15.39)	71.27 (20.25)	12.93 (17.33)
	0	59.41 (16.88)	11.27 (15.12)	56.05 (15.93)	12.31 (16.50)
	-5	46.60 (13.24)	10.75 (14.42)	43.56 (12.38)	11.58 (15.53)
	-10	35.53 (10.10)	9.97 (13.37)	32.82 (9.33)	10.55 (14.14)
	-15	26.46 (7.52)	9.01 (12.08)	24.07 (6.84)	9.34 (12.52)
	-20	18.96 (5.39)	7.91 (10.61)	16.88 (4.80)	8.04 (10.78)
	274	5	150.67 (42.82)	21.99 (29.49)	143.09 (40.66)
0		119.19 (33.87)	21.58 (28.43)	112.45 (31.96)	23.55 (31.58)
-5		93.50 (26.57)	20.54 (27.54)	87.50 (24.86)	22.10 (29.63)
-10		71.17 (20.23)	19.09 (25.60)	65.84 (18.71)	20.12 (26.99)
-15		53.09 (15.09)	17.22 (23.09)	48.39 (13.75)	17.84 (23.93)
-20		38.15 (10.84)	15.15 (20.31)	33.86 (9.62)	15.35 (20.59)
276		5	225.477 (64.08)	34.44 (46.17)	213.81 (60.79)
	0	178.23 (50.67)	33.81 (45.36)	168.15 (47.81)	36.93 (49.52)
	-5	139.8 (39.75)	32.25 (43.26)	130.68 (37.15)	34.74 (46.59)
	-10	106.59 (30.30)	29.91 (40.11)	98.46 (27.99)	31.65 (42.44)
	-15	79.38 (22.57)	27.03 (36.24)	72.21 (20.53)	28.02 (37.57)
	-20	56.88 (16.17)	23.73 (31.83)	50.64 (14.39)	24.12 (32.34)
	Refrigerant		R-290 (Propane)		
272	5	57.34 (16.29)	10.44 (14.01)	53.58 (15.23)	11.48 (15.39)
	0	47.42 (13.47)	10.29 (13.80)	44.08 (12.53)	11.07 (14.84)
	-5	38.75 (11.01)	9.89 (13.26)	35.82 (10.18)	10.44 (14.01)
	-10	31.07 (8.83)	9.30 (12.47)	28.48 (8.19)	9.71 (13.02)
	-15	24.53 (6.97)	8.56 (11.48)	22.24(6.32)	8.80 (11.80)
	-20	18.91 (5.38)	7.69 (10.32)	16.84 (4.78)	7.77 (10.41)
	274	5	115.04 (32.69)	20.02 (26.85)	107.50 (30.55)
0		95.13 (27.03)	19.71 (26.43)	88.43 (25.13)	21.16 (28.38)
-5		77.74 (22.09)	18.88 (25.32)	71.87 (20.42)	20.02 (26.85)
-10		62.34 (17.72)	17.74 (23.79)	57.13 (16.23)	18.57 (24.90)
-15		49.21 (13.98)	16.39 (21.98)	44.62 (12.68)	16.80 (22.54)
-20		37.95 (10.78)	14.73 (19.75)	33.78 (9.60)	14.83 (19.89)
276		5	172.02(48.91)	31.32(42.00)	160.74(45.70)
	0	142.26(40.45)	30.87(41.39)	132.24(37.60)	33.21(44.53)
	-5	116.25(33.05)	29.67(39.78)	107.46(30.55)	31.32(42.00)
	-10	93.21(26.5)	27.9(37.41)	85.44(24.29)	29.13(39.06)
	-15	73.59(20.92)	25.68(34.03)	66.72(18.97)	26.4(35.40)
	-20	56.73(16.13)	23.07(30.93)	50.52(14.36)	23.31(31.25)
	Refrigerant		R-134a		
272	5	43.98 (12.50)	8.16 (10.94)	40.63 (11.54)	8.67 (11.62)
	0	34.97 (9.94)	7.72 (10.36)	32.04 (9.10)	8.07 (10.82)
	-5	27.22 (7.74)	7.15 (9.58)	24.71 (7.02)	7.33 (9.83)
	-10	20.73 (5.89)	6.45 (8.65)	18.44 (5.24)	6.50 (8.72)
	-15	15.32 (4.35)	5.66 (7.59)	13.34 (3.79)	5.58 (7.49)
	-20	10.73 (3.05)	4.80 (6.43)	9.07 (2.58)	4.61 (6.18)
	274	5	88.33 (25.10)	16.39 (21.98)	81.50 (23.16)
0		70.06 (19.91)	15.46 (20.73)	64.17 (18.24)	16.18 (21.70)
-5		54.72 (15.55)	14.32 (19.20)	49.57 (14.09)	14.73 (19.75)
-10		41.49 (11.79)	12.97 (17.39)	37.00 (10.51)	13.07 (17.53)
-15		30.62 (8.70)	11.31 (15.16)	26.76 (7.60)	11.20 (15.02)
-20		21.53 (6.12)	9.63 (12.91)	18.19 (5.17)	9.24 (12.39)
276		5	131.94(37.5)	24.48(32.82)	121.89(34.65)
	0	104.91(29.83)	23.16(31.05)	96.12(27.33)	24.21(32.46)
	-5	81.66(23.21)	21.45(28.76)	74.13(21.07)	21.99(29.48)
	-10	62.19(17.68)	19.35(25.94)	55.32(15.72)	19.5(26.14)
	-15	45.96(13.06)	16.98(22.77)	40.02(11.37)	16.74(22.14)
	-20	32.19(9.15)	14.4(19.31)	27.21(7.73)	13.83(18.54)