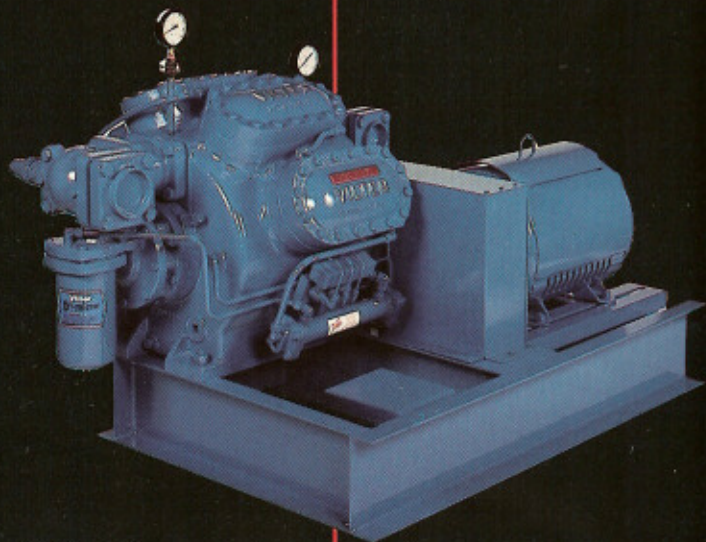
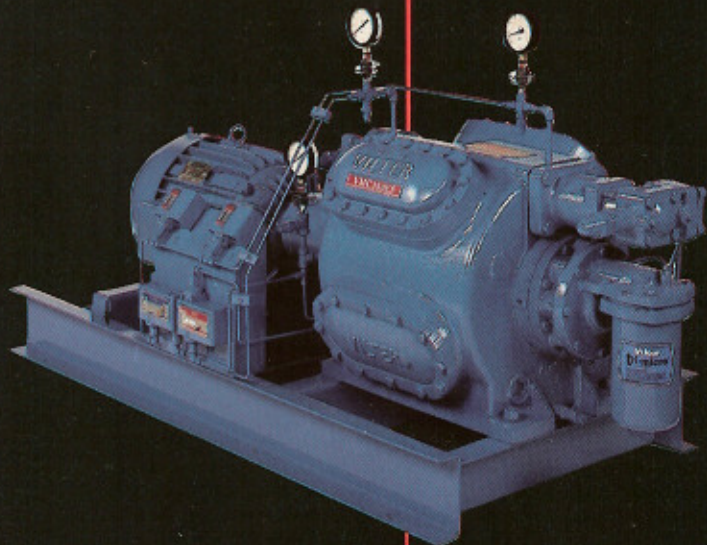
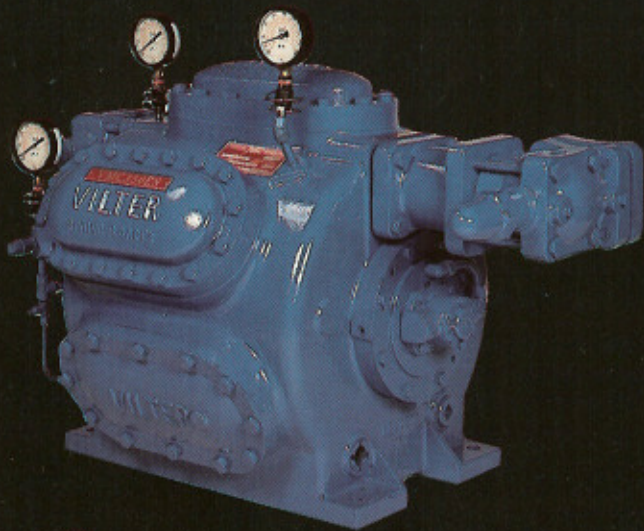


Vilter®

VMC® 350ES™ **Compressors and Compressor Units**



**For Air Conditioning,
Refrigeration and
Heat Pump Applications**

The Vilter 350ES. Exceptional value in an op

Industrial Performance At A Surprisingly Low Price

Now there's an open-type, Vilter reciprocating compressor for industrial and commercial halocarbon systems whose performance won't surprise you, since it's a Vilter, but whose price will. The Vilter VMC® 350ES™. This compressor was designed to provide industrial performance at a price comparable to many commercial-type refrigeration and air conditioning compressors on the market today.

The 350ES has a longer piston stroke (3¹/₂") than its earlier Vilter 300 series counterparts, thereby producing 33% more capacity within the same compressor frame. It's available in six different cylinder sizes, each usable with any of the halocarbon refrigerants. And, with new manufacturing procedures and machine center improvements, the 350ES is extremely price competitive. All this adds up to a high capacity, high quality compressor that

provides an attractive compressor package and price to refrigeration and air conditioning users.

Ideal Compressor Choice For Many Applications

The 350ES is capable of operating at temperatures as low as -40°F. suction, and as high as 135°F. condensing. This allows the 350ES to be used in both low temperature jobs and also applications where high condensing temperatures are encountered. With a CFM range of 121-322, the 350ES can operate as a single stage or booster compressor. It can also operate as part of a condensing unit or a packaged system where one or more 350ES compressors are incorporated into a complete pre-packaged refrigeration, air conditioning or heat pump system.

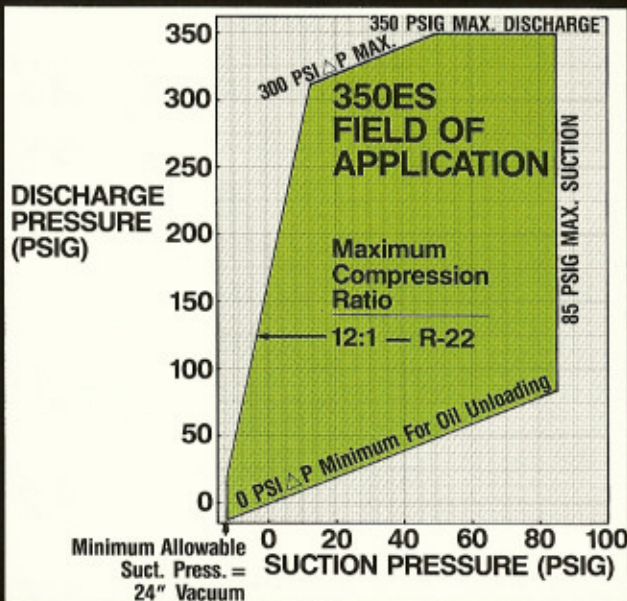
Practical applications for the 350ES include low and medium temperature refrigeration duties in the food, beverage, marine and chemical industries. Other applications include commercial and industrial air condition-

ing duties, such as comfort cooling hospitals, hotels, office buildings and even industrial complexes.

The 350ES Comes With Many Attractive Standard Features

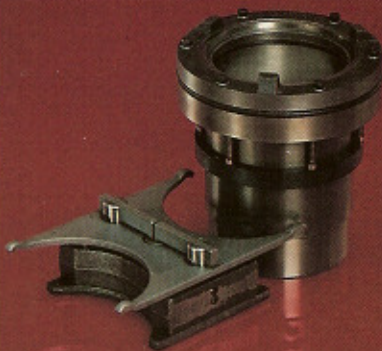
The 350ES is built with many of Vilter's high quality standard features including:

- Large bore (oversize valve area) for low gas velocity and low pressure drop across valves.
- Positive unloading with simplified mechanism for ease of service, if required. Capacity control and unloading system balances the compressor's capacity to varying load requirements, thereby obtaining optimum operating economies.
- Ease of access to parts subject to wear.



Cylinder Liner/Unloader Mechanism

The 350ES cylinder liners are made of high grade, cast alloy iron. These easily replaceable liners are held in place by the safety head springs. Suction valve seats on the liners are ground and lapped. The liners are sealed with "O" rings to prevent gas leakage from the discharge to the suction side. Unloader mechanism is actuated by oil pressure to provide various unloading increments.



Piston And Rings

Conformatic, cast aluminum pistons eliminate piston slap while maintaining a closer piston fit under all operating conditions while holding groove and ring wear to a minimum. Other features include increased bearing area in the skirt, better oil control and less blow-by. Rings consist of special close grained, heat treated cast iron for longer wear and minimum required run-in time.



Spring Loaded Safety Head

Vilter spring-loaded safety heads provide protection against liquid slugs, protecting owners from costly repairs and shutdowns. In event of slugging, springs compress and safety heads rise to provide extra volume, thereby avoiding the transmission of a heavy shock load to the compressor parts. Discharge valves and seats are lapped to ensure trouble-free performance while increasing efficiency.



en-type industrial reciprocating compressor

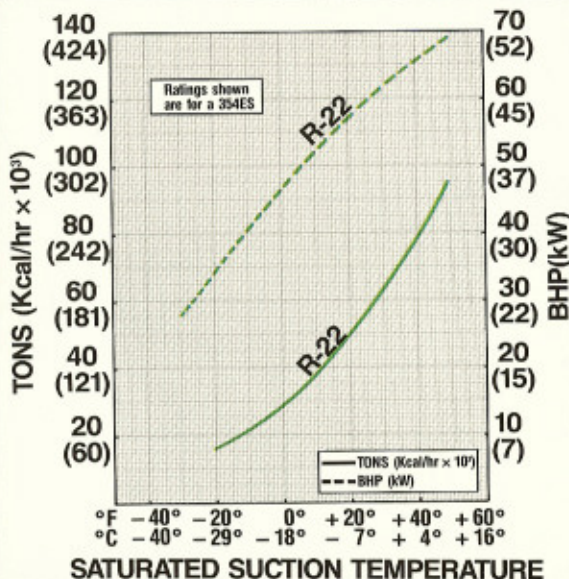
- All components freely interchangeable.
- Compressor frame cast of VILTRITE™ in Vilter's own foundry.

Additional VMC® 350ES features available for more severe duty include:

- Tri-Micro® full flow oil filter.
- Water-cooled cylinder covers.
- Water or refrigerant cooled oil cooler.

Top Value For The Dollar

Overall, the 350ES is a top performer with an economy price tag. It's been designed so that plant owners can get industrial cooling duty at a commercial market price. In addition, the 350ES carries one more outstanding feature that guarantees top performance and value for the dollar — the Vilter nameplate.



Nominal high-stage ratings for the 350ES are shown in this chart. The following conditions were used in establishing these ratings:

- 1800 RPM.
- 15° F. suction superheat.
- 15° F. subcooling.
- No belt losses.
- All ratings are based on 95° F. condensing temperature.
- Ratings are based on a 4-cylinder 350ES (354ES). For tonnage and approximate BHP figures of other 350ES models, use a direct proportion to the number of cylinders of the 354ES.

Engineering Specifications

(For the aid of Architects and Engineers)

The Contractor shall furnish and install where shown on the plans or specifications a Vilter 350ES reciprocating compressor(s) in accordance with the following specifications:

All materials shall be new and of the highest quality and shall be installed by the contractor in a neat workmanlike manner and shall conform with all state and local codes.

The compressor(s) shall be of the heavy duty, reciprocating multi-cylinder open type. The compressor shall have spring loaded safety heads, removable cylinder liners, dynamically and statically balanced heavy duty crankshaft and insert type connecting rod bearings.

Pistons are to be aluminum Conformatric type with rifle drilled aluminum connecting rods. Each piston shall be fitted with two compression rings and one oil ring.

Valves shall be of the non-flexing ring plate type and shall be ultrasonically inspected, surface treated and lapped to ensure extra long life. Discharge valves shall have ample portage to ensure low velocity gas passage and low impact value. Valve springs shall be shot peened to provide long life. All valve mechanisms to be so located that they can be inspected and replaced by removing the cylinder heads only. Cylinder sleeve liners shall be of the high grade cast iron alloy type. Valve seats are to be ground and lapped to form a perfect fit.

The compressor shall have forced feed, self-aligning positive displacement type oil pump. All oil entering the pump shall be strained to prevent foreign material from reaching the bearing surfaces. The compressor shall be equipped with internally piped oil lubricating system.

Compressor shall come complete with motor base, direct drive coupling (1750, 1450, 1150 or 960 RPM), coupling guard, or V-belt drive for _____ RPM, suction and discharge service valves, dual pressure control with manual reset on high pressure side, and oil pressure failure switch with manual reset. Compressor shall be equipped with a standard NEMA type open motor wound for _____ volts, _____ cycle, _____ phase current, (1750 or 1150) RPM. Compressor shall have a capacity of not less than _____ tons when operating with Refrigerant _____ at _____ °F. suction temperature and _____ °F. condensing temperature. Compressor(s) to be manufactured by Vilter Manufacturing Corporation, Milwaukee, Wisconsin, or equal as approved.

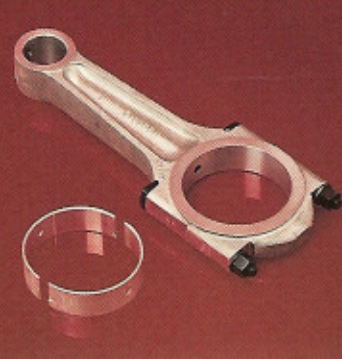
Crankshaft

The crankshaft is constructed of high tensile, ductile iron with integral counterweights. It is dynamically and statically balanced to assure minimum vibration. Bearing surfaces are carefully ground and polished to close tolerances and a mirror-like finish. In addition, the crankshaft is drilled for positive pressure lubrication of bearing surfaces.



Connecting Rod

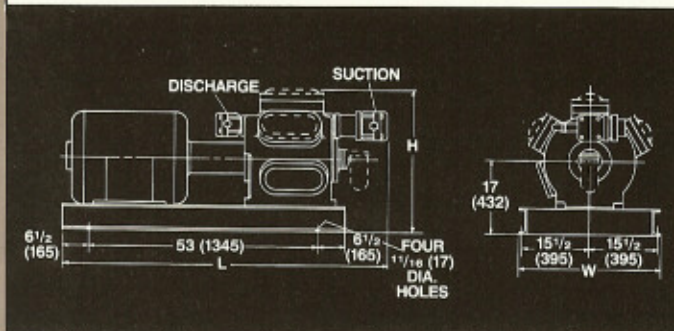
Connecting rods are made of a high alloy, light-weight aluminum heat treated for strength and durability. They are provided with replaceable precision-made bearing shells of steel backed babbitt and ample bearing area surfaces. Rods are rifle drilled to assure effective pressure lubrication of piston pin areas. Piston pins consist of case hardened carbon steel ground and polished for accurate fit.



Dimensions And Specifications

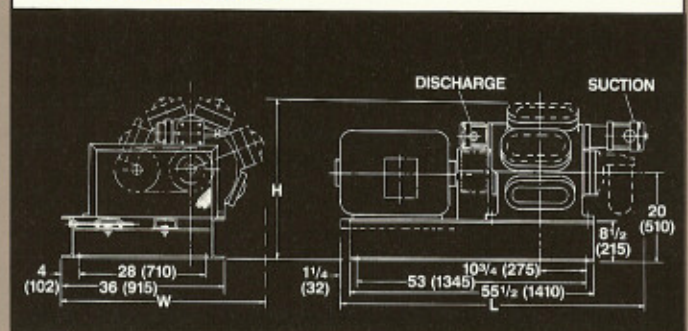
Dimensions shown are approximate and are not to be used for construction, for which certified prints will be furnished. Dimensions are in inches followed in parentheses by millimeters—in.(mm).

Direct Drive



	353ES	354ES	355ES	356ES	357ES	358ES
L	75 ^{3/8} (1915)	75 ^{3/4} (1924)	76 ^{7/16} (1942)	76 ^{7/16} (1942)	76 ^{7/16} (1942)	78 ^{3/16} (1986)
W	32 ^{7/8} (835)	32 ^{7/8} (835)	32 ^{7/8} (835)	32 ^{7/8} (835)	32 ^{7/8} (835)	32 ^{7/8} (835)
H*	30 ^{3/4} (781)	30 ^{3/4} (781)	33 ^{1/4} (845)	33 ^{1/4} (845)	32 ^{1/2} (826)	32 ^{1/2} (826)

V-Belt Drive



	353ES	354ES	355ES	356ES	357ES	358ES
L	66 ^{3/16} (1684)	66 ^{3/4} (1695)	67 ^{7/16} (1713)	67 ^{7/16} (1713)	67 ^{7/16} (1713)	67 ^{11/16} (1719)
W	41 ^{3/4} (1060)	41 ^{3/4} (1060)	44 ^{1/2} (1130)	44 ^{1/2} (1130)	44 ^{3/4} (1137)	44 ^{3/4} (1137)
H*	33 ^{3/4} (857)	33 ^{3/4} (857)	36 ^{1/4} (921)	36 ^{1/4} (921)	35 ^{1/2} (902)	35 ^{1/2} (902)

*Phantom lines indicate optional Tri-Micro[®] oil filter and water cooled heads.
For "H" dimension of units without water cooled heads, subtract 2" (51mm).

ITEM	353ES	354ES	355ES	356ES	357ES	358ES
Number of Cylinders	3	4	5	6	7	8
Maximum RPM	1800	1800	1800	1800	1800	1800
Bore & Stroke — In. (mm)	3 ^{3/4} × 3 ^{1/2} (95 × 89)	3 ^{3/4} × 3 ^{1/2} (95 × 89)	3 ^{3/4} × 3 ^{1/2} (95 × 89)	3 ^{3/4} × 3 ^{1/2} (95 × 89)	3 ^{3/4} × 3 ^{1/2} (95 × 89)	3 ^{3/4} × 3 ^{1/2} (95 × 89)
CFM @ Maximum RPM (m³/hr.)	121(205)	161(274)	201(342)	242(411)	282(479)	322(547)
Tons (Kcal/hr × 10³) Refrigeration @ 95° F. Condensing						
	R-22 (20° F.)					
	37(112)	49(148)	61(184)	73(221)	85(257)	98(296)
Suction Connection — In.(mm)	2 ^{5/8} (67)	3 ^{1/8} (79)	3 ^{5/8} (92)	3 ^{5/8} (92)	3 ^{5/8} (92)	4 ^{1/8} (105)
Discharge Connection — In.(mm)	2 ^{1/8} (54)	2 ^{1/8} (54)	2 ^{5/8} (67)	2 ^{5/8} (67)	3 ^{1/8} (79)	3 ^{1/8} (79)
Unit Weight Less Motor — Lbs.(Kg.)	1500(680)	1500(680)	1600(726)	1600(726)	1700(771)	1700(771)
Oil Charge — Gallons (Liters)	3 ^{1/2} (13)	3 ^{1/2} (13)	3 ^{1/2} (13)	3 ^{1/2} (13)	3 ^{1/2} (13)	3 ^{1/2} (13)
Standard Steps of Unloading (%)	33	50	40/60	33/66	29/57	25/50/75
Optional Steps of Unloading (%)	33/66	25/50/75	20/40/60	17/33/50/66	14/29/43/57	12/25/37/50/62/75
Maximum Discharge Temp. — °F.(°C)	300(149)	300(149)	300(149)	300(149)	300(149)	300(149)
Crankcase Oil Temp. Range — °F.(°C)	100-150 (38-66)	100-150 (38-66)	100-150 (38-66)	100-150 (38-66)	100-150 (38-66)	100-150 (38-66)

Vilter reserves the right to make changes in design and specifications without notice.

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