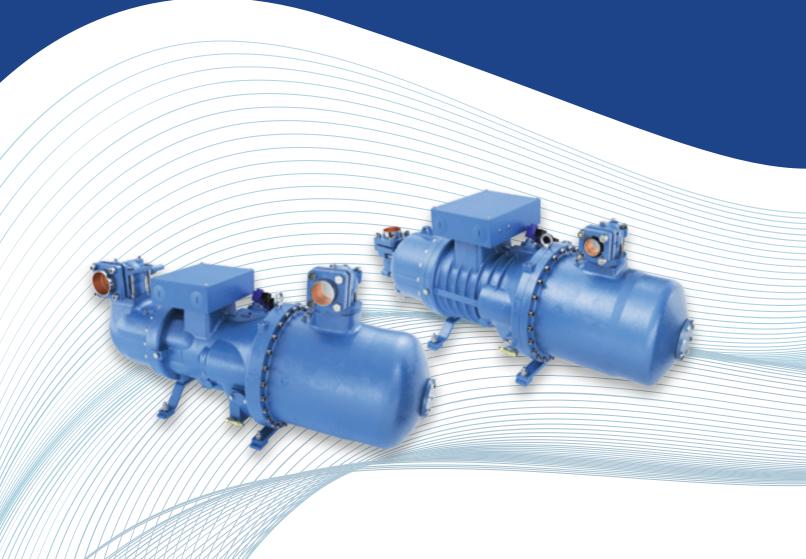
# SHITEG

# ES3 & RS3 SERIES

Semi-hermetic Compact Screw Compressors



MADE IN ITALY





### ADVANCED COMPRESSOR TECHNOLOGIES

The SRMTec brand represents the most complete range of screw compressors for commercial and industrial applications, straight from Europe's newest manufacturing facilities.

Our technologically innovative solutions are backed by expert support on every continent worldwide.





MADE IN ITALY

New production facility in Italy





Continuous Innovation

New production facility in Italy







# **MODEL DESIGNATION**

		RS3-	Н	140-	L	4	Н
RS3-	= Refrigerant Screw Compressor	<b>'</b>					
Н	= Motor size	,					
	L = small motor size;						
	H = large motor size.						
140	= Nominal power [Hp]			_			
L	= Accessories voltage						
	L = Electrical accessories 220V AC 50/60Hz;						
	M = Electrical accessories 110V AC 50/60Hz;						
	Y = Electrical accessories 24V AC 50/60Hz;						
	U = Electrical accessories UL approved 220V AC 50/60Hz						
	(only for S series);						
	V = Electrical accessories UL approved 110V AC 50/60Hz						
	(only for S series						
4	= Partial load control (0/4/Z)						
	0 = without steps capacity control;						
	4 = 4 steps capacity control (100-75-50% - minimum step)						
	made with 3 solenoid valves, only for S series;						
	Z = Infinite capacity control (from minimum capacity to						
	100% or from 50 to 100%), only for S series;						
Н	= High compression ratio version (if required)						

								-
		ES3-	Н	140-	L	4	Н	
ES3-	= Efficient Screw Compressor	•						
Н	= motor size							
	H = full size							
	L = small size							
140	= Nominal power [Hp]			_				
L	= Accessories voltage							
	L = Electrical accessories 220V AC 50/60Hz;							
	M = Electrical accessories 110V AC 50/60Hz;							
	Y = Electrical accessories 24V AC 50/60Hz;							
	U = Electrical accessories UL approved 220V AC 50/60Hz							
	(only for S series);							
	V = Electrical accessories UL approved 110V AC 50/60Hz							
	(only for S series							
4	= Partial load control (0/4/Z)							
	0 = without steps capacity control;							
	4 = 4 steps capacity control (100-75-50% - minimum step)							
	made with 3 solenoid valves, only for S series;							
	Z = Infinite capacity control (from minimum capacity to							
	100% or from 50 to 100%), only for S series;							
Н	= High compression ratio version (if required)							



# **INTRODUCTION**

In the air conditioning field,together with compressor reliability and availability,attention toward other factors such as efficiency,noiseless,compactness and the simplicity of installation and maintenance have spread the compact screw compressor technology to all markets.

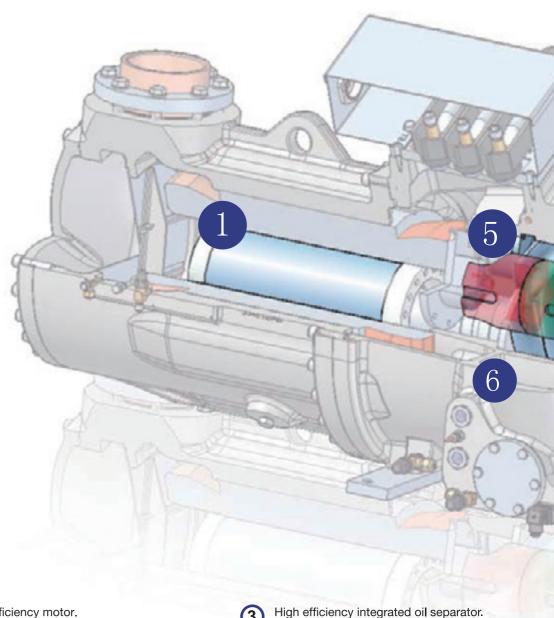
SRMTEC double screw compressors dedicated to air conditioning are:

RS3 is the name of the series dedicated to the use of refrigerants R22 and non-chlorinated R407C,R404A, R507,R134a.

ES3 is the name of the series dedicated to the use of R134a.



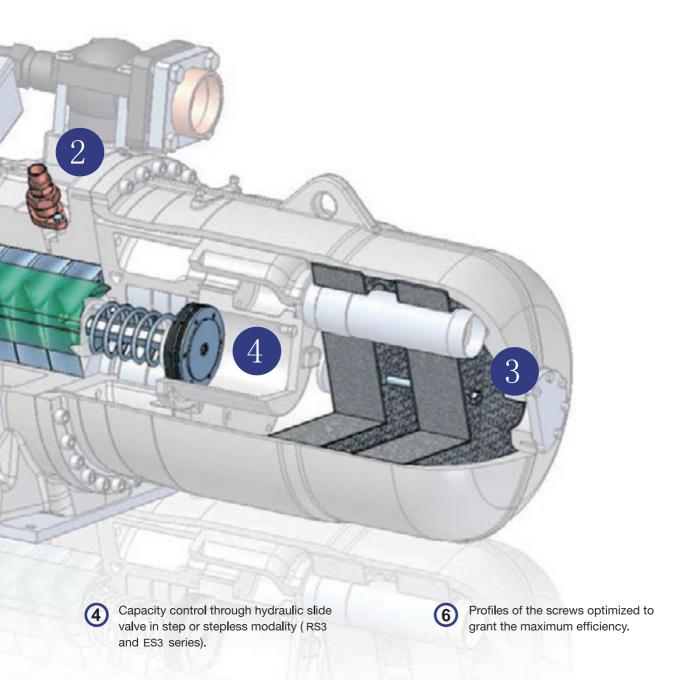
### **ES3 Series RS3 Series**



High efficiency motor.

- High efficiency integrated oil separator.
- Intermediate port to the compression area for economizer or liquid injection.





For the biggest sizes is available the adjustable built-in volumetric ratio device.



# **TECHNICAL DATA**

МС	DEL	ES3			070	080	090	100
Dis	place	ement at 50/60 [Hz]		m <sup>3</sup> /h	270/324	307/368	344/413	380/456
We	ight			Kg	510	518	532	538
Oil	Oil charge			dm <sup>3</sup>	11	11	11	11
Cra	Crankcase heater							
Dis	char	ge line, internal Ø/Pipe size		mm inches	54.1/ 2- 1/8"	54.1/ 2- 1/8"	54.1/ 2- 1/8"	67.0/ 2- 5/8"
Suc	ction	line, internal Ø/Pipe size		mm inches	80.0/ 3- 1/8"	80.0/ 3- 1/8"	92.5/ 3- 5/8"	92.5/ 3- 5/8"
Ca	pacit	y control steps						
Pro	otecti	on devices						
Luk	orica	nt						
Sta	ındar	d motor <sup>(1)</sup>						
			LRA Y	А	138	159	193	254
	<u>%</u>	Starting current	LRA Δ	А	422	459	580	770
	ES3(W)	Max running current	FLA	А	107	111	123	131
	S)		LRA Y	А	159	193	254	254
\damped	ES3(	Starting current	LRA Δ	А	459	580	770	770
Y / A	ES3(L)/ES3(S)	Max running current	FLA	А	118	132	148	156
	Starting current	Charting	LRA Y	А	_	254	254	-
		Starting current	LRA Δ	А	_	770	770	-
	Max running current		FLA	А	-	142	160	-

<sup>(1)</sup> Voltage tolerance  $\pm$  10%



	110	120	140	160	180	210	220	240	270	300
	113/496	480/576	560/672	640/768	720/864	805/966	850/1020	910/1092	1000/1200	1100/1320
	660	670	680	930	940	950	980	1330	1350	1390
	17	17	17	23	23	23	23	25	25	25
0W-	-230V-50/	60 [Hz]				275W-2	30V-50/60	[Hz]		
	80.0/ 3- 1/8"	105.5/ 4- 1/8"	105.5/ 4- 1/8"	105.5/ 4- 1/8"						
	105.5/ 4- 1/8"	134.8/Ф133	134.8/Ф133	134.8/Ф133						

ES3: Step: 100,75,50%, Minimum. (Stepless: 100%..... Minimum. or 100.....50% on request)

### INT69 RCY

CPI Solest 170 (Please contact RefComp if you have any special requirements)

### 400/3/50 [Hz] - 460/3/60 [Hz]

224	280	280	354	374	453	543	551	703	791
693	842	842	1064	1155	1333	1645	1667	2109	2390
156	174	199	229	254	266	276	330	367	402
318	361	361	374	453	543	595	703	783	876
953	1095	1095	1155	1333	1645	1802	2109	2348	2627
182	202	228	260	295	310	335	400	435	490
361	403	403	453	543	595	_	783	876	1062
1095	1208	1208	1333	1645	1802	_	2348	2627	3186
203	230	263	299	341	366	_	446	501	569



# **TECHNICAL DATA**

Мос	del	RS3			040	050	060	070	080	
Disp	plac	ement at 50/60 [Hz]		[m³/h]	118/ 142	150/ 180	175/ 210	205/ 246	237/ 284	
Weight				[Kg] <sup>(1)</sup>	325 (300)	330 (305)	335 (310)	510	515	
Oil charge				[dm³] <sup>(1)</sup>	6 (6,5)	6 (6,5)	6 (6,5)	7	7	
Cra	Crankcase heater						20	0W - 230V -	- 50/60 [Hz]	l
Discharge line, internal Ø/Pipe size				[inches / mm]	42.2/ 1- 5/8"	42.2/ 1- 5/8"	42.2/ 1- 5/8"	54.1/ 2- 1/8"	54.1/ 2- 1/8"	
Suc	ctio	n line, internal Ø/Pipe size		[inches / mm]	54.1/ 2- 1/8"	54.1/ 2- 1/8"	54.1/ 2- 1/8"	67.0/ 2- 5/8"	67.0/ 2- 5/8"	
Cap	oaci	ty control steps								
Pro	tect	tion devices								
Lub	orica	ant								
Standard motor <sup>(2)</sup>										
		a	LRA Y	[A]	109	131	134	139	159	
Starting current  Max running current	Starting current	LRA Δ	[A]	331	398	406	422	459		
	Max running current	FLA	[A]	70	82	86	105	115		

<sup>(1)</sup> Data referred to RS3 models



<sup>(2)</sup> Voltage tolerance ±10%

100	110	120	140	160	180	210	220	240	270	300	340	390
286/ 343	318/ 382	341/ 409	402/ 482	445/ 534	510/ 612	562/ 674	600/ 720	700/ 840	860/ 1032	910/ 1092	1000/ 1200	1100/ 1320
615	590	625	730	740	775	1010	1030	1020	980	1400	1400	1400
10	10	10	14	14	16	19	19	20	23	25	25	25
						2	75W - 230\	V - 50/60 [H	lz]			
54.1/ 2- 1/8"	54.1/ 2- 1/8"	54.1/ 2- 1/8"	80.0/ 3- 1/8"	105.5/ 4-1/8"	105.5/ 4-1/8"	105.5/ 4-1/8"						
00.0	80.0	80.0	92.5/	92.5/	92.5/	105.5/	105.5/	105.5/	105.5/	134.8/Ф133	134.8/Ф133	134.8/Ф133
80.0 3- 1/8"	3- 1/8"	3- 1/8"	3- 5/8"	3- 5/8"	3- 5/8"	4- 1/8"	4- 1/8"	4- 1/8"	4- 1/8"			

### INT69 RCY

### RS3-H:5GS

### 400/3/50 [Hz] - 460/3/60 [Hz]

193	254	254	276	354	374	453	543	543	595	783	876	1062
580	770	770	876	1155	1155	1333	1645	1645	1802	2348	2627	3186
140	160	170	195	210	230	265	290	320	418	475	540	590



### **BENEFITS**

### Efficiency

Built-in volumetric ratio could be chosen,in phase of order,between these values:

ES3 Vi = 2,2 (W)

dedicated to water condensing units with flooded evaporator and high efficency units

Vi = 2,6 (L)

dedicated to water condensing units

Vi = 3,2 (S)

dedicated to air condensing units

Vi = 4,4 (R)

dedicated to air condensing units and /or heat pump applications

RS3 Vi = 2,2 (W)

dedicated to water condensing units with flooded evaporator and high efficency units

Vi = 2,6 (S)

dedicated to air/water condensing units

Vi = 3,2 (H)

dedicated to air condensing units and heat pump applications

For the biggest sizes is available, on request, the adjustable built-in volumetric ratio device, using which, the Vi can be set between different values:

ES3 Vi = 2,6 - 2,2 (LW)

Vi = 3,2 - 2,6 (SL)

Vi = 4,4 - 3,2 (RS)

RS3 Vi = 2,6 - 2,2 (SW)

Vi = 3,2 - 2,6 (HS)

Choosing the right Vi the compression process can be adjusted to the actual compression ratio required, optimizing energy efficiency and allowing the highest EER.



### **DELIVERY**

### Extent of delivery:

 $Y/\Delta$  motor (400V-3-50Hz,460V-3-60Hz) with 6TC tempreture sensors, suction shut - off valve (only on RS3 series), discharge shut-off valve, integrated check valve, integrated check valve, integrated safety relief valve, flanged-on oil separator, oil sight glass, oil filter, oil charge. oil heater, 4steps capacity control (100-75-50-min%) or stepless (100...min%), motor protection module (220V-1-50/60Hz), electrical box with enclosure class IP54, nitrogen protective charge, kit oil cooling connection (only on RS3 -040/050/060; RS3 -100/110/240/270/300/340/390), vibration dampers kit.

### Accessories:

On request the following accessories can be delivered: special motors, suction shut-off valve, connection kit for liquid injection, connection kit for ECO port with shut-off valve, connection kit for oil cooling, oil level control, coversion kit for step-less capacity control, bridges for D.O.L starting.

#### Electrical accessories:

The electrical accessories of the compressor (motor protection module, oil heater, coils for solenoid valves) are suitable for 220V AC50/60 Hz in the standard delivery. Special voltages are available on request.

### Name plate data:

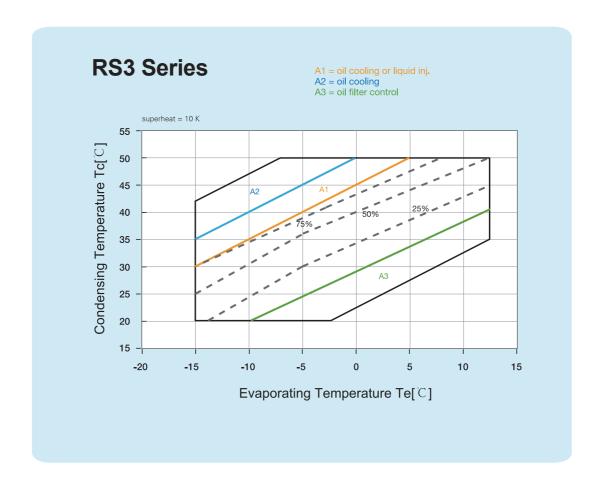
The main characteristics of the compressor are showed on a metal label:-serial number -compressor model -electric motor data -lubricant type (M=oil for R22,E= oil for HFC refrigerants)-displacement (m³/h)The lubricant brand name and type are showed on a sticker.

### Applications:

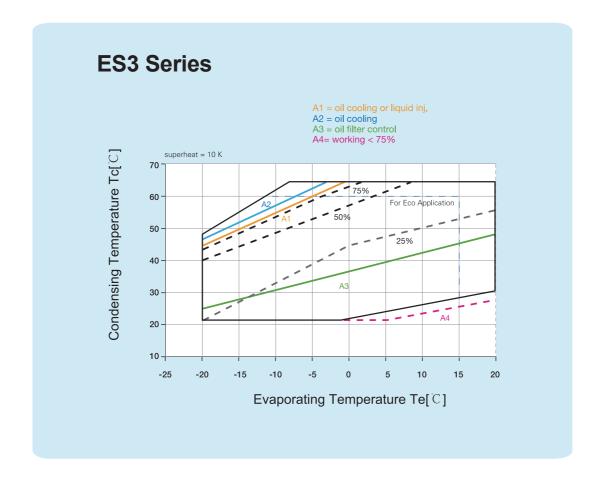
Hard working conditions (high condensing temperature and /or low evaporating temperature) require the additional cooling of the compressor. The application limits of each refrigerant show three differentiated zones:zone n°1 identifies working conditions where additional cooling can be performed via oil cooling or liquid injection. Working conditions inside zone n°2 strictly require the oil cooling, Zone n°3 strictly requires the oil filter pressor drop must be monitored. For the dimensioning of the additional cooling circuits and the selection of the required additional comonents you can consult **SRMTEC** screw compressors application and maintenance manual. The global efficiency of the refrigerant cycle (COP) can be further increased by the subcooling economiser circuit(ECO). For the working principle, the subcooling circuit, and the selection of the additional components you can consult srmtec screw compressors application and maintenance manual.



# **ENVELOPE**









### **PERFORMANCES ES3**

		ES3(W)						
	T e = 5	5 [°C]; Tc = 3	38 [°C]		T e = 2	2 [°C]; Tc = 4	c = 45 [°C]	
MODEL	Qo [kW]	Pa [kW]	COP	MODEL	Qo [kW]	Pa [kW]	COP	
ES3 (W)-070	198	39,8	4,97	ES3 (L)-070	148,5	44,5	3,34	
ES3 (W)-080	223,5	44,3	5,05	ES3 (L)-080	167,5	49,4	3,39	
ES3 (W)-090	250,4	49,6	5,05	ES3 (L)-090	187,6	55,3	3,39	
ES3 (W)-100	269,6	53,3	5,06	ES3 (L)-100	201,9	59,4	3,40	
ES3 (W)-110	298,6	55,6	5,37	ES3 (L)-110	244,6	67,1	3,65	
ES3 (W)-120	352,3	64,7	5,45	ES3 (L)-120	275,2	74,2	3,71	
ES3 (W)-140	403,3	74,7	5,40	ES3 (L)-140	317,4	84,7	3,75	
ES3 (W)-160	470,3	86,8	5,42	ES3 (L)-160	369,3	100,2	3,69	
ES3 (W)-180	535,6	98,3	5,45	ES3 (L)-180	418,1	112,2	3,73	
ES3 (W)-210	571,1	104,7	5,45	ES3 (L)-210	446,8	118,7	3,76	
ES3 (W)-220	604,3	110,9	5,45	ES3 (L)-220	471,7	126,5	3,73	
ES3 (W)-240	669,2	122,8	5,45	ES3 (L)-240	522,3	139,4	3,75	
ES3 (W)-270	755,7	138,7	5,45	ES3 (L)-270	589,8	155,8	3,79	
ES3 (W)-300	843,7	154,8	5,45	ES3 (L)-300	658,5	176,9	3,72	

			ES3(S)				ES3(R)	
		T e = 2	2 [°C]; Tc =	50 [°C]		T e = -	5 [°C]; Tc =	53 [°C]
MOI	DEL	Qo [kW]	Pa [kW]	COP	MODEL	Qo [kW]	Pa [kW]	COP
ES3(S	S)-070	139,7	47,7	2,93	ES3(R)-080	105,7	51,1	2,07
ES3(S	8)-080	158,3	53,1	2,98	ES3(R)-090	120,4	57	2,11
ES3(S	S)-090	178,2	59,6	2,99	ES3(R)-110	162,7	72,4	2,25
ES3(S	S)-100	192	64,2	2,99	ES3(R)-120	185,9	78,7	2,36
ES3(S	S)-110	231,3	72,3	3,2	ES3(R)-140	214,4	89,8	2,39
ES3(S	S)-120	260,3	80	3,25	ES3(R)-160	245,2	106,8	2,3
ES3(S	S)-140	300,2	91,2	3,29	ES3(R)-180	282,3	119	2,37
ES3(S	S)-160	349,2	108	3,23	ES3(R)-210	301,7	125,8	2,4
ES3(S	S)-180	395,3	120,9	3,27	ES3(R)-240	346,8	148,6	2,33
ES3(S	S)-210	422,5	127,9	3,3	ES3(R)-270	398,3	165,1	2,41
ES3(S	S)-220	446	136,4	3,27	ES3(R)-300	444,7	187,5	2,37
ES3(S	6)-240	493,9	150,2	3,29				
ES3(S	S)-270	557,7	167,8	3,32				
ES3(S	S)-300	622,7	190,6	3,27				

### KEY / LEGENDA

  $\begin{aligned} &(W) \ : \ Vi = 2,2 \\ &(L) \ : \ Vi = 2,6 \\ &(S) \ : \ Vi = 3,2 \\ &(R) \ : \ Vi = 4,4 \end{aligned}$ 



### **PERFORMANCES RS3**

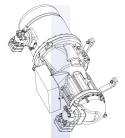
	RS3										
	Te=2	[°C]; Tc=	40[°C]	Te=2[	[°C]; Tc=	50[°C]					
MODEL	Qo [kW]	Pa [kW]	COP	Q <sub>0</sub> [kW]	Pa [kW]	COP					
RS3 - 040	113,8	28,7	3,97	95,7	35,5	2,7					
RS3 - 050	144,6	35,7	4,05	121,6	44,2	2,75					
RS3 - 060	158,7	37,6	4,22	137,8	45,6	3,02					
RS3 - 070	184	43,7	4,21	159,8	52,9	3,02					
RS3 - 080	212,8	50	4,26	184,7	60,5	3,05					
RS3 - 100	261,6	60,3	4,34	227,1	73,1	3,11					
RS3 - 110	291,1	67	4,34	252,7	81,1	3,12					
RS3 - 120	315,1	72,6	4,34	273,5	88	3,11					
RS3 - 140	375,3	85,4	4,39	325,8	103,5	3,15					
RS3 - 160	419,4	94,6	4,43	364,0	114,6	3,18					
RS3 - 180	463,5	105,7	4,39	410,6	128,7	3,19					
RS3 - 200	510,8	116,5	4,38	452,5	141,8	3,19					
RS3 - 220	545,3	124,4	4,38	483,1	151,4	3,19					
RS3 - 240	647,9	155,3	4,17	577	184,2	3,13					
RS3 - 270	744,4	180,2	4,13	638,9	223,2	2,86					
RS3 - 300	896,7	212,8	4,21	798,5	252,3	3,16					
RS3 - 340	1012,5	240,3	4,21	901,7	284,9	3,16					
RS3 - 390	1130,5	268,3	4,21	1006,8	318,1	3,17					

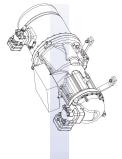
### KEY / LEGENDA

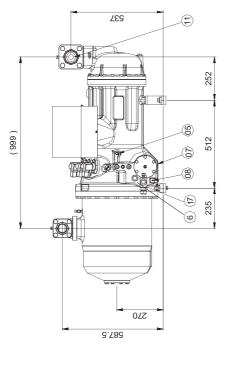
 $Q_0 = Cooling \ Capacity \ [kW] - Pa = Input \ Power \ \ [kW] - Te = Evaporating \ temperature \ \ [^{\circ}C, DEW] \\ Te = Condensing \ temperature \ \ [^{\circ}C, DEW] - Liquid \ subcooling \ 5K - Suction \ gas \ superheat \ 10K / 1K; \\ For produet improvement, the performance paranmeter refer to the latest software selection of SRMTEC .$ 

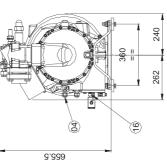


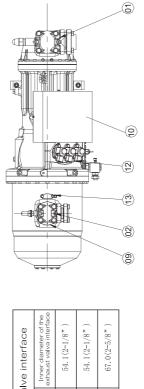


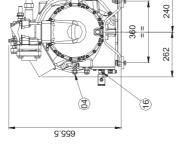


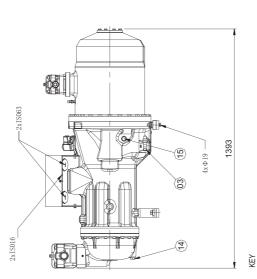












Innerdiameter of the suction valve interface

Compressor standard configuration

	ES3 070-08	ES3 090	ES3 100				
4.0il cooler connector 5/8 SAE-FLARE	5. Hydraulic fittings 1/4" SAE-FLARE 6. Mirror to inspect the oil level	7.0il filter 8.0il heater	9. Check valve 10. Juction box 11 fow presents connector 1/4" SAE-ETARE	13. Hign pressure connector 1/4" SAE-FLARE	14. Low pressure side discharge port 15. Spray liquid interface \$\phi 10/\text{Economic macchine}\$	interface φ22 (optional accssories) 16.0il temperature sensor 1/8" NPT 17.0il valve switch (optional)	

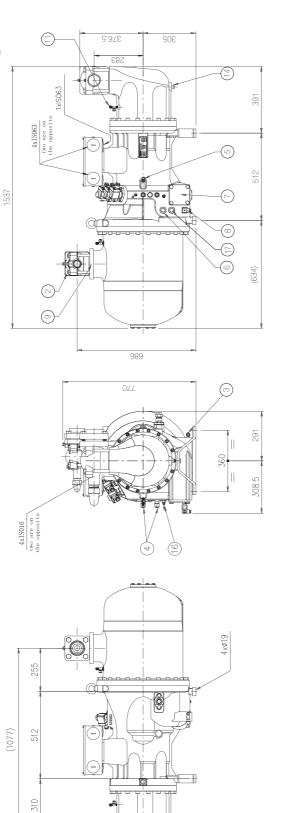
67.0(2-5/8")

54.1(2-1/8") 54.1(2-1/8")

80.0(3-1/8")

92.5(3-5/8") 92.5(3-5/8")





### ΚĒ

- 1. Suction shut-off valve (optional)
- 2. Exhaust gas shut-off valve
  3. Oiling / oil drain valve 3/8" SAE-FLARE
  4. Oil cooler connector 5/8" SAE-FLARE
  5. Hydraulic fittings 1/4" SAE-FLARE
  6. Mirror to inspect the oil level
  7. Oil filter
  8. Oil heater

Di=80.0 (3-1/8")

- - - 9. Check valve

- 10. Juction box 11. Low pressure connector 1/4" SAE-FLARE 12. Cooling capacity regulating solenoid valve 13. High pressure connector 1/4" SAE-FLARE 14. Low pressure side discharge port 15. Spray liquid interface \$\phi10\)Fconomic macchine
- interface φ28 (optional accssories) 16.0il temperature sensor 1/8" NPT 17.0il valve switch (optional)

Di=105.5 (4-1/8")

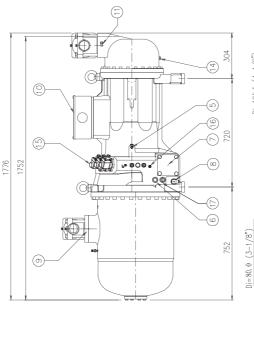
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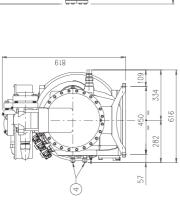
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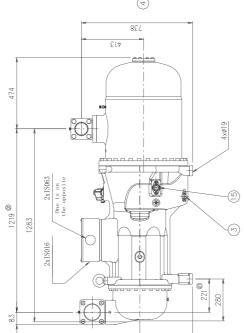
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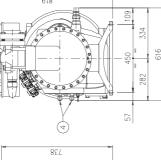








099





1. Suction shut-off valve (optional)

183

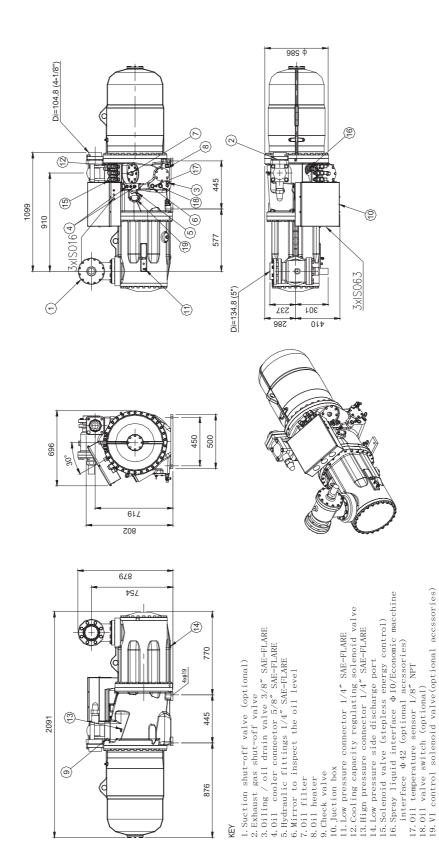
52

Di=105.5 (4-1/8")

2. Exerton solution valve (optional)
2. Exhaust gas shut-off valve
3. Oiling / oil drain valve 3/8" SAE-FLARE
4. Oil cooler connector 5/8" SAE-FLARE
5. Hydraulic fittings 1/4" SAE-FLARE
6. Mirror to inspect the oil level
7. Oil filter
8. Oil heater
9. Check valve
10. Juction box
11. Low pressure connector 1/4" SAE-FLARE
12. Cooling capacity regulating solenoid valve
13. Hign pressure connector 1/4" SAE-FLARE
14. Low pressure connector 1/4" SAE-FLARE
15. Spray liquid interface \$0.00 Fconomic macchine
interface \$0.00 Fconomic macchine
16. Oil temperature sensor 1/8" NPT
17. Oil valve switch (optional)



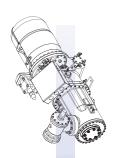


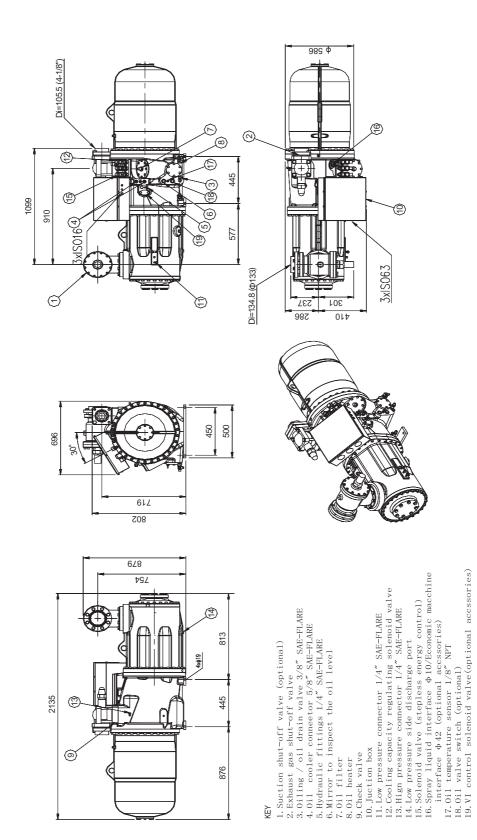


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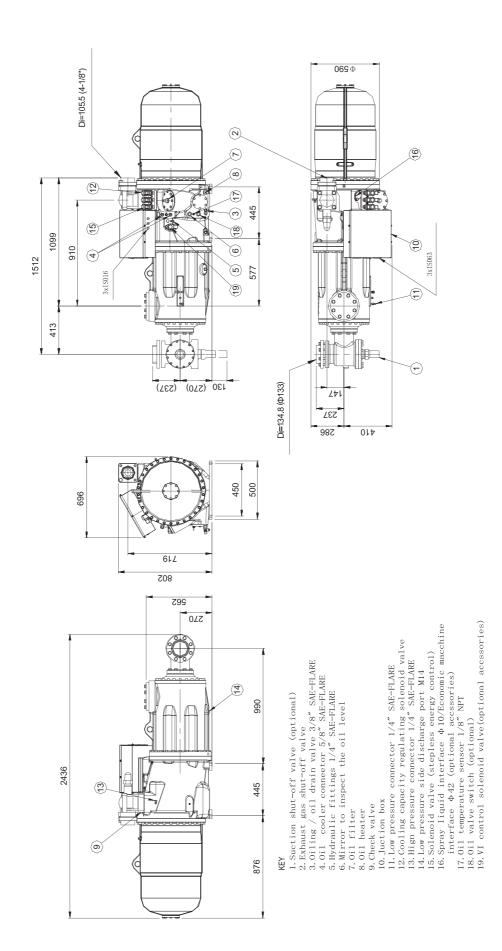


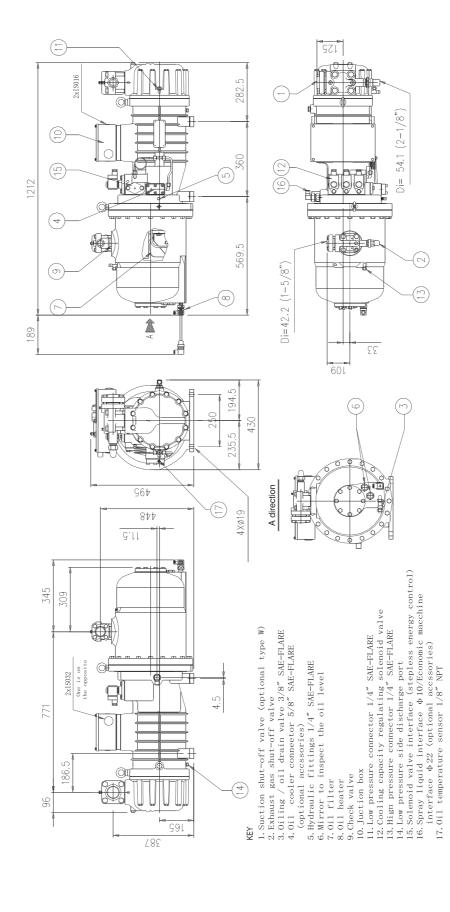


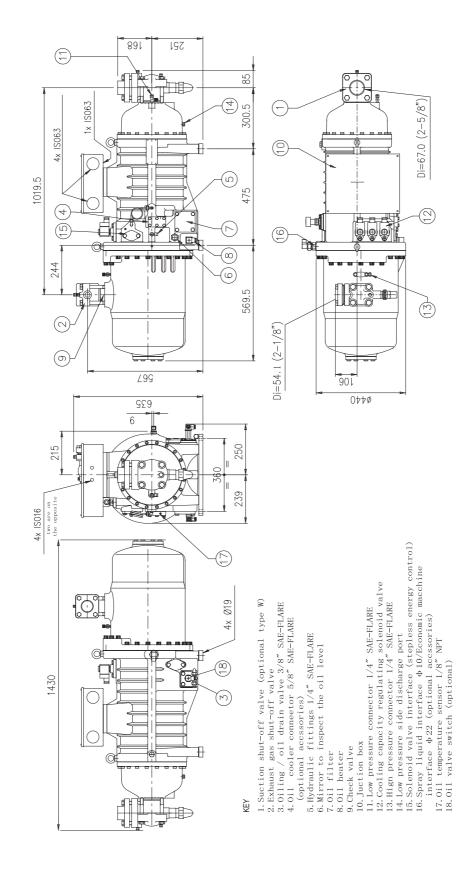


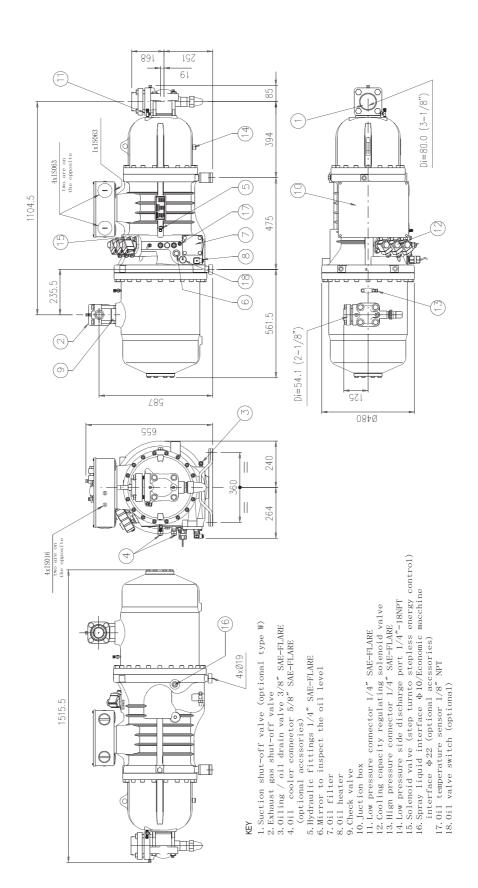
9/8

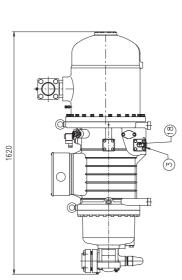


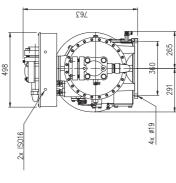


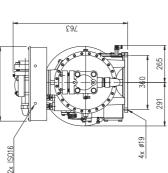


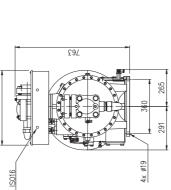












289

871

2x IS063

1150

245

082



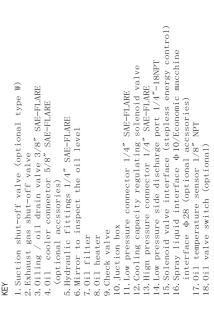
395

210

-00

(O)







Di=92.5 (3-5/8")

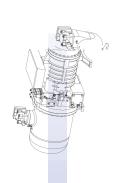
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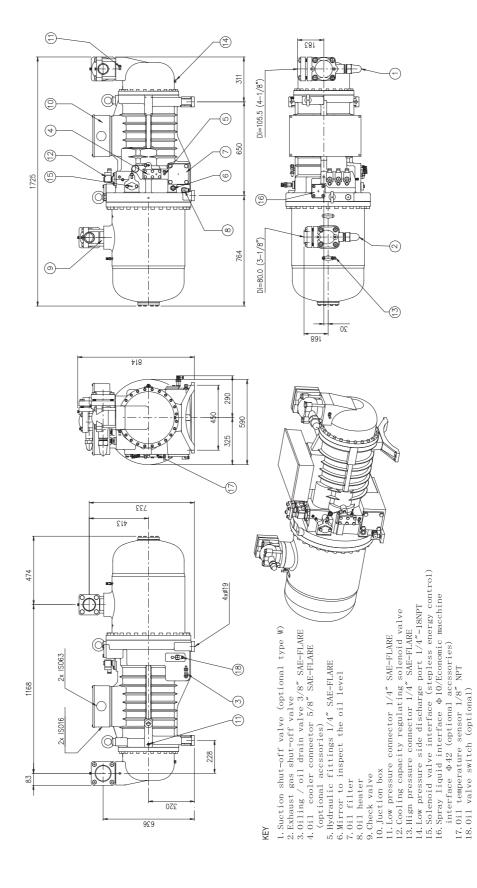
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(4)

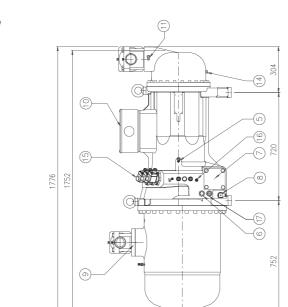
143

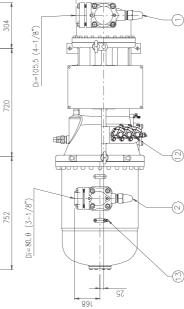




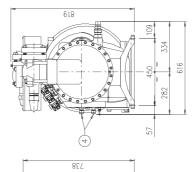


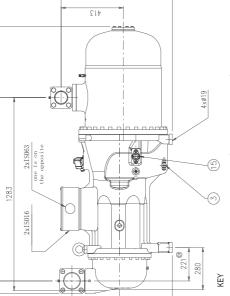






183





09ε

- 1. Suction shut-off valve (optional type W)
  2. Exhaust gas shut-off valve
  3. Oiling / oil drain valve 3/8" SAE-FLARE
  4. Oil cooler connector 5/8" SAE-FLARE
  5. Hydraulic fittings 1/4" SAE-FLARE
  6. Mirror to inspect the oil level

- 7.0il filter 8.0il heater 9.Check valve 10.Juction box
- 11. Low pressure connector 1/4" SAE-FLARE
  12. Cooling capacity regulating solenoid valve
  13. Hign pressure connector 1/4" SAE-FLARE
  14. Low pressure side discharge port 1/4"-18NPT
  15. Spray Liquid interface \$40/Economic macchine
  interface \$42/ (optional accssories)
  16.011 temperature sensor 1/8" NPT
  17.011 valve switch (optional)

474

1219 (0)



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