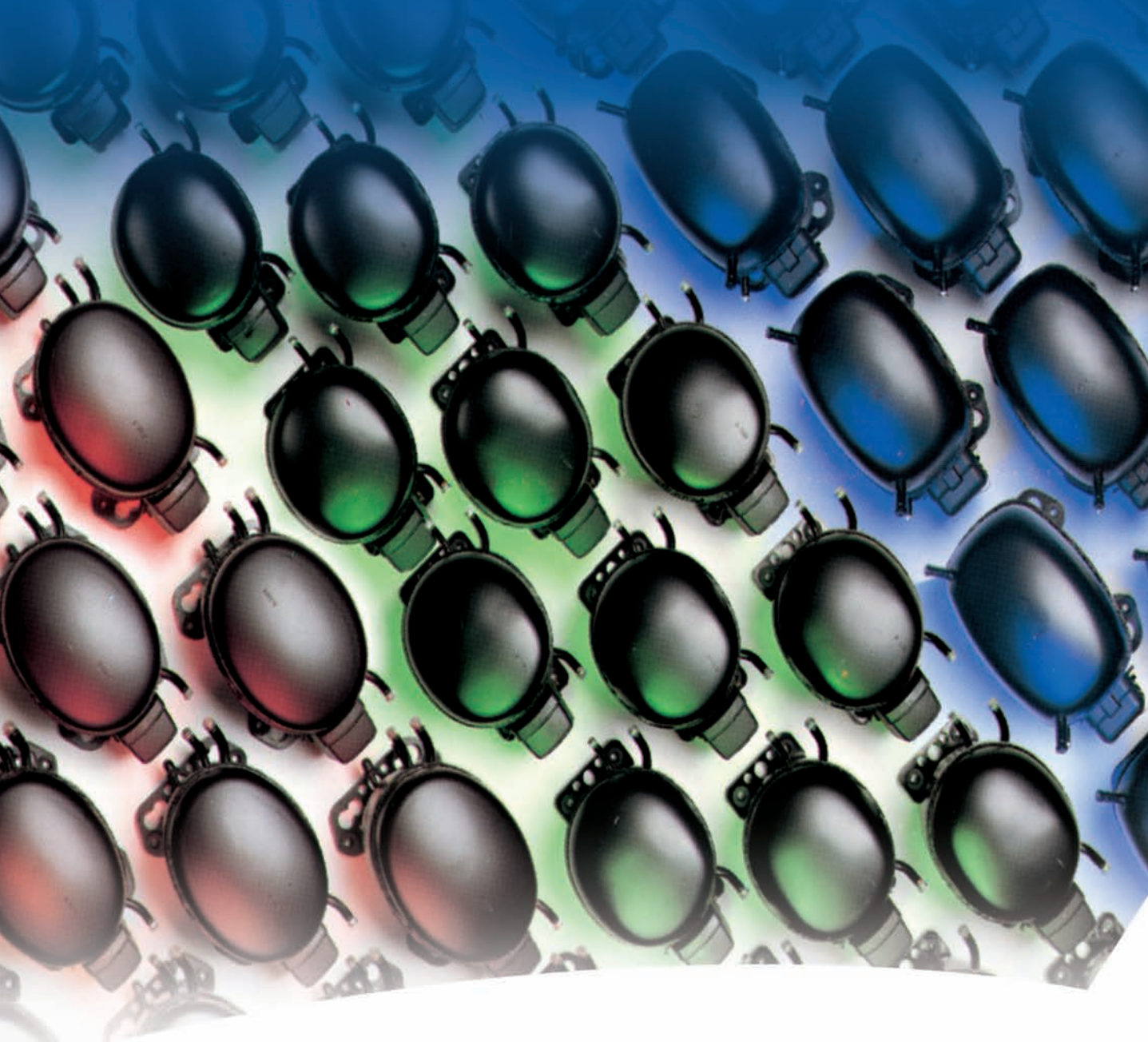


Danfoss

220 V Hermetic Compressors R12 • R22 • R502



REFRIGERATION AND
AIR CONDITIONING

Quick reference

Hermetic Compressors 220 V

Application	Compressor	Code numbers		Capacity [Watt]							Power consumption [Watt]		Displacement cm ³	
		Compressor	Compressor with oil cooling	Evaporating temperature [°C]							-25°C	5°C		
				-45	-35	-25	-15	-10	-5	5				15
R12 LBP	TL2A	102U2002			12	33	64	81	100			52		2.13
	TL2.5A	102U2003			20	45	80	100	122			62		2.61
	TL3A	102U2004			27	56	97	121	147			74		3.13
	TL4A	102U2005			39	73	120	148	178			91		3.86
	TL5A	102U2010			56	96	158	194	235			114		5.08
	NL6A	105F3607			73	127	204	255				138		6.1
	NL7A	105F3707			85	146	237	295				157		7.3
	FR10A	103U2904	103U2914		85	158	255	315				180		9.05
	FR11A	103U2104	103U2114		110	205	335	415				245		11.15
	SC12A	104L2660	104L2680		95	230	395	495	600			260		12.9
SC15A	104L2820	104L2810		130	275	485	600	725			305		15.3	
SC18A	104L2100			170	340	575	715	860			365		17.7	
SC21A	104L2300			220	400	660	820	980			455		20.95	
R12 LBP	TFS3AT	102U2083			32	60	98	120				80		3.13
	TFS4AT	102U2081			42	79	128	160				95		3.86
	TFS5AT	102U2080			62	104	175	215				125		5.08
	FF7.5AT	103U2750			65	132	220	280				147		6.93
	FF7.5AT		103U2760		65	132	220	280				147		6.93
	FF8.5AT	103U2850			77	152	255	315				169		7.95
	FF8.5AT		103U2860		77	152	255	315				169		7.95
FF10AT	103U2950			86	165	275	350				190		9.05	
R22 LBP	SC10C	104L2516		50	155	325	560	700	850			300		10.3
	SC12C	104L2674		95	220	415	680	840	1020			380		12.9
	SC15CM	104L2848		115	270	510	840	1050	1280			470		15.3
	SC18CM	104L2120		130	310	585	980	1230	1500			510		17.7
	SC10/10C *	104L4076		100	310	650	1120	1400	1700			600		2x10.3
	SC12/12C *	104L4077		190	440	830	1360	1680	2040			760		2x12.9
	SC15/15CM *	104L4079		230	540	1020	1680	2100	2560			940		2x15.3
SC18/18CM**	104L4081		260	620	1170	1960	2460	3000			1020		2x17.7	
R502 LBP	SC10C	104L2516		80	215	365	590	710	870			335		10.3
	SC12C	104L2674		110	270	470	770	950	1140			420		12.9
	SC15CM	104L2848		150	325	590	920	1120	1390			535		15.3
	SC18CM	104L2120		180	400	685	1080	1330	1600			580		17.7
	SC10/10C *	104L4076		160	230	730	1180	1420	1740			670		2x10.3
	SC12/12C *	104L4077		220	540	940	1540	1900	2280			840		2x12.9
	SC15/15CM *	104L4079		300	650	1180	1840	2240	2780			1070		2x15.3
SC18/18CM**	104L4081		360	800	1370	2160	2660	3200			1160		2x17.7	
R12 LBP HBP	TL2.5B	102U2021			20	45	80	102	126	182	248		112	2.61
	TL3B	102U2023			27	56	96	120	148	215	296		141	3.13
	TL4B	102U2016			39	73	116	145	182	264	364		157	3.86
	FR6B	103U2654			55	110	190	235	295	438	620		243	6.24
	FR7.5B	103U2754	103U2764		65	127	210	275	340	495	695		280	6.93
	FR8.5B	103U2854	103U2864		72	146	240	300	375	555	770		326	7.95
	FR10B	103U2954	103U2964		85	158	268	340	420	620	860		375	9.05
	FR11B	103U2154			110	205	340	420	520	758	1050		485	11.15
	SC10B	104L2510	104L2511		70	170	310	400	490	760	1080		390	10.3
	SC12B	104L2670	104L2671		95	230	410	520	630	950	1330		500	12.9
	SC15B	104L2830	104L2831		130	275	490	615	760	1090	1590		595	15.3
	SC18B	104L2110			170	340	575	715	870	1120	1820		720	17.7
	SC21B	104L2310			220	400	670	840	1010	1450	2080		730	20.95
	SC12/12B *	104L4072			190	460	820	1040	1260	1900	2660		1000	2x12.9
SC15/15B *	104L4073			260	550	980	1230	1520	2180	3180		1190	2x15.3	
SC18/18B **	104L4074			340	680	1150	1430	1740	2560	3640		1440	2x17.7	
SC21/21B **	104L4075			440	800	1340	1680	2020	2900	4160		1460	2x20.95	
R22 HBP	SC10D	104L2529	104L2517				510	655	835	1295	1895		545	10.3
	SC12D	104L2694	104L2684				650	840	1070	1615	2290		660	12.9
	SC15D	104L2859	104L2839				800	1045	1325	1975	2750		715	15.3
	SC10/10D *	104L4084					1020	1310	1670	2590	3790		1090	2x10.3
	SC12/12D **	104L4085					1300	1680	2140	3230	4580		1320	2x12.9
	SC15/15D **	104L4086					1600	2090	2650	3950	5500		1430	2x15.3
R12 HBP Heat pump compressors	FR7H		103U2763				215	280	355	520	770		260	6.93
	SC10H		104L2515				260	345	455	730	1060		350	10.3
	SC10HH		104L2514				260	345	455	730	1060		320	10.3
	SC15H		104L2836				455	610	765	1120	1560		5500	15.3
	SC15HH		104L2835				455	610	765	1120	1560		510	15.3

Testing conditions (CECOMAF)

Application	R12	R502 / R22
Condensing temperature	55°C	45°C
Ambient temperature	32°C	32°C
Suction gas temperature	32°C	32°C
Liquid temperature	55°C	45°C
220 V / 50 Hz		

Conversion of capacity

If a stated capacity is required at 32°C liquid temperature, multiply the capacity with one of the following factors.

R12:	From 55°C to 32°C liquid: 1.20
R22:	From 45°C to 32°C liquid: 1.11
R502:	From 45°C to 32°C liquid: 1.41

Conversion of units

1 Watt = 0.86 kcal/h
1 Watt = 3.41 Btu/h

Compressor cooling		Voltage and frequency		Electrical equipment					Compressor			
				LST		HST					LST / HST	
				PTC Starting device	Starting realy	Starting realy	Starting capacitor	Starting device			Cord relief	Cover
-32°C	-43°C											
S		1-6	103N0011					103N1010	103N2010	TL2A		
S		1	103N0011					103N1010	103N2010	TL2.5A		
S		1	103N0011		117U6007	117U5014		103N1010	103N2010	TL3A		
S		1	103N0011		117U6009	117U5014		103N1010	103N2010	TL4A		
S		1	103N0011		117U6004	117U5014		103N1010	103N2010	TL5A		
S		1	103N0011		117U6004	117U5015		103N1010	103N2010	NL6A		
S		1	103N0011		117U6000	117U5015		103N1010	103N2010	NL7A		
S O (F ₁)		1	103N0011		117U6001	117U5015		103N1010	103N2010	FR10A		
O F ₁		1	103N0011		117U6016	117U5015		103N1010	103N2010	FR11A		
O F ₁		1	103N0002		117U6002	117U5017		103N1004	103N2009	SC12A		
O F ₁		1	103N0002		117U6003	117U5017		103N1004	103N2009	SC15A		
F ₁		1			117U6005	117U5017		103N1004	103N2009	SC18A		
F ₁		1			117U6011	117U5017		103N1004	103N2009	SC21A		
S	S	3-5		117U4114				117U0317	117U1023	TFS3AT		
S	S	3-5		117U4109				117U0317	117U1023	TFS4AT		
S	S	4		117U4103				117U0317	117U1023	TF55AT		
S	F ₁	3-5		117U4116				117U0317	117U1023	FF7.5AT		
S(O F ₁)	O (F ₁)	3-5		117U4115				117U0317	117U1023	FF7.5AT		
S	F ₁	3-5		117U4118				117U0317	117U1023	FF8.5AT		
S(O F ₁)	O (F ₁)	3-5		117U4117				117U0317	117U1023	FF8.5AT		
F ₁	F ₁	3		117U4120				117U0317	117U1023	FF10AT		
F ₂		1			117U6003	117U5017		103N1004	103N2009	SC10C		
F ₂		1			117U6005	117U5017		103N1004	103N2009	SC12C		
F ₂		2			117U6019	117U5017		103N1004	103N2009	SC15CM		
F ₂		2					117-7012	103N1004	103N2009	SC18CM		
F ₂		1			117U6003	117U5017		103N1004	103N2009	SC10/10C *		
F ₂		1			117U6005	117U5017		103N1004	103N2009	SC12/12C *		
F ₂		2			117U6019	117U5017		103N1004	103N2009	SC15/15CM *		
F ₂		2					117-7012	103N1004	103N2009	SC18/18CM**		
F ₂		1			117U6003	117U5017		103N1004	103N2009	SC10C		
F ₂		1			117U6005	117U5017		103N1004	103N2009	SC12C		
F ₂		2			117U6019	117U5017		103N1004	103N2009	SC15CM		
F ₂		2					117-7012	103N1004	103N2009	SC18CM		
F ₂		1			117U6003	117U5017		103N1004	103N2009	SC10/10C *		
F ₂		1			117U6005	117U5017		103N1004	103N2009	SC12/12C *		
F ₂		2			117U6019	117U5017		103N1004	103N2009	SC15/15CM*		
F ₂		2					117-7012	103N1004	103N2009	SC18/18CM**		
S	S (F ₁)	1-6	103N0011		117U6007	117U5014		103N1010	103N2010	TL2.5B		
S	S (F ₁)	1-6	103N0011		117U6009	117U5014		103N1010	103N2010	TL3B		
S	S (F ₁)	1-6	103N0011		117U6004	117U5014		103N1010	103N2010	TL4B		
S	S (F ₁)	1-6	103N0011		117U6000	117U5015		103N1010	103N2010	FR6B		
SO (F ₁)	O (F ₁)	1-6	103N0011		117U6001	117U5015		103N1010	103N2010	FR7.5B		
SO (F ₁)	O (F ₁)	1-6	103N0011		117U6015	117U5015		103N1010	103N2010	FR8.5B		
O (F ₁)	O (F ₁)	1-6	103N0011		117U6010	117U5015		103N1010	103N2010	FR10B		
F ₁	F ₁	1	103N0011		117U6010	117U5015		103N1010	103N2010	FR11B		
O (F ₁)	O (F ₁)	1-6	103N0002		117U6002	117U5017		103N1004	103N2009	SC10B		
O (F ₁)	O (F ₁)	1-6	103N0002		117U6003	117U5017		103N1004	103N2009	SC12B		
O (F ₁)	O (F ₁)	1-6			117U6005	117U5017		103N1004	103N2009	SC15B		
F ₁	F ₁	1-6			117U6011	117U5017		103N1004	103N2009	SC18B		
F ₁	F ₁	1					117-7010	103N1004	103N2009	SC21B		
F ₁		1			117U6003	117U5017		103N1004	103N2009	SC12/12B *		
F ₁		1			117U6005	117U5017		103N1004	103N2009	SC15/15B *		
F ₁		1			117U6011	117U5017		103N1004	103N2009	SC18/18B **		
F ₁		1					117-7010	103N1004	103N2009	SC21/21B **		
F ₂		1			117U6005	117U5017		103N1004	103N2009	SC10D		
F ₂		2			117U6011	117U5017		103N1004	103N2009	SC12D		
F ₂		2					117-7010	103N1004	103N2009	SC15D		
F ₂		1			117U6005	117U5017		103N1004	103N2009	SC10/10D *		
F ₂		2			117U6011	117U5017		103N1004	103N2009	SC12/12D **		
F ₂		2					117-7010	103N1004	103N2009	SC15/15D **		
O F ₁	O F ₁	1			117U6015	117U5015		103N1010	103N2010	FR7H		
O F ₁	O F ₁	1			117U6002	117U5017		103N1004	103N2009	SC10H		
O F ₁	O F ₁	1					117-7011	103N1004	103N2009	SC10HH		
O F ₁	O F ₁	1			117U6005	117U5017		103N1004	103N2009	SC15H		
O F ₁	O F ₁	1					117-7011	103N1004	103N2009	SC15HH		

Compressor cooling

S = Static cooling normally sufficient
O = Oil cooling
F₁ = Fan cooling 1.5 m/s
(compressor compartment temperature equal to ambient temperature)
F₂ = Fan cooling 3.0 m/s necessary

For Twin compressors

Time delay relay:
* Service valve for 12 mm tube:
* Solder connector for 12 mm tube:
** Service valve for 16 mm tube:
** Solder connector for 16 mm tube:
Seal ring:

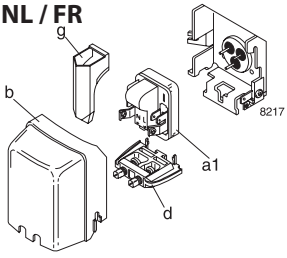
117N0001
118-7350
104B0584
118-7351
118-7405
118-3638

Voltages and frequencies

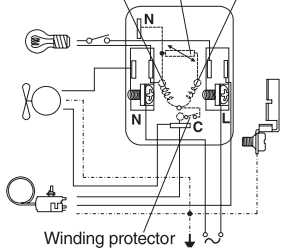
1 = 198-254 V, 50 Hz
2 = 198-242 V, 50 Hz
3 = 176-254 V, 50 Hz
4 = 176-242 V, 50 Hz
5 = 198-254 V, 60 Hz
6 = 198-254 V, 60 Hz, LBP

LST - RSIR

TL / NL / FR

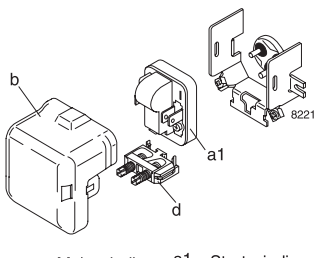


Main winding a1 Start winding

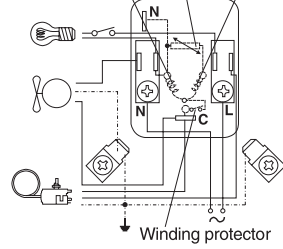


Winding protector

SC

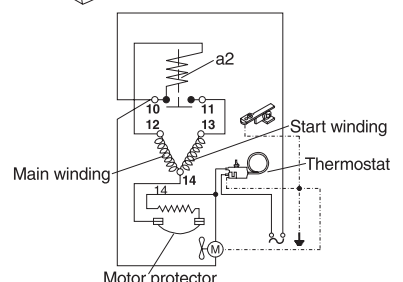
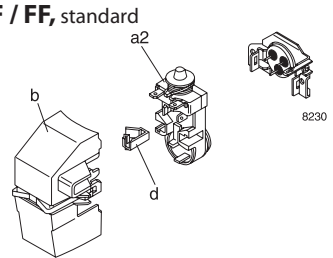


Main winding a1 Start winding



Winding protector

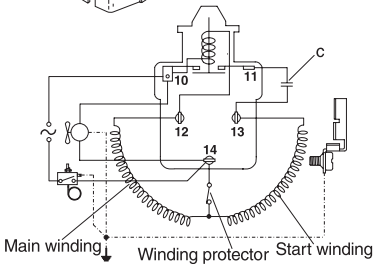
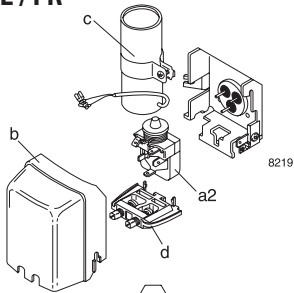
TF / FF, standard



Motor protector

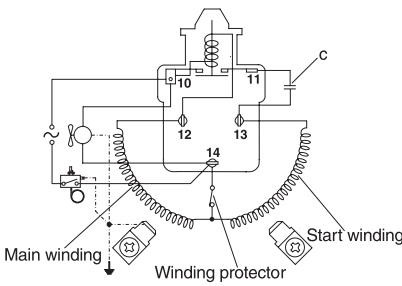
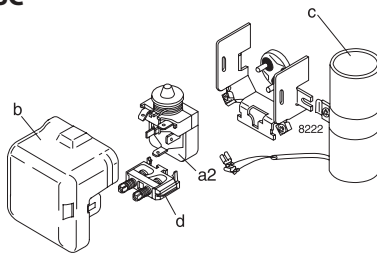
HST - CSIR

TL / NL / FR



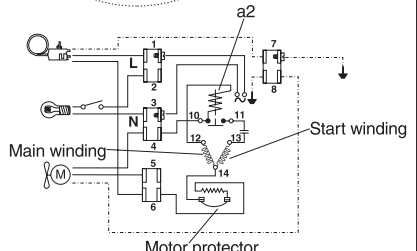
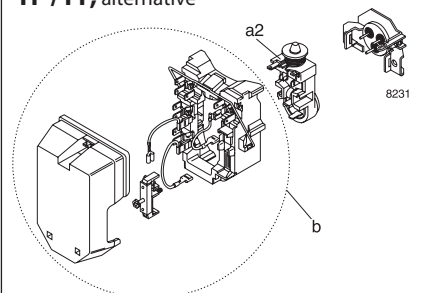
Main winding Winding protector Start winding

SC



Main winding Winding protector Start winding

TF / FF, alternative



Motor protector

Applications

- LBP**
Low Back Pressure
- HBP**
High Back Pressure
- MBP**
Medium Back Pressure

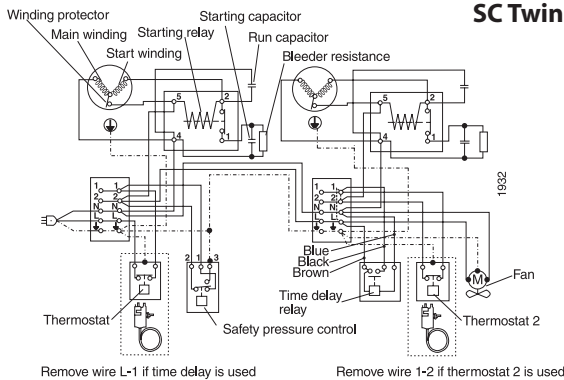
Motor types

- RSIR**
Resistant Start Induction Run
- CSIR**
Capacitor Start Induction Run
- CSR**
Capacitor Start Run

Starting devices

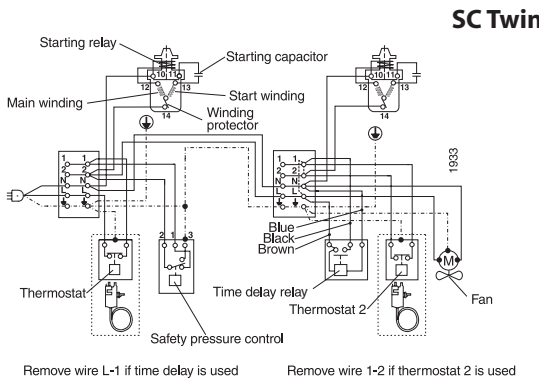
- LST**
Low Starting Torque
- HST**
High Starting Torque

HST - CSIR



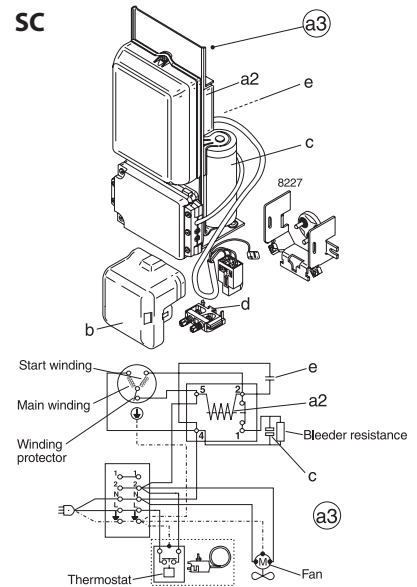
Remove wire L-1 if time delay is used Remove wire 1-2 if thermostat 2 is used

HST - CSIR



Remove wire L-1 if time delay is used Remove wire 1-2 if thermostat 2 is used

HST - CSIR



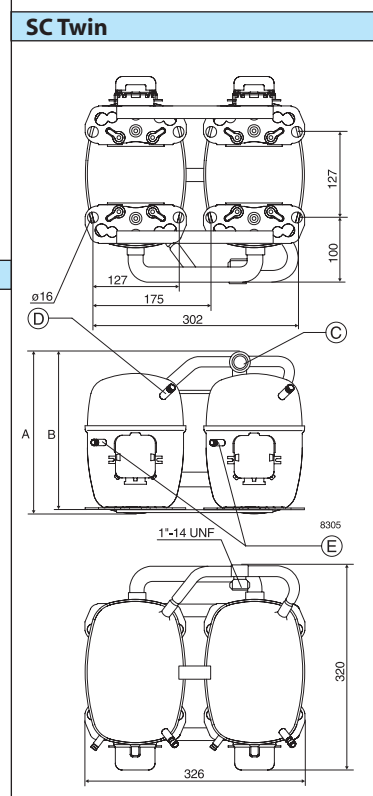
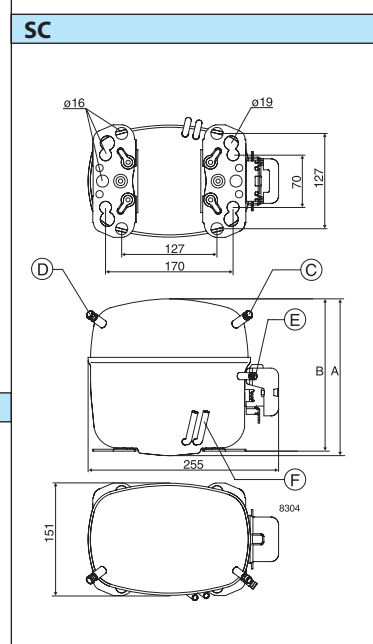
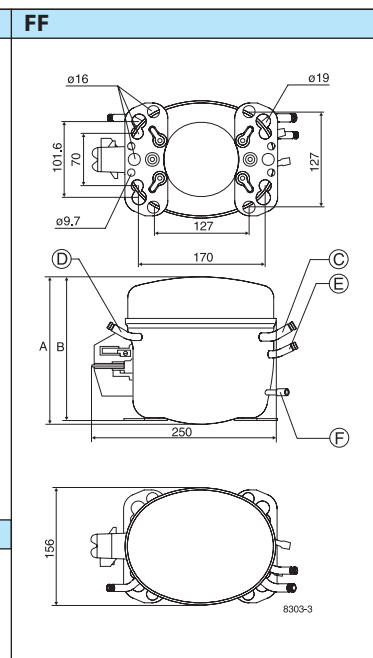
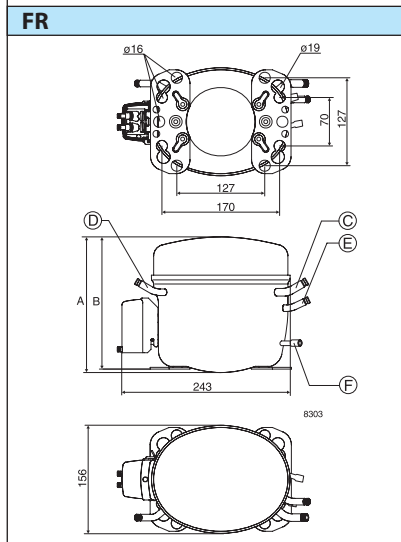
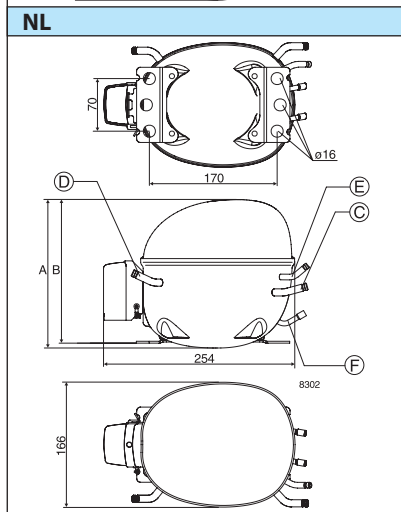
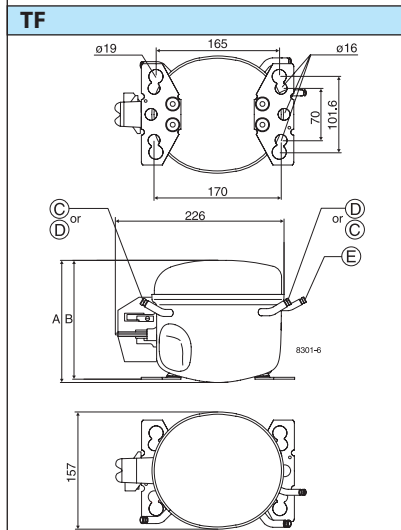
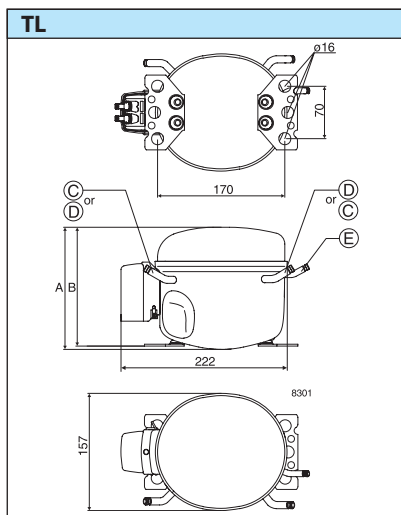
Legend

- a1: PTC starting device
- a2: Starting relay
- a3: Starting device
- b: Cover
- c: Starting capacitor
- d: Cord relief
- e: Run capacitor
- g: Protection screen for PTC

Compressor	Dimensions					
	Height		Suction	Discharge	Oilcooler	Process
	A	B				
TL2A	163	159	6.2	5.0		6.2
TL2.5A	163	159	6.2	5.0		6.2
TL3A	163	159	6.2	5.0		6.2
TL4A	173	169	6.2	5.0		6.2
TL5A	173	169	6.2	5.0		6.2
NL6A	197	175	6.2	5.0		6.2
NL7A	197	178	6.2	5.0		6.2
FR10A	196	191	8.2	6.2	6.2	6.2
FR11A	196	191	8.2	6.2	6.2	6.2
SC12A	209	203	8.2	6.2	6.2	6.2
SC15A	209	203	8.2	6.2	6.2	6.2
SC18A	219	213	10.2	6.2		6.2
SC21A	219	213	10.2	6.2		6.2
TFS3AT	173	169	6.5	5.0		6.5
TFS4AT	173	169	6.5	5.0		6.5
TFS5AT	173	169	6.5	5.0		6.5
FF7.5AT	196	191	8.2	6.5		6.5
FF7.5AT	196	191	8.2	6.5	6.5	6.5
FF8.5AT	196	191	8.2	6.5		6.5
FF8.5AT	196	191	8.2	6.5	6.5	6.5
FF10AT	196	191	8.2	6.5		6.5
SC10C	199	193	8.2	6.2		6.2
SC12C	209	203	8.2	6.2		6.2
SC15CM	209	203	10.2	6.2		6.2
SC18CM	219	213	10.2	6.2		6.2
SC10/10C	249	244	*	6.2		6.2
SC12/12C	249	244	*	6.2		6.2
SC15/15CM	259	254	*	6.2		6.2
SC18/18CM	259	254	**	6.2		6.2
SC10C	199	193	8.2	6.2		6.2
SC12C	209	203	8.2	6.2		6.2
SC15CM	209	203	10.2	6.2		6.2
SC18CM	219	213	10.2	6.2		6.2
SC10/10C	249	244	*	6.2		6.2
SC12/12C	249	244	*	6.2		6.2
SC15/15CM	259	254	*	6.2		6.2
SC18/18CM	259	254	**	6.2		6.2
TL2.5B	163	159	6.2	5.0		6.2
TL3B	163	159	6.2	5.0		6.2
TL4B	173	169	6.2	5.0		6.2
FR6B	196	191	8.2	6.2		6.2
FR7.5B	196	191	8.2	6.2	6.2	6.2
FR8.5B	196	191	8.2	6.2	6.2	6.2
FR10B	196	191	8.2	6.2	6.2	6.2
FR11B	196	191	8.2	6.2		6.2
SC10B	199	193	8.2	6.2	6.2	6.2
SC12B	209	203	8.2	6.2	6.2	6.2
SC15B	209	203	10.2	6.2	6.2	6.2
SC18B	219	213	10.2	6.2		6.2
SC21B	219	213	10.2	6.2		6.2
SC12/12B	249	244	*	6.2		6.2
SC15/15B	249	244	*	6.2		6.2
SC18/18B	259	254	**	6.2		6.2
SC21/21B	259	254	**	6.2		6.2
SC10D	199	193	10.2	8.2	8.2	6.2
SC12D	209	203	10.2	8.2	8.2	6.2
SC15D	209	203	10.2	8.2	8.2	6.2
SC10/10D	249	244	*	8.2		6.2
SC12/12D	249	244	**	8.2		6.2
SC15/15D	259	254	**	8.2		6.2
FR7H	196	191	8.2	6.2	6.2	6.2
SC10H	199	193	10.2	8.2	8.2	6.2
SC10HH	199	193	10.2	8.2	8.2	6.2
SC15H	209	203	10.2	8.2	8.2	6.2
SC15HH	209	203	10.2	8.2	8.2	6.2

For Twin compressors

Time delay relay:	117N0001
* Service valve for 12 mm tube:	118-7350
* Solder connector for 12 mm tube:	104B0584
** Service valve for 16 mm tube:	118-7351
** Solder connector for 16 mm tube:	118-7405
Seal ring:	118-3638



220 V hermetic compressors type TL, NL, TF, FR, FF, SC, and Twin

Application range

Refrigerators, refrigerated display counters
Refrigerated storage compartments
Freezers, freezing compartments
Liquid coolers
Dehumidifiers
Heat pumps

Electrical equipment

With 6.3 mm spade connectors
Winding protector in TL, NL, FR, and SC
Motor protector in TF and FF

Starting device LST and HST

- LST** is used with capillary tube control and pressure equalizing.
The PTC starting device for TL, NL, FR and SC requires 5 minutes cooling before each start.
Relay and external motor protector for TF and FF.
- HST** consisting of relay and starting capacitor is used for expansion valve control or for capillary tube control without pressure equalizing.

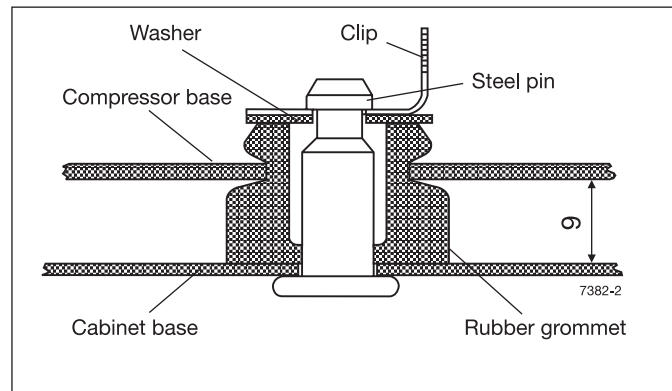
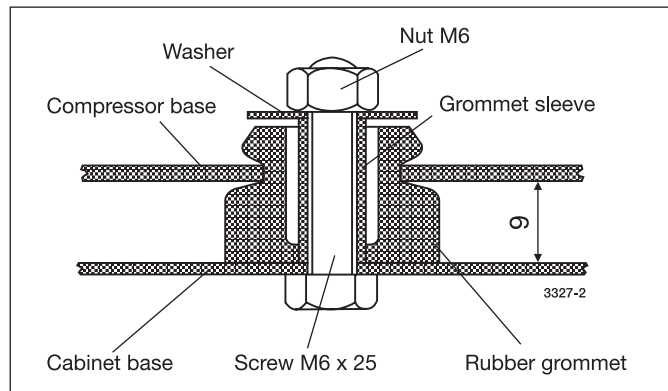
Model designation

TFS4AT (example)
TF = compressor type
S = semi-direct intake
4 = nominal displacement in cm³
(12/12 = Twin 2 x 12)
A = R12, LBP
B = R12, HBP / LBP
C = R502 (R22), LBP
CL = R404A, LBP
CM = R22 / R502, LBP
D = R22 / R502, HBP
F = R134a, LBP
G = R134a, HBP / LBP
GH = R134a, heat pump
T = tropical version

Further programme

Refrigeration compressors for 115 V / 60 Hz
Refrigeration compressors for 12 and 24 V battery connection
Refrigeration compressors for refrigerants R134a and R404A
Fan-cooled condensing units
Automatic controls

Mounting accessories



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