

### COMPRESSOR DEFINITION

Designation	<b>FMS D11C</b>
Nominal Voltage/Frequency	<b>230 V 90-315 Hz</b>
Engineering Number	<b>518000055</b>

### A - APPLICATION / LIMIT WORKING CONDITIONS

1 Type	Hermetic reciprocating compressor		
2 Refrigerant	R-600a		
3 Nominal voltage and frequency	230 / 90-315	[ V / Hz ]	
4 Application type	Low-Medium Back Pressure (Hot Gas Defrost not allowed)		
4.1 Evaporating temperature range	-35°C to 0°C	(-31°F to 32°F)	
5 Motor type	BPM		
6 Starting torque	LST - Low Starting Torque		
7 Expansion device	Capillary tube		
8 Compressor cooling	Operating voltage range		
		50 Hz	60 Hz
8.1 LBP (32°C Ambient temperature)	-	-	-
8.2 LBP (43°C Ambient temperature)	-	-	-
8.3 HBP (32°C Ambient temperature)	-	-	-
8.4 HBP (43°C Ambient temperature)	-	-	-
9 Maximum condensing temperature			
9.1 Operating	6.9	[kgf/cm <sup>2</sup> ] (98 psig)	/ °C - °F
9.2 Peak	7.8	[kgf/cm <sup>2</sup> ] (111 psig)	/ °C - °F
10 Maximum winding temperature	130	[ °C ]	

### B - MECHANICAL DATA

1 Commercial designation	1/6	[hp]
2 Displacement	7.87	[cm <sup>3</sup> ] (0.480 cu.in)
2.1 Bore [mm]	22.500	
2.2 Stroke [mm]	19.800	
3 Lubricant charge	0	[ml] (0.00 fl.oz.)
3.1 Lubricants approved		
3.2 Lubricants type/viscosity	ALQUILB / ISO5	
4 Weight (with oil charge)	3.58	[kg] (7.89 lb.)
5 Nitrogen charge	0.2 to 0.3	[kgf/cm <sup>2</sup> ] (2.84 to 4.27 psig)

### C - ELECTRICAL DATA

1 Nominal Voltage/Frequency/Number of Phases	230 V 90-315 Hz 3~ (Three phase)	
2 Starting device type	Inverter	
2.1 Starting device	CF02F01L	
3 Start capacitor	-	[µF(VAC minimum)]
4 Run capacitor	-	[µF(VAC minimum)]
5 Motor protection	CF02F01 L 00 XX F	
6 Start winding resistance	10.75	[Ω at 25°C (77°F)] +/- 8%
7 Run winding resistance	10.75	[Ω at 25°C (77°F)] +/- 8%
8 LRA - Locked rotor amperage (90/315 Hz)	2.17	[A] - Measured according to UL 984
9 FLA - Full load amperage L/MBP (90/315 Hz)	1.25	[A] - Measured according to UL 984
10 FLA - Full Load Amperage HBP (90/315 Hz)	-	[A] - Measured according to UL 984
11 Approval boards certification	CE - UKCA - UL	

### D - PERFORMANCE - CHECK POINT DATA

TEST CONDITIONS: <b>@115V1800RPM</b>			<b>ASHRAELBP32</b> <b>Static</b>		Evaporating temperature (Condensing temperature)		<b>-23.3°C (-9.94°F)</b> <b>54.4°C (129.92°F)</b>		
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
280	71	82	44	0.88	0.88	6.36	1.60	1.86	

TEST CONDITIONS: <b>@115V2800RPM</b>			<b>ASHRAELBP32</b> <b>Static</b>		Evaporating temperature (Condensing temperature)		<b>-23.3°C (-9.94°F)</b> <b>54.4°C (129.92°F)</b>		
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
430	108	126	66	1.30	1.35	6.55	1.65	1.92	

TEST CONDITIONS: <b>@115V4000RPM</b>			<b>ASHRAELBP32</b> <b>Static</b>		Evaporating temperature (Condensing temperature)		<b>-23.3°C (-9.94°F)</b> <b>54.4°C (129.92°F)</b>		
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
622	157	182	98	1.93	1.95	6.33	1.60	1.85	

TEST CONDITIONS: <b>@115V6300RPM</b>			<b>ASHRAELBP32</b> <b>Static</b>		Evaporating temperature (Condensing temperature)		<b>-23.3°C (-9.94°F)</b> <b>54.4°C (129.92°F)</b>		
Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]	
901	227	264	159	2.84	2.83	5.67	1.43	1.66	

### E - PERFORMANCE - CURVES

TEST CONDITIONS: <b>@115V1800RPM</b>		<b>ASHRAE32</b> <b>Static</b>				(Condensing temperature <b>35°C (+95°F)</b> )				
Evaporating temperature	Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%			
	°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]
-35	(-31)	163	41	48	27	0.58	0.51	5.97	1.50	1.75
-30	(-22)	220	55	64	32	0.65	0.69	6.92	1.74	2.03
-25	(-13)	287	72	84	36	0.73	0.90	7.91	1.99	2.32
-20	(- 4)	368	93	108	41	0.80	1.16	8.99	2.26	2.63
-15	(+ 5)	467	118	137	46	0.87	1.47	10.21	2.57	2.99
-10	(+14)	587	148	172	50	0.94	1.85	11.65	2.93	3.41
-5	(+23)	731	184	214	55	1.01	2.31	13.35	3.36	3.91
0	(+32)	904	228	265	59	1.09	2.87	15.38	3.88	4.51

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V1800RPM		ASHRAE32 Static			(Condensing temperature 45°C (+113°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	148	37	43	28	0.56	0.46	5.31	1.34	1.56
-30	(-22)	204	51	60	33	0.67	0.64	6.14	1.55	1.80
-25	(-13)	271	68	79	39	0.77	0.85	6.95	1.75	2.04
-20	(- 4)	352	89	103	45	0.87	1.11	7.81	1.97	2.29
-15	(+ 5)	452	114	133	51	0.97	1.42	8.77	2.21	2.57
-10	(+14)	574	145	168	58	1.06	1.81	9.89	2.49	2.90
-5	(+23)	722	182	211	64	1.16	2.28	11.23	2.83	3.29
0	(+32)	898	226	263	70	1.25	2.85	12.86	3.24	3.77

TEST CONDITIONS: @115V1800RPM		ASHRAE32 Static			(Condensing temperature 55°C (+131°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	126	32	37	27	0.53	0.39	4.56	1.15	1.33
-30	(-22)	180	45	53	34	0.68	0.57	5.33	1.34	1.56
-25	(-13)	247	62	72	41	0.81	0.78	6.05	1.52	1.77
-20	(- 4)	329	83	97	49	0.95	1.03	6.76	1.70	1.98
-15	(+ 5)	431	109	126	57	1.07	1.36	7.53	1.90	2.21
-10	(+14)	555	140	163	66	1.19	1.75	8.41	2.12	2.47
-5	(+23)	706	178	207	75	1.31	2.23	9.47	2.39	2.78
0	(+32)	887	224	260	83	1.42	2.81	10.77	2.71	3.16

TEST CONDITIONS: @115V2200RPM		ASHRAE32 Static			(Condensing temperature 35°C (+95°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	200	50	59	33	0.66	0.63	6.00	1.51	1.76
-30	(-22)	272	69	80	39	0.76	0.85	7.03	1.77	2.06
-25	(-13)	356	90	104	44	0.86	1.12	8.00	2.02	2.34
-20	(- 4)	455	115	133	51	0.96	1.43	9.00	2.27	2.64
-15	(+ 5)	574	145	168	57	1.05	1.81	10.14	2.56	2.97
-10	(+14)	717	181	210	62	1.14	2.26	11.51	2.90	3.37
-5	(+23)	888	224	260	67	1.20	2.81	13.20	3.33	3.87
0	(+32)	1090	275	319	71	1.26	3.45	15.31	3.86	4.49

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V2200RPM		ASHRAE32 Static			(Condensing temperature 45°C (+113°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	183	46	53	34	0.66	0.57	5.40	1.36	1.58
-30	(-22)	254	64	75	40	0.79	0.80	6.31	1.59	1.85
-25	(-13)	337	85	99	47	0.92	1.06	7.12	1.79	2.09
-20	(- 4)	435	110	128	55	1.04	1.37	7.92	1.99	2.32
-15	(+ 5)	553	139	162	63	1.16	1.74	8.80	2.22	2.58
-10	(+14)	693	175	203	70	1.26	2.19	9.85	2.48	2.89
-5	(+23)	860	217	252	77	1.34	2.72	11.19	2.82	3.28
0	(+32)	1059	267	310	83	1.41	3.36	12.89	3.25	3.78

TEST CONDITIONS: @115V2200RPM		ASHRAE32 Static			(Condensing temperature 55°C (+131°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	154	39	45	33	0.64	0.48	4.65	1.17	1.36
-30	(-22)	228	57	67	41	0.80	0.71	5.53	1.39	1.62
-25	(-13)	311	78	91	50	0.96	0.98	6.26	1.58	1.84
-20	(- 4)	409	103	120	59	1.12	1.29	6.93	1.75	2.03
-15	(+ 5)	525	132	154	69	1.26	1.65	7.64	1.92	2.24
-10	(+14)	664	167	195	78	1.39	2.10	8.48	2.14	2.48
-5	(+23)	830	209	243	87	1.50	2.63	9.54	2.40	2.79
0	(+32)	1026	259	301	95	1.59	3.25	10.92	2.75	3.20

TEST CONDITIONS: @115V2800RPM		ASHRAE32 Static			(Condensing temperature 35°C (+95°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	255	64	75	43	0.82	0.80	6.00	1.51	1.76
-30	(-22)	341	86	100	49	0.95	1.07	6.91	1.74	2.02
-25	(-13)	447	113	131	57	1.07	1.40	7.82	1.97	2.29
-20	(- 4)	575	145	169	65	1.19	1.81	8.81	2.22	2.58
-15	(+ 5)	729	184	214	73	1.31	2.29	9.93	2.50	2.91
-10	(+14)	911	230	267	81	1.42	2.87	11.24	2.83	3.29
-5	(+23)	1124	283	329	88	1.52	3.55	12.81	3.23	3.75
0	(+32)	1372	346	402	93	1.61	4.35	14.70	3.70	4.31

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V2800RPM		ASHRAE32 Static			(Condensing temperature 45°C (+113°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	232	58	68	43	0.82	0.73	5.41	1.36	1.59
-30	(-22)	318	80	93	51	0.98	1.00	6.24	1.57	1.83
-25	(-13)	423	107	124	60	1.14	1.33	7.02	1.77	2.06
-20	(- 4)	550	139	161	70	1.29	1.73	7.83	1.97	2.29
-15	(+ 5)	702	177	206	80	1.43	2.21	8.72	2.20	2.55
-10	(+14)	882	222	258	90	1.57	2.78	9.75	2.46	2.86
-5	(+23)	1092	275	320	99	1.68	3.45	11.00	2.77	3.22
0	(+32)	1336	337	391	107	1.79	4.23	12.51	3.15	3.67

TEST CONDITIONS: @115V2800RPM		ASHRAE32 Static			(Condensing temperature 55°C (+131°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	197	50	58	42	0.80	0.62	4.71	1.19	1.38
-30	(-22)	286	72	84	52	1.00	0.90	5.52	1.39	1.62
-25	(-13)	394	99	115	63	1.19	1.24	6.25	1.57	1.83
-20	(- 4)	522	132	153	75	1.38	1.64	6.95	1.75	2.04
-15	(+ 5)	674	170	198	88	1.55	2.12	7.69	1.94	2.25
-10	(+14)	854	215	250	100	1.72	2.69	8.53	2.15	2.50
-5	(+23)	1063	268	311	112	1.86	3.36	9.52	2.40	2.79
0	(+32)	1306	329	383	122	1.99	4.14	10.74	2.71	3.15

TEST CONDITIONS: @115V4000RPM		ASHRAE32 Static			(Condensing temperature 35°C (+95°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	356	90	104	62	1.15	1.12	5.72	1.44	1.68
-30	(-22)	477	120	140	73	1.32	1.50	6.55	1.65	1.92
-25	(-13)	625	158	183	85	1.50	1.96	7.37	1.86	2.16
-20	(- 4)	805	203	236	98	1.68	2.53	8.23	2.07	2.41
-15	(+ 5)	1020	257	299	111	1.86	3.21	9.20	2.32	2.70
-10	(+14)	1274	321	373	123	2.03	4.02	10.35	2.61	3.03
-5	(+23)	1571	396	460	134	2.19	4.97	11.73	2.95	3.44
0	(+32)	1915	483	561	143	2.32	6.07	13.40	3.38	3.93

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V4000RPM		ASHRAE32 Static			(Condensing temperature 45°C (+113°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	329	83	96	62	1.15	1.03	5.27	1.33	1.54
-30	(-22)	449	113	131	74	1.36	1.41	6.05	1.52	1.77
-25	(-13)	595	150	174	88	1.57	1.87	6.77	1.70	1.98
-20	(- 4)	772	195	226	103	1.79	2.43	7.48	1.89	2.19
-15	(+ 5)	983	248	288	119	2.00	3.09	8.26	2.08	2.42
-10	(+14)	1233	311	361	135	2.19	3.89	9.15	2.31	2.68
-5	(+23)	1524	384	447	149	2.37	4.82	10.24	2.58	3.00
0	(+32)	1861	469	545	161	2.53	5.90	11.57	2.92	3.39

TEST CONDITIONS: @115V4000RPM		ASHRAE32 Static			(Condensing temperature 55°C (+131°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	283	71	83	61	1.12	0.88	4.64	1.17	1.36
-30	(-22)	409	103	120	75	1.37	1.28	5.47	1.38	1.60
-25	(-13)	561	141	164	91	1.63	1.76	6.18	1.56	1.81
-20	(- 4)	742	187	217	109	1.88	2.33	6.84	1.72	2.00
-15	(+ 5)	957	241	280	127	2.13	3.01	7.51	1.89	2.20
-10	(+14)	1209	305	354	146	2.37	3.81	8.26	2.08	2.42
-5	(+23)	1502	378	440	164	2.58	4.75	9.14	2.30	2.68
0	(+32)	1840	464	539	181	2.77	5.83	10.22	2.58	3.00

TEST CONDITIONS: @115V6300RPM		ASHRAE32 Static			(Condensing temperature 35°C (+95°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	520	131	152	107	1.86	1.63	4.87	1.23	1.43
-30	(-22)	675	170	198	122	2.07	2.12	5.56	1.40	1.63
-25	(-13)	903	228	265	146	2.38	2.83	6.18	1.56	1.81
-20	(- 4)	1185	299	347	173	2.73	3.72	6.83	1.72	2.00
-15	(+ 5)	1501	378	440	198	3.04	4.72	7.60	1.92	2.23
-10	(+14)	1831	461	537	214	3.25	5.77	8.62	2.17	2.53
-5	(+23)	2157	543	632	216	3.27	6.82	9.98	2.52	2.93
0	(+32)	2458	619	720	197	3.04	7.79	11.80	2.97	3.46

### E - PERFORMANCE - CURVES

TEST CONDITIONS: @115V6300RPM		ASHRAE32 Static			(Condensing temperature 45°C (+113°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	513	129	150	110	1.94	1.61	4.65	1.17	1.36
-30	(-22)	665	168	195	126	2.16	2.08	5.32	1.34	1.56
-25	(-13)	886	223	260	150	2.49	2.78	5.89	1.48	1.72
-20	(- 4)	1156	291	339	179	2.85	3.63	6.44	1.62	1.89
-15	(+ 5)	1457	367	427	205	3.16	4.59	7.10	1.79	2.08
-10	(+14)	1769	446	518	223	3.37	5.58	7.96	2.01	2.33
-5	(+23)	2072	522	607	227	3.39	6.55	9.14	2.30	2.68
0	(+32)	2347	592	688	211	3.15	7.45	10.74	2.71	3.15

TEST CONDITIONS: @115V6300RPM		ASHRAE32 Static			(Condensing temperature 55°C (+131°F))					
Evaporating temperature		Cooling capacity (Qe) +/- 5%			Input power (We) +/- 5%	Electric current +/- 5%	Mass flow rate +/- 5%	Efficiency EER & COP +/- 7%		
°C	(°F)	[Btu/h]	[kcal/h]	[W]	[W]	[A]	[kg/h]	[Btu/Wh]	[kcal/Wh]	[W/W]
-35	(-31)	463	117	136	108	1.92	1.45	4.29	1.08	1.26
-30	(-22)	610	154	179	123	2.16	1.91	4.99	1.26	1.46
-25	(-13)	822	207	241	149	2.50	2.58	5.55	1.40	1.62
-20	(- 4)	1080	272	317	178	2.86	3.40	6.06	1.53	1.78
-15	(+ 5)	1365	344	400	205	3.18	4.30	6.65	1.68	1.95
-10	(+14)	1657	418	486	224	3.39	5.23	7.41	1.87	2.17
-5	(+23)	1937	488	568	229	3.40	6.13	8.45	2.13	2.48
0	(+32)	2185	551	640	215	3.16	6.93	9.88	2.49	2.90

### F - EXTERNAL CHARACTERISTICS

1 Base plate	Universal ES/FMS		
2 Tray holder	No		
3 Connectors			
3.1 SUCTION	6.1 +0.10/+0.00	[mm]	(0.240" +0.004"/+0.000")
3.1.1 Material	Copper		
3.1.2 Shape	Slanted parallel to Base Plate		
3.2 DISCHARGE	5.1 +0.10/+0.00	[mm]	(0.201" +0.004"/+0.000")
3.2.1 Material	Copper		
3.2.2 Shape	Slanted parallel BP+45°to Back		
3.3 PROCESS	6 +0.08/-0.08	[mm]	(0.236" +0.003"/-0.003")
3.3.1 Material	Copper(OD)		
3.3.2 Shape	Straight		
3.4 Oil cooler (Copper)	No	[mm]	
3.5 Connector sealing	Rubber Plugs		