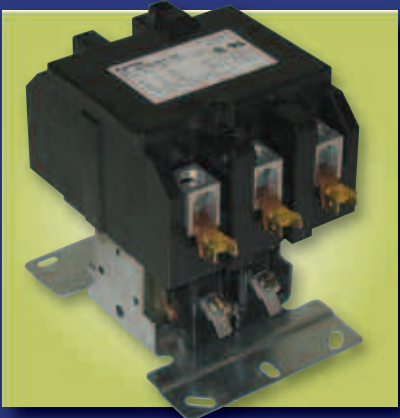
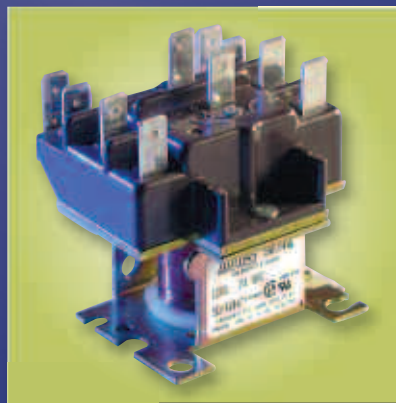
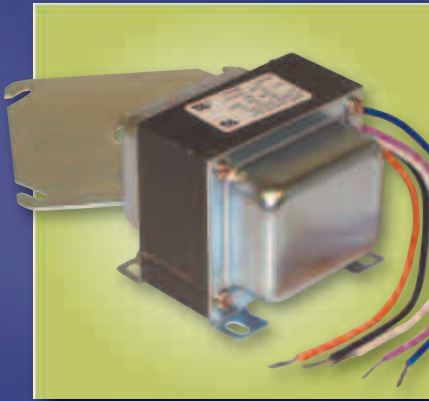


# Component

# Section



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# Motor Start Capacitors

MARS SERIES **110**



11002

## Electrolytic Capacitors for Motor Starting Applications

Start capacitor case dimensions chart. Capacitor accessories on page C9.

### MARS Blue Box™

#### Features:

- The largest assortment of replacements in the industry!
- Smallest dimensions for general replacements.
- Hermetically sealed black Bakelite case permanently protects the capacitor from oil, dirt, grease or moisture.
- New and improved terminal construction capable of withstanding increased heat. This terminal will generate less heat when applied under severe hot humid environment.

#### 110/125 Dual Voltage AC

MARS NO.	MICROFARAD Min - Max.	CASE SIZE
11002	21-25	1
11003	25-30	1
11004	30-36	1
11005	36-43	1
11006	43-56	1
11007	56-72	1
11008	72-88	1
11009	88-108	1
11010	108-130	1
11112	124-156	1
11011	130-156	1
11013	145-175	1
11014	161-193	1
11015	189-227	1
11016	200-240	1
11017	216-259	1
11018	233-292	1
11019	270-324	1
11020	300-360	1
11021	324-388	1
11022	340-408	2
11023	378-440	2
11024	400-480	2
11071	430-516	2
11025	460-552	2
11026	540-648	4
11027	590-708	4
11047	645-774	4
11028	708-850	4
11072	815-970	4
11029	829-995	4
11073	850-1020	4
11030	1000-1200	7
11074	1290-1548	7

#### 220/250 Dual Voltage AC

MARS NO.	MICROFARAD Min - Max.	CASE SIZE
11038	21-25	1
11039	25-30	1
11040	30-36	1
11041	36-43	1
11042	43-56	1
11043	56-72	1
11084	59-71	1
11137	64-77	4
11044	72-88	4
11045	88-108	4
11046	108-130	4
11148	124-156	4
11049	145-175	4
11050	161-193	6
11051	189-227	6
11052	216-259	6
11053	233-292	6
11054	270-324	6
11085	280-336	7
11086	320-384	7
11087	340-408	7
11088	378-455	7
11089	400-480	7
11090	430-516	7
11091	630-750	8

#### 330 Volts AC

MARS NO.	MICROFARAD Min - Max.	CASE SIZE
11055	21-25	2
11056	25-30	2
11057	30-36	2
11058	36-43	2
11059	43-56	4
11060	56-72	4
11160	64-77	4
11061	72-88	4
11062	88-108	4
11063	108-130	7
11064	130-156	7
11165	124-156	7
11092	135-162	7
11066	145-175	7
11067	161-193	7
11068	189-227	7
11069	216-259	7
11070	270-324	7
11093	300-360	7

#### 165 Volts AC

MARS NO.	MICROFARAD Min - Max.	CASE SIZE
11075	72-88	1
11076	88-108	1
11077	108-130	1
11031	124-149	1
11032	145-175	1
11033	161-193	1
11034	189-227	1
11078	216-259	4
11035	233-292	4
11036	270-324	4
11079	340-408	4
11080	378-455	4
11037	400-480	4
11081	540-648	4
11082	710-850	7
11083	810-972	7

MARS suggests applying a bleed resistor (MARS PN 93007) on start capacitors used in conjunction with starting relays

\*Capacitors may be put in different case sizes occasionally, but will not be larger than those stated.



# Turbo™ Products

MARS SERIES **121**



## The Turbo® 200 Family Products

Universal Run & Start Capacitor Replacement. Have the right capacitor for the job every time. The perfect solution for off hour emergency service calls.

Universal HardStart Replacement. One “2-Wire” Turbo® Easy-Start “4” Hardstart can replace any one of four compressor hardstart kits on the market.

MARS NO.	DESCRIPTION	MICROFARAD
12100	Turbo® 200 mini	2.5 mfd - 12.5 mfd, 370V or 440V
12200	Turbo® 200	2.5 mfd - 67.5 mfd, 370V or 440V
12300	Turbo® 200 X	5.0 mfd -97.5 mfd, 370V or 440V
11200	Turbolytic™ 50 Universal Motor Start Capacitor	23 mfd -302 mfd, 125V to 330V
11100	Turbolytic™ JR	23 mfd -208 mfd, 125V to 330V
86150	<b>TurboMeter™</b> See the dual values develop simultaneously on the screen as you create the ratings needed.	
12400	Turbo® Easy-Start “4” Hardstart Universal Hardstart	Up to 1 ton 108-130 mfd 1 to 2 tons 189-227 mfd 2.5 to 3 tons 233-280 mfd 3.5 to 5 tons 270 to 324 mfd

## MARS Capacitor Tester

### Features:

- Easy to use
- 9V battery and test leads included
- Low battery indicator

MARS NO.	RANGE	RESOLUTION	ACCURACY	TEST FREQUENCY
65746	200 pF	0, 1pF	± (0.5% rdg + 1 dgt + 0.5 pF)	
	2000 pF 20 nF 200 nF 2 nF	1 pF 10 pF 100 pF 1 nF	± (0.5% rdg +1 dgt)	820Hz
	20 μF	10 nF		82 Hz
	200 μF	100 nF	± (2.0% rdg. + 1dgt)	8.2 Hz
	2000 μF	1 μF		
	20 mF	10 μF	± (4.0% rdg. + 1dgt)	

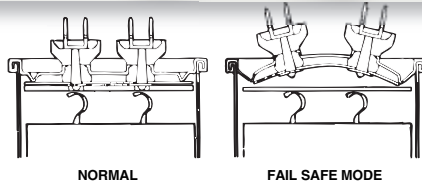




# Motor Run Capacitors

MARS SERIES **120**

COMPONENT



PHYSICAL INTERRUPTER

## Single Section Run Capacitors

Capacitor accessories on page C9.

### Features:

- MARS offers the widest selection of ratings in the industry
- Non-PCB capacitors. Physical interrupter makes our capacitors safe
- Perfect for general replacements—smallest dimensions available
- UL and CSA listings available

Single Section 370 Volt Oval			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12002	2	A	1.500
12003	3	A	1.500
12004	4	A	1.500
12005	5	A	1.500
12006	6	A	1.500
12007	7.5	A	2.375
12008	10	A	2.625
12009	12.5	A	3.000
12010	15	A	3.750
12012	17.5	A	3.750
12014	20	C	2.375
12015	25	C	2.625
12017	30	C	2.625
12018	35	C	3.000
12021	40	C	3.750
12023	45	C	3.750
12025	50	C	3.750
12024	55	C	4.250
12087	60	C	4.750
12011	65	C	4.750
12089	70	C	4.750
12090	80	D	3.750

Single Section 370 Volt Round			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12092	2	M	2.000
12093	3	M	2.000
12094	4	M	2.000
12095	5	M	2.000
12096	6	M	2.000
12097	7.5	M	2.000
12098	10	M	2.000
12099	12.5	M	2.000
12210	15	M	2.375
12211	16	M	2.375
12212	17.5	M	2.375
12214	20	M	2.625
12215	25	M	3.000
12217	30	M	3.000
12218	35	M	3.750
12221	40	M	3.750
12223	45	N	3.375
12225	50	N	3.750
12226	55	N	3.750
12227	60	N	4.750
12128	65	N	4.750
12229	70	N	4.750
12199	80	N	4.750
12116	100	P	4.750

Single Section 440 Volt Oval			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12026	2	A	1.500
12019	2.5	A	1.500
12027	3	A	2.000
12028	4	A	2.000
12029	5	A	2.375
12030	6	A	2.375
12031	7.5	A	2.625
12032	10	A	3.750
12033	12.5	A	3.750
12034	15	C	2.375
12036	17.5	C	2.375
12037	20	C	2.625
12040	25	C	3.000
12041	30	C	3.750
12043	35	C	3.750
12045	40	C	4.750
12048	45	C	4.750
12049	50	C	4.750
12050	55	C	4.750
12051	60	D	3.750
12052	65	D	3.750
12130	70	D	3.750
12135	75	D	3.750
12140	80	D	4.750

Single Section 440 Volt Round			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12102	2	M	2.000
12103	3	M	2.000
12104	4	M	2.000
12105	5	M	2.000
12106	6	M	2.000
12107	7.5	M	2.000
12232	10	M	2.375
12233	12.5	M	2.375
12234	15	M	2.625
12236	17.5	M	2.750
12237	20	M	3.000
12240	25	M	3.750
12241	30	N	3.375
12243	35	N	3.750
12245	40	N	3.750
12248	45	N	4.750
12251	50	P	3.375
12252	55	P	3.750
12254	60	P	3.750
12258	70	P	4.750
12259	80	P	4.750
12068	90	P	4.750

Base Dimensions on p.C7

\*Capacitors may be put in different case sizes occasionally, but will not be larger than those stated.



# Motor Run Capacitors

MARS SERIES **120**



12141

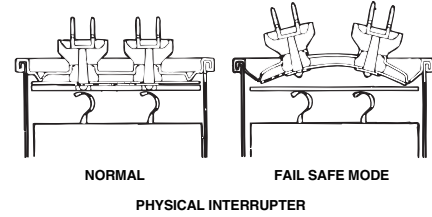
## Dual Section Motor Run Capacitors

Dual section run capacitors are used primarily to serve two microfarad applications. They can, however, by making various combinations of parallel connections, be used to obtain many other microfarad ratings.

Capacitor accessories on page C9.

### Features:

- MARS offers the widest selections of ratings in the industry
- Non-PCB capacitors.
- Physical interrupter makes our capacitors safe
- Perfect for general replacements—smallest dimensions available
- UL and CSA listings available



Dual Section 370 Volt Oval			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12141	15/3	C	2.625
12056	15/4	C	2.625
12057	15/5	C	2.625
12058	15/10	C	3.000
12059	17.5/4	C	2.375
12060	17.5/5	C	2.375
12061	20/3	C	2.625
12062	20/4	C	2.625
12063	20/5	C	2.625
12064	20/10	C	2.625
12164	20/15	C	4.750
12142	25/3	C	2.625
12065	25/4	C	2.625
12066	25/5	C	2.625
12143	25/7.5	C	2.625
12131	25/8	C	3.000
12167	25/10	C	3.000
12133	25/15	C	3.000
12144	30/3	C	3.000
12145	30/4	C	3.000
12069	30/5	C	3.000
12146	30/7.5	C	3.000
12147	30/10	C	3.375
12148	35/3	C	3.000
12071	35/4	C	3.750
12072	35/5	C	3.750
12149	35/7.5	C	3.000
12150	35/10	C	3.750
12151	40/3	C	3.750
12158	40/4	C	3.750
12171	40/5	C	3.750
12152	40/7.5	C	3.750
12134	40/10	C	3.750
12173	45/3	C	3.750
12174	45/5	C	3.750
12153	45/7.5	C	3.750
12136	45/10	C	4.750
12137	45/15	C	4.750
12138	50/5	C	4.750
12154	55/5	C	4.750
12155	55/7.5	C	4.750
12139	60/5	D	4.750
12156	60/7.5	C	4.750
12157	60/10	C	4.750
12159	65/5	D	4.750
12163	80/5	D	4.750
12123	80/7.5	D	4.750

Base Dimensions on page C7

Dual Section 370 Volt Round			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12121	15/3	N	3.125
12122	15/4	N	3.125
12203	15/5	N	3.125
12204	15/10	N	3.125
12205	17.5/4	N	3.125
12206	17.5/5	N	3.125
12207	20/4	N	3.125
12260	20/5	N	3.125
12016	20/7.5	N	3.125
12208	20/10	N	3.125
12209	20/15	N	3.125
12242	25/3	N	3.125
12175	25/4	N	3.125
12261	25/5	N	3.125
12262	25/7.5	N	3.125
12213	25/10	N	3.125
12244	30/3	N	3.125
12263	30/4	N	3.125
12264	30/5	N	3.125
12224	30/7.5	N	3.125
12228	30/10	N	3.125
12039	30/15	N	3.875
12082	35/3	N	3.875
12231	35/4	N	3.125
12266	35/5	N	3.875
12235	35/7.5	N	3.125
12238	35/10	N	3.875
12074	40/3	N	3.875
12267	40/4	N	3.875
12178	40/5	N	3.875
12268	40/7.5	N	3.875
12246	40/10	N	3.875
12073	45/3	N	3.875
12247	45/4	N	3.875
12269	45/5	P	3.875
12249	45/7.5	N	3.875
12250	45/10	N	3.875
12075	50/3	P	3.125
12191	50/5	N	3.875
12192	50/7.5	P	3.125
12239	50/10	P	3.875
12193	55/5	N	4.75
12194	55/7.5	N	4.75
12067	55/10	N	4.75
12076	60/3	P	3.875
12195	60/5	P	3.875
12196	60/7.5	N	4.75
12265	60/10	P	3.125
12042	65/5	N	4.75
12053	70/5	P	3.875
12054	70/7.5	P	3.875
12055	70/10	P	3.875
12044	75/5	P	3.875
12046	75/7.5	P	3.875
12084	75/10	P	3.875
12197	80/5	P	3.875
12198	80/7.5	P	3.875
12201	80/10	P	3.875
12202	80/12.5	P	4.75
12129	85/5	P	4.75
12230	85/7.5	P	4.75
12222	85/10	P	4.75



# Motor Run Capacitors

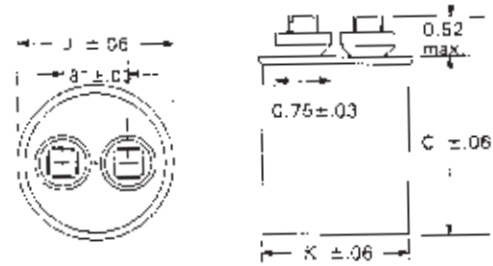
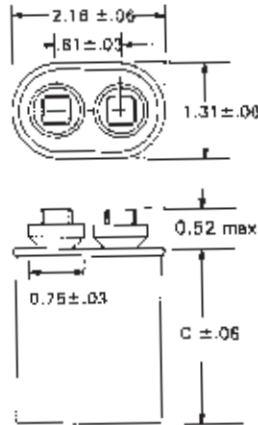
MARS SERIES **120**

COMPONENT

## Capacitor Base Dimensions



12165



Dual Section 440 Volt Oval			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12165	10/5	C	2.625
12170	10/10	C	2.625
12270	15/4	C	2.625
12271	15/5	C	2.625
12177	15/10	C	3.750
12180	20/5	C	2.625
12083	20/15	D	3.000
12184	25/5	D	3.000
12182	25/7.5	C	3.750
12183	25/10	C	3.750
12186	25/15	D	3.000
12181	30/4	C	3.750
12187	30/5	D	3.750
12038	30/7.5	C	3.750
12035	30/10	C	3.750
12085	35/3	C	4.750
12179	35/4	C	3.750
12185	35/5	C	4.750
12188	35/7.5	C	3.750
12176	35/8.5	C	3.750
12272	35/10	C	4.750
12080	40/3	C	4.750
12086	40/5	C	4.750
12189	40/7.5	C	4.750
12273	40/10	C	4.750
12190	45/5	D	4.750
12274	45/7.5	C	4.750
12108	50/5	D	4.750
12013	50/7.5	C	4.750
12275	55/5	D	4.750
12276	55/10	D	4.750
12109	60/5	D	4.750
12110	60/7.5	D	4.750
12101	65/10	D	4.750
12297	80/5	D	5.750
12298	80/7.5	D	5.750

Base Dimension Key - Oval			
KEY	DEPTH IN.	WIDTH IN.	DESCRIPTION
A	1.31	2.16	oval fan size
C	1.91	2.91	oval
D	1.97	3.66	oval

Base Dimension Key - Round		
KEY	DEPTH IN.	MOUNTING STRAP
M	1.75	93031
N	2.00	93032
P	2.50	93033

Dual Section 440 Volt Round			
MARS NO.	MICROFARAD	BASE	HEIGHT IN.
12111	10/5	N	3.125
12118	15/5	N	3.125
12356	15/10	N	3.125
12350	17.5/5	N	3.125
12115	20/5	N	3.125
12354	20/7.5	N	3.125
12351	20/10	N	3.875
12112	20/15	N	3.875
12353	25/3	N	3.875
12355	25/4	N	3.875
12278	25/5	N	3.875
12279	25/7.5	N	3.875
12113	25/10	N	3.625
12114	25/15	N	3.875
12126	30/3	N	3.875
12120	30/4	N	3.875
12281	30/5	N	3.875
12282	30/7.5	N	3.875
12352	30/10	N	4.750
12077	35/3	N	3.875
12070	35/4	N	3.875
12283	35/5	N	3.875
12119	35/6	N	4.750
12284	35/7.5	P	3.875
12091	35/10	N	4.750
12078	40/3	P	3.125
12285	40/4	P	3.125
12286	40/5	P	3.125
12220	40/6	N	4.750
12287	40/7.5	P	3.875
12088	40/10	N	4.750
12079	45/3	P	3.875
12219	45/4	N	3.750
12288	45/5	P	3.875
12127	45/6	N	4.750
12289	45/7.5	N	3.875
12172	45/10	P	3.875
12290	50/5	P	3.875
12291	50/7.5	P	3.875
12124	50/10	P	3.875
12253	50/12.5	P	3.875
12292	55/5	P	3.875
12293	55/7.5	P	3.875
12299	55/10	P	3.875
12160	60/3	P	4.750
12294	60/5	P	3.875
12295	60/7.5	P	3.875
12296	60/10	P	3.875
12161	60/12.5	P	4.750
12162	65/10	P	4.750
12255	70/5	P	4.750
12166	70/7.5	P	4.750
12169	70/10	P	4.750
12168	75/5	P	4.750
12125	75/7.5	P	4.750
12047	75/10	P	4.750
12257	80/5	P	4.875
12216	80/7.5	P	4.750
12117	80/10	P	4.750
12022	85/5	P	4.750
12020	85/7.5	P	4.750
12001	85/10	P	4.750



The largest selection of motors, components, and accessories for the HVAC/R Industry

# Motor Run Capacitors

MARS SERIES **120/129**



## SINGLE SECTION RUN CAPACITORS

370 VOLT				
MFD	Oval MARS NO.	Round MARS NO.	Oval MARS2 NO.	Round MARS2 NO.
2	12002	12092	12902	12992
3	12003	12093	12903	12993
4	12004	12094	12904	12994
5	12005	12095	12905	12995
6	12006	12096	12906	12996
7.5	12007	12097	12907	12997
10	12008	12098	12908	12998
12.5	12009	12099	12909	12999
15	12010	12210	12910	12710
16		12211		12911
17.5	12012	12212	12912	12712
20	12014	12214	12914	12714
25	12015	12215	12915	12715
30	12017	12217	12917	12717
35	12018	12218	12918	12718
40	12021	12221	12921	12721
45	12023	12223	12923	12723
50	12025	12225	12925	12725
55	12024	12226	12924	12726
60	12087	12227	12987	12727
65	12011	12128	12988	12828
70	12089	12229	12989	12729
80	12090	12199	12990	12899
100		12116		12916

440 VOLT				
MFD	Oval MARS NO.	Round MARS NO.	Oval MARS2 NO.	Round MARS2 NO.
2	12026	12102	12926	12802
2.5	12019		12919	
3	12027	12103	12927	12803
4	12028	12104	12928	12804
5	12029	12105	12929	12805
6	12030	12106	12930	12806
7.5	12031	12107	12931	12807
10	12032	12232	12932	12732
12.5	12033	12233	12933	12733
15	12034	12234	12934	12734
17.5	12036	12236	12936	12736
20	12037	12237	12937	12737
25	12040	12240	12940	12740
30	12041	12241	12941	12741
35	12043	12243	12943	12743
40	12045	12245	12945	12745
45	12048	12248	12948	12748
50	12049	12251	12949	12751
55	12050	12252	12950	12752
60	12051	12254	12951	12754
65	12052		12952	
70	12130	12258	12830	12758
75	12135		12831	
80	12140	12259	12840	12759
90		12068		12868

## DUAL SECTION RUN CAPACITORS

370 VOLT				
MFD	Oval MARS NO.	Round MARS NO.	Oval MARS2 NO.	Round MARS2 NO.
15/3	12141	12121	12841	12701
15/4	12056	12122	12956	12702
15/5	12057	12203	12957	12703
15/10	12058	12204	12958	12704
17.5/4	12059	12205	12959	12705
17.5/5	12060	12206	12960	12706
20/3	12061		12961	
20/4	12062	12207	12962	12707
20/5	12063	12260	12963	12760
20/7.5		12016		12716
20/10	12064	12208	12864	12708
20/15	12164	12209	12964	12709
25/3	12142	12242	12842	12711
25/4	12065	12175	12965	12875
25/5	12066	12261	12966	12761
25/7.5	12143	12262	12843	12762
25/8	12131		12832	
25/10	12167	12213	12867	12713
25/15	12133		12833	
30/3	12144	12244	12844	12720
30/4	12145	12263	12845	12763
30/5	12069	12264	12969	12764
30/7.5	12146	12224	12846	12724
30/10	12147	12228	12847	12728
30/15		12039		12939
35/3	12148	12082	12848	12730
35/4	12071	12231	12971	12731
35/5	12072	12266	12972	12766
35/7.5	12149	12235	12849	12735
35/10	12150	12238	12850	12738
40/3	12151	12074	12851	12739
40/4	12158	12267	12858	12767
40/5	12171	12178	12871	12878
40/7.5	12152	12268	12852	12768
40/10	12134	12246	12834	12746
45/3	12173	12073		12747
45/4		12247		12947
45/5	12174	12269	12874	12769
45/7.5	12153	12249	12853	12749
45/10	12136	12250	12836	12750
45/15	12137		12837	
50/3		12075		12753
50/5	12138	12191	12838	12755
50/7.5		12192		12825
50/10		12239		12757
55/5	12154	12193	12854	12893
55/7.5	12155	12194	12855	12894
55/10		12067		12967
60/3		12076		12976
60/5	12139	12195	12839	12895
60/7.5	12156	12196	12856	12896
60/10	12157	12265	12857	12865
65/5	12159	12042	12859	12742
70/5		12053		12953
70/7.5		12054		12954
70/10		12055		12955
75/5		12044		12744
75/7.5		12046		12946
75/10		12084		12984
80/5	12163	12197	12863	12897
80/7.5	12123	12198	12817	12819
80/10		12201		12824
80/12.5		12202		12722
85/5		12129		12829
85/7.5		12230		12756
85/10		12222		12922

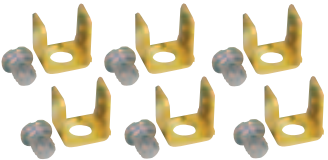






## DUAL SECTION RUN CAPACITORS

440 VOLT				
MFD	Oval MARS NO.	Round MARS NO.	Oval MARS2 NO.	Round MARS2 NO.
10/5	12165	12111	12765	12811
15/4	12270		12770	
15/5	12271	12118	12771	12818
15/10	12177	12356	12777	12656
17.5/5		12350		12650
20/5	12180	12115	12880	12780
20/7.5		12354		12654
20/10		12351		12651
20/15	12083	12112	12983	12812
25/3		12353		12653
25/4		12355		12655
25/5	12184	12278	12884	12778
25/7.5	12182	12279	12882	12779
25/10	12183	12113	12883	12813
25/15	12186	12114	12886	12814
30/3		12126		12826
30/4	12181	12120	12881	12820
30/5	12187	12281	12887	12781
30/7.5	12038	12282	12982	12782
30/10	12035	12352	12835	12652
35/3	12085	12077	12985	12977
35/4	12179	12070	12879	12870
35/5	12185	12283	12885	12783
35/6		12119		
35/7.5	12188	12284	12888	12784
35/8.5	12176		12876	
35/10	12272	12091	12772	12797
40/3	12080	12078	12877	12978
40/4		12285		12785
40/5	12086	12286	12986	12786
40/6		12220		12920
40/7.5	12189	12287	12889	12787
40/10	12273	12088	12773	12798
45/3		12079		12979
45/4		12219		12891
45/5	12190	12288	12890	12788
45/6		12127		12827
45/7.5	12274	12289	12774	12789
45/10		12172		12872
50/5	12108	12290	12808	12790
50/7.5	12013	12291	12913	12791
50/10		12124		12892
50/12.5		12253		12719
55/5	12275	12292	12775	12792
55/7.5		12293		12793
55/10	12276	12299	12822	12799
60/3		12160		12860
60/5	12109	12294	12809	12794
60/7.5	12110	12295	12776	12795
60/10		12296		12796
60/12.5		12161		12861
65/10	12101	12162	12810	12862
70/5		12255		12823
70/7.5		12166		12866
70/10		12169		12869
75/5		12168		12968
75/7.5		12125		12901
75/10		12047		12935
80/5	12297	12257	12815	12801
80/7.5	12298	12216	12898	12816
80/10		12117		12821
85/5		12022		12938
85/7.5		12020		12942
85/10		12001		12944




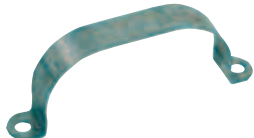




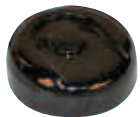




## Accessories for Relays and Capacitors

QC-6 Kit		
93001	For conversion of screw-type connections on relays	
QC-8 for 11001 Start Capacitor Kit		
93003	<ul style="list-style-type: none"> <li>- 9 pc 93007 2 watt (15,000 ohm) resistors</li> <li>- 32 pc push-on to screw-on connectors</li> <li>- 6 pc 93005 4-in jumpers with .25-in female spade connectors</li> </ul>	
6 Inch Jumper		
93006	- 6-in jumper with .25-in female spade connectors	
Resistor for Start Capacitors		
93007	- 2 watt (15,000 ohm) Resistors	
QC-13 for Start Capacitors		
93106	- 10 pc 2 watt (15,000 ohm) resistors with .25-in female spade connectors	
Snap on Terminals		
93029	<p><b>Sold in packs of 25 only</b></p> <ul style="list-style-type: none"> <li>- 25 pc snap-on terminals</li> <li>- Converts push-on type terminals to screw-on type</li> </ul>	
Snap-on Mounting Brackets for Motor Start Capacitors		
93026	2.75 in	
93027	3.38 in	
93028	4.38 in	

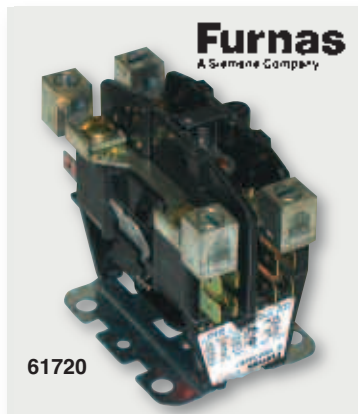
Case Dimensions*		
CASE SIZE	DIAMETER	LENGTH
1	1.44	2.75
2	1.44	3.38
4	1.81	3.38
5	1.81	4.38
6	2.06	3.38
7	2.06	4.38
8	2.56	4.38

Protector (boots) for Motor Run Capacitors		
93011	1 Hole Boot	
93012	2 Hole Boot	
93013	3 Hole Boot for Dual Section	
Wrap-Around Brackets for Motor Run Capacitors		
93014	<b>Oval</b> 1.94 x 2.78 for base A	
93015	<b>Oval</b> 1.97 x 2.94 for base C	
93116	<b>Oval</b> 2.25 x 3.66 for base D	
Mounting Brackets for Round Capacitors		
93031	- For 1.63 in and 1.75 in diam	
93032	- For 2.0 in diam	
93033	- For 2.50 in diam	
Bakelite End Caps for Motor Start Capacitors		
93018	- BEC-1 1.44 in	
93019	- BEC-2 1.81 in	
93020	- BEC-3 2.06 in	
93021	- BEC-4 2.56 in	
93022	For mounting OFF MOTOR. Leads on top side.	
93023	- BEC-1 1.44 in	
93024	- BEC-2 1.81 in	
93025	- BEC-3 2.06 in	
93025	- BEC-4 2.56 in	

\*Capacitors may be put in different case sizes occasionally, but will not be larger than those stated.

# Furnas/MARS 780 Definite Purpose Contactors

MARS SERIES **614**



## Class 45 w/Jumper 1 Pole 25-40 Amp Contactors

The Furnas Centurion 2000 Contactors offer a high new standard in definite purpose control. When used with an appropriate pilot device they can provide either low voltage protection or low voltage release. These controls have been designed with a low drop out voltage making them ideal for air conditioning, heating and refrigeration applications.

The Centurion 2000 was designed to be a tougher, more compact, more versatile and quieter contactor than ever before.

### Features:

- Compact size
- Interchangeable mounting
- Straight thru wiring
- Sems screws available on 25A, 30A and 40A
- Binding Head Screws optional on 40A
- Class H Coil Insulation on 25-60 amp
- Meets ARI-780, UL and CSA Standards

### 1 Pole with Jumper Wire, 25 – 40 Amps, Class 45

MARS NO.	FURNAS NO.	F.L.A.	LOCKED ROTOR AMPS				NON INDUCTIVE AMPS	COIL VOLTS
			240V	277V	480V	600V		
61315	45DG10AJA	25	150	150	100	80	35	24
61316	45DG10AFA							120
61317	45DG10AGA							240
61320	45EG10AJA	30	180	180	150	120	40	24
61720 <sup>1</sup>	45EG10AJAL <sup>1</sup>							24
61321	45EG10AFA							120
61322	45EG10AGA							240
61323	45EG10ALA							277
61330	45GG10AJA	40	180	180	150	120	50	24
61730 <sup>1</sup>	45GG10AJAL <sup>1</sup>	40	240	200	160	140	55	24

### 2 Pole, 20 – 40 Amps, Class 45

MARS NO.	FURNAS NO.	F.L.A.	LOCKED ROTOR AMPS				NON INDUCTIVE AMPS	COIL VOLTS
			240V	277V	480V	600V		
61335	45CG20AJ	20	-	120	100	80	30	24
61336	45CG20AF							120
61337	45CG20AG							240
61338	45CG20AL							277
61340	45DG20AJ	25	-	150	125	100	35	24
61341	45DG20AF							120
61342	45DG20AG							240
61343	45DG20AL							277
61345	45EG20AJ	30	-	180	135	110	40	24
61745 <sup>1</sup>	45EG20AJL <sup>1</sup>							24
61346	45EG20AF							120
61746 <sup>1</sup>	45EG20AFL <sup>1</sup>							120
61347	45EG20AG							240
61747 <sup>1</sup>	45EG20AGL <sup>1</sup>							240
61348	45EG20AL							277
61349	45EG20AH							480
61755 <sup>1</sup>	45GG20AJL <sup>1</sup>							40
61756 <sup>1</sup>	45GG20AFL <sup>1</sup>	120						
61757 <sup>1</sup>	45GG20AGL <sup>1</sup>	240						

### Coil Data

CLASS	POLES	F.L.A.	WATTS	VA (NOMINAL)		VOLTS (NOMINAL)	
				INBRUSH	SEALED	PICK-UP	DROP OUT
45	1-2	20 - 40	2.6	27	7.3	80%	50%

For Dimensions see page C14 - C16

<sup>1</sup> with Lug and QC



## Class 42 2, 3 and 4 Pole 25-60 Amp Contactors

The Furnas Centurion 2000 Contactors offer a high new standard in definite purpose control. When used with an appropriate pilot device they can provide either low voltage protection or low voltage release. These controls have been designed with a low drop out voltage making them ideal for air conditioning, heating and refrigeration applications.

The Centurion 2000 was designed to be a tougher, more compact, more versatile and quieter contactor than ever before.

### Features:

- Compact size
- Interchangeable mounting
- Straight thru wiring
- Sems screws available on 25A, 30A and 40 A
- Binding Head Screws optional on 40A
- Class H Coil Insulation on 25-60 amp
- Meets ARI-780, UL and CSA Standards

Class 42 contactors offer reliable full voltage control of Compressor Motors and Electric Heating Loads.

These contactors also feature an enclosed recessed push test button to prevent accidental operation. Close tolerance cross arm guidance system reduce chances of binding.

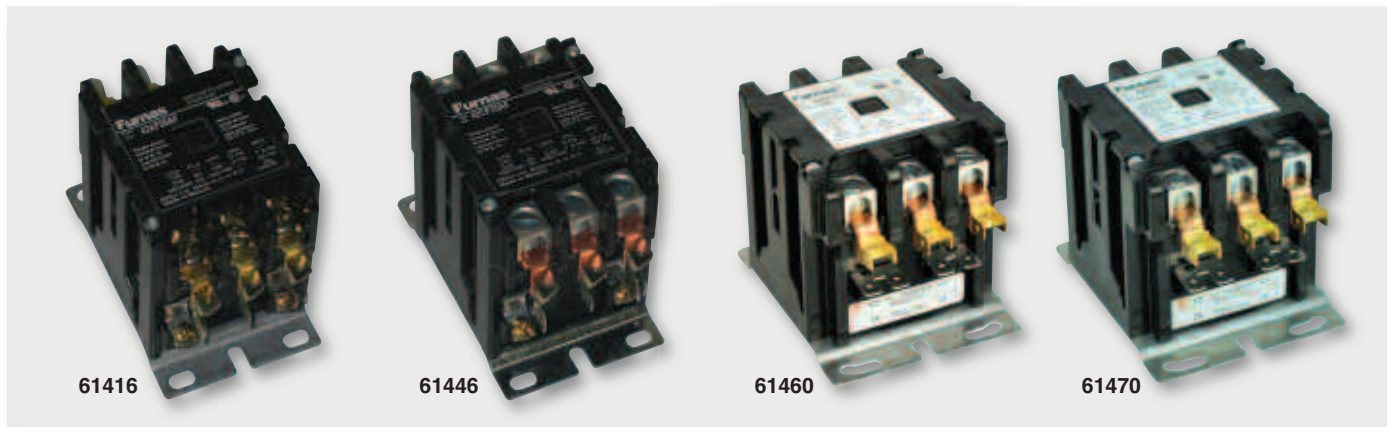
## 2 pole, 25-40 Amp, Class 42

MARS NO.	FURNAS NO.	F.L.A.	LOCKED ROTOR AMPS			NON INDUCTIVE AMPS	COIL VOLTS	HORSE POWER	
			240V	480V	600V			120V	240 V
61410	42AF15AJ	25	150	125	100	35	24	2	3
61411	42AF15AF						120	2	3
61412	42AF15AG						240	2	3
61425	42BF15AJ	30	180	150	120	40	24	2	5
61426	42BF15AF						120	2	5
61427	42BF15AG						240	2	5
61428	42BF15AL						277	2	5
61440	42CF15AJ	40	240	200	160	50	24	3	7.5
61441	42CF15AF						120	3	7.5
61442	42CF15AG						240	3	7.5

For Accessories and Dimensions see pages C-14 to C-16

# Furnas/MARS 780 Definite Purpose Contactors

MARS SERIES **614**



## 3 and 4 Pole, 25 – 60 Amp, Class 42

MARS NO.	FURNAS NO.	F.L.A.	LOCKED ROTOR AMPS			NON INDUCTIVE AMPS	COIL VOLTS	HORSE POWER			MARS NO.	FURNAS NO.
			240V	480V	600V			240V	480 V	600 V		
<b>3 POLE</b>											<b>4 POLE</b>	
61415	42AF35AJ	25	150	125	100	35	24	5	7.5	7.5	-	-
61416	42AF35AF						120	5	7.5	7.5	-	-
61417	42AF35AG						240	5	7.5	7.5	-	-
61430	42BF35AJ	30	180	150	120	40	24	7.5	10	10	61435	42BF25AJ
61431	42BF35AF						120	7.5	10	10	61436	42BF25AF
61432	42BF35AG						240	7.5	10	10	61437	42BF25AG
61433	42BF35AL						277	7.5	10	10	-	-
61434	42BF35AH						480	7.5	10	10	-	-
61445	42CF35AJ	40	240	200	160	50	24	10	15	15	61450	42CF25AJ
61446	42CF35AF						120	10	15	15	61451	42CF25AF
61447	42CF35AG						240	10	15	15	61452	42CF25AG
61448	42CF35AL						277	10	15	15	-	-
61449	42CF35AH						480	10	15	15	-	-
61460	42DF35AJ	50	300	250	200	63	24	15	30	30	-	-
61461	42DF35AF						120	15	30	30	-	-
61462	42DF35AG						240	15	30	30	-	-
61463	42DF35AL						277	15	30	30	-	-
61464	42DF35AH						480	15	30	30	-	-
61470	42EF35AJ	60	360	300	240	75	24	20	40	40	-	-
61471	42EF35AF						120	20	40	40	-	-
61472	42EF35AG						240	20	40	40	-	-

## Coil Data

CLASS	POLES	F.L.A.	WATTS	VA (NOMINAL)		VOLTS (NOMINAL)	
				INBRUSH	SEALED	PICK-UP	DROP OUT
42	2 - 3	25 - 40	2.5	52	6.2	80%	50%
42	4	25 - 40	4.2	91	15.6	80%	50%
42	2 - 3	50 - 60	4.2	91	15.6	80%	50%

For Accessories and Dimensions see pages C-14 to C-16



# Furnas/MARS 780 Definite Purpose Contactors

MARS SERIES **614**

COMPONENT



## Class 42 3 Pole 75-150 Amp Contactors

The Furnas Centurion 2000 Contactors offer a high new standard in definite purpose control. When used with an appropriate pilot device they can provide either low voltage protection or low voltage release. These controls have been designed with a low drop out voltage making them ideal for air conditioning, heating and refrigeration applications.

The Centurion 2000 was designed to be a tougher, more compact, more versatile and quieter contactor than ever before.

### Features:

- Compact size
- Interchangeable mounting
- Straight thru wiring
- Encapsulated Coils in a moisture proof epoxy
- Meets ARI-780, UL and CSA Standards
- Class 42 contactors offer reliable full voltage control of Compressor Motors and Electric Heating Loads.

### 3 Pole, 75-150 Amp, Class 42

MARS NO.	FURNAS NO.	F.L.A.	LOCKED ROTOR AMPS			NON INDUCTIVE AMPS	COIL VOLTS
			240V	480V	600V		
<b>3 POLE</b>							
61480	42FE35AJ106	75	450	375	300	93	24
61481	42FE35AF106						120
61482	42FE35AG106						240
61483	42FE35AL106						277
61490	42GE35AJ106	90	540	450	360	120	24
61491	42GE35AF106						120
61492	42GE35AG106						240
61501	42HF35AF	120	720	600	480	150	120
61502	42HF35AG						240
61511	42IF35AF	150	900	750	600	160	120

### Coil Data

CLASS	POLES	F.L.A.	WATTS	VA (NOMINAL)		VOLTS (NOMINAL)	
				INBRUSH	SEALED	PICK-UP	DROP OUT
42	3	75 - 90	13.5	200	31	85%	53%
42	3	120	14	310	26	85%	50%

### Horse Power Rating for 3 Pole

	240 V	480 V	600 V
75 amp	25	40	40
90 amp	30	50	50

For Accessories and Dimensions see pages C-14 to C-16



The largest selection of motors, components, and accessories for the HVAC/R Industry

# Furnas/MARS 780 Definite Purpose Contactors

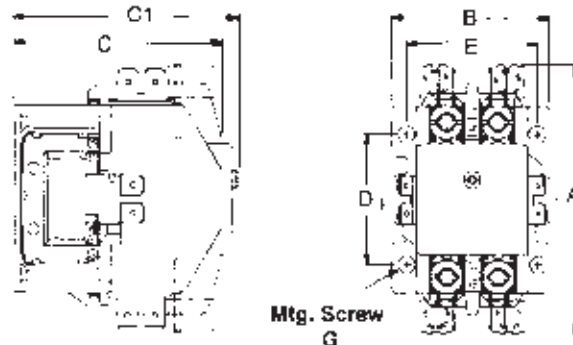
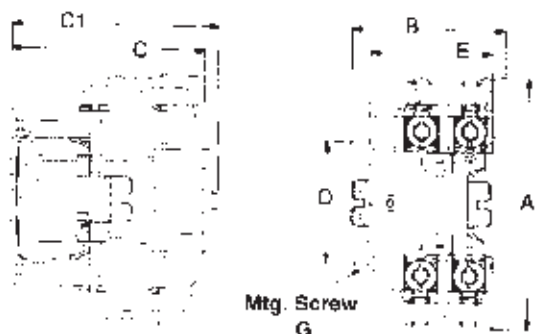
MARS SERIES **614**



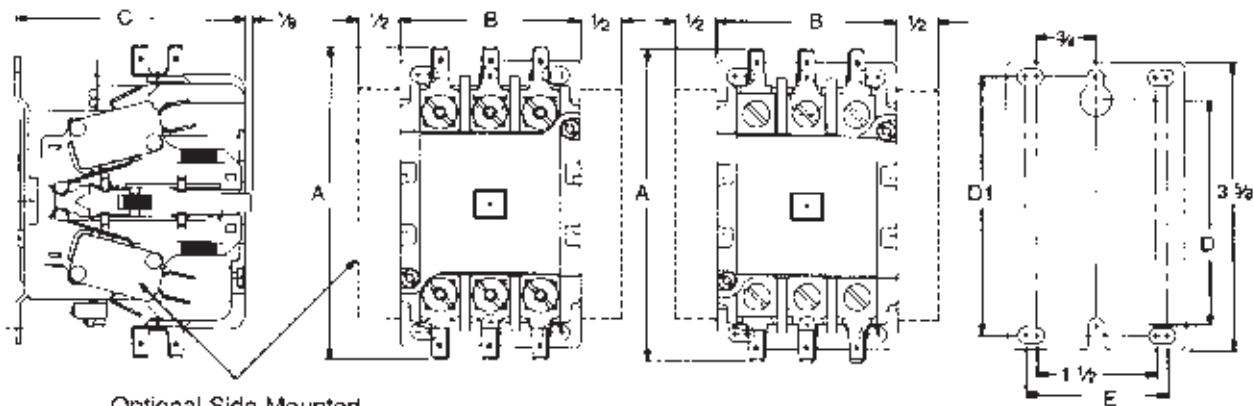
## Renewal Parts and Accessories

20-40A 1 Pole

20-40A 2 Pole



25-40A 3 Pole



Optional Side Mounted Auxiliary Interlocks

MARS NO.	SIZE F.L.A.	POLES	OUTLINE DIMENSIONS				MTG DIMENSIONS			MTG SCREW G	MAX WIRE SIZE
			A	B	C	C1	D	D1	E		
61310-61334, 61720-61734	20-40	1	3-3/8	2-1/16	2-5/8	2-13/16	1-5/8	-	1-5/8	10	10
61335-61359, 61745-61759	20-40	2	3-3/8	2	2-11/16	2-27/32	1-5/8	-	1-5/8	10	10
61415-61419, 61434	25-30	3	3-31/32	2-1/4	2-7/8	-	3-1/8	3-1/4	1 13/16	10	8
61445-61449	40	3	3-31/32	2-1/4	2-7/8	-	3-1/8	3-1/4	1 13/16	10	2

# Furnas/MARS 780 Definite Purpose Contactors

MARS SERIES **614**

COMPONENT



## Renewal Parts and Accessories

### Snap-On Side Mounted Auxiliary Interlocks – Class 42 Contactors

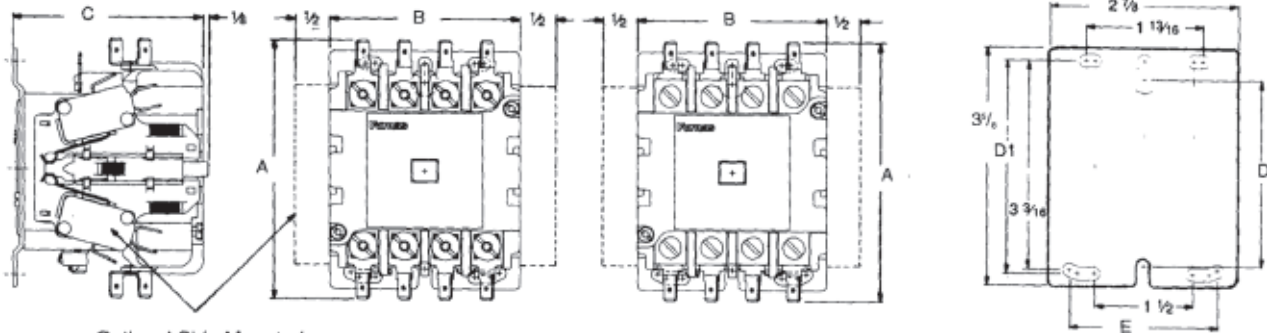
MARS NO.	FURNAS NO.	INTERLOCK CONTACTS	CONTACTOR F.L.A.	USED ON MARS NO.
61610	49ACRO	1 NO		
61611	49ACRC	1 NC		
61612	49ACR6	1 NO – 1 NC		
61613	49ACR7	2 NO	25 - 60	61410 - 61474
61614	49ACR8	2 NC		
61615	49D36098001	SPDT		
61616	49D36098003	DPDT		
61617	49CE42SPDT	SPDT		
61618	49D22125001	1 NO	75 - 90	61475 – 61494
61619	49D22125002	1 NC		

# Furnas/MARS 780 Definite Purpose Contactors

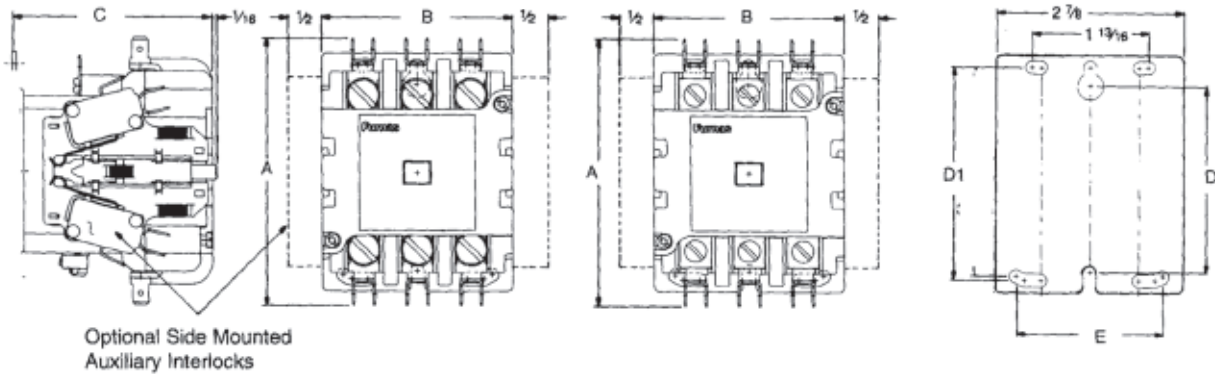
MARS SERIES **614**



25-40A 4 Pole

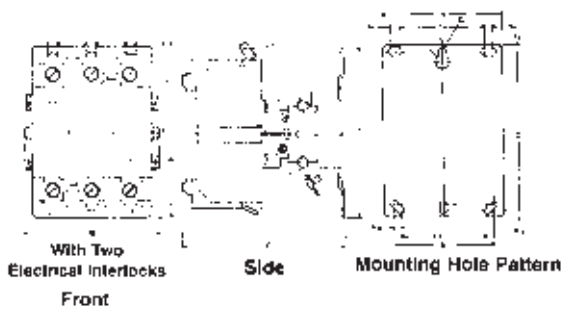


50A, 60A 3 Pole

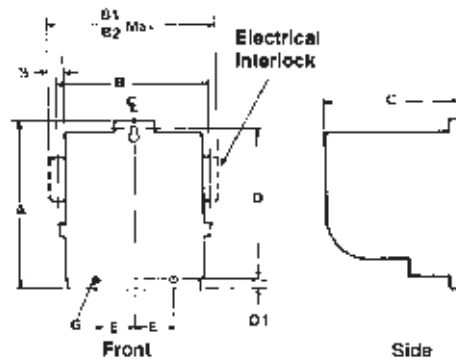


MARS NO.	SIZE F.L.A.	POLES	OUTLINE DIMENSIONS			MTG DIMENSIONS			MTG SCREW G	MAX WIRE SIZE
			A	B	C	D	D1	E		
61420-61424, 61435-61439	25-30	4	3-31/32	2-7/8	2-7/8	3-1/8	3-1/4	2-1/4	10	8
61450-61454	40	4	3-31/32	2-7/8	2-7/8	3-1/8	3-1/4	2-1/4	10	2
61460-61464, 61470-61474	50-60	3	4-1/16	2-7/8	3-1/16	3-1/8	3-1/4	2-1/4	10	2

75A, 90A 3 Pole



120A, 150A 3 Pole



MARS NO.	SIZE F.L.A.	OUTLINE DIMENSIONS				MTG DIMENSIONS			MTG SCREW G	MAX WIRE SIZE
		A	B	B1	C	D	D1	E		
61475-61479, 61480-61484	75	5-3/16	4	-	4-3/4	4-5/8	-	2-7/8	10	1/0
61485-61489, 61490-61494	90	5-3/16	4	-	4-3/4	4-5/8	-	2-7/8	10	1/0
61495-61499, 61500-61504	120	6-1/8	5-1/8	5-1/4	5-1/16	5-5/8	1/4	3/4	1/4	000

Dimensions for reference, not for construction.

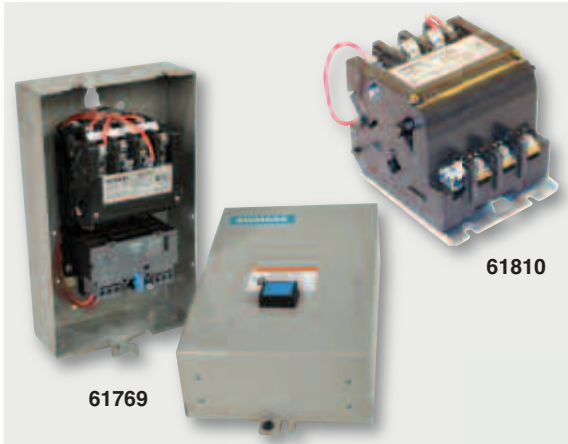




# Furnas NEMA Contactors & Starters

MARS SERIES **617**

COMPONENT



## Application:

NEMA heavy duty contactors and starters are designed for across the line starting of 3 phase motors. Typical applications include cooling towers, refrigeration equipment, and commercial HVAC. NEMA contactors provide the switching (on/off) function. NEMA starters consist of a NEMA contactor with the addition of motor protection via a solid state overload relay which includes phase loss protection.

## Standard NEMA Contactor Features:

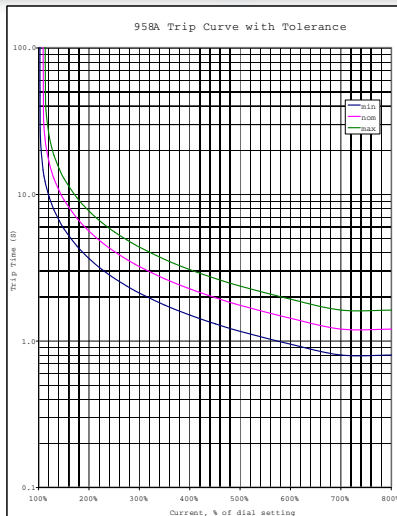
- **Rugged Industrial Design**  
Epoxy encapsulated coil seals out moisture, promotes heat transfer, and resists electrical, mechanical, and thermal stresses. The 45 degree wedge action contacts reduce tracking and provide faster arc quenching. The resulting self-cleaning and reduced contact bounce mean cooler operation and longer life for the large silver cadmium oxide contacts

- **Dual Voltage Coils**  
120/240 VAC is standard  
24 VAC and 240/480 VAC are available as accessories

- **Easy Coil Access**  
Top mounted coil requires no tools to change

## Standard NEMA Starter Features:

- **NEMA Contactor**
- **True Phase Loss Protection**  
Trips within 3 seconds and is self protected from short circuits
- **High Accuracy** +/- 2% repeat trip accuracy
- **Self Powered** Requires no hard wiring or separate power source
- **Heaterless Construction**  
Minimizes energy costs. Does not require the use of complicated heater charts. Simply set the dial on the overload relay to the motor F.L.A.
- **Overload trip class 20**



## NEMA Starters

MARS NO.	SIEMENS NO.	NEMA SIZE	AMP RATING	HORSEPOWER			OVERLOAD RANGE	COIL VOLTAGE	ENCLOSURE
				200V	230V	460V			
61769	14BUB32BA	0	9	1/2	3/4	1-1/2	.75-3A	120/240	NEMA 1
61770	14CUC32BA	0	18	2	2	5	2.5-10A	120/240	NEMA 1
61771	14CUD32BA	0	18	3	3	-	9-18A	120/240	NEMA 1
61772	14DUC32BA	1	27	2	2	5	2.5-10A	120/240	NEMA 1
61773	14DUD32AA	1	27	3	3	10	9-18A	120/240	Not Included
61774	14DUD32BA	1	27	3	3	10	9-18A	120/240	NEMA 1
61775	14DUE32AA	1	27	7-1/2	7-1/2	-	13-27A	120/240	Not Included
61776	14DUE32BA	1	27	7-1/2	7-1/2	-	13-27A	120/240	NEMA 1
61779	14FUF32AA	2	45	-	-	15	13-27A	120/240	Not Included
61780	14FUF32BA	2	45	10	15	25	22-45A	120/240	NEMA 1
61781	14FUF32AA	2	45	10	15	25	22-45A	120/240	Not Included
61782	14HUG32BA	3	90	25	30	50	45-90A	120/240	NEMA 1
61783	14HUG32AA	3	90	25	30	50	45-90A	120/240	Not Included

## NEMA Contactors

MARS NO.	SIEMENS NO.	NEMA SIZE	AMP RATING	HORSEPOWER			COIL VOLTAGE	ENCLOSURE
				200V	230V	460V		
61810	40CP32AA	0	18	3	3	5	120/240	Not Included
61811	40DP32AA	1	27	7-1/2	7-1/2	10	120/240	Not Included
61812	40EP32AA	1-3/4	40	10	10	15	120/240	Not Included
61813	40FP32AA	2	45	10	15	25	120/240	Not Included
61815	40HP32AA	3	90	25	30	50	120/240	Not Included



# Furnas NEMA Contactors & Starters

MARS SERIES **617**



## Parts & Accessories for Starters & Contactors

MARS NO.	SIEMENS NO.	DESCRIPTION	NEMA SIZE
61652	75D73070J	Coil 24VAC	0-2
61650	75D73070A	Coil 120/240V	0-2
61653	75D73070C	Coil 240/480V	0-2.5
61654	75D73070D	Coil 208V	0-2.5
61655	75D73251C	Coil 240/480V	3
61656	75CF14	Replacement Contact Kits*	0
61657	75DF14	Replacement Contact Kits*	1
61658	75FP14	Replacement Contact Kits*	2
61659	49AB10	N.O. Auxiliary Contact	0-3
61660	49AB01	N.C. Auxiliary Contact	0-3
61671	49SBBIX637	NEMA 1 Hand-Off Auto Kit	-

\* Replacement contacts are sold in kits that will re-build 1 power pole.  
 For Example: Use (3) 75DF14 contact kits to re-build a 3 pole device.

## Solid State Overload Relays

MARS NO.	SIEMENS NO.	OVERLOAD RANGE	ENCLOSURE
61795	3UB81134AB2	.25-1A	Not Included
61796	3UB81134BB2	.75-3A	Not Included
61798	3UB81234DW2	9-18A	Not Included
61800	48ASGM20	20-40A	Not Included
61801	3UB81334FW2	13-27A	Not Included



# GE Definite Purpose Contactors

MARS SERIES **130**

COMPONENT



## Model 453 Definite Purpose Contactors

These compact models for 1-1/2, and 2 pole applications, and new 3 pole models that have been specially designed to accommodate IEC style auxiliaries and overloads.

The compact models feature universal mount bases, taped coils, and combination phillips/ slot head screws. 40 amp compact models feature box lugs and arc covers. All of the GE compact designs feature "no burn" coil design. These are self-protecting coils that meet the Trane specification. The Series 453 GE compact design contactors all meet ARI 780. Some other manufacturer's economy model compact contactors do not meet this rigorous spec. All of this is now available at attractive pricing!

### Features:

- Compact overall size
- Combo phillips/slothead screws/hexhead on 30 amp
- Box lugs on 40 F.L.A. rated models
- Universal mount base

### Specifications:

#### CR453C Compact, 30A, 40A, 1-Pole Plus Shunted Pole & 2-Pole

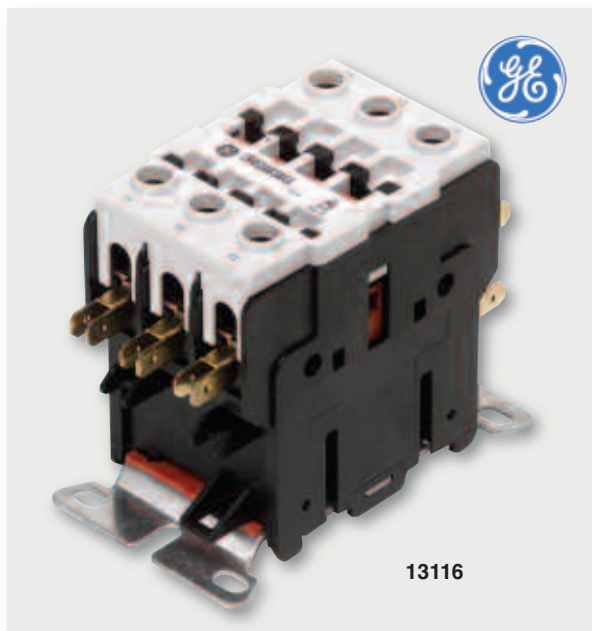
FULL LOAD AMPS	RESISTIVE AMPS PER POLE	LOCKED ROTOR AMPS SINGLE PHASE, 50/60 HZ			POLES
		240/277V	480V	600V	
30	40	180	150	120	1 + Shunt
					2
40	50	240	200	160	2*

\* Ratings shown are for 1-phase, 2-pole.

MARS NO.	F.L.A.	RESISTIVE RATING PER POLE	POLES	VOLTAGE	GE MODEL	DIMENSIONS		
						HEIGHT	WIDTH	DEPTH
13101	30	40	1-1/2	24	453CC3HAAAM	2-9/16	2	3-1/4
13104	30	40	2	24	453CC2HAAAM	2-3/4	2	2-7/16
13105				120	453CC2AAAAM			
13106				240	453CC2BAAAM			
13107	40	50	2	24	453CE2HBBAM	2-3/4	2	2-7/16
13108				120	453CE2ABBAM			
13109				240	453CE2BBBAM			

# GE Definite Purpose Contactors

MARS SERIES **130**



## Model 453 Definite Purpose Contactors

GE's model 453 25-40 amp 3 pole contactors feature several significant innovations, including "finger safe" design and a visual indicator showing whether the contactor is energized. The model 453 25-40 amp 3 pole models also have been designed to accommodate IEC style auxiliaries.

### Specifications:

#### CR453 Ratings-Full Voltage, Non-Reversing

FRAME SIZE	VAC	RATINGS				RESISTIVE RATINGS PER POLE
		F.L.A.	LRA	HORSEPOWER		
				1 PH	3 PH	
CR453AB	120	25	150	2	-	35
	240			3	7.5	
	480			-	10	
	600			-	10	
CR453AC	120	30	180	2	-	40
	240			5	10	
	480			-	15	
	600			-	15	
CR453AD	120	40	240	3	-	50
	240			7.5	10	
	480			-	20	
	600			-	20	

### Features:

- Compact overall size
- Combo phillips/slothead/hexhead screws on 25 amp & 30 amp
- Box lugs on 40 F.L.A. rated models
- Universal mount base
- Unique coil fit for correct replacement every time
- Includes a visual indicator showing whether the contactor is energized
- Designed to accommodate IEC style auxiliaries & overloads
- A choice of terminal configurations allows diverse applications

MARS NO.	F.L.A.	RESISTIVE RATING PER POLE	POLES	VOLTAGE	GE MODEL	DIMENSIONS		
						HEIGHT	WIDTH	DEPTH
13110	25	35	3	24	453AB3HAAA00AB	3-1/8	2-1/4	3-3/4
13111				120	453AB3AAAA00AB			
13112				240	453AB3BAAA00AB			
13113	30	40	3	24	453AC3HAAA00AB	3-1/8	2-1/4	3-3/4
13114				120	453AC3AAAA00AB			
13115				240	453AC3BAAA00AB			
13116	40	50	3	24	453AD3HBBA00AB	3-1/8	2-1/4	3-3/4
13117				120	453AD3ABBA00AB			
13118				240	453AD3BBBA00AB			

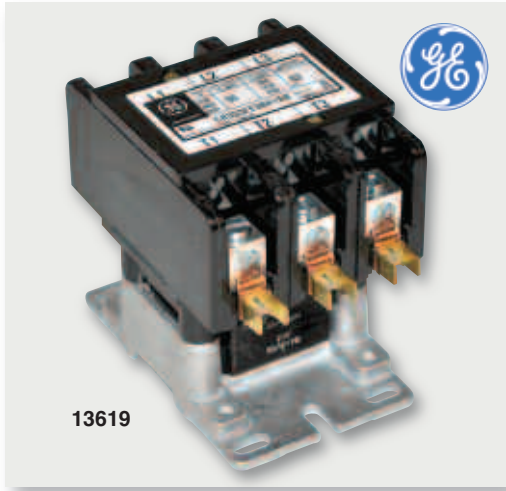




# GE Definite Purpose Contactors

MARS SERIES **130**

COMPONENT



13619

## 50 and 60 Amp Contactors

General Electric has 50 and 60 amp 3 pole contactors. MARS numbers 13619 thru 13627 feature smaller size and a rugged die cast universal base for replacement of competitive contactors. These contactors feature famous General Electric quality and dependability.

### Features:

- Used on air conditioning, refrigeration and heating
- Box lug terminals with quick-connects
- Terminal cover keeps out dust and dirt
- UL and CSA listings available

### Specifications:

#### LOCKED ROTOR AMPS

- At 240V, 6 times F.L.A.
- At 480V, 5 times F.L.A.
- At 600V, 4 times F.L.A.

#### COIL DATA @ 60 Hz (50 Hz)

	INRUSH VA	HOLDING VA
13619-13627	100 (119)	11 (14)

### Compact

MARS NO.	FULL LOAD AMPS	RESISTIVE AMPS	COIL VOLTAGE	POLES	HEIGHT	WIDTH	DEPTH
13619	50	62	24	3	3.75	2.75	3.56
13620			110-120				
13621			208-240				
13625	60	75	24	3	3.75	2.75	3.56
13626			110-120				
13627			208-240				



13260

## 75, 90, 120 and 150 Amp Contactors

General Electric 75 thru 150 amp contactors make the GE contactor line from MARS the most complete in the industry. Small size and straight thru wiring make these easy to install.

### Features:

- Compact size
- 120 and 150 amp allow coil change and contact inspection in seconds without tools
- Box lug terminals with quick-connects on 75 and 90 amp models
- Pressure type terminals on 120 and 150 amp models
- Totally encapsulated coil
- UL and CSA listings available

### Specifications:

#### LOCKED ROTOR AMPS

- At 240V, 6 times F.L.A.
- At 480V, 5 times F.L.A.
- At 600V, 4 times F.L.A.

#### COIL DATA @ 60 Hz (50 Hz)

AMPS	INRUSH VA	HOLDING VA
75,90	233	40
120	1150	80
150	1217	85

MARS NO.	FULL LOAD AMPS	RESISTIVE AMPS	COIL VOLTAGE	POLES	HEIGHT	WIDTH	DEPTH
13240	75	90	24	3	4.63	3.38	4.28
13241			115-120				
13242			208-240				
13260	90	90	24	3	4.63	3.38	4.28
13261			115-120				
13262			208-240				
13281	120	120	115-120	3	7.75	5.75	6.50
13282	120	120	208-240				
13301	150	150	115-120				



# GE Definite Purpose Contactors

MARS SERIES **130**



## Renewal Parts for GE Contactors

### Contact Sets

MARS NO.	AMPERAGE OF DEVICE	MARS NUMBERS	USED ON	G.E. NUMBERS
92039	30	13113-13115	CR153C, CR154C, CR353AC, CR453AC	
92103	75	13240-13252	CR153GB, CR154GB, CR253GB, CR353EG	
92104	90	13260-13272	CR153L, CR154L, CR253LB, CR353EH	

### Renewal Coils

MARS NO.	VOLTAGE		AMPERAGE OF DEVICE	MARS NUMBERS	USED ON	G.E. NUMBERS
	60HZ	50HZ				
92048	24	24	25, 30, 40	13110-13118,	CR153A, B, C, D, DA, CR154A, B, C, D, DA, BV, CV, DV, CR253DB, CR453AB, AC, AD, CR353AB, AC, AD, CR354AB, AC, AD, CR355AB, AC, AD	
92046	110-120	110-120		13413-13455, 13513, 13555,		
92047	208-240	208-240		13613-13615, 13110-13118		
92085	24	24	50, 60	13619-13627	CR253EB, FB, CR353FE, FF, CR354FE	
92086	110-120	110-120				
92087	208-240	208-240				
92120	24	—	75, 90	13240-13272	CR153GB, L, CR353EG, EH, CR355EG, EH	
92121	115-120	110				
92122	208-240	220				



## Accessory Parts for GE Contactors

GE contactor accessory parts are designed to provide reliable switching options. Auxiliary switches feature easy installation in the field.

All auxiliaries are UL, CSA and CE listed

### Auxiliary Switches

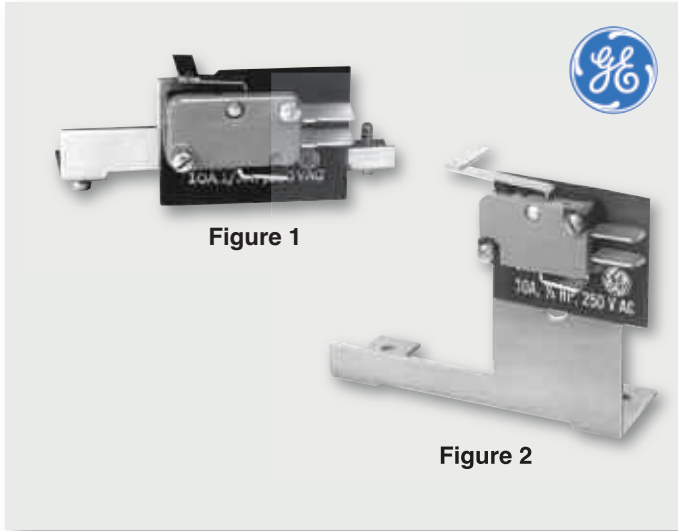
MARS NO.	GE MODEL NO.	DESCRIPTION
92320	CR453XC211	Single SPDT 250V Side Mount
92321	CR453XC222	Double SPDT 250V Side Mount
92324	CR453XC611	1NO-1NC 600V Side Mount w/QC
92322	BCLF10	1 NO 600V Top Mount
92323	BCLF01	1 NC 600V Top Mount



# GE Definite Purpose Contactors

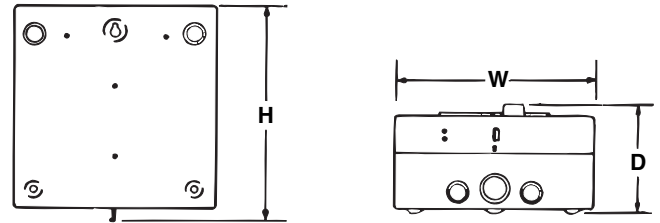
MARS SERIES **130**

COMPONENT



## Auxiliary Contacts & Enclosures for GE Contactors and Starters

### Enclosure Dimensions (See Chart Below)



### Auxiliary Contacts 10 Amp at 240 VAC

MARS NO.	SWITCH ACTION	USED ON MARS NOS.	G.E. NOS.	APPLICATION	FIG. NO.
92301	SPDT	13110-13118, 13413-13455, 13513-13555, 13613-13627	CR153A, B, C, D, DA, CR154BV, CV, DV, CR253DB CR253EB, FB, CR353AB, AC, AD, FE, FF, CR354AB, AC, AD, FE	One switch can be added	1
92302	SPDT	13200-13272, 13473-13495, 13573-13575	CR153EB, FB, GB, L, CR154EV, FV, GV, LV, CR253GB, LB, CR353EE, EF, EG, EH	One switch can be added to each side	2

### Enclosures

MARS NO.	USED ON	HEIGHT	WIDTH	DEPTH
92018	contactors thru 60 amp	10.00	6.00	4.03

# ACC Contactors

MARS SERIES **600**



## 30-40 Amp Type C Power Contactors

### One Pole With Shunt

The Type C contactor is used extensively in the Air Conditioning industry for single phase applications.

### Two Pole Contactors

For applications where breaking both sides of the line and added safety is very important, the two pole Type C is the right selection.

### Specifications:

- Line & load terminations: 10-32 phillips/slotted hex, washer head, box lug
- Tightening Torque: 25 in. lb.
- Quick connects: quad .250 standard (40 amp models have dual QC.)
- Coil termination: double .250 on each side
- Permissible ambient temperature: operate +60C/-40C, storage +90C/-50C
- Contact material: silver cadmium oxide
- Approximate mechanical life cycles: 1,000,000
- 30 amp models do not include covers. Add CJ suffix to part numbers if covers are desired (10 pc. min.) There will be an additional charge. 40 amp model is standard with covers.
- Dimensions & Accessories: pages C24

U.L. 508 GUIDE NO. NLDX2 / FILE NO. E75492  
C.S.A. C22.2 NO. 14 / FILE NO. LR49598 or LR47771

## 1 Pole w/Shunt, 2 Pole Power Contactors, w/ Taped Wound Coils

1 POLE w/SHUNT		2 POLE		COIL VOLTS 50/60 HZ (1)	LINE/ LOAD VOLTS	FULL LOAD AMPS	LOCKED ROTOR AMPS		RES. AMPS	
MARS NO.	AH MODEL	MARS NO.	AH MODEL				1P	2P	1P	2P
60025	C301NU10	60030	C302U10	24	240/277	30	150	150	40	40
		60031	C302U20	120						
		60032	C302U30	208-240	480					
		60045	C402U10	24	240/277	40	240	240	50	50
		60046	C402U20	120						
		60047	C402U30	208-240	480					

Note: Replacement coils, contacts & auxiliary switches are not available for "C" contactors. (1) Nominal rated voltage at 50 Hz are 110V for U20/220V for U30 and 240V for U50.

## Technical Data: 1 Pole, 1 Pole w/Shunt, 2 pole, - 20 - 40 Amps

AC COIL DATA (50/60 Hz)	VOLTAGE 1 POLE					VOLTAGE 2 POLE				
	24	120	240	277	480	24	120	240	277	480
Nominal Coil Voltage	24	120	240	277	480	24	120	240	277	480
Maximum Pick Up Volts	18	88	177	221	384	18	88	177	221	384
Drop Out Volts Range	6-15	20-70	40-140	50-180	(1)	6-15	20-70	40-140	50-180	(1)
Maximum Pick Up Time Milliseconds	30	30	30	30	30	30	30	30	30	30
Maximum Drop Out Time Milliseconds	20	20	20	20	20	20	20	20	20	20
Maximum Inrush VA 50 Hz	23	26	25	25	25	38	40	40	40	40
Maximum Inrush VA 60 Hz	22	24	23	23	23	35	37	37	30	37
Maximum Sealed VA 50 Hz	9	9	8	8	8	10	10	10	10	10
Maximum Sealed VA 60 Hz	6.5	7	7	7	7	8	8	8	6	8





## 25-90 Amp Contactors Millennium Series

ACC Millennium Series Contactors offers high performance as well as flexibility and reliability. They are designed to match numerous applications such as: motors, power supplies, food service equipment, compressors, business machines, resistive heating, air conditioning, refrigeration equipment and welding. Millennium Series Contactors feature a manual test button which directly closes movable contacts without energizing the coil.

### Specifications:

- ARI 780 rated
- Quick connects: double .250 standard
- Coil termination: 6-32 screw & single QC
- Temperature range: -40°C to 65°C/-40°F to 150°F
- Contact material: silver cadmium oxide
- Approximate mechanical life cycles: 1,000, 000
- 25 and 30 amp models are standard with arc covers and QC terminals
- 40 amp models are standard with lugs and QC terminals
- Dimensions , Coil Data, Horsepower & Accessories  
see page C24

U.L. 508 GUIDE NO. NLDX2/FILE NO. E75492

C.S.A. C22.2 NO. 14/FILE NO. LR49598

## 3 Pole Contactors, w/ Molded Encapsulated Coils

MARS NO.	AH MODEL NO.	COIL VOLTS 50/60 HZ	POLES	F.L.A. 600V	LOCKED ROTOR AMPS			RES AMPS PER POLE 600V
					240V	480V	600V	
60505	ACC238UMM10	24						
60506	ACC238UMM20	110/120	3	25	150	125	100	35
60507	ACC238UMM30	208/240						
60515	ACC338UMM10	24						
60516	ACC338UMM20	110/120	3	30	180	150	120	40
60517	ACC338UMM30	208/240						
60530	ACC438UMM10	24						
60531	ACC438UMM20	110/120	3	40	240	200	160	50
60532	ACC438UMM30	208/240						

## 50-60 Amp, 2 Pole Power Contactors, w/ Molded Encapsulated Coils

MARS NO.	AH MODEL 93	MARS NO.	AH MODEL 86	COIL VOLTS 50/60/HZ (1)	NO. OF POLES	FULL LOAD 600V	LOCKED ROTOR AMPS			RES. AMPS PER POLE		LOAD VOLTS	MAX. HP		
							240V	480V	600V	93	86		1PH	3PH	
60225	ACC633U10	60205	ACC630U10	24	3	60	360	300	240	75	-	-	-	-	

(1) Nominal rated voltage at 50 Hz are 110V for U20 & 220V for U30.

## 90 Amp, 3 Pole Power Contactors

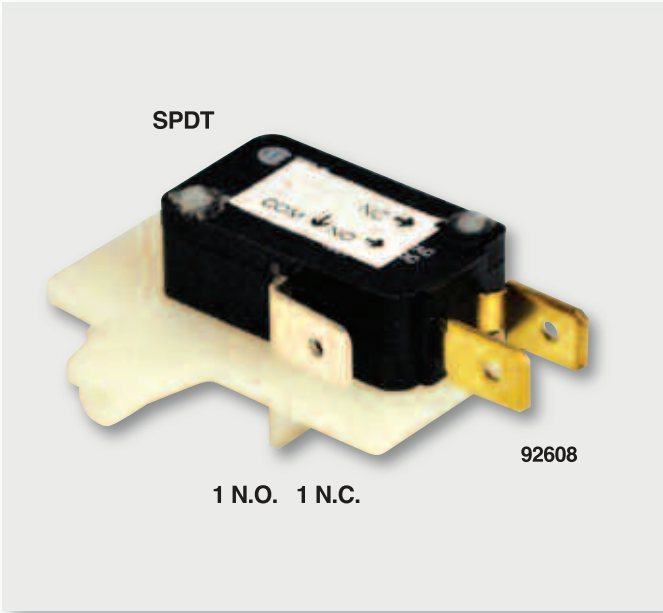
MARS NO.	AH MODEL	COIL VOLTS 50/60/HZ (1)	NO. OF POLES	F.L.A. 600V	LOCKED ROTOR AMPS			RES. AMPS PER POLE 600V	LOAD/ LOAD VOLTS	MAX. HP	
					240V	480V	600V			1PH	3PH
60245	ACC937U10	24									
60246	ACC937U20	110-120	3	90	540	450	360	120	110-120	7.5 25	
60247	ACC937U30	208-240							200-240	15 30	

\*Limited quantities available, while supplies last (1) Nominal rated voltage at 50 Hz are 110V for U20 & 220V for U30.

# ACC Contactor Renewal Parts/Universal Enclosure



MARS SERIES **910 & 600**



## ACC Contactor Renewal Parts

Selected renewal parts are available to extend the service of MARS definite purpose contactors.

### ARROWHART/ACC Renewal/Accessory Parts Application Chart

MARS NO.	ARROWHART MODEL	IND. AMPS	VOLTS	SPDT AUX. SWITCH
60245	ACC937U10	90	24	92608
60246	ACC937U20	90	110-120	92608
60247	ACC937U30	90	208-240	92608

MARS NO.	ARROWHART MODEL NO.	COIL REPLACEMENT	MODEL NO.
92620	36320-501	110-120	93

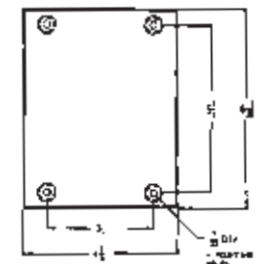
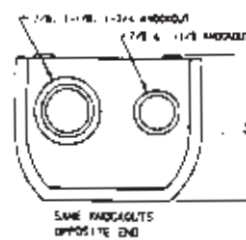
MARS NO.	ARROWHART MODEL NO.	SWITCHING ACTION	MODEL NO.
92608	34300-337	SPDT	86
92609	98220-332	1 N.O. 1 N.C.	Millenium Series
92610	98220-337	SPDT	Millenium Series



## Universal Contactor Enclosure

The MARS 92680 Universal Contactor enclosure is specifically made for Arrowhart Contactors from 20 to 40 amp., but will also fit other brands of contactors from 20 to 40 amp. This enclosure will also fit the new smaller frame ACC533 and ACC633 contactors. Each enclosure comes with all the necessary mounting screws.

MARS NO.	MFG. PART NO.	DESCRIPTION
92680	AHK425A	Universal Contactor Enclosure

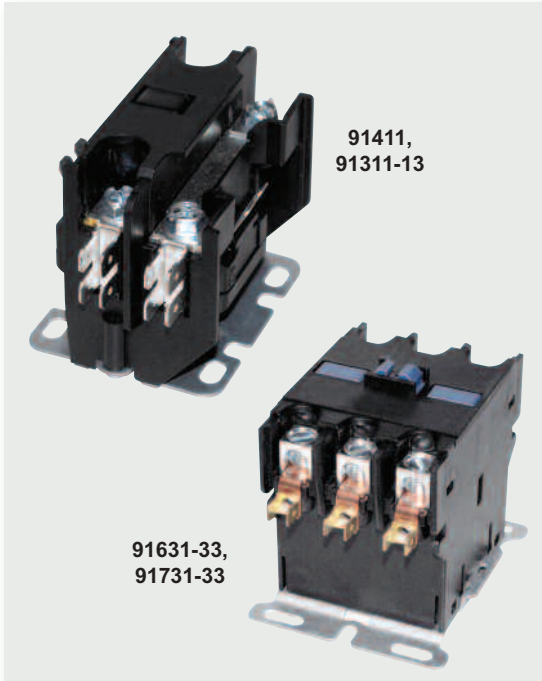




# Definite Purpose Contactors

MARS SERIES **910**

COMPONENT



## MARS Definite Purpose Contactors

MARS definite purpose contactors are designed for use on refrigeration, air conditioning, and electric heating systems. They are available in one pole with shunt (one and one half pole) configurations, from 30 thru 40 amps. MARS brand definite purpose contactors are also available in 2 pole models (30 and 40 amp) and 3 pole models (30 through 75 amp). The universal mounting base allows replacement of most contactor brands. Straight-thru wiring and small size speeds installation.

### Features:

- Used in air conditioning, heating and refrigeration
- Box lug terminations speed installation
- Universal mounting base
- Contact cover and enclosed coils reduce dirt and insect intrusion
- Compact design
- Silver-Cadmium contacts

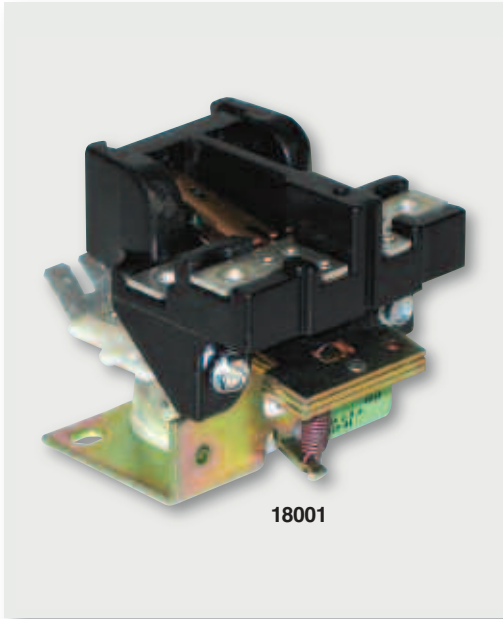
### Specifications:

- Meets ARI 780/790 requirements
- cULus Approval
- 1,000,000 Cycle mechanical life

MARS No.	FLA	Poles	Locked Rotor Amps				Res.	Coil Volts	Termination	Horsepower			
			240	277	480	600				1 PH	3 PH		
										240	240	480	600
91311	30	1 Pole w/Shunt	180	180			40	24	Screw Type	-	-	-	-
91312								120					
91313								208/230					
91321	30	2	180	-	150	120	40	24	Screw Type	-	-	-	-
91322								120					
91323								208/230					
91411	40	1 Pole w/Shunt	240	240	-	-	50	24	Box Lug	-	-	-	-
91331	30	3	180	-	150	120	40	24	Screw Type	3 HP	7.5 HP	10 HP	15 HP
91332								120					
91333								208/230					
91421	40	2	240	-	200	160	50	24	Box Lug	-	-	-	-
91422								120					
91423								208/230					
91431	40	3	240	-	200	160	50	24	Box Lug	5 HP	10HP	15 HP	20 HP
91432								120					
91433								208/230					
91531	50	3	300	-	250	200	63	24	Box Lug	5 HP	15 HP	20 HP	25 HP
91532								120					
91533								208/230					
91631	60	3	360	-	300	240	75	24	Box Lug	7.5 HP	20 HP	25 HP	30 HP
91632								120					
91633								208/230					
91731	75	3	450	-	375	300	94	24	Box Lug	15 HP	25 HP	40 HP	40 HP
91732								120					
91733								208/230					

# Magnetic Line Contactors

MARS SERIES **180**



18001

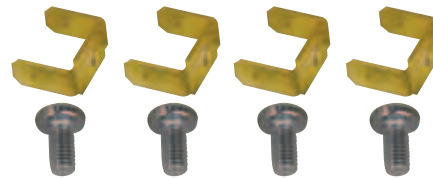
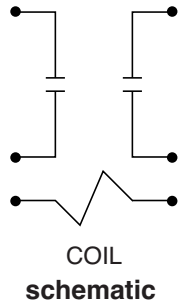
## 30 Amp Two Pole Contactors

The MARS Series 180 contactors are designed primarily to replace contactors used in air conditioning and electric heating to control blower motors. In addition they are used to switch pumps and computer power supplies. Replace General Electric Contactors and other manufacturers including WR, Essex/RBM and Honeywell.

### Features:

- Replace all 3ARR8, 9, 27, and 28 General Electric contactors
- Replace WR, Essex/RBM and Honeywell
- Instructions and cross reference chart included
- Non-positional
- UL and CSA listings available

Cross Reference		
GEMLINE	HONEYWELL NO.	MARS REPLACEMENT
MC11	R850B1146	18001



4 SCREWS & 4 TERMINALS

KIT 93103

MARS NO.	DESCRIPTION	FULL LOAD AMPS	RESISTIVE AMPS	LOCKED ROTOR AMPS	COIL VOLTAGE	POLES	COIL VOLT	PICK-UP HOT	MAX COLD
18001	30 Amp 2 Pole Magnetic Line Contactor	30	30	120	24	2	24	20.5	19.2
93103	Push-On Terminals Adapters and Screws.								





# MARS General Purpose Relays

MARS SERIES **420**

## For Motor Starting Circuits up to One Horsepower

### Features:

- Replace Potter & Brumfield PR series, Deltrol, Guardian, Magnacraft, etc.
- Plastic enclosed coil minimizes damage, resists dirt and moisture
- 5/16" diameter silver contacts for long life
- Tough phenolic base
- Reinforced screw terminals
- UL and CSA listings available

### Cross Reference Information

POTTER & BRUMFIELD	MARS NO.	DELTROL NO.	MARS NO.
PR3AY0-24V	43001	20237-82D	43001
PR3AY0-120V	43002	20238-83D	43002
PR3AY0-240V	43003	20238-84D	43003
PR5AY0-24V	43004	20239-82D	43004
PR5AY0-120V	43005	20239-83D	43005
PR5AY0-240V	43006	20239-84D	43006
PR7AY0-24V	43007	20240-82D	43007
PR7AY0-120V	43008	20240-83D	43008
PR7AY0-240V	43009	20240-84D	43009
PR11AY0-24V	43013	20241-82D	43013
PR11AY0-120V	43014	20241-83D	43014
PR11AY0-240V	43015	20241-84D	43015

Coil Data: 24-240 VAC @ 50/60 Hz; 9.5 VA Max. Sealed



SPST-NO

SPDT

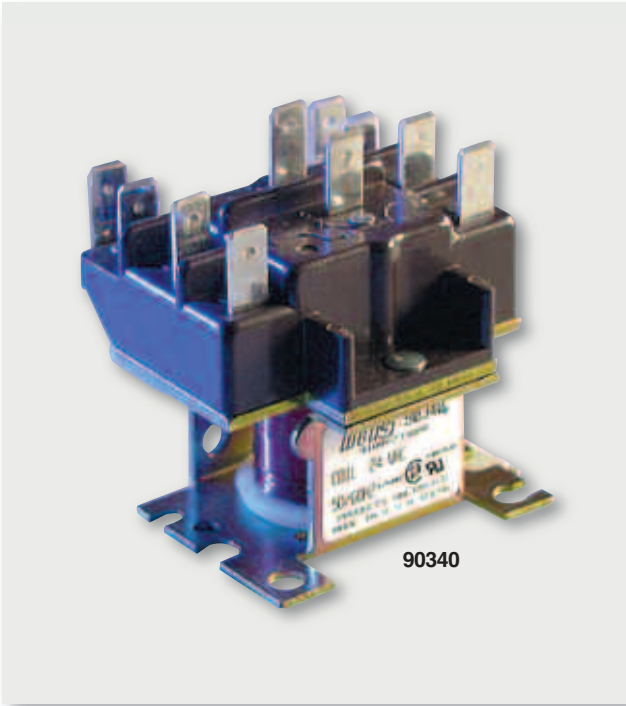
DPST-NO

DPDT with auxiliary

MARS NO.	P & B SERIES	CONTACTS ARRANGEMENT	AMP	COIL VOLTAGE	COIL RES. IN OHMS	NOM. POWER
43001	PRD3AY0	SPST-NO-DM	25	24	12	9.8VA
43002				120	290	
43003				240	1,200	
43004	PRD5AY0	SPDT	25	24	12	9.8VA
43005				120	290	
43006				240	1,200	
43007	PRD7AY0	DPST-NO	25	24	12	9.8VA
43008				120	290	
43009				240	1,200	
43013	PRD11AY0	DPDT	25	24	12	9.8VA
43014				120	290	
43015				240	1,200	
43016	35D013	Metal dust cover for PRD series relays. Length: 4-7/8 in.; Width: 3-7/8 in.; Height: 3 in.				

# MARS General Purpose Switching Relays

MARS SERIES **903**

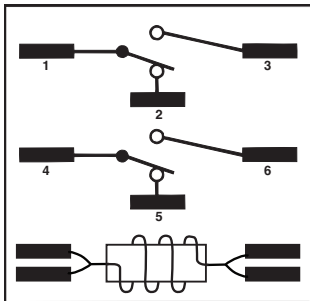


## 2-Pole Air Conditioning Relays

The MARS Series 903 switching relays are intended for many applications in air conditioning, refrigeration, and heating. Other uses include general purpose switching in appliances, fan controls, and vending machines. Our relays are available in 24, 110/120, and 208/240 coil voltages with various combinations of power and pilot duty contacts.

### Features:

- Replaces Honeywell and White-Rodgers/RBM - cross reference on package
- Double quick-connect terminals on coil
- 2.13 x 1.88 x 2.25 in.
- Base is designed for easy replacement of competitive relays
- Molded terminal numbers and circuit diagram on top of relay
- UL and CSA listings available



	POWER		PILOT	
	120V	208/240V	120V	208/240V
Full Load Amps	12	6	—	—
Resistive Amps*	15	15	3	3
Locked Rotor Amps	60	35	—	—
Horsepower	3/4	3/4	1/10	1/10

\*277 VAC

### Cross Reference Information

MARS NO.	COIL VOLTAGE	TERMINALS 1-2-3	TERMINALS 4-5-6
90340	24		
90341	110/120	Power	Power
90342	208/240		
90343	24		
90344	110/120	Power	Pilot
90345	208/240		
90346	24	Pilot	Pilot
90348	208/240		

WR/RBM No.	MARS Replacement	HONEYWELL No.	MARS Replacement
90-340	90340	R4222B1082	90344
90-341	90341	R4222B1090	90345
90-342	90342	R4222D1013	90341
90-343	90343	R4222D1021	90342
90-344	90344	R4222N1010	90348
90-345	90345	R4222V1002	90344
90-346	90346	R4222V1010	90345
90-348	90348	R8222B1067	90343
		R8222D1014	90340
		R8222N1011	90346
		R8222V1003	90343

Coil Data: 24-240 VAC @ 50/60 Hz; 21.5 VA Max.  
Inrush; 9.5 VA Max. Sealed



# MARS General Purpose Switching Relays

MARS SERIES **903**

COMPONENT

## SPST and SPDT Fan Relays

The MARS Series 903 relays are among the most popular relays used in air conditioning today. They will replace the WR/Essex/RBM Type 84 (90-290 thru 90-295) quick-connect and screw terminal versions.\*

### Features:

- 0.25 inch quick-connect terminals
- Packaged with instructions and cross reference
- Replace 90-290 thru 90-295 and 90-290Q thru 90-295Q
- Dimensions: 2.38 x 1.63 x 1.50 in.
- UL and CSA listings available

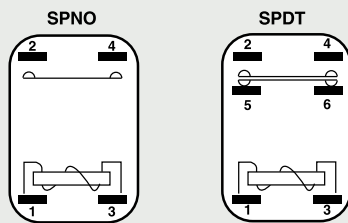
COIL VOLTAGE	MARS NO. SPST	MARS NO. SPDT
24	90290	90293
110/120	90291	90294
208/240	90292	90295

### Contact Rating—All Models/Amps

VOLTAGE	FULL LOAD	LOCKED ROTOR	RESISTIVE
120	12	60	18
240	8	48	18
277	7	42	18

### SPDT

MARS NO.	COIL VOLTAGE	CONTACT RATING 125 VAC	CONTACT RATING 250 VAC
90296	24	3 amps	1.5 amps



### Cross Reference Information

WR/RBM NO.	MARS REPLACEMENT	WR/RBM NO.	MARS REPLACEMENT
90-290*	90290	90-293*	90293
90-290Q	90290	90-293Q	90293
90-291*	90291	90-294*	90294
90-291Q	90291	90-294Q	90294
90-292*	90292	90-295*	90295
90-292Q	90292	90-295Q	90295

Coil Data: 24-240 VAC @ 50/60 Hz;  
5 VA Max. Inrush; 3.0 VA Max. Sealed

\*For Screw Terminal Versions, use MARS No. 93029 push-on to screw-on adaptors.

## Heavy Duty Fan Relays

MARS Heavy Duty Fan Relays are used on heating and air conditioning equipment to provide switching of heavier loads with a compact size relay.

MARS Heavy Duty Fan Relays replace WR/Essex/RBM type 184.

### Features:

- 0.25 inch quick-connect terminals
- Packaged with instructions and cross reference
- Replaces WR/Essex/RBM Type 184
- Universal mounting bracket
- UL and CSA listings available

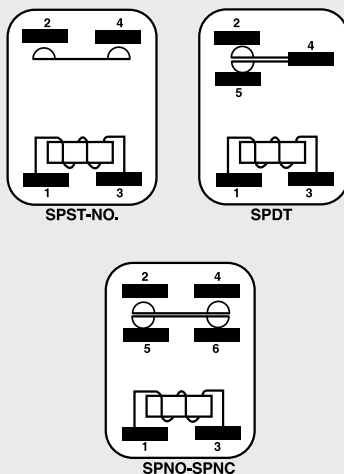
COIL VOLTAGE	MARS NO. SPST	MARS NO. SPDT	MARS NO. SPNO-SPNC
24	90360	90370	90380
110/120	90362	90372	90382
208/240	90364	90374	90384
277		90377	

### Contact Rating—All Models/Amps

VOLTAGE	FULL LOAD	LOCKED ROTOR	RESISTIVE
120	12	60	18
240	8	48	18
277	7	42	18

### Coil Data

COIL VOLTAGE	MAX INRUSH	MAX. SEALED
24	5 VA	3 VA
120	5 VA	3 VA
208/240	5 VA	3 VA



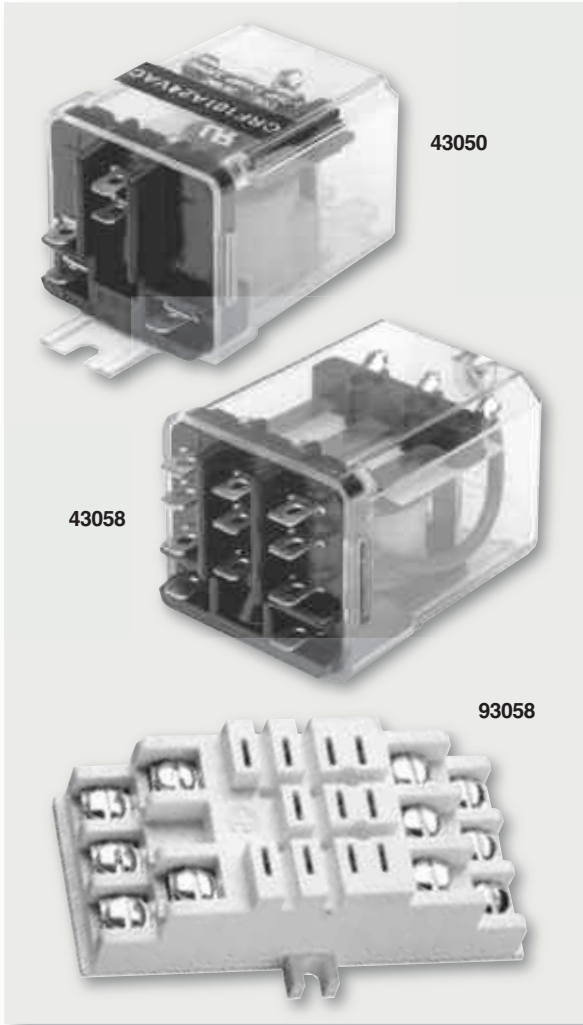
### Cross Reference Information

WR/RBM	MARS NO.	WR/RBM	MARS NO.
90-360	90360	90-374	90374
90-362	90362	90-380	90380
90-364	90364	90-382	90382
90-370	90370	90-384	90384
90-372	90372		



# MARS Enclosed Relays

MARS SERIES **430**



## MARS Enclosed Switching Relays

MARS enclosed switching relays are heavy duty general purpose relays suitable for a variety of applications. They are commonly used in heating, air conditioning, vending machines, office machines, control panels and other general purpose applications. They are available in single pole, two pole and three pole models for either bracket or plug-in mounting. All MARS enclosed switching relays are protected by a tough polycarbonate cover to keep out dust and dirt. Blade type terminals fit standard plug-in mounts plus allow use with 3/16 inch quick-connect terminals or direct soldering.

### Features:

- Simple connections
- One, two and three pole models
- Plug-in or bracket mount
- See-through protective cover
- Three-way blade terminals. Plug-in, quick-connect or solder
- UL and CSA listings available

### Specifications:

DIMENSIONS: 2.0 X 1 1/2 X 1 3/8  
 TERMINALS: 3/16 blade  
 COIL DATA: 2.0 VA  
 CONTACT MATERIAL: Silver alloy, gold flashed

MARS NO.	COIL VOLTAGE	HZ	AMP RATING	HORSEPOWER		SWITCH ACTION	TYPE MOUNT
				120V	240V		
43050	24	50/60	10	1/3	1/2	SPDT	bracket
43053	24						
43054	120	50/60	10	1/3	1/2	DPDT	bracket
43055	240						
43056	24						
43057	120	50/60	10	1/3	1/2	3PDT	bracket
43058	240						
43060	24						
43061	120	50/60	10	1/3	1/2	SPDT	plug-in
43063	24						
43064	120	50/60	10	1/3	1/2	DPDT	plug-in
43065	240						
43066	24						
43067	120	50/60	10	1/3	1/2	3PDT	plug-in
43068	240						

**93058** Socket Base. Can be surface or DIN rail mounted.





# MARS Current Relays

MARS SERIES **270**



MARS 27000 Series  
Current Relay

## MARS "One-on-One" Current Relays for Tecumseh Applications

MARS brand current relays were designed by GE for Tecumseh compressor applications. Tecumseh compressors, utilizing current relays designed by GE can be found in refrigerators, freezers, water coolers, pumps and vending machines.

### Features:

- Reliable rugged GE 3ARR12 design
- Replaces plug-on, bracket-type, split phase and capacitor-start current relays
- Clearly labeled terminals for fast wiring

### Cross Reference

MARS NO.	GE NO. 3ARR12 PAC	MAX PICK-UP	MIN DROP OUT
27035	172S	30.5	25
27036	178S	10.4	8.5

TECUMSEH PART NO.	MARS NO.
82481-1	27035
82489-1	27036



## Universal Replacement

12 MARS current relays manufactured by General Electric can replace almost any current relay found on refrigerators, freezers, water cooler, pumps and vending machines.

### Features:

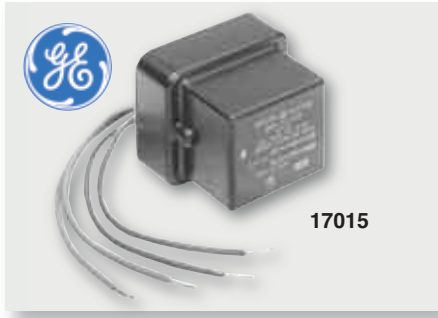
- Replace plug-on, bracket-type, split-phase, and capacitor-start current relays
- Covers replacement needs of 1/12 H.P. 115V to 1-1/2 H.P. 230V and parts kits
- Clearly labeled terminals for fast wiring
- Each relay packaged with installation instructions and wiring diagrams
- UL and CSA listings available

MARS NO.	GE NO. 3ARR12 PAC	MAX PICK-UP	MIN DROP OUT	APPLICATION SURVEY BY HORSEPOWER <sup>1</sup> (AT 115) <sup>2</sup>							
				1/12	1/8	1/6	1/5	1/4	1/3	1/2	3/4
27001	309A	3.8	3.2	■	□	□	□	□	□	□	□
27002	310A	5.2	4.4	□	■	□	□	□	□	□	□
27003	311A	6.8	5.8	□	■	■	■	□	□	□	□
27004	312A	8.3	7.1	□	□	■	■	■	□	□	□
27005	313A	10.5	8.7	□	□	□	■	■	□	□	□
27006	314A	11.8	9.8	□	□	□	■	■	■	□	□
27007	315A	13.8	11.5	□	□	□	□	■	■	□	□
27008	316A	15.1	12.6	□	□	□	□	■	■	■	□
27009	317A	16.8	14.0	□	□	□	□	□	■	■	□
27010	318A	22.5	18.0	□	□	□	□	□	■	■	□
27011	319A	25.4	20.3	□	□	□	□	□	■	■	■
27012	320A	31.0	25.0	□	□	□	□	□	□	■	■

1. Current relays cannot be replaced by horsepower, amperage, or nameplate data alone. Refer to cross reference information for proper replacement of original equipment current relays by part numbers.  
 2. These current relays are often used on 230 volt applications, however this horsepower survey refers only to 115 volt applications.

# GE Relays

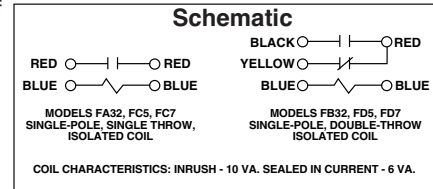
MARS SERIES **190**



## Totally Enclosed Switching Relays

### Features:

- Replaces GE, Honeywell, WR/Essex/RBM, White-Rodgers, etc.
- Designed for standard conduit box mounting for remote control of air conditioning and heating systems and remote power switching of motors, power tools, fans and blowers.
- Totally enclosed with heavy, impact resistant phenolic cover
- Non-positional
- Color-coded lead wires
- UL and CSA listings available

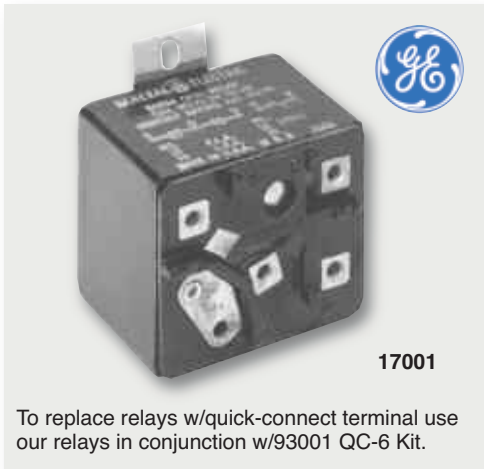


MARS NO.	GE NO.	COIL VOLTAGE	CONTACT ARRANGEMENT	MAX. HP @ 240V		F.L.A.	LOCKED MOTOR AMPS		LEAD LENGTH
				N.O.	N.C.		N.O.	N.C.	
17015	3ARR4 FA32	24							16 in.
17016	3ARR4 FC7	120	SPST	1-1/2	—	18	55	—	6 in.
†17018	3ARR4 FB32	24							16 in.
†17019	3ARR4 FD7	120	SPDT	1-1/2	3/4	18	55	35	6 in.
†17020	3ARR4 FD5	240							6 in.

† S.P.D.T relays may be used on S.P.S.T. applications by eliminating use of yellow lead for normally open applications or eliminating use of black lead for normally closed applications.

### Cross Reference Information

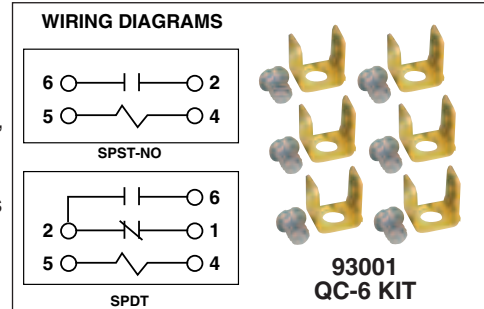
WHITE-RODGERS NO.	MARS REPLACEMENT	HONEYWELL NO.	MARS REPLACEMENT	WHITE-RODGERS NO.	MARS REPLACEMENT
90-120	17015	R8225A	17018	8A04-1	17018
90-121	17016	R8225B	17015		
90-122	17017				
90-123	17018				
90-124	17019				
90-125	17020				



## Switching and Shunt Relays

### Features:

- MARS 17001—Economical replacement for SPST relays with 24 volt coil
- Reduce inventory on 3ARR4 relays. Four magnetic line relays now replace over 200 different models. SPDT relays will replace both single pole single throw and single pole double throw models
- Used for remote control of heating and air conditioning systems and remote power switching of motors, power tools, fans and blowers on GE, Day & Night, Carrier, York, Bryant, American Standard, Lennox, etc.
- Purchase of 93001 QC-6 Kit converts screw-on to push-on type terminals for even more replacements
- UL and CSA listings available



MARS NO.	GE CAT. NO.	COIL VOLTAGE	F.L.A.	LOCKED MOTOR AMPS		CONTACT ARRANGEMENT
				N.O. CONTACTS	N.C. CONTACTS	
17001	3ARR4 A32	24	18	55	—	SPST-NO
17002	3ARR4 CA32	24				
17004	3ARR4 CA7	120	18	55	35	SPDT
17006	3ARR4 CA5	240				
93001	QC-6					

### Cross Reference To WR/Essex/RBM

WR/ESSEX NO.	WR/ESSEX MARS REPLACEMENT	MARS NO.	REPLACEMENT
90-100	17004	90-104	17001
90-101	17004	90-105	17002
90-102	17006	90-106	17002
90-103	17006	90-107	17004
		90-108	17006

Coil Data: 24-240 VAC @ 50/60 Hz; 10 VA Max. inrush; 6 VA Max. Sealed

Coil Data: 24-240 VAC @ 50/60 Hz; 10 VA Max. inrush; 6 VA Max. Sealed



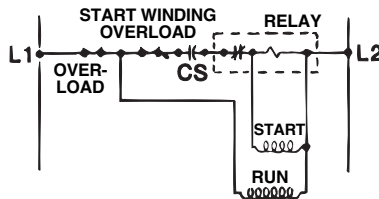
19550

## For Submersible Pump Applications

The MARS 550 and 551 relays were specifically developed for submersible pump and other motor starting applications in high moisture environments. Because the control panels for these are often located in areas of high humidity, the components on them must resist the effects of moisture. Chrome plating on the core and armature and the relatively small area of contact eliminates armature sticking due to organic contaminants which was the number one cause of relay failure.

### Features:

- Used on F.E. Meyers, Franklin Electric, Jacuzzi, Red Jacket, Sta-Rite, and Tait
- 2 relays replace over 25 O.E.M. relays
- Universal break-off bracket on each relay. Simply snap off parts not needed
- UL and CSA listings available



MARS NO.	MARS MODEL NO.	CONTINUOUS COIL VOLTAGE	PICK-UP		DROP-OUT	
			MIN.	MAX	MIN.	MAX
19550	MARS 550	130	111	134	15	40
19551	MARS 551	332	244	270	40	90

## Cross Reference Information

MANUFACTURER	OEM NO.	GE CATALOG NO.	MARS REPLACEMENT	MANUFACTURER	OEM NO.	GE CATALOG NO.	MARS REPLACEMENT
F.E. Myers	13178-A	3ARR3D7J4	19550	Jacuzzi	23-1308-26	3ARR3EA9V5	19551
	13179-A	3ARR3D3V4	19551		23-1308-00	3ARR3EA7J5	19550
	13180-A	3ARR3D3A4	19551		23-1308-18	3ARR3EA7BB5	19550
	17891-A	3ARR3EA3A4	19551		23-1308-34	3ARR3EA5U5	19551
	17890-A	3ARR3EA3V4	19551		23-1308-42	3ARR3EA7M5	19550
	17889-A	3ARR3EA7J4	19550		23-1308-49	3ARR3EA5C5	19551
Franklin Electric	155031-101	3ARR3J7J4	19550	Red Jacket	71-69	3ARR3EA7M5	19550
	155031-102	3ARR3J9V4	19551		71-70	3ARR3EA5B5	19551
	155031-104	3ARR3J2P3	19550		71-47	3ARR3J3V2	19551
	155031-103	3ARR3J9U4	19551	Sta-Rite	U18-325	3ARR3J3V3	19551
	155031-105	3ARR3J7M1	19550		U18-665	3ARR3J3A3	19551
					U18-810	3ARR3J2P3	19550
					U18-811	3ARR3J5V3	19551
				Tait	A124P2	3ARR3EA5A5	19551
					A124P1	3ARR3EA7K5	19550

MARS NO.	G.E. NO.	USED BY
16104	3ARR3J3G3	Barnes [Burks, Decator] & Myers

# GE Potential Relays

MARS SERIES **190**



## One-On-One™ Direct Replacement Potential Relays

The relays are exact replacements for Bristol & Copeland applications. They conform to specifications and in most cases are the one-on-one™ replacement relay used by the manufacturer

Other relays available on special order. Contact your local wholesaler or MARS Customer Service.

BRISTOL	MARS	BRISTOL	MARS	BRISTOL	MARS	COPELAND	MARS	COPELAND	MARS	COPELAND	MARS
650058	16028	650919	16069	650975	16054	040-0001-30	16097	040-0001-64	16098	040-0001-82	16132
650097	16058	650926	16070	650976	16055	040-0001-31	16094	040-0001-66	16103	040-0001-83	16137
650143	16030	650929	16071	650977	16053	040-0001-34	16099	040-0001-67	16120	040-0001-84	16138
650153	16032	650942	16072	650978	16056	040-0001-35	16090	040-0001-65	16153	040-0001-85	16139
650155	16059	650943	16073	650979	16057	040-0001-36	16096	040-0001-66	16103	040-0001-86	16140
650160	16060	650944	16074			040-0001-48	16093	040-0001-67	16120	040-0001-87	16141
650169	16061	650946	16076			040-0001-49	16087	040-0001-68	16099	040-0001-88	16151
650304	16029	650947	16077			040-0001-50	16085	040-0001-69	16088	040-0001-89	16155
650409	16047					040-0001-51	16021	040-0001-70	16125	040-0007-00	16105
650410	16062					040-0001-52	16094				
650512	16048					040-0001-53	16095				
650567	16049					040-0001-54	16089				
650568	16063					040-0001-55	16023				
650569	16050					040-0001-56	16096				
650570	16064					040-0001-57	16097				
650571	16065					040-0001-59	16090				
650855	16051					040-0001-60	16091				
650879	16066					040-0001-61	16086				
650887	16067					040-0001-62	16035				
650889	16068										

## Universal Replacement

### Quick Reference Relay Selection Chart For General Electric Relays

1. Determine the General Electric model number of the Relay to be replaced—the “FORM” and “GROUP”

EXAMPLE:	3ARR3*	1 or 2 Letters	One number plus	
	Basic Type	A	1 or 2 Letters	3
		FORM	GROUP	Non-Positional

\*Also refers to basic type 3ARR1

### Cross Reference Information

WR/RBM NO.	MARS	WR/RBM NO.	MARS	WR/RBM NO.	MARS	TECUMSEH NO.	MARS
90-1	19002	90-13	19005	90-25	19006	82777	19002
90-2	19009	90-14	19003	90-26	19008	82778	19004
90-3	19004	90-15	19006	90-27	19005	82779	19008
90-4	19003	90-16	19007	90-40	19004	82781	19010
90-5	19006	90-17	19002	90-41	19008	82783	19003
90-6	19006	90-18	19008	90-63	19002	82784	19009
90-7	19004	90-19	19006	90-64	19003	82785	19006
90-8	19003	90-20	19007	90-65	19004	82787	19007
90-9	19007	90-21	19002	90-66	19005		
90-10	19008	90-22	19003	90-67	19006		
90-11	19003	90-23	19007	90-68	19007		
90-12	19007	90-24	19008	90-69	19001		

2. Locate in the following table the Relay GROUP and select the corresponding MARS Replacement Relay from the kit.

- 19002 MARS 63 replaces Relay GROUPS 2J; 2K; 2L; 2M; 5N; 7J; 7K; 7L; 7M; 7N; 8L; 8M; 8N
- 19003 MARS 64 replaces Relay GROUPS 3A; 3B; 3AV; 3AU; 4A; 4B; 6A; 6B; 6AV; 10A; 10B; 10AU; 10AV
- 19004 MARS 65 replaces Relay GROUPS 3P; 3R; 3AP; 5P; 5R; 5S; 5T; 22S
- 19005 MARS 66 replaces Relay GROUPS 3U; 3V; 3AT; 6U; 6V; 6W
- 19006 MARS 67 replaces Relay GROUPS 3C; 3D; 3AA; 4C; 4D; 4BK; 6C; 6D; 6AA; 10C; 10D; 26A; 26B; 26C; 26D
- 19007 MARS 68 replaces Relay GROUPS 3E; 3F; 3AB; 3AC; 4E; 4F; 4G; 6E; 6F; 6G; 10H; 10AB; 10AC; 26E; 26F; 26G; 26H; 27E; 27F; 27G
- 19008 MARS 69 replaces Relay GROUPS 3S; 3T; 10S; 10T; 25S; 25T; 10AS
- 19009 MARS 70 replaces Relay GROUPS 5B; 5C; 5D; 5AA; 8B; 8C; 8D
- 19010 MARS 71 replaces Relay GROUPS 6TV; 6TW; 10V

3. Install relay in accordance with instructions in MARS Replacement Kit





# GE Potential Relays

MARS SERIES **190**

COMPONENT

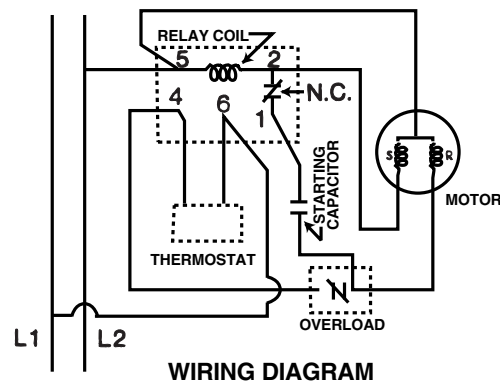
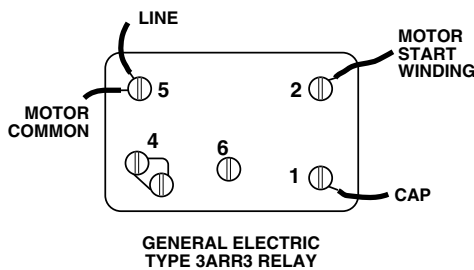


## Universal Replacement

The MARS potential relay service kit has become an industry standard since its introduction twenty years ago. Its long-term reliability and easy replacement have been the key to its success. The wide calibration ranges and the universal bracket make the MARS potential relay service kit a must on every service truck.

### Features:

- Genuine MARS relays replace thousands of O.E.M. models
- *Non-Positional*
- Wide range of selectivity
- QC-6 Kit included with each relay to convert screw-on to push-on
- Instructions and wiring diagram included in each relay
- Universal break-off bracket on each relay. Simply snap-off parts not needed
- The six most popular relays available in a service kit—19001 MARS 6 PAK—complete cross reference guide included in each kit
- UL and CSA listings available



## Calibration Specifications

MARS NO.	MARS MODEL NO.	CONTINUOUS COIL VOLTAGE	PICK-UP		DROP-OUT MAX
			MIN.	MAX	
19001	MARS 6 PAK	—	—	—	—
19002	MARS 63	170	139	153	55
19003	MARS 64	395	260	275	120
19004	MARS 65	332	168	182	90
19005	MARS 66	395	215	225	120
19006	MARS 67	420	295	315	125
19007	MARS 68	502	325	345	135
19008*	MARS 69	336	180	195	105
19009*	MARS 70	253	285	305	77
19010*	MARS 71	420	212	232	121
93001	QC-6				

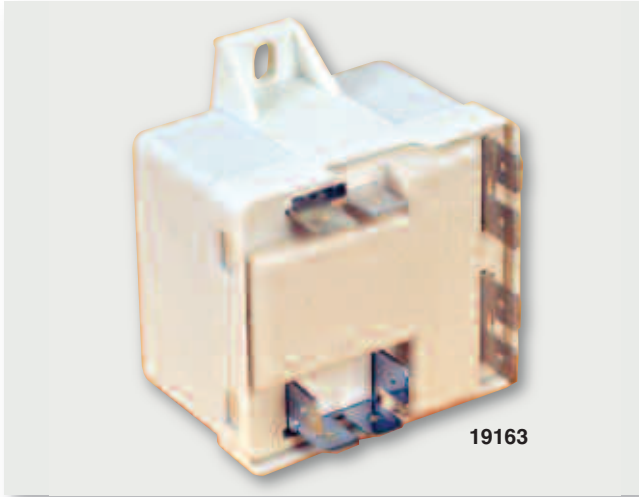
\*Not included in 19001 MARS 6- PAK





# Potential Relays

MARS SERIES **191**

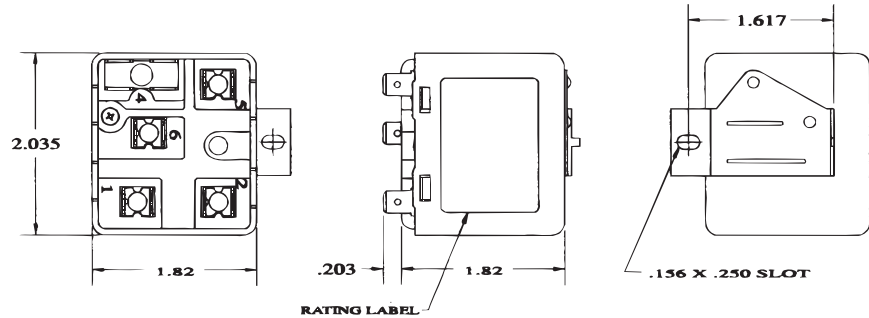
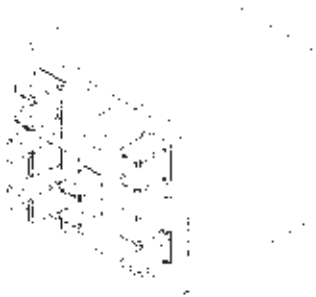


## Universal Replacement Potential Relays

MARS II series relays are manufactured for the HVAC industry. These relays meet all requirements for original equipment relays. They feature a universal break-off bracket to fit your specific application.

### Features:

- 50/60 cycle
- UL and CSA approved
- Contact rating 35 amp, 480 VAC
- Non-positional
- Instructions and wiring diagram included in each relay



## Calibration Specifications

MARS2 NO.	MARS MODEL NO	CONTINUOUS COIL VOLTAGE	PICK-UP		DROP-OUT MAX
			MIN.	MAX.	
19163	MARS II 163	170	139	153	55
19164	MARS II 164	395	260	275	120
19165	MARS II 165	332	168	182	90
19166	MARS II 166	395	215	225	120
19167	MARS II 167	420	295	315	125
19168	MARS II 168	502	325	345	135
19169	MARS II 169	332	180	193	105
19170	MARS II 170	253	285	305	77
19171	MARS II 171	420	212	232	121



25307

## MARS H-10PM Manual and/or Automatic Balance Universal Refrigerant Leak Detector

The MARS H-10PM is the latest design in traditional style H-10 portable leak detectors which combines and enhances all features of the previous H-10 Series models into one full featured unit. Now with manual or automatic auto zero balance control, it's unique sensor calibration system will pinpoint both small & large leaks. It is the most sensitive and accurate battery powered leak detector able to detect all CFC, HFC, and HCFC refrigerants. The MARS H-10PM is certified by UL (SA9717) to satisfy the requirements of SAE standard J1627 and is CE marked. The MARS H-10PM is shipped complete with a carrying case, shoulder strap, built-in rechargeable battery, battery charger, and instruction sheet. An optional adapter (MARS No. Z5325) is available that allows the MARS H-10PM to run on 120VAC power while simultaneously re-charging the battery.

### Features:

- Manual or automatic auto zero balance control
- Impact resistant professional case
- Power source: internal battery - AC or DC powered.
- Halogen selective (minimal false alarms)
- Unique on-board electronic sensor calibration system
- Highly visible neon lamp indicates leaks for any refrigerant gas or blend (CFC, HFC, HCFC)

**NOTE: sensors are consumed in normal operation. It is good practice to have a spare sensor available at all times.**

### Specifications:

**Nominal Leak Range:** Small leak switch position: .5 oz./yr., R-134a .1 oz./yr., R-12  
 Medium leak switch position: 1.0 oz./yr., R-134A .5 oz./yr., R-12  
 Large leak switch position: 5.0 oz./yr., R-134A 3.0 oz./yr., R-12

### Power Supply:

**12VDC-** internal rechargeable, sealed lead acid battery  
**12VDC-** external battery using battery clamp/cigarette lighter plug cord.  
**120VAC-** wall adapter converts to 13.5VDC, 500ma. to charge unit.  
**120VAC-** optional wall adapter to charge and continuously operate unit from AC power.

**Reference Leak:** Approx. 0.4 oz./yr. (1 lb./40 yr.), R-134a approx. 6 month life

### Ambient Operating

**Temperature:** 32° to 104°F

**Low Battery Indicator:** Red LED light on (indicates approx. 5 min. left)

**Battery Life:** Approx. 1.5 hours before recharge with continuous operation

**Warm Up Time:** Approx. 2 min.

**Probe Length:** 4.5 feet

**Dimensions:** 5.5" x 10.5" x 8.5"

MARS NO.	CATALOG NO.	DESCRIPTION
25307	H-10PM	Battery powered universal refrigerant leak detector



25303

## MARS H-10G Universal Refrigerant Leak Detector

The MARS H-10G is the latest generation of the original General Electric design that has earned recognition as the industry's standard for field service leak detectors. This rugged, 115 volt powered, leak detector is the most reliable field service instrument of its type. The MARS H-10G will detect chlorine and fluorine based refrigerants. The MARS H-10G uses a unique heated diode sensor that is the most powerful technology available for leak detection. An air pump inside the MARS H-10G provides a controlled volume sample from the area being tested. The MARS H-10G comes with a reference leak and an instruction manual.

### Features:

- Two leak signals - 80 db horn in the control unit and flashing light in the probe tip
- Air flow indicator in probe tip
- On/off power switch
- Protective case with fold-away cover
- Flexible probe assembly
- Reliable sensor
- Top mount controls
- Easily accessible reference leak
- Easy sensor and filter replacement

### Specifications:

**Refrigerants:** Sensitive to R-12, R-123, R-134a, R-22, R-502, HP-62, R410A

**Sensitivity:** Chlorine based refrigerants .05 oz./yr.  
 fluorine based refrigerants .5 oz./yr.

**Response:** Approx. 1/2 second

**Alarm:** 80db horn and flashing light

**Distance:** Alarm will sound at a distance of 1/2" with probe moving at a speed not to exceed 2 inches per second for either R-12 or R-134 a refrigerant in accordance with SAE specifications

MARS NO.	MODEL NO.	VOLTAGE	DIMENSIONS	WEIGHT
25303	H-10G	115V 50/60 Hz.	2.7" D x 5" W x 8.5" L	3.4 lbs.

# Leak Detectors

MARS SERIES **253**



## Renewal Parts

MARS stocks genuine renewal parts for MARS, GE, and Bacharach H-10 Series Leak Detectors.

### Renewal Parts For H-10 Professional, H-10N, H-10G, and H-10B

MARS NO.	CATALOG NO.	DESCRIPTION	H-10 Pro/PM	H-10N	H-10G	H-10B
25310	M1101UD	Maintenance kit (100 filters, 3 rubber probe tips)	✓	✓	✓	✓
25315	H10N04	Plug-in sensor element	✓	✓	✓	✓
25308	M1101UV	Probe assembly	✓	✓	✓	✓
25314	M1101UU	Probe tip - clear plastic	✓	✓	✓	✓
25309	E7076DX	Rubber tip for probe	✓	✓	✓	
25322	B9017MM	Metal probe extension, 14" long	✓	✓	✓	✓
25325	M1101AH	Battery charger	✓			
25320	B9017LC	Battery charger (included with 25331)		✓		
25333	M1101VS	Cigarette lighter adapter	✓	✓		
25331	B9017LB	Rechargeable 12 volt battery pack		✓		
25319	M1101HV	Power cord			✓	✓
25323	M1101UC	Super tune up kit; sensor, leak vial, 100 filters 3 flow balls and 3 rubber probe tips	✓	✓	✓	✓
25326	M1101AD	Battery for H-10 Pro	✓			
25321	K9344AH	Reference Leak Assembly	✓	✓	✓	✓

### Renewal Parts for MARS Top Gun, H-10XPro

MARS NO.	CATALOG NO.	DESCRIPTION
25377	M1109YB	Top Gun Sensor Assembly



# Recovery System

MARS SERIES **250**

COMPONENT



## Professional Recovery System

### COMPACT, LIGHTWEIGHT, RELIABLE!

The STINGER, manufactured by Bacharach, is the smallest and lightest recovery system of its kind. Despite its small size, this machine is built to perform. The STINGER features a revolutionary single valve compressor driven by a powerful 8 amp motor. This machine WILL NOT be damaged by liquid. The compressor works together with a high performance condenser and two cooling fans for fast recovery - even on the hottest days.

The STINGER is a universal recovery system, recovering all medium and high-pressure refrigerants - including R-410A. Its simple purge system prevents cross-contamination of refrigerants WITHOUT changing hoses. The STINGER features a tangle-free power cord and an innovative storage slot to make operating instructions readily available.

With its compact size, lightweight design and durable plastic housing, the STINGER sets a new professional standard for size and performance in refrigerant recovery systems.



25011

### Features:

- Extremely compact and lightweight
- Advanced oil-less compressor
- Durable plastic housing
- Universal refrigerant - including R-410A
- Recovers liquid without damage
- Reliable - built to last

### Specifications:

**Unit:** MARS No. 25011

**Power Source:** 115 VAC 50/60 Hz  
230 VAC 50/60 Hz

**Weight:** 24 lbs. **Dimensions:** 11" x 17" x 9.5"

**Compressor:** Oil-less w/ single valve liquid head

**Motor:** 8 amp. **Vacuum Rating:** 13" Hg +

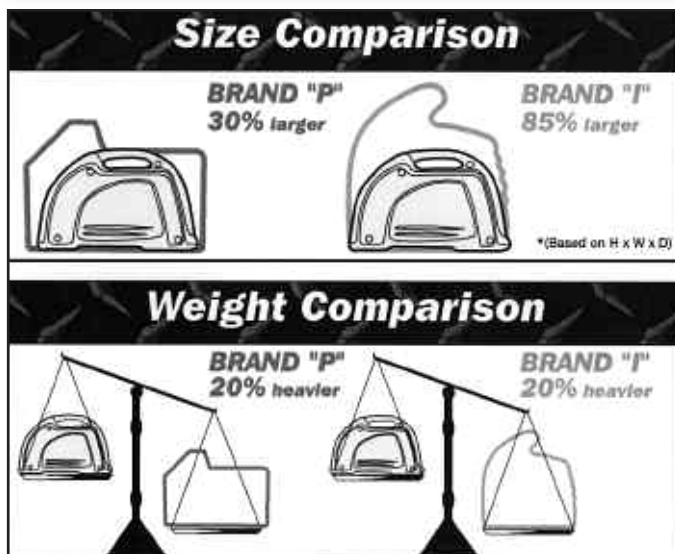
**High Pressure Limit:** 550 PSI

**Recovery Rate:** Liquid 2.2 lbs./min. Vapor\* 0.3 lbs./min. (\*ARI rating for R-22)

**Auto 80% Tank Shut-Off:** Optional

**Self Purging System:** No hose changes

**Refrigerants:** R-12, R-22, R-114, R-134A, R-410A, R-401B, R-401C, R-402A, R-402B, R-404A, R-406A, R-407A, R-407B, R-407C, R-407D, R-408A, R-409A, R-410A, R-411A, R-411B, R-412A, R-500A, R-502B, R-507, R-509



MARS NO.	Description	Vacuum Rating	Dimensions
25011	Recovery System	13" Hg +	11" x 17" x 9.5"



The largest selection of motors, components, and accessories for the HVAC/R Industry



# MARS Start Assist

MARS SERIES **327**



32708

## MARS AllStart™ Hard Start Device

The MARS AllStart™ is a two wire hard start device designed to provide maximum starting torque for single phase PSC and CSIR compressors up through 10HP. The MARS AllStart™ recycles instantly for maximum convenience on troublesome hard start jobs.

Independent testing has determined that the MARS AllStart™ provides more starting torque than other competitive models, and this results in quicker starts. Test results on a range of head pressures from 166 to 300 PSI indicate that the MARS AllStart™ started the test compressor in an average of 21.7% **less** time than the leading competitor! More available starting torque means less time to get problem compressors started.

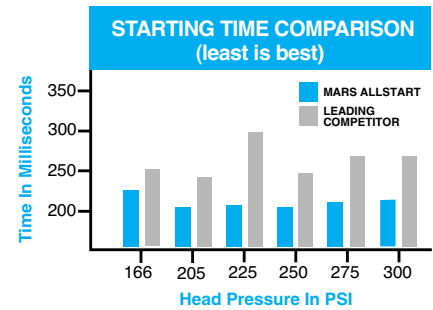
MARS offers the largest assortment of refrigeration and air conditioning compressor starting components. When the proper starting relay and capacitor combination is a must, they are available from MARS. When getting a problem compressor started in the field "NOW" is the job, rely on the new MARS AllStart™.

### Features:

- Maximum Starting Torque!
- More Than 20% Faster Starts!
- Easy Two Wire Installation
- Recycles Instantly
- Individually packaged with wiring instructions

### Cross Reference

SUPPLIER	PART NO.	MARS REPLACEMENT
KICKSTART	TO5	<b>32708</b>
SUPCO	SPP8	<b>32708</b>
WATSCO	WSX-1	<b>32708</b>



MARS NO.	MODEL NO.	H.P.	VOLT MAX.
32708	AllStart	1/2 to 10	115-277V



32741

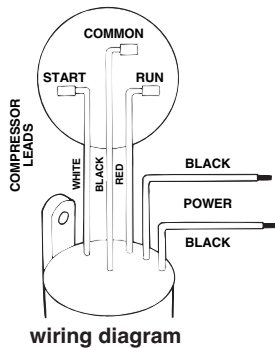
## MARS Combination Starters

The MCS is a combination start relay, start capacitor, and motor overload. It is designed to replace those components on a 115 volt single phase refrigeration compressor installed on a capillary tube system.

The MCS is factory wired and comes with a connection diagram on the product label for maximum convenience.

### Features:

- Factory wired
- Wiring diagram on the product label
- Compressor leads have push-on terminals for easy installation
- Compact design
- Universal application reduces inventory



### Cross Reference

SUPPLIER	PART NO.	MARS REPLACEMENT
GEMLINE	HS 410	<b>32741</b>
	HS 810	<b>32781</b>
	HS 210	<b>32725</b>
ROBERTSHAW	600-410	<b>32741</b>
	600-810	<b>32781</b>
	600-210	<b>32725</b>
SUPCO	RCO 410	<b>32741</b>
	RCO 810	<b>32781</b>
	RCO 210	<b>32725</b>

MARS NO.	MODEL NO.	HORSEPOWER	VOLT MAX.
32741	MCS 41	1/4 to 1/3	115V
32781	MCS 81	1/12 to 1/5	115V
32725	MCS 21	1/2	115V



## Hard Start Kits

The new SS-1 and SS-5 are two-wire electro-mechanical hard start kits. These hard start kits feature genuine GE brand potential relays for reliable starts, time after time, every time.

The SS-1 and SS-5 also feature a durable North American made start capacitor.

For single phase 208V, 230V, 265V A/C refrigeration and heat pump compressors.

### Features:

- Simple to install
- 2-Wire Design
- Features a genuine GE potential relay
- Replaces Kickstart®
- Individually packaged
- Assembled in the USA

## Wiring Diagram Simple Two Wire Connection



Connect Blue Leads to run Capacitor  
No Polarity Required

MARS NO.	H.P.	MAX VOLTS	CROSS REFERENCE
32703	1 to 3	265V	Kickstart® TO-5 Kickstart® KS8 Supco SPP9E
32704	3.5 to 5	265V	Kickstart® KS1 Supco SPP10E

# MARS Solid State Motor Starting Devices

MARS SERIES **325**



32330

## MARS Solid State Motor Starting Relay for Refrigerators and Freezers

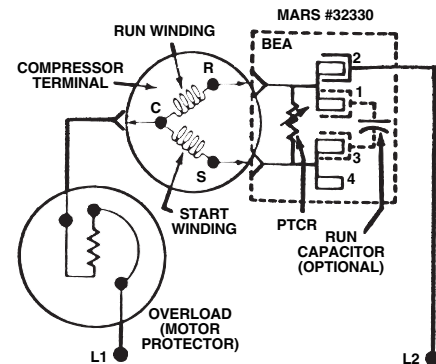
MARS 32330 is a solid state PTC motor starting relay that mounts directly to any 3-pin fuseite connector. One model replaces thousands of current relays used on 1/12 HP to 1/3 HP compressors.

### Features:

- Replaces Tecumseh Relays SSR2 and SSR3 for push-on applications.
- Non-positional
- One model for 1/12 HP to 1/3 HP, 120 volt
- UL and CSA listings available

MARS NO.	HORSEPOWER	VOLTAGE
32330	1/12 - 1/3	120

WIRING DIAGRAM FOR USE WITH SPLIT PHASE OR PSC MOTOR



32721

## MARS Snap-On Relays

The MARS snap-on relays are easy to install and will replace ALL current type relays. One size relay fits compressors from 1/12 HP thru 1/2 HP. They can be used with or without a start capacitor.

These snap-on relays can be mounted on the inside of the terminal box of the compressor with the quick "snap-on-bracket" or installed in any convenient location by using screws through the mounting holes.

UL recognized

MARS NO.	HORSEPOWER	VOLT MAX.
32721	1/12 thru 1/2	115
32722	1/12 to 1/2	230



32723

## MARS Push-On Relays

The MARS push-on relays are easy to install and will replace ALL push-on current type relays. One size relay fits compressors from 1/12 HP thru 1/2 HP. The MARS push-on relay can be used with or without a start capacitor.

These push-on relays are mounted on compressors with "pin type" terminals. The MARS push-on relays are the lowest resistance in solid state relays available today, with the fastest test cool down time of all solid state relays. UL recognized

MARS NO.	HORSEPOWER	VOLT MAX.
32723	1/12 thru 1/2	115
32724	1/12 to 1/2	230



## MARS Motor Torque Multiplier

The MARS MT<sup>x</sup> 100, MT<sup>x</sup> 200 and MT<sup>x</sup> 300 motor torque multipliers feature a combination PTC solid state device, and start capacitor in one compact unit.

The MT<sup>x</sup> 100 is designed for use on PSC motors and compressors up to 5HP, 277V maximum; the MT<sup>x</sup> 200 is designed for use on PSC motors and compressors up to 10HP, 277V maximum; and the MARS MT<sup>x</sup> 300 is designed for use on PSC motors & compressors from 1-1/2 up to 10HP, 115-230V. These units are easily installed by connecting the two leads from the MT<sup>x</sup> unit to the motor run capacitor terminals.

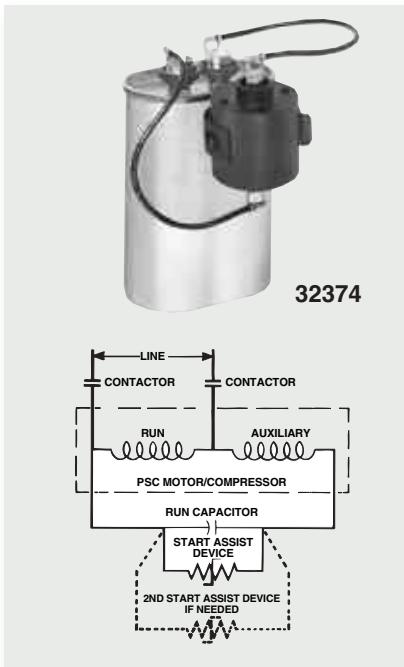
### Features:

- Totally solid state integrated design
- Fast, easy two wire installation
- Three mounting options; clip, screw, or capacitor bracket
- Individually packaged

### Cross Reference

SUPPLIER	PART NO.	MARS REPLACEMENT
GEMLINE	HS600	32701
	HS650	32702
ROBERTSHAW	600-052	32702
	600-057	32701
SUPCO	SPP5	32701
	SPP6	32702

MARS NO.	MODEL NO.	H.P.	VOLT MAX.
32701	100	1/2 to 5	277V
32702	200	1/2 to 10	277V



## Solid State Start Assist Device

MARS Series 327 Start Assists are solid ceramic devices that increase the starting torque of permanent split capacitor (PSC) motor by as much as 500%.

Three different models to choose from let you select the one that's best for each application. MARS Start Assists come equipped with standard 0.25" quick-connect terminals and a handy mounting bracket for safe, fast, easy installation.

Performing in a manner similar to that of a motor starting capacitor and potential relay, our device improves the starting ability of a PSC motor by momentarily increasing the current supplied to the auxiliary winding. When voltage is applied, the MARS Start Assist heats up and changes from very low to very high resistance. Thus, it becomes essentially non-conductive, permitting the compressor motor to return to PSC running operation. MARS motor starters are designed for use on PSC compressor motors of air conditioners, heat pumps, commercial refrigeration pumps, etc. They are connected in parallel with the run capacitor, as the diagram shows.

### Features:

- Less expensive than conventional start capacitor/ relay combination
- Only one component to connect. No relay coil voltages to worry about
- Three different ratings permit choice of unit for best performance
- Constructed of solid ceramic material...no moving parts or contacts to wear or fail
- UL and CSA listings available

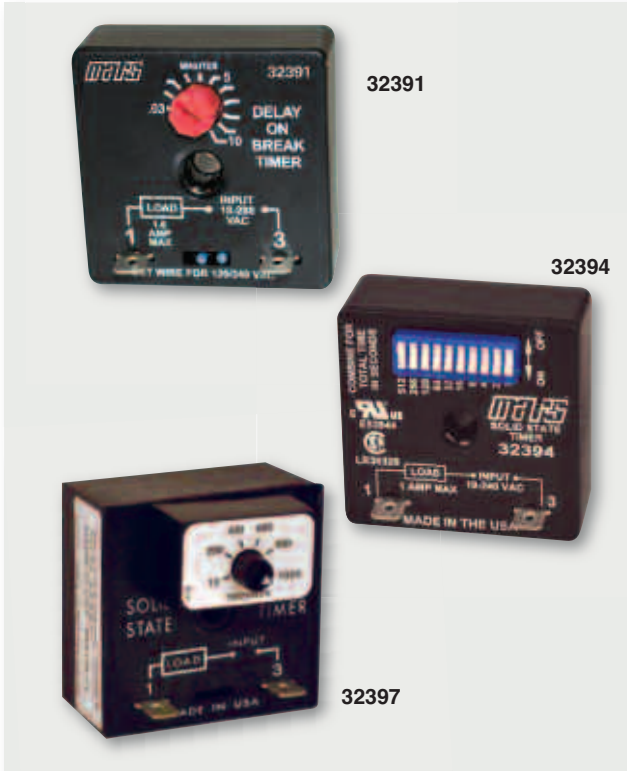
**Try our 32375 Super Starter. It is as powerful as 2 start assists wired in parallel.**

MARS NO.	SUGGESTED MAX. HP	APPROX. STARTING* TORQUE INCREASE	RESISTANCE (OHMS)	MAX. LINE VOLTAGE
32370	5	225%	50±20%	292
32374	7.5	335%	25±20%	292
32375	7.5+	500+%	13±20%	292



# MARS Solid State Timers

MARS SERIES **325**



## MARS Solid State Timers Delay On Make

The MARS 32391 is the top-selling timer in the industry. Its reliability has been proven in the field by knowledgeable contractors.

The MARS 32391 will **not** be fooled by **the thermostat** anticipator.

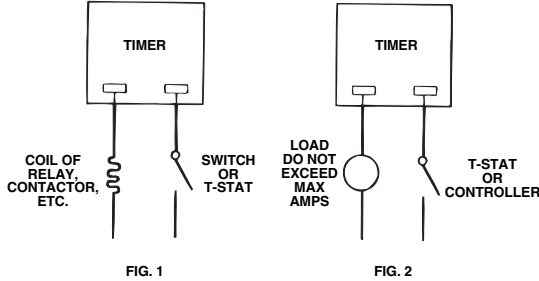
Heavy duty MARS timers are offered for higher current applications.

### Features:

- Easy two-wire installation
- Proven reliability, all solid state
- .25 in. quick connect terminals
- Mounts in any position
- Compact size
- High accuracy
- Totally enclosed and encapsulated for proper heat dissipation

### Specifications:

- .040 amps min. latch current



MARS NO.	TYPE DELAY	TIME DELAY RANGE	TYPE OF ADJUSTMENT	INPUT VOLTAGE	HZ	MAX AMPS.	VOLTAGE DROP	CONNECTION DIAGRAM
32391	on make	6 sec...8 min.	dial	19...240VAC	50/60	1	2.5 at 1 amp.	1
32394	on make	1 sec...1023 sec.	slide switch adjustable in 1 second increments.	19...144VAC	50/60	1	2.5 at 1 amp.	1
32396	on make	1 sec...1023 sec.	slide switch adjustable in 1 second increments.	80...240VAC	50/60	1	2.5 at 1 amp.	1

### Heavy Duty

32397	on make	10...1000 sec.	dial	24 VAC	50/60	6	2 at 6 amp.	1 or 2
32398	on make	10...1000 sec.	dial	120 VAC	50/60	10	2.1 at 10 amp.	1 or 2
32399	on make	10...1000 sec.	dial	230 VAC	50/60	10	5 at 10 amp.	1 or 2



# MARS Solid State Timers

MARS SERIES **325**

COMPONENT

## MARS Solid State Timers Delay On Break

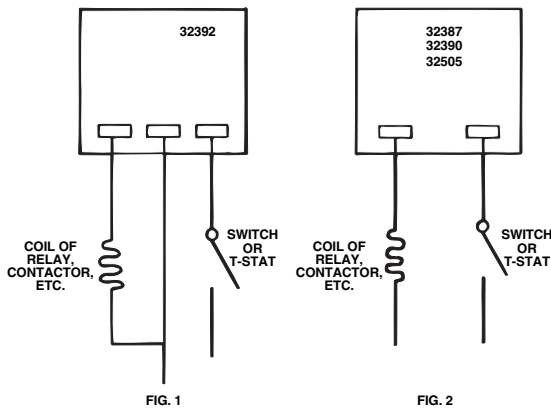
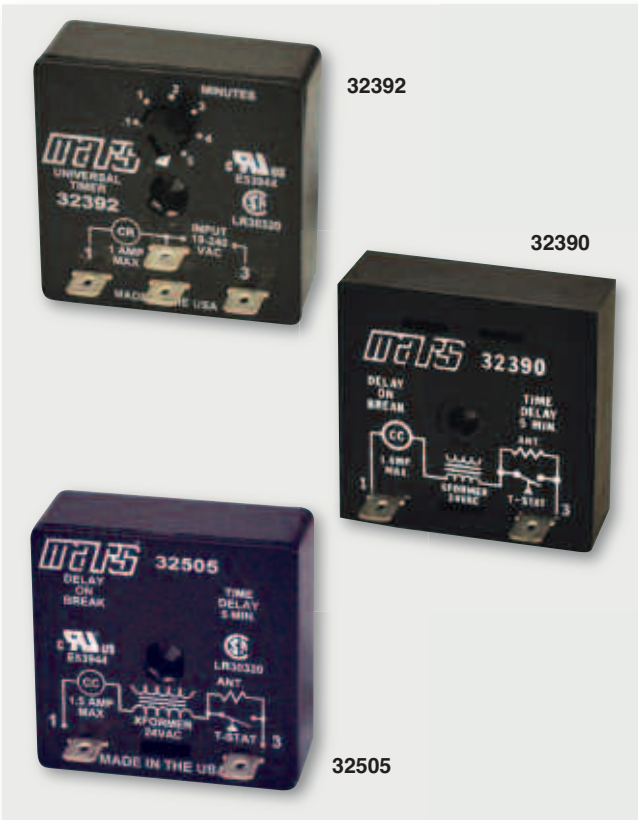
MARS solid state delay on break timers are designed to prevent short cycling of air conditioning, refrigeration and heat pump compressors. Upon application of power the load is energized. When the thermostat opens, or if there is a momentary loss of power, the load is de-energized and the delay period begins. The compressor will not start again during the delay period.

MARS number 32392 is a versatile three wire timer that features adjustable timing and can be used with any voltage from 19 thru 240 VAC, 50 or 60 Hz. MARS 32387 features easy to install two wire connection. Model 32387 incorporates circuitry to allow continuous current flow through the thermostat anticipator. Ideal for heat pumps.

The MARS 32390 and the new 32505 are the most simple and economic ways to stop short cycling on 24 VAC controlled systems. Both devices are fixed 5 minute delay on break timers.

### Features:

- 1 to 3 second random re-start
- Models for two-wire or three-wire connection
- 32387 for use with anticipator thermostats
- Dial adjustable
- Compact size
- Mounts in any position
- .25 in. quick connect terminals
- Proven reliability
- MARS delay-on-break timers are not load sensitive
- MARS 32505 features two wire leads



### Adjustable

MARS NO.	TYPE DELAY	TIME DELAY RANGE	TYPE OF ADJUSTMENT	INPUT VOLTAGE	HZ	MAX AMPS.	VOLTAGE DROP	CONNECTION DIAGRAM
32392	on break	6 sec...5 min.	dial	19...240 VAC	50/60	1	2.5 at 1 amp.	1
32387	on break	120...300 sec.	dial	24 VAC	50/60	1	3 at 1 amp.	2

### Fixed Delay

32390	on break	5 min.	none	24 VAC	50/60	1	2.5 at 1 amp.	2
32505	on break	5 min.	none	20-30 VAC	50/60	1	3 at 1 amp.	2



# MARS Solid State Devices

MARS SERIES **325**

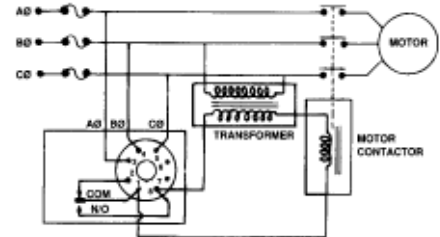


32532

## MARS Phase Reversal Protector

### Features:

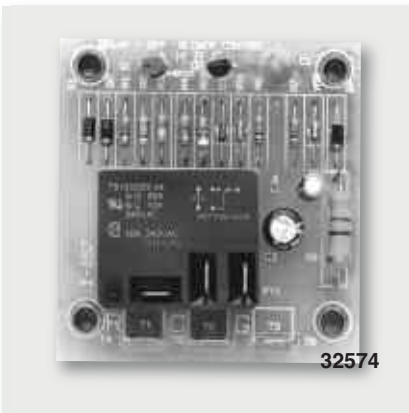
- Disconnects the motor pilot circuit on loss of one or more phases or when the voltage imbalance between any of the two phases exceeds 7%
- Re-energizes the pilot circuit only when all 3 phases are present and the voltage imbalance is less than 7%
- 208-277VAC, 50-60Hz
- Contact Rating: NO/NC (type "C") 5A/240V, 10A/120V
- 1/4" male spade terminals
- Compact design: 2.35" x 2.425" x 1.1"



## Phase Reversal Protector

MARS NO.	NOMINAL VOLTAGE	INPUT VOLTAGE	SPDT RELAY CONTACTS AMP RATING
32532	240 VAC	175-255 VAC	10 amps res.
32534	480 VAC	380-500 VAC	8 amps res
93057*	8 Pin Octal Base, 35mm Din Rail or Surface Mount		

\* Base not included



32574

## Fan Time Delay Module

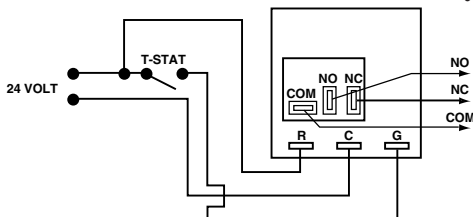
The MAHBC fan time delay module is a replacement for the direct motor control used by leading OEMs in high efficiency residential central air conditioning systems. The purpose of the control is to keep the blower motor running for 60 seconds after the thermostat has been satisfied. The result is an increase in residual cooling from the indoor coil without running the condensing unit, and thus, higher energy efficiency.

The MAHBC is ideal for retrofit where improved efficiency is desirable.

### Features:

- Wide ambient temperature operating range -40°F to 175°F
- 1/4" male quick connect terminals
- Easy surface mount with four #6 screws
- UL and CSA recognized

Wiring Diagram



### Cross Reference

OEM	PART NO.
BARD	8201-056
RHEEM	42-22515-01
SNYDER GENERAL	0001395336

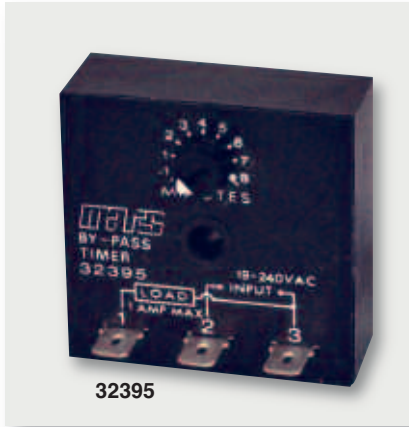
MARS NO.	MARS MODEL	VOLTAGE	OUTPUT		TIME DELAY	ACTION
			120V	240V		
32574	MAHBC	24VAC	1 HP	2 HP	60 SEC.	SPDT



# MARS Solid State Timers

MARS SERIES **325**

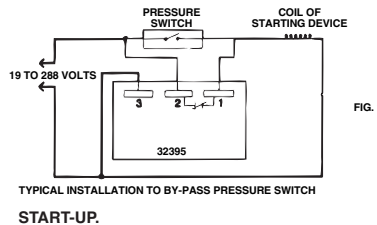
COMPONENT



## MARS Bypass Timer

MARS 32395 is an adjustable, multi-voltage bypass timer that allows the temporary bypass of a control or device during start-up. At the end of the delay period the control is returned to the circuit.

Eliminate nuisance trips!



Low pressure switch bypass application.

FIGURE 1  
LOAD IS BYPASSED ON RETURNS TO CIRCUIT AFTER DELAY PERIOD.

MARS NO.	TYPE DELAY	TIME DELAY RANGE	TYPE OF ADJUSTMENT	INPUT VOLTAGE	HZ	MAX AMPS.	VOLTAGE DROP	CONNECTION DIAGRAM
32395	by-pass	6 sec...8 min.	dial	19...240VAC	50/60	1	2 at 1 amp.	1



## Compressor Anti-Short Cycle Timer with Low Voltage Brownout Protection

Delay on break.

OEM replacement timers for Lennox, Rheem, Ruud, Trane, Heil Quaker, Keep Rite, Mc Quay, Snyder General and others.

### Features:

- Lockout delay prevents rapid cycling compensated resistor type wall thermostats
- Single hole mounting (.25 inch diameter)
- Non-positional
- Brownout protection prevents startup when voltage is below normal conditions
- Reduces nuisance service calls due to short cycling
- Delay on Break Lockout delay starts with opening of thermostat or loss of power
- .25 in. quick-connect terminals
- Eliminates relay chatter due to thermostat bounce
- Small size 2.00 x 2.00 x .75 in.
- UL and CSA listings available

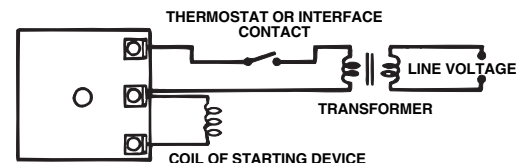
### Operation:

On initial closure of the thermostat, the compressor relay energizes immediately. When the thermostat opens, a lockout condition and a time delay is initiated. During this lockout time delay period, the compressor cannot be energized.

Brownout protection prevents energizing of the compressor when the line voltage is below normal conditions.

### With Integral Brownout Protection

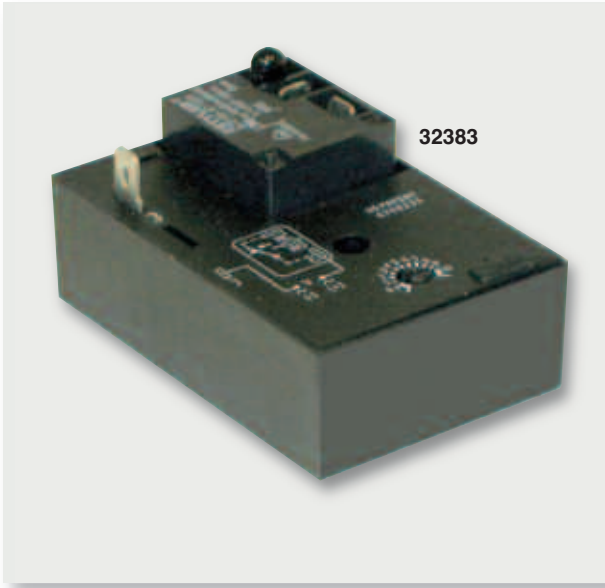
MARS NO.	MODEL NO.	OPERATING VOLTAGE (NOMINAL)	TIME DELAY (MIN.) ± 2%	MAX AMPS
32381	TA24A3	24 VAC	3	1.5
32382	TA24A5	24 VAC	5	1.5





# MARS Solid State Timers

MARS SERIES **325**



## MARS High Power Delay-On-Make Time Delay Relay

The MARS 32383 delay timer relay is a combination of electromechanical relay & digital solid state circuitry. The high rating of the output contacts allows for direct operation of heavy loads such as compressors, pumps, blower motors, heaters, etc.

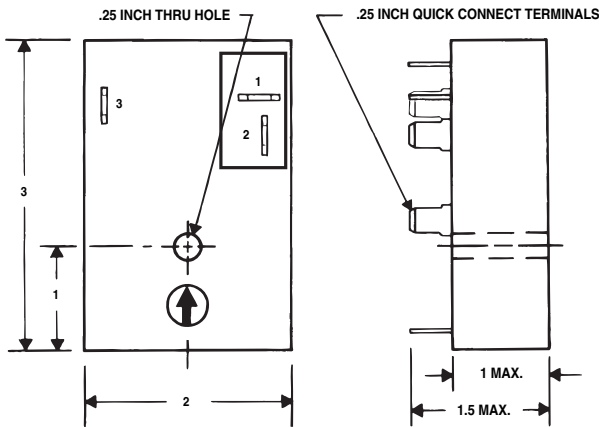
### Features:

- Solid state circuitry with relay contacts
- Encapsulated digital circuitry
- Use for OEM or general replacement
- Knob adjustable from 0.1 to 10 mins.

### Specifications:

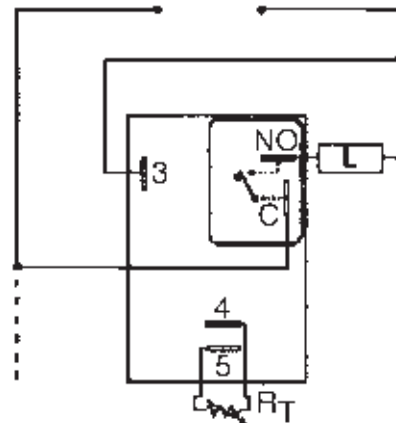
- 15 amps resistive SPST relay contacts
- 120 VAC operating voltage
- 50/60 hertz
- Operating temp: -20° to 60° C
- Repeat accuracy: ± 0.5%
- UL & CSA

### Mechanical:



NOTE: All dimensions in inches.

### Wiring:



MARS NO.	TYPE DELAY	TIME DELAY RANGE	TYPE OF ADJUSTMENT	INPUT VOLT	SWITCH	MAX AMPS
32383	Delay-On-Make	0.1 to 10 min	DIAL	120	SPDT	15 Resistive, 1 HP DP:15 FLA, 90 LRA @ 125VAC



# MARS Solid State Timers

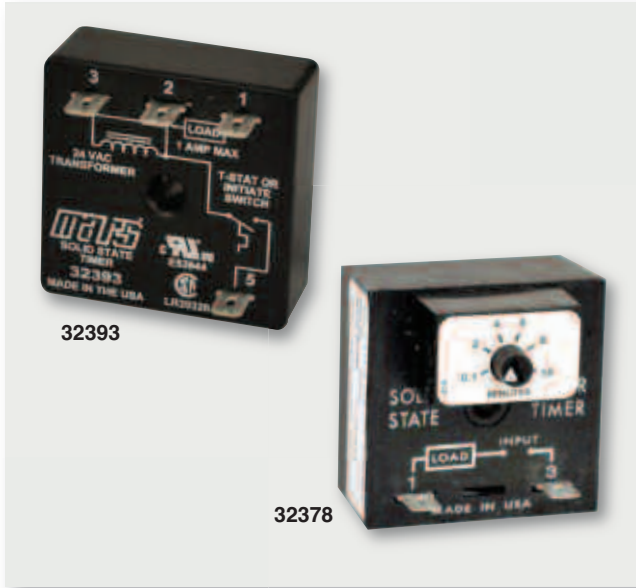
MARS SERIES **325**

## MARS Fan Delay/Post Purge Timers

These MARS solid state timers provide for convenient control of a variety of functions.

MARS number 32393 is a fixed 2 minute, 24V off-delay timer that allows the fan to continue to operate after the thermostat is satisfied to purge the ducts of conditioned air.

MARS numbers 32377, 32378 and 32379 are versatile, high amp timers which, depending on installation (see connection diagrams 2 and 3), will perform either on-delay or off-delay functions. On-delay is especially useful for controlling unloader valves. Off-delay can be used for fan off-delay, pump down systems or post purge applications. The off-delay may also serve an anti-bounce function as a pump flutter bypass switch.



32393

32378

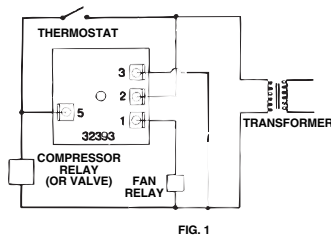


FIG. 1

### Features:

- Wide selection of models
- Easy installation
- Compact size
- Mounts in any position
- Totally solid state
- High accuracy

### Specifications:

- 100 milliamps minimum latch current

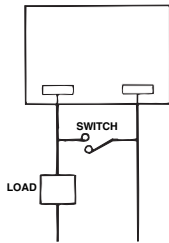


FIG. 2  
POST PURGE

WITH THE SWITCH CLOSED, THE LOAD IS ENERGIZED. WHEN THE SWITCH OPENS, THE LOAD REMAINS ENERGIZED AND THE TIME DELAY BEGINS. AT THE END OF THE DELAY PERIOD THE LOAD IS DE-ENERGIZED.

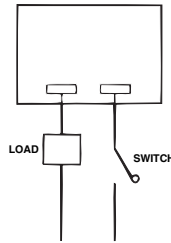


FIG. 3  
INTERVAL - ON

WHEN THE SWITCH CLOSSES, THE TIME DELAY BEGINS. AT THE END OF THE DELAY PERIOD, THE LOAD IS DE-ENERGIZED.

MARS NO.	TYPE DELAY	TIME DELAY RANGE	TYPE OF ADJUSTMENT	INPUT VOLTAGE	HZ	MAX AMPS.	VOLTAGE DROP	CONNECTION DIAGRAM
32393	off delay	2 min. fixed	—	24 VAC	50/60	1	2 at 1 amp.	1
32377	off delay/ interval	6 sec...10 min.	dial	24 VAC	50/60	6	2 at 6 amp.	2 or 3
32378	off delay/ interval	6 sec...10 min.	dial	120 VAC	50/60	10	2.1 at 10 amp.	2 or 3
32379	off delay/ interval	6 sec...10 min.	dial	230 VAC	50/60	10	5 at 10 amp.	2 or 3

# MARS 3/4" Motor Protectors

MARS SERIES **350**



## Universal Replacements for Refrigeration and Air Conditioning

30 MARS motor protectors solve the serviceman's most annoying problem—finding suitable replacements for motor overload protectors.

### Features:

- Used in refrigeration, room air conditioners, heating, appliances, and electric motors
- Each overload has six-inch leads and two wire nuts for simple installation
- UL and CSA listings available

### Application Survey By Horsepower\*

MARS NO.	HORSEPOWER															
	110/115							208/240V								
	1/20	1/12	1/8	1/6	1/5	1/4	1/3	1/2	1/12	1/8	1/6	1/5	1/4	1/3	1/2	1
35009	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
35010	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
35011	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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35014	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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35016	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
35017	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
35018	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
35019	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35020	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 3/4" A/C Overloads

MARS NO.	TEMPERATURE CODE
35101	MRA-3763-529
35105	MRP-00-AIU-529

\*Motor protectors cannot be replaced by horsepower, amperage, or nameplate data alone. Refer to cross reference information for proper replacement of original equipment motor protectors by part number.



# Klixon 3-Phase Motor Protectors

MARS SERIES **370**



## On-Winding Overheat Protection

Klixon SL-11 kits are mounted on the windings of general purpose motors and hermetically sealed compressors. They supplement conventional current overload relays in magnetic starters providing modern total protection for most older motors in use today.

### Features:

- Allow motors to perform at full-load capacity but will protect against dangerous running overloads
- Protect against blocked ventilation, high ambient temperatures, single phasing
- Each kit contains three matched motor-winding thermostats
- When starter overloads operate, the SL-11 will protect against re-starting at unsafe winding temperatures if the starter overloads reset when the motor is still too hot
- These motor winding thermostats do not replace overloads in the starter
- UL & CSA listed

### Installation:

SL-11 thermostats are tied in place on the end turns of appropriate winding bundles, one to each phase or buried in the windings during motor rewind. They are connected in series between the starter coil and its power supply.

### Selection:

- Pick thermostat temperature to operate at the mid-point between the “maximum normal running” temperature and the “maximum allowed running temperature.”
- Subtract the gradient temperature (outlined in the chart below) from the mid-point to obtain the operating temperature of the thermostat.

Maximum Contact Rating Amperes			
Klixon #	24V	115V	230V
9700K	18	18	12

MOTOR TYPE	THERMOSTAT LOCATION	
	TIED ON END TURNS	BURIED IN END TURNS
OPEN TYPE	30°C	15°C
TOTALLY ENCLOSED		
FAN COOLED	25°C	10°C
TOTALLY ENCLOSED		
NON-VENTILATED	20°C	5°C

## Epoxy-Sealed Thermostats For General- Purpose Motors.

MARS NO.	KLIXON KIT NO	KLIXON CAT. NO	OPERATING TEMPERATURE
37075	SL-11-75	9700K51-146	75°C
37090	SL-11-90	9700K21-146	90°C
37100	SL-11-100	9700K26-146	100°C
37110	SL-11-110	9700K36-146	110°C
37120	SL-11-120	9700K01-146	120°C
37130	SL-11-130	9700K11-146	130°C
37135	SL-11-135	9700K06-146	135°C
37140	SL-11-140	9700K66-146	140°C
37145	SL-11-145	9700K76-146	145°C
37150	SL-11-150	9700K46-146	150°C

Three thermostats per package



# Klixon Motor Protectors

MARS SERIES **360**



## 1" Universal Replacements

Eleven MARS 1-inch motor protectors manufactured by Klixon replace hundreds of original equipment motor protectors used on air conditioning and refrigeration compressors.

### Features:

- Covers 1/2 to 2 HP range
- Replace 2- and 3- terminal overloads
- Reduce inventories
- Electrical ratings are same as originals

MARS NO.	KLIXON NO.	HP*	VOLTAGE	HZ	NO. OF TERMINALS
36010	CSM 16 HX	1/2	115	60	2
36011	CSO 67 AJN	3/4, 1	230	60	3
36012	CSM 00 ANN	1	208/230	50/60	2
36014	CSM 36 AIN	1	208/230	60	2
36015	CSM 40 ALN	3/4	115	60	2
36016	CSO 67 AFN	2	230	60	3
36017	CSM 00 AHN	1	115	50/60	2

\*Motor protectors *cannot* be replaced by horsepower, amperage, or nameplate data alone. Refer to cross reference information for proper replacement of original equipment motor protectors by part number. These ratings are those of compressors on which the original overloads are found and are intended as a stocking guide only.

## MARS Motor Protector Reference Information

### Copeland

PROTECTOR MODEL	MARS NO.
071-0090-00	36021
071-0090-01	36022
071-0090-03	36024
071-0090-04	36025
071-0090-05	36026
071-0090-19	36030
071-0092-06	36032
071-0092-16	36034
071-0092-18	36035
071-0092-23	36036
071-0092-25	36037
071-0092-27	36038
071-0092-39	36044
071-0099-00	36040
071-0099-01	36017
071-0099-04	36045
071-0119-01	36041
071-0092-39	36044

### Klixon

PROTECTOR MODEL	MARS NO.
RA1910	36010
RA1959	36010
RA1986	36010
BRA2904	36041
BYA1216	36022
BYT23WX-7	36030
CRA2930	36010
CRA2938	36010
CRA2972	36012
CRA2980	36014
CRA2982	36011
CRA2987	36012
CRA3787-18	36044
CRA3786-157	36045
CRA3935	36015
CRA3946	36014
CRA3949	36036
CRA3963	36014

### Klixon (cont.)

PROTECTOR MODEL	MARS NO.
CRA3978	36010
CRA3982	36015
CRA3993	36014
CRA3997	36014
CRA4998	36012
CRA5948	36014
CRA5949	36013
CRA5952	36017
CRA5960	36014
CRA5961	36013
CRA5984	36017
CRA5989	36017
CRA5993	36011
CRA6926	36017
CRA6934	36015
CRA6945	36015
CRA6947	36017
CRA7902-157	36040
CRA7903	36036

### Klixon (cont.)

PROTECTOR MODEL	MARS NO.
CRA7944	36017
CRA7956	36017
CRA7963	36017
CRA7973	36010
CRA8936	36010
CRA8940	36012
CRA9993-109	36010
CRB2955	36011
CRB3908	36016
CRB3950	36016
CRB4910	36011
CRB4955	36016
CRB6914	36011
CRB7985	36011
CRP38JX-18	36037
CRT20HY-18	36032
CRT32EY-18	36035
CRT36EV-18	36034
CSM16HX	36010

### Klixon (cont.)

PROTECTOR MODEL	MARS NO.
CSTOOAHN-3	36017
CSTOOAHN-38	36017
CSTOOAHN-67	36017
CSTOOAHN-68	36017
CSTOOAHN-79	36017
CSTOOAHN-81	36017
CSTOOAHN-82	36017
CSTOOAHN-86	36017
CSTOOAHN-87	36017
CSTOOAHN-88	36017
CSTOOAHN-111	36017
CSTOOAHN-121	36017
CSTOOAHN-124	36017
CSTOOAHN-131	36017
CSTOOAHN-133	36017
CSPOOANN-115	36012
CSPOOANN-133	36012
CSTOOANN-60	36012
CSTOOANN-86	36012

### Klixon (cont.)

PROTECTOR MODEL	MARS NO.
CSTOOANN-124	36012
CSTOOANN-131	36012
CSTOOANN-133	36012
CSTOOANN-136	36012
CST67AJN-105	36011
CYA1225	36021
CYA1227	36024
CYA1228	36025
CYA1231	36026



# Commercial Refrigeration Thermostats

MARS SERIES **330**

COMPONENT



## Refrigeration Cases and Coils

MARS has selected the most popular Klixon disc-type thermostats found in commercial refrigeration. These controls cover a wide assortment of applications including supermarket cases and walk-in, reach-in, and beverage coolers.

### Features:

- Used on refrigeration cases, coils, with many other commercial applications
- *Long lead wires supplied to satisfy most requirements*
- Used by Hussman, Friedrich, Larkin, Schaefer, etc.
- 1 inch discs fully encapsulated for trouble-free use
- Mounts directly on coil tube or surface for maximum temperature response
- UL and CSA listings available
- 25 resistive amps maximum

### Electrical Rating

		TERMINALS	TERMINALS
		1-3	1-2
Full load amps	120V	13	5.8
	240V	10	2.9
Locked rotor amps	120V	60	34.8
	240V	45	17.4
Pilot Duty	120/240V	125	125
Resistive amps	120/240V	25	25
	277V	15	15

## Tube Mounting

MARS NO.	KLIXON NO.	O.E.M.	O.E.M. PART NO.	SWITCH ACTION	OPERATING TEMPERATURES F°		TUBE MOUNTING IN	LEADS IN
					OPEN	CLOSE		
33405	20420D24-106-63	Bally	—	D	70	20	5/8	18
33415	20420D24-399-350		—	D	65	20	5/8	20
33420	20428F1-4-676	Friedrich	606-038-00	F	35	55	3/8	20
33425	20420L15-913-302		794-824-00	L	40	25	5/8	11
33430	20420D1-166-336		—	D	50	35	1/2	18
33435	20420L28-229-89	Hussman	P211-119696	L	20	5	3/4	40
33440	20420F32-381-533		—	F	20	30	3/4	48
33455	20420F19-63-294	Schaefer	C10872-19	F	20	60	5/8	36
33460	20420L19-202-274		C10872-6	L	35	5	5/8	54
33470	20420L15-376-218		125211	L	50	30	5/8	36
33475	20420L15-722-218	Tyler Ref.	146291	L	40	20	5/8	36
33480	20420L15-767-257		146739	L	80	50	5/8	90

## Surface Mounting

MARS NO.	KLIXON NO.	O.E.M.	O.E.M. PART NO.	SWITCH ACTION	OPERATING TEMPERATURES F°		LEADS IN
					OPEN	CLOSE	
33017	20425L153-B22-B54	Heatcraft	5708L	L	75	40	18 w/ quick connects
33025	20425D56-520-B10	Heatcraft	5709L	D	55	35	18 w/ quick connects

1D=SPDT, no. 1 is common - no label, no. 2 either opens or closes temp. rise - red label, no. 3 is opposite of no. 2 - blue label

F= close on temperature rise, SPST

L= open on temperature rise, SPST

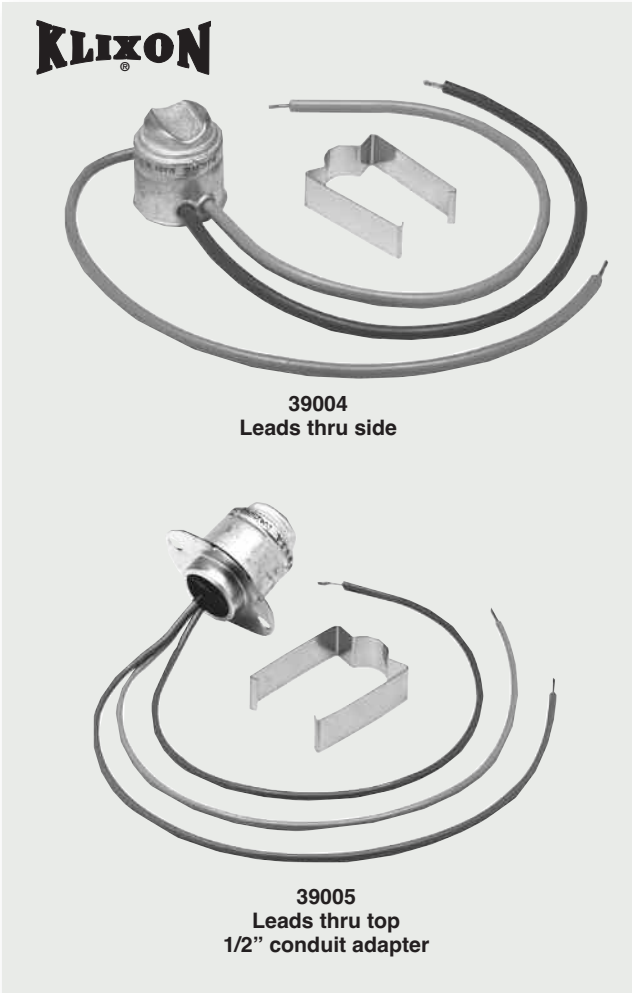
2 mounting is not limited to this size, see mounting clips above.



The largest selection of motors, components, and accessories for the HVAC/R Industry

# Klixon Fan & Limit Switches

MARS SERIES **390**



**39004**  
Leads thru side

**39005**  
Leads thru top  
1/2" conduit adapter

## Change-Over Switches for Fan-Coil Systems

The MARS Series 390 change-over switches are used for summer-winter change-over of electric thermo-stats in hydronic heating - cooling fan-coil units.

### Features:

- Color coded leads allow easy installation
- SL-8 thermostat is enclosed in sealed case for trouble-free operation
- Snap-acting disc type, insures accurate temperature repeatability
- Can be mounted in any position
- UL and CSA listings available

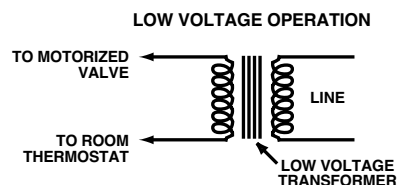
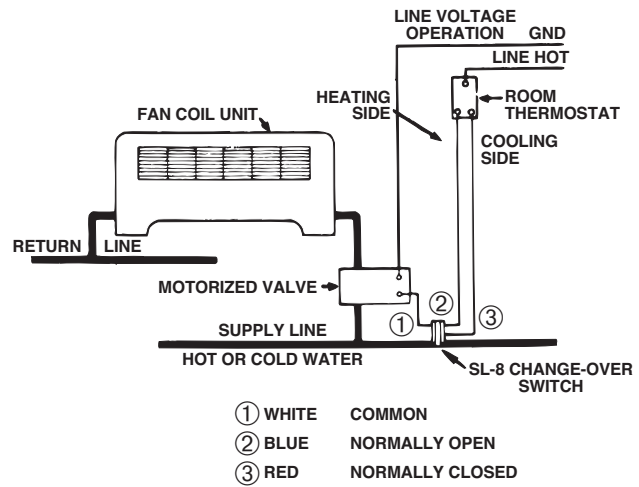
### Installation

The SL-8 change-over switch is located on the main run of the supply line where it can quickly sense the maximum temperature of the hot or cold water passing through. If the SL-8 switch is exposed to surrounding temperatures, thermal insulation should be wrapped around the switch case to maintain desired thermal response.

### Specifications:

**Pipe size:** 5/8 in O.D.  
**Leads:** 12 in. color coded  
**Switch Action:** SPDT  
**Temperature:** 88°F (31°C)—terminals 1 & 2 close, 1 & 3 open  
 73°F (23°C)—terminals 1 & 3 close, 1 & 2 open  
**Mounting:** mounting clip supplied with each kit  
**Electrical:** terminals 1 & 3 25 amp at 120/240 VAC  
 Terminals 1 & 2 10 amp at 120 VAC, 5 amp at 240 VAC

MARS NO.	KLIXON KIT NO.	KLIXON NO.	DESCRIPTION
39004	SL8-5	20425D27-160-356	leads thru side of cup
39005	SL8-5A	20425D69-160-287	leads thru top of cup with 1/2" conduit adapter



### Cross Reference

HONEYWELL NO.	MARS REPLACEMENT	WHITE RODGERS NO.	MARS REPLACEMENT
L6076A	39004	752-1	39004
L6076B	39005	752-2	39005



# Defrost Thermostats

MARS SERIES **330**

COMPONENT



33008

## For Defrost Termination

MARS Series 330 defrost controls are designed to replace many defrost thermostats. The leads are of sufficient length for the connection to be made at the same location as was the control removed. The connection should be insulated in a manner similar to that on the original equipment.

The selection of the proper thermostat can be made by matching the temperature code of the thermostat removed to the code on the MARS Thermostat.

### Features:

- Refrigerators, A/C units, & heat pumps, dehumidifiers, icemakers or any place where a fixed temperature control is required in a wet or dirty environment.
- Thermostats have 32" leads.

MARS NO.	TEMPERATURE CODE	OPENING TEMP. F°	CLOSING TEMP F°
33008	L45	45	25
33010	L55	55	35
33011	L60	60	40
33012	L70	70	50
33020	L80	80	60

## Temperature Selection Guide

TEMP. CODE	USE MARS NO.	TEMP. CODE	USE MARS NO.	TEMP. CODE	USE MARS NO.
L40-3.0	33008	L58-4.3	33011	L65-4.0	33012
L42-2.0		L60-2.0		L67-4.2	
L45-3.0		L60-2.5		L70-4.0	
L45-3.0		L60-3.0		L75-5.0	
		L60-3.5			
L55-1.5	33010	L60-4.0	33020	L80-3.0	
L55-2.0		L60-4.5		L80-4.0	
L55-2.5				L80-4.5	
L55-3.0				L80-5.0	
L55-3.5					
L55-4.0					

VOLTS	INDUCTIVE	
	F.L.A.	L.R.A.
120	5.8	25
240	2.9	70



33101

## MARS Freeze Stat

The MARS 33101 is designed to help stop flood back to compressor crankcases caused by low ambient temperatures.

### Features:

- Simple to install
- Refrigerators, freezers, A/C, food dispensing equipment
- 24" leads.

MARS NO.	OPENING TEMP. F°	CLOSING TEMP F°
33101	34	45





# Klixon Pressure Switches

MARS SERIES **333**



**KLIXON**



33329

## Fixed Setting Pressure Controls

Low pressure controls.

### Specifications:

- Contacts rated at 6 amps, 24-240 volts
- 18" leads

### Features:

- Tamper proof construction
- Direct mounting on tubing
- UL & CSA recognized

The 4 - Series Klixon Pressure Switches. This newest set of designs delivers the reliability and performance that has made Klixon the most trusted name in the electromechanical sensor business. The 4 - Series line of pressure switches covers many new R410A applications along with traditional pressure setting switches.

Klixon Brand, UL and CUL, Compact size, light weight for direct mounting, Factory Set, Hermetically Sealed Sensor.

5.8 FLA - 34.8 LRA @ 120 VAC, 2.9 FLA - 15.0 LRA @ 240 VAC, 100,000 Cycle Life at Rated Current.

## Low Pressure Cut-Out - Open on Pressure Drop, Automatic Reset Normally Open

3 SERIES MARS NO.	4 SERIES MARS NO.	CUT OUT	CUT IN	NOTES
33329	43341	5	20	1/4" Female Flare S.A.E. Mounting
	43342	5	30	1/4" Female Flare S.A.E. Mounting
33330	43343	10	25	1/4" Female Flare S.A.E. Mounting
33333	43344	15	35	1/4" Female Flare S.A.E. Mounting
	43371	15	40	1/4" Copper Clad SS Tube, 90 degree elbow w/36" leads
	43345	20	45	1/4" Female Flare S.A.E. Mounting
	43372	22	50	1/4" Copper Clad SS Tube w/38" leads
	43373	25	40	Gold Contacts 1/4" Female Flare w/36" leads
33362	43346	25	50	1/4" Female Flare S.A.E. Mounting
33336	43347	25	65	1/4" Female Flare S.A.E. Mounting
33363	43348	25	80	1/4" Female Flare S.A.E. Mounting
	43349	35	60	1/4" Female Flare S.A.E. Mounting
33364	43350	40	80	1/4" Female Flare S.A.E. Mounting
	43351	45	60	1/4" Female Flare S.A.E. Mounting
33339	43352	50	90	1/4" Female Flare S.A.E. Mounting
	43374	50	95	1/4" Copper Clad SS Tube w/36" leads
33342	43353	75	100	1/4" Female Flare S.A.E. Mounting
	43375	90	120	1/4" Female Flare, w/18" leads
	43354	150	225	1/4" Female Flare S.A.E. Mounting
	43355	170	250	1/4" Female Flare S.A.E. Mounting
	43361	165	215	1/4" Female Flare S.A.E. Mounting w/Quick Connects
	43362	200	240	1/4" Female Flare S.A.E. Mounting w/Quick Connects, SPDT



# Klixon Pressure Switches

MARS SERIES **333**

COMPONENT

**KLIXON**



33353

## Fixed Setting Pressure Controls High Pressure Cut-Outs

MARS offers the most complete line of high pressure cut-outs available.

### Specifications:

- Contacts rated at 6 amps, 24-240 volts
- 1/4" female flare S.A.E. mounting
- 18" leads

### Features:

- Tamper proof construction
- Direct mounting on tubing
- UL & CSA recognized

The 4 - Series Klixon Pressure Switches. This newest set of designs delivers the reliability and performance that has made Klixon the most trusted name in the electromechanical sensor business. The 4 - Series line of pressure switches covers many new R410A applications along with traditional pressure setting switches.

Klixon Brand, UL and CUL, Compact size, light weight for direct mounting, Factory Set, Hermetically Sealed Sensor.  
5.8 FLA - 34.8 LRA @ 120 VAC, 2.9 FLA - 15.0 LRA @ 240 VAC, 100,000 Cycle Life at Rated Current.

## High Pressure Cut-Out - Open on Pressure Rise, Automatic Reset, Normally Closed

3 SERIES MARS NO.	4 SERIES MARS NO.	CUT OUT	CUT IN	NOTES
33353	43337	200	150	1/4" Female Flare S.A.E. Mounting
	43321	225	150	1/4" Female Flare S.A.E. Mounting
33354	43322	250	150	1/4" Female Flare S.A.E. Mounting
33310	43324	275	195	1/4" Female Flare S.A.E. Mounting
33355	43325	300	200	1/4" Female Flare S.A.E. Mounting
33313	43326	325	225	1/4" Female Flare S.A.E. Mounting
33316	43320	350	245	1/4" Female Flare S.A.E. Mounting
33356	43327	350	250	1/4" Female Flare S.A.E. Mounting
33319	43328	375	275	1/4" Female Flare S.A.E. Mounting
33357	43329	400	200	1/4" Female Flare S.A.E. Mounting
33322	43330	400	280	1/4" Female Flare S.A.E. Mounting
33370	43340	400	300	1/4" Female Flare S.A.E. Mounting w/24" leads (1 stripped, 1 w/1/4" female flag QC)
33358	43331	400	300	1/4" Female Flare S.A.E. Mounting w/24" leads (1 stripped, 1 w/1/4" female flag QC)
33365 <sup>1</sup>	43313 <sup>1</sup>	410	290	1/4" Female Flare S.A.E. Mounting
33325	43332	425	300	1/4" Female Flare S.A.E. Mounting
	43333	425	325	1/4" Female Flare S.A.E. Mounting
33359	43334	450	250	1/4" Female Flare S.A.E. Mounting
	43365	590	418	1/4" Female Flare w/snubber
33361	43335	600	475	1/4" Female Flare S.A.E. Mounting
	43366	610	420	1/4" Copper Clad SS Tube, 90 degree elbow w/snubber
	43376	610	420	1/4" Copper Clad SS Tube w/snubber
33369	43339	630	480	1/4" Female Flare S.A.E. Mounting
	43367	650	450	1/4" Copper Clad SS Tube w/snubber

<sup>1</sup> Manual reset

# Klixon Pressure Switches

MARS SERIES **333**



## Condenser Fan Cycling Switches

Fan cycling switches provide refrigeration and air conditioning from low ambient conditions.

### Specifications:

- Contacts rated at 6 amps, 24-240 volts
- 1/4" female flare S.A.E. mounting
- 18" leads

### Features:

- Tamper proof construction
- Direct mounting on tubing
- UL & CSA recognized



### Fan Cycling - Close on Pressure Rise

3 SERIES MARS NO.	4 SERIES MARS NO.	CUT OUT	CUT IN	NOTES
33340	43301	75	100	1/4" Female Flare S.A.E. Mounting
	43302	110	170	1/4" Female Flare S.A.E. Mounting
	43303	125	265	1/4" Female Flare S.A.E. Mounting
	43304	150	225	1/4" Female Flare S.A.E. Mounting
	43305	190	275	1/4" Female Flare S.A.E. Mounting
33341	43370	180	240	New! 1/4" Female Flare
	43306	210	275	1/4" Female Flare S.A.E. Mounting
	43307	300	400	1/4" Female Flare S.A.E. Mounting



### Manual Reset - High Pressure Cut Out Open on Pressure Rise

3 SERIES MARS NO.	4 SERIES MARS NO.	CUT OUT	CUT IN	NOTES
33365	43312	375	Manual	1/4" Female Flare S.A.E. Mounting
33350	43313	410	Manual	1/4" Female Flare S.A.E. Mounting
33352	43314	415	Manual	Capillary Tube
	43315	440	Manual	Capillary Tube
	43316	475	Manual	1/4" Female Flare S.A.E. Mounting
	43368	590	Manual	1/4" Female Flare w/snubber
	43369	610	Manual	1/4" Female Flare w/snubber



# Heat Pump Thermostats

MARS SERIES **330**

COMPONENT



## Heat Pump Defrost Thermostats

MARS heat pump defrost thermostats are designed for direct replacement of most existing controls of this type. The temperature settings and tubing sizes have been carefully selected from the most popular OEM settings. Each MARS thermostat comes complete with extra long 54 inch leads, mounting clamp, and installation instructions for fast and simple field installation.

### Features:

- Four controls cover most requirements
- Tapered mounting edge for maximum heat transfer
- Extra long 54 inch leads for simple wiring
- Individually boxed with mounting clamp and instructions
- UL & CUL listed

### Electrical Ratings:

CYCLES X1000	VOLTS	FLA	LRA	RESISTIVE AMPS	VA
100	120VAC	5.8	34.8	10	125
100	240VAC	2.9	17.4	10	125
30	120VAC	10.0	40.0	—	—
30	240VAC	10.0	40.0	—	—
100	30VDC	—	—	1	—

MARS NO.	OPERATING TEMPERATURES F°		TUBE MOUNTING IN	LEADS IN
	OPEN	CLOSE		
33490	80	30	3/8	54
33492	80	30	1/2	54
33494	65	30	3/8	54
33496	65	30	1/2	54



# MARS Solid State Devices

MARS SERIES **347**



## MARS Heat Pump Defrost Timer

MARS Heat Pump Defrost Timer replaces General Electric and Paragon timers on heat pumps with time initiated and time or temperature terminated defrost systems.

The MARS Heat Pump Timer features a defrost interval adjustment that allows selection of either 90 minutes or 45 minutes between defrost periods.

The MARS Heat Pump Defrost Timer will replace Paragon timers used by Carrier, Bryant, and other OEMs with the addition of a mounting bracket.

### Specifications:

<b>Time Delays:</b>	Digital Interval delay duration: jumper selectable as 45 or 90 min. D faults to 45 min. if jumper wire is not connected.
<b>Defrost Delay Duration:</b>	10 min. or terminated upon the defrost thermostat opening
<b>Defrost Window Delay Duration:</b>	50 seconds
<b>Operating Voltage:</b>	240 VAC +10% - 25%
<b>Output:</b>	relay/contactor output Type - solid state Form - SPDT N.O. Rating - .50 amp steady state
<b>Protection:</b>	25% or greater shutdown
<b>Surface Mount:</b>	With two #6 screws .25 inch male quick connect terminal
<b>Operating Temp:</b>	-40°C to +85°C
<b>Humidity:</b>	95% relative

### Features:

- Adjustable 90 or 45 minute defrost interval
- Replaces GE directly
- Replaces Paragon with bracket
- Telechron S1 motor
- 50/60 Hertz
- UL and CSA listings available

MARS NO.	DEFROST INTERVAL	DEFROST TIMING PERIOD	DEFROST INITIATION	SWITCHING
34790	90 or 45	10	50 Sec.	SPST N.O.

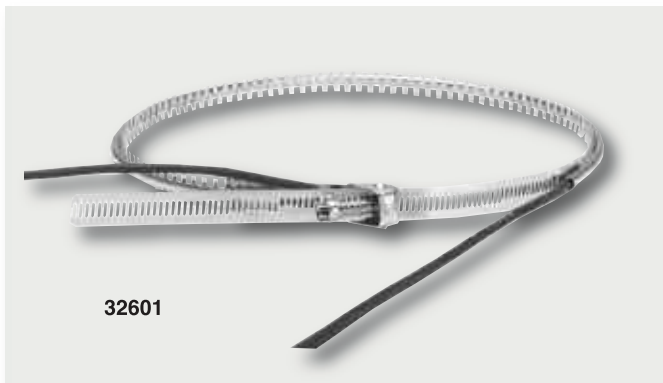


The largest selection of motors, components, and accessories for the HVAC/R Industry



# Compressor Heaters

MARS SERIES **326**



## Application Reference Chart for TUTCO™ Compressor Heaters

Manufacturer	Model	MARS No.
Aspera	H	32605-32608
Aspera	J	32609-32612
Bendix/Westinghouse	A	32613-32616
Bendix/Westinghouse	C, D	32601-32604
Bendix/Westinghouse	E	32605-32608
Bristol/Sundstrand	H10A, H21A, H2EA, H2A	32605-32608
Bristol/Sundstrand	H10B, H20B, H21B, H22B	32613-32616
Bristol/Sundstrand	H10G, H20G, H12G, H22G, H2NG-144	32617-32620
Carrier	6A25, 26, 28, 29, 6A35, 38, 45, 48	32605-32608
Carrier	6A88	32617-32620
Carrier/Carlisle	6R	32625-32626
Carlisle	W (70-88)	32601-32604
Copeland	BR	32633-32635
Copeland	CR	32605-32608
Copeland	JR	32629-32630
Copeland	RR, SR	32613-32616
Copeland	ZR	32621-32624
Copeland	Y	32601-32604
Fedders/Chrysler	3009	32617-32620
Fedders/Chrysler	2870908	32631-32632
Hitachi	1500FH4-H	32617-32620
Hitachi	305FH2HE, 402FH2-HE, 505FH2-HE	32613-32616
Hitachi	753FH3-H, 1001FH4-H	32601-32604
Sanyo	CR151F, CR20F, CR33F	32631-32632
Tecumseh	AB	32613, 32616
Tecumseh	AH	32605-32608
Tecumseh	AJ	32609-32612
Tecumseh	AK	32629-32630
Tecumseh	B, C, CL, AG, AV	32601-32604
Tecumseh	FE, FB	32617-32620
Trane	D4340/7669	32609-32612
Trane	D4340/7670	32621-32624
Trane	D4350/689, D4359/690	32605-32608
Westinghouse	CD072, CD090	32605-32608
Westinghouse	CD072, CD090	32621-32624

## TUTCO™ Compressor Heaters for A/C And Refrigeration

### Features:

- Corrosion resistant exterior
- High temperature silicone rubber element and insulated leads
- 30" leads
- Wattage for each model matches compressor requirements
- Completely moisture proof
- Installs quickly and easily
- Nominal power consumption
- UL & CSA Listed

MARS NO.	DESCRIPTION	VOLTS	WATTS	INCHES		SHAPE
				MIN.	MAX	
32601	CH-100	240	50	30 3/16	37	OVL
32602	CH-100-1	208		30 3/16	37	
32604	CH-100-3	480		30 3/16	37	
32605	CH-101	240	54	27 7/16	34 1/4	OVL
32608	CH-101-3	480		27 7/16	34 1/4	
32609	CH-102	240	60	25 3/4	32 9/16	OVL
32610	CH-102-1	208		25 3/4	32 9/16	
32611	CH-102-2	120		25 3/4	32 9/16	
32613	CH-103	240	45	24 3/4	31 9/16	OVL
32616	CH-103-3	480		24 3/4	31 9/16	
32617	CH-104	240	75	41 1/2	48 5/16	RND
32618	CH-104-1	208		41 1/2	48 5/16	
32619	CH-104-2	120		41 1/2	48 5/16	
32620	CH-104-3	480		41 1/2	48 5/16	
32621	CH-105	240		32 1/2	39 5/16	
32622	CH-105-1	208	50	32 1/2	39 5/16	RND
32624	CH-105-3	480		32 1/2	39 5/16	
32625	CH-115	240	40	30 3/16	37	RND
32626	CH-115-2	120		30 3/16	37	
32629	CH-135	240	45	20 5/16	27 1/8	OVL
32630	CH-135-2	120		20 5/16	27 1/8	
32631	CH-197	240	25	13 3/4	20 9/16	RND
32633	CH-202	240	70	33 3/4	36 3/4	RND
32634	CH-202-2	120		33 3/4	36 3/4	
32635	CH-202-3	480		33 3/4	36 3/4	



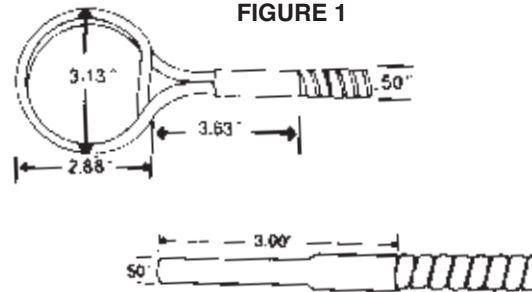
# Crankcase Heaters

MARS SERIES **324**

COMPONENT



## Direct Replacement Crankcase Heaters for Copeland



## K&H Series Crankcase Heaters

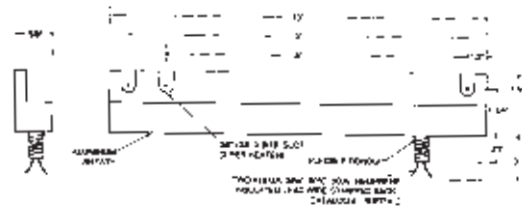
MARS NO.	COPELAND NO.	WATTS	VOLTS	FIGURE	COMPRESSOR MODEL
32443	9980118-06(018-0028-02)	50	240	1	K & H

## BR Series Crankcase Heaters

MARS NO.	COPELAND NO.	WATTS	VOLTS	FIGURE	COMPRESSOR MODEL
32445	018-0022-01	60	120	3.00	2



## Universal Replacement Crankcase Heaters for Copeland



MARS NO.	COPELAND NO.	WATTS	VOLTS	HEATER LENGTH IN.	CAN REPLACE	ACCESSORIES
32490	018-0034-00	65	120	10.00	4R,6R,6T,9R,9T,9W,E,MW 3A,3R,LA,MR,NR,EA,ER,LW,MD	2 bolts
32491	018-0034-01	65	240	10.00	4R,6R,6T,9R,9T,9W,E,MW 3A,3R,LA,MR,NR,EA,ER,LW,MD	2 bolts
32492	018-0034-02	65	480	10.00	E,9R,9W,MW,3A,3R,LA,MR, NR,EA,ER,LW,MD	2 bolts

# Crankcase Heaters

MARS SERIES **324**



## Direct Replacement Crankcase Heaters for Copeland

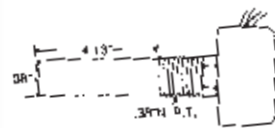
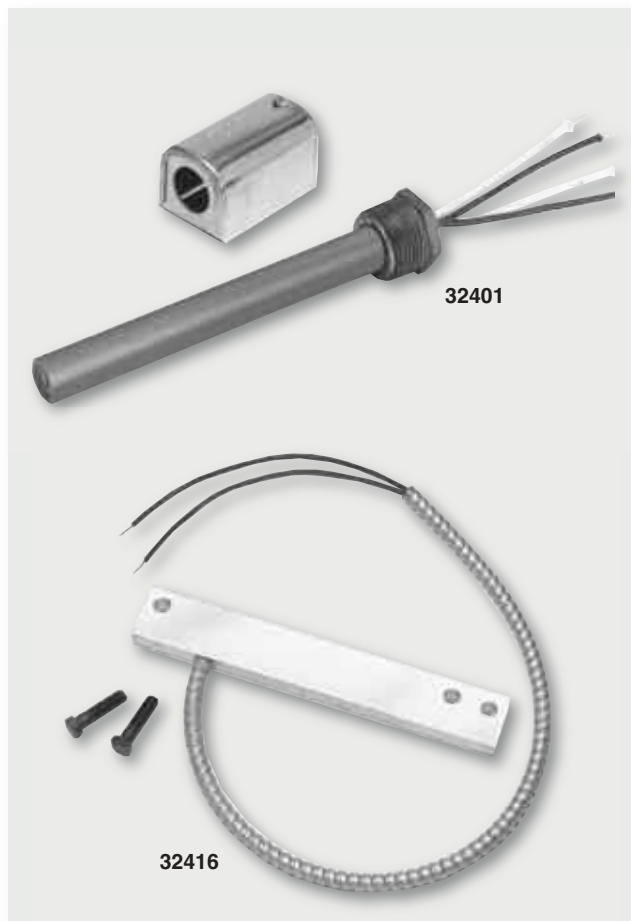


FIGURE 1

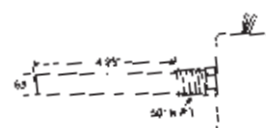


FIGURE 2

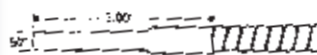


FIGURE 3

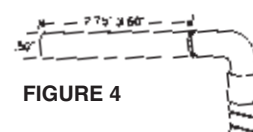


FIGURE 4



FIGURE 5

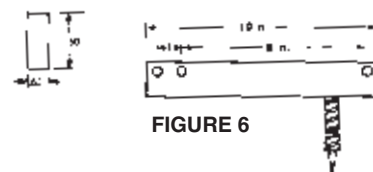


FIGURE 6

## Crankcase Heaters for Copeland

NOTE: All heaters requiring clips or brackets are packaged with the appropriate clips or brackets required.

MARS NO.	COPELAND NO.	WATTS	VOLTS	HEATER LENGTH IN.	FIGURE	COMPRESSOR MODEL	ACCESSORIES
32401	518-0001-01						2 bolts
32403	518-0001-02	65	240	4.13	1	3D,9D,9R	
32405	518-0001-03						2 bolts
32408	518-0002-01						
32409	518-0002-02	100	240	4.25	2	4R,6R,6T,4D,6D	
32410	518-0002-03						
32416	518-0009-01	65	240	10.00	6	E,9R,9W,MW,3A,3R,LA,MR,NR	
32429	018-0029-00	60	240	3.00	3	BR	
32431	018-0021-04		120				
32432	018-0021-05	200	240	3.50	4	6RJ,4RJ,4RR	
32437	018-0023-01		240				
32439	018-0023-00	50	120	5.00	5	K & H	



# Crankcase Heaters

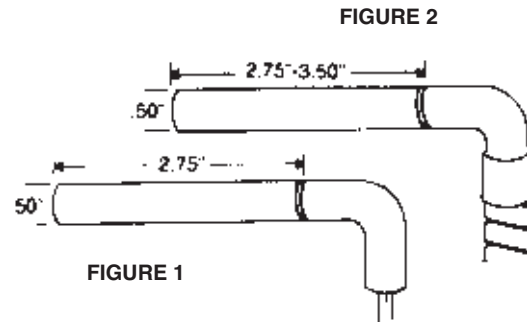
MARS SERIES **324**

COMPONENT



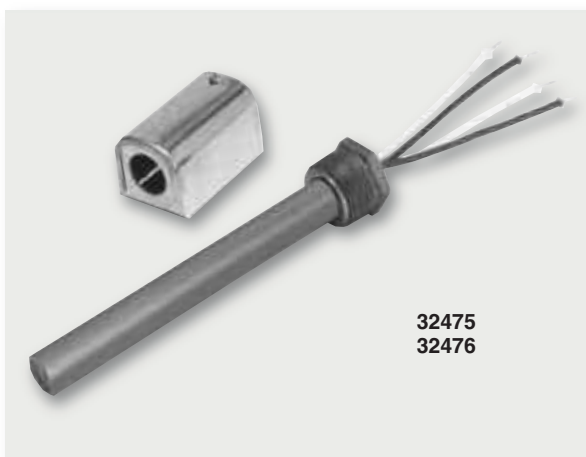
32456  
32466

## Direct Replacement Crankcase Heaters for Carrier



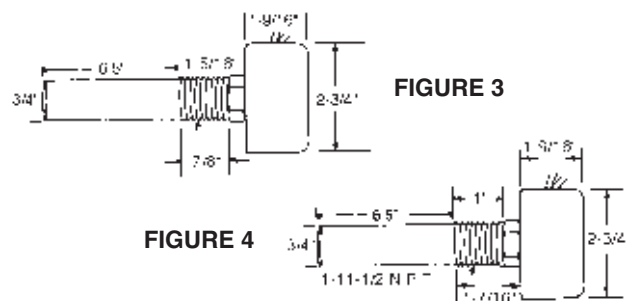
## Crankcase Heaters for Carrier

MARS NO.	CARRIER NO.	WATTS	VOLTS	HEATER LENGTH IN.	LEAD LENGTH IN.	FIGURE	COMPRESSOR MODEL
32452	HT36DL172	125	120	2.75	25	2	
32456	HT36ES363	75	120	2.75	36.5	1	AB:AC:AD:38AA
32458	HT36FS364	75	120	2.75	52	2	AB:AC:AD:38AA
32460	HT36NS377	75	120	2.75	88	2	EB:30EA:30HH:30HJ:48DD:50DD
32462	HT36NS477	75	230	2.75	88	2	6D:06D
32464	HT36FS474	75	240	2.75	52	2	EM:6D:06D
32466	HT36XS575	75	240	2.75	36	1	
32468	HT36FL463	125	240	2.75	49	2	
32472	HT36FL379	125	120	2.75	60	2	EM:06DM:306B:50EQ
32474	HT36FL479	125	240	2.75	68	2	EM:06DM:30HR:30HS



32475  
32476

## One-On-One™ Crankcase Heaters



MARS NO.	OEM	OEM NO.	WATTS	VOLTS	LENGTH	DIA.	FIGURE
32475	Trane	661A-16093-12-4-C*	100	115/230	6 1/2"	3/4"	4
32476	Trane	661A-13881-12-4-C*	75	115/230	6 1/2"	3/4"	3
32478	Trane	X13140729-01	140	115/230	11"	3/4"	4





# Crankcase Heaters

MARS SERIES **324**



## PTCR Crankcase Heaters

MARS solid state crankcase heater is a PTCR self regulating device which performs in a similar manner to a heater and thermostat combination. Unlike conventional resistance heater and thermostat combinations which provide only fully on or fully off operation, MARS solid state crankcase heater emits heat in proportion to the compressor requirements.

As compressor temperature decreases, current flow through the heater increases causing it to heat up. When the compressor is warm and additional heat is not required, current flow decreases. Only enough electricity is consumed to maintain the correct temperature. MARS solid state crankcase heaters are self adjusting to voltage variations.

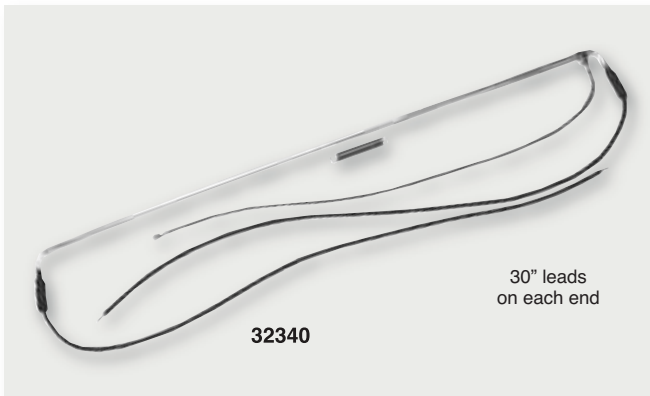
### Application:

MARS 32342 is for use on heaterless compressors to help correct refrigerant migration or as a preventative maintenance precaution. It will replace belly-band heaters on compressors up to 5 HP, 120 and 240 VAC. MARS 32342 attaches to the compressor using high temperature, pressure sensitive aluminum foil. If more heat is required, a second 32342 may be wired in parallel and applied to the opposite side of the compressor.

MARS NO.	TYPE	WATTS	VOLTS
32342	Heater with self-stick foil	28	600 Max

### Features:

- Total solid state reliability
- Self regulating
- 32342—fast, easy installation
- UL E49372, SA5202
- CSA LR46861, LR80111



## Universal Crankcase Heater

MARS 32340 universal crankcase heater is for use on air conditioning and heat pump compressors located in cool ambient temperatures, to prevent refrigerant migration. MARS 32340 is a soft aluminum sheath which is formed around the base of the compressor and attached with the supplied mounting spring. This unique design will fit most hermetic compressors used in residential systems.

### Features:

- Universal application
- Simple installation
- UL and CSA listed

MARS NO.	TYPE	WATTS	VOLTS
32340	Universal wrap-around	50	230



## Replacement Coil Kits and Accessories for Electric Heat

MARS Replacement coil kits for electric heat let you repair strip heaters quickly and economically. Each kit contains one close wound, stretch to length, resistance coil with welded terminal bolts; two each male and female ceramic terminal insulators; two each .375 and .450 inch standard ceramic bushings; two each .375 and .450 inch extra long ceramic bushings; necessary nuts, washers, and installation instructions.

Select the right MARS kit from the chart below and order one kit for each circuit to be repaired. Thermal fuse links are rated 25 amps res. at 120 and 240 VAC.

### Features:

- Welded terminal bolts for low resistance and long life
- Close wound coil, stretch to fit many applications
- Complete with bushings, insulators and hardware

MARS NO.	WATTAGE AT				STRETCHED LENGTH			
	240V	208V	480V	277V	INCHES		METERS	
					MIN	MAX	MIN	MAX
34602	5000	3750	—	—	44.62	127.48	1.13	3.24
34604	—	—	5000	—	61.78	176.53	1.57	4.48
34606	—	—	—	5000	59.44	169.82	1.51	4.31
34608	3500	2625	—	—	50.75	145.00	1.29	3.68
34610	—	—	3500	—	42.27	120.76	1.07	3.07
34614	2000	1500	—	—	25.90	74.01	0.66	1.88
34616	2500	1875	—	—	30.89	88.26	0.78	2.24
34620	—	—	—	2500	27.61	78.87	0.70	2.00
34622	1500	1125	—	—	17.04	48.69	0.43	1.24
34624	4500	3375	—	—	42.33	120.95	1.07	3.07
34626	—	—	4500	—	46.05	131.98	1.17	3.35
34630	—	—	2000	—	32.00	108.00	0.81	2.74
34652	6600	4950	—	—	70.56	201.59	1.79	5.12
34654	—	—	6600	—	65.39	186.71	1.66	4.74
34656	6000	4500	—	—	54.43	155.50	1.38	3.95
34658	—	—	6000	—	71.88	205.38	1.83	5.22
34660 <sup>1</sup>	5000	3756	—	—	25.00	70.00	—	—

<sup>1</sup> Larger diameter coil - 5/8"

### Thermal Fuse Links\*

MARS NO.	°F	°C	DESCRIPTION
34700	204	95.56	Fuse Link
34702	283	139.45	Fuse Link
34704	333	167.22	Fuse Link
34706	300	148.89	Fuse Link
34708	300	148.89	Fuse Link—Round Ceramic Base
34710	227	108.33	Fuse Link—Oblong Ceramic Base
34712	300	148.89	Fuse Link—Oblong Ceramic Base

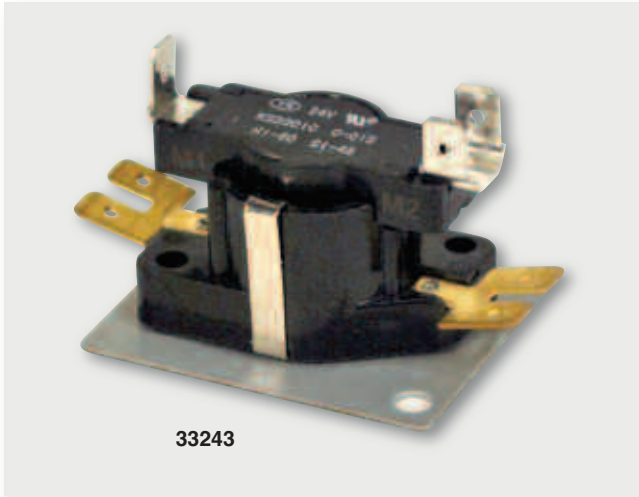
\*10 per pack

### Replacement Coil Economy Kits

MARS NO.	DESCRIPTION
34600	5000 Watt @ 240 V; includes coil, insulators & hardware
34601	5000 Watt @ 240 V; includes 300° fuse link, coil, insulators & hardware

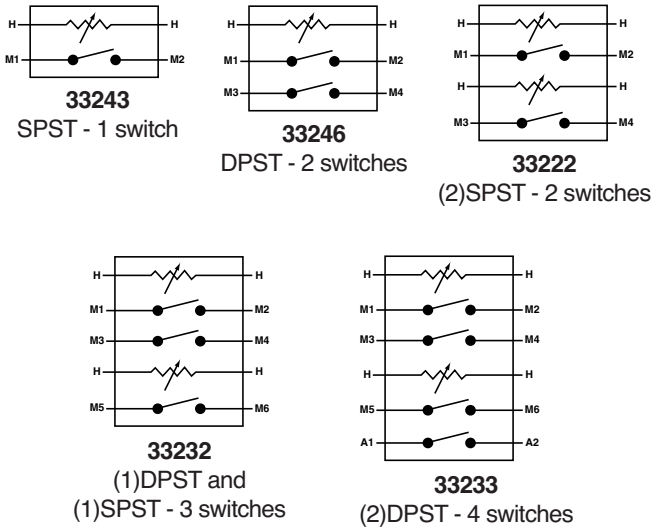
# Relays & Sequencers

MARS SERIES **332**



33243

## Schematic



## Electric Heat Sequencers

A new simple method for selecting and replacing electric heat sequencers with only five basic controls. Replace sequencers in almost any existing system.

Sequencer selection:

- A. Determine the number of circuits to be switched. (Electrical rating of auxiliary switch same as main switch.) When more than one (1) sequencer is required the sequencers are to be wired in series with the last switch in each sequencer energizing the control circuit of the next sequencer.
- B. Select from the chart the sequencers needed for the number of circuits to be switched. These sequencers may be wired in series to allow sequencing of virtually any number of heating elements and fans.

If the sequencers control the fan/blower circuit, the first switch (M1-M2) of each sequencer must always control the fan. This provides a fan interlock to insure that the fan will remain on until all elements are de-energized.

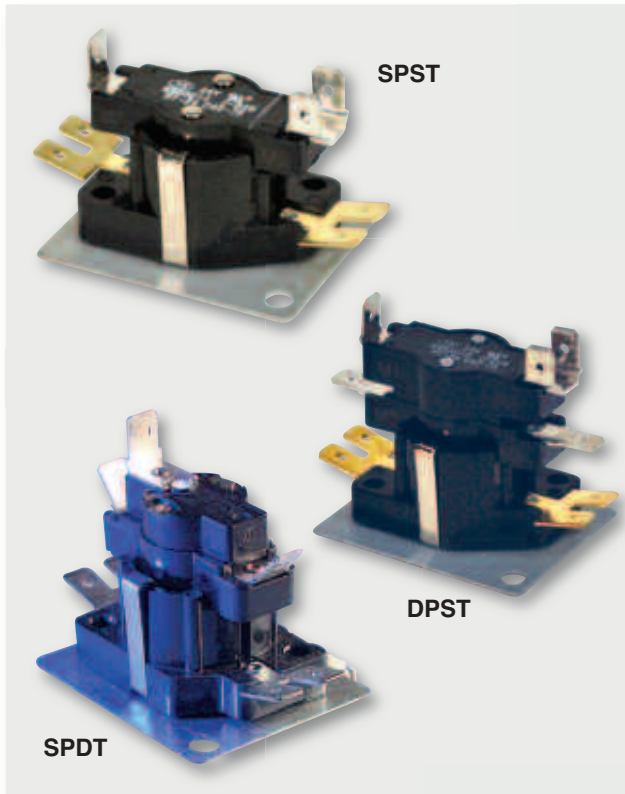
## Features:

- *Solid State dependability*
- Replaces Honeywell and White-Rodgers
- Ambient rated from 20°F. to 160°F.
- Used on both separate blower and element and combination blower and element systems
- Total 24 Volt control
- Standard *double quick-connect terminals* for combination fan and element systems
- Full-load-rated auxiliary contacts
- 7.2 KW combination fan and element rated contacts (23A. resistive, 7A. motor load)
- *Non-positional*
- *Voltage and ambient self compensating* positive temperature coefficient (PTC) heater elements
- Individually packaged with wiring diagrams for up to seven element furnaces.
- UL and CSA listing available

## Contact Rating Chart

VAC	RES AMPS	FLA	LRA	PILOT DUTY VA
120	30	23	84	672
240	30	23	60	960
277	23	23	42	775
480	12.5	5	10	400

NO. OF SWITCHES	MARS NO.	REPLACES KLIXON NO.	SWITCH TIMING: MIN-MAX IN SECONDS											
			Switch Sequence		Switch No. 1 (Terminals M1 / M2)		Switch No. 2 (Terminals M3 / M4)		Switch No. 3 (Terminals M5 / M6)		Switch No. 4 (2) (Terminals A1 / A2)			
			FIRST ON	LAST ON	FIRST OFF	LAST OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
1	33243	6000AOM	(1)				1-60	1-45						
2	33246	6000EOM	(1)				1-60	1-45	1-60	1-45				
2	33222	51172-22	No. 1	No. 2			1-24	45-75	30-70	1-40				
3	33232	51172-32	No. 1, No. 2	No. 3			1-24	45-75	1-24	45-75	30-70	1-40		
4	33233	51172-33	No. 1, No. 2	No. 3, No. 4			1-24	45-75	1-24	45-75	30-70	1-40	30-70	1-40



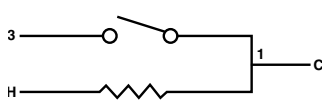
## Thermal Time Delay Relays Sequencers

These time delay relays are used for a variety of applications in heating and air conditioning. They operate by means of a solid state PTC (positive temperature coefficient) device which heats up as current passes through it from the control circuit. This heat causes a positive, snap-acting disc to make or break the necessary contacts.

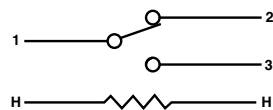
### Features:

- Shock & vibration resistant internal snap action automatic reset switch mechanism assures positive make/break action
- Non-positional
- Wide selection for any application
- Voltage and ambient compensated
- UL and CSA listed
- Used for electric heat, air conditioning, heat pumps, gas & oil furnaces, unit heaters and commercial refrigeration

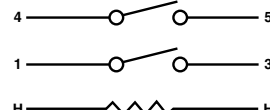
### Diagrams:



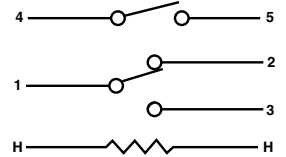
Single Pole Single Throw



Single Pole Double Throw  
(Contacts 1 and 3 are normally open)



Double Pole Single Throw



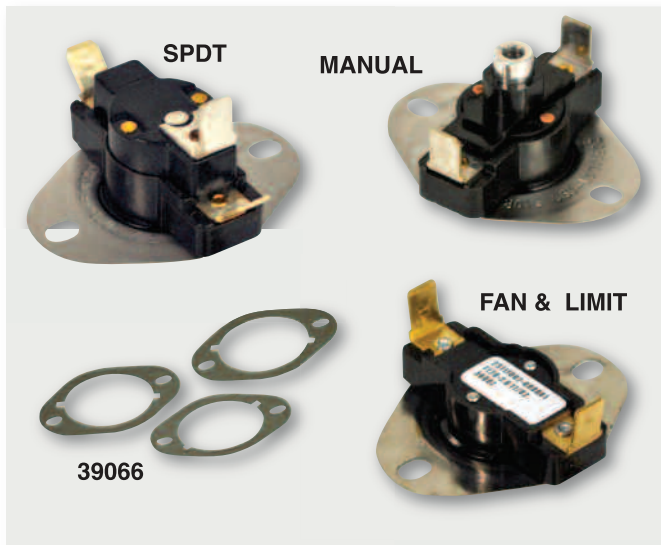
Double Pole Single Throw  
Single Pole Double Throw  
(Contacts 1 and 3 are normally open)

MARS NO.	REPLACES KLIXON TYPE 6000	SWITCH TYPE	CONTROL VOLTAGE	DELAY (SEC.)	
				ON	OFF
33215	G0-18	DPST & SPDT 1 & 3 N.O.	24	1-60	1-45
33217	G4-9	1 & 2 N.C., 4 & 5 N.O.	240	20-70	20-80
33241	AOM	SPST N.O.	24	1-24	45-75
33242	AOM		24	30-75	1-40
33243	AOM		24	1-60	1-45
33244	EOM	DPST N.O.	24	1-24	45-75
33245	EOM		24	30-75	1-40
33246	EOM		24	1-60	1-45
33247	COM-21	SPDT 1 & 3 N.O.	24	1-24	15-75
33255	E4	DPST N.O.	120	30-110	15-65
33256	E4		120	20-70	20-80
33265	E4	DPST N.O.	240	30-110	15-65
33266	E4		240	20-70	20-80
33267	C4M-13	SPDT 1 & 3 N.O.	240	20-70	20-80



# Fan & Limit Disc Thermostats

MARS SERIES **390**



## Heating Applications

MARS Series 390 thermostats are designed for quick on-the-job replacements. One thermostat, when used in conjunction with only one listed, can solve almost any mounting problems you encounter.

Our thermostats have been carefully selected to cover the widest temperature ranges with the fewest models.

### Features:

- Each 3/4" thermostat has an integral oval flange to match the most commonly used mounting option
- Widest range of replacements in the industry
- UL and CSA listings available

## Fan Switches—Close On Temperature Rise

MARS NO.	KLIXON TEMP. CODE	TEMPERATURE °F OPEN	TEMPERATURE °F CLOSE
39105	F90-2	70	90
39006	F110-2	90	110
39007	F120-2	100	120
39008	F130-2	110	130
39009	F140-2	120	140
39010	F150-2	130	150
39011	F160-2	140	160
39112	F175-2	155	175
39113	F195-2	175	195
39015	F210-2	190	210
39016	F250-4	210	250
39017	F350-4	310	350

## Manual Reset Limit Switches—Open On Temperature Rise

MARS NO.	REPLACES KLIXON TEMP. CODE	TEMPERATURE °F OPEN °F
39099	MR125	125
39037	MR140	140
39038	MR150	150
39039	MR160	160
39095	MR170	170
39096	MR180	180
39097	MR190	190
39098	MR200	200
39040	MR210	210
39041	MR220	220
39042	MR240	240
39043	MR300	300

## Limit Switches—Open On Temperature Rise

MARS NO.	REPLACES KLIXON TEMP. CODE	TEMPERATURE °F CLOSE	TEMPERATURE °F OPEN
39086	L125-2	105	125
39087	L130-4	90	130
39018	L140-4	100	140
39019	L150-4	110	150
39020	L160-4	120	160
39021	L170-4	130	170
39022	L180-4	140	180
39023	L190-4	150	190
39024	L200-4	160	200
39025	L210-4	170	210
39026	L220-4	180	220
39027	L230-4	190	230
39028	L240-4	200	240
39029	L250-4	210	250
39030	L270-4	230	270
39130	L290-4	250	290
39031	L300-4	260	300
39032	L325-4	285	325
39033	L350-4	310	350

## Single Pole Double Throw Switches

MARS NO.	REPLACES KLIXON TEMP. CODE	TEMPERATURE °F 1-2 OPEN	TEMPERATURE °F 1-2 CLOSE
39077	D130-2	110	130
39078	D140-2	120	140
39045	D150-2	130	150
39046	D160-2	140	160
39081	D170-2	150	170
39147	D195-4	155	195
39082	D205-4	165	205
39084	D245-4	195	245
39085	D270-4	220	270

### Electrical Rating

		TERMINALS	TERMINALS*
Full load amps	120V	1-3	1-2
	240V	10	5.8
Resistive amps	120V	5	2.9
	240/277V	25	10
Pilot Duty	120/240/277V	25	5
		125VA	125VA

\*for SPDT thermostats

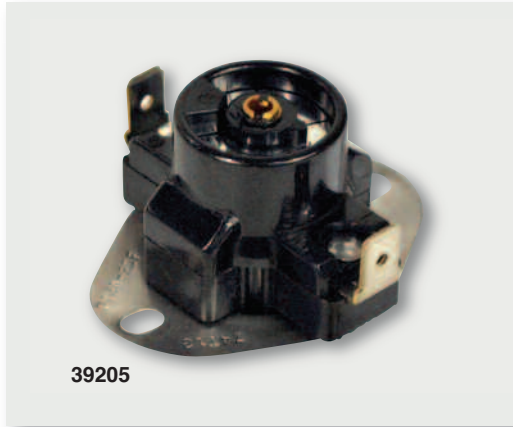
## Mounting Flanges—3 Per Package

MARS NO.	DESCRIPTION	TYPE OF MOUNTING	SWITCH DIAMETER
39066	small oval flat	flush	3/4"



# Fan & Limit Disc Thermostats

MARS SERIES **390**



39205

## Adjustable Fan or Limit Thermostats

MARS adjustable fan or limit thermostats let you reduce inventory and still have on hand the most popular thermostat ratings.

MARS adjustable thermostats are easily set for the desired temperature by turning the indicator dial built into the control. Each MARS adjustable thermostat features integral 2 hole oval mounting flanges.

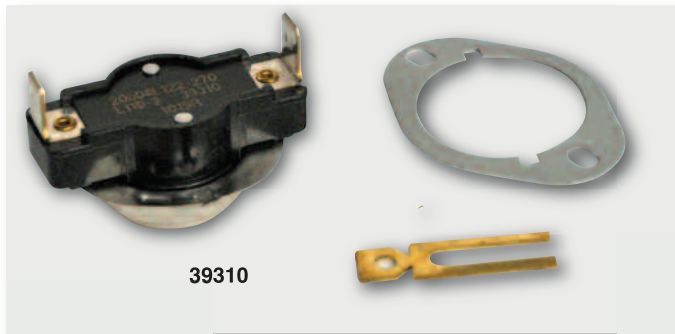
### Features:

- Easy dial adjustment
- Six controls cover most requirements
- Integral oval flange
- UL and CSA listings available

MARS NO.	TYPE	RANGE °F	DIFF. °F	SWITCHING ACTION
39205	Fan	90-130	20	Close on rise
39210	Fan	140-180	20	Close on rise
39220	Limit	135-175	40	Open on rise
39225	Limit	175-215	40	Open on rise
39230	Limit	210-250	40	Open on rise
39235	Limit	250-290	40	Open on rise

### Cross Reference Information

GEM NO.	MARS NO.	WHITE-RODGERS NO.	MARS NO.
AT 012	39220	3F05-1	39205
AT 013	39225	3F05-2	39210
AT 014	39230	3L05-1	39220
AT 015	39235	3L05-2	39225
AT 021	39205	3L05-3	39230
AT 022	39210		



39310

## Electric Heat High Limit Thermostats

MARS electric heat high limit thermostats are designed for easy accurate replacement of OEM thermostats on electric furnaces. Temperature ratings and differentials have been carefully selected for safe operation.

MARS electric heat high limit thermostats feature an exposed matte finish disc for fast response. Easy matching of OEM mountings using the integral round flange, accessory oval flange or the terminal mounting adapter.

### Features:

- Exposed matte finish disc for fast response
- Unique terminal mounting adapter for simple secure mounting
- Oval mounting flange supplied to match many popular mounts
- Twelve models replace most popular OEM thermostats
- Individually bagged with instructions
- UL and CSA listings available

MARS NO.	TEMPERATURE °F		DIFFERENTIAL
	OPEN	CLOSE	
39310	110	90	20
39312	120	100	20
39314	130	100	30
39316	140	100	40
39318	145	105	40
39320	150	110	40
39322	155	115	40
39324	160	120	40
39326	170	130	40
39328	180	140	40
39330	190	150	40
39332	200	160	40

# Fan & Limit Disc Thermostats

MARS SERIES **390**



39008

## Pro-Series Heating Service Kit

MARS has selected the most popular fan and limit switches used in heating applications. Each switch has an integral small oval flange to duplicate the most popular mounting. UL and CSA listings available.

MARS NO.	SWITCH TYPE	KLIXON TEMP. CODE	TEMPERATURE °F CLOSE	TEMPERATURE °F OPEN	TEMPERATURE °C CLOSE	TEMPERATURE °C OPEN
39008	Fan	F130-2	130°F	110°F	54°C	43°C
39009	Fan	F140-2	140	120	60	49
39010	Fan	F150-2	150	130	66	54
39011	Fan	F160-2	160	140	71	60
39022	Limit	L180-4	140°F	180°F	60°C	82°C
39023	Limit	L190-4	150	190	66	88
39024	Limit	L200-4	160	200	71	93
93029	0.25 inch spade to screw adapters					



39086

## Home Laundry Applications

MARS has carefully selected the most popular multi-purpose thermostats for home laundry and drier equipment. MARS Operating Limit Thermostats range from 125°F to 180°F and have narrow differentials (20°F).

### Features:

- UL and CSA listings available.

## Operating Limit Thermostats – Open On Temperature Rise

MARS NO.	KLIXON TEMP. CODE	TEMP °F-OPEN	TEMP. °F-CLOSE
39086	L125-2	125	105
39055	L130-2	130	110
39054	L135-2	135	115
39051	L150-2	150	130
39090	L155-2	155	135
39048	L180-2	180	160
93029	0.25 inch quick connect screw adapters		

## Cross Reference Information

WR NO.	MARS REPLACEMENT	WR NO.	MARS REPLACEMENT	WR NO.	MARS REPLACEMENT
3F01-110	39006	3L01-120	39086	3L02-160	39039
3F01-120	39007	3L01-130	39087	3L02-170	39095
3F01-130	39008	3L01-140	39018	3L02-180	39096
3F01-140	39009	3L01-180	39022	3L02-190	39097
3F01-150	39010	3L01-190	39023	3L02-200	39098
3F01-160	39011	3L01-200	39024		
3F01-180	39112	3L01-230	39027	3L03-140	39078
3F01-200	39113	3L01-250	39029	3L03-190	39147
3F01-350	39017	3L01-300	39031	3L03-325	39093
		3L01-350	39033		
		3L01-550	39036		

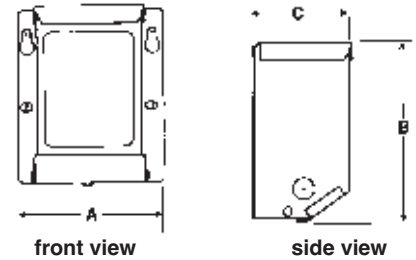


## Single Phase Dry Type Transformers

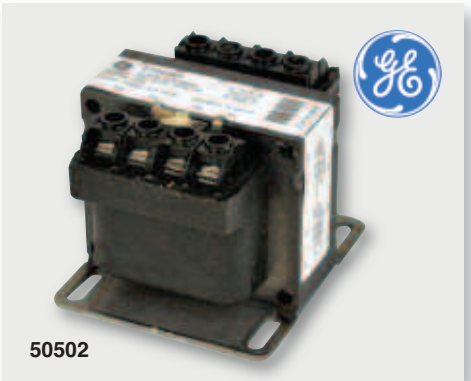
GE dry type transformers are designed for low voltage power distribution. They are made of a heavy gauge steel construction, suitable for indoor or outdoor NEMA 3R use in commercial and industrial power applications. Knockouts are provided for easy wiring. A schematic connection diagram is located on the enclosure nameplate for quick referral.

### Features:

- Single phase
- 6 inch leads - clearly marked
- 60 Hertz
- Indoor/outdoor NEMA 3R
- UL listed
- CSA certified



MARS NO.	KVA RATING	PRIMARY	SECONDARY	DIMENSIONS		
				A	B	C
50530	.10	240/480	120/240	5.125	6.375	3.25
50531	.15	240/480	120/240	6.125	7.375	4.25
50533	.50	240/480	120/240	6.875	8.375	4.875
50534	.75	240/480	120/240	7.875	9.625	5.50
50535	1.00	240/480	120/240	7.875	9.625	5.50
50536	1.50	240/480	120/240	9.375	11.125	6.7188

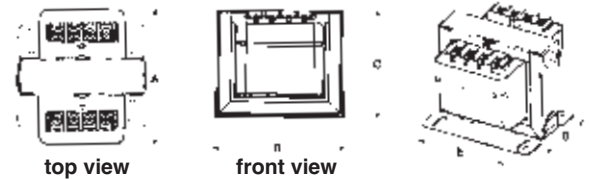


## Type Ip Core and Coil Transformers

GE type IP transformers are core and coil units designed for industrial control, panel board, HVAC and general purpose applications. They conform to ANSI C89.2, and are UL listed and CSA certified. These transformers are lightweight, small and designed for minimum mounting dimensions.

### Features:

- 60 Hertz
- Encapsulated thru 500VA
- Control power applications
- UL listed, UL-506 File E2739
- CSA certified, C22.2 Number 66, File 3272
- 50 Hertz available on special order basis



Encapsulated Style Views

### Encapsulated

MARS NO.	CONT. KVA	PRIMARY	SECONDARY	A	B	DIMENSIONS		
						C	D	E
50502	.075	240/480	120/240	4.22	3.29	2.79	2.41	2.50
50503	.100	240/480	120/240	4.17	4.04	3.29	2.16	3.12
50504	.150	240/480	120/240	4.67	4.04	3.29	2.66	3.12
50505	.200	240/480	120/240	4.92	4.04	3.29	2.91	3.12
50506	.250	240/480	120/240	5.17	4.04	3.29	3.16	3.12
50507	.300	240/480	120/240	5.17	4.04	3.29	3.16	3.12
50508	.375	240/480	120/240	5.67	4.04	3.29	3.66	3.12
50509	.500	240/480	120/240	5.82	4.79	3.92	3.31	3.79

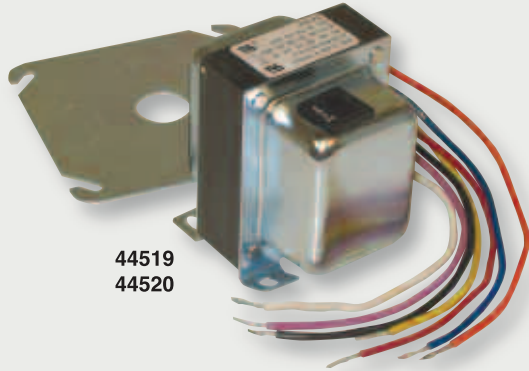
### Step-by-Step Selection of Core and Coil Transformers:

1. Determine the input voltage, output voltage and frequency.
2. Determine the continuous power (VA) drawn by each load device. Calculate the maximum continuous power of all load devices that could be energized at the same time.
3. Determine if any of the load devices are voltage sensitive. NEMA standards require electromagnetic components to operate reliably at 85% of rated voltage. This includes devices such as contactors, relays and solenoids. For applications with voltage sensitive devices, determine the inrush current of each load device. Inrush is the power (VA) drawn by a device the instant it is energized. Electromechanical devices have an inrush from 3 to 10 times their continuous power rating. The inrush of resistive devices is the same as their continuous power rating. Calculate the maximum inrush power. This is the inrush of all devices being energized at a given instant, plus the continuous power of all devices already energized. A number of load device combinations may have to be examined to determine which produces the maximum inrush current.

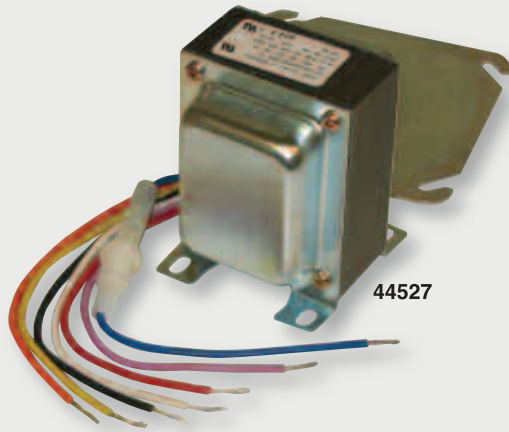


# JARD Transformers

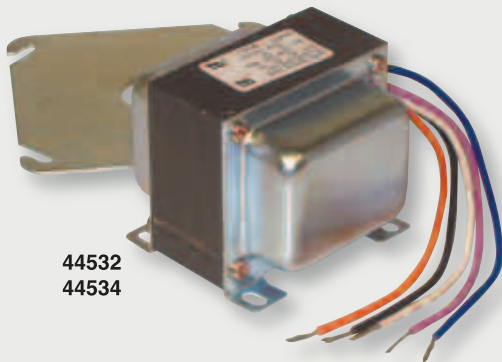
MARS SERIES **445**



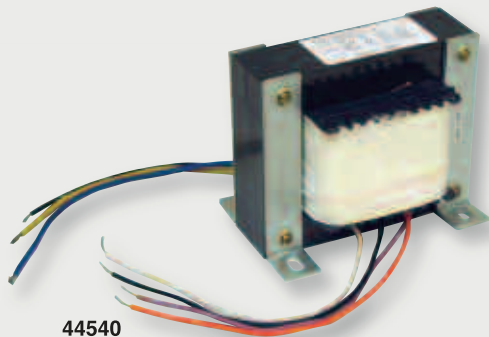
44519  
44520



44527



44532  
44534



44540

## Hub-Mounted Transformers with Circuit Breakers and Multiple Inputs of 120/208/240/480 VAC

Available either in 50VA or 75 VA, these 2 versatile transformers replace Honeywell® AT150F and AT175F. All leads pass through the chase nipple.

- Model 5041MCB, 50 VA, Model 7541MCB, 75 VA
- Plate mount or foot mount
- Four inputs including 120/208/240/480 VAC
- UL Recognized

MARS NO.	JARD NO.	VA	PRIMARY VAC	SECONDARY VAC
44519	5041MCB	50	120/208/240/480	24
44520	7541MCB	75	120/208/240/480	24

## Multi-Mount Transformers Closed Construction, 4" x 4" Plate

- Optional 3-way mounting for maximum flexibility.
- Safety agency approved.
- Welded laminations for quiet operation.

MARS NO.	JARD NO.	VA	PRIMARY VAC	SECONDARY VAC
44522	4011M	40	120	24
44523	4021M	40	208/240	24
44524	4031M	40	120/208/240	24
44525	5031M	50	120/208/240	24
44526	5032M	48	120/208/240	2.5/12/24
44527	7541M	75	120/208/240/480	24
44528	7541STM	75	120/240/277/575	24

## Fully Enclosed Junction Box Ready

- Several models with dual voltage output.
- Welded laminations for quiet operation
- Conservative heat rise characteristics.
- UL 506

MARS NO.	JARD NO.	VA	PRIMARY VAC	SECONDARY VAC
44532	5048PC	50	240/480	120
44533	5048STPC	50	208/277/575	120
44534	10048PC	100	240/480	120
44535	10048STPC	100	208/277/575	120

## Open Construction Foot Mount Wire Leads

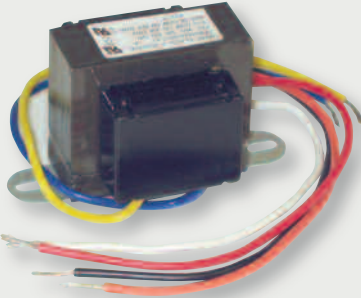
MARS NO.	JARD NO.	VA	PRIMARY VAC	SECONDARY VAC
44536	5024P	50	208/240	120/24
44538	7524P	75	208/240	120/24
44539	75481P	75	480	120



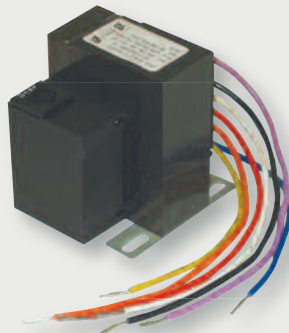
# JARD Foot Mount Transformers

MARS SERIES **445**

COMPONENT



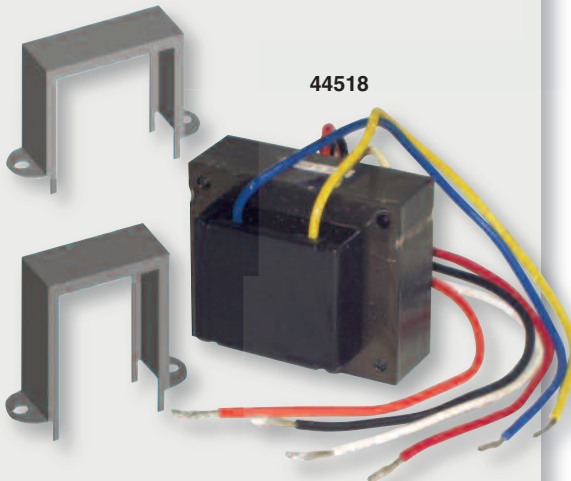
44504



44513



44517



44518

JARD # 4031VM - Includes 2 Brackets

## Open Construction, Wire Leads

- Safety agency approved.

MARS NO.	JARD NO.	VA	PRIMARY VAC	SECONDARY VAC
44501	2031F	20	120/208/240	24
44502	4011F	40	120	24
44503	4021F	40	208/240	24
44504	4031F	40	120/208/240	24
44505	4032F	40	120/208/240	2.5/12/24
44506	40241F	40	240	24
44507	40271F	40	277	24
44508	5031F	50	120/208/240	24
44509	5032F	50	120/208/240	2.5/12/24
44510	7531F	75	120/208/240	24

## Closed Construction With Circuit Breaker

- All models feature a UL recognized manual reset circuit breaker.
- Safety agency approved.

MARS NO.	JARD NO.	VA	PRIMARY VAC	SECONDARY VAC
44511	5041C	50	120/208/240/480	24
44512	6041C	60	120/208/240/480	24
44513	7541C	75	120/208/240/480	24
44514	7541STC	75	120/277/380/575	24
44515 <sup>(1)</sup>	10041C	100	120/208/240/480	24
44516 <sup>(1)</sup>	10041STC	100	120/208/277/575	24

<sup>(1)</sup> Not UL, UL 506

## Closed Construction Quick Connect

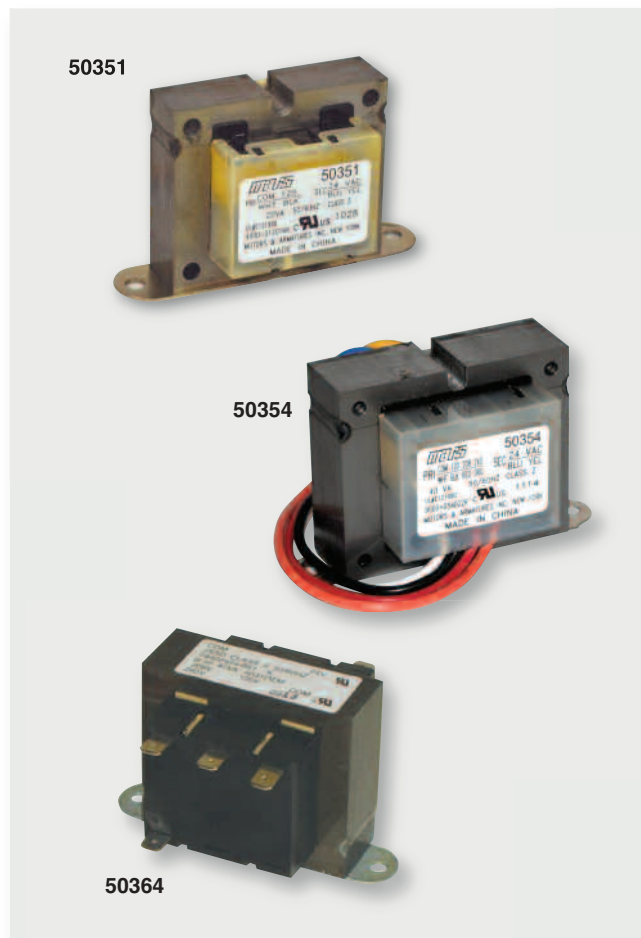
MARS NO.	JARD NO.	VA	PRIMARY VAC	SECONDARY VAC
44517	4031OEM	40	120/208/240	24

## Versatile 3-Way Mounting

MARS NO.	JARD NO.	VA	PRIMARY VAC	SECONDARY VAC
44518	4031VM	40	120/208/240	24

# Transformers

MARS SERIES **503**



## MARS Control Transformers NEMA Class II Open Construction

MARS compact open construction transformers are less than 2 1/4" in height. This makes them ideal as replacements within existing equipment.

MARS control transformers are available with various outputs and voltages for special applications.

### Application:

Provide power source for control circuit for air conditioning, heating, or refrigeration systems.

### Features:

- UL class 2 recognized
- Low heat rise
- Primary color coded leads
- Secondary color coded leads, or 1/4" male quick connects
- Foot-mount

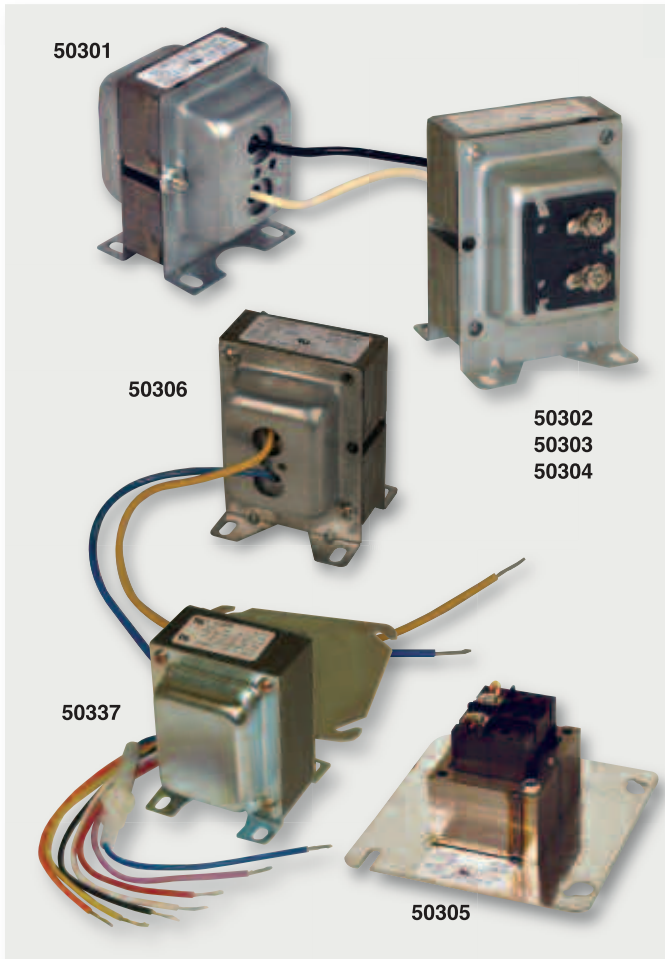
## Foot-Mount Open Construction

MARS NO.	FORMER MARS JARD NO.	JARD NO.	VA RATING	HZ	PRIMARY		SECONDARY	
					VOLTAGE	CONNECTIONS	VOLTAGE	CONNECTIONS
50351	-	-	20	50/60	120	Color coded leads	24	Color coded leads
50352	44502	4011F	40	50/60	120	Color coded leads	24	Color coded leads
50353	44503, 44506	4021F, 40241F	40	50/60	208/240	Color coded leads	24	Color coded leads
50354	44504	4031F	40	50/60	120/208/240	Color coded leads	24	Color coded leads
50355*	-	-	40	60	120	Color coded leads	12/24	Color coded leads
50350	44501	2031F	20	50/60	120/208/240	Color coded leads	24	Color coded leads
50357	44507	40271F	40	50/60	277	Color coded leads	24	Color coded leads
50359 <sup>(1)</sup>	44505	4032F	40	50/60	120/208/240	Color coded leads	24/12/2.5	Color coded leads
50308	44508	5031F	50	50/60	120/208/240	Color coded leads	24	Color coded leads

\* Not UL listed  
(1) In line fuse protection

## Foot-Mount Open Construction With Primary & Secondary Quick Connects

MARS NO.	FORMER MARS JARD NO.	JARD NO.	VA RATING	HZ	PRIMARY		SECONDARY	
					VOLTAGE	CONNECTIONS	VOLTAGE	CONNECTIONS
50362	-	-	40	50/60	120	1/4" Male quick connects	24	1/4" Male quick connects
50364	44517	40310OEM	40	50/60	120/208/240	1/4" Male quick connects	24	1/4" Male quick connects
50363	-	-	50	50/60	208/240	1/4" Male quick connects	24	1/4" Male quick connects



## MARS Control Transformers NEMA Class II End Bell Type

MARS end bell transformers provide enclosures for the primary and secondary windings, MARS multi-mount models offer three mounting options - Foot, Plate, or Conduit mount.

MARS control transformers are available with various outputs and voltages for special applications.

### Application:

Provide power source for control circuit for air conditioning, heating, or refrigeration systems.

### Features:

- UL class 2 recognized
- Low heat rise
- Primary color coded leads
- Secondary color coded leads, or screw terminals
- Multi-mount or plate-mount

### Foot-Mount End Bell Type

MARS NO.	VA RATING	HZ	PRIMARY VOLTAGE	PRIMARY CONNECTIONS	SECONDARY VOLTAGE	SECONDARY CONNECTIONS
50301	20	60	120	Color coded leads	24	Color coded leads

### Multi-Mount End Bell Type

MARS NO.	FORMER MARS JARD NO.	JARD NO.	VA RATING	HZ	PRIMARY VOLTAGE	PRIMARY CONNECTIONS	SECONDARY VOLTAGE	SECONDARY CONNECTIONS
50302	44522	4011M	40	50/60	120	Color coded leads	24	Screw terminals
50303	44523	4021M	40	50/60	208/240	Color coded leads	24	Screw terminals
50304	44524	4031M	40	60	120/208/240	Color coded leads	24	Screw terminals
50306*	-	-	48	60	277	Color coded leads	24	Color coded leads
50314	44525	5031M	50	50/60	120/208/240	Color coded leads	24	Color coded leads
50333*	44526	5032M	48	50/60	120/208/240	Color coded leads	24/12/2.5	Color coded leads
50337	44527	7541M	75	50/60	120/208/240	Color coded leads	24	Color coded leads

\* Not UL listed

### Plate-Mount End Bell Type

MARS NO.	VA RATING	HZ	PRIMARY VOLTAGE	PRIMARY CONNECTIONS	SECONDARY VOLTAGE	SECONDARY CONNECTIONS
50305	40	50/60	120	Color coded leads	24	Screw terminals



# Transformers

MARS SERIES **503**



## MARS Control Transformers NEMA Class II Heavy Duty End Bell Type

MARS control transformers are available with various outputs and voltages for special applications.

### Application:

MARS heavy duty end bell transformers offer a wide variety of higher VA rated models. These models are the choice when extra power is the solution.

### Features:

- UL class 2 recognized
- 50/60 Hz
- Low heat rise
- Color coded leads
- Foot-mount

### Foot-Mount End Bell Type

MARS NO.	FORMER MARS JARD NO.	JARD NO.	VA RATING	HZ	PRIMARY VOLTAGE	PRIMARY CONNECTIONS	SECONDARY VOLTAGE	SECONDARY CONNECTIONS
50316	-	-	60	50/60	208/240	Color coded leads	24	Color coded leads
50320 <sup>(1)</sup>	44510	7531F	75	50/60	120/208/240/480	Color coded leads	24	Color coded leads
50324	-	-	75	50/60	208/240	Color coded leads	24	Color coded leads
50326	-	-	75	50/60	480	Color coded leads	24	Color coded leads
50340*	-	-	100	50/60	120/208/240/480	Color coded leads	24	Color coded leads

\*100 VA does not qualify for NEMA Class II

(1) Inline fuse

### Foot Mounted Open Construction

MARS NO.	FORMER MARS JARD NO.	JARD NO.	VA RATING	HZ	PRIMARY VOLTAGE	PRIMARY CONNECTIONS	SECONDARY VOLTAGE	SECONDARY CONNECTIONS
50339 <sup>(2)</sup>	44539	75481P	75	50/60	480	Color coded leads	120	Color coded leads

(2) UL 506



50321  
50327  
50341  
50375



## MARS Control Transformers NEMA Class II Manual Reset Style

MARS control transformers are available with various outputs and voltages for special applications.

### Application:

Provide power source for control circuit for air conditioning, heating, or refrigeration systems.

### Features:

- UL class 2 recognized
- Low heat rise
- Color coded leads or quick connect terminals
- Foot-mount



50380

## MARS Power Transformers

### Application:

Provide 120V power source for air conditioning, heating, or refrigeration systems. MARS power transformers provide dual purpose options — **120V** or **24V secondary** with 208V/240V/480V primary connections. Three VA selections offer a true powerhouse!

### Features:

- Color coded leads
- Compact size
- Low heat rise

## Foot-Mount End Bell Type with Manual Reset

MARS NO.	FORMER MARS JARD NO.	JARD NO.	VA RATING	HZ	PRIMARY		SECONDARY	
					VOLTAGE	CONNECTIONS	VOLTAGE	CONNECTIONS
50327	44511	5041C	50	60	120/208/240/480	Color coded leads	24	Color coded leads
50321	44513	7541C	75	50/60	120/208/240/480	Color coded leads	24	Color coded leads
50375	-	-	75	50/60	120/208/240/575	Color coded leads	24	Color coded leads
50341*	44515	10041C	100	50/60	120/208/240/480	Color coded leads	24	Color coded leads
50312	44512	6041C	60	50/60	120/208/240/480	Color coded leads	24	Color coded leads
50370	44514	7541STC	75	50/60	120/277/380/575	Color coded leads	24	Color coded leads
50371	44516	10041STC	100	50/60	120/208/277/575	Color coded leads	24	Color coded leads

## Power Transformers Foot-Mount Open Construction

MARS NO.	FORMER MARS JARD NO.	JARD NO.	VA RATING	HZ	PRIMARY		SECONDARY	
					VOLTAGE	CONNECTIONS	VOLTAGE	CONNECTIONS
50380 <sup>(1)</sup>	44536	5024P	50	60	208/240/480	Color coded leads	120/24	Color coded leads
50381 <sup>(2)</sup>	-	-	100	60	208/240/480	Color coded leads	120/24	Color coded leads

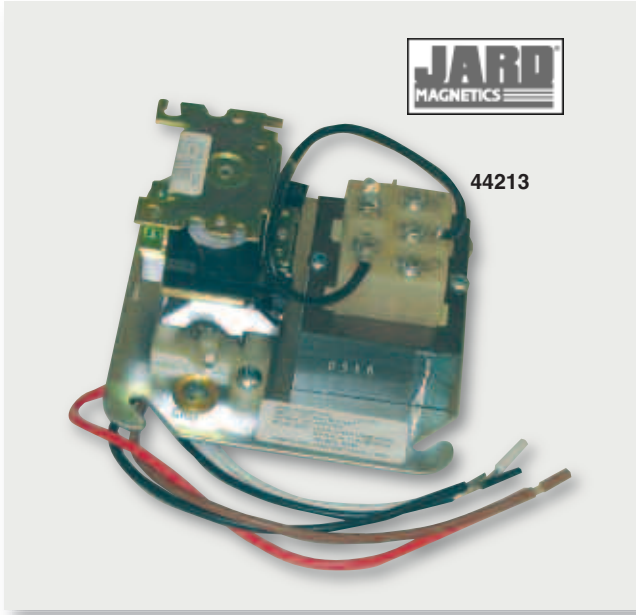
\* 100VA and higher does not qualify for NEMA Class II

(1) Not UL listed

(2) UL 506

# Fan Centers

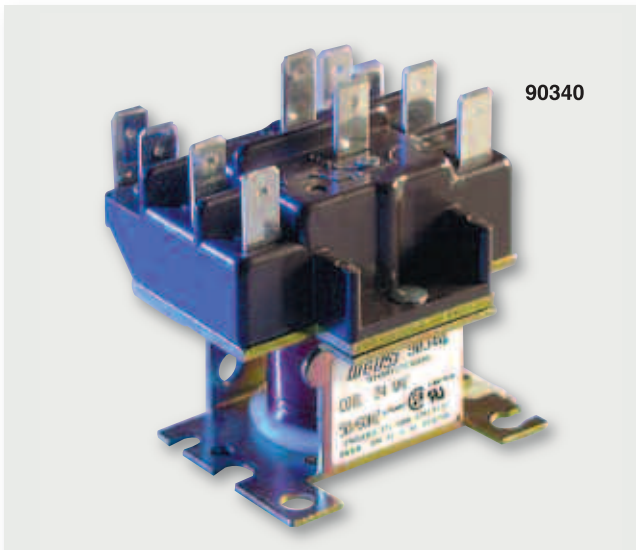
MARS SERIES **240**



## JARD Fan Centers

- Plug-in style relay for easy field replacement.
- Pre-stripped, color coded leads simplify wiring.
- Combination screw/solder terminals for low voltage wiring.
- Standard double-throw relays handle both one and two speed motors.

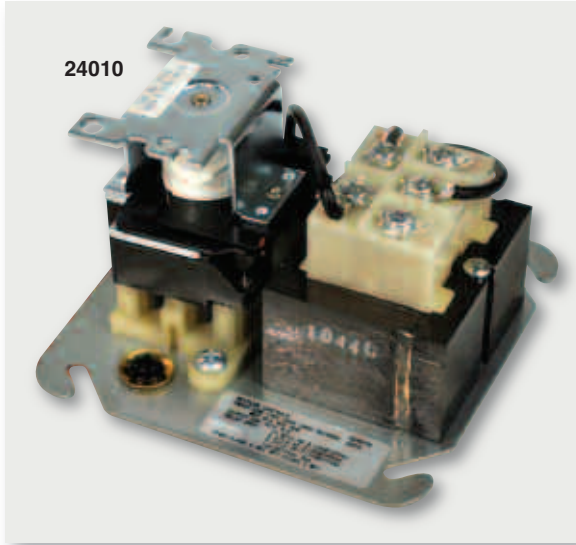
MARS NO.	JARD NO.	VA	PRIMARY VAC	SECONDARY VAC	CONTACT CONFIGURATION	HP RATING
44213	4011FC	40	120	24	SPDT	3/4
44210	4031FC	40	120/208/240	24	DPDT	3/4



## Replacement Relay for Fan Control Centers

MARS fan center replacement relay provides quick and easy plug-in installation to restore like new operation without replacing the entire fan center. The universal relay will cover all MARS fan centers and many competitive brands.

MARS NO.	USED ON	DESCRIPTION
90340	24010, 24012, 24013, 24014	DPDT universal plug-in replacement relay



## MARS Relay/Transformer Fan Control Centers

MARS series 240 fan centers provide convenient low voltage control of one and two speed fan motors and auxiliary circuits in heating, cooling, or heating/cooling applications. Each MARS fan center is a reliable, compact unit consisting of a 24 volt control transformer and a plug-in switching relay mounted on a 4" square electrical junction box cover. All line voltage connections are made inside the box with color coded pre-stripped leads. Low voltage connections are made at a convenient terminal board mounted to the transformer.

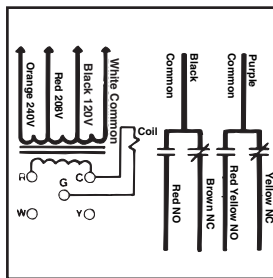
### Features:

- Choice of SPDT, SPNO / SPNC or DPDT relay switching options
- UL 1585 40VA transformer
- Color coded leads
- Low voltage terminal board
- Mounts directly to 4" electrical box

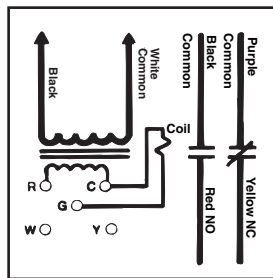
### 40VA 3/4 HP

MARS NO.	TRANSFORMER		CONTACT RATINGS						
	PRIMARY VOLTAGE	SECONDARY CONNECTIONS	120V AC (amps) FULL RELAY	120V AC (amps) LOCKED LOAD	240V AC (amps) FULL ROTOR	240V AC (amps) LOCKED LOAD	240V AC (amps) ROTOR		
24010	120/208/240	Color coded leads, pre-stripped	24V	Terminal board with 5 screw terminals	DPDT	13.8	82.8	6.9	41.4
24012	120	Color coded leads, pre-stripped	24V	Terminal board with 5 screw terminals	SPNO/SPNC	13.8	82.8	6.9	41.4
24013	120	Color coded leads, pre-stripped	24V	Terminal board with 5 screw terminals	SPDT	13.8	82.8	6.9	41.4

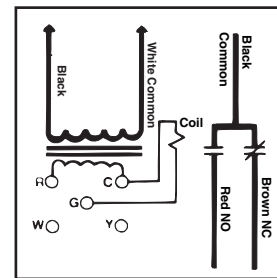
### Schematic:



24010



24012



24013



# Hot Surface Igniters

MARS SERIES **679**



## MARS Universal Silicon Nitride Igniter

MARS Universal Silicon Nitride Igniter is designed to replace over 100 silicon nitride igniter applications. The universal bracket kit is used in a simple series of combinations for a quick and easy installation. Extremely low iron content makes the MARS Universal Silicon Nitride Igniter very durable and reliable. Low energy consumption makes it perfect for any 120 VAC application.

### Features:

- Gas Fired Forced Air Furnaces and Boilers
- Easy to Install
- Universal Bracket Fits Most Furnaces
- Fits over 100 Applications

### Specifications:

- Input Voltage 120VAC
- Time to ignition Temperature: 16 Seconds
- CSA Certified
- Steady current 1.3 amps (± 0.3 amps @ 120V)



MARS NO.	DESCRIPTION
68040	Universal SiN Round Silicone Nitride Igniter



# Hot Surface Igniters

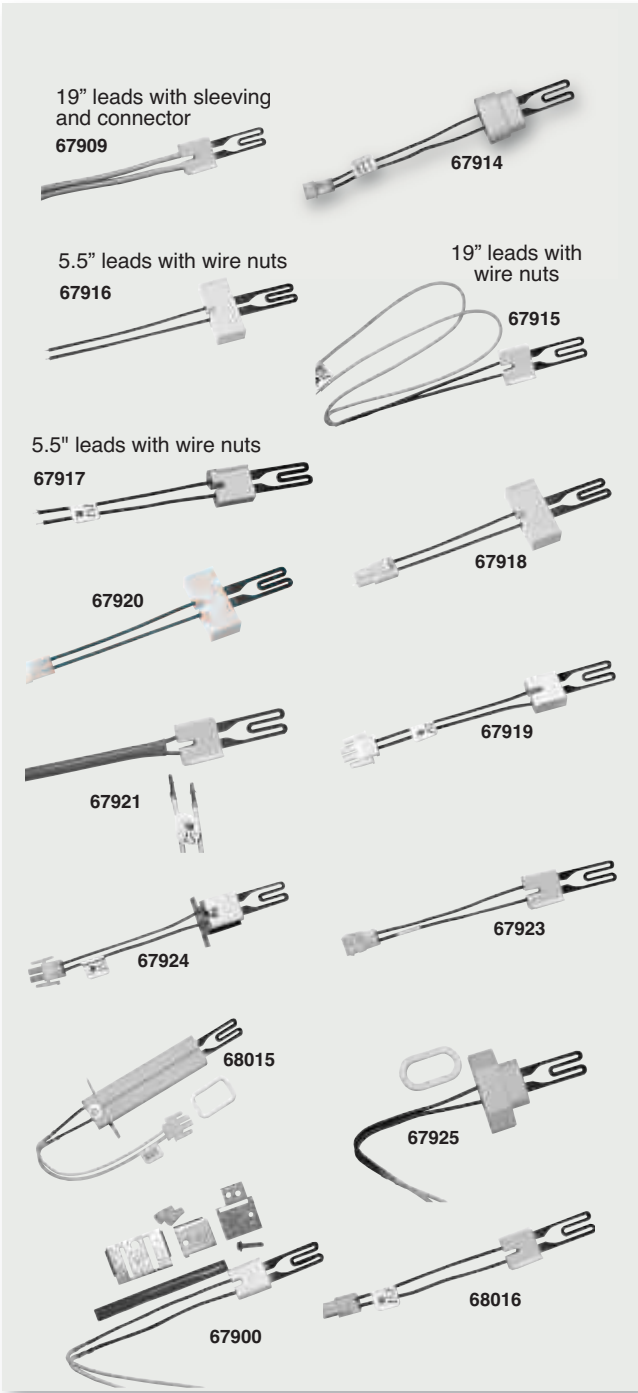
MARS SERIES **679**

COMPONENT

## Gas Furnace Igniters

- Compatible with 17, 34, and 45 second warm-up modules
- Full 115/120 volt rated (no step down module required for silicon nitride)
- Wire nuts or OEM plugs and mounting hardware included
- New laminated pictorial cross reference and contractor tri-folds available

**Flat silicon carbide:** The most economical solution.  
**Silicon nitride:** The newest technology is virtually indestructible.



## Direct Replacements

FLAT SILICON CARBIDE	INDUSTRY RECOGNIZED REFERENCE
67914	41-401
67915	41-402
67916	41-403
68017	41-404
67917	41-405
67925	41-406
67918	41-407
67919	41-408
67920	41-409
68016	41-410
68013	41-411
68014	41-412/41-414
67915	41-238/41-242
68015	Rheem 62-22669-92
67909	Coleman 1474-051P / 052P
67921	Lennox 33J37
67924	Goodman B1401015 / B1401018S
67923	York 025-32625-000

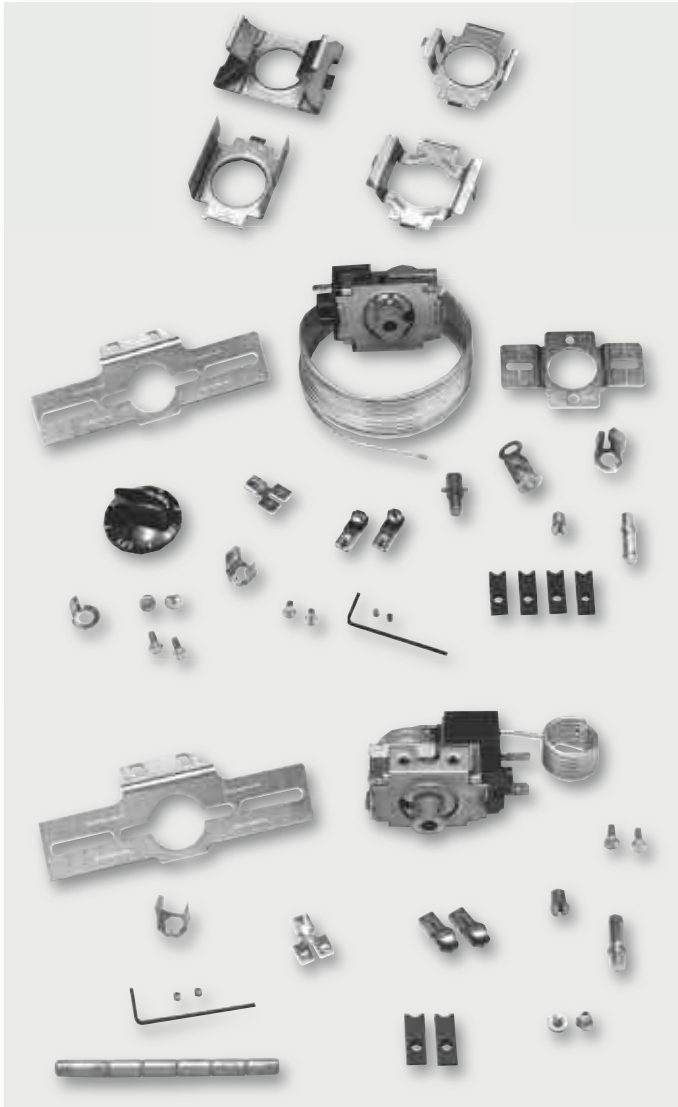
## Universal

FLAT SILICON CARBIDE	SILICON NITRIDE	SUPCO	WHITE-RODGERS
67900	N/A	SIG1100	
N/A	68040	SSN2000	21D64-2



# Cold Controls

MARS SERIES **260**



## MARS Super-Fit™ Universal Replacement Cold Controls

MARS Super-Fit™ cold controls are designed for the serviceman who wants to lower his inventory yet still have on hand the necessary controls to meet most replacement needs in the field. MARS Super-Fit™ cold controls are individually boxed with all necessary brackets and hardware to match almost any control mounting you're likely to find. And MARS Super-Fit™ cold controls come in a wide choice of temperature ranges and capillary lengths so you can make replacements that look and work like the original.

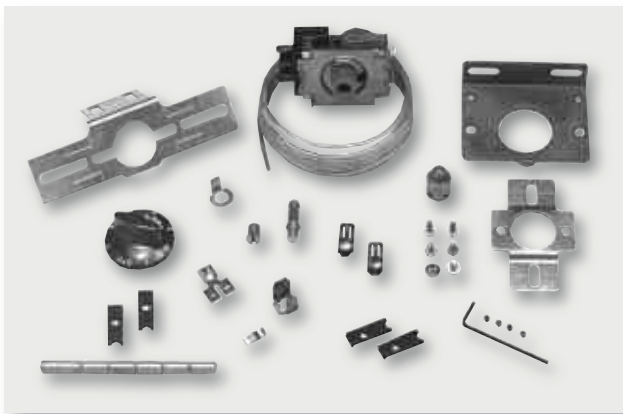
Save time and gasoline by keeping a selection of MARS Super-Fit™ cold controls on hand to finish the job on the *first* service call.

- Packed with mounting accessories and instructions
- Special brackets, shaft adaptors and fittings included where necessary
- UL and CSA approved

### Features:

- Wide selection, temperature ranges and capillary lengths
- Models for refrigerators, freezers, beverage coolers and room air conditioners
- Each control clearly labeled with all necessary information

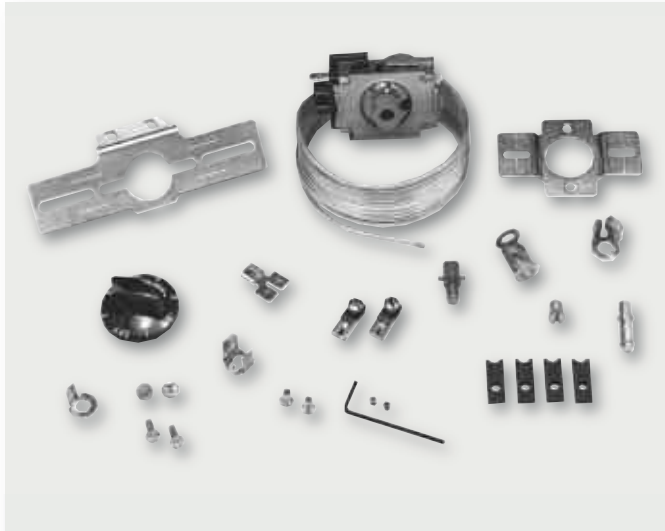
**ELECTRICAL RATING:** 120 VAC—10 FLA, 60 LRA  
 (Applies to all controls except where noted) 240 VAC— 5 FLA, 30 LRA  
 Switch—SPST



## Super-Fit™ Beverage Cooler Cold Controls—Constant Differential

MARS Super-Fit™ beverage cooler cold controls feature the same universal mounting capabilities found on all MARS Super-Fit™ cold controls. Temperature ranges and capillary lengths have been carefully selected for application on beverage, milk and water coolers. Individually boxed for protection, clearly labeled for accurate selection and complete with brackets, hardware and instructions.

MARS NO.	WARM ON °F	ON °F	MID OFF °F	COLD OFF °F	CAP LENGTH
26274	52.0	39	17	2.0	78"
26273	56.4	36	24	-5.0	78"
26272	65.5	47.5	41.5	24.5	78"



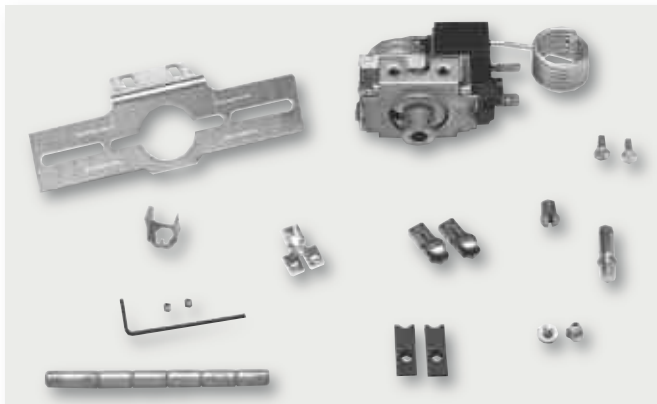
### Super-Fit™ Refrigeration Cold Controls—Constant Differential

MARS Super-Fit™ constant differential refrigeration cold controls always maintain the same difference between on and off temperature over the entire dial range. The knob selects the operating temperature.

MARS Super-Fit™ constant differential controls are complete with brackets, hardware and instructions, and available in a wide selection of temperature ranges and capillary lengths to match almost any requirement.

Individually boxed and clearly labeled with all necessary information.

MARS NO.	WARM ON	MID ON	OFF	COLD OFF	CAP. LENGTH
26255	19.3	0	-14	-21	42"
26256	27.4	-2	-10	-20.5	42"
26244	42.0	20	9	-24	42"
26238	49.8	37	30	14.5	76"
26252	51.8	35	19	-5.5	30"



### Super-Fit™ Room Air Conditioner Controls

MARS Super-Fit™ air conditioner controls are designed to replace GE, Ranco, Cutler Hammer, Robertshaw and most other OEM controls. Packaged with brackets, hardware and complete instructions, MARS Super-Fit™ RAC controls are available in a wide selection of temperature ranges, capillary lengths and styles. Clearly labeled with all necessary information.

MARS NO.	RANGE °F WARM ON	COLD OFF	DIFFERENTIAL °F	CAP. LENGTH	SWITCH	RATING FLA	LRA
26002	91.5	40.0	6.0	39" bulb	SPDT	25	80
26003	93.0	52.0	6.0	31" bulb	SPDT	25	80
26004	93.0	52.0	6.0	48" st. cap	SPST	30	125

## Cold Control Cross Reference

### RANCO-MARS CROSS REFERENCE

RANCO	MARS	RANCO	MARS
A22-1113	26004	A10-311	26255
A22-2451	26003	A10-312	26256
A22-2453	26002	A10-313	26256
A30-119	26238	A10-314	26256 <sup>(1)</sup>
A30-120	26244	A10-315	26256
A30-127	26256	A10-316	26256
A30-180	26244	A10-393	26256 <sup>(2)</sup>
A30-185	26244	A10-394	26256 <sup>(2)</sup>
A30-203	26252	A30-451	26004
A30-261	26272	A30-X451	26004
A30-262	26273	K-607	26256
A30-263	26274	K-608	26255

(1) 42" cap length (2) No alarm circuit

### GEM-MARS CROSS REFERENCE

GEM	MARS	GEM	MARS
GA222451	26003	GC501	26244
GA222453	26002	GC505	26238
GA30180	26244	GC506	26252
GA30185	26244	GC604	26255
GA30261	26272	GC607	26256
GA30262	26273	GC608	26255
GA30263	26274	GC702	26004
GA30311	26255	GC708	26003
GA30312	26256	GC709	26004
GA30313	26256	GC714	26004
GA30314	26256	GC902	26273
GA30451	26004	GC903	26272
GC108	26256	GC904	26238
GC115	26272	GC905	26274
GC180	26244		



# Condensate Pumps

MARS SERIES **217**



21784

## MARS Low Profile 22' Pump

### Features:

- Low Profile Pump
- Compact Design
- Integrated Safety Switch
- Quick Service Check Valve
- Drip Proof Housing
- Class Leading Performance

MARS NO.	DESCRIPTION
21784	115 V, 60 Hz, Low Profile 22' Lift, 3/8 Check Valve, Safety Switch
21785	230 V, 60 Hz, Low Profile 22' Lift, 3/8 Check Valve, Safety Switch



21786

## MARS 16' Lift Pump

### Features:

- 16' Lift Pump
- Whisper Quiet
- ½ Gal Reservoir
- Rubber Isolation Feet
- Quick Service Check Valve
- Class Leading Performance

MARS NO.	DESCRIPTION
21786	115 V, 60 Hz, 16' Lift 3/8 Check Valve, Safety Switch, Medium Reservoir

MARS NO.	DIMENSIONS		
	LENGTH	WIDTH	HEIGHT
21784	10.25	5.04	5.28
21785	10.25	5.04	5.28
21786	10.25	5.125	6.375

## Check Valve Replacement

MARS NO.	DESCRIPTION
21787	Check Valve Replacement Kit



21780

## MARS Condensate Pump - 24 Foot Lift

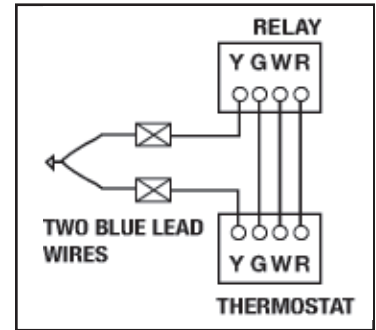
MARS new line of medium condensate pumps are designed to outperform the competition while providing quiet operation and reliability.

The MARS pump design couples industry leading performance with the installation flexibility and features you need to get the job done.

The quick release silicone check valve allows for quick and efficient servicing without the need to remove the condensate line. The integrated safety switch can be wired for equipment shut down or directly to a high level alarm.

### Features:

- 24 foot lift
- 125 GPH
- 0.5 gal Reservoir
- Patent Pending, Quick Release Check Valve
- Field serviceable "Duck Bill" Check Valve
- Rubber Isolation Feet
- Drip Proof Housing Design
- Solid Float
- Integrated Safety Switch 250 volt and Float Switches
- ABS and Stainless Steel construction



MARS NO.	DESCRIPTION
21780	115 V, 60 Hz, 0.91 Amps, 71 Watts 6' Cord, 3/8" Check Valve, Safety Switch Medium Reservoir
21781	115 V, 60 Hz, 0.91 Amps, 71 Watts 6' Cord, 3/8" Check Valve, Safety Switch 20' Tubing, Medium Reservoir
21782	230 V, 60 Hz, 0.6 Amps, 75 Watts 6' Cord, 3/8" Check Valve, Safety Switch Medium Reservoir
21783	230 V, 60 Hz, 0.6 Amps, 75 Watts 6' Cord, 3/8" Check Valve, Safety Switch 20' Tubing, Medium Reservoir

## Gallons Per Hour Pump Performance Comparison Chart

FOOT LIFT	1	5	10	15	20	24
MARS	125	98	74	70	43	7
Comp. 1	84	75	60	42	10	0
Comp. 2	117	98	70	58	11	0
Comp. 3	105	95	73	36	0	0

## Specifications

MODEL NO.	Performance - Gallons per hour @ height in feet					
	1	5	10	15	20	24
21780	125	98	74	70	43	7
21781	125	98	74	70	43	7
21782	139	119	70	50	28	7
21783	139	119	70	50	28	7

## Condensate Pump vs. Competition

FEATURE	MARS	COMP. 1	COMP. 2	COMP. 3
24 ft. Lift	●			
Motor Corrosion Protection	●			
Drip Proof Motor Housing	●	●		●
Drip Proof Motor & Switches	●			
Vibration Absorbing Rubber Feet	●	●	●	
Side Mount	●	●	●	●
Quick Release Check Valve	●	●		
Internal Safety Switch	●		●	
Solid Float	●	●		●

MODEL NO.	DIMENSIONS		
	Length	Width	Height
21780	10.25	5.125	6.375
21781	10.25	5.125	6.375
21782	10.25	5.125	6.375
21783	10.25	5.125	6.375

Dimensions in inches

# NOTES