

We are pleased to introduce new series of FLP Induction 3 phase Motors as per IS:60079-1:2007 for Gas Group I, IIA & IIB.

REMI was first manufacturer to introduce in India in the year 1973 FLP Motors of IEC Frame Sizes including FLP Motors of Frame Sizes 63 and 71, which were not manufactured in country.

REMI designed, manufactured and marketed FLP Motors since 1973 under following Standards of FLP Motors of the country and after obtaining necessary statutory approvals.

- (1) IS:2148:1968**
- (2) IS:2148:1981**
- (3) IS:2148:2004**
- (4) IS:60079-1:2007**

With above proven experience, REMI developed new series of FLP Motors in Frame Sizes 63 to 160 having speed of 750, 1000, 1500 and 3000 RPM, available Foot Mounting B3, Flange Mounting B5, Face Mounting B14 and also Foot cum Flange Mounting B3/B5 and B3/B14.

REMI FLP Motor is most compact FLP Motor in market especially in frame size 63 to 112, ideal for all type of machinery and equipment.

REMI FLP Motors can be used in Gas Group I, IIA & IIB, but approval from Director General of Mine Safety (DGMS) is expected.

You can use REMI FLP Motors with cost advantage without sacrificing quality.

TEMPERATURE CLASS

The ignition temperature of the gas classified as T1 to T6 is as follows:

Temp. Class as per IS: 6381	Ignition Temperature - °C	
	Above	Upto and Including
T1	450	-
T2	300	450
T3	200	300
T4	135	200
T5	100	135
T6	85	100

- The maximum surface temperature under the worst operating condition should not exceed the ignition temperature of gas.
- The maximum surface temperature refers to that surface which is coming in contact with the explosive gas.
- In the case of Flame proof motors Ex (d), this refers to external surface temperatures.

STATUTORY APPROVALS AND LICENSES

Motors used in hazardous areas need statutory approvals from various statutory authorities depending upon their area of jurisdiction before marketing. REMI has got their Test / Approval / License as given below:

Statutory Authority	Scope	Remarks
ERTL (East) Kolkata	Testing & Certification	Certified
BIS	Licensed	Certified
PESO Nagpur	Approved	Certified
DGFASLI Mumbai	Approved	Certified

FOLLOWING STANDARDS ARE APPLICABLE FOR REMI FLAME PROOF MOTOR

IS : 325	Three phase induction motors - specification
IS/IEC : 60079-14	Code of practice for installation and maintenance of induction motors.
IS : 1231	Dimensions of Foot mounted A.C. Induction motors.
IS : 2223	Dimensions of flange mounted A.C. Induction motors.
IS : 5572	Classification of Hazardous areas (other than mining) having flammable gases and vapours for electrical installations.
IS/IEC : 60079-1:2007	Electrical Apparatus for explosive gas atmosphere. Flame proof enclosure Ex 'd'

MECHANICAL FEATURES

- Motors are offered with Totally Enclosed Fan Cooled (TEFC) construction.
- Frame, Endshields, Terminal boxes and Bearing covers of all motors are made of grey cast iron.
- These motors are so designed that the surface temperature will remain below the ignition temperature of gas-air mixture involved as mentioned in the table 'Classification of Hazardous Gases'.
- All cast iron parts forming flame proof enclosures after final machining are subjected to hydraulic pressure test, as per IS/IEC : 60079-1 : 2007 at 15 kg / cm² to ensure soundness of casting i.e. without blow holes and pinholes.
- All Terminal Box are located at the top. Viewing from Driving End LHS & RHS Terminal Box Position can be offered on request.

RANGE

- REMI Flameproof motors are available from frame sizes 63 to 160 in 2, 4, 6 & 8 pole designs.
- Motors are suitable for continuous duty (S1), temperature class T4 to T6 as per IS/IEC: 60079-1:2007.
- Ambient temperature upto 45°C & site altitudes of upto 1000 meters above mean sea level.

DESIGN FEATURES

- Flame proof motors are available in Five basic designs. Foot mounted (B3), Flange Mounted (B5), Face mounted (B14), Foot cum Flange mounted (B3-B5), Foot cum Face mounted (B3-B14).
- A wide variety of mounting positions are possible with these designs.
- The flame proof enclosure consists of sturdy cast iron parts, which are mechanically robust and rugged.
- The cast iron enclosure of motors is built to withstand any internal explosion.

CABLE ENTRY

- Motors for Gas Gr. I are provided with cable entries with compound filling sealing boxes suitable for paper insulated lead covered double wire armoured (PILCDWA) PVC cables.
- Cable Entries with **“FLAMEPROOF CABLE GLANDS”** can also be provided to suit PVC armoured cables. (For application in hazardous area with Gas Gr. IIA and IIB only).

WINDINGS / INSULATION

- Winding is of class ‘F’ insulation in compliance with IS: 1271:2012 with temperature limited to class ‘B’ insulation.
- Superior winding material used which is capable of withstanding temperature rise of 75°C over a maximum ambient temperature of 45°C at a relatively humidity of 80% referred to 20°C
- Windings are vacuum impregnated for operation in humid and tropical climate.

PROTECTION

- IP55 degree of protection as per IS:4691.

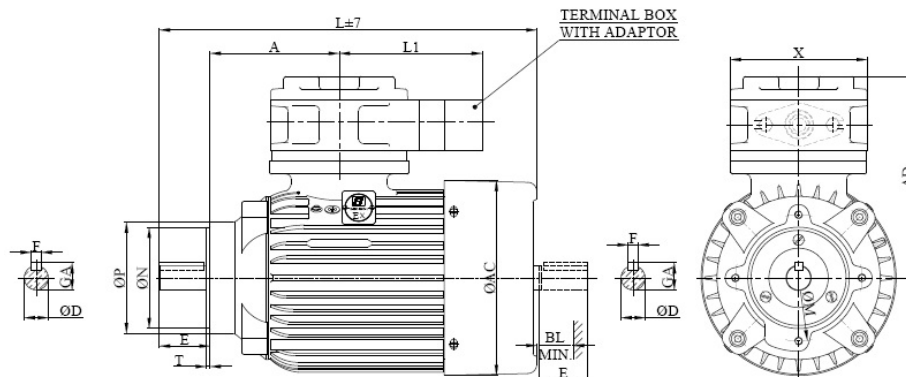
POWER RATING

- Motors are intended for operating voltage of $415 \pm 10\%$ at $50 \text{ HZ} \pm 5\%$.
- Motors above 2.2 kW. (3HP) can be started either by D.O.L. or by star-delta starter, as all the 6leads are brought to the terminal box.

EARTHING TERMINALS

- Two earthing terminals are provided on the motor.

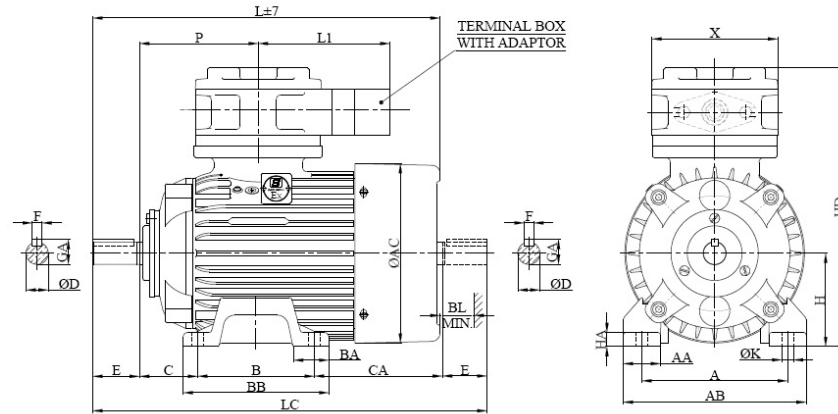
B14 Mounting Dimension for FLP Motor – For Group II A & II B



FRAMES	L	AC	AD	D	E	F	GA	P	M	N	S	T	X	L1	A	BL Min
63 A	204	122	142	11j6	23	4	13	66	75	60j6	M5	2.5	112	113	73	14
63 B	218	122	142	11j6	23	4	13	66	75	60j6	M5	2.5	112	113	73	14
71 A	239	138	154	14j6	30	5	16.5	76	85	70j6	M6	2.5	112	113	85	16
71 B	259	138	154	14j6	30	5	16.5	76	85	70j6	M6	2.5	112	113	85	16
80 A	298	155	160	19j6	40	6	22	88	100	80j6	M6	3	112	113	102	16
80 B	318	155	160	19j6	40	6	22	88	100	80j6	M6	3	112	113	102	16
90 SB	354	173	167	24j6	50	8	27.5	102	115	95j6	M8	3	112	113	113	18
90 LB	354	173	167	24j6	50	8	27.5	102	115	95j6	M8	3	112	113	113	18
90 LC	374	173	167	24j6	50	8	27.5	102	115	95j6	M8	3	112	113	113	18
100 LB	415	193	175	28j6	60	8	32	118	130	110j6	M8	3.5	112	113	116	20
100 LC	447	193	175	28j6	60	8	32	118	130	110j6	M8	3.5	112	113	116	20
112 MB (3L)	419	217	187	28j6	60	8	32	132	130	110j6	M8	3.5	112	113	107	22
112 MB (6L)	419	217	187	28j6	60	8	32	132	130	110j6	M8	3.5	168	142	186	22

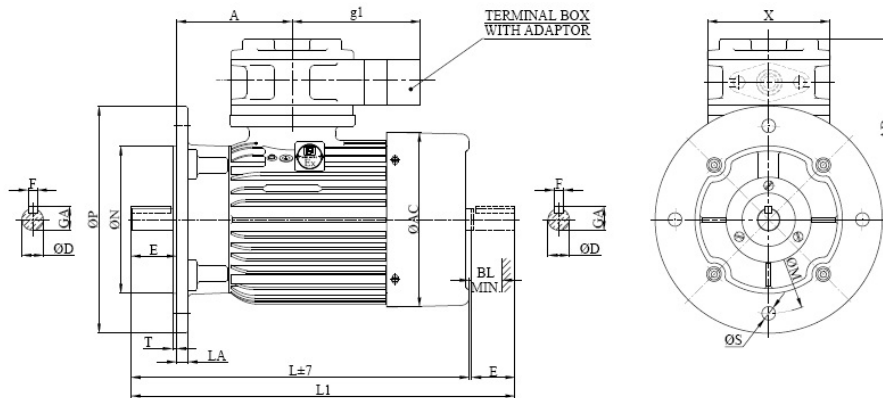
Note : 3L – 3Leads
6L – 6Leads

B3 Mounting Dimension for FLP Motor – For Group II A & II B



FRAMES	B	A	HA	D	BB	AB	AC	L1	H	X	L	LC	E	BA	AA	HD	K	GA	F	C	CA	P	BL Min
63 A	80	100	10	11j6	105	125	122	113	63	112	204	232	23	28	25	205	7	13	4	40	66	73	14
63 B	80	100	10	11j6	105	125	122	113	63	112	218	246	23	28	25	205	7	13	4	40	80	73	14
71 A	90	112	11	14j6	115	140	138	113	71	112	239	274	30	32	28	225	7	17	5	45	79	85	16
71 B	90	112	11	14j6	115	140	138	113	71	112	259	294	30	32	28	225	7	17	5	45	99	85	16
80 A	100	125	12	19j6	125	157	155	113	80	112	298	343	40	30	32	239	10	22	6	50	113	102	16
80 B	100	125	12	19j6	125	157	155	113	80	112	318	363	40	30	32	239	10	22	6	50	133	102	16
90 SB	100	140	13	24j6	130	175	173	113	90	112	354	409	50	35	35	257	10	28	8	56	153	113	18
90 LB	125	140	13	24j6	155	175	173	113	90	112	354	409	50	35	35	257	10	28	8	56	128	113	18
90 LC	125	140	13	24j6	155	175	173	113	90	112	374	429	50	35	35	257	10	28	8	56	148	113	18
100 LB	140	160	15	28j6	175	200	193	113	100	112	415	480	60	42	40	275	12	32	8	63	157	116	20
100 LC	140	160	15	28j6	175	200	193	113	100	112	447	512	60	42	40	275	12	32	8	63	189	116	20
112 MB (3L)	140	190	18	28j6	180	232	217	113	112	112	419	484	60	44	46	299	12	32	8	70	154	107	22

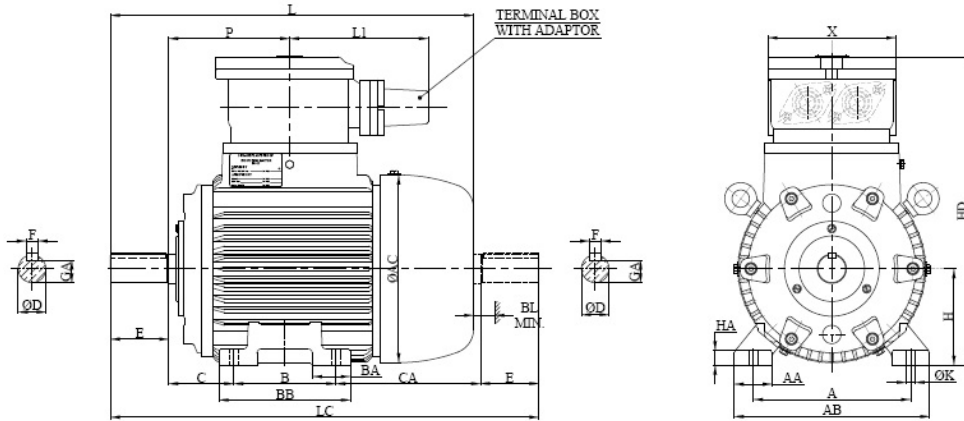
B5 Mounting Dimension for FLP Motor – For Group II A & II B



FRAMES	P	N	LA	D	M	T	AC	g1	X	E	L	L1	GA	F	AD	S	A	BL Min
63 A	140	95j6	10	11j6	115	3	122	113	112	23	204	410	13	4	142	10	73	14
63 B	140	95j6	10	11j6	115	3	122	113	112	23	218	424	13	4	142	10	73	14
71 A	160	110j6	10	14j6	130	3.5	138	113	112	30	239	463	16.5	5	154	10	85	16
71 B	160	110j6	10	14j6	130	3.5	138	113	112	30	259	294	16.5	5	154	10	85	16
80 A	200	130j6	10	19j6	165	3.5	155	113	112	40	298	343	22	6	160	12	102	16
80 B	200	130j6	10	19j6	165	3.5	155	113	112	40	318	363	22	6	160	12	102	16
90 SB	200	130j6	12	24j6	165	3.5	173	113	112	50	354	409	27.5	8	167	12	113	18
90 LB	200	130j6	12	24j6	165	3.5	173	113	112	50	354	409	27.5	8	167	12	113	18
90 LC	200	130j6	12	24j6	165	3.5	173	113	112	50	374	429	27.5	8	167	12	113	18
100 LB	250	180j6	12	28j6	215	4	193	113	112	60	415	480	32	8	175	15	116	20
100 LC	250	180j6	12	28j6	215	4	193	113	112	60	447	512	32	8	175	15	116	20
112 MB (3L)	250	180j6	16	28j6	215	4	217	113	112	60	419	484	32	8	187	15	107	22

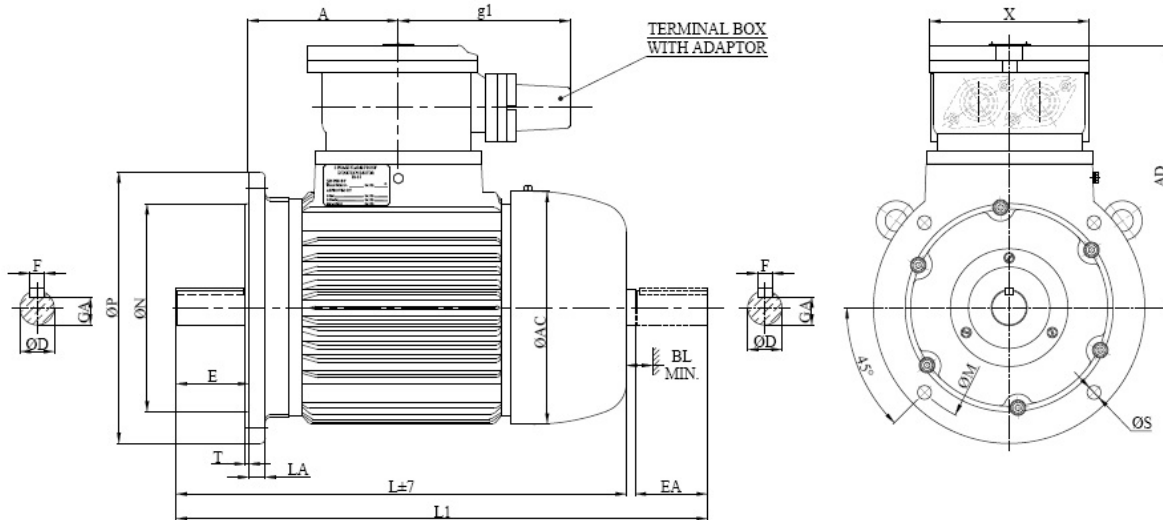
Note: 3L – 3Leads

B3 Mounting Dimension for FLP Motor – For Group II A & II B



FRAMES	B	A	HA	D	BB	AB	AC	L1	H	X	L	LC	E	BA	AA	HD	K	GA	F	C	CA	P	BL Min
112 MB (6L)	140	190	18	28j6	180	232	217	142	112	168	419	484	60	44	46	357	12	32	8	70	154	186	22
132 SA	140	216	20	38k6	180	268	257	190	132	202	494	579	80	52	52	427	12	42	10	89	190	166	25
132 SB	140	216	20	38k6	180	268	257	190	132	202	531	616	80	52	52	427	12	42	10	89	227	166	25
132 MB	178	216	20	38k6	218	268	257	190	132	202	531	616	80	52	52	427	12	42	10	89	189	166	25
160 MA	210	254	22	42k6	262	322	309	190	160	202	577	692	110	68	68	475	15	46.5	12	108	154	178	30
160 MB	210	254	22	42k6	262	322	309	190	160	202	609	724	110	68	68	475	15	46.5	12	108	186	178	30
160 MC	210	254	22	42k6	262	322	309	190	160	202	659	774	110	68	68	475	15	46.5	12	108	236	178	30
160 LC	254	254	22	42k6	306	322	309	190	160	202	659	774	110	68	68	475	15	46.5	12	108	192	178	30

B5 Mounting Dimension for FLP Motor – For Group II A & II B



FRAMES	P	N	LA	D	M	T	AC	g1	X	E	L	L1	GA	F	AD	S	A	BL Min
112 MB (6L)	250	180j6	16	28j6	215	4	217	142	168	60	419	484	32	8	187	15	186	22
132 SA	300	230h6	18	38k6	265	4	257	190	202	80	494	579	42	10	295	15	166	25
132 SB	300	230h6	18	38k6	265	4	257	190	202	80	531	616	42	10	295	15	166	25
132 MB	300	230h6	18	38k6	265	4	257	190	202	80	531	616	42	10	295	15	166	25
160 MA	350	250h6	20	42k6	300	5	309	190	202	110	577	692	46.5	12	315	19	178	30
160 MB	350	250h6	20	42k6	300	5	309	190	202	110	609	724	46.5	12	315	19	178	30
160 MC	350	250h6	20	42k6	300	5	309	190	202	110	659	774	46.5	12	315	19	178	30
160 LC	350	250h6	20	42k6	300	5	309	190	202	110	659	774	46.5	12	315	19	178	30

Note: 6L – 6Lead

REMI FLAME PROOF MOTOR RATING CHART

EFF-2

FRAME		K.W.	H.P.	R.P.M.	Current @ 415 V in amps.	Eff %	P.F.	Starting Current to rated current ratio in %	Starting Torque to rated torque ratio in %
SPEED 3000 RPM									
63	A/2 D	0.18	0.25	2750	0.48	65.0	0.80	400	200
63	A/2F D	0.12	0.16	2800	0.52	65.0	0.80	400	200
63	B/2 D	0.25	0.33	2770	0.64	70.0	0.78	415	220
71	A/2 D	0.37	0.5	2855	0.88	73.0	0.80	480	200
71	B/2 D	0.55	0.75	2870	1.31	73.0	0.80	550	225
80	A/2 D	0.75	1.0	2870	1.72	76.0	0.80	580	265
80	B/2 D	1.1	1.5	2865	2.25	79.0	0.86	600	275
90	SB/2 D	1.5	2.0	2875	3.10	79.5	0.85	640	240
90	LC/2 D	2.2	3.0	2880	4.20	83.5	0.88	720	250
100	LC/2 D	3.7	5.0	2880	7.10	84.0	0.87	720	250
132	SA/2 D	5.5	7.5	2865	10.3	85.7	0.87	650	240
132	SB/2 D	7.5	10.0	2875	13.6	87.0	0.88	690	255
160	MA/2 D	9.3	12.5	2900	17.2	87.7	0.86	610	190
160	MB/2 D	11.0	15.0	2900	20.7	88.4	0.84	720	240
160	MC/2 D	15.0	20.0	2910	27.0	89.4	0.87	800	240
SPEED 1500 RPM									
63	A/4 D	0.12	0.16	1300	0.39	57.5	0.75	265	180
63	B/4 D	0.18	0.25	1300	0.55	60.0	0.76	275	170
71	A/4 D	0.25	0.33	1380	0.74	65.0	0.72	310	180
71	B/4 D	0.37	0.5	1365	1.20	66.0	0.65	360	200
80	A/4 D	0.55	0.75	1390	1.36	75.0	0.75	420	205
80	B/4 D	0.75	1.0	1390	1.86	74.0	0.76	435	200
90	SB/4 D	1.1	1.5	1410	2.50	77.5	0.79	500	240
90	LB/4 D	1.5	2.0	1400	3.50	78.5	0.76	550	265
100	LB/4R D	2.2	3.0	1415	4.70	81.0	0.80	540	220
112	MB/4 D	3.7	5.0	1430	7.40	84.0	0.83	590	200
112	MB/4 D *	3.7	5.0	1430	7.40	84.0	0.83	590	200
132	SA/4 D	5.5	7.5	1435	10.6	86.0	0.84	570	190
132	MB/4R D	7.5	10.0	1440	14.8	87.0	0.81	670	195
160	MA/4 D	9.3	12.5	1445	17.3	88.0	0.85	610	200
160	MB/4 D	11.0	15.0	1450	21.0	88.5	0.82	675	215
160	LC/4 D	15.0	20.0	1450	27.6	89.4	0.85	780	215
SPEED 1000 RPM									
71	A/6 D	0.12	0.16	875	0.52	54.0	0.60	210	140
71	B/6 D	0.18	0.24	900	0.84	57.0	0.52	240	170
80	A/6 DF	0.25	0.33	930	0.79	69.0	0.64	400	235
80	A/6 D	0.37	0.5	900	1.08	67.0	0.71	310	200
80	B/6 D	0.55	0.75	895	1.73	68.0	0.65	310	200
90	SB/6 D	0.75	1.0	905	2.10	71.5	0.69	350	220
90	LC/6 D	1.1	1.5	910	2.90	74.0	0.72	390	225
100	LC/6 D	1.5	2.0	920	3.90	76.0	0.70	400	190
112	MB/6 D *	2.2	3.0	940	5.20	79.5	0.74	450	180
132	SA/6 D	3.7	5.0	935	8.20	82.5	0.76	500	190
132	MB/6 D	5.5	7.5	930	11.8	84.5	0.77	540	200
160	MB/6 D	7.5	10.0	955	15.6	86.0	0.78	500	180
160	LC/6F D	9.3	12.5	965	19.2	87.0	0.78	600	190
160	LC/6 D	11.0	15.0	955	22.0	87.5	0.79	525	160
SPEED 750 RPM									
80	A/8 D	0.18	0.24	655	0.71	57.0	0.62	225	180
80	B/8 D	0.25	0.34	660	0.92	59.0	0.64	240	185
90	SB/8 D	0.37	0.5	670	1.28	63.0	0.64	250	190
90	LC/8 D	0.55	0.74	660	1.76	67.0	0.65	260	185
100	LB/8 D	0.75	1.0	685	2.33	70.0	0.64	290	180
100	LC/8 D	1.1	1.5	675	3.25	72.5	0.65	300	185
112	MB/8 D *	1.5	2.0	690	3.70	76.0	0.74	360	185
132	SA/8 D	2.2	3.0	695	5.00	79.0	0.77	390	170
132	MB/8 D	3.7	5.0	710	8.30	82.0	0.76	370	170
160	MB/8 D	5.5	7.5	710	12.2	83.5	0.75	400	165
160	LC/8 D	7.5	10.0	715	16.6	84.0	0.75	420	165

*** 3 or 6 Lead**

- Note :
1. Efficiency measurement are without seal.
 2. All performance values are subject to IS tolerance as per IS-325.
 3. Motor are subject to continuous improvement.
 4. All dimensions are in mm unless otherwise specified.