Delco Remy
DIVISION OF GENERAL MOTORS • ANDERSON, INDIANA

BULLETIN NO. 1M-188
DATE 3-1-84
26 PAGES PAGE 1
Supplements Bulletins
1M-187 1964-1977
1M-186 1956-1963
1M-180, 185 Prior to 1956
Supersedes 1M-188 (3-1-83)

SERVICE TEST SPECIFICATIONS

For Motors Released 1978-1984

CRANKING MOTORS AND MISCELLANEOUS D.C. MOTORS

Specifications contained in this bulletin are for the purpose of testing the performance of Delco Remy cranking and miscellaneous d.c. motors in the service field and apply only when tests are conducted as recommended in the applicable service bulletin.

To obtain full performance data on a motor, or to determine the cause of abnormal operation, the motor should be subjected to a "no-load" test. This test is performed, as described below, with the motor removed from the engine.

No-Load Test

Be sure switch is OPEN before connections or disconnections are made.

To perform the no-load test, connect the cranking motor in series with a fully charged battery of the specified voltage as illustrated in Figure 1 or Figure 2. An r.p.m. indicator is necessary to measure armature speed. Obtain the specified voltage by varying the carbon pile. Then read the current draw and the armature speed and compare these readings with the values listed in the published specifications. CAUTION: Do not apply voltage above what is specified. Excessive voltage may cause the armature to throw windings.

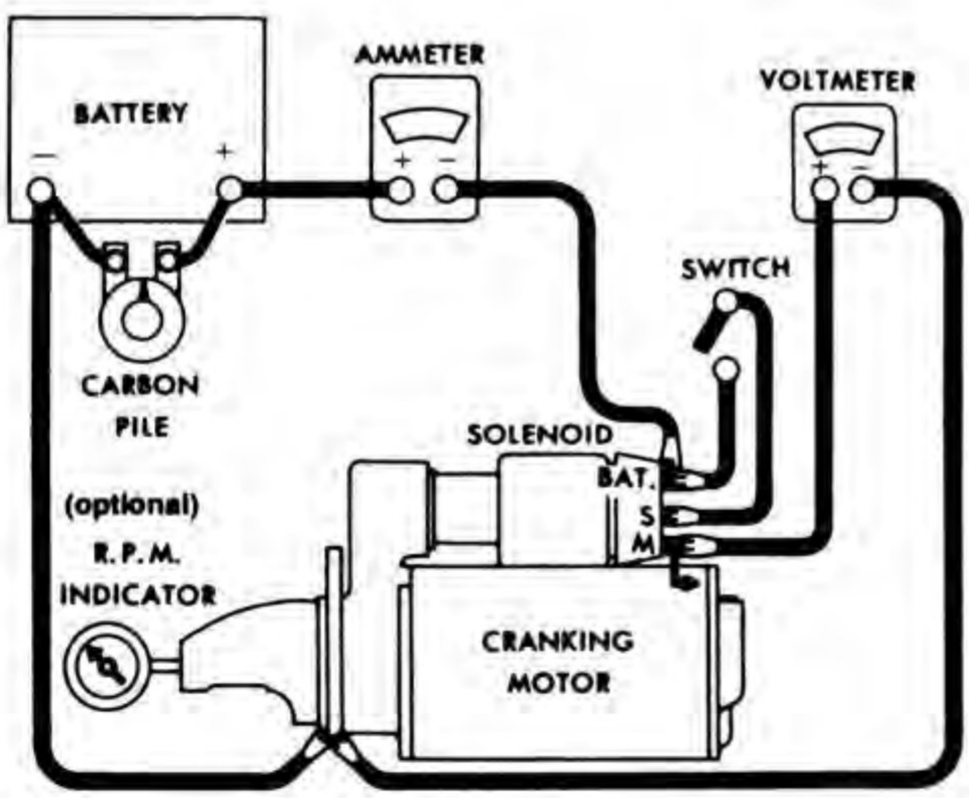


Fig. 1—No-Load test hookup with solenoid. Current specification includes solenoid current.

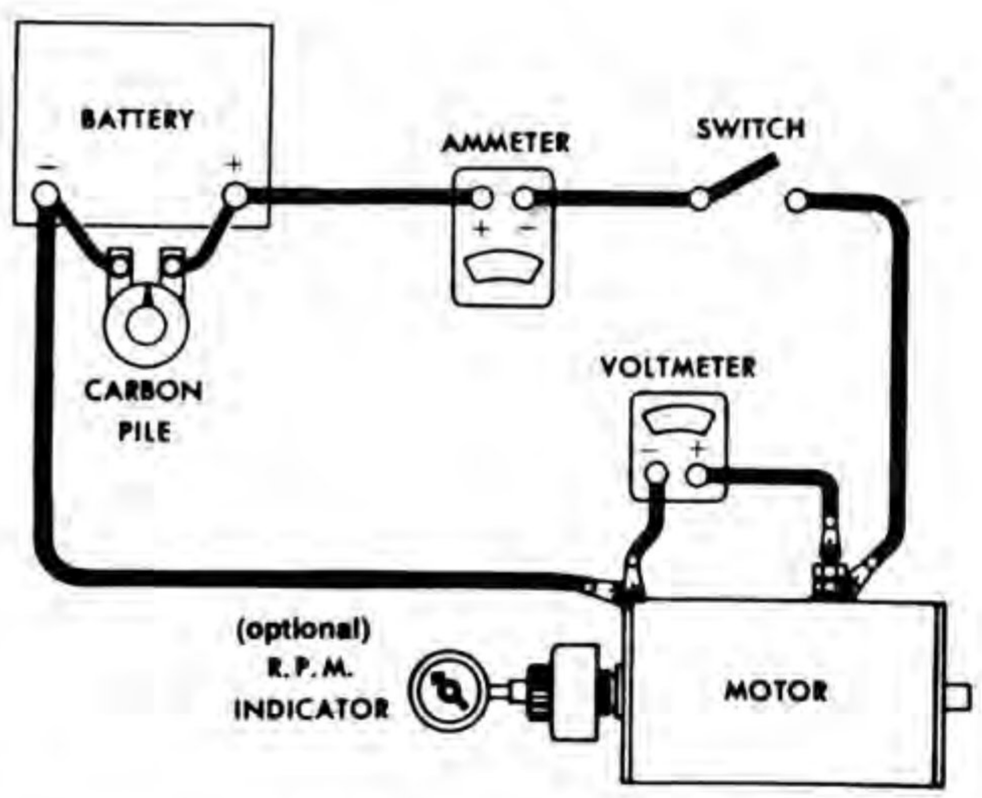


Fig. 2—No-Load test hookup without solenoid

MOTORS

1. Motor Model
   Anlasser Modell
   Modèle démarreur
   Modelo arranques

2. Series
   Serie
   Series
   Serie

3. Type
   Typ
   Type
   Tipo

4. Service Bulletin
   Kundendienst Technische Information
   Bulletin de service
   Boletín de servicio

5. Rotation Viewing D.E.
   Drehrichtung
   Sens de Rotation (vu cote Bendix)
   Sentido de rotacion

6. Spec No.
   Spez. Nr.
   Spec. No.
   No. de especificación

7. No Load Test (includes solenoid current when applicable)
   Versuch ohne Last (einschl. Magnetschalterstrom, falls anwendbar)
   Test à vide (quand cela est applicable inclure le courant du solenoide)
   pruebaon vacio (incluyendo la corriente del interrupter eléctro magnetico si hay logar)

Volts	Min. Amps.	Max. Amps.	Min. RPM	Max. RPM
Volt	Amp Min.	Amp Max.	U/Min Min.	U/Min Max.
Tension	Amps Mini	Amps Maxi	RPM Mini	RPM Maxi

1. Motor Model	2. Series	3. Type	4. Service Bulletin	5. Rotation Viewing D. E.	6. Spec. No.	7. NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1108227(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1108228(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1108229(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1108230(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1108281(a)	10MT		1M-151	CW	3592	10	60	90	6500	10500
1108282(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1108283(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1108284(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1108285(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1108286(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1108287(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1108288(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1108289(a)	10MT	125	1M-151	CW	3589	10	70	110	6500	10700
1108290(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1108291(a)	10MT	100	1M-151	CCW	3592	10	60	90	6500	10500
1108292(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1108293(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1108294(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1108295(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1108296(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1108297(a)	10MT	101	1M-151	CCW	3592	10	60	90	6500	10500
1108298(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1108299(a)	10MT	125	1M-151	CCW	3592	10	60	90	6500	10500
1109061(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1109062(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1109063(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1109064(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1109065(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1109066(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1109067(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1109068(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1109069(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1109070(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1109072(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1109074(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec. No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1109075(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1109076(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1109077(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1109078(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1109079(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1109080(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109081(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109082(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109083(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1109084(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109085(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109086(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109087(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109088(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109089(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109090(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109091(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109092(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109093(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109094(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109095(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109096(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1109097(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	6500
1109098(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	6500
1109099(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	6500
1109197	20MT	150	1M-151	CW	3553	10	75	200	6500	14000
1109198	20MT	150	1M-151	CW	3553	10	75	200	6500	14000
1109199	20MT	150	1M-151	CW	3553	10	75	200	6500	14000
1109212(a)	20MT	125	1M-151	CW	3553	10	75	200	6500	14000
1109213(a)	25MT	150	1M-151	CW	3595	10	100	200	6500	14000
1109214(a)	25MT	125	1M-151	CW	3595	10	100	200	6500	14000
1109215(a)	25MT	150	1M-151	CW	3595	10	100	200	6500	14000
1109216	27MT	136	1M-151	CW	7100	10	120	210	9000	13400
1109217	25MT	150	1M-151	CW	3586	10	75	175	6900	14900
1109218	27MT	136	1M-151	CW	7100	10	120	210	9000	13400
1109219	27MT	136	1M-151	CW	7100	10	120	210	9000	13400
1109220	50MT	400	1M-156	CCW	3569	30	100	125	7500	10500
1109221	50MT	400	1M-156	CCW	433	30	75	100	5500	7500
1109222	50MT	400	1M-156	CCW	419	20	95	120	5500	7500
1109223	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109224	50MT	400	1M-156	CW	433	30	75	100	5500	8000
1109261(a)	25MT	150	1M-151	CW	3594	10	105	200	6500	14000
1109262(a)	20MT	150	1M-151	CW	3534	10	65	100	5500	9000
1109263(a)	25MT	150	1M-151	CW	3586	10	75	175	6900	14900
1109264(a)	25MT	150	1M-151	CW	3586	10	75	175	6900	14900
1109265(a)	25MT	150	1M-151	CW	3586	10	75	175	6900	14900
1109266(a)	25MT	150	1M-151	CW	3586	10	75	175	6900	14900
1109267(a)	25MT	150	1M-151	CCW	3586	10	75	175	6900	14900
1109268(a)	25MT	150	1M-151	CW	3596	10	50	100	6100	9700
1109269(a)	25MT	150	1M-151	CW	3586	10	75	175	6900	14900
1109270(a)	25MT	150	1M-151	CW	3586	10	75	175	6900	14900
1109271(a)	25MT	150	1M-151	CCW	3586	10	75	175	6900	14900
1109272(a)	25MT	150	1M-151	CW	3586	10	75	175	6900	14900
1109273(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109274(b)	50MT	400	1M-156	CCW	433	30	75	100	5500	8000
1109275(b)	50MT	400	1M-156	CW	433	30	75	100	5500	8000
1109276(b)	50MT	400	1M-156	CW	3569	30	100	125	7500	10500
1109277(b)	50MT	400	1M-156	CW	433	30	75	100	5500	8000
1109278(b)	50MT	400	1M-156	CW	433	30	75	100	5500	8000
1109279(b)	50MT	400	1M-156	CW	433	30	75	100	5500	8000

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)
(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)
(f) Do not free speed on 64 volts or above 9000 RPM during no load test.

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec. No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1109280(b)	50MT	400	1M-156	CW	433	30	75	100	5500	8000
1109281(b)	50MT	400	1M-156	CW	3569	30	100	125	7500	10500
1109282(b)	50MT	400	1M-156	CW	3569	30	100	125	7500	10500
1109283(b)	50MT	400	1M-156	CW	3568(f)	30	65	90	5500	7500(f)
1109284(b)	50MT	400	1M-156	CW	3575	30	65	99	5500	7500
1109285(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109286(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109287(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109288(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109289(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109290(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109291(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109292(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109293(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109294(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109295(b)	50MT	400	1M-156	CW	3599	11	210	270	5000	7400
1109296(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109297(b)	50MT	400	1M-156	CCW	419	20	95	120	5500	7500
1109298(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109299(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109352	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109353	10MT		1M-110	CCW	3592	10	60	90	6500	10500
1109354(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109355(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1109356(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109357(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109358(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109359(a)	10MT	100	1M-151	CCW	3592	10	60	90	6500	10500
1109360(a)	10MT	100	1M-151	CCW	3592	10	60	90	6500	10500
1109361(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1109362(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1109363(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109364(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1109365(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1109367	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109368	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109369(a)	10MT	100	1M-151	CCW	3589	10	70	110	6500	10700
1109371	10MT		1M-110	CCW	3592	10	60	90	6500	10500
1109372	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109373	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109374	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109377(a)	10MT	100	1M-151	CCW	3592	10	60	90	6500	10500
1109378	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109379	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109380	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109381	10MT		1M-110	CW	3546	5	50	95	2900	6500
1109382	10MT		1M-110	CW	3546	5	50	95	2900	6500
1109383	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109384	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109385	10MT		1M-110	CCW	3592	10	60	90	6500	10500
1109386	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109387	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109388	10MT		1M-110	CCW	3592	10	60	90	6500	10500
1109389	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109390	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109391	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109392	10MT		1M-110	CCW	3592	10	60	90	6500	10500
1109393	10MT		1M-110	CW	3546	5	50	95	2900	6500
1109394	10MT		1M-110	CW	3546	5	50	95	2900	6500
1109395	10MT		1M-110	CCW	3592	10	60	90	6500	10500

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)
(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec. No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1109396	10MT		1M-110	CCW	3510	20	40	75	3300	5600
1109397	10MT		1M-110	CW	3592	10	60	90	6500	10500
1109398(a)	10MT	125	1M-151	CW	3589	10	70	110	6500	10700
1109399(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109417(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1109418(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109419(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109420(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1109421(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109422(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1109423(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109424(a)	10MT	125	1M-151	CCW	3592	10	60	90	6500	10500
1109425(a)	10MT	125	1M-151	CCW	3592	10	60	90	6500	10500
1109426(a)	10MT	100	1M-151	CCW	3592	10	60	90	6500	10500
1109427(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109428(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1109429(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1109430(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109431(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109432(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1109433(a)	10MT	125	1M-151	CCW	3592	10	60	90	6500	10500
1109434(a)	10MT	125	1M-151	CW	3589	10	70	110	6500	10700
1109435(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1109436(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109437(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109438(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109439(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109446(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1109447(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1109448(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1109482(a)	10MT	110	1M-151	CW	3563	10	70	110	6500	10700
1109483(a)	10MT	110	1M-151	CCW	3563	10	70	110	6500	10700
1109484(a)	10MT	110	1M-151	CW	3563	10	70	110	6500	10700
1109485(a)	10MT	110	1M-151	CCW	3563	10	70	110	6500	10700
1109486(a)	10MT	110	1M-151	CW	2438	10	60	95	3900	6300
1109487(a)	10MT	110	1M-151	CW	2438	10	60	95	3900	6300
1109488(a)	10MT	110	1M-151	CW	3589	10	70	110	6500	10700
1109489(a)	10MT	110	1M-151	CW	3592	10	60	90	6500	10500
1109490(a)	10MT	110	1M-151	CW	3592	10	60	90	6500	10500
1109491(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109492(a)	10MT	110	1M-151	CCW	3589	10	70	110	6500	10700
1109493(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109494(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109495	27MT	136	1M-151	CW	7100	10	120	210	9000	13400
1109496	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1109497(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109498(a)	10MT	125	1M-151	CW	3563	10	70	110	6500	10700
1109499	20MT	150	1M-151	CW	3553	10	100	200	6500	14000
1109500	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1109521(c)	5MT	101	1M-155	CW	3587	10	50	75	6000	11500
1109522(c)	5MT	100	1M-155	CW	3590	10	55	85	6000	12000
1109523(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109524(a)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109525(a)	5MT	101	1M-155	CW	3587	10	50	75	6000	11500
1109526(a)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109527(a)	5MT	101	1M-155	CW	3590	10	55	85	6000	12000
1109528(a)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109529(a)	5MT	101	1M-155	CW	3590	10	55	85	6000	12000
1109530(a)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109531(a)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)
(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)
(c) Pinion Clearance—.25 mm to 4.06 mm (.010 in to .160 in.)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec. No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1109532(a)	5MT	100	1M-155	CW	3590	10	55	85	6000	12000
1109533(a)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109534(a)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109535(a)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109537(a)	5MT	101	1M-155	CW	7102	10	55	85	6000	12000
1109538(a)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109539(a)	25MT	150	1M-151	CW	3586	10	75	175	6900	14900
1109540(a)	20MT	150	1M-151	CW	3553	10	100	200	6500	14000
1109541(a)	20MT	150	1M-151	CW	3553	10	100	200	6500	14000
1105542(a)	20MT	150	1M-151	CW	3553	10	100	200	6500	14000
1105543	20MT	150	1M-151	CW	3553	10	100	200	6500	14000
1105544	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109545(b)	50MT	400	1M-156	CW	3599	11	210	270	5000	7400
1109546	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109547(a)	20MT	150	1M-151	CW	3553	10	100	200	6500	14000
1109548(a)	20MT	150	1M-151	CW	3553	10	100	200	6500	14000
1109549(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109550(a)	27MT	160	1M-151	CW	7100	11	120	210	9000	13400
1109551	5MT	100	1M-155	CW	7102	10	55	85	6000	12000
1109552(a)	10MT	125	1M-151	CW	3563	10	70	110	6500	10700
1109553(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109554(b)	50MT	300	1M-153	CW	3599	11	210	270	5000	7400
1109555(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1109556(b)	5MT	101	1M-155	CW	7102	10	55	85	6000	12000
1109558(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109559(a)	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1109560(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109561(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109562(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109563(a)	27MT	136	1M-151	CW	7100	10	120	210	9000	13400
1109564(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1109565(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109566(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1109567(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109568(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1109569(a)	10MT	125	1M-151	CW	3589	10	70	110	6500	10700
1109570(a)	10MT	125	1M-151	CW	3589	10	70	110	6500	10700
1109571(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1109572(a)	10MT	125	1M-151	CW	3589	10	70	110	6500	10700
1109573(a)	10MT	101	1M-151	CCW	3589	10	70	110	6500	10700
1109574(a)	10MT	100	1M-151	CCW	3589	10	70	110	6500	10700
1109575(a)	10MT	125	1M-151	CCW	3589	10	70	110	6500	10700
1109576(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1109577(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1109578(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1109579(a)	10MT	100	1M-151	CCW	3589	10	70	110	6500	10700
1109580(a)	10MT	100	1M-151	CCW	3589	10	70	110	6500	10700
1109581(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1109582(a)	10MT	100	1M-151	CCW	3589	10	70	110	6500	10700
1109583(a)	10MT	100	1M-151	CW	3593	10	80	130	6000	10000
1109584(a)	10MT	100	1M-151	CCW	3589	10	70	110	6500	10700
1109585(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1109586(a)	10MT	100	1M-151	CCW	3589	10	70	110	6500	10700
1109587(a)	10MT	100	1M-151	CCW	3589	10	70	110	6500	10700
1109588(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1109589(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1109590(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109591(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109592(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1109593(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)
(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)
(c) Pinion Clearance—.25 mm to 4.06 mm (.010 in to .160 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec. No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1109594(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1109595(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109596(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1109597(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1109598(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1109599(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1109637(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1109640(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1109777(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1109778(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1109779(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1109780(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1109781(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1109782(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1109783(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1109784			1M-110	CW	433	30	75	100	5500	8000
1109785			1M-110	CW	419	20	95	120	5500	7500
1109786			1M-110	CCW	419	20	95	120	5500	7500
1109787(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1109788(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1109789(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1109790(b)	50MT	300	1M-153	CW	3599	11	210	270	5000	7400
1109791(b)	50MT	250	1M-153	CW	419	20	95	120	5500	7500
1109792(b)	50MT	250	1M-153	CW	419	20	95	120	5500	7500
1109793(b)	50MT	250	1M-153	CW	419	20	95	120	5500	7500
1109794(b)	50MT	250	1M-153	CW	419	20	95	120	5500	7500
1109795(b)	50MT	250	1M-153	CW	419	20	95	120	5500	7500
1109796(b)	50MT	250	1M-153	CW	3569	30	100	125	7500	10500
1109797(b)	50MT	250	1M-153	CW	433	30	75	100	5500	8000
1109798(b)	50MT	250	1M-153	CW	419	20	95	120	5500	7500
1109799(b)	50MT	250	1M-153	CCW	419	20	95	120	5500	7500
1109828(b)	50MT	250	1M-153	CCW	433	30	75	100	5500	8000
1109829(b)	50MT	250	1M-153	CCW	3569	30	100	125	7500	10500
1109830(b)	50MT	400	1M-156	CCW	419	20	95	120	5500	7500
1109831(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109832(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109833(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109834(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109835(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109836(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109837(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109838(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109839(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109840(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109841(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109842(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109843(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109844(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109845(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109846(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109847(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109848(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1109849(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1113247	30MT	175	1M-153	CW	2412	10	50	83	3500	7100
1113250(e)	30MT	190	1M-153	CW	3524	20	44	70	7000	11000

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)
(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)
(d) Pinion Clearance—.25 mm to 1.78 mm (.010 in to .070 in)
(e) Pinion Clearance—4.3 mm to 5.8 mm (.17 in to .23 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E	Spec No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1113251(d)	30MT	175	1M-153	CW	2412	10	50	83	3500	7100
1113252(d)	30MT	175	1M-153	CW	2412	10	50	83	3500	7100
1113253(e)	30MT	190	1M-153	CW	3524	20	44	70	7000	11000
1113254(e)	30MT	190	1M-153	CW	3524	20	44	70	7000	11000
1113255(e)	30MT	190	1M-153	CW	3524	20	44	70	7000	11000
1113256(d)	30MT	175	1M-153	CW	3524	20	44	70	7000	11000
1113257(e)	30MT	190	1M-153	CW	3524	20	44	70	7000	11000
1113258(e)	30MT	190	1M-153	CW	3524	20	44	70	7000	11000
1113259(e)	30MT	190	1M-153	CW	3524	20	44	70	7000	11000
1113261(e)	30MT	190	1M-153	CW	3524	20	44	70	7000	11000
1113262(e)	30MT	190	1M-153	CW	3524	20	44	70	7000	11000
1113263(e)	30MT	190	1M-153	CW	3524	20	44	70	7000	11000
1113355	30MT	190	1M-153	CW	2413	20	60	80	5500	10000
1113356	30MT	175	1M-153	CW	2413	20	60	80	5500	10000
1113472	35MT	195	1M-153	CW	3579	20	60	80	5500	9600
1113478(d)	35MT	185	1M-153	CW	3574	10	105	160	5000	10400
1113479(b)	35MT	190	1M-153	CW	2413	20	60	80	5500	10000
1113480(b)	35MT	195	1M-153	CW	3574	10	105	160	5000	10400
1113481(b)	35MT	190	1M-153	CW	2413	20	60	80	5500	10000
1113482(b)	35MT	195	1M-153	CW	3574	10	105	160	5000	10400
1113483(b)	35MT	195	1M-153	CW	3579	20	60	80	5500	9600
1113484(e)	35MT	195	1M-153	CCW	3574	10	105	160	5000	10400
1113485(b)	35MT	195	1M-153	CW	3579	20	60	80	5500	9600
1113486(b)	35MT	190	1M-153	CW	2413	20	60	80	5500	10000
1113487	35MT	195	1M-153	CW	3579	20	60	80	5500	9600
1113488(d)	35MT	185	1M-153	CW	3574	10	105	160	5000	10400
1113489(d)	35MT	185	1M-153	CCW	3574	10	105	160	5000	10400
1113490(g)	35MT	195	1M-153	CW	3574	10	105	160	5000	10400
1113491(d)	35MT	185	1M-153	CW	3574	10	105	160	5000	10400
1113492	35MT	175	1M-153	CW	2415	10	75	125	5000	8100
1113493(d)	35MT	185	1M-153	CW	3574	10	105	160	5000	10400
1113494(d)	35MT	175	1M-153	CW	2415	10	75	125	5000	8100
1113495(d)	35MT	175	1M-153	CW	2415	10	75	125	5000	8100
1113496(d)	35MT	175	1M-153	CW	2415	10	75	125	5000	8100
1113497(d)	35MT	185	1M-153	CW	3574	10	105	160	5000	10400
1113498(d)	35MT	175	1M-153	CW	2415	10	75	125	5000	8100
1113499(d)	35MT	175	1M-153	CW	3564	10	130	190	5200	8300
1113500(b)	35MT	190	1M-153	CW	2415	10	75	125	5000	8100
1113532(b)	35MT	190	1M-153	CW	2415	10	75	125	5000	8100
1113533(b)	35MT	190	1M-153	CW	2413	20	60	80	5500	10000
1113534(b)	35MT	190	1M-153	CW	2413	20	60	80	5500	10000
1113535(b)	35MT	190	1M-153	CW	2413	20	60	80	5500	10000
1113536(b)	35MT	190	1M-153	CW	2413	20	60	80	5500	10000
1113537(b)	35MT	195	1M-153	CW	3574	10	105	160	5000	10400
1113538(b)	35MT	195	1M-153	CW	3574	10	105	160	5000	10400
1113539(b)	35MT	195	1M-153	CW	3579	20	60	80	5500	9600
1113540(b)	35MT	195	1M-153	CW	3579	20	60	80	5500	9600
1113541(b)	35MT	190	1M-153	CW	2413	20	60	80	5500	10000
1113542(b)	35MT	195	1M-153	CW	3579	20	60	80	5500	9600
1113543(b)	35MT	190	1M-153	CW	2415	10	75	125	5000	8100
1113544(b)	35MT	195	1M-153	CW	3579	20	60	80	5500	9600
1113545(b)	35MT	190	1M-153	CW	2413	20	60	80	5500	10000
1113546(b)	35MT	190	1M-153	CW	2413	20	60	80	5500	10000
1113547(b)	35MT	195	1M-153	CW	3574	10	105	160	5000	10400
1113548	35MT	185	1M-153	CW	3574	10	105	160	5000	10400

(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)
(d) Pinion Clearance—.25 mm to 1.78 mm (.010 in to .070 in)
(e) Pinion Clearance—4.3 mm to 5.8 mm (.17 in to .23 in)
(g) Pinion Clearance—1.85 mm to 2.0 mm (.073 in to .087 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D E	Spec No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min Amps	Max Amps	Min RPM	Max RPM
1113549(b)	35MT	195	1M-153	CW	3574	10	105	160	5000	10400
1113550(b)	35MT	190	1M-153	CW	2413	20	60	80	5500	10000
1113582(d)	35MT	185	1M-153	CW	3574	10	105	160	5000	10400
1113583(b)	35MT	185	1M-153	CW	3579	20	60	80	5500	9600
1113584	35MT	190	1M-153	CW	2413	20	60	80	5500	10000
1113585	35MT	195	1M-153	CW	3579	20	60	80	5500	9600
1113586(d)	35MT	185	1M-153	CW	3574	10	105	160	5000	10400
1113587	35MT	190	1M-153	CW	2413	20	60	80	5500	10000
1114673(d)	40MT	301	1M-153	CW	2432	20	70	110	5500	9000
1114674	40MT		1M-153	CCW	2432	20	70	110	5500	9000
1114677(d)	50MT	401	1M-156	CCW	419	20	95	120	5500	7500
1114678(d)	40MT	401	1M-156	CW	2432	20	70	110	5500	9000
1114679(d)	50MT	401	1M-156	CCW	419	20	95	120	5500	7500
1114680(d)	50MT	401	1M-156	CW	419	20	95	120	5500	7500
1114681(d)	50MT	401	1M-156	CCW	419	20	95	120	5500	7500
1114682(b)	40MT	401	1M-156	CW	2432	20	70	110	5500	9000
1114683(b)	50MT	401	1M-156	CCW	419	20	95	120	5500	7500
1114684(b)	50MT	401	1M-156	CCW	419	20	95	120	5500	7500
1114685(b)	50MT	401	1M-156	CW	419	20	95	120	5500	7500
1114686(b)	50MT	401	1M-156	CCW	419	20	95	120	5500	7500
1114687(b)	40MT	401	1M-156	CCW	2432	20	70	110	5500	9000
1114688(b)	40MT	401	1M-156	CCW	2432	20	70	110	5500	9000
1114689(b)	50MT	401	1M-156	CW	419	20	95	120	5500	7500
1114760(b)	40MT	300	1M-153	CW	2432	20	70	110	5500	9000
1114761(b)	40MT	300	1M-153	CW	3501	10	140	215	4000	7000
1114762(b)	40MT	300	1M-153	CW	2432	20	70	110	5500	9000
1114763(b)	40MT	300	1M-153	CW	2434	28	75	95	3250	5000
1114764(b)	40MT	200	1M-153	CW	2431	10	90	150	3000	7600
1114765(b)	40MT	200	1M-153	CW	3501	10	140	215	4000	7000
1114766(b)	40MT	300	1M-153	CW	3501	10	140	215	4000	7000
1114767(b)	40MT	300	1M-153	CW	2432	20	70	110	5500	9000
1114768(b)	40MT	300	1M-153	CW	2432	20	70	110	5500	9000
1114769(b)	40MT	300	1M-153	CW	2431	10	90	150	3000	7600
1114770(b)	40MT	200	1M-153	CW	3501	10	140	215	4000	7000
1114771(b)	40MT	300	1M-153	CW	3501	10	140	215	4000	7000
1114772(b)	40MT	300	1M-153	CW	2432	20	70	110	5500	9000
1114773(b)	40MT	300	1M-153	CW	3501	10	140	215	4000	7000
1114774(b)	40MT	300	1M-153	CW	2432	20	70	110	5500	9000
1114775(b)	40MT	250	1M-153	CW	3501	10	140	215	4000	7000
1114776(b)	40MT	250	1M-153	CW	2432	20	70	110	5500	9000
1114777(b)	40MT	250	1M-153	CW	2432	20	70	110	5500	9000
1114778(b)	40MT	250	1M-153	CCW	3501	10	140	215	4000	7000
1114779(b)	40MT	250	1M-153	CW	2431	10	90	150	3000	7600
1114780(b)	40MT	250	1M-153	CW	3501	10	140	215	4000	7000
1114781(b)	40MT	250	1M-153	CW	2432	20	70	110	5500	9000
1114782(b)	40MT	250	1M-153	CW	2432	20	70	110	5500	9000
1114783(b)	40MT	250	1M-153	CW	2432	20	70	110	5500	9000
1114784(b)	40MT	250	1M-153	CW	2432	20	70	110	5500	9000
1114785(b)	40MT	250	1M-153	CW	2432	20	70	110	5500	9000
1114786(b)	40MT	250	1M-153	CW	2434	30	75	95	3250	6000
1114787(b)	40MT	250	1M-153	CW	3501	10	140	215	4000	7000
1114788(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114789(b)	40MT	300	1M-153	CW	2431	10	90	150	3000	7600
1114790(b)	40MT	300	1M-153	CW	2432	20	70	110	5500	9000
1114791(b)	40MT	300	1M-153	CW	3501	10	140	215	4000	7000

(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)
(d) Pinion Clearance—.25 mm to 1.78 mm (.010 in to .070 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1114792(b)	40MT	300	1M-153	CCW	2432	20	70	110	5500	9000
1114793(b)	40MT	300	1M-153	CW	2432	20	70	110	5500	9000
1114794(b)	40MT	300	1M-153	CW	2434	30	75	95	3250	6000
1114795(b)	40MT	300	1M-153	CW	2431	10	90	150	3000	7600
1114796(b)	40MT	300	1M-153	CW	3501	10	140	215	4000	7000
1114797(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114798(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114799(b)	40MT	300	1M-153	CW	3501	10	140	215	4000	7000
1114800(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114801(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114802(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114803(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114804(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114805(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114806(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114807(b)	40MT	400	1M-156	CCW	3501	10	140	215	4000	7000
1114808(b)	40MT	400	1M-156	CCW	3501	10	140	215	4000	7000
1114809(b)	40MT	400	1M-156	CCW	3501	10	140	215	4000	7000
1114810(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114811(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114812(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114813(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114814(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114815(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114816(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114817(b)	40MT	400	1M-156	CW	2431	10	90	215	3000	7600
1114818(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114819(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114820(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114821(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114822(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114823(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114824(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114825(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114826(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114827(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114828(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114829(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114830(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1114831(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114832(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114833(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114834(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114835(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114836(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114839(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1114840(b)	40MT	400	1M-156	CCW	2432	20	70	110	5500	9000
1114841(b)	40MT	400	1M-156	CCW	2432	20	70	110	5500	9000
1114842(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114843(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114844(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114845(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114846(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114847(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114848(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000

(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D E	Spec No	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min Amps	Max Amps	Min RPM	Max RPM
1114849(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114850(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114851(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114852(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114853(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114854(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114855(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114856(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114857(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114858(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114859(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114860(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114861(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114862(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114863(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114864(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114865(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114866(b)	40MT	400	1M-156	CW	2434	30	75	95	3250	6000
1114867(b)	40MT	400	1M-156	CW	2434	30	75	95	3250	6000
1114868(b)	40MT	400	1M-156	CW	2434	30	75	95	3250	6000
1114869(b)	40MT	400	1M-156	CW	2434	30	75	95	3250	6000
1114870(b)	40MT	400	1M-156	CW	2434	30	75	95	3250	6000
1114871(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114872(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114873(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114874(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114875(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114876(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114877(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114878(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114879(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114880(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114881(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114882(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114883(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114884(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114885(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114886(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114887(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114888(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114889(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114890(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114891(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114892(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1114893(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114894(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114895(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114896(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114897(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114898(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114899(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114900(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114901(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1114902(b)	40MT	400	1M-156	CCW	3501	10	140	215	4000	7000
1114903(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000

(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1114904(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1114905(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114906(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114907(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114908(b)	40MT	400	1M-156	CCW	3501	10	140	215	4000	7000
1114909(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114910(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114911(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114912(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114913(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1114914(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114915(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114916(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114917(b)	40MT	200	1M-153	CW	2432	20	70	110	5500	9000
1114918(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114919(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114920(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114921(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114922(b)	40MT	400	1M-156	CCW	2432	20	70	110	5500	9000
1114923(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114924(b)	40MT	400	1M-156	CW	2434	30	75	95	3250	6000
1114925(b)	40MT	400	1M-156	CCW	2434	30	75	95	3250	6000
1114926(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114927(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1114928(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1114929(b)	40MT	400	1M-156	CCW	2431	10	90	150	3000	7600
1114930(b)	40MT	400	1M-156	CCW	2431	10	90	150	3000	7600
1114931(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1114932(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1114933(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1114934(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114935(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114936(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1114937(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114938(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1114939(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1114940(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1114941(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1114942(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114943(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1114944(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114945(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114946(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114947(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114948(b)	40MT	400	1M-156	CCW	2432	20	70	110	5500	9000
1114949(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114950(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114951(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114952(b)	40MT	400	1M-156	CCW	2432	20	70	110	5500	9000
1114953(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114954(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114955(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1114956(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1114957(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1114958(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000

(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec. No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1114959(b)	40MT	400	1M-156	CCW	2432	20	70	110	5500	9000
1114960(b)	40MT	400	1M-156	CCW	3501	10	140	215	4000	7000
1114961(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114962(b)	40MT	400	1M-156	CW	2434	30	75	95	3250	6000
1114963(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114964(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114965(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114966(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114967(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114968(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114969(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114970(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114971(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114972(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1114973(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114974(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114975(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1114976(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1114977(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114978(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114979(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114980(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114981(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114982(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114983(b)	40MT	300	1M-153	CW	3501	10	140	215	4000	7000
1114984(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114985(b)	40MT	300	1M-153	CW	3501	10	140	215	4000	7000
1114986(b)	40MT	300	1M-153	CW	3501	10	140	215	4000	7000
1114987(b)	40MT	300	1M-153	CW	2432	20	70	110	5500	9000
1114988(b)	40MT	300	1M-153	CW	3501	10	140	215	4000	7000
1114989(b)	40MT	300	1M-153	CW	2432	20	70	110	5500	9000
1114990(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114991(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114992(b)	40MT	350	1M-153	CW	3501	10	140	215	4000	7000
1114993(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1114994(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114995(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114996(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1114997(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1114998(b)	40MT	400	1M-156	CCW	2432	20	70	110	5500	9000
1114999(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1977067(a)	8MT	100	1M-151	CW	3500	10	55	85	6500	10500
1977068(a)	8MT	125	1M-151	CW	3500	10	55	85	6500	10500
1977069	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1977070(a)	10MT	125	1M-151	CW	3563	10	70	110	6500	10700
1977071(c)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1977072(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1977073(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1977074(c)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1977075(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1977076(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1977077(c)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1977078(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1977079(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1977080(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)
(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)
(c) Pinion Clearance—.25 mm to 4.06 mm (.010 in to .160 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec. No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1977081(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1977082(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1977083(a)	10MT	125	1M-151	CW	3563	10	70	110	6500	10700
1977084(a)	10MT	125	1M-151	CW	3563	10	70	110	6500	10700
1977085(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1977086(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1977087(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1977088(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1977089(c)	10MT	125	1M-151	CW	3563	10	70	110	6500	10700
1977090(c)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1977091(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1989449(c)	5MT	101	1M-155	CW	7100	10	120	210	9000	13400
1989453(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1989454(c)	5MT	100	1M-155	CW	3590	10	55	85	6000	12000
1990200(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1990201(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1990202(b)	40MT	300	1M-153	CW	2432	20	70	110	5500	7000
1990203(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	7000
1990204(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	7000
1990205(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1990206(b)	40MT	400	1M-156	CCW	3501	10	140	215	4000	7000
1990207(b)	40MT	450	1M-156	CCW	3501	10	140	215	4000	7000
1990208(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1990209(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1990210(b)	40MT	300	1M-153	CCW	2432	20	70	110	5500	9000
1990211(b)	40MT	300	1M-153	CCW	3501	10	140	215	4000	7000
1990212(b)	40MT	300	1M-153	CCW	3501	10	140	215	4000	7000
1990213(b)	40MT	300	1M-153	CCW	2432	20	70	110	5500	9000
1990214(b)	40MT	300	1M-153	CCW	2431	10	90	150	3000	7000
1990215(b)	40MT	300	1M-153	CCW	3501	10	140	215	4000	7000
1990216(b)	40MT	300	1M-153	CCW	2434	30	75	95	3250	6000
1990217(b)	40MT	400	1M-156	CCW	2434	30	75	95	3250	6000
1990218(b)	40MT	400	1M-156	CCW	3501	10	140	215	4000	7000
1990219(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1990220(b)	40MT	300	1M-153	CW	3501	10	140	215	4000	7000
1990221(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1990222(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1990223(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1990224(b)	40MT	400	1M-156	CW	2431	10	90	150	3000	7600
1990225(b)	50MT	400	1M-156	CW	3569	30	100	125	7500	10500
1990226(b)	50MT	400	1M-156	CW	3569	30	100	125	7500	10500
1990227(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990228(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990229(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990230(b)	50MT	400	1M-156	CW	3569	30	100	125	7500	10500
1990231(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990232(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990233(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990234(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990235(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990236(b)	50MT	400	1M-156	CCW	419	20	95	120	5500	7500
1990237(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990238(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990239(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990240(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)
(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)
(c) Pinion Clearance—.25 mm to 4.06 mm (.010 in to .160 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec. No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1990241(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990242(b)	50MT	400	1M-156	CCW	3569	30	100	125	7500	10500
1990243(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990244(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990245(b)	50MT	400	1M-156	CCW	433	30	75	100	5500	8000
1990246(b)	50MT	400	1M-156	CW	433	30	75	100	5500	8000
1990247(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990248(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990249(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990250(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990251(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990252(b)	50MT	400	1M-156	CCW	433	30	75	100	5500	8000
1990253(b)	50MT	400	1M-156	CW	433	30	75	100	5500	8000
1990254(b)	50MT	400	1M-156	CW	433	30	75	100	5500	8000
1990255(b)	50MT	400	1M-156	CW	433	30	75	100	5500	8000
1990256(b)	50MT	400	1M-156	CW	433	30	75	100	5500	8000
1990257(b)	50MT	400	1M-156	CW	3568	30(f)	65	90	5500	7500(f)
1990258(b)	50MT	400	1M-156	CW	3575	30	65	100	5500	6500
1990259(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990260(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990261(b)	50MT	400	1M-156	CW	3599	11	210	270	5500	7400
1990262(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990263(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990264(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990265(b)	50MT	400	1M-156	CCW	419	20	95	120	5500	7500
1990266(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990267(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990268(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990269(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990270(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990271(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990272(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990273(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990274(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990275(b)	50MT	400	1M-156	CW	433	30	75	100	5500	8000
1990276(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990277(b)	50MT	400	1M-156	CW	3599	11	210	270	5000	7400
1990278(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990279(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1990280(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1990281(b)	40MT	300	1M-153	CW	3501	10	140	215	4000	7000
1990282(b)	40MT	300	1M-153	CW	2432	20	70	110	5500	9000
1990283(b)	40MT	300	1M-153	CW	2432	20	70	110	5500	9000
1990284(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1990285(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1990286(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1990287(b)	50MT	300	1M-153	CW	419	20	95	120	5500	7500
1990288(b)	50MT	300	1M-153	CW	3569	30	100	125	7500	10500
1990289(b)	50MT	300	1M-153	CW	433	30	75	100	5500	8000
1990290(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1990291(b)	50MT	400	1M-156	CW	419	20	95	120	5500	7500
1990292(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990293(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990294(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990295(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000

(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)
(d) Pinion Clearance—.25 mm to 1.78 mm (.010 in to .070 in)
(f) Do not free speed on 64 volts or above 9000 RPM during no load test.

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec. No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1990296(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1990297(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1990298(b)	50MT	400	1M-156	CW	3599	11	210	270	5000	7400
1990299(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1990300(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1990302(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1990303(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1990304(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1990305(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1990306(b)	40MT	450	1M-156	CW	3501	10	140	215	4000	7000
1990307(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1990308(b)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990309(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990310(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990311(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990312(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990313(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990314(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990315(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990316(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990317(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990318(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990319(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990320(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990321(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990322(d)	37MT	300	1M-157	CCW	7104	10	140	175	6600	8200
1990323(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1990324(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1990325(b)	40MT	400	1M-156	CW	3501	10	140	215	4000	7000
1990326(d)	37MT	200	1M-157	CW	7110	10	90	150	5800	8200
1990327(d)	37MT	200	1M-157	CW	7110	10	90	150	5800	8200
1990328(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1990329(b)	40MT	400	1M-156	CCW	3501	10	140	215	4000	7000
1990330(c)	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1990331(c)	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1990332(c)	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1990333(b)	50MT	400	1M-156	CW	433	30	75	100	5500	8000
1990334(d)	37MT	200	1M-157	CW	7110	10	90	150	5800	8200
1990335(b)	40MT	450	1M-156	CW	3501	10	145	215	4000	7000
1990336(c)	37MT	200	1M-157	CW	7110	10	90	150	5800	8200
1990337(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990338(c)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990339(b)	40MT	450	1M-156	CCW	3501	10	145	215	4000	7000
1990340(b)	40MT	450	1M-156	CCW	2432	20	70	110	5500	9000
1990341(c)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990342(b)	40MT	450	1M-156	CW	3501	10	145	215	4000	7000
1990343(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1990344(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990345(b)	40MT	350	1M-153	CCW	3501	10	145	215	4000	7000
1990346(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1990347(c)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1990348(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990349(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990350(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990352(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800

(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)
(c) Pinion Clearance—.25 mm to 4.06 mm (.010 in to .160 in)
(d) Pinion Clearance—.25 mm to 1.78 mm (.010 in to .070 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec. No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1990353(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990354(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990356(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990357(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990358(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990359(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990360(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990361(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990362(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990363(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990364(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990365(b)	42MT	400	1M-156	CCW	7113	10	100	170	5500	7800
1990366(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990367(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990368(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990369(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990370(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990371(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990372(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990373(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990374(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990375(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990376(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990377(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990378(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990379(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990380(b)	42MT	400	1M-156	CCW	7113	10	100	170	5500	7800
1990381(b)	42MT	400	1M-156	CCW	7115	20	60	75	6500	7700
1990382(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990383(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990384(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990385(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990386(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990387(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990388(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990389(b)	42MT	400	1M-156	CCW	7115	20	60	75	6500	7700
1990390(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990391(b)	42MT	450	1M-156	CW	7113	10	100	170	5500	7800
1990392(b)	42MT	450	1M-156	CW	7113	10	100	170	5500	7800
1990393(b)	42MT	450	1M-156	CW	7113	10	100	170	5500	7800
1990394(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990395(b)	42MT	400	1M-156	CCW	7113	10	100	170	5500	7800
1990396(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990397(b)	42MT	450	1M-156	CW	7113	10	100	170	5500	7800
1990398(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990399(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990400(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990401(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990402(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990403(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990404(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990405(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990406(b)	42MT	450	1M-156	CW	7113	10	100	170	5500	7800
1990407(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990408(b)	42MT	450	1M-156	CW	7113	10	100	170	5500	7800

(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec. No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1990409(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990410(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990411(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990412(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990413(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990414(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990415(b)	42MT	450	1M-156	CW	7115	20	60	75	6500	7700
1990416(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990417(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990418(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990419(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990420(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990421(b)	42MT	450	1M-156	CW	7113	10	100	170	5500	7800
1990422(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990423(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990424(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990425(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990426(b)	42MT	450	1M-156	CW	7113	10	100	170	5500	7800
1990427(b)	42MT	450	1M-156	CW	7113	10	100	170	5500	7800
1990428(b)	42MT	450	1M-156	CW	7113	10	100	170	5500	7800
1990429(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990430(b)	42MT	400	1M-156	CCW	7113	10	100	170	5500	7800
1990431(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990432(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990433(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990434(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990435(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990436(b)	42MT	400	1M-156	CCW	7115	20	60	75	6500	7700
1990437(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990438(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990439(b)	42MT	400	1M-156	CCW	7113	10	100	170	5500	7800
1990440(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990441(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990442(b)	42MT	400	1M-156	CCW	7113	10	100	170	5500	7800
1990443(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990444(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990445(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990446(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990447(b)	42MT	400	1M-156	CCW	7115	20	60	75	6500	7700
1990448(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990449(b)	42MT	450	1M-156	CW	7113	10	100	170	5500	7800
1990450(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990451(b)	42MT	450	1M-156	CW	7113	10	100	170	5500	7800
1990452(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990453(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990454(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990455(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990456(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990457(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990458(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990459(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990460(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990461(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990462(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990463(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700

(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec. No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1990464(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990465(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990466(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990467(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990468(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990469(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990470(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990471(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990472(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990473(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990474(b)	42MT	400	1M-156	CW	7115	20	60	75	6500	7700
1990475(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990476(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990477(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990478(b)	42MT	400	1M-156	CW	7113	10	100	170	5500	7800
1990499(c)	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1993700(b)	40MT	450	1M-156	CW	2432	20	70	110	5500	9000
1993701(d)	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1993702(d)	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1993703(b)	40MT	400	1M-156	CW	3501	10	145	215	4000	7000
1993704(b)	40MT	400	1M-156	CW	2432	20	70	110	5500	9000
1993705(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1993706(d)	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1993707(d)	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1993708(b)	50MT	400	1M-156	CW	433	30	75	100	5500	8000
1993709	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1993710	37MT	200	1M-157	CW	7110	10	90	150	5800	8200
1993711	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1993712	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1993713	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1993714	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1993715	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1993716	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1993717	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1993718	37MT	200	1M-157	CW	7110	10	90	150	5800	8200
1993719	37MT	200	1M-157	CW	7110	10	90	150	5800	8200
1993720	37MT	200	1M-157	CW	7110	10	90	150	5800	8200
1993721	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1993722	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1993723	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1993724	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1993727	37MT	200	1M-157	CW	7104	10	140	175	6600	8200
1993728(d)	37MT	200	1M-157	CW	7110	10	90	150	5800	8200
1993729	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1993730	37MT	300	1M-157	CCW	7104	10	140	175	6600	8200
1993731	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1993732	37MT	300	1M-157	CW	7112	20	115	175	3000	4800
1993733	37MT	300	1M-157	CCW	7112	20	115	175	3000	4800
1993734	37MT	200	1M-157	CW	7110	10	90	150	5800	8200
1993735	37MT	200	1M-157	CW	7110	10	90	150	5800	8200
1993736	37MT	300	1M-157	CCW	7104	10	140	175	6600	8200
1993737	37MT	300	1M-157	CCW	7104	10	140	175	6600	8200
1993738	37MT	300	1M-157	CW	7104	10	140	175	6600	8200
1998201	10MT		1M-110	CCW	3592	10	60	90	6500	10500
1998202	10MT		1M-110	CCW	3592	10	60	90	6500	10500

(b) Pinion Clearance—8.3 mm to 9.9 mm (.330 in to .390 in)
(c) Pinion Clearance—.25 mm to 4.06 mm (.010 in to .160 in)
(d) Pinion Clearance—.25 mm to 1.78 mm (.010 in to .070 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E	Spec No	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1998203	10MT		1M-110	CW	3592	10	60	90	6500	10500
1998204(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1998205(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1998206(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998207(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998208(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998209(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1998210(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998211(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1998212(a)	10MT	100	1M-151	CCW	3592	10	60	90	6500	10500
1998213(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1998214(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998215(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1998216	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1998217(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1998218(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998219(a)	10MT	125	1M-151	CW	3589	10	70	110	6500	10700
1998220(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1998221(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1998222(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1998223(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1998224(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1998225(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1998226(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1998227(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1998228(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998229	10MT	100		CW	3563	10	70	110	6500	10700
1998230	10MT	100		CW	3563	10	70	110	6500	10700
1998231	10MT	100		CW	3563	10	70	110	6500	10700
1998232	10MT	100		CW	3592	10	60	90	6500	10500
1998233	10MT	101		CW	3592	10	60	90	6500	10500
1998234	10MT	101		CW	3589	10	70	110	6500	10700
1998235(a)	10MT	101		CW	3589	10	70	110	6500	10700
1998236(a)	10MT	101		CW	3592	10	60	90	6500	10500
1998237(a)	10MT	101		CW	3589	10	70	110	6500	10700
1998238(a)	10MT	101		CW	3589	10	70	110	6500	10700
1998239(a)	10MT	101		CW	3589	10	70	110	6500	10700
1998240(a)	10MT	101		CW	3592	10	60	90	6500	10500
1998241(a)	10MT	101		CW	3589	10	70	110	6500	10700
1998242(a)	10MT	101		CW	3592	10	60	90	6500	10500
1998243(a)	10MT	101		CW	3563	10	70	110	6500	10700
1998244(a)	10MT	101		CW	3592	10	60	90	6500	10500
1998245(a)	10MT	100		CW	3589	10	70	110	6500	10700
1998246(a)	10MT	101		CW	3563	10	70	110	6500	10700
1998247(a)	10MT	101		CW	3563	10	70	110	6500	10700
1998248(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998249(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998250(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998251(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998252(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998253(c)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1998256(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998257(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998258(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998259(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)
(c) Pinion Clearance—.25 mm to 4.06 mm (.010 in to .160 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E	Spec No	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1998260(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998261(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998262(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998263(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998264(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998265(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1998266(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998267(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998269(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998270(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998271(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998272(c)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998273(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998274(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998275(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998276(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998279(c)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1998280(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998281(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998282(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998283(a)	10MT	100	1M-151	CCW	3592	10	60	90	6500	10500
1998284(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1998285(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998286(c)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1998287(c)	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1998288(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998289(a)	10MT	100	1M-151	CCW	3589	10	70	110	6500	10700
1998290(a)	10MT	100	1M-151	CCW	3592	10	60	90	6500	10500
1998291(a)	10MT	125	1M-151	CW	3589	10	70	110	6500	10700
1998292(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1998293(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998294(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998295(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998297(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998298(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998299(a)	10MT	125	1M-151	CCW	3592	10	60	90	6500	10500
1998300(c)	10MT	125	1M-151	CCW	3592	10	60	90	6500	10500
1998301(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998302(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998303(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1998304(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998305(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998306(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998307(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1998308(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1998309(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998310(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998311(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998313(c)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1998314(a)	10MT	110	1M-151	CW	3563	10	70	110	6500	10700
1998315(a)	10MT	110	1M-151	CW	3563	10	70	110	6500	10700
1998316(a)	10MT	110	1M-151	CCW	3563	10	70	110	6500	10700
1998317(a)	10MT	110	1M-151	CW	3589	10	70	110	6500	10700
1998318(a)	10MT	110	1M-151	CW	3592	10	60	90	6500	10500
1998320(c)	10MT	110	1M-151	CW	3592	10	60	90	6500	10500

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)
(c) Pinion Clearance—.25 mm to 4.06 mm (.010 in to .160 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D E	Spec No	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min Amps	Max Amps	Min RPM	Max RPM
1998321(c)	10MT	110	1M-151	CCW	3589	10	70	110	6500	10700
1998323(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1998324(a)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998325(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998326(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998327(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998328(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998329(a)	10MT	125	1M-151	CW	3589	10	70	110	6500	10700
1998330(c)	22MT	330	1M-151	CW	7105	10	65	100	5500	9000
1998331(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998332(c)	22MT	150	1M-151	CCW	7105	10	65	100	5500	9000
1998333(c)	22MT	150	1M-151	CCW	7106	10	100	200	6500	14000
1998334(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998335(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998336(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998337(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998338(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998339(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998340(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998341(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998342(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998343(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998344(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998345(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998346(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998347(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998348(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998349(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998350(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998351(c)	22MT	150	1M-151	CW	7107	20	52	90	7000	13000
1998352(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998353(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998354(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998355(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998356(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998357(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998358(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998359(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998360(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998361(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998362(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998363(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998364(c)	22MT	150	1M-151	CW	7103	10	75	175	6900	14900
1998365(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998366(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998367(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998368(c)	27MT	160	1M-151	CCW	7103	10	75	175	6900	14900
1998369(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998370(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998371(c)	27MT	160	1M-151	CW	7109	10	50	80	5500	9000
1998372(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998373(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998374(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998375(c)	27MT	160	1M-151	CCW	7103	10	75	175	6900	14900
1998376(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)
(c) Pinion Clearance—.25 mm to 4.06 mm (.010 in to .160 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec. No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min. RPM	Max. RPM
1998377(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998378(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998379(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998380(c)	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1998381(c)	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1998382(a)	10MT	125	1M-151	CW	3592	10	60	90	6500	10500
1998383(a)	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1998384(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998385(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998386(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998387(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998388(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998389(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998390(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998391(c)	10MT	125	1M-151	CW	3563	10	70	110	6500	10700
1998392(a)	10MT	100	1M-151	CCW	3592	10	60	90	6500	10500
1998393(a)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998394(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998395(c)	10MT	125	1M-151	CW	3563	10	70	110	6500	10700
1998396(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1998397(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1998398(a)	10MT	125	1M-151	CCW	3563	10	70	110	6500	10700
1998399(a)	10MT	125	1M-151	CW	3563	10	70	110	6500	10700
1998400(c)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1998401(c)	27MT	136	1M-151	CW	7100	10	120	210	9000	13400
1998402(c)	20MT	150	1M-151	CW	3553	10	100	200	6500	14000
1998403(c)	20MT	150	1M-151	CW	3553	10	100	200	6500	14000
1998404(c)	10MT	110	1M-151	CW	3592	10	60	90	6500	10500
1998405(c)	10MT	110	1M-151	CCW	3592	10	60	90	6500	10500
1998408(c)	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1998409(c)	27MT	136	1M-151	CW	7108	20	40	80	8000	12500
1998410(c)	10MT	125	1M-151	CCW	3563	10	70	110	6500	10700
1998411(c)	10MT	125	1M-151	CCW	3563	10	70	110	6500	10700
1998412(c)	10MT	125	1M-151	CCW	3592	10	60	90	6500	10500
1998413(c)	10MT	125	1M-151	CCW	3563	10	70	110	6500	10700
1998414(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998415(c)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1998416(c)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998417(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1998418(c)	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1998419(c)	10MT	125	1M-151	CW	3563	10	70	110	6500	10700
1998421(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1998422(c)	5MT	101	1M-155	CW	7102	10	55	85	6000	12000
1998423(c)	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1998424(c)	10MT	125	1M-151	CCW	3592	10	60	90	6500	10500
1998426(c)	20MT	150	1M-151	CW	7107	20	52	90	7000	13000
1998427(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1998428(c)	5MT	100	1M-155	CW	3590	10	55	85	6000	12000
1998429(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1998430(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1998431(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1998432(c)	22MT	150	1M-151	CW	7107	20	52	90	7000	13000
1998433	5MT	101	1M-155	CW	7102	10	55	85	6000	12000
1998434(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1998435(c)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)
(c) Pinion Clearance—.25 mm to 4.06 mm (.010 in to .160 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min. Amps	Max. Amps	Min RPM	Max. RPM
1998436(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1998437(a)	10MT	101	1M-151	CW	3592	10	60	90	6500	10500
1998438(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1998439(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1998440(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1998441(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1998442(c)	27MT	136	1M-151	CW	7100	10	120	210	9000	13400
1998443(a)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1998444(a)	10MT	100	1M-151	CW	3589	10	70	110	6500	10700
1998445(c)	5MT	101	1M-155	CW	7111	10	52	76	6000	12000
1998446(c)	20MT	150	1M-151	CW	3553	10	100	200	6500	14000
1998447(c)	5MT	100	1M-155	CW	7102	10	55	85	6000	12000
1998448(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1998449(c)	5MT	101	1M-155	CW	7102	10	55	85	6000	12000
1998450(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1998451(c)	5MT	100	1M-155	CW	7102	10	55	85	6000	12000
1998452(a)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1998453(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1998454(c)	27MT	136	1M-151	CW	7108	20	40	80	8000	12500
1998455(c)	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1998456(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998457(c)	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1998458(c)	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1998459(c)	27MT	160	1M-151	CW	7108	20	40	80	8000	12500
1998460(c)	10MT	110	1M-151	CW	3592	10	60	90	6500	10500
1998461(c)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1998462(c)	15MT	170	1M-151	CW	7101	10	160	240	4400	6300
1998463(c)	22MT	150	1M-151	CW	7107	20	52	90	7000	13000
1998464(c)	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1998465(c)	27MT	160	1M-151	CW	7100	10	120	210	9000	13400
1998466(c)	5MT	101	1M-155	CW	7111	10	52	76	6000	12000
1998467(c)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1998468(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998469(c)	10MT	101	1M-151	CW	3589	10	70	110	6500	10700
1198470(c)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1198471(c)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1198472(c)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1198473(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1198474(c)	10MT	100	1M-151	CW	3592	10	60	90	6500	10500
1198475(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998476(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1998477(c)	5MT	101	1M-155	CW	7102	10	55	85	6000	12000
1998478(c)	PMGR	101		CW	7114					
1998479(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998480(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998481(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998482(c)	5MT	101	1M-155	CW	3591	10	50	75	6000	11900
1998483(c)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700
1998484(c)	22MT	150	1M-151	CW	7106	10	100	200	6500	14000
1998485(c)	10MT	100	1M-151	CW	3563	10	70	110	6500	10700

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)
(c) Pinion Clearance—.25 mm to 4.06 mm (.010 in to .160 in)

MOTORS

Motor Model	Series	Type	Service Bulletin	Rotation Viewing D. E.	Spec No.	NO LOAD TEST (INCLUDES SOLENOID CURRENT when applicable) Volts	Min Amps	Max Amps	Min RPM	Max RPM
1998486(c)	27MT	160	1M-151	CCW	7100	10	120	210	9000	13400
1998487(c)	22MT	150	1M-151	CW	7107	20	52	90	7000	1300
1998488(c)	27MT	160	1M-151	CW	7108	20	40	80	8000	12500
1998489(c)	22MT	150	1M-151	CW	7105	10	65	100	5500	9000
1998490(c)	27MT	160	1M-151	CW	7103	10	75	175	6900	14900
1998491(c)	10MT	101	1M-151	CW	3563	10	70	110	6500	10700
1998492	PMGR	101		CW	7114					
1998493	PMGR	101		CW	7114					
1998552(a)	15GR	101	1M-151	CW	7101	10	160	240	4400*	6300*
1998553(a)	15GR	101	1M-151	CW	7101	10	160	240	4400*	6300*
1998554(a)	15GR	101	1M-151	CW	7101	10	160	240	4400*	6300*
1998555	15GR	101	1M-151	CW	7101	10	160	240	4400*	6300*
1998556	15GR	101	1M-151	CW	7101	10	160	240	4400*	6300*

(a) Pinion Clearance—.25 mm to 3.56 mm (.010 in to .140 in)
(c) Pinion Clearance—.25 mm to 4.06 mm (.010 in to .160 in)
* Pinion speed.

NOTES

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