Delco-Remy
DIVISION OF GENERAL MOTORS • ANDERSON, INDIANA

BULLETIN NO. 1R-187
DATE 1-1-70
4 PAGES PAGE 1
SUPPLEMENTS
Bulletins 1R-180, 1R-185 and 1R-186
SUPERSEDES
Bulletin 1R-187, Dated 1-1-69

SERVICE TEST SPECIFICATIONS

REGULATORS

Because of important differences in wiring circuits, design, and operation, Delco-Remy regulators have been classified by groups and identified by table number. If important instructions relating to a particular type of regulator are given, read and follow them carefully to insure accurate results.

Table 1—Standard Regulators
Table 2—Standard Regulators (Double Contact Type)
Table 3—Standard Regulators (Double Contact Type Used With "Delcotron" Generators)
Table 4—Transistor Regulators
Table 5—Heavy Duty Regulators

The specifications listed in this bulletin apply only when regulators are tested under service conditions and according to the methods recommended in the applicable service bulletin.

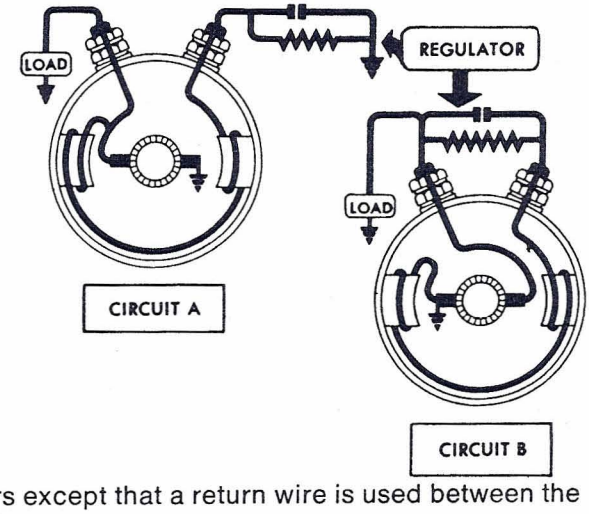
No attempt should be made to substitute regulators on the basis of similarity of test specifications. Regulators are designed to operate with specific generators and should be used only as shown by application information.

REGULATOR CIRCUITS

Two different circuits are used for Delco-Remy regulators; the "A" circuit and the "B" circuit. These regulators are entirely different and must always be used with generators of the corresponding circuits.

"A" Circuit: The field resistance and contact points of the regulator are connected between the field terminal of the generator and ground so that the generator field is grounded through the regulator.

"B" Circuit: The field resistance and contact points of the regulator are connected between the field terminal and main terminal of the generator so that the field circuit is insulated in the regulator and grounded in the generator.



The same two circuits are used for insulated regulators except that a return wire is used between the regulator and generator instead of a ground return.

POLARITY

All regulators are designed for a specific polarity as indicated in the test specifications. The regulator contacts will be severely damaged if the regulator is connected to a system of opposite polarity.

RELAYS

Separate relays that are not a part of the regulator should be checked in accordance with service bulletin 1R-100. If the relay should fail, it should be serviced by complete replacement.

Delco-Remy

REGULATORS

TABLE 1—STANDARD REGULATOR SERVICE TEST SPECIFICATIONS

Generally speaking, a voltage regulator setting that is within the normal range shown is satisfactory if (1) the battery remains satisfactorily charged without an excessive use of water and (2) there is no evidence of damage to lights or other voltage-sensitive equipment. If water consumption in the battery exceeds one ounce per cell each 1,000 miles, lower the voltage regulator setting. Raise the voltage regulator setting if the battery consistently remains undercharged. In either case the setting must be within the specified range.

On applications where no battery history is available, adjust the voltage regulator setting to a value about the middle of the normal range. Generally speaking, a setting slightly above the middle of the normal range will be satisfactory for most cars. However, a slightly lower setting will be more satisfactory for cars operated at high speeds or in warm climates. A slightly higher setting may be more satisfactory for cars normally operated at low speeds or in the cooler climates.

The voltage regulator unit must be set within the range given in the specification. When a range is not given and the chart number is indicated in the specification, the voltage regulator unit must be set in accordance with the temperature-voltage chart on page 4. The voltage regulator unit must be at operating temperature which is reached after 15 minutes of continuous operation with 1/4 ohm resistance in series with the battery and with the regulator cover in place. It is not necessary to measure the amount of current flowing during warm-up or testing of the voltage unit; however, it is important that no electrical load other than ignition be turned on during the test. (If a variable resistor is used in series with the battery, set to 1-10 amperes for warm-up period.)

Non-compensated current regulator units must be set within the range that is given. When the current regulator unit is temperature compensated it must be set in accordance with the temperature-current chart on page 4. The chart number is indicated in the specifications. The current regulator must also be stabilized by operating it for at least 15 minutes with cover in place. (Non-compensated current regulators operate the same, hot or cold. Operating temperature, therefore, may be disregarded.)

					CUTOUT RELAY			VOLTAGE REGULATOR		CURRENT REGULATOR	
Regulator Model	Service Bulletin	Circuit	Polarity	Spec. No.	+Air Gap (In.)	Point Opening (In.)	Closing Voltage Range or Chart	+Air Gap (In.)	Voltage Setting Range or Chart	+Air Gap (In.)	Current Setting Range or Chart
1119304	1R-118A	A	P	3233	.020	.020	11.8-13.5	.060	No. 2	.075	No. 9
1119305	1R-118A	A	N	4235*	.023	.020	No. 1	.060	No. 2	.070	No. 10
1119306	1R-118A	A	N	2122	.017	.032	24-27	.060	27.5-29.5	.075	23-27
1119307	1R-118A	A	P	2140	.020	.020	11.8-13.5	.060	No. 2	.075	15.5-18.5
1119308	1R-118A	A	N	2137	.017	.032	24-27	.060	27.5-29.5	.075	16-20
1119309	1R-118A	A	N	2140	.020	.020	11.8-13.5	.060	No. 2	.075	15.5-18.5
1119310	1R-118A	A	N	2184	.020	.020	11.8-13.5	.060	No. 2	.075	13-15

+ Tolerance plus or minus 10%.
* Relay to open at 1-4 amperes reverse current at 12.5 volts.

TABLE 2—STANDARD REGULATOR (DOUBLE CONTACT VOLTAGE REGULATOR) SERVICE TEST SPECIFICATIONS

					CUTOUT RELAY			VOLTAGE REGULATOR			CURRENT REGULATOR	
Regulator Model	Service Bulletin	Circuit	Polarity	Spec. No.	+Air Gap (In.)	Point Opening (In.)	Closing Voltage Range	Air Gap (In.)	Point Opening (In.)	Voltage Chart	+Air Gap (In.)	Current Setting (Amps.)
1119677	1R-119A	A	N	3299	.017	.032	22.8-25.2	¶	.016	No. 5†*	.075	14-16
1119678	1R-119A	A	P	3299	.017	.032	22.8-25.2	¶	.016	No. 5†*	.075	14-16
1119679	1R-119A	A	N	4245	.020	.020	11.8-13	¶	.016	No. 3§*	.075	22-26
1119680	1R-119A	A	P	4245	.020	.020	11.8-13	¶	.016	No. 3§*	.075	22-26
1119681	1R-119A	A	N	4245	.020	.020	11.8-13	¶	.016	No. 3§*	.075	22-26
1119682	1R-119A	A	N	4247	.020	.020	11.8-13	¶	.016	No. 3§*	.075	15.5-18.5
1119683	1R-119A	A	N	3247	.017	.032	22.8-25.2	¶	.016	No. 5(a)	.075	14-16

* This measurement to be made with the external adjustment screw at "0".
¶ Adjust air gap as outlined in applicable service bulletin ONLY when necessary to obtain specified difference between voltage settings of upper and lower contacts. **After bench repair only,** set air gap to approximately .067"; then make final air gap adjustment per applicable service bulletin.
\+ Tolerance plus or minus 10%.
§ Operation on lower contacts must be .1-.3 volt lower than on upper contacts.
† Operation on lower contacts must be .4-.7 volt lower than on upper contacts.
(a) Operation on lower contacts must be .2-.6 volt lower than on upper contacts.

REGULATORS

TABLE 3—STANDARD REGULATOR (DOUBLE CONTACT VOLTAGE REGULATOR TYPE USED WITH "DELCOTRON" GENERATORS) SERVICE TEST SPECIFICATIONS

Regulator Model	Service Bulletin	Polarity	Spec. No.	Voltage Chart
1119516	1R-262	N	4209	No. 3*
1119517	1R-264	N	4221	No. 3*
1119518	1R-262	N	4246	No. 5†
1119519	1R-262	N	4209	No. 3*
1119520	1R-262	N	4209	No. 3*

* Operation on lower contacts must be 0-.4 volt lower than on upper contacts.
† Operation on lower contacts must be .1-.8 volt lower than on upper contacts.

TABLE 4—TRANSISTOR REGULATOR SERVICE TEST SPECIFICATIONS

Regulator Model	Service Bulletin	Polarity	Spec. No.	Voltage Setting or Chart	Field Relay Closing Voltage Range
1116366	1R-265	N	4231	No. 4*	
1116367	1R-266	N	4236	No. 6	2-4
1116368	1R-266	N	4237	No. 7*	2-4
1116369	1R-266	N	4238	No. 6	
1116370	1R-266	N	4239	No. 7*	
1116371	1R-266	N	4240	No. 6*	2-4
1116372	1R-266	N	4241	No. 6*	
1116373	1R-266	N	4242	No. 6	4.5-8
1116374	1R-266	N	4243	No. 7*	4.5-8
1116375	1R-266	N	4237	No. 7*	2-4
1116376	1R-265	N	4231	No. 4*	
1116377§		N(i)	4244	No. 6§	
1116378	1R-266	N	4237	No. 7*	2-4
1116381	1R-266	N	4237	No. 7*	2-4
1116382	1R-266	N	4249	No. 8*	2-4
1117134‡	1G-255	N	3367	28.0	
1117135‡	1G-255	N	3369	14.0	

‡ For generator specifications, refer to 1G-187.
* Allowable range at "0" position of adjusting screw.
(i) Insulated.
§ For models having date code of 9B and after, use Chart #8.

TABLE 5—HEAVY DUTY REGULATOR SERVICE TEST SPECIFICATIONS

All electrical checks and adjustments must be made with the regulator at operating temperature, and voltage settings must be made on open circuit. If voltage and current settings are found to be within the ranges given in this table, the regulator is operating satisfactorily and need not be disturbed. When settings are found to be outside the ranges, the regulator should be adjusted to the value specified. All mechanical values have an allowable variation of plus or minus 10 per cent unless otherwise stated.

					CUTOUT RELAY			VOLTAGE REGULATOR			CURRENT REGULATOR		
Regulator Model	Service Bulletin	Circuit	Polarity	Spec. No.	+Air Gap (In.)	Point Opening (In.)	Closing Voltage Range‡	+Air Gap (In.)	Point Opening (In.)	Voltage Setting Range*	+Air Gap (In.)	Point Opening (In.)	Current Setting Range‡
1118400	DR-8102	B	N	4248	.048	.035	25-27	.087	.018	27.5-29.5	.087	.018	13.5-16.5

* Adjust to 28.2 volts.
‡ Satisfactory range. When adjusting, set to middle of range.
+ Tolerance plus or minus 5%.

Delco-Remy

REGULATORS

TEMPERATURE-VOLTAGE CHARTS FOR TABLES 1, 2, 3, AND 4

Regulator Ambient Temperature— Degrees Fahrenheit	65	85	105	125	145	165	185
Cutout Relay Closing Voltage Range							
Chart # 1	12.2-13.8	12.1-13.7	11.8-13.4	11.5-13.1	11.2-12.8	11-12.5	10.7-12.2
Voltage Setting Range							
Chart # 2	14.4-15.4	14.2-15.2	14-14.9	13.8-14.7	13.5-14.3	13.1-13.9	
Chart # 3	13.9-15	13.8-14.8	13.7-14.6	13.5-14.4	13.4-14.2	13.2-14	13.1-13.9
Chart # 4	13.8-14.5	13.6-14.4	13.5-14.2	13.4-14.1	13.2-14		
Chart # 5	27.7-29.8	27.4-29.4	27.1-29	26.8-28.5	26.6-28.2	26.3-27.9	26-27.6
Chart # 6	14.1-14.8	13.9-14.7	13.7-14.5	13.6-14.3	13.4-14.2		
Chart # 7	14.1-14.8	13.9-14.7	13.7-14.5	13.6-14.3	13.4-14.2	13.2-14	13.1-13.8
Chart # 8	13.6-14.3	13.4-14.2	13.3-14	13.1-13.8	12.9-13.7	12.8-13.5	12.7-13.4

TEMPERATURE-CURRENT CHARTS FOR TABLE 1

Regulator Ambient Temperature— Degrees Fahrenheit	65	85	105	125	145	165	185
Current Setting Range							
Chart # 9	20-24.2	19.3-23	18.5-22	17.5-20.8	16.5-19.7	15.5-18.5	14.4-17.3
Chart # 10	35-40	34-38.5	32.5-37	31-35.5	29.5-33.5		