

INSTALLATION INSTRUCTIONS



82635, 82640, 82643 TACHOMETER KITS
82621, 82622, 82647 TACH/HOURMETER KITS
82620 **82651 24VDC TACH/HOURMETER KITS**
82671

The above listed models are Bi-Torque, programmable electronic diesel truck tachometers or tach/hourmeters for use with 12 volt DC negative ground electrical systems (The 82651 Tach/Hourmeter is used with 24 volt DC Neg. Ground system.) These instruments are programmed with an 8 lever switch located at the rear of the case.

These Tachometers and Tach/Hourmeters are used to replace mechanical, flexible shaft driven instruments by using the 82623-B or F-82565 sender kits (The use of the F-82565 sender is limited to applications where the speed does not fall below 600 RPM.)

On engines where the mechanical take-off is not available, the alternator 'R' terminal (also called 'W' or 'AC' terminal) can be used as a signal source for driving the tachometer. This terminal delivers pulsating DC current and is not to be confused with the DC output terminal or terminals 1 and 2.

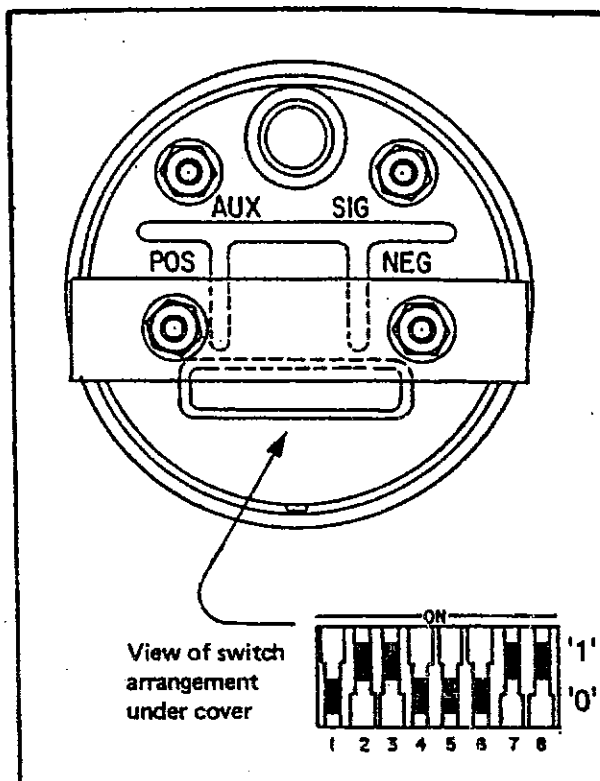


Figure 1

PROGRAMMING

FOR SENDER DRIVEN INSTRUMENTS

1. Determine the tachometer drive take-off ratio.
Locate and remove switch cover at rear of the Tachometer (Figure 1.)

2. Set the switches as shown in the following table:

For a generator pulse sender of 8 pulses per revolution (995-J, Kit 82623-B or F-82565.)

TAKE-OFF RATIO	SWITCH SETTING							
	1	2	3	4	5	6	7	8
2:1	1	1	0	1	1	0	0	1
1.5:1	1	1	0	0	0	0	1	0
1:1	1	0	0	1	0	1	0	0
0.5:1	0	0	0	0	1	1	0	0

3. Viewing tachometer in upright position from rear, slide switch levers into positions coded in Tachometer Program Chart using a small straight-bladed screwdriver. Follow left to right sequence as in the chart. '1' is UP position. '0' is DOWN position.

The 12 pulses/rev standard tachometer signal can be used following the programming instructions for 12 pulses/rev.

4. Replace switch cover.

PROGRAMMING
FOR ALTERNATOR 'R' TERMINAL INPUT

1. Determine Pulses/Eng Rev by the following formula:

$$\frac{\text{PULSES}}{\text{ENG REV}} = \frac{\text{CRANKSHAFT PULLEY DIA.}}{\text{ALTERNATOR PULLEY DIA.}} \times \frac{\text{NO. OF ALT. POLES}}{2}$$

2. Select the nearest pulses/eng rev tabulated in the programming chart.

3. Set each switch lever as specified for the pulses/eng rev selected.

PROGRAMMING CHARTS

PLS/ REV	2400	3500	TACHOMETER		PLS/ REV	2400	3500	TACHOMETER	
	RPM HZ	RPM HZ	SWITCH	CODE		RPM HZ	RPM HZ	SWITCH	CODE
			1234	5678				1234	5678
4.00	160	233	0000	1100	8.00	320	467	1001	0100
4.10	164	239	0001	0011	8.10	324	473	1001	0110
4.20	168	245	0001	1001	8.20	328	478	1001	1000
4.30	172	251	0001	1111	8.30	332	484	1001	1001
4.40	176	257	0010	0101	8.40	336	490	1001	1011
4.50	180	263	0010	1010	8.50	340	496	1001	1100
4.60	184	268	0011	0000	8.60	344	502	1001	1110
4.70	188	274	0011	0101	8.70	348	508	1001	1111
4.80	192	280	0011	1001	8.80	352	513	1010	0001
4.90	196	286	0011	1110	8.90	356	519	1010	0010
5.00	200	292	0100	0010	9.00	360	525	1010	0100
5.10	204	298	0100	0111	9.10	364	531	1010	0101
5.20	208	303	0100	1011	9.20	368	537	1010	0110
5.30	212	309	0100	1111	9.30	372	543	1010	0111
5.40	216	315	0101	0011	9.40	376	548	1010	1001
5.50	220	321	0101	0110	9.50	380	554	1010	1010
5.60	224	327	0101	1010	9.60	384	560	1010	1011
5.70	228	333	0101	1101	9.70	388	566	1010	1100
5.80	232	338	0110	0001	9.80	392	572	1010	1101
5.90	236	344	0110	0100	9.90	396	578	1010	1111
6.00	240	350	0110	0111	10.0	400	583	1011	0000
6.10	244	356	0110	1010	10.1	404	589	1011	0001
6.20	248	362	0110	1101	10.2	408	595	1011	0010
6.30	252	368	0111	0000	10.3	412	601	1011	0011
6.40	256	373	0111	0010	10.4	416	607	1011	0100
6.50	260	379	0111	0101	10.5	420	613	1011	0101
6.60	264	385	0111	1000	10.6	424	618	1011	0110
6.70	268	391	0111	1010	10.7	428	624	1011	0111
6.80	272	397	0111	1100	10.8	432	630	1011	1000
6.90	276	403	0111	1111	10.9	436	636	1011	1001
7.00	280	408	1000	0001	11.0	440	642	1011	1010
7.10	284	414	1000	0011	11.1	444	648	1011	1011
7.20	288	420	1000	0101	11.2	448	653	1011	1011
7.30	292	426	1000	0111	11.3	452	659	1011	1100
7.40	296	432	1000	1001	11.4	456	665	1011	1101
7.50	300	438	1000	1011	11.5	460	671	1011	1110
7.60	304	443	1000	1101	11.6	464	677	1011	1111
7.70	308	449	1000	1111	11.7	468	683	1100	0000
7.80	312	455	1001	0001	11.8	472	688	1100	0000
7.90	316	461	1001	0011	11.9	476	694	1100	0001

For use with two tachometers driven by a single sender:

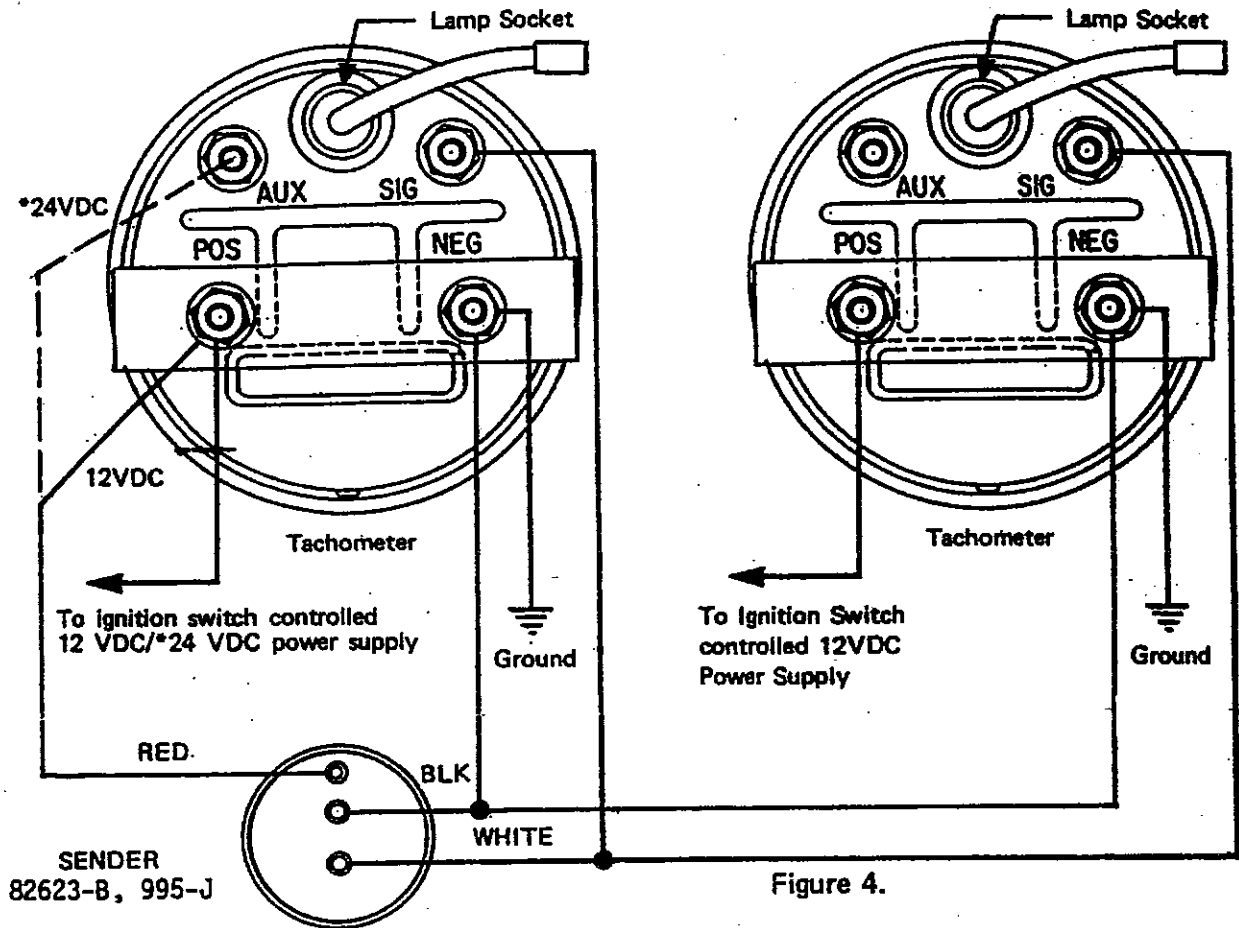


Figure 4.

WIRING

Follow the same procedure as for a single tachometer. Wire as shown in Fig.4.

For Alternator and 12 pulse/rev standard application, the signal terminal on the tachometer gets connected to the 'R' terminal or the buffered standard output respectively.

HOURLMETER

The hourmeter on Kits 82621, 82622, 82647, and 82651 is factory calibrated and needs no adjustment. It is a true engine hour indicator because it records the time only while the engine is running.

MOUNTING TACHOMETER IN PANEL

NOTE: Tachometer requires approximately 3-3/4" clearance behind instrument panel.

1. Cut a 3-3/8" diameter hole with a 1/8" wide X 1/16" deep notch pointing down or remove existing tachometer (Fig.2)
2. Connect wires from sending unit as described in "Wiring" section.
3. Insert tachometer into hole aligning locating key with notch and secure with mounting bracket, lockwashers, and nuts. Do not distort mounting bracket by overtightening.

NOTE: If panel thickness exceeds 3/16", trim bracket ends to obtain a snug fit.

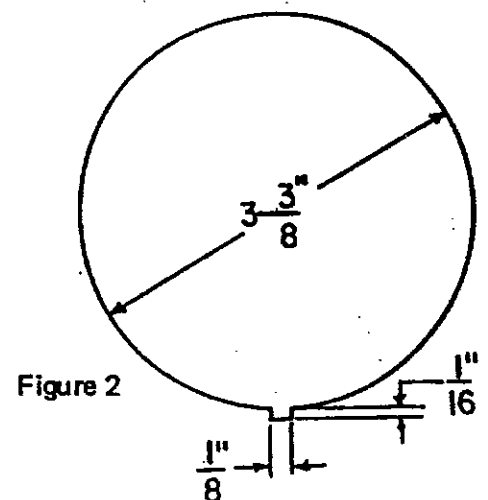


Figure 2

23.0	920	1342	1110	1101
23.1	924	1348	1110	1110
23.2	928	1353	1110	1110
23.3	932	1359	1110	1110
23.4	936	1365	1110	1110
23.5	940	1371	1110	1110
23.6	944	1377	1110	1111
23.7	948	1383	1110	1111
23.8	952	1388	1110	1111
23.9	956	1394	1110	1111
24.0	960	1400	1111	0000
24.1	964	1406	1111	0000
24.2	968	1412	1111	0000

24.3	972	1418	1111	0000
24.4	976	1423	1111	0000
24.5	980	1429	1111	0001
24.6	984	1435	1111	0001
24.7	988	1441	1111	0001
24.8	992	1447	1111	0001
24.9	996	1453	1111	0001
25.0	1000	1458	1111	0001
25.1	1004	1464	1111	0010
25.2	1008	1470	1111	0010
25.3	1012	1476	1111	0010
25.4	1016	1482	1111	0010
25.5	1020	1488	1111	0010

*24 VDC Models - wire as shown.

WIRING

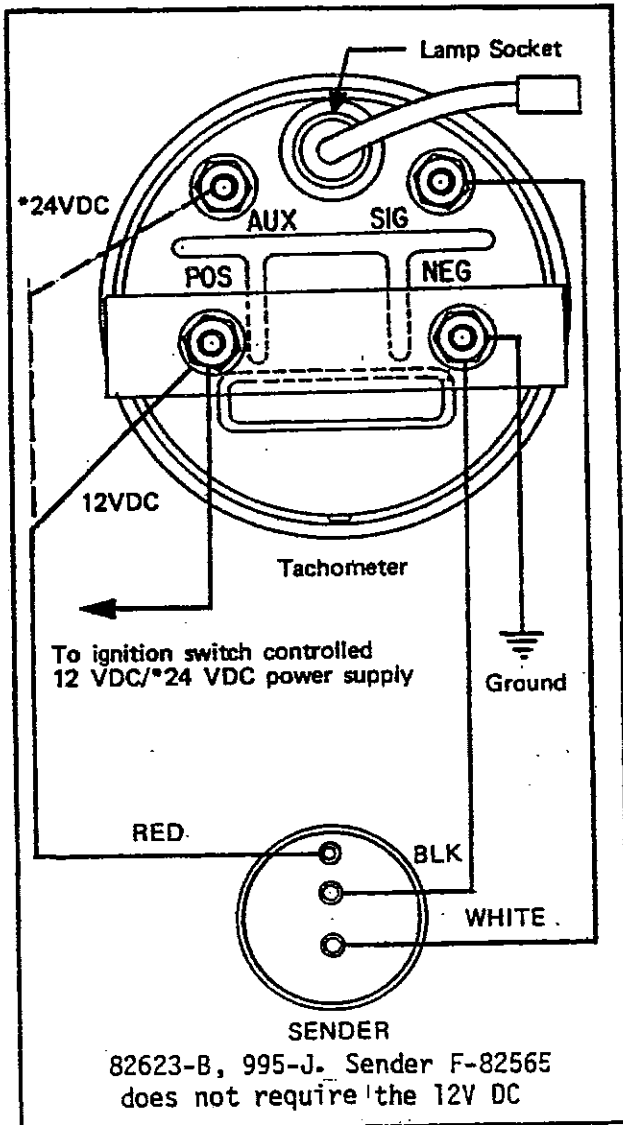


Figure 3

NOTE: This tachometer is for use with a generator pulse sender pickup. The Stewart Warner Model 995-J, Kit 82623-B will operate this tachometer. The F-82565 sender can be used where idle speed is above 600.

IMPORTANT: Use 18 AWG wire and insulated shank eyelet type terminals to make wiring connections to tachometer.

For use as a replacement:

1. Disconnect negative battery cable.
2. Make wiring connections to new tachometer the same as old unit.
3. Reconnect negative battery cable.

For use with new sending unit:

1. Disconnect negative battery cable.
2. Connect a vehicle ground lead to (NEG) terminal of tachometer.
3. Connect white sender lead to (SIG) terminal of tachometer.
4. Connect black sender lead to (NEG) terminal of tachometer.
5. Connect a wire from (POS) terminal of tachometer and red sender lead to a 12 VDC ignition switch controlled power source. For *24 VDC models, connect the red sender lead to the (AUX) terminal. See Fig.3.
6. Wire existing lamp & socket assembly to lighting dimmer circuit.
7. Reconnect negative battery cable.

12.0	480	700	1100 0010	17.5	700	1021	1101 1110
12.1	484	706	1100 0011	17.6	704	1027	1101 1111
12.2	488	712	1100 0011	17.7	708	1033	1101 1111
12.3	492	718	1100 0100	17.8	712	1039	1110 0000
12.4	496	723	1100 0101	17.9	716	1044	1110 0000
12.5	500	729	1100 0101	18.0	720	1050	1110 0000
12.6	504	735	1100 0110	18.1	724	1056	1110 0001
12.7	508	741	1100 0111	18.2	728	1062	1110 0001
12.8	512	747	1100 1000	18.3	732	1067	1110 0001
12.9	516	753	1100 1000	18.4	736	1073	1110 0010
13.0	520	758	1100 1001	18.5	740	1079	1110 0010
13.1	524	764	1100 1001	18.6	744	1085	1110 0010
13.2	528	770	1100 1010	18.7	748	1091	1110 0011
13.3	532	776	1100 1011	18.8	752	1097	1110 0011
13.4	536	782	1100 1011	18.9	756	1103	1110 0011
13.5	540	788	1100 1100	19.0	760	1108	1110 0100
13.6	544	793	1100 1100	19.1	764	1114	1110 0100
13.7	548	799	1100 1101	19.2	768	1120	1110 0100
13.8	552	805	1100 1110	19.3	772	1126	1110 0100
13.9	556	811	1100 1110	19.4	776	1132	1110 0101
14.0	560	817	1100 1111	19.5	780	1138	1110 0101
14.1	564	823	1101 0000	19.6	784	1143	1110 0101
14.2	568	828	1101 0000	19.7	788	1149	1110 0110
14.3	572	834	1101 0001	19.8	792	1155	1110 0110
14.4	576	840	1101 0001	19.9	796	1161	1110 0110
14.5	580	846	1101 0010	20.0	800	1167	1110 0110
14.6	584	852	1101 0010	20.1	804	1173	1110 0111
14.7	588	858	1101 0011	20.2	808	1178	1110 0111
14.8	592	863	1101 0011	20.3	812	1184	1110 0111
14.9	596	869	1101 0100	20.4	816	1190	1110 0111
15.0	600	875	1101 0100	20.5	820	1196	1110 1000
15.1	604	881	1101 0101	20.6	824	1202	1110 1000
15.2	608	887	1101 0101	20.7	828	1208	1110 1000
15.3	612	893	1101 0110	20.8	832	1213	1110 1000
15.4	616	898	1101 0110	20.9	836	1219	1110 1001
15.5	620	904	1101 0110	21.0	840	1225	1110 1001
15.6	624	910	1101 0111	21.1	844	1231	1110 1001
15.7	628	916	1101 0111	21.2	848	1237	1110 1001
15.8	632	922	1101 1000	21.3	852	1243	1110 1010
15.9	636	928	1101 1000	21.4	856	1248	1110 1010
16.0	640	933	1101 1001	21.5	860	1254	1110 1010
16.1	644	939	1101 1001	21.6	864	1260	1110 1010
16.2	648	945	1101 1001	21.7	868	1266	1110 1011
16.3	652	951	1101 1010	21.8	872	1272	1110 1011
16.4	656	957	1101 1010	21.9	876	1278	1110 1011
16.5	660	963	1101 1011	22.0	880	1283	1110 1011
16.6	664	968	1101 1011	22.1	884	1289	1110 1100
16.7	668	974	1101 1011	22.2	888	1295	1110 1100
16.8	672	980	1101 1100	22.3	892	1301	1110 1100
16.9	676	986	1101 1100	22.4	896	1307	1110 1100
17.0	680	992	1101 1101	22.5	900	1313	1110 1100
17.1	684	998	1101 1101	22.6	904	1318	1110 1101
17.2	688	1003	1101 1101	22.7	908	1324	1110 1101
17.3	692	1009	1101 1110	22.8	912	1330	1110 1101
17.4	696	1015	1101 1110	22.9	916	1336	1110 1101