ISSPRO, INC. 2515 N.E. Riverside Way, Portland OR 97211
Telephone: (503) 288-4488 ◆ Toll Free: (800) 888-8065
FAX: (503) 249-2999

ISSPRO 3 3/8" Dia. Programmable Speedometer

Aircore Version

General Information:

Operating Voltage: 11-30 VDC: NOTE – Instrument comes equipped with a 12V lamp. Replace lamp with one of proper voltage when installing instrument on 24V systems.

Input: Magnetic sensor or AC generator

Transient Protection: +100 V, -400 V

Reverse Voltage Protected

Calibration:

The ISSPRO Programmable Speedometer is calibrated (programmed) by setting a combination of eight switches found in the rear of the instrument. The odometer and pointer are electronically linked together and both are calibrated when the switches are properly set. Program before installing. Models are available with and without odometers.

Calibration Procedure:

Calculate the "calibration number" from the appropriate formula below. (A minimum calibration number of 9531 is required to be within calibration range). Refer to the "CALIBRATION SWITCH SETTING" table with this number. Locate the row in which the calibration number is between the limits, then set the switches marked with an "X" to the "on" position (up).

EXAMPLE: Calibration number = 43620: From the table 43620 lies between 43250 and 43900, therefore, switches 1,2,3,6,7 and 8 will be set to "on".

(1) Front wheel mounted tone wheel: **CALIBRATION NUMBER = # SLOTS IN TONE WHEEL X TIRE REVS PER MILE**

(2) Tail Shaft mounted magnetic sensor: **CALIBRATION NUMBER = TIRE REVS PER MILE X DIFFERENTIAL RATION X 16**

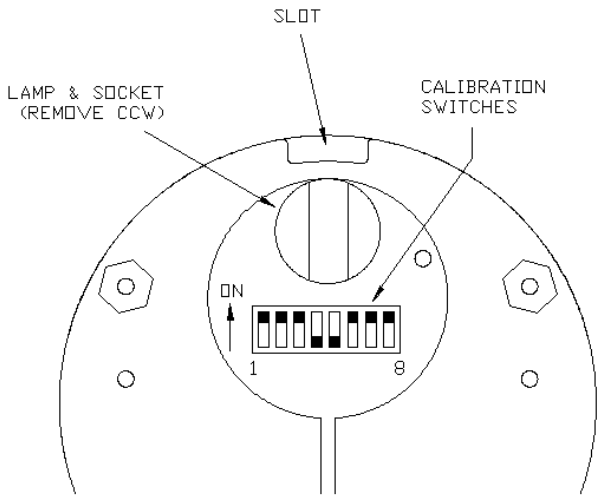
(3) Sender driven from transmission cable drive:

CALIBRATION NUMBER = CABLE TURNS PER MILE (Usually 1000) X PULSES PER SENDER TURN

If the # of cable turns per mile is not known, follow this procedure: Obtain a ratio tester and a correct drive tang for your transmission. With a steel tap measure, mark off 1/10th mile (528 ft.) in as straight of a line as possible. Mark start and stop lines with chalk or paint. Position the vehicle so that one of the wheels aligns with the start mark. Disconnect the speedometer cable at the transmission and install the ratio tester in its place. Secure the cables and reset the ratio tester. Drive the vehicle to the stop point positioning the selected wheel on the stop mark. The reading displayed on the ratio tester is the number of cable turns per mile if using and Engler "SAC-10". If using an SS White ratio tester (P/N 312-12175Y), multiply the reading by 10 to obtain the cable turns per mile.

FREQUENTLY USED SENDERS	**#PULSES PER TURN**
DATCON 4-D-C 71267	8*
DIXSON SG201A, SG201A1, SG202	2*
ENGLER 870-0588	15
ISSPRO R8970, R8940	30
KIENZLE-ARGO 8-161-237008	8*
MOTOROLA 4-100 (7SG100), 4-111 (7SG100B)	30
ROCKWELL 240R02-001	30
SUN Model CP7643	6*
SYNCHRO-START Minigen	30
TELEFLEX 9604276	8*
VDO (Old Style Engler) ISSPRO 300092	4*
ZEMCO 4710	8*
ZEMCO 6314	5*

*NOTE: These senders do not produce the minimum required # of pulses to be in calibration range when driven at 1000 turns per mile. It may be necessary to change your sender to one that generates more pulses per rev such as an ISSPRO R8970.



REAR VIEW OF SPEEDOMETER

INSTALLATION: Mount the speedo in the dash panel and connect the wires as described below:

Make all of your connections to the black plug supplied and then plug it into the speedometer's white connector.

RED – Connect to ignition switched power source.
BLACK – Connect to ground along with one of the sensor wires.
GREEN – Connect to dash lamp power.
WHITE – Connect to other sensor wire.

INSTALLATION:

1.) Bring both sensor wires back to the speedo connector. Don't connect the sensor ground wire to a point which is physically different than the speedometer ground.

2.) **WHEN POWER IS APPLIED, THE NEEDLE SHOULD GO TO THE ZERO POSITION. IF IT DOESN'T, THERE MAY BE A BAD CONNECTION IN THE "HOT" (RED WIRE) OR GROUND WIRE CIRCUIT. CHECK POWER TO THE METER BY MEASURING WITH A VOLTMETER AT THE PLUG (METER LEADS ON THE PINS THAT ATTACH TO THE RED AND BLACK WIRES). IF THERE IS POWER AT THE PLUG, THE PROBLEM IS IN THE GAUGE.**

3.) Low voltage (below 10.5 volts) will cause inaccurate reading. If inaccuracy is suspected, measure voltage with vehicle operating and meter connected. This can be done by connecting a voltmeter to power source (i.e. fuse block, etc.) and/or piercing the red and black wire insulation with the meter leads.

4.) If speedo reads zero, then "jumps" to normal reading after a certain speed adjust the sensor in closer to gear (generators cannot be adjusted).

5.) A bad ground will make the needle erratic.

HINTS:

Finding tire revs per mile:
The best source of finding tire revolutions per mile is by contacting your tire dealer. However, if the information is impossible to get, use the following procedure:

1.) Check the tire revs per mile:
   a. Mark the tire and floor directly below the center of the hub.
   b. Move the vehicle one revolution of the tire and mark the floor corresponding to the mark on the tire.
   c. Measure the distance between the two marks in inches. Use this distance in the formula below to find the tire revs per mile:

63,360 Divided By Measured Distance = Tire Revs Per Mile

2.) After calibration the meter per instructions, if you will find the meter still runs too fast or slow try the calculations below to fine turn calibration:

Drive at a known speed and note the speed indicated on the speedometer. A good way of doing this is by following a vehicle with a calibrated speedometer. Next, with the following formula, use the numbers obtained and the original calibration number to calculate the correct calibration number.

$$\frac{\text{(Old calibration number) X (MPH shown on meter)}}{\text{(Actual MPH)}} = \text{New Calibration number}$$

EXAMPLE:

The vehicle was actually going 55 MPH while the speedometer shows 60 MPH. The meter switches are set for calibration number of 39,847.

$$\frac{39{,}847 \times 60}{55} = 43.469$$

The new calibration number for this meter is 43,469. Refer to calibration chart (pages 3 and 4) and find that switches 1,2,3,6,7 and 8 will be in the "on" position.

The following calibration chart is for use with units that apply to direction sheet #IS073 (3 3/8" Programmable Speedometer Air Core Version.) If you have another application call ISSPRO for the appropriate calibration chart.

Aircore Speedometers - MPH
Calibration Switch Setting

Calibration Number	Switches Set "ON"							
	1	2	3	4	5	6	7	8
67784 – 69378	X	X	X	X	X	X	X	X
66226 – 67783		X	X	X	X	X	X	X
64739 – 66225	X		X	X	X	X	X	X
63314 – 64738			X	X	X	X	X	X
61950 – 63313	X	X		X	X	X	X	X
60646 – 61949		X		X	X	X	X	X
59397 – 60645	X			X	X	X	X	X
58195 – 59396				X	X	X	X	X
57040 – 58194	X	X	X		X	X	X	X
55934 – 57039		X	X		X	X	X	X
54869 – 55933	X		X		X	X	X	X
53842 – 54868			X		X	X	X	X
52852 – 53841	X	X			X	X	X	X
51901 – 52851		X			X	X	X	X
50983 – 51900	X				X	X	X	X
50054 – 50982					X	X	X	X
49157 – 50053	X	X	X	X		X	X	X
48333 – 49156		X	X	X		X	X	X
47536 – 48332	X		X	X		X	X	X
46763 – 47535			X	X		X	X	X
46015 – 46762	X	X		X		X	X	X
45292 – 46014		X		X		X	X	X
44591 – 45291	X			X		X	X	X
43911 – 44590				X		X	X	X
43250 – 43910	X	X	X			X	X	X
42611 – 43249		X	X			X	X	X
41990 – 42610	X		X			X	X	X
41386 – 41989			X			X	X	X
40799 – 41385	X	X				X	X	X
40230 – 40798		X				X	X	X
39676 – 40229	X					X	X	X
39099 – 39675						X	X	X
38537 – 39098	X	X	X	X	X		X	X
38029 – 38536		X	X	X	X		X	X
37534 – 38028	X		X	X	X		X	X
37050 – 37533			X	X	X		X	X
36579 – 37049	X	X		X	X		X	X
36121 – 36578		X		X	X		X	X
35674 – 36120	X			X	X		X	X
35237 – 35673				X	X		X	X
34810 – 35236	X	X	X		X		X	X
34395 – 34809		X	X		X		X	X
33989 – 34394	X		X		X		X	X
33592 – 33988			X		X		X	X
33205 – 33591	X	X			X		X	X
32827 – 33204		X			X		X	X
32457 – 32826	X				X		X	X
32078 – 32456					X		X	X
31707 – 32077	X	X	X	X			X	X
31363 – 31706		X	X	X			X	X
31025 – 31362	X		X	X			X	X
30694 – 31024			X	X			X	X
30370 – 30693	X	X		X			X	X
30053 – 30369		X		X			X	X
29743 – 30052	X			X			X	X
29439 – 29742				X			X	X
29140 – 29438	X	X	X				X	X
28849 – 29139		X	X				X	X
28563 – 28848	X		X				X	X
28282 – 28562			X				X	X
28007 – 28281	X	X					X	X
27737 – 28006		X					X	X
27473 – 27736	X						X	X
27147 – 27472							X	X

Calibration Number	Switches Set "ON"							
	1	2	3	4	5	6	7	8
26827 – 27146	X	X	X	X	X	X		X
26580 – 26826		X	X	X	X	X		X
26337 – 26579	X		X	X	X	X		X
26098 – 26336			X	X	X	X		X
25863 – 26097	X	X		X	X	X		X
25633 – 25862		X		X	X	X		X
25408 – 25632	X			X	X	X		X
25185 – 25407				X	X	X		X
24966 – 25184	X	X	X		X	X		X
24752 – 24965		X	X		X	X		X
24541 – 24751	X		X		X	X		X
24334 – 24540			X		X	X		X
24130 – 24333	X	X			X	X		X
23929 – 24129		X			X	X		X
23732 – 23928	X				X	X		X
23529 – 23731					X	X		X
23329 – 23528	X	X	X	X		X		X
23142 – 23328		X	X	X		X		X
22958 – 23141	X		X	X		X		X
22776 – 22957			X	X		X		X
22597 – 22775	X	X		X		X		X
22421 – 22596		X		X		X		X
22248 – 22420	X			X		X		X
22077 – 22247				X		X		X
21909 – 22076	X	X	X			X		X
21744 – 21908		X	X			X		X
21581 – 21743	X		X			X		X
21421 – 21580			X			X		X
21262 – 21420	X	X				X		X
21107 – 21261		X				X		X
20953 – 21106	X					X		X
20791 – 20952						X		X
20631 – 20790	X	X	X	X	X			X
20485 – 20630		X	X	X	X			X
20340 – 20484	X		X	X	X			X
20197 – 20339			X	X	X			X
20056 – 20196	X	X		X	X			X
19918 –20055		X		X	X			X
19781 – 19917	X			X	X			X
19646 – 19780				X	X			X
19513 – 19645	X	X	X		X			X
19382 – 19512		X	X		X			X
19252 – 19381	X		X		X			X
19124 – 19251			X		X			X
18998 – 19123	X	X			X			X
18874 – 18997		X			X			X
18751 – 18873	X				X			X
18624 – 18750					X			X
18498 – 18623	X	X	X	X				X
18380 – 18497		X	X	X				X
18264 – 18379	X		X	X				X
18149 – 18263			X	X				X
18035 – 18148	X	X		X				X
17923 – 18034		X		X				X
17812 – 17922	X			X				X
17702 – 17811				X				X
17594 – 17701	X	X	X					X
17487 – 17593		X	X					X
17382 – 17486	X		X					X
17278 – 17381			X					X
17174 – 17277	X	X						X
17073 – 17173		X						X
16972 – 17072	X							X
16847 – 16971								X

Aircore Speedometers - MPH
Calibration Switch Setting

Calibration Number	Switches Set "ON"							
	1	2	3	4	5	6	7	8
16724 – 16846	X	X	X	X	X	X	X	
16627 – 16723		X	X	X	X	X	X	
16532 – 16626	X		X	X	X	X	X	
16437 – 16531			X	X	X	X	X	
16344 – 16436	X	X		X	X	X	X	
16252 – 16343		X		X	X	X	X	
16161 – 16251	X			X	X	X	X	
16070 – 16160				X	X	X	X	
15981 – 16069	X	X	X		X	X	X	
15893 – 15980		X	X		X	X	X	
15806 – 15892	X		X		X	X	X	
15720 – 15805			X		X	X	X	
15634 – 15719	X	X			X	X	X	
15550 – 15633		X			X	X	X	
15466 – 15549	X				X	X	X	
15380 – 15465					X	X	X	
15294 – 15379	X	X	X	X		X	X	
15213 – 15293		X	X	X		X	X	
15134 – 15212	X		X	X		X	X	
15054 – 15133			X	X		X	X	
14976 – 15053	X	X		X		X	X	
14899 – 14975		X		X		X	X	
14822 – 14898	X			X		X	X	
14746 – 14821				X		X	X	
14671 – 14745	X	X	X			X	X	
14597 – 14670		X	X			X	X	
14523 – 14596	X		X			X	X	
14450 – 14522			X			X	X	
14378 – 14449	X	X				X	X	
14307 – 14377		X				X	X	
14236 – 14306	X					X	X	
14161 – 14235						X	X	
14087 – 14160	X	X	X	X	X		X	
14018 – 14086		X	X	X	X		X	
13950 – 14017	X		X	X	X		X	
13883 – 13949			X	X	X		X	
13816 – 13882	X	X		X	X		X	
13750 – 13815		X		X	X		X	
13685 – 13749	X			X	X		X	
13620 – 13684				X	X		X	
13556 – 13619	X	X	X		X		X	
13493 – 13555		X	X		X		X	
13430 – 13492	X		X		X		X	
13367 – 13429			X		X		X	
13306 – 13366	X	X			X		X	
13244 – 13305		X			X		X	
13184 – 13243	X				X		X	
13121 – 13183					X		X	
13059 – 13120	X	X	X	X			X	
13000 – 13058		X	X	X			X	
12941 – 12999	X		X	X			X	
12883 – 12940			X	X			X	
12826 – 12882	X	X		X			X	
12769 – 12825		X		X			X	
12713 – 12768	X			X			X	
12657 – 12712				X			X	
12601 – 12656	X	X	X				X	
12547 – 12600		X	X				X	
12492 – 12546	X		X				X	
12438 – 12491			X				X	
12385 – 12437	X	X					X	
12332 – 12384		X					X	
12279 – 12331	X						X	
12214 – 12278							X	

Calibration Number	Switches Set "ON"							
	1	2	3	4	5	6	7	8
12149 – 12213	X	X	X	X	X	X		
12098 – 12148		X	X	X	X	X		
12047 – 12097	X		X	X	X	X		
11997 – 12046			X	X	X	X		
11947 – 11996	X	X		X	X	X		
11898 – 11946		X		X	X	X		
11849 – 11897	X			X	X	X		
11800 – 11848				X	X	X		
11752 – 11799	X	X	X		X	X		
11704 – 11751		X	X		X	X		
11657 – 11703	X		X		X	X		
11610 – 11656			X		X	X		
11563 – 11609	X	X			X	X		
11517 – 11562		X			X	X		
11471 – 11516	X				X	X		
11424 – 11470					X	X		
11376 – 11423	X	X	X	X		X		
11332 – 11375		X	X	X		X		
11287 – 11331	X		X	X		X		
11243 – 11286			X	X		X		
11199 – 11242	X	X		X		X		
11156 – 11198		X		X		X		
11113 – 11155	X			X		X		
11070 – 11112				X		X		
11028 – 11069	X	X	X			X		
10986 – 11027		X	X			X		
10944 – 10985	X		X			X		
10903 – 10943			X			X		
10861 – 10902	X	X				X		
10821 – 10860		X				X		
10780 – 10820	X					X		
10737 – 10779						X		
10694 – 10736	X	X	X	X	X			
10655 – 10693		X	X	X	X			
10616 – 10654	X		X	X	X			
10577 – 10615			X	X	X			
10538 – 10576	X	X		X	X			
10499 – 10537		X		X	X			
10461 – 10498	X			X	X			
10423 – 10460				X	X			
10386 – 10422	X	X	X		X			
10349 – 10385		X	X		X			
10312 – 10348	X		X		X			
10275 – 10311			X		X			
10238 – 10274	X	X			X			
10202 – 10237		X			X			
10166 – 10201	X				X			
10128 – 10165					X			
10091 – 10127	X	X	X	X				
10056 – 10090		X	X	X				
10021 – 10055	X		X	X				
9986 – 10020			X	X				
9952 – 9985	X	X		X				
9918 – 9951		X		X				
9884 – 9917	X			X				
9850 – 9883				X				
9816 – 9849	X	X	X					
9783 – 9815		X	X					
9750 – 9782	X		X					
9717 – 9749			X					
9684 – 9716	X	X						
9652 – 9683		X						
9620 – 9651	X							
9531 – 9619								