

Chapter 19

INDICATORS, ELECTRO-MAGNETIC, THREE POSITION, DOWTY, TYPE C.5175Y

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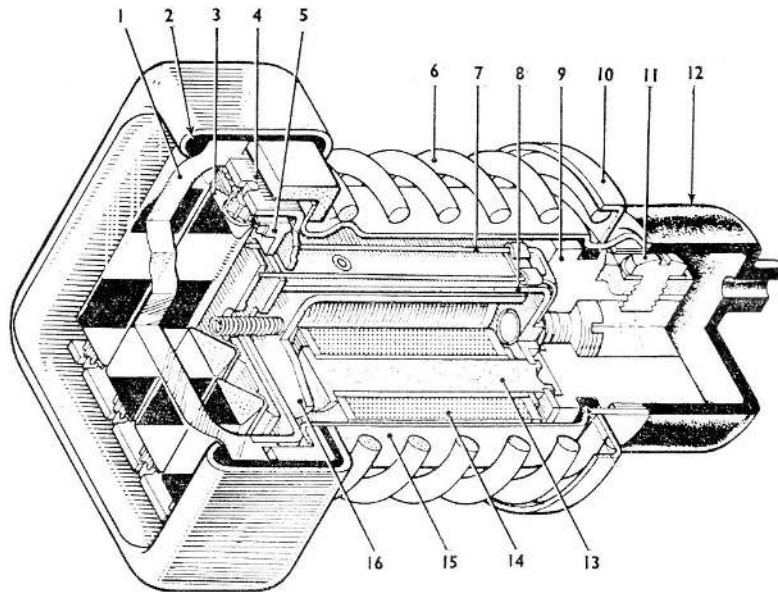
LEADING PARTICULARS

<i>Normal operating voltage</i>	..	28V d.c.
<i>(see note at end of Appendix 1)</i>		
<i>Minimum operating voltage</i>	..	16V d.c.
<i>Coil resistance</i>	437 ± 9 ohms	at 20 deg. C.

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Introduction

1. These three-position electro-magnetic indicators are used in various aircraft electrical services to give a visual indication as to which one of two circuits has been selected or whether both circuits are switched off. The various Marks of indicator are electrically identical and vary only in the markings on the indicator prisms. Details of the markings of the individual indicators are given in Appendix 1 to this chapter.



- | | |
|-------------------|-------------------|
| 1 WINDOW | 9 TERMINAL BLOCK |
| 2 RUBBER SEAL | 10 BAYONET CLIP |
| 3 PRISMS | 11 TERMINAL SCREW |
| 4 TRAY | 12 CABLE GROMMET |
| 5 RACK | 13 COILS |
| 6 MOUNTING SPRING | 14 COILS |
| 7 CONTROL SPRINGS | 15 CASE |
| 8 YOKE | 16 ARMATURE |

Fig. 1. Part sectional view of indicator

DESCRIPTION

2. A part sectional view of the Dowty three-position indicator is shown in fig. 1 while fig. 2 is an installation diagram showing the indicator mounted on a panel. A retaining spring fits over the indicator, between the panel and a bayonet type fixing ring, thus providing a flexible mounting. A key in the top end of the indicator body fits in a slot in the panel to prevent the indicator from rotating.

3. The indicator case encloses two coils wound on soft-iron cores which are fixed to a terminal block carrying three terminals. The windings and cores form electro-magnets which when energized, act upon an iron armature pivoted about the coils.

4. A tray, attached to a fixed yoke, accommodates a rack and four prisms, the teeth of the prisms and rack being always in mesh. The armature and rack are mechanically connected and movement of the armature, due to the energizing of one of the coils, actuates the rack which rotates the prisms and presents the selected signal at the window situated at the viewing end of the case. The prisms return to the normal position under the action of control springs when the coil is de-energized. The coils act independently of one another and actuate the same mechanism but in opposite directions from the neutral position.

5. The unit is completely sealed and weather-proofed, the case being spun over rubber sealing washers. A three-way synthetic rubber grommet fits over the leads and terminal block.

OPERATION

6. The armature, which is normally held central by control springs, is attracted to whichever coil is energized. Movement of the armature causes the rack to slide in the tray thus rotating the prisms. The movement of the rack is such that the prisms are rotated through 120 degrees, thus presenting a new signal surface at the window. The prisms return to the normal position when the coil is de-energized.

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INSTALLATION

7. An installation diagram is shown in fig. 2 and illustrates the method of attaching the indicator to the panel. The panel cutaway should be as shown with the keyway at the top for vertical or sloping panels.

8. If it is desired to fit the indicator from the front of the panel, the following procedure should be adopted:—

(1) Slip the bayonet type fixing ring and spring over the leads.

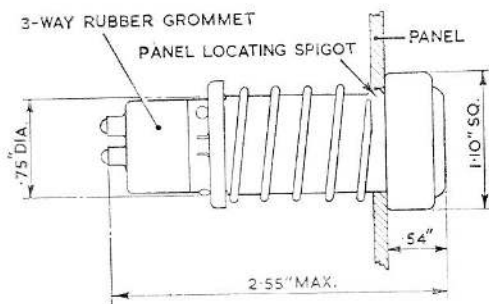


Fig. 2. Installation diagram

(2) Bring the leads out through the panel.

(3) Slip the rubber grommet over the leads and attach the leads to the indicator terminals.

(4) Fit the rubber grommet over the terminals.

(5) Pass the indicator back through the panel and secure the bayonet type ring and spring as shown, making sure that the locating pip is in the keyway.

SERVICING

9. Ensure that the indicator is held securely in position. Check the unit for mechanical damage and fit a new one if necessary. If an indicator fails to operate, it must be removed and a serviceable one fitted in its place. Check that the fluorescent brightness of the white surface is satisfactory by observing that it is clearly visible in dark surroundings.



Fig. 3. Circuit diagram

Appendix 1

DETAILS OF MARKINGS

Dowty C5175Y Mk. No.	Terminals 1 and 3 energized	Indication		Ref. No. 5CZ/
		OFF	Terminals 2 and 3 energized	
1	"OPEN" in black letters on white ground	Black and white cross hatching	"SHUT" in black letters on white ground	5695
1P	"	"	"	6456
2	"ON" in black letters on white ground	Black and white cross hatching	"OFF" in black letters on white ground	5696
2P	"	"	"	6457
3	"ARM" in black letters on white ground	Black and white cross hatching	"CUT" in black letters on white ground	5698
4	"AUTO" in black letters on white ground	Black and white cross hatching	"MAN" in black letters on white ground	5699
5	"ON" in black letters on white ground	Black and white cross hatching	"HIGH" in black letters on white ground	5700
5P	"	"	"	6458
6	"LE" in black letters on white ground	Black ground	"CYC" in black letters on white ground	5701
6P	"	"	"	6459
7	White horizontal line on black ground	Black and white cross hatching	White vertical line on black ground	5518
7P	"	"	"	5971
8	White ground	White ground	"LOW" in black letters on white ground	5702
9	"MAX" in black letters on white ground	Black ground	"MIN" in black letters on white ground	5641
◀ 9P	"	"	"	6532 ▶
10	White L in top RH corner on black ground	Black ground	Diagonal white line on black ground	5703
11	Red ground	Black ground	Blue ground	
12	"F" in red letter on white ground	"OFF" in white letters on black ground	"S" in green letter on white ground	
13	"OPEN" in white letters on black ground	Black ground	"SHUT" in white letters on black ground	6142
13P	"	"	"	6141
14	White upward pointing arrow on black ground	"AUTO" in white letters on black ground	White downward pointing arrow on black ground	5271

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DETAILS OF MARKINGS (*Continued*)

Dowty CS175Y Mk. No.	Terminals 1 and 3 energized	Indication		Ref. No. 5CZ/
		OFF	Terminals 2 and 3 energized	
15	Black ground	Black and white cross hatching	White ground	5908
15P	„	„	„	6406
16	“FWD” in black letters on white ground	Black and white cross hatching	“AFT” in black letters on white ground	
17	“LOW” in black letters on white ground	“NORM” in black letters on white ground	“HIGH” in black letters on white ground	
18	Black upward pointing arrow on white ground	Black ground	Black downward point- ing arrow on white ground	5951
◀ 18P	„	„	„	6531 ▶
19	“OPEN” in black letters on white ground	Black and white cross hatching	Black ground	5447
20	White downward pointing arrow on black ground	Black ground	White upward pointing arrow on black ground	
21	“NORM” in black letters on white ground	Black and white cross hatching	“HOVR” in black letters on white ground	
22	“ON” in black letters on white ground	Black and white cross hatching	“FAIL” in black letters on white ground	7316
23	Black circle on white ground	Black and white cross hatching	“F” in white letter on black ground	
24	White ground	“OFF” in white letters on black ground	Black and white cross hatching	5540
25	“LOW” in black letters on white ground	Black and white cross hatching	“HIGH” in black letters on white ground	6434
26	“UP” in black letters on white ground	Black and white cross hatching	“DOWN” in black letters on white ground	
27	“1” in black figure on white ground	Black ground	“3” in black figure on white ground	
28	“MAX” in black letters on white ground	Black ground	“MIN” in white letters on black ground	
29	“P” in white letter on black ground	White ground	“T” in white letter on black ground	5937
30	“LOW” in black letters on white ground	Black ground	“HIGH” in black letters on white ground	5861
31	Red vertical line on grey ground	Red horizontal line on grey ground	Red vertical line on grey ground	
32	Red ground	Grey ground	Red ground	

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DETAILS OF MARKINGS (Continued)

Dowty C5175Y Mk. No.	Terminals 1 and 3 energized	Indication		Ref. No. 5CZ/
		OFF	Terminals 2 and 3 energized	
33	"NORM" in white letters on black ground	Black ground	"BY/P" in white letters on black ground	
34	"ON" in white letters on black ground	"OFF" in white letters on black ground	Black and white cross hatching	6577
35	"UP" in white letters on black ground	Black and white cross hatching	"NORM" in black letters on white ground	6436
36	"ON" in white letters on black ground	"OFF" in black letters on white ground	Black and white cross hatching	6413
◀ 36P	"	"	"	6414 ▶
37	Red ground	Black and white cross hatching	Green ground	
38	Red ground	Grey ground	Black ground	
39	Red horizontal line on grey ground	Grey ground	Red vertical line on grey ground	
40	"OPEN" in white letters on black ground	Black and white cross hatching	"SHUT" in black letters on white ground	6415
◀ 40P	"	"	"	6416
41	"OPEN" in white letters on green ground	Black and white cross hatching	"SHUT" in white letters on red ground	7117
◀ 41P	"	"	"	▶
42	"OPEN" in white letters on red ground	Black and white cross hatching	"SHUT" in white letters on green ground	
43	"ON" in white letters on red ground	Black and white cross hatching	"OFF" in white letters on green ground	
44	"UP" in white letters on green ground	Black and white cross hatching	"DOWN" in white letters on red ground	
45	"IN" in white letters on green ground	Black and white cross hatching	"OUT" in white letters on red ground	
◀ 45P	"	"	"	▶
46	"FULL" in white letters on green ground	Black ground	"LOW" in white letters on red ground	
47	"OFF" in white letters on red ground	Black and white cross hatching	Black ground	
48	"ON" in white letters on red ground	Black ground		
49	Black ground	"EMPT" in white letters on green ground		
50	"FWD" in white letters on red ground	Black ground	"AFT" in white letters on red ground	
51	Black ground	Black and white cross hatching	"O/H" in black letters on white ground	6086
52	"NORM" in white letters on black ground	Black and white cross hatching	"EMGY" in black letters on white ground	6435

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DETAILS OF MARKINGS (Continued)

Dowty C5175Y Mk. No.	Terminals 1 and 3 energized	Indication		Ref. No. 5CZ/
		OFF	Terminals 2 and 3 energized	
53	"ADF" with arrow beneath pointing from left to right in white letters on green ground	Black ground	"VOR" with arrow beneath pointing from left to right in white letters on green ground	
53P	"	"	"	
54	"TRAN" in white letters on black ground	"FAIL" on black letters on white ground	"OFF" in white letters on black ground	5845
55	"O/H" in white letters on black ground	Black and white cross hatching	"NORM" in white letters on black ground	5902
56	"N" in black letter on white ground	White ground	"R" in black letter on white ground	5921
57	"ON" in white letters on green ground	"OFF" in white letters on black ground	"OUT" in white letters on red ground	
58	"OPEN" in black letters on white ground	Black and white cross hatching	"SHUT" in white letters on black ground	5890
59	Black ground	"OFF" in white letters on red ground	"MEM" in white letters on black ground	
60	Black ground	White ground	"ON" in black letters on white ground	6408
60P	"	"	"	6407
61	"W" in white letter on black ground	White ground	"F" in white letter on black ground	
62	"W" in white letter on black ground	White ground	"R" in white letter on black ground	
63	"OFF" in white letters on black ground	White ground	Black ground	6411
64	"OPEN" in white letters on black ground	"MID" in white letters on black ground	"SHUT" in white letters on black ground	
65	"ON" in black letters on white ground	White ground	"FAIL" in black letters on white ground	
66	"NORM" in white letters on black ground	"FAIL" in black letters on white ground	Black and white cross hatching	6114
67	"NORM" in white letters on black ground	"BYP" in black letters on white oblong with black and white cross hatching ground	"REFL" in black letters on white ground	
67P	"	"	"	5972
68	"NORM" in white letters on black ground	Black and white cross hatching	"REFL" in black letters on white ground	
68P	"	"	"	5973

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DETAILS OF MARKINGS (Continued)

Dowty CS175Y Mk. No.	Terminals 1 and 3 energized	Indication		Ref. No. 5CZ/
		OFF	Terminals 2 and 3 energized	
69	"SHUT" in white letters on black ground	Black and white cross hatching	"OPEN" in black letters on white ground	5981
69P	"	"	"	5974
70	White vertical line with upward pointing arrow- head on black ground	Black and white cross hatching	White vertical line on black ground	
70P	"	"	"	5975
71	"IN" in white letters on black ground	Black and white cross hatching	"OUT" in black letters on white ground	5976
◀ 71P	"	"	"	7118 ▶
72	"NORM" in white letters on black ground	Black and white cross hatching	"O/HT" in black letters on white ground	5982
72P	"	"	"	5977
73	Black ground	Black ground	"ICE" in black letters on white ground	
73P	"	"	"	5978
74	"ON" in white letters on black ground	Black and white cross hatching	"RELS" in black letters on white ground	5979
75	"ON" in white letters on black ground	"OFF" in black letters on white ground	Black ground	
75P	"	"	"	5980
76	"UP" in white letters on black ground	"MID" in white letters on black ground	"DOWN" in white letters on black ground	
77	"DOWN" in white letters on black ground	Red upward pointing arrow on white ground	"UP" in black letters on white ground	
78	"ADF 1" in white letters with red fluorescent arrow beneath pointing from right to left on black ground	Black ground	"VOR 1" in white letters with red fluorescent arrow beneath pointing from right to left on black ground	7102
79	"ADF 2" in white letters with green fluorescent arrow beneath pointing from left to right on black ground	Black ground	"VOR 2" in white letters with green fluorescent arrow beneath pointing from left to right on black ground	7103
80	"OPEN" in white letters on black ground	Black and white cross hatching	"SHUT" in white letters on black ground	
◀ 80P	"	"	"	7247 ▶
81	"OUTr" in white letters on black ground	"OFF" in white letters on black ground	"INNR" in white letters on black ground	6123

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DETAILS OF MARKINGS (Continued)

Dowty C5175Y Mk. No.	Terminals 1 and 3 energized	Indication		Ref. No. 5CZ/
		OFF	Terminals 2 and 3 energized	
82	"NORM" in white letters on green ground	"OFF" in white letters on black ground	"O/H" in black letters on on white ground	
83	"1" in black figure on white ground	Black and white cross hatching	"2" in black figure on white ground	
83P	"	"	"	6025
84	"3" in black figure on white ground	Black and white cross hatching	"4" in black figure on white ground	
84P	"	"	"	6026
85	"VOR" in white letters on black ground	Black ground	"ILS" in white letters on black ground	6800
86	Red vertical line on grey ground	Red horizontal line on grey ground	Grey ground	
87	"RUN" in white letters on black ground	Black and white cross hatching	"CUT" in white letters on black ground	6018
88	Black ground	"OFF" in black letters on red ground	"M" in black letter on yellow ground	
89	"RAD 1" in white letters on black ground	Black ground	"RAD 2" in white letters on black ground	
90	"ALTR" in black letters on white ground	Black and white cross hatching	"RECT" in black letters on white ground	6455
91	Red horizontal line with arrowhead pointing to left on light grey ground	Light grey ground	Red vertical line on light grey ground	
92	Red horizontal line with two outward pointing arrowheads on light grey ground	Light grey ground	Red vertical line on light grey ground	
93	Red ground	Light grey ground	Black ground	
94	"L1" in white letters on brilliant green ground	Red ground	"L2" in white letters on brilliant green ground	
95	Traffic yellow ground	Light grey ground	Brilliant green ground	
96	"ARM" in black letters on white ground	Black ground	White ground	6579
97	Black ground	"ICE" in black letters on white ground	Black ground	
98	"START" in white letters on black ground	Black and white cross hatching	"NORM" in white letters on black ground	

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DETAILS OF MARKINGS (Continued)

Dowty C5175Y Mk. No.	Terminals 1 and 3 energized	Indication		Ref. No. 5CZ/
		OFF	Terminals 2 and 3 energized	
99	"FULL" in white letters on black ground	"EMPTY" in white letters on black ground	"LOW" in white letters on black ground	
100	"UP" in white letters on black ground	Black and white cross hatching	"DOWN" in white letters on black ground	6405
101	"OPEN" in red letters on white ground	"MID" in red letters on white ground	"SHUT" in red letters on white ground	
102	Red reversed L in top LH corner on white ground	White ground	Red L in top RH corner on white ground	
103	"IN" in white letters on black ground	"OUT OF" in white letters on black ground	"IN" in white letters on black ground	
104	"IN" in white letters on black ground	"OUT" in white letters on black ground	"IN" in white letters on black ground	
105	"FROM" in white letters on black ground	"SHUT" in white letters on black ground	"TO" in white letters on black ground	
106	White vertical line on black ground	White horizontal line on black ground	Black ground	
107	"ON" in white letters on black ground	Black and white cross hatching	"HIGH" in white letters on black ground	
108	White ground	Black ground	White ground	
109	White horizontal line on black ground	White vertical line on black ground	Black ground	
110	"A" in black letter on white ground	"OFF" in black letters on white ground	"B" in black letter on white ground	
111	"OUTR" in white letters on black ground	White ground	"INNER" in white letters on black ground	
112	Black and white cross hatching	Black ground	White ground	
113	"H" in white letter on black ground	"S" in white letter on black ground	"L" in white letter on black ground	

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DETAILS OF MARKINGS (*Continued*)

Dowty C5175Y Mk. No.	Terminals 1 and 3 energized	Indication		Ref. No. 5CZ/
		OFF	Terminals 2 and 3 energized	
114	"OFF" in black letters on white ground	"TRIP" in white letters on red ground	"ON" in black letters on white ground	
115	"GYRO" in white letters on black ground	Black and white cross hatching	"SINS" in white letters on black ground	
116	"IN" in white letters on black ground	Black and white cross hatching	"OUT" in white letters on black ground	
117	"LOG" in white letters on black ground	Black and white cross hatching	"DMY" in white letters on black ground	
118	"ELEC" in white letters on black ground	"EMGY" in white letters on black oblong with black and white cross hatching ground	"HYD" in white letters on black ground	
119	"MAIN" in white letters on black ground	"VITL" in white letters on black oblong with black and white cross hatching ground	"VITL" in white letters on black ground	
◀ 159	"INNER" in black letters on white ground	Black	"OUTR" in black letters on white ground	7318
179	White horizontal line on black background	White vertical line on black background	Black and white cross hatching, with white horizontal line across centre	7307 ▶

Note . . .

Indicators with no suffix are for 28V systems, e.g. C.5175 Y Mk. 1.

Indicators with a suffix A are for 12V systems, e.g. C.5157 Y Mk. 1A.

Indicators with a suffix B are required to operate at 9G, e.g. C.5175 Y Mk. 1B.

Indicators with a suffix P are for use on plasteck lighting panels, e.g. C.5175 Y Mk. 1P.

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