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CONNECTORS, HELLERMANN DEUTSCH, DD

MINIATURE SERIES

GENERAL AND TECHNICAL INFORMATION

BY COMMAND OF THE DEFENCE COUNCIL

I.T. Dunnett

Ministry of Defence

FOR USE IN THE
ROYAL NAVY
ROYAL AIR FORCE

(Prepared by the Ministry of Technology)

AMENDMENT RECORD SHEET

To record the incorporation of an Amendment List in this publication, sign against the appropriate A.L.No. and insert the date of incorporation

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LIST OF CHAPTERS

Chapter 1

HELLERMAN DEUTSCH, DD MINIATURE SERIES

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ILLUSTRATIONS

TABLES

LEADING PARTICULARS

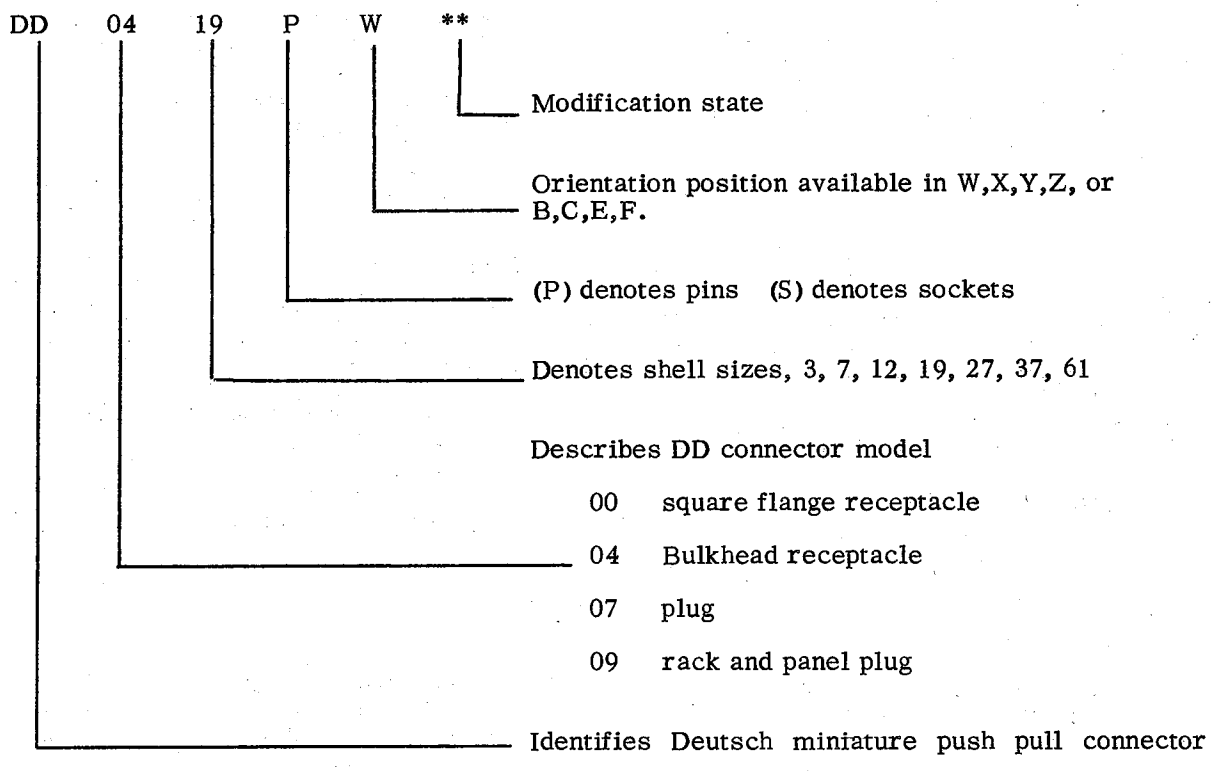
Current rating	Size 20 contacts 7·5A Size 16 contacts 25A Size 12 contacts 40A
Voltage rating	500V d.c. working 900V a.c. working
Contact detail	Beryllium copper gold plated
Contact resistance	Size 20 contact 15 millivolt drop at 7·5A Size 16 contact 21 millivolt drop at 25A
Temperature range...	-55°C to 150°C
Lubricant	MS4 Ref. No. 33C/9424829

INTRODUCTION

1. Connectors in the Hellerman Deutsch DD miniature range have special fluorinated silicone inserts; are interchangeable with DS, MDS, MDR and DM series connectors and meet all requirements of MIL-C-26482.

SIGNIFICANCE OF CODE NUMBERS

2.



DESCRIPTION

SQUARE FLANGE

3.

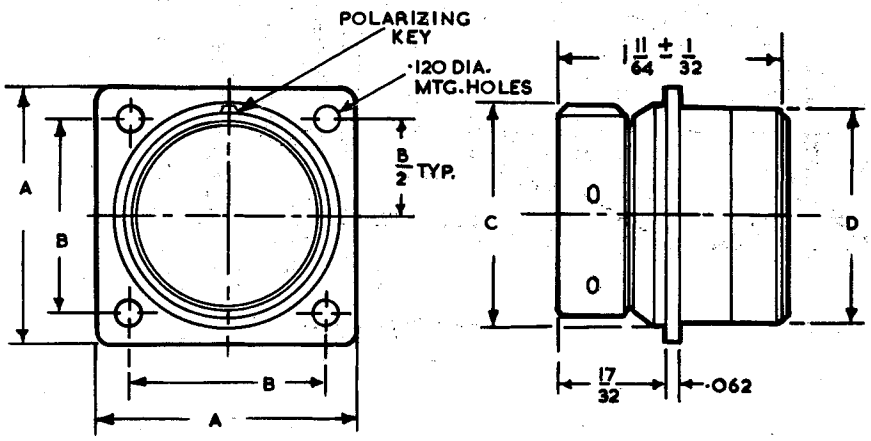


Fig. 1. Square flange

TABLE 1

Dimension of square flange

PART NO.	A	B	C	D
DD00 - 3 P S	7/8	0·625	9/16	39/64
DD00 - 7 P S	1	0·719	43/64	11/16
DD00 - 12 P S	1 3/32	0·812	13/16	13/16
DD00 - 19 P S	1 3/16	0·906	15/16	15/16
DD00 - 27 P S	1 9/32	0·968	1 1/8	1 3/32
DD00 - 37 P S	1 7/16	1·187	1 1/4	1 1/4
DD00 - 61 P S	1 25/32	1·437	1 9/16	1 9/16

SINGLE HOLE MOUNTING

4.

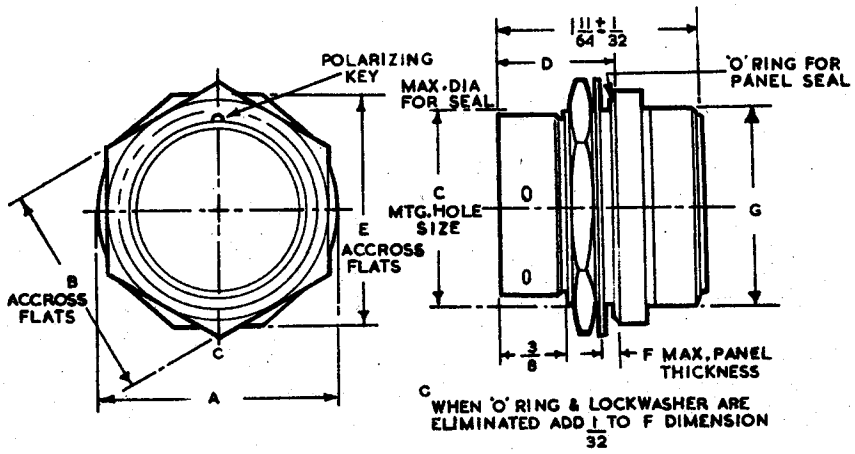


Fig. 2. Single hole mounting

TABLE 2

Dimensions of single hole mounting

PART NO.	A	B	C $^{+0\cdot020}_{-0\cdot005}$	D	E	F	G
DD 04 - 3 $^{P}_{S}$	$\frac{3}{4}$	$\frac{5}{8}$	0·571	$\frac{39}{64}$	0·750	$\frac{1}{16}$	$\frac{39}{64}$
DD 04 - 7 $^{P}_{S}$	$\frac{7}{8}$	$\frac{13}{16}$	0·696	$\frac{21}{32}$	0·875	$\frac{3}{32}$	$\frac{11}{16}$
DD 04 - 12 $^{P}_{S}$	$1\frac{1}{16}$	$\frac{15}{16}$	0·818	$\frac{21}{32}$	1·062	$\frac{3}{32}$	$\frac{13}{16}$
DD 04 - 19 $^{P}_{S}$	$1\frac{3}{16}$	$1\frac{1}{16}$	1·010	$\frac{21}{32}$	1·156	$\frac{3}{32}$	$\frac{15}{16}$
DD 04 - 27 $^{P}_{S}$	$1\frac{5}{16}$	$1\frac{1}{4}$	1·135	$\frac{21}{32}$	1·312	$\frac{3}{32}$	$1\frac{3}{32}$
DD 04 - 37 $^{P}_{S}$	$1\frac{1}{2}$	$1\frac{3}{8}$	1·260	$\frac{21}{32}$	1·420	$\frac{3}{32}$	$1\frac{1}{4}$
DD 04 - 61 $^{P}_{S}$	$1\frac{7}{8}$	$1\frac{3}{4}$	1·630	$\frac{47}{64}$	1·849	$\frac{3}{32}$	$1\frac{9}{16}$

PLUG PUSH PULL

5.

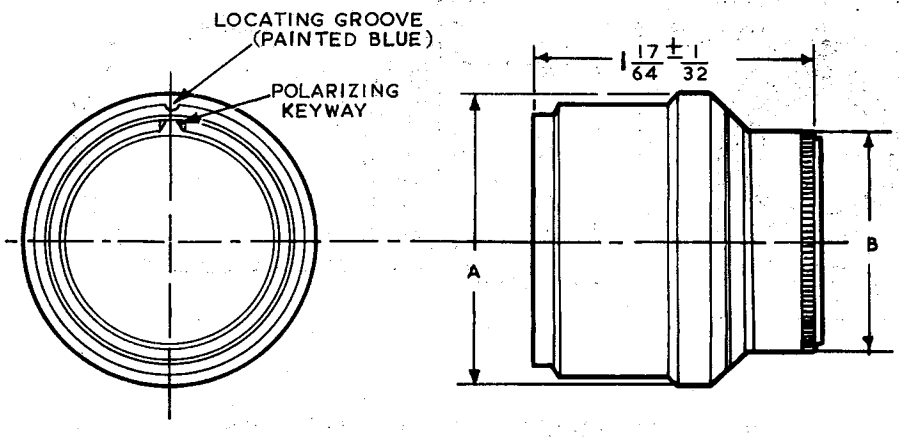


Fig. 3. Push pull plug

TABLE 3

Dimensions of plug push pull

PART NO.	A-MAX	B
DD 07 - 3 P S	0·806	39/64
DD 07 - 7 P S	0·938	11/16
DD 07 - 12 P S	1·061	13/16
DD 07 - 19 P S	1·246	15/16
DD 07 - 27 P S	1·424	1 3/32
DD 07 - 37 P S	1·559	1 1/4
DD 07 - 61 P S	1·866	1 9/16

6.

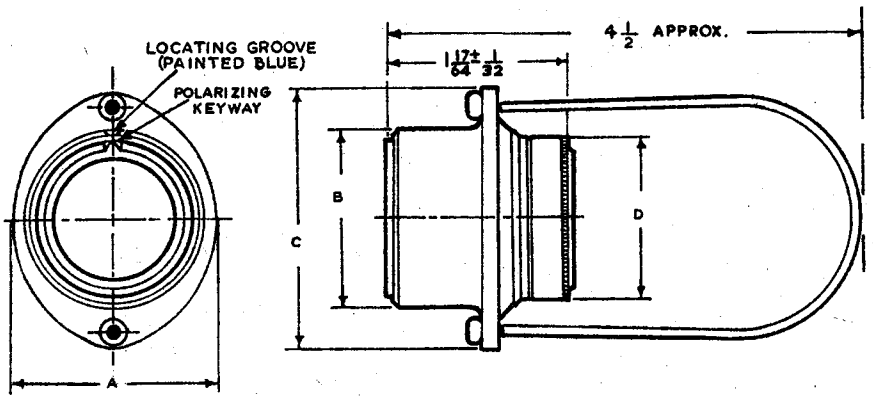


Fig. 4. Push pull plug with heavy duty lanyard

TABLE 4

Dimensions of plug push pull type, with heavy duty lanyard

PART NO.	A	B	C	D
12942 - 3 P S	29/32	23/32	1 1/4	39/64
12942 - 7 P S	1 3/64	55/64	1 13/32	11/16
12942 - 12 P S	1 5/32	1	1 33/64	13/16
12942 - 19 P S	1 5/16	1 9/64	1 43/64	15/16
12942 - 27 P S	1 15/32	1 19/64	1 13/16	1 3/32
12942 -37 P S	1 19/32	1 7/16	1 29/32	1 1/4
12942 - 61 P S	1 7/8	1 3/4	2 7/32	1 9/16

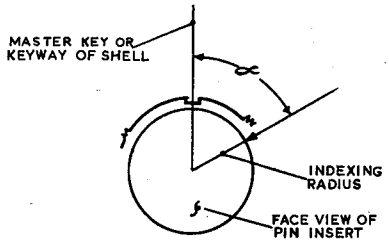
ORIENTATION FEATURES

Insert orientations W, X, Y, B and C

7. In the insert orientations fig. 5 the pin insert is rotated clockwise relative to the main polarizing key or keyway as indicated. The socket insert would thus be rotated counter-clockwise the same number of degrees. All the inserts arrangements fig. 5 and 6 show the mating face of the pin insert in the normal position.

PROTECTIVE CAPS

8.



INSERT ARRANGE	INSERT POSITION DEGREES						
	NORMAL	W	X	Y	Z	B	C
-37	0°	25°	50°	75°	[illegible]	150°	225°
-37-2	0°	SHOWN FOR REFERENCE ONLY, FOR ACTUAL CLOCKING POSITION SEE INDIVIDUAL INSERT ARRANGEMENT SHEETS				150°	225°
-3719	0°	[illegible]	50°	75°	100°	150°	225°

Fig. 5. Insert orientation

TABLE 5

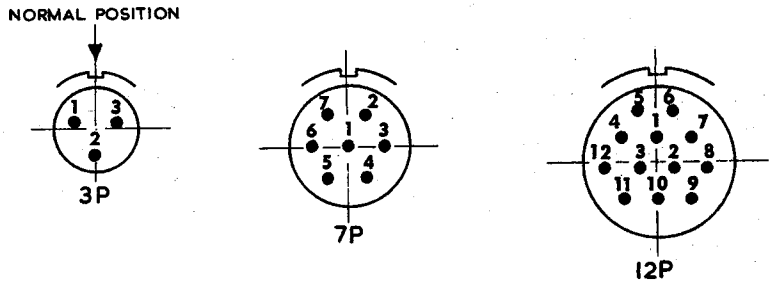
Orientation arrangements

Insert Arr. No.	Insert position degrees W	X	Y	B	C
3	b	b	75	b	b
7	b	b	b	130	b
12	15	50	75	150	225
19	b	b	75	150	225
27	25	50	75	150	225
37	a	a	75	150	225
61	a	a	75	150	225

Note . . .
a. Special order only
b. Not available in this orientation

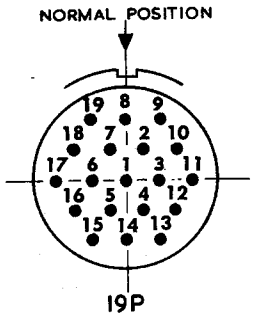
SHELL SIZES 3.7. 12.

INSERT ARR. NO.	CONTACT SIZE			
	20	16	12	$C_{O_{Ax}}$
3	3			
7	7			
12	12			



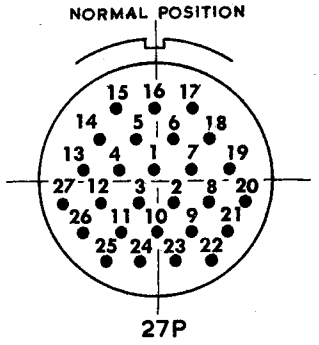
SHELL SIZE 19.

INSERT ARR. NO.	CONTACT SIZE			
	20	16	12	$C_{O_{Ax}}$
19	19			



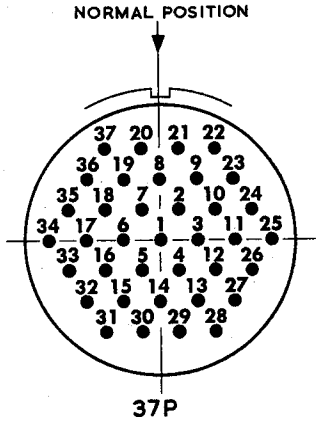
SHELL SIZE 27.

INSERT ARR. NO.	CONTACT SIZE			
	20	16	12	$C_{O_{Ax}}$
27	27			



SHELL SIZE 37.

INSERT ARR. NO.	CONTACT SIZE			
	20	16	12	$C_{O_{Ax}}$
37	37			



SHELL SIZE 61.

INSERT ARR. NO.	CONTACT SIZE			
	20	16	12	$C_{O_{Ax}}$
61	61			

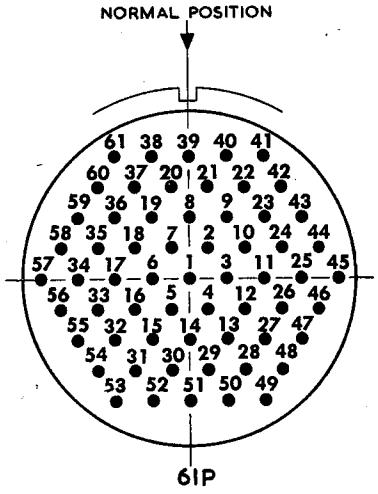


Fig. 6. Insert arrangements and contact size

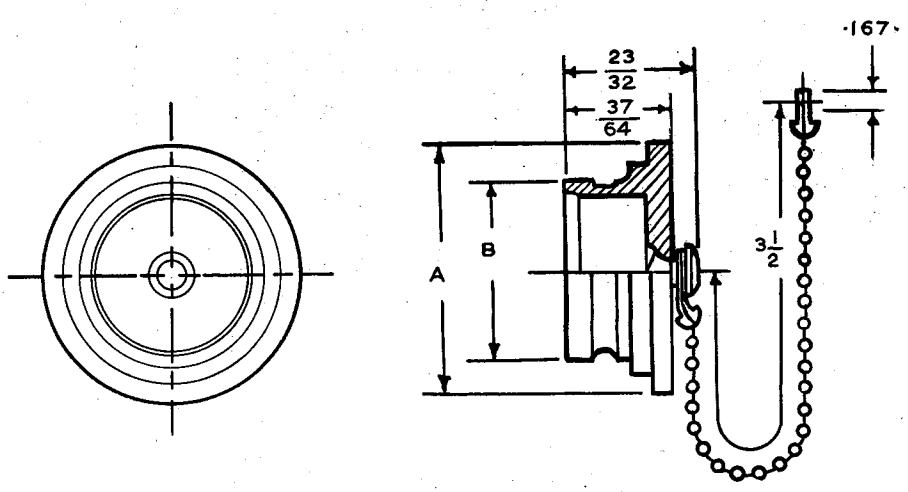


Fig. 7. Protective cap for socket contacts

TABLE 6

Protective caps for use with socket contacts

CONNECTOR SIZE	A	B	WT. IN LBS.
DM9701 - 3A	$\frac{23}{32}$	0•435	0•0141
DM9701 - 7A	$\frac{7}{8}$	0•570	0•0167
DM9701 - 12A	$1\frac{1}{16}$	0•704	0•0216
DM9701 - 19A	$1\frac{3}{16}$	0•843	0•0262
DM9701 - 27A	$1\frac{11}{32}$	1•000	0•0331
DM9701 - 37A	$1\frac{1}{2}$	1•120	0•0361
DM9701 - 61A	$1\frac{7}{8}$	1•408	0•0554

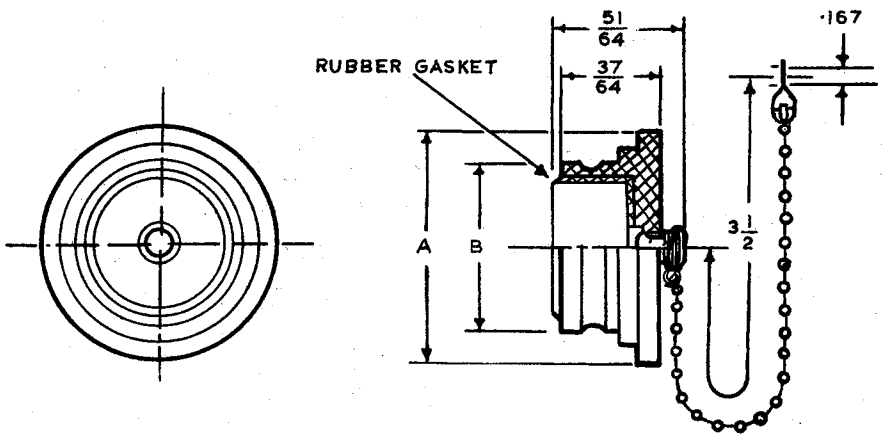


Fig. 8. Protective cap for pin contacts

TABLE 7

Protective cap for use with pin contacts

PART NO.	A	B	WT. IN LBS.
DM 9701 - 3B	$\frac{23}{32}$	0·435	0·0160
DM 9701 - 7B	$\frac{7}{8}$	0·570	0·2404
DM 9701 - 12B	$1\frac{1}{16}$	0·704	0·0264
DM 9701 - 19B	$1\frac{3}{16}$	0·843	0·0319
DM 9701 - 27B	$1\frac{11}{32}$	1·000	0·0404
DM 9701 - 37B	$1\frac{1}{2}$	1·120	0·0482
DM 9701 - 61B	$1\frac{7}{8}$	1·408	0·0730

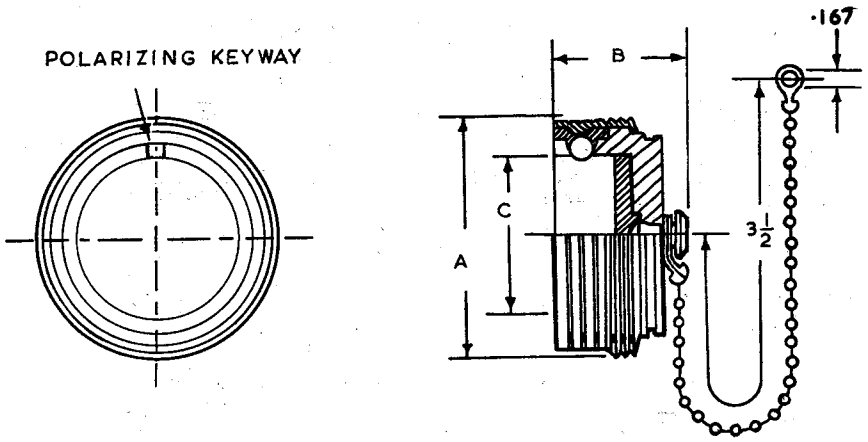


Fig. 9. Protective cap without retaining ring

TABLE 8

Protective cap without retaining ring

CONNECTOR NO.	A	B MAX.	C ±0•010	WT. IN LBS.
DM 9605 - 3A	$\frac{23}{32}$	$\frac{25}{32}$	0•440	0•0201
DM 9605 - 7A	$\frac{29}{32}$	$\frac{45}{64}$	0•579	0•0244
DM 9605 - 12A	$1\frac{1}{16}$	$\frac{25}{32}$	0•715	0•0306
DM9605 - 19A	$1\frac{3}{16}$	$\frac{45}{64}$	0•856	0•0347
DM 9605 - 27A	$1\frac{23}{64}$	$\frac{25}{32}$	1•009	0•0455
DM 9605 - 37A	$1\frac{1}{2}$	$\frac{45}{64}$	1•129	0•0496
DM 9605 - 61A	$1\frac{13}{16}$	$\frac{25}{32}$	1•418	0•0738

9.

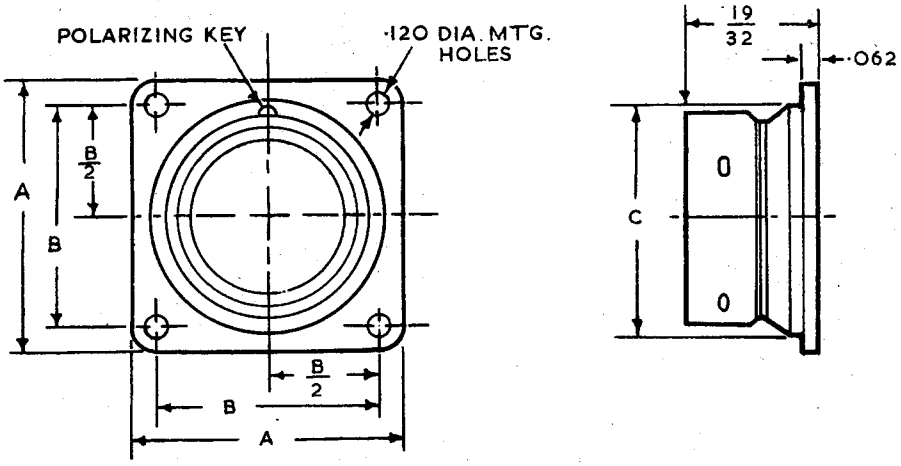


Fig. 10. Dummy stowage square flange type

TABLE 9

Dummy stowages square flange type

PART NO.	A	B	C
14090 - 3	$\frac{7}{8}$	0•625	$\frac{9}{16}$
14090 - 7	1	0•719	$\frac{43}{64}$
14090 - 12	$1\frac{3}{32}$	0•813	$\frac{13}{16}$
14090 - 19	$1\frac{3}{16}$	0•906	$\frac{15}{16}$
14090 - 27	$1\frac{9}{32}$	0•968	$1\frac{1}{8}$
14090 - 37	$1\frac{7}{16}$	1•187	$1\frac{1}{4}$
14090 - 61	$1\frac{25}{32}$	1•437	$1\frac{9}{16}$

CRIMPING TOOLS

10. The approved crimping tool will be required for the DD series contacts which is given in Table 10.

TABLE 10

Tools

Ref. No.	Description	Contact size
1H/279	Crimp tool	
1H/414	Locator	20
1H/415	Locator	16
1H/530	Insertion tool	20
1H/424	Insertion tool	16
1H/426	Removal tool	20
1H/427	Removal tool	16

CONTACTS

11. The contacts are of a high grade conductive material and are gold plate; they are available in two sizes, 20 for 7·5A rating and 16 for 25A rating. Contacts are inserted into the connector after wiring and can easily be removed using the appropriate tool listed in Table 10.

PRESSURE SEAL

12. The sealing effect of the assembled connector ensures that the maximum leakage rate through the seal at 30 lb/in^2 differential is 1 c.c./hr.

FILLER PLUGS

13. It is necessary to assemble all contacts even though they may not be connected to conductors. For the unconnected contacts filler plugs of the appropriate size are pressed into the insulator by hand pressure behind the contact; they can be removed when required using the appropriate ejector tool Table 10. Filler plugs are supplied in two sizes for the size 16 and 20 contacts (Table 11).

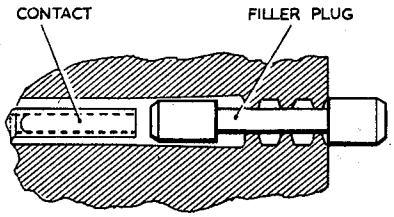


Fig. 11. Filler plug in rear of DD insert

TABLE 11

Contacts and filler plugs

Ref. No.	Pt. No.	Description	Remarks
	0004-135-000	Contact	Pin size 20
	0007-044-000	Contact	Socket size 20
	0004-065-000	Contact	Pin size 16
	0007-013-000	Contact	Pin size 20
	0143-013-000	Contact retention clip	Contact size 20
	0143-004-000	Contact retention clip	Contact size 16
	419206	Filler plug	Socket and pin size 20
	4113-3-1601	Filler plug	Socket and pin size 16

ASSEMBLY INSTRUCTIONS

PREPARATION OF CONDUCTOR

14. Stripping length is to be between $\frac{3}{16}$ in. and $\frac{7}{32}$ in.

CONTACT CRIMP (PIN OR SOCKET)

15. (1) Check the correct crimping tool setting for contact, also the correct locator Table 10.

(2) Drop contact into crimping tool and insert the prepared end of conductor into the back of the contact.

(3) Depress the crimping tool level, the crimping tool will not release until the crimping cycle has been completed.

(4) Check the inspection hole at contact end of crimp to ensure that the cable is correctly located. The depression allows check on length of conductor crimped fig. 12.

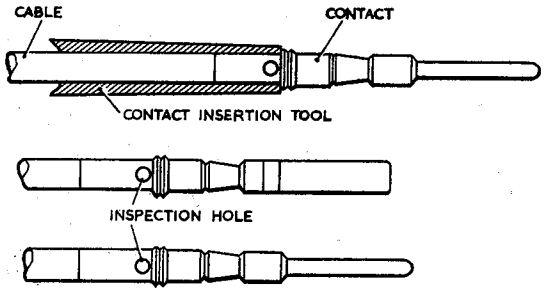


Fig. 12. Insertion detail

CONTACT INSERTION (PIN OR SOCKET)

16. (1) Check correct insertion tool for size of contact Table 10.

(2) Apply insertion tool to crimped contact and cable ensuring that the end of the insertion tool is butted against the shoulder of the contact fig. 12.

(3) Push the insertion tool, contact and cable straight into the rear face of connector insert cavity until the contact snaps into its retained position.

(4) Pull insertion tool straight back out of connector insert.

(5) A light pull on the cable will verify that the contact is in its retained position. If the contact is not retained it must be completely removed from the connector insert b e f o r e reapplication of the insertion tool.

(6) Slide the follower along cables and into position over rear of insert. Screw up retaining nut. Contacts should be fitted even if left unwired.

Note . . .
Under no circumstances must an insertion tool be applied to a partially inserted contact.

CONTACT REMOVAL (PIN OR SOCKET)

17. (1) Check correct contact removal tool for size of contact Table 10.

(2) Slide the removal tool tube towards the tool handle.

(3) Centre the removal tool probe on the selected contact but do not apply pressure on the probe.

(4) Slide the removal tool tube, by moderate finger pressure into the mating face of connector insert fig. 13.

(5) Maintain finger pressure on the removal tool tube and steadily apply pressure by palm of hand to the removal tool probe, until contact unseats from the retaining spring clip.

(6) If the contact fails to release, pull the removal tube free, rotate the tool and repeat the procedure.

(7) Pull the contact free of rear insert cavity and remove tool from mating face cavity.

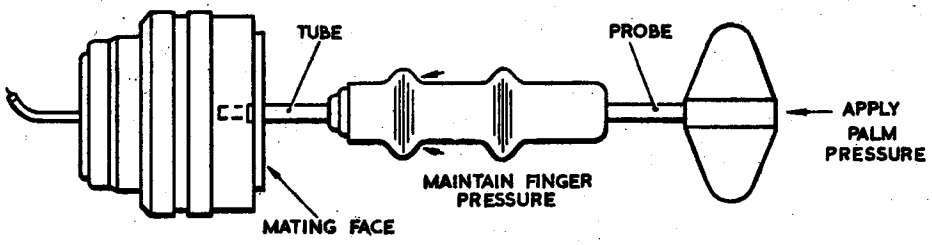


Fig. 13. Removal detail

CONTACT RETENTION

18. Each contact must withstand a minimum of 15 lb. pull.

Note . . .
All tools must be periodically examined for wear or damage.

RETAINING CLIP REMOVAL

19. (1) Check correct clip removal tool for size of contact Table 10.

(2) Insert the clip insertion tool into rear face of selected cavity, push the tool with moderate pressure as far as possible.

(3) Place the plunger of clip probe over the pin end of clip insertion tool from the mating face of the connector.

(4) Slide the sleeve of clip probe, with moderate finger pressure over the plunger until the ears of the spring clip are depressed.

(5) Maintain the finger pressure.

(6) Apply pressure by palm of hand to handle of clip removal probe until the clip appears at rear face of connector.

(7) Remove both tools and discard clip.

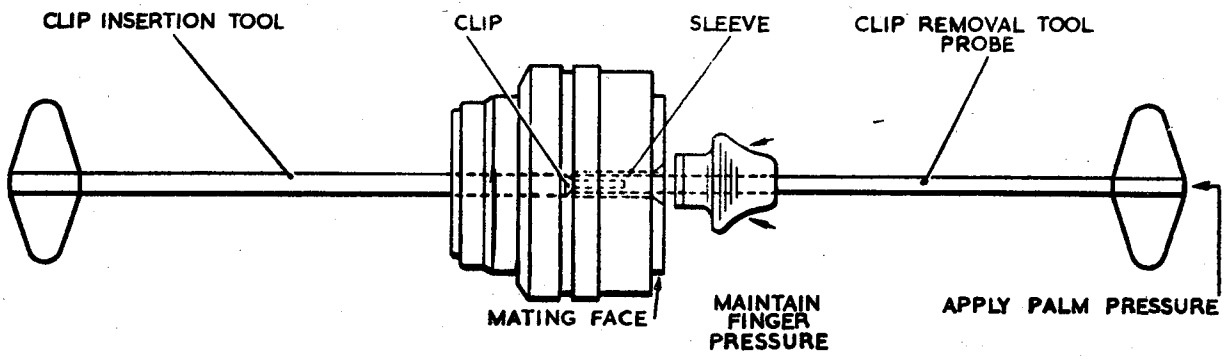


Fig. 14. Retaining clip removal

RETAINING CLIP INSERTION

20. (1) Check correct clip insertion tool for size of contact Table 10.

(2) Press clip into sleeve until clip ears are compressed fig. 15.

(3) Pass the square end of holder cup through other end of sleeve and over the compressed ears of the retaining clip.

(4) Remove sleeve over tapered end of holder cup.

(5) Apply insertion tool to retaining clip held in holder cup.

(6) Push insertion tool complete with retaining clip and holder cup from rear face of connector straight into selected cavity, until the clip is in retained position.

(7) Remove holder cup from mating face of connector.

(8) Remove insertion tool from rear face of connector.

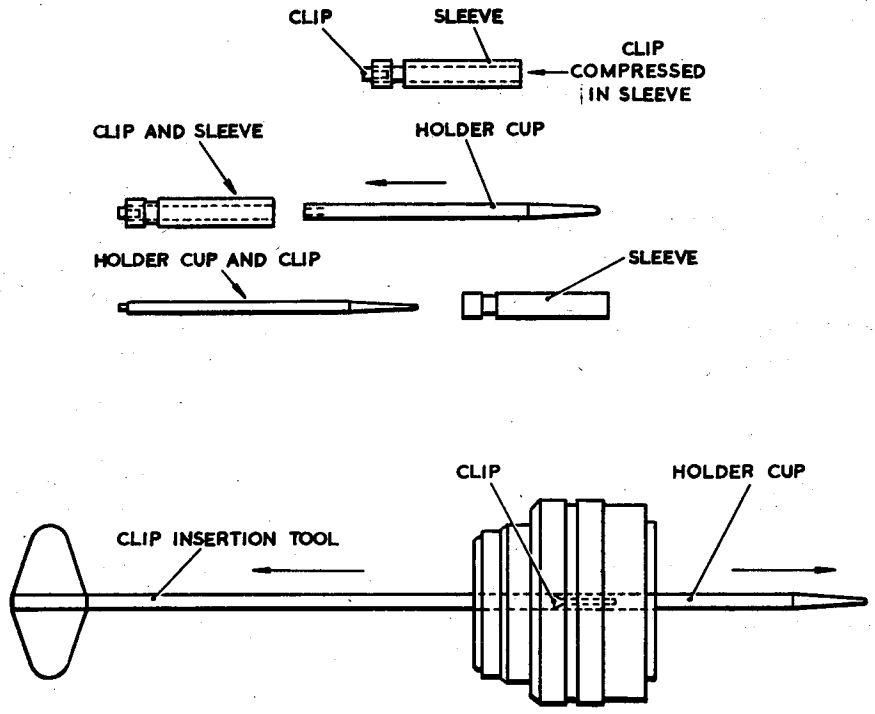


Fig. 15. Retaining clip insertion