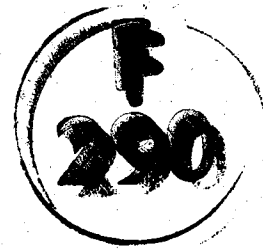


AIR PUBLICATION

113D-1804-1

CANNON CONNECTORS TYPE DPA



GENERAL AND TECHNICAL INFORMATION

BY COMMAND OF THE DEFENCE COUNCIL

J. 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

1. Cannon connectors Type DPA

Chapter 1

CANNON CONNECTORS TYPE DPA

CONTENTS

	Page		Page
<i>Introduction</i>	2	<i>Significance of code numbers</i>	5
Description	2	<i>Type A size 20 crimped contacts</i>	7
<i>DPA connector</i>	2	Instructions for use	7
<i>DPAF (float mount shell)</i>	2	<i>Crimping tools</i>	7
<i>DPAH (hermetically sealed version)</i>	2	<i>Wiring connectors</i>	7
<i>DPAL (large flange shell)</i>	2	<i>Crimping</i>	8
<i>Cable clamps</i>	2	<i>Insertion of size 20 crimped contacts into</i>	
<i>Protective caps</i>	2	<i>insulator</i>	8
DPA solder pot termination	2	<i>Removal of size 20 crimped contacts from</i>	
<i>Significance of code numbers</i>	2	<i>insulator</i>	8
DPAMA crimped version	5	<i>Panel mounting</i>	8

TABLES

No.	Page	No.	Page
1 <i>DPA contact variations</i>	4	6 <i>Coax cable cross references</i>	13
2 <i>DPA snap in coax part numbers and tools</i>	5	7 <i>DPA and DPAMA part numbers and refer-</i>	
3 <i>DPAMA contact variations</i>	7	<i>ence numbers</i>	13
4 <i>DPAMA coax part numbers and tools</i>	7		
5 <i>Stripping lengths for stand and crimped</i>			
<i>contacts</i>	7		

ILLUSTRATIONS

Fig.	Page	Fig.	Page
1 <i>DPA standard connector</i>	2	7b <i>DPA coax contact stripping instructions for</i>	
2 <i>DPA contact arrangements</i>	4	<i>termination code 3</i>	10
3 <i>DPA coax contact terminations</i>	4	7c <i>DPA coax contact stripping instructions for</i>	
4 <i>DPAMA crimped connector</i>	6	<i>termination code 11 and 6</i>	10
5 <i>DPAMA contact arrangements</i>	6	8 <i>DPAMA coax contact stripping instructions</i>	11
6 <i>DPAMA coax contact terminations</i>	6	9 <i>Panel mounting instructions and accessories</i>	12
7a <i>DPA coax contact stripping instructions for</i>			
<i>termination codes 1,2,4,7,8 and 9</i>	9		

Introduction

1. The Cannon DPA connectors are distinguished in the Cannon range by their rectangular shape. The standard insulator material is Melamine. The DPA range of connectors can accommodate up to 32 copper alloy contacts with solder pot termination.
2. A crimped version (DPAMA) contact assembly has a Diallyl Phthalate insulator with crimped terminated contacts that can be inserted released and extracted from the rear of the connector.
3. The Hermetically sealed versions (DPAH) solder pot termination only, are used to seal units in a partial vacuum, inert gas or under constant pressure.

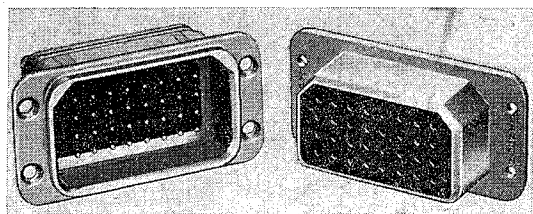


Fig. 1. DPA standard connector

DESCRIPTION

DPA connector

4. The operating temperature for the DPA connector is -67 deg. F to $+280$ deg. F.

DPAF (float mount shell)

5. DPAF plugs are DPA plugs with four float rivets with washers on the termination side of the connector. Floating rivets are 0.093 in. ID with a minimum of 0.032 in. float (fig. 9).

DPAH (hermetically sealed version)

6. DPAH plugs are hermetically sealed versions of the DPA plugs. The operating temperature is -67 deg. F to $+350$ deg. F.

DPAL (large flange shell)

7. DPAL plugs are DPA plugs with a large flange shell (fig. 9).

Cable clamps

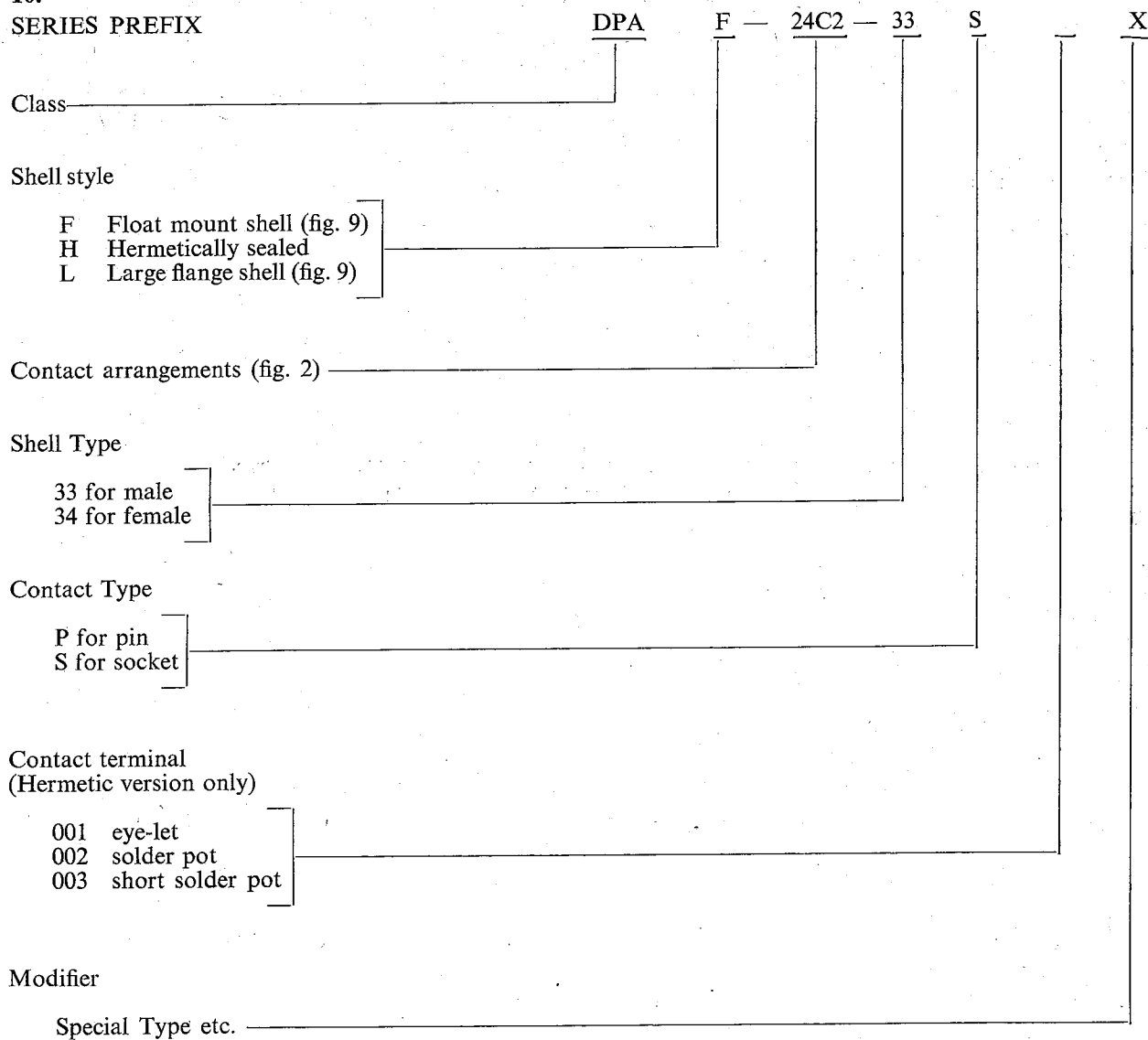
8. Straight junction shell, 90 deg. angle junction shell and the potting shell are all illustrated on (fig. 9). They provide for a single core and multi-core cable onto which the clamps exert positive grip.

Protective caps

9. Protection against damage and contamination of contacts when coupling units are disconnected can be provided by the protective caps shown in (fig. 9).

DPA SOLDER POT TERMINATION

Significance of code numbers

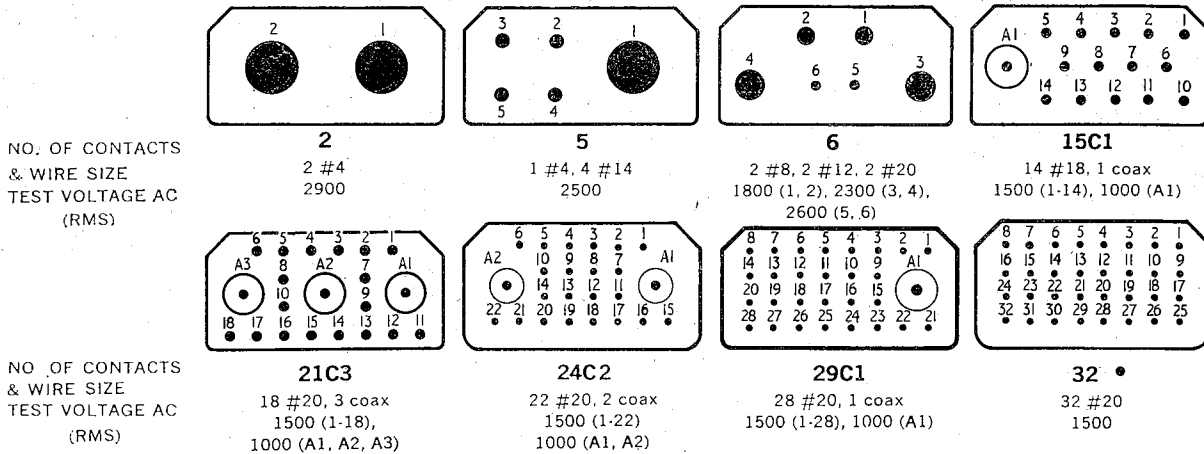
10.**SERIES PREFIX****Note . . .**

(1) Arrangements with coax contacts, except in 15C1 and coax contacts shown as fixed in the coax contact variations (Table 1) may be ordered without coax contacts by substituting a "W" for the "C" e.g. DPA-24C2-33S with two coax contacts become, DPA-24W2-33S with two cavities. Any snap in coax contact may then be used.

CONTACT ARRANGEMENTS

Face view of pin insert

Current Carrying Capacity of Wires and Cables						
Wire Size	#4	#8	#12	#14	#16	#20
Amperage	80	46	23	17	13	7.5



• Hermetic arrangement also. Test voltage becomes 1250 AC rms and may be employed in any shell type.

Fig. 2. DPA contact arrangements

CONTACT TERMINATIONS

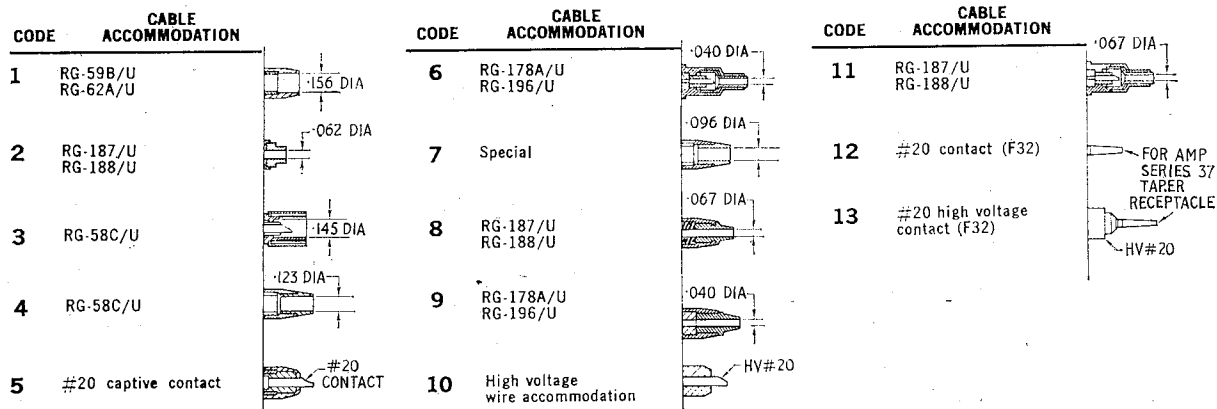


Fig. 3. DPA coax contact terminations

TABLE 1—DPA Contact variations

Termination Code	Variations of Basic Arrangements	Contact Type	Max. Contact Extensions from rear of flange	
			34 Shell	33 Shell
1	A21C3 *24C2 *29C1	Fixed	0.953	0.453
2	*21C3 D24C2 A29C1	Fixed	0.859	0.359
3	B21C3 L24C2 C29C1	Snap in	1.031	0.500
4	C21C3 P24C2 F29C1	Fixed	1.094	0.594
5	D21C3 K24C2 K29C1	Fixed	1.047	0.562
6	E21C3 N24C2 L29C1	Snap in	1.218	0.670
7	F21C3 B24C2 M29C1	Fixed	1.094	0.594
8	G21C3 C24C2 N29C1	Fixed	1.094	0.609
9	H21C3 R24C2 P20C1	Fixed	1.125	0.625
10	21HV3 24HV2 29HV1	Fixed	1.062	0.554
11	J21C3 H24C2 G29C1	Snap in	1.218	0.670
12	Taper Pin Terminals†	Fixed	0.973	0.471
13	Taper Pin Terminals†	Fixed	1.185	0.672
1	15C1 Coax Plug	Fixed	1.125	0.499
6	15C1 Coax Socket	Fixed	1.125	0.499

* Denotes basic arrangement.

† Any arrangements may be ordered with contacts accommodating AMP taper terminals by adding code F32.
Example: DPA-32-33S-F32.

TABLE 2

DPA snap in coax part numbers and tools

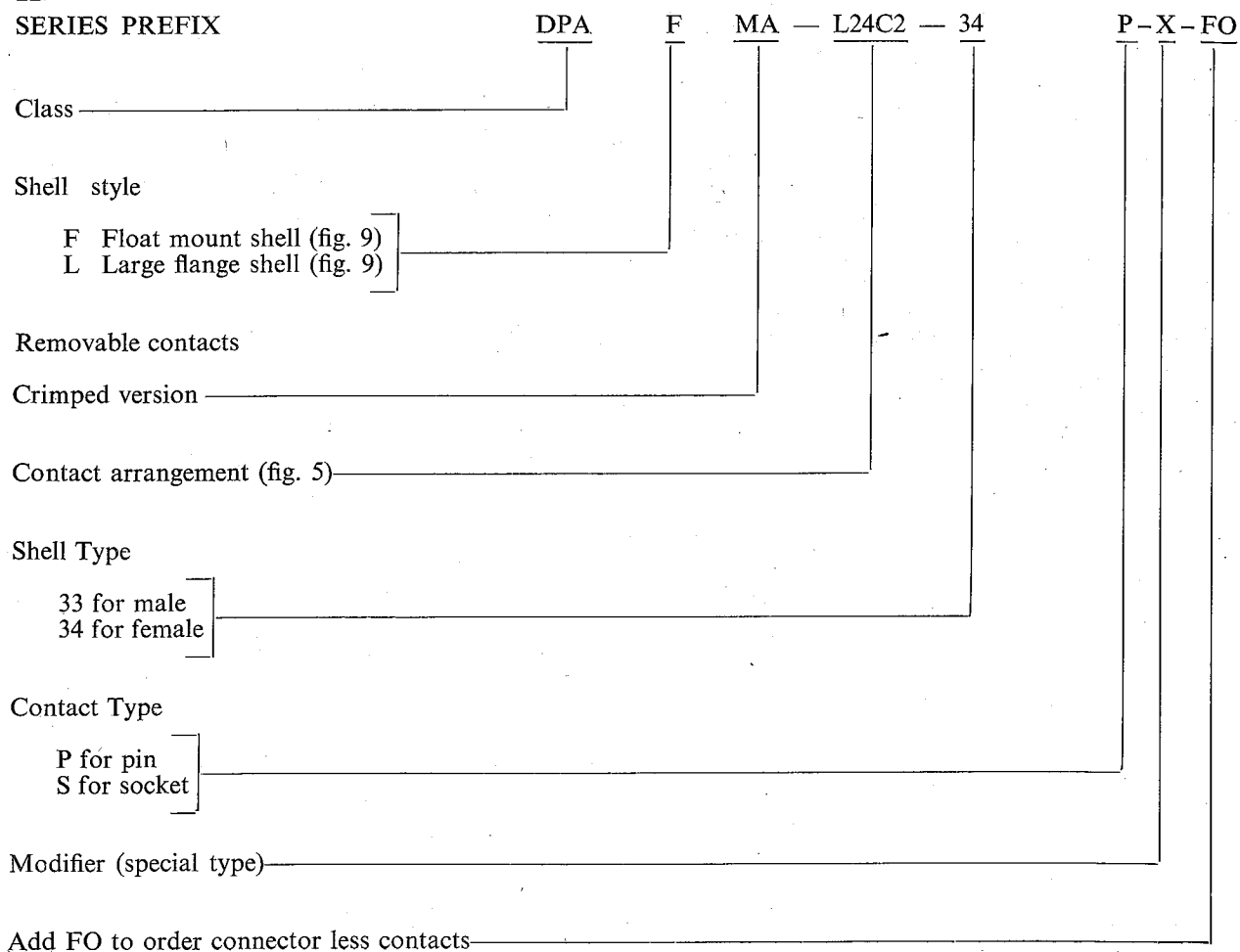
Termination code	Part numbers		Contact insertion extraction tool
3	plug	249-5012-000	Insertion by hand non-extractable
	socket	249-5008-000	
6	plug	249-5052-002	Insertion by hand non-extractable
	socket	249-5051-001	
11	plug	249-5052-000	Insertion by hand non-extractable
	socket	249-5051-000	

DPAMA CRIMPED VERSION

Significance of code numbers

11.

SERIES PREFIX



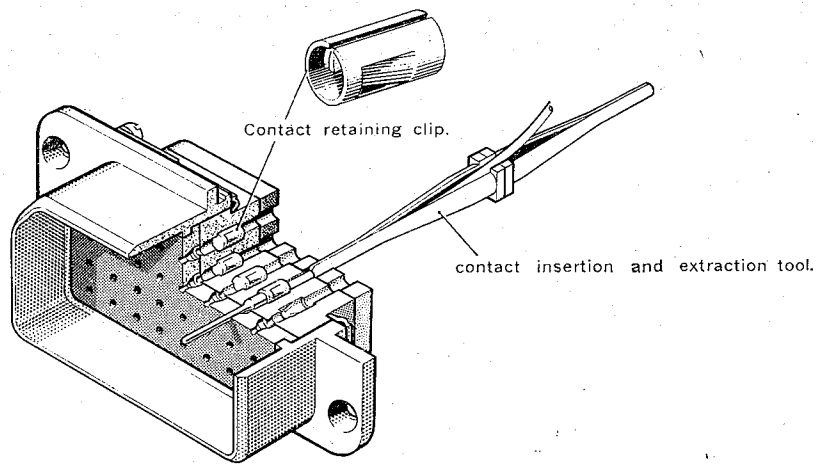


Fig. 4. DPAMA crimped connector

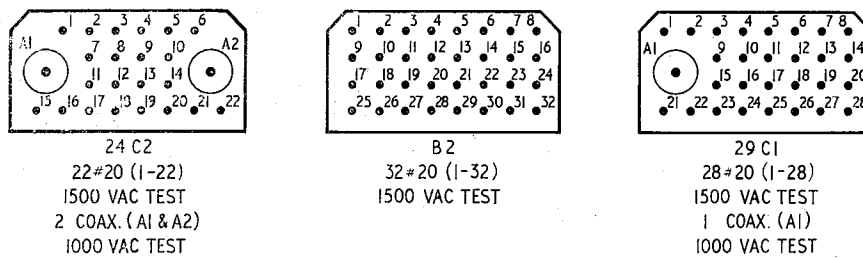


Fig. 5. DPAMA contact arrangements

TERMINATION CODE	CONTACT TYPE	CABLE
B		RG 58/u
C		HIGH VOLTAGE AWG. 20 22 & 24
D		RG 55/u RG 58/u.

Fig. 6. DPAMA coax contact terminations

Type A size 20 crimped contacts

12. (1) Pin Part No. 030-9173-003
 (2) Socket Part No. 031-9174-003

TABLE 3
DPAMA contact variations

Basic arrangement	Variation of basic arrangement	Contact Type
24C2	24W2	22 Type A. Coax not supplied.
24C2	L24C2	22 Type A. 2 termination code B.
24C2	B24C1HV1	22 Type A. 1 termination Code B. 1 Type C.
24C2	24HV2	22 Type A. 2 termination code C.
24C2	E24C2	22 Type A. 2 termination code D.
29C1	B29C1	28 Type A. 1 termination code D.
29C1	29W1	28 Type A. Coax not supplied.
29C1	H29C1	28 Type A. 1 termination code B.

TABLE 4
DPAMA coax part numbers and tools

Termination code	Part Number	Crimp tool	Contact insertion extraction tool
B	Plug 249-9104-000 Socket 249-9103-000	Solder Type }	Insertion by hand CET C11
C	Pin 143-0304-000 (for socket insert)	Solder Type }	Insertion by hand CET C11
D	Plug 249-9008-000 Socket 249-1741-000	Burndy MR8PV-2	Insertion by hand CET C11

Note . . .

Crimp tool Burndy MR8PV-2 must be modified by Cannon drawing CA58073.

INSTRUCTIONS FOR USE**Crimping tools**

13. (1) Size 20 contacts Buchanan crimping tool MS3191 Ref. No. 1H/279, locator Red Part No. 611062 Ref. No. 1H/414.
 (2) Coax contacts crimping tool (Table 4).

Wiring connectors

14. When wiring a multi-cored cable to a plan, crossing of conductors cannot always be avoided. Careful trimming of each conductor is necessary to allow the contact to seat evenly in their correct positions in the insulator. To prepare the cable:—

- (1) Trim back outer insulation.
 (2) Cut individual conductors to length required.

15. Strip the individual conductor insulation to the dimensions shown in Table 5 for the standard contacts and figs. 7 and 8 for the coax contacts:— taking care that none of the strands are severed in the process.

TABLE 5
Stripping lengths for standard and crimped contacts

Contact size	Ampere rating	Cable stripping
20	7.5	$\frac{3}{16}$ in.
16	1.3	$\frac{1}{4}$ in.
14	17	$\frac{1}{4}$ in.
12	23	$\frac{1}{4}$ in.
8	46	$\frac{1}{4}$ in.
4	80	$\frac{1}{2}$ in.

Crimping

16. Fit each contact over the bared conductor ensuring that all strands enter the conductor well to the full depth, i.e. the wire must be visible through the inspection hole. Crimp the contacts to the conductor according to the tool instructions.

Insertion of the size 20 crimped contacts into insulator

17. (1) Insertion tool Cannon CIET20 (red end).
(2) Offer the tip of the insertion tool onto the rear of the contact and keep it in line with the connector axis.
(3) Push on the rear of the insertion tool with a gently increasing pressure until the contact clip is felt to close.
(4) Withdraw the insertion tool.

Removal of size 20 crimped contacts from insulator

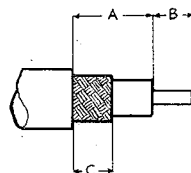
18. (1) Extraction tool Cannon CIET20 (white end).
(2) Offer the tip of the ejector tool over the rear of the contact (fig. 4), and keep it in line with the connector axis.
(3) Push on the rear of the extraction tool with a gently increasing pressure until the contact clip is felt to open.
(4) Withdraw the extraction tool complete with the contact and remove the exposed contact from the extraction tool.

Panel mounting

19. Plan illustrations, dimensional details and panel piercing dimensions for the appropriate shell style are given in fig. 9.

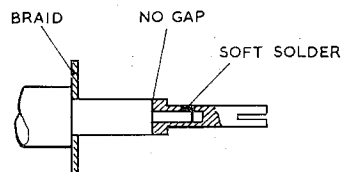
TERMINATION CODE	ASSEMBLY	STRIPPING DIMENSIONS IN.		
		A	B	C
1	1A	19/64	1/8	1/8
2	2	13/64	1/8	1/8
4, 7, 8 AND 9	1B	7/16	1/8	1/8

STRIPPING DIMENSIONS

ASSEMBLY
1A AND 1B

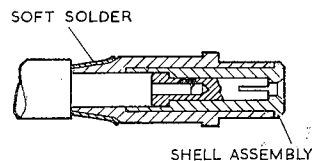
STEP 1

COMB OUTER BRAID OUT STRAIGHT AND FOLD BACK AS SHOWN. SOFT SOLDER CONTACT TO CENTRE CONDUCTOR



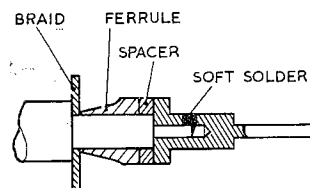
STEP 2

INSERT CONTACT AND CABLE INTO SHELL ASSEMBLY. FOLD OUTER BRAID WIRES FORWARD ONTO TAPERED PORTION OF SHELL AND SOFT SOLDER

ASSEMBLY
2

STEP 1

COMB OUTER BRAID OUT STRAIGHT AND FOLD BACK AS SHOWN. SOFT SOLDER CONTACT TO CENTRE CONDUCTOR AFTER SLIDING FERRULE AND SPACER ONTO DIELECTRIC



STEP 2

INSERT CONTACT AND CABLE INTO SHELL ASSEMBLY, FOLD OUTER BRAID WIRES FORWARD ONTO FERRULE AND SOFT SOLDER BRAID TO FERRULE AND FERRULE TO SHELL AS INDICATED

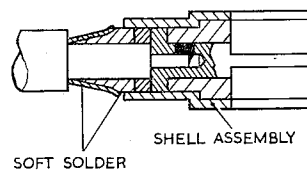
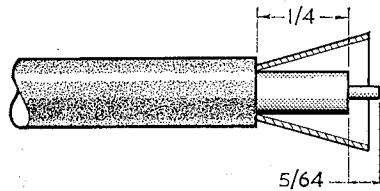


Fig. 7a. DPA coax contact stripping instructions for termination codes 1, 2, 4, 7, 8 and 9

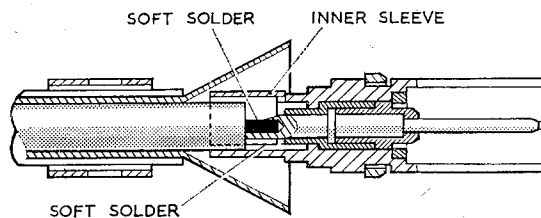
CODE 3



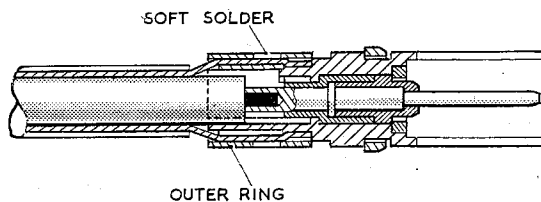
STEP 1
TRIM CABLE JACKET TO DIMENSION SHOWN



STEP 2
COMB OUT BRAID AND FOLD BACK. TRIM DIELECTRIC
AND INNER CONDUCTOR TO DIMENSIONS SHOWN

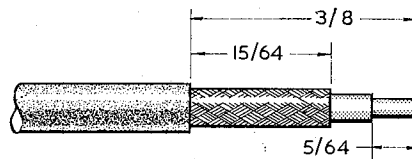


STEP 3
INSERT CABLE INTO REAR OF COAXIAL AND SOFT
SOLDER CENTRE CONDUCTOR OF CABLE TO
CONTACT. SNAP INNER SLEEVE OVER OPENING IN
SHELL AND SOFT SOLDER

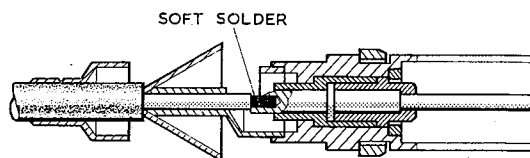


STEP 4
FOLD BRAID WIRES FORWARD OVER INNER SLEEVE
AND TRIM TO CORRECT LENGTH. SLIDE OUTER
RING OVER BRAID AND SOFT SOLDER THROUGH
SOLDER HOLES

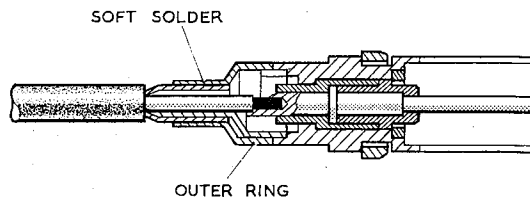
CODE 11 AND 6



STEP 1
TRIM COAXIAL CABLE TO DIMENSIONS SHOWN



STEP 2
INSERT CABLE INTO REAR OF COAXIAL AND SOFT
SOLDER CENTRE CONDUCTOR OF CABLE TO
CONTACT



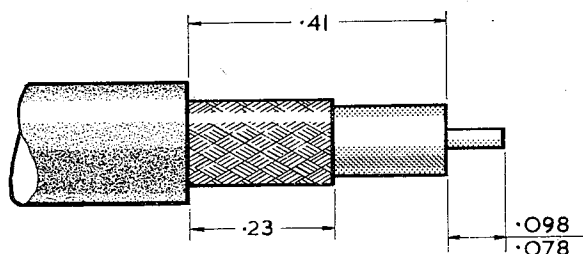
STEP 3
FOLD BRAID WIRES FORWARD OVER INNER SLEEVE
AND TRIM TO CORRECT LENGTH. SLIDE OUTER
RING OVER BRAID AND SOFT SOLDER THROUGH
SOLDER HOLES

Fig. 7b. DPA coax contact stripping instructions
for termination code 3

Fig. 7c. DPA coax contact stripping instructions
for termination code 11 and 6

TERMINATION CODE

B

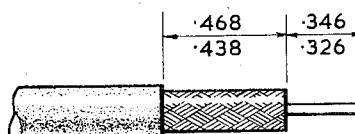


CABLE ASSEMBLY INSTRUCTIONS

SOLDER INNER CONDUCTOR TO COAXIAL CONTACT THROUGH SIDE SLOT IN COAXIAL WITH OUTER SLEEVE PUSHED BACK ON CABLE. THEN PULL SLEEVE FORWARD OVER BRAID AND SOLDER THROUGH HOLES IN SLEEVE

TERMINATION CODE

D



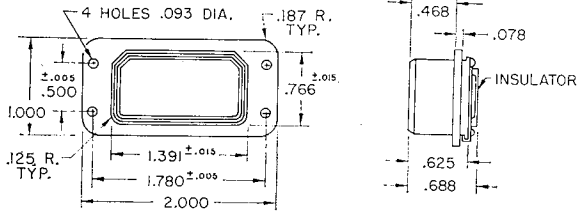
CABLE ASSEMBLY INSTRUCTIONS

- 1 TRIM CABLE AS SHOWN ABOVE
- 2 SLIDE CRIMP RING OVER CABLE JACKET
- 3 PUSH CAP AND REAR INSULATOR UNDER BRAID
- 4 SOLDER CONTACT TO INNER CONDUCTOR
- 5 PUSH CABLE ASSEMBLY INTO COAXIAL WITH BRAID OVER COAXIAL SHELL
- 6 SLIDE CRIMP RING OVER BRAID AND CRIMP

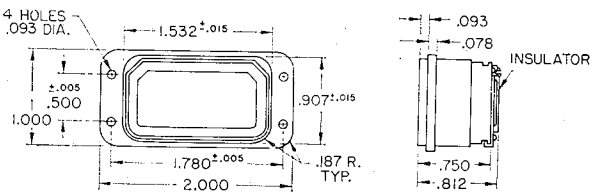
Fig. 8. DPAMA coax contact stripping instructions

SHELL DIMENSIONS

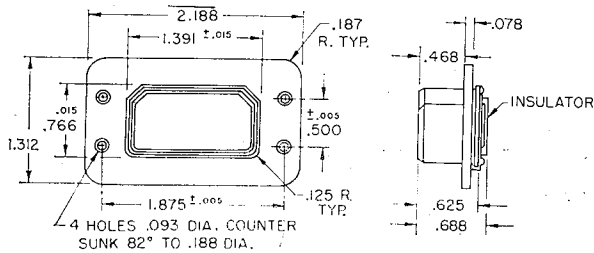
DPA-33 DPAMA-33 Solid Shell



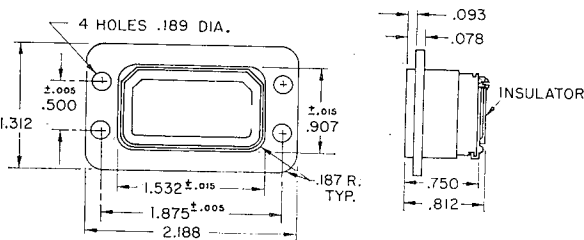
DPA-34 DPAMA-34 Solid Shell



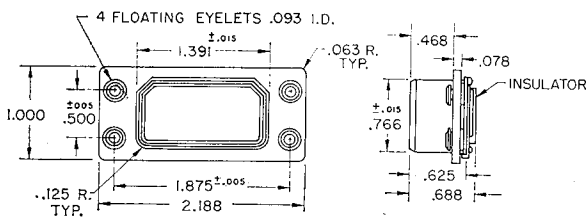
DPAL-33 DPALMA-33 Large Flange Shell



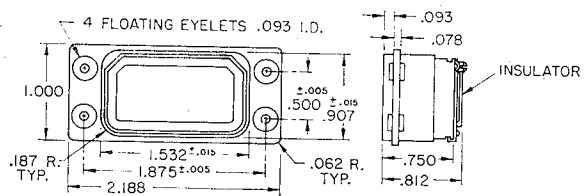
DPAL-34 DPALMA-34 Large Flange Shell



DPAF-33 DPAFMA-33 Float Mount Shell

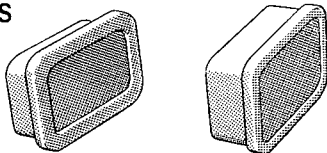


DPAF-34 DPAFMA-34 Float Mount Shell



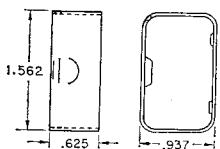
ACCESSORIES

DUST CAPS

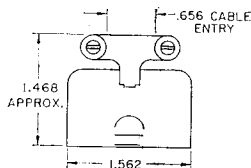


DPA-59 for 33 shells DPA-60 for 34 shells

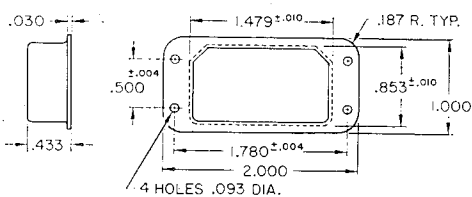
22054 POTTING SHELL



20746 STRAIGHT JUNCTION SHELL



DPAH Hermetic Seal Version



20746-1 90° JUNCTION SHELL

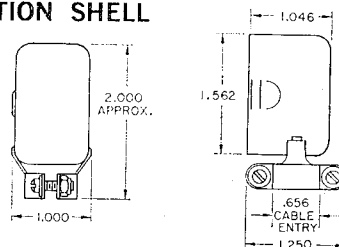


Fig. 9. Panel mounting instructions and accessories

TABLE 6
Coax Cable Cross References

Item	British	French	U.S. and Canadian	NATO	Amphenol
1x	Uniradio No. 67	KX4 or KX50 MD1	RG-8/U	NWR1S	21-004
2x		KX8 or KX75 MD1	RG- 11/U	NWR3S	21-007
3x	Uniradio No. 57	KX75 MM1	RG-11A/U	NWR3	—
4	Uniradio No. 60		RG- 13/U		21-009
5	Uniradio No. 43		RG- 29/U		21-018
6x	Uniradio No. 43		RG- 58/U	NWR2	21-024
7	Uniradio No. 43		RG- 55/U		21-023
8	Uniradio No. 39		RG- 39/U		N/A
9	Uniradio No. 31		RG-133/U		21-525
10x	Uniradio No. 72		RG-141/U	NWR9	421-382
11x	Uniradio No. 73		RG-165/U	NWR10S	421-710
12x	Uniradio No. 64		RG- 63/U	NWR4	21-027
13x	Uniradio No. 74	KX5	RG- 17/U	NWR5	21-013
14	Uniradio No. 75		RG- 18/U		21-014
15x	Uniradio No. 76	KX2	RG-58A/U	NWR2S	21-199
16x	Uniradio No. 77		RG-164/U	NWR6	21-125
17x	Uniradio No. 78	KX100 MM1	RG-133/U	NWR7	—
18x	Uniradio No. 87		RG- 65/U	NWR8	N/A
19x	Uniradio No. 90	KX7	RG- 59/U	NWR11	21-025
20x	Uniradio No. 96		RG- 62/U	NWR12	21-026
21x	Uniradio No. 103		RG-144/U	NWR16	21-391
22x	Uniradio No. 104		RG-140/U	NWR14	21-379

Note . . .

The items marked x are NATO standard cables. 2 and 3 only differ in that the inner conductor of 2 is 7 strand while that of 3 is a solid wire. 5 the American cable has a polyethylene instead of a PVC sheath. 7, 8 and 11 the American cables have double braids, the British cables single braids.

TABLE 7
DPA and DPAMA part numbers and reference numbers

Part numbers	Reference numbers
DPA-32-33S	5X/10249
DPA-32-34P	5X/11199
DPAMA-32-33P	5X/10722
DPAMA-32-33S	5X/10727

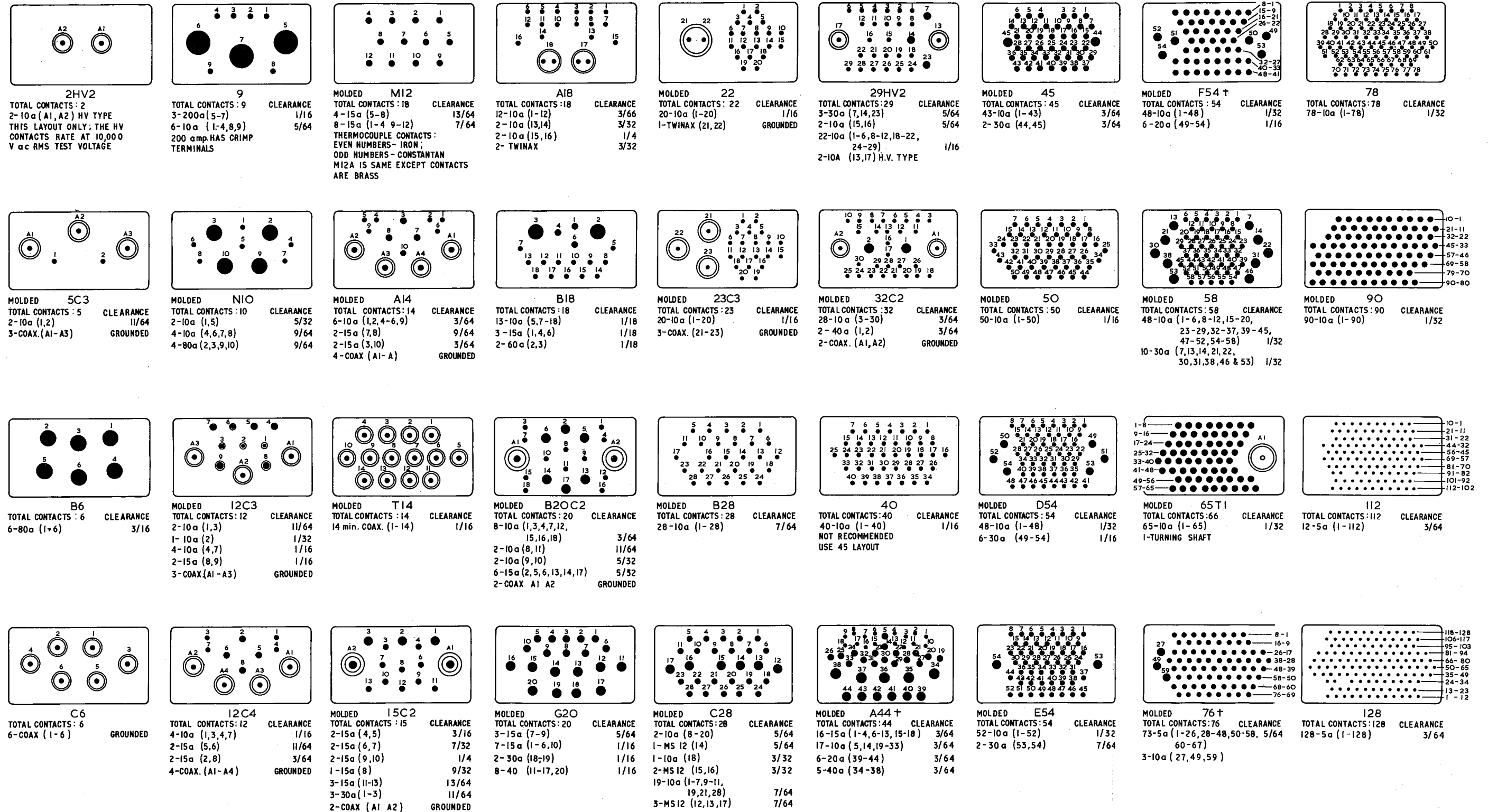


Fig.10

Issued April 69

Contact arrangements

Fig.10

Chap. I



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