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PLESSEY STANDARD BREEZE CONNECTORS

GENERAL AND TECHNICAL INFORMATION

BY COMMAND OF THE DEFENCE COUNCIL

: I. Dunna

Ministry of Defence

FOR USE IN THE ROYAL NAVY ROYAL AIR FORCE

(Prepared by the Ministry of Technology)

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AMENDMENT RECORD SHEET

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LEADING PARTICULARS

Current ratings: 7A, 19A, 37A and 64A

Voltage rating (sea level): 250 V a.c. or 350 V d.c.

Contact details:

brass, silver-plated; crimped or soldered connections

Contact resistance:

less than 2 milliohms for currents less than 10A less than 1 milliohm for currents greater than 10A

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Temperature range:
-65 degrees C to +150 degrees C (uprated types)

Altitude ratings: 208 V a.c. or 300 V d.c. at 50,000 ft.

Compatibility:

resistant to water and fluids

Lubricants:

Polypaste 300 to DTD 900/4669 for threads; ZX-36 for cables, etc.

Introduction

- 1. The Plessey standard breeze range of connectors were designed primarily for use in d.c. systems but are not restricted to low voltages provided due consideration is paid to voltage, frequency, etc. The connectors are climatic proof provided they are not fully exposed. They are available in aluminium and steel shells in six sizes designated A, Z, B, C, D and E (a seventh size F was available in the early development stages of the connector; also, the early ranges included brass shells). Units in steel shells are fireproof (a fireproof unit passing d.c. will continue to operate for 5 minutes in a total flame envelopment of 1,000 degrees C. and will allow no passage of flame for 20 minutes).
- Improved characteristics have been incorporated into Standard connectors to give them wider applications. The current designs of units are classified as follows:—
 - (I) Climatic-proof and vibration-proof types. These have been made splashproof by the suitable positioning of gaskets. The socket unit contains spring contacts which, together with the coupling nut (drilled with holes for wire locking), safeguard the unit against excessive vibration. Free movement of the pin contacts facilitates mating of the connectors. All the insulators, insulating rings and washers are of materials resistant to high temperature, and the mounting gaskets etc. are resistant to oils and hydrocarbons used in aircraft.
 - (2) Climatic-proof, fireproof and vibration-proof types. These are specifically for use on the engine side of a fireproof bulkhead and where excessive vibration is experienced. They are electrically and physically similar to and interchangeable with the types described under 2 (I), but the shells are of steel (nickel-plated) and high tensile steel fixing screws and stiffnuts are provided to secure the units against the affects of engine vibration.
 - (3) Pressurized types. These are for use on pressure cabin bulkheads. They have aluminium shells and are sealed against a pressure difference of 15 lb/in². They are not suitable for use in high temperatures.
- 3. The standard shell styles in the range provide for fixed, bulkhead and free units in the various shell sizes and twenty-three different contact arrangements. A wide variety of fittings is available to take screened or unscreened single or multi-core cables. The free units (viz. socket units) are supplied as "normal" or "reverse" (see para. 20).
- 4. Mismating of units is prevented by the dispositions of their pin or socket contacts. Fixed units (plugs) including bulkhead units are fitted with pin contacts; free units (sockets) are fitted with socket contacts.
- 5. All units have progressed from their original designs and units at different stages are in existence. The use of earlier designs of units is not recommended and current versions of these units are supplied as replacements. The current versions are

those units incorporating the characteristics described in para, 2. However, a full list of the part numbers of all units in existence is given in Tables 1 to 14, which indicate the various stages of development, and the main features of each development stage are described below.

Description

Fixed unit (Tables 1 and 6)

Stage I (fixed-pins version)

6. This style of unit (fig. 1 and 5) was the original design; it consisted of an insulator of phenolic material, in which the pins are permanently moulded in position, and an aluminium, brass or steel shell machined from bar. The square flange is integral with the shell.

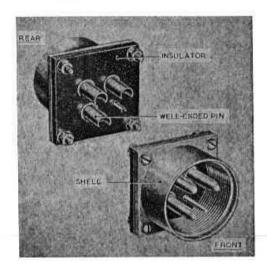


Fig. 1. Fixed unit-fixed pins version

7. Four nuts and bolts hold the unit together and secure the flange to a panel. The shell shrouds the pins and is internally threaded to receive the free unit shell. The pins have wells which are suitable for soldered connections only.

Stage 2 (loose-pins version)

8. In this style of unit (fig. 2 and 5), the insulator comprised two identical parts. In order to reduce creepage, the perimeters of the pin contact holes in these discs are formed with stepped barriers so that the surface area between the pins is increased. The bases of the pins are sandwiched between the insulators when they are clamped to the shell flange by the fixing bolts. In stage 2 units the flange corners are drilled and tapped to accept the fixing bolts.

Stage 3 (climatic-proof version)

9. In the stage 3 version (fig. 3, 4 and 5), two rubber insulator gaskets (on either face of the front insulator) and a shell gasket were introduced to

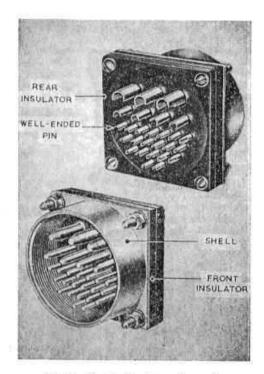


Fig. 2. Fixed unit-loose pins version

make the unit proof against climatic conditions (providing the unit is not fully exposed). The rear insulator is redesigned to accept pins that are suitable for crimped or soldered connections and is made deeper to shroud the connections.

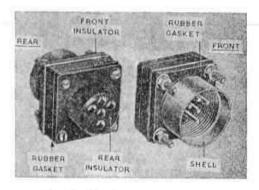


Fig. 3. Fixed unit—climatic-proof

10. The composite square flange is made up of the flange integral with the rear insulator, the front insulator disc together with its two gaskets, the flange integral with the shell, and the unit shell gasket. Four nuts and bolts hold the unit together and secure the flange to a panel.

Stage 4 (uprated version)

Page 4

11. In the stage 4 version (fig. 5), the front and rear insulators were alkyd, the shell and rear insulator gaskets silicone rubber and a seating gasket of

silicone rubber (designed to accept the mating rim of the free unit) replaced the front insulator gasket of the stage 3 version. Also, a brass backing plate was introduced behind the rear insulator in order to prevent damage when the bolts are tightened. The changes leading to this stage enabled the unit to operate between ambient temperatures of -65 degrees C. and +150 degrees C.

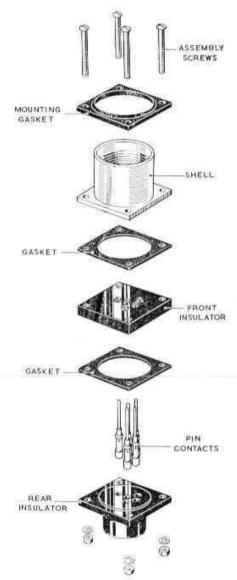


Fig. 4. Fixed unit (exploded)—climatic-proof

Stage 5 (improved fluid resistant version)

12. This version differed from stage 4 in that the shell and rear insulator gasket material was asbestos fibre. This change improved resistance to fluids and fire. These units are splash-proof and vibration-proof when assembled in aluminium shells and splash-proof, fireproof and vibration-proof when assembled in steel shells (para. 2(1) and 2(2)).

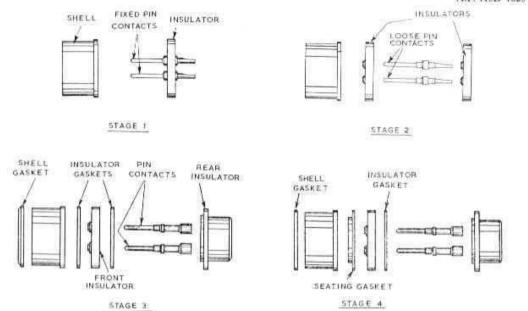


Fig. 5. Fixed unit, stages of development

Normal or reverse free unit (Tables 2, 3, 7 and 8)

Stage I

13. This style of unit (fig. 8) was the original design, manufactured with rimmed shells in aluminium, brass or steel. It includes a long socket insulator of phenolic material and a pressed comb. Solid end split type socket contacts with short wells (suitable only for soldering) are used and these are protected by an insulating sleeve at the well ends. A diamond knurled coupling nut screws on to the back of the shell to secure the assembly; at the front of the shell the insulator is retained by an insulating ring and a circlip.

Stage 2

14. In this style (fig. 8) the shell and coupling nut were modified. The shell rim is castellated and longer shells are used in sizes D, E and F. The coupling nut is not knurled but castellated. A shortened socket insulator is used and this is backed by a comb insulator in place of the pressed comb. Rolled type socket contacts (suitable for soldering or crimping with the use of thimbles) are used and these are protected by insulating sleeves at the well ends (one sleeve is used in a size A, Z, B or C shell; two sleeves are used in a size D, E or F shell). The insulator is retained by the insulating ring at the front and a circlip at the back. The coupling nut screws on to the back of the shell to secure the assembly.

Stage 3 (climatic-proof version)

15. Units at stage 3 (fig. 6 and 8) differed from those at stage 2 in that the shell rim and the coupling nut have straight knurls. The use of a comb insulator in this type restricts the use of the unit to

arrangements of 7A and 19A contacts only. The shell length is the same as at stage 1 and a single insulating sleeve is used. A ferrule gasket has been introduced between the coupling nut and the circlip at the back, and a sealing gasket fits on to the front of the shell rim.

Stage 4 (vibration-proof version)

16. Units at stage 4 (fig. 7 and 8) introduced vibration-proof socket contacts (suitable for soldering or crimping without the use of thimbles). A pressed comb replaces the comb insulator used at stage 3, making the unit suitable for use with arrangements which include 37A and 64A contacts. Wire locking holes are drilled in the coupling nut as an added precaution against vibration.

Stage 5 (improved contacts version)

17. Units at stage 5 (fig. 8) differed only in the type of contact used. These contacts are an improved type using circlips and were designed to provide lighter insertion loading and greater contact length.

Stage 6 (uprated version)

18. Units at this stage (fig. 8) were designed to operate between ambient temperatures of -65 degrees C. and +150 degrees C. They are similar in construction to those in stage 5 except that the socket and comb insulators are of alkyd, and the shorter insulating sleeve and the insulating ring are of fibreglass (P.T.F.E. coated); the ferrule gasket is of silicone rubber. A steel thrust ring has been introduced at the rear of the insulating sleeve. The sealing gasket is not included in the assembly but always accompanies the unit since it may be required to mate with an early type of fixed unit.

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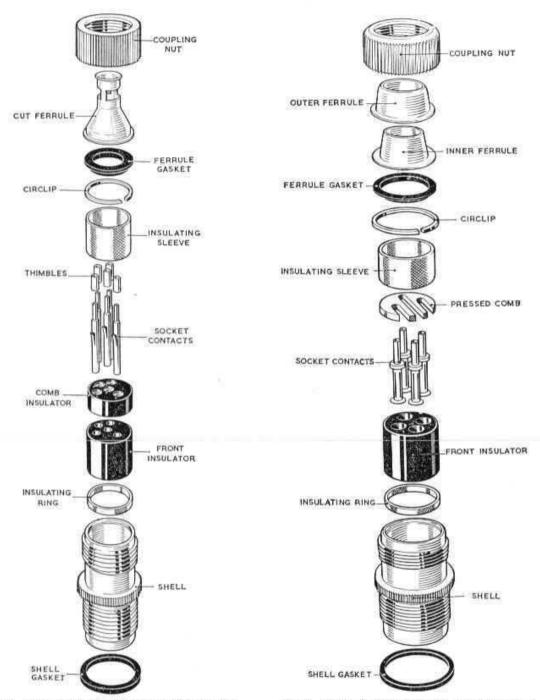


Fig. 6. Free unit (exploded) with coupling nut and cut ferrule, climatic-proof

Fig. 7. Free unit (exploded) with coupling nut and inner and outer ferrules, vibration proof

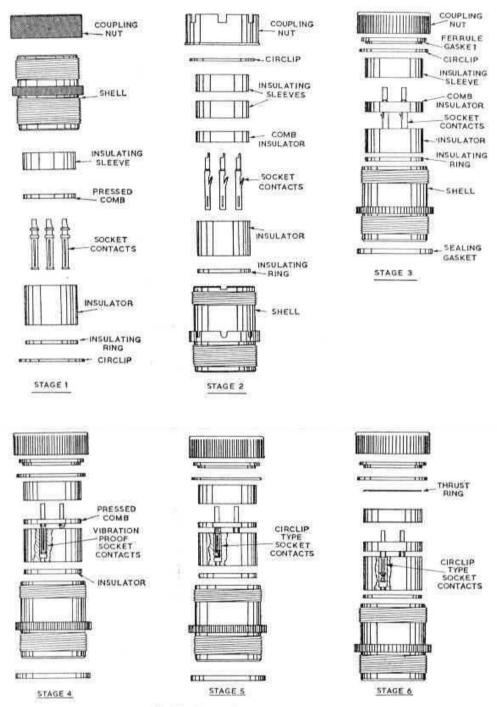


Fig. 8. Free unit, stages of development

Stage 7 (improved fluid resistant version)

19. In this version the ferrule gasket is made of asbestos fibre, thus giving the unit improved resistance to fluids and fire. These units are waterproof and vibration-proof when assembled in aluminium shells and waterproof, fireproof and vibration-proof when assembled in steel shells (para, 2(I) and 2(2)).

Bulkhead unit (Tables 4 and 9)

Stage I (fixed pins version)

20. This style of unit (fig. 10) was the original design and was manufactured with aluminium, brass and steel shells. In effect, the stage 1 bulkhead unit consists of two stage 1 fixed units joined back-to-back but with a single insulator (of phenolic material) in which special double-ended pins are moulded in position. It is used to connect two free units, one a normal unit, the other a reverse unit, on either side of a bulkhead (that is, the free units are mirror images of one another but otherwise identical).

Stage 2 (loose pins version)

21. This version (fig. 10) differed from stage 1 in that the insulation was formed of two identical components, each having stepped creepage barriers at the perimeters of the contact holes (para. 8). The bases of the pins are sandwiched between the insulators when the flange is secured by the fixing bolts and nuts.

Stage 3 (climatic-proof version)

22. In the stage 3 version (fig. 9 and 10), two rubber insulator gaskets (each on the pin face of the insulators) and a shell gasket were introduced to make the unit climatic-proof.

Stage 4 (uprated version)

1

23. In the stage 4 version (fig. 10), the front and rear insulator discs were alkyd and the shell gasket silicone rubber. A seating and a reverse seating gasket (designed to accept the leading edges of mating socket units) replace the insulator gaskets of units in stage 3 and these are also of silicone rubber. The changes leading to this stage enabled the unit to operate between ambient temperatures of -65 degrees C. and +150 degrees C.

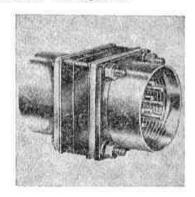
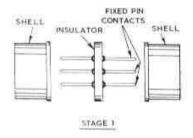
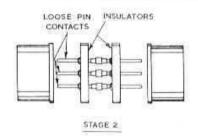


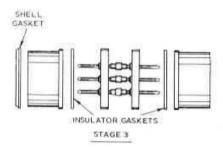
Fig. 9. Bulkhead unit, climatic-proof

Stage 5 (improved fluid-resistant version)

24. Units at this stage differ from those at stage 4 in that the shell gaskets are replaced by similar gaskets of asbestos fibre. This change improves resistance to fluids and fire. These units are water-proof and vibration-proof when assembled in aluminium shells, and waterproof, fireproof and vibration-proof when assembled in steel shells (para, 2(1) and 2(2)).







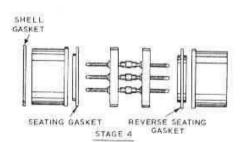


Fig. 10. Bulkhead unit, stages of development

Pressurized bulkhead unit (Table 5) Stage I (original version)

25. This style of unit (fig. 11 and 12) was manufactured in aluminium and differs from the normal type bulkhead unit in that it has a round flange integral with the shell. The shell is strengthened and contains two identical insulator discs of phenolic material bonded together by sealing compound with the double-ended pins moulded in position. A sealing gasket is fitted between the insulator and the shell. Completing the sealing requirement is a mounting gasket fitting in a recess of the front face of the flange and a unit cover fitting against the rear face of the flange. Fixing bolts and nuts (four for sizes A and Z; eight for sizes B, C, D and E) hold the unit together and secure the unit to a bushead. The unit is proof against a pressure of 15 lb/in² but is not suitable for use in temperatures exceeding 85 degrees C. (para, 2(3)).

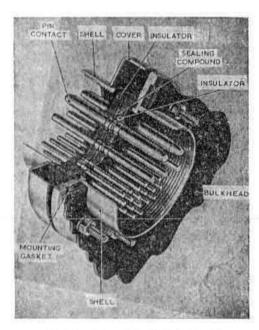


Fig. 11. Pressurised bulkhead unit

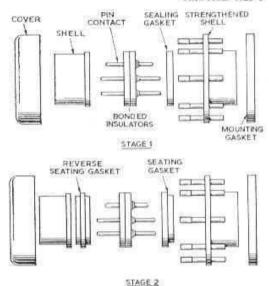


Fig. 12. Pressurised bulkhead unit, stages of development

Stage 2 and subsequent stages (uprated version)

26. Units at these stages differ from those at stage 1 in that the insulators are of alkyd; the seating and the reverse seating gaskets (designed to accept the leading edges of mating socket units) are of silicone rubber.

Special purpose connectors Fixed unit (detachable leads) (Table 10) Stage 1

27. This style of unit (fig. 13) was manufactured in a size A aluminium shell only for use on electric motors and other equipment where short leads only can be accommodated. In this unit the insulator holes are slotted so as to allow the pins to be slid through the widest parts of the slots. The pins are therefore removable from the insulator so that they can be more easily wired, re-inserted and subsequently withdrawn (when required) with the conductors still attached. The pins are suitable for soldering only.

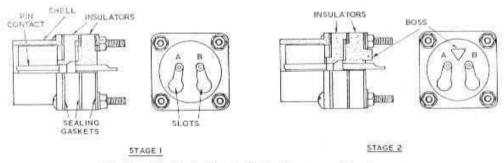
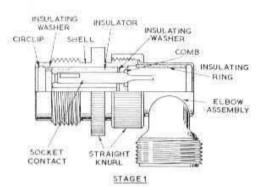


Fig. 13. Fixed unit (detachable leads), stages of development



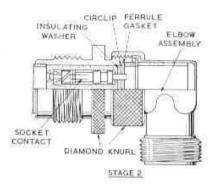


Fig. 14. Free unit (short reach), stages of development

Stage 2

28. In this version the rear insulator was modified to form a boss between the contact wells. Also, shells became available in both aluminium and steel.

Stage 3

29. Units at this stage differ from those at stage 2 only in the design of the front sealing gasket.

Free unit (short-reach) (Table 11) Stage 1

30. This style of unit (fig. 14) was manufactured in aluminium only and differs from the normal free unit (at stage 1) in that the rear of the shell is shorter and accommodates a brass elbow outlet fitting with a dull nickel-plated finish. The unit was designed to be easily withdrawn where space is limited. Other differences are as follows:—the insulating sleeve is replaced by an insulating ring; the long insulator is of bakelite and contains rolled type contacts; the coupling nut and the shell rim have a straight knurl.

Stage 2

31. Improved circlip-type socket contacts were introduced.

Stage 3

32. Units at this stage (fig. 14) are available with aluminium or steel shells and differ from those at stage 2 in that the elbow assembly is modified; the insulator is shorter and together with the comb insulator are of alkyd; the ferrule gasket and the insulating rings are of silicone rubber. This style of unit is designed to operate between ambient temperatures of -65 degrees C, and +150 degrees C. The sealing gasket is not included in the assembly but is supplied with the unit in case it should be required (viz. when the unit is mated with an early type of fixed unit).

Heavy duty pressurized bulkhead connector block (Table 12)

33. This connector (fig. 15) is pressurized at 15 lb/in² and designed for use at pressure cabin bulkheads where heavy duty connections must be broken. The type illustrated will accomodate two 200A conductors and one 19A conductor; another

type will accomodate three 200A conductors. All conductors may be crimped or soldered to lugs mounted on the connector terminal studs. (The 19A conductor lug is a circular ferrule type and fits into a socket mounted on the terminal stud.) End covers are supplied with these units when ordered.

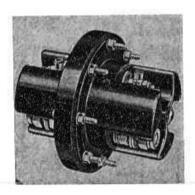


Fig. 15. Heavy duty pressurised bulkhead unit

Quick-release connector (Table 13) Stage 1

34. Quick-release fixed and free units (fig. 16) with aluminium shells were introduced for use where rapid mating or demating was necessary. The free unit shell is not threaded but machined with an external circumferential groove; the fixed unit is fitted with four steel balls retained by a flat spring, a rubber band or a special retainer. Mating is effected when the four balls of the fixed unit lodge in the groove of the free unit; demating occurs quickly when the balls are dislodged on pulling the free unit away. When not in use the contacts are protected by a spring-loaded cap which fits over the front of the unit.

Stage 2

35. Units introduced at this stage (fig. 16) were manufactured only in steel. The quick-release principle was modified thus: four slots are machined in the fixed unit shell to accept four flat springs which are fitted to the free unit and held by a retaining ring. The insulators of both units were

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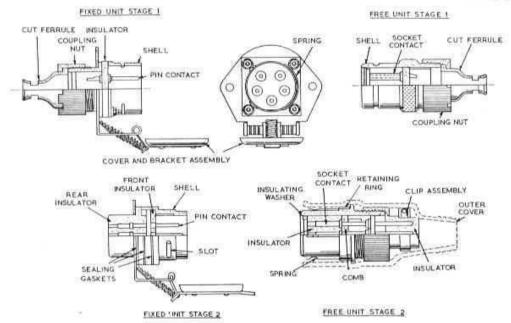


Fig. 16. Quick release fixed and free units, stages of development

extended and redesigned to accept modified pin or vibration-proof socket contacts suitable for soldered or crimped connections. An additional insulator, retained by a clip assembly, was introduced. A synthetic rubber outer cover for use on the free unit was supplied separately.

Stage 3

36. At this stage, the design of the springs on the free unit was improved and the retaining ring stagged on to each spring.

Thermocouple connectors

37. A range of these units with limited contact arrangements (para, 57) is available for use in circuits employing temperature compensating leads. Part numbers of these units are listed in Table 14 which also gives details of the thermocouple contacts (para, 39).

Contacts

38. The seven sizes of contacts (7A, 7A special, 19A, 19A special, 37A, 64A and 200A) used in standard connectors have also undergone stage-by-stage development consistent with that of the connectors. The socket contacts are illustrated with their part numbers in Table 15, which also specifies those that can be used in the different stages of the free unit in relation to their sizes as well as those that may be in existence but are now superseded. The part numbers for pin contacts used in fixed and bulkhead units are also given in Table 15. All contacts are of brass, silver-plated and give electrical connections with contact resistances less than 2 milliohms for currents less than 10A and 1 milliohm for currents greater than 10A.

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Thermocouple contacts (Table 14)

39. A special range of thermocouple contacts is provided for use with thermocouple fixed and free units (para, 37). These contacts are available in brass, alumel, chromel or constantan and are identified by a band of coloured paint within which there is a series of grooves (the contact position is identified on the insulator by a similar colour code). It is recommended that thermocouple contacts be soldered even if they are of a design that permits crimping.

Connector accessories

Fixed unit sealing cap (Table 25)

40. This cap is of bakelite and is designed to prevent the ingress of dust or moisture when the unit is not in use.

Fixed unit screening cap (Table 26)

41. This cap is of aluminium and may be used as an alternative to the bakelite type.

Coupling nut (Table 27, fig. 6 and 7)

42. The coupling nut is made in aluminium or steel and designed for use with free units, fixed unit shrouds, elbow or tee assemblies and for clamping all forms of cable fittings into position.

Fixed unit shroud (Table 28)

43. These shrouds are made in aluminium or steel and designed for mounting at the rear of fixed units for the purpose of attaching other cable fittings (para, 42, 46, 47, 48, 50 and 52). The four holes in the base correspond to those in the fixed unit.

Ferrule plate assembly (Table 29)

44. This assembly is made of brass with an electrotin finish (exceptions are part numbers CZ.24634 and CZ.24640 which are dull nickel-plated) and is designed for use with plastic tubing where cables enter a panel or a junction box. The 4 fixing holes and the spigot on the front face are designed for the same panel piercing arrangements as for a fixed unit of the same size.

Clamp ring (Table 30)

45. The clamp ring is designed for clamping plastic tubing to a ferrule or to a ferrule plate assembly. There are two types, viz. a solid cadmium-plated brass ring (plain type); and an open cadmium-plated steel ring (screw type), the ends of which are drilled and tapped and fitted with

Inner and outer ferrules (Table 31 and fig. 7)

46. These ferrules are brass (nickel plated) and designed to form a sound joint when using plastic tubing, loose braid or conduit. They may be used on a free unit or on a fixed unit shroud with a coupling nut.

Ferrule for plastic tubing (Table 32)

47. This ferrule is brass (electro-tinned) and designed for use with plastic tubing and a clamp ring (para. 45). The ferrule is available standard or oversize and may be used on a free unit or on a fixed unit shroud with a coupling nut;

Conduit ferrule (Type H) (Table 33)

48. This ferrule is available in aluminium or brass (nickel-plated) and is designed for use with a metal conduit to which it is swaged or soldered. It may also be used on a free unit or on a fixed unit shroud with a coupling nut.

Conduit ferrule (Type G) (Table 34)

49. This ferrule is available in aluminium or brass (nickel-plated) and designed for use with a metal conduit to which it is swaged or soldered.

Elbow assembly (Table 35)

50. This assembly is of brass (nickel-plated) and designed to allow a right-angle entry into the rear of a free unit or into the rear of a fixed unit to which is fitted a fixed unit shroud (para. 43). Both ends of the elbow assembly are designed to accept ferrules and coupling nuts.

Tee connector (Table 36)

51. This connector is of brass (nickel-plated) and designed for use with metal conduit where take-off conductors are required at right-angles to the existing run. The three ends of the tee connector are designed to accept ferrules and coupling nuts.

Cut ferrule (round base) (Table 37 and fig. 6)

52. This ferrule is brass (nickel-plated) and designed for use with single or multi-core cables where a clamp is required immediately behind the free unit or the fixed unit shroud. Its purpose is to prevent strain on the cables being transmitted to the contacts.

Cut ferrule (square base) (Table 38)

53. This ferrule is of brass (nickel-plated) and is designed for use where single or multi-core cables are required to be clamped immediately behind a fixed unit or where cables are to be clamped on entering a junction box. The four fixing holes in the square base correspond to those of the fixed unit.

Fixed unit strainer

54. The fixed unit strainer has been designed to prevent the separation of a mated pair due to the weight of cable, etc. It consists of a rectangular plate cut so that two opposite sides are extended in the form of tags; the centre of the plate is cut out in order to fit the rear of the fixed unit. When fitted to a mated pair the tags are bent down and tied to the free unit cable.

Water sealing glands

55. A range of special water-sealing glands has been designed for fitting at the rear of connectors to prevent the ingress of moisture at the cable entries.

Spares and replacements

56. A list of available spares and replacements is given in Table 24 which also gives the materials of the items and their part numbers.

Contact arrangements

57. Twenty three different contact arrangements are available in the six shell sizes for contacts having current ratings of 7A, 7A (special), 19A, 37A and 64A. The contact arrangements possible in each of the shell sizes (specified as A, Z, B, C, D and E) are shown in fig. 20. Note: early stage units may have contact arrangements which include 17A (special) and 200A contacts (para, 38 and Tables 1 to 13).

Instructions for use

Preparations

Part numbers-shell style

58. Determine the part number for the available (viz. current) shell style from Tables 1 to 14, viz. fixed unit, bulkhead unit, normal or reverse free unit, or special purpose unit (select the unit according to the stage that gives a waterproof and vibration-proof type; a waterproof, fireproof and vibration-proof type; or a pressurized bulkhead type).

Part numbers-connector accessories

59. When connector accessories are to be fitted, select the types suitable and order them under the part numbers given in Tables 25 to 38.

Part numbers-contacts

60. Where contacts are ordered seperately, order these from the part numbers given in Table 15.

Crimping tools

- 61. An approved crimping tool will be required. Until amended instructions are received, use:—
- (1) Buchanan Crimping Tool (MS. 3191—4—single indent type—Ref. No. 1H/279). (The appropriate locators must be available.)
- (2) Kit Crimping Plessey Ref. No. 1H/5807066.

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Wiring connectors

Cable preparation-single conductors

62. Cut the conductors to the length required. Taking care that no strands are severed in the process, strip the insulation to a suitable length to expose the bare conductors.

Cable preparation-multi-core cables

63. Strip the outer insulation and cut the conductors to length. Then proceed as in para. 62. When wiring to a plan, crossing of conductors cannot always be avoided. Careful trimming to length of each conductor is necessary (particularly when an elbow assembly or a tee connector is to be used) to

allow the contacts to seat evenly in their correct positions in the insulator. One recommended method is to prepare a drilled plate through which the conductors can be fed in their correct positions for wiring; they may then be cut evenly to the correct lengths.

Cable preparation-screened cables

64. Cut the screened cable to length (fig. 18(A)). Strip the braid to a suitable length and wind five turns of 33 s.w.g. tinned copper wire some distance from the end (fig. 18(B)); lightly solder the wire to the braiding, taking care not to damage the cable insulation. Trim the braid so that no sharp ends or frays are left (fig. 18(C)).

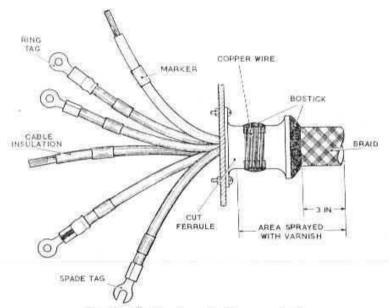


Fig. 17. Cut ferrule used with screened cable

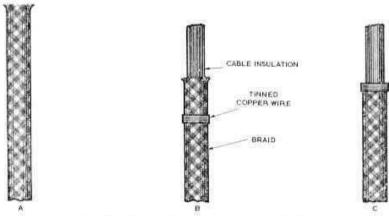


Fig. 18. Preparation of ends of screened cable

Crimping

65. Fit marker sleeves, if required, to the conductors. Fit each contact over the bared conductor end, ensuring that all strands enter the conductor well, to the full depth. Crimp the contacts to the conductors, using the instructions supplied with the tool in use.

Soldering

66. Tin dip the conductor ends and lightly tin the conductor wells with solder (to BS.219). Insert each conductor into the conductor well and solder firmly in position. Care must be taken to ensure that there is no overflow of solder from the joint and that the contact plating is not damaged by excessive heat.

Assembly of cable fittings

Cut ferrule (round or square base)—assembled to connector

67. Pass the cable through a split sleeve of the correct size, prepare the cable as for single conductors (para. 62) or for multi-core cables (para. 63), crimp or solder the conductors to the contacts (para. 65 or 66) and insert the contacts in the insulator. Locate the ferrule on the free unit or on the fixed unit shroud, pull the sleeve over the ferrule and bind with twine; coat the twine with shellac varnish.

Cut ferrule (square base)—assembled to junction

68. Where the cut ferrule is bolted to the side of a junction box (no connector used), pass the cable through a split sleeve and through the cut ferrule into the junction box. Prepare the conductor ends with markers and suitable terminations (ring or spade type tags) depending on the terminal block in the junction box. With an unscreened cable, secure the cable in the ferrule by a few turns of waxed thread; with a screened cable secure the screen of the cable in the same way but with copper wire and solder the wire to the screen and the cut ferrule. Pull the sleeve over the ferrule and bind with twine; coat the twine with shellac varnish. An alternative method (where no split sleeve is used) is to seal the mouth and the slots of the cut ferrule with bostik and spray the area shown in fig. 17 with two coats of insulating varnish.

Inner and outer ferrules

69. Strip the PVC cover or the screen to a suitable length thus exposing the conductors. Thread the coupling nut and outer ferrule on to the PVC-covered or screened cable. Locate the inner ferrule between the conductors and the PVC cover or the screen. Prepare the conductors (para. 63 or 64) and crimp or solder the contacts to the conductor ends (para. 65 or 66) and insert the contacts in the insulator. Slide the outer ferrule down so that the PVC cover or the screen is squeezed between the two ferrules; retain the assembly by screwing home the coupling nut on the free unit or the fixed unit shroud.

Ferrule plate assembly

70. Where a ferrule plate assembly has been bolted to a panel or to the side of a junction box, first thread a plain or a screw type clamp ring on to the cable, then thread the cable through the ferrule. Prepare the conductor ends with suitable terminations depending on the terminal block behind the panel or in the junction box. Secure the cable with the plain or the screw type clamp ring.

Ferrule for plastic tubing

71. Strip the plastic tubing to a suitable length, thus exposing the cable. Thread a coupling nut and a ferrule over the plastic tubing (the circular flange towards the free unit or the fixed unit shroud). Prepare the cable and the conductors (para. 63) and crimp or solder the contacts to the conductor ends (para. 65 or 66) and insert the contacts in the insulator. Bring down the ferrule so that its flange rests against the rear of the free unit or the fixed unit shroud; retain the assembly by screwing home the coupling nut.

Conduit ferrule (Type H)

72. Thread the coupling nut and the ferrule on to the conduit (circular flange towards rear of the free unit or the fixed unit shroud). Prepare the cable and the conductors (para. 63) and crimp or solder the contacts to the conductor ends (para. 65 or 66) and insert the contacts in the insulator. Arrange the ferrule so that its flange rests against the rear of the free unit or the fixed unit shroud; retain the assembly by screwing home the coupling nut. Swage or solder the ferrule to the conduit.

Conduit ferrule (Type G)

73. Where conduit requires to be suitably terminated, thread a type G ferrule on to a cable that is cut and suitably prepared. Bring the ferrule up to the conduit and swage or solder it in position.

Fixed unit shroud

74. Where it is required to accommodate cable entry accessories to a fixed unit, a fixed unit shroud must be used. Fit the shroud to the rear of the fixed unit; prepare the cable and conductors (para. 63 or 64) and crimp or solder the contacts to the conductor ends (para. 65 or 66) and insert the contacts in the insulator. Fit the accessory in the manner described in para. 67, 69, 71, 72 or 75.

Elbow assembly

75. Thread the elbow assembly—viz. cable coupling nut, cable ferrule or ferrules, elbow fitting and the unit coupling nut, unit ferrule or ferrules on to the cable in that order, Prepare the cable and conductors (para. 63 or 64) and crimp or solder the contacts to the conductor ends (para. 65 or 66) and insert the contacts in the insulator. Arrange the cable ferrule or ferrules so that their flanges rest against the rear end of the elbow fitting and secure them by screwing home the cable coupling nut. Arrange the unit ferrule or ferrules

so that their flanges rest against the rear end of the elbow fitting and secure them by screwing home the cable coupling nut.

Tee connector assembly

76. Thread one of the cable coupling nuts, the cable ferrule or ferrules of the assembly on to the cable; follow with the tee connector fitting and arrange that the cable comes out of the fitting at right-angles to its input. Thread the second coupling nut, ferrule or ferrules on to this outcoming cable. Arrange that the take-off cable goes out of the remaining aperture of the tee connector and on to this cable. Thread the remaining cable coupling nut, the cable ferrule or ferrules of the assembly. Arrange the cable ferrules so that their flanges rest against the input, output and take-off apertures of the tee connector and secure them by screwing home the cable coupling nuts.

Ejector tool (fig. 19)

- 77. This tool is essential when removing type A contacts (Table 15) from insulators. Reference and part numbers of ejector tools to fit contacts sized 7A, 7A (special), 19A, 37A and 64A are given in Table 39. The tool is operated as follows:—
 - (1) Place the tool end over the contacts so that it presses the contact flap back (fig. 19(A)).
 - (2) Push the plunger down and eject the contact from the insulator (fig. 19(B)).

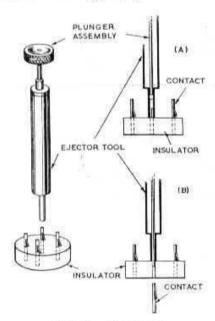


Fig. 19. Ejector tool

Renewing cables

78. When renewing a cable, use the old cable (if in a conduit) as a draw-wire for the new cable after first removing old wire ends from any bunching sleeves that may be fitted.

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Renewing a cable to a climatic-proof free unit

79. Work is minimized if this procedure is followed:—

- (1) Disconnect the free and fixed units.
- (2) Unscrew the coupling nut of the free unit and slide back the nut, ferrule and washer, as far as possible along the cable. If a cut ferrule is used, first cut away the binding.
- (3) Working from the front end insert the ejector tool in the relevant hole in the insulator and eject the contact (para. 77).
- (4) Pull the conductor end clear of the free unit.
- (5) Prepare the new cable and conductors (para, 62, 63 or 64) and crimp or solder the conductor ends to the new contacts.
- (6) Push the new contact into the vacant hole in the comb insulator until the contact locks into position.
- (7) Repeat (6) for all the contacts in the insulator.
- (8) Re-assemble the free unit and re-make the ferrule connection.

Renewing a cable to a vibration-proof free unit

- 80. Proceed as in para. 79 as far as sub-para (2); then:
 - (1) Remove the circlip and inner ferrule.
 - (2) Push up the insulator sufficiently to permit the comb insulator to slide clear.
 - (3) Proceed as para, 79 sub-para. (3) to (8).

Mounting connectors

81. The panel piercing details for mounting fixed and bulkhead units are given in Table 16 or 17; the panel piercing details for mounting pressurised bulkhead units and heavy duty pressure proof bulkhead units are given in Tables 18 and 19 respectively; the panel piercing details for quick-release units are given in Table 20. These Tables also give the recommended distances between the centres of similar size units.

Mating connectors

Normal types

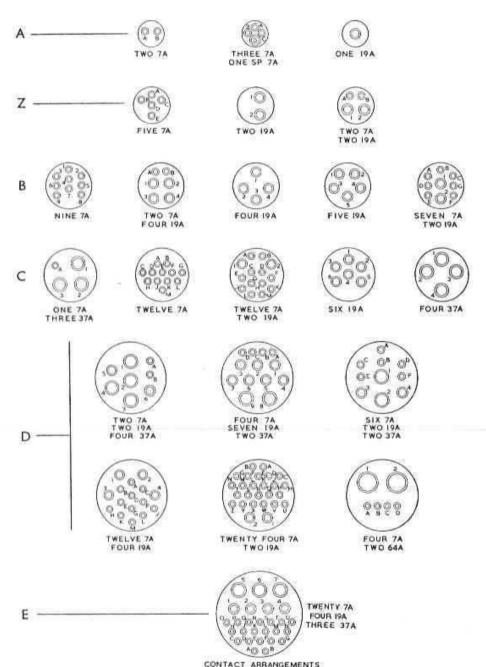
82. Slacken the free unit coupling nut (this allows the free unit shell to be rotated without twisting the cable). Line up the socket contacts with the pin contacts, then screw the free unit shell firmly into the fixed unit shell. When mating is complete, firmly tighten the coupling nut. To demate the units, first slacken the coupling nut, then unscrew the free unit shell from out of the fixed unit shell.

Quick-release types

83. To mate the units, simply push the free unit into the fixed unit. Demate the units by pulling the free unit out of the fixed unit.

WARNING

Strap wrenches must not be used for tightening connections. If necessary, they may be used with care to release a stubborn coupling nut or a screw clamp.



CONTACT ARRANGEMENTS
ALL VIEWS ARE LOOKING INTO THE FRONT FACE OF A PIN INSULATOR

Fig. 20. Contact arrangements

o, Ref. No.	393 SX/9165			395 5X/9167	396 5X/9168			398 5X/9170		1716/XS 661					400 5X/9172			403 5X/9175		401 SX(91/3				404 5X/9176					5X/9177			CX 10170
Part No.	508/1/06393			\$08/1/06395	508/1/06396			508 1 06398		96190/1/80\$ \$11/X\$ \$CC111/20C					508/1/06400			508/1/06403			2006/1/00402		2007E1000	508/1/06					508/1/06405			508/1/06407
Ref. No.	5X/7139			5X/7141	5X/7142			5X/7144		\$8/7145					9712/X5			5 SX/7149			5 5X/1148			5 5X/7150					1311/X2 3C(111 Z)C	5X/7152		7 SX7153
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Ref. No.	5X/4001	5X/4002	5X/4003	5X/4004	\$0.700£	5X/4006	5X/4007	5X/4008	5X/4009	5X/4010	5X/4011	5X/4013	5X/4014	5X/4015	5X/4016	5X/401/	5X/4018	5X/4021	5X/4022	5X/4023	5X/4024		5X 4025	5X/4026	5X/4027	5X/4028	5X/4029	5X/4030	5X/4031	5X/4033	5X 4034	1000
Part No.	CZ.1064/2	CZ 1760/2	C7 1050/2	CZ 2754/2	C7 758617	CZ 2685.2	CZ 2750/2	CZ 12347/2	CZ.1765/2	CZ.1060/2	CZ 1776/2	CZ 2655/2	CZ 2097/2	CZ 2678/2	CZ 1065/2	CZ.2687/2	CZ 12348/2	CZ 1051/2	CZ.1066/2	CZ 1070/2	CZ.2682/2		CZ 1061/2	CZ.12384/2	CZ.2744/2	CZ.1071/2	CZ.2658/2	CZ.1088/2	CZ,12370/2	27 2003/2	C7 100712	1
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Size	10:3	13	177	7 64 78	7sp	ds6I	64 7sp 19sp 200 Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.
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Normal Free Unit (Aluminium fig. 8)

Reli (100-	5X/9073	5X/9076 5X/9071		5X,9078		5X/9080		5X/9081		CC 3002	SAL MOR	5X/9085	£X/9083	5%,3084	9806/XS	5X/9087 5X/9088	5X/9089 5X/9090	•
FAIT NO.	508/1/03941	5X/7173 508/1/03942 5X/7174 508/1/03943	No de la constante de la const	508 1 03944	5X/7176 508/1/03945	508/1/03946		508/1/03947		S00/1 (M3548	Subjet jours	508/1/03931	5X/7180 508/1/03949	508/1/03950	506/1/03952	508/1/03953		LACYLE
Kel. No.	5X/17/X2	SX,7173 ATITAXS		5X/7175	5X,7176	77.17.X8		5X/7178		07171V2	SAFER	5X/7182	5X/7180	5X/7181	5X,7183	5X/7184 5X/7185	5X/7186 5X/7187	4
Ref. No. Part No.	5X/6772/B 2CZ.111230 5X/7172 508/1/03941 5X/9073	5X,679/B 2CZ 111231 5X,7173 50811,03943 5X,6773/B 2CZ 111232 5X,7774 50811,03943		6776/B 2CZ 111233	6822/B 2CZ.111436	6775/B 2CZ.111437		6777/B 2CZ.111234		207111 Walt 101700	0/14/B 22.4.11177	6778/B 2CZ.111440	5X/6779/B 2CZ.111298	6829/B 2CZ.111439	6826/B 2CZ.111441	5X,6780/B 2CZ,111235 5X,7184 508/1/03953 5X/6781/B,2CZ,111236 5X,7183 508/1/03954	5X/6832/B 2CZ 111296 5X/7186 508/1/03955 5X/6798/B 2CZ 111237 5X/7187 308/1/03936	STAGES
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Q	* * 0 III	4 4 104	Territori	1 5050139	11111	1111	3 3	CZ2323A		CZ.2123A/2		2 2	CZ2123A/3 5X/186 CZ 1093A/3 5X/187	5X/186 5X/187	CZ 2800	CZ2123A/3 5X/186: CZ.1093A/3 5X/187 CZ28005 5X/6130		(ZZ)	X2 8771	5800 202	2111688	— CZ,71778 5X/5809.2CZ,111688 5X/6809/H.2CZ,111467 5X,7727/508/1/03982 5X/9116	(2111467	TEE NS	508(1)03983	16,332
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	@ S	5411	1-11	100 000	1111	1	11000	Ĩ	1	1		B	1107A/3	\$X/2131	- CZ.1107A/3 5X/2131 CZ.59415		CZ_6053	— CZ.60533 SX(6369 CZ.71780 SX)6846 2CZ.111691 SX,6546/B 2CZ.111470 SX(7450 S05/1)03995 SX.9119	X2 0871	(16846.202	169117	5X,6546/B 20	CZ.111470	5X/7430	808/1/0368	5 5X/91
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TABLE 4
Bulkhead Unit (Aluminium fig. 10)

 ۲	61	37	Contacts 64	7sp	195p	200	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.
r4 r	1	1	1	1	4	1	CZ.2670	99/XS	CZ 2670/2	5X/4066 5X/4067	CZ.50363	5X/6262	202.111413	191L/X5	508/1 06439	5X:9211
n 40	11-	111	1 1 1	-	1 1 1	1 1	CZ 2109	5X/68	CZ_2109/2	5X 4068	CZ_50364 CZ_28182	5X/6263 5X/6012	2CZ.111414 2CZ.111415	5X/7162	508/1/06440	5X/9212 5X/9213
2	1	1	į	1	3	0.0	CZ 2688	69/XS	CZ.2688/2	5X(4069	CZ.50365	5X/6264	2CZ.111416	5X/7163	508/1/06442	5X/9214
r 4	144	1 I E	111	111	1 1 1	1.1.1	CZ.2746 CZ.11408	5X/70 5X/71	CZ.2746/2 CZ.11408/2	5X/4070 5X/4071	CZ.28185 CZ.50387	5X/6027 5X/6340	2CZ.111417 2CZ.111418	5X/7164 5X/7165	508/1/06443 5X/9215 508/1/06444 5X/9216	5X/9215 5X/9216
2 C 6 01	1111	1 1 1 1	1 1 1 1		13.1.1	1111	CZ.2668 — CZ.2105	2X/72 	CZ.2668/2 — CZ.2105/2	5X/4072 5X/4073	99805723	5X/6341	2CZ.111419 5X77166	5X/7166	508/1/06445 5X/9217	5X/9217
ŭ - - 11 c	1 4 4 4 4	1 (1111	1 1 1 1 1	11111	[1]	11111	CZ.2676	5X/74	CZ 2676/2	5X/4074	CZ.50388	5X/6342	2CZ.111420 5X/8552	5X/8552	508/1/06446 5X/9218	5X/9218
16 07	N - N	1.1.1	t i t	1.1.1	1 1 1	1 1 1	_ _ CZ.2653	5X/76	CZ.2653/2	5X,4076	CZ.56075	5X/6345	2CZ.111423	7917/XS	508/1/06449 5X/9221	5X/9221
111-1	44 N	1 m m	11111	11111	11111	11111	CZ.2677 CZ.2669 CZ.12390	77,XZ	CZ.2677/2 —— CZ.2669/2 CZ.12390/2	5X/4077 5X/4078 5X/4079	CZ.50367 CZ.50368	5X/6343 5X/6344	2CZ.111421 2CZ.111422	5X/8342 5X/8559	508/1/06447	5X/9219 5X/9220
16891	1 w 4 w	w m	1 1 1 1 1	11111	11/11/1	I 1 1 1 1	CZ_1076 CZ_2102 CZ_2581 CZ_2581	5X/80 5X/81 5X/82 5X/83	CZ.1076/2 CZ.2102/2 CZ.2681/2 CZ.2107/2	5X/4080 5X/4081 5X/4082 5X/4083	CZ 28194	5X/6072	2CZ,111424	Ĩ	508/1/06450 5X/9222	5X/9222
1 2 11 12 12	w 12 0	11114	1 1 1 1 1 1	3 1 1 13 1	11111	111111	CZ_2104 CZ_2100 CZ_2673 ————————————————————————————————————	5X/84 5X/85 5X/86 5X/86	CZ.2104/2 CZ.2100/2 CZ.2673/2 ———CZ.10710/2	5X/4084 5X/4085 5X/4086 — 5X/4087	CZ.28198 CZ.28198 CZ.28199 CZ.28200	5X,6186 5X,6092 5X,6097 5X,6102	2CZ.111426 5X/7168 2CZ.111426 5X/7169 2CZ.111427 — 2CZ.111428 5X/7170	5X/7168 5X/7169	508/1/06451 5X/9223 508/1/06452 5X/9224 508/1/06453 5X/9225 508/1/06454 5X/9225	5X/9223 5X/9224 5X/9225 5X/9226
							ST	STAGE 1	STA	STAGE 2	ST	STAGE 3	ST/	STAGE 4	STA	STAGE 5

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Chap. 1, Page 23

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4 6 7 2 2 CZ2800		া	I	1	rı	Į	1	î	CZ 2756	5X/88	CZ 27562	5X 4088	CZ 56069	5X 6346	2CZ.111434	5X 7377		5X/9232
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TABLE 5

Part No. Ref. No.	508/1/11431 5X/9506	508/1/11432 5X:9508	508/1/11433 5X/9505	508/1/11434 5X/9513			508/1/11436 5X/9509			508/1/11437 5X/9519						308/1/11438 3X/9515			308/1/11453 5X/9520	508/1 (11420	0106/30				508/1/11441 5X/9511							508/1/11443 5X/9524		508/1/11444 5X,9516	500 H 11 445
Ref. No. P.	808	308	808	808		5X/8551 508/	808			208						300		500			000				- 508							3.X, 6336		23, 8049	COUS
Part No.	2CZ.138097	2CZ,138099	2CZ.138096	2CZ.138104		2CZ.138098	2CZ.138100		Strong some	2CZ.138240					301351776	ZCZ.138100		BERDET ANDE	7677138747	207 138101	207 130106	COC1120100			2CZ.138102					1110111	202.138111	22.2.138113	F01001 5-00	2CZ.138107	2010112
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Part No.	CZ 28031	CZ 28032	CZ 28033	CZ 28034		CZ 28036	CZ.28037		CZ.28044	CZ.28038	CZ 28141				-	CZ 28039		250 ST 18 ST 18 CAN	CZ 57212		CZ 28042	CZ-28043			CZ,28046					0	CZ.28048	CZ.28049		CZ 28050	The second second
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Ref. No.	5X/9518 5X/9517	5X/9521 5X/9523		5X/9525	5X/9526	5X,9527								
Part No.	508/1/11446 508/1/11451	508/1/11448		508/1/11449	508/1/11450	508/1/11452								
Ref. No.	5X/7646	5X 8095		1	5X 8556	L								STAGE 2
Part No.	2CZ 138109 2CZ 138108	2CZ.138112 2CZ.138110		2CZ.138114	202.138115	2CZ 138116								ST
Ref. No.	3.1	3 %		6 5 99/X5	5X, 6634	I								Î
Part No.	31.36	9.1		CZ,71906	CZ.71733	1								STAGE 1
Ref. No.	5X/6108 5X/6310	5X/6113 5X6118		5X/6128	5X/6133 5X/6138	5X/6143								-STA
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et No. Part No. Part No. Part No. Ref. No. Part No. Ref. No. Part	250316 — — — — — — — — — — — — — — — — — — —	Part No Ref. No Part No Part
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910	nn	NO	10010	e jajai	1 1 1	E3E3	- CZ27398 - CZ27399		1.1	CZ.50326 CZ.50327	F.I	CZ_66487	1 1	CZ 50381 CZ 50382	5X/6304 CZ,60480 5X/6305 CZ,60482	1.1	2CZ 108920 5X/7647 2CZ 108921 5X/7534	5X/7647 5X/7534	508/1/06433	5X/9205 5X/9206
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n n n 28%		2111	17.11	1110	1111	E353 E	- CZ27609		1	62E05.Z.2	5X/6274	Ĭ	1	CZ.28116 CZ.28117	5X/6131 5X/6136	1	- 2CZ 108923 5X,7037	5X/7037	508/1/06436	5X/9208
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TABLE 8

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	1 I	1	1	1										
99831 949-0	¥	1	1	1										
4 4 4 - 0		1	1	t					-	The state of the state of	ACCOON + 100000	5010173	500 V 05450 5V 0541	ACO! V.2
10 1	1	1	Ť	1	CZ.50339				CZ.28188	24/0047	CZ1100529 3A/1163	24/11/23	County long	200
10 1		l		1										
7 2		1	1	1					-	200,000,000	ACCOUNT 10001		60011 06670	VI CO. A3
	3	1	1	1	CZ_57211	Ì			CZ_56079	5X/6348	26.2.108932	970//XS	200/1/00472	3A/324
1	1	1	1	Ľ						-	orogon soot		DC1201 11903	CVCO AS
4	1	1		1	CZ.50340	1			CZ.28191	5X/6057	2C.Z.108930		209/1/004/0	
5		1	1	1	CZ.50341	1			CZ,28192	5X/6062	2CZ_108931	5X/7124	208/1/004/1	2X 9743
ī	I	1	1	1										
1		1	E	1										
			ĺ	1	CZ.50342				CZ 28195	2X/6077	2CZ.108933 5X/7024	5X/7024	508/1/06473 5X/9245	5X/924
		1												
5	I	1	1	Ţ										
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1		ı	. 1	1										
C 10 3		1	1	1									100000000000000000000000000000000000000	
12	I	1	ţ	1	CZ_50343	1			CZ.28197	5X/6087	2CZ.84867	5X/7027	508 1 06474 5X 9246	5X/924
12 2	I.	1	į.	1	CZ 50344	1			CZ 50390	5X/6291	207 84868	5X 1079	208/1/004/2 28/374/	25/249
16	1	1	1	1					A TOTAL SECTION OF THE PARTY OF	100000000000000000000000000000000000000	100000000000000000000000000000000000000		244200 FLOOR	PACTORA
9	1	1	1	Į	CZ.50345				CZ 50391	5X/6420	202,108934	30 min	508 1 00410 57 5240	57 034
1	4	1	Įį.	L	7.50346	1			(2,50392	3X/08/1	2CZ 108933 3A/1123	C711/VC	100/1/00/	264 744
					STA	STAGE 3			S	STAGE 3	ST	STAGE 4	ST	STAGE 5

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	Contacts		J	11		H	IJ	1	11	3	1.1	1 1	11	1	11		1	1	1 1	1	03		()
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	000	1	1	11	1.1	1.1	1.1	î	11	1.1	1 1	nn	N	1.	વસ્ત	nn	r.	mi	200	m	m m	m	ne
+ BR	Part No.	CZ 50147	CENTRAL	CZ.50348 CZ.50349				CZ,50350		CZ.30351	CZ 50353												
BRASS	Ref. No.	1.1		1 f				1		È	1												
	Part No.																						
	Ref. No.																						
STEEL	Part No.	CZ_50393 CZ_56070		CZ 50394		2		CZ.50396	20000	CZ 28207	CZ 28208												
	Ref. No.	5X/6349		11				5X 6626	6615743	5X/6137	5X/6142												
1	Part No.	2CZ 108936 2CZ 108940		2CZ 108937 2CZ 108938			100000000000000000000000000000000000000	2CZ 108939	03040.2.04		2CZ.108941 5X/7126												
	Ref. No.	1.1		1 1				£	6V/700	Carl Act													
	Part No.	508/1/06478	eno 14 (0.6470)	508/1/06480				508/1/06481 5X/9255	50871 (06482	100/1/00/	508/1/06484 5X/9256												
	Ref. No.	5X/9250 5X/9255	CU. OUT.	SX 9251				5X/9255	CK 00 CA		5X/9256												

TABLE 10
Fixed Unit (Detachable Leads fig. 13)

		ALUN	INIUM	Si	TEEL
	"A" SIZE	Plessey Part No.	Ref. No.	Plessey Part No.	Ref. No.
TAGE 1	A 2/0/0	CZ.22238	5X/2183		
TAGE 2	A 2/0/0	CZ.76498	5X/6720	2CZ.111486	
STAGE 3	A 2/0/0	2CZ,140052		2CZ.140053	

TABLE 11 Free Unit (Short Reach fig. 14)

	"A" SIZE	ALUM	IINIUM	ST	EEL
		Part No.	Ref. No.	Part No.	Ref. No.
TAGE 1	A 2/0/0	CZ.27004	5X/2928		
	A 4/0/0	CZ.50951	5X/6156		
TAGE 2	A 2/0/0	CZ.140462			
	A 4/0/0	CZ 140461			
TAGE 3	A 2/0/0	508/1/11507	5X/8747	508/1/11509	5X/7573
	A 4/0/0	508/1/11508	5X/7642	508/1/11510	

TABLE 12
Heavy-Duty Pressurized Bulkhead Connector Block (fig. 15)

Connections	Part. No.	Ref. No.		Dimension	s (in.)	Weight	C	over
			A	B Dia.	c	(oz.)	Part No.	Ref. No
Three 200A	CZ.51091	5H/112	3.62	3-62	1.937	19-6	Z 51094	5H/111
Two 200A	CZ.51097	5H/110	3-62	3.62	1.937	18.2	Z 51094	5H/111
One 19A								

Add ·125 in to each end of dimension "A" if covers are used.

TABLE 13

Quick-Release Fixed and Free Units (fig. 16)

	"B" SIZE	ALU	MINIUM	S	TEEL
		Plessey Part No.	Ref. No.	Plessey Part No.	Ref. No.
	FIXED UNIT				
	B 0/5/0	CZ.12353	5X/95		
	B 0/4/0	CZ.19147	5X/3157		
	B 1/3/0	CZ.19145	5X/3158		
	B 7/2/0	CZ.51390	5X/6158		
	B 7/2/0 Bulkhead	CZ.53206	5X/6651		
STAGE 1					
	FREE UNIT				
a title paper of	B 0/5/0	CZ.10348			
	B 0/4/0	CZ.19148	5X/3159		
	B 1/3/0	CZ.19146	5X/3160		
	B 7/2/0	CZ.51395	5X/6159		
	FIXED UNIT				
	B 7/2/0			CZ,70185	5X/6470
STAGE 2					
JINOL Z	FREE UNIT				
	B 7/2/0			CZ.70186	5X/6471
	ATRIVIETER				- ANJAHA
STAGE 3	12220200 - 20000000				
	FREE UNIT			Walkara arawaran	(SEE ENDOSE END
	B 7/2/0			CZ.83851	5X/6847

TABLE 14 Thermocouple unit

Shall size				Thermo-cou	hermo-couple Contacts				Climatic	4	Pressurized	Manage	Danage
and Contact Code Arrange- ment	ů,	Contact Designation see fig. 20	Current Rating (Amps.)	Material	Contact Designation see fig. 20	Current Rating (Amps.)	Material	Shell	Proof Fixed Unit	Bulkhead	Bulkhead Unit	Free Unit	Free Unit
A 2/0/0	-	Ą	7	Constantan	В	7	Brass	Alum.	2CZ.139864	I)	2CZ.139865	2CZ.139866	2CZ.139867
A 2/0/0	a =	V	7 (Constantan	В	7	Brass	Steel	2CZ.139868	2CZ 139869	1	2CZ.139870	2CZ.139871
A 2/0/0	01.03 1.4	V	1	Chromel	В	7	Alumel	Steel	Я	2CZ.139872	Ĭ	2CZ 139873	2CZ.139874
Z.0/2/0	vi	-	19	Constantan	м	61	Brass	Steel	2CZ.139875	1	£	2CZ.139876	Ļ
Z 0/2/0	80	T.	19	Chromel	2	16	Alumel	Alum.	2CZ.139877	E	2CZ.139878	2CZ 139879	2CZ 139880
Z 0/2/0	*	-	16	Chromel	2	19	Alumel	Steel	2CZ.139881	2CZ.139882	B	2CZ.139883	2CZ.139913
Z 5/0/0	4	A, C, E	7 (Chromel	B, D	1	Alumel	Steel	2CZ.139884	2CZ,139885	1	2CZ.139886	2CZ 139887
B 7/2/0	п	н	19	Chromel	cı	61	Alumel	Steel	2CZ.139888	1	I	2CZ.139889	1
	A, B	A, B, C, D, E, F, G	7	Brass									
B 0/4/0	6	÷.) 61	Constantan	2,4	19	Brass	Steel	2CZ.139890	2CZ,139891	E	2CZ.139892	2CZ,139893
B 0/4/0	5	1,3	16	Chromel	2,4	19	Alumel	Steel	2CZ.139894	2CZ.139895		2CZ 139896	2CZ.139897
B 0/4/0	0,	1, 3	19 (Constantan	2, 4	19	Brass	Alum.	t	2CZ 139898	2CZ.139899	2CZ.139900	2CZ,139901
	16	1, 3	37 (Chromel	4 %	37	Alumel	Steel	2CZ,139902	2CZ.139903	1	2CZ.139904	2CZ.139905
C12/0/0	13 A.	A, C, E, G, J, L	7	Constantan	B, D, F, H, K, M	7	Brass	Alum.	2CZ.139906	2CZ.139907	2CZ,139908	2CZ.139909	2CZ.139910
E 20/4/3	23 M.	M, O, Q, S, U, D	1	Constantan	A, B, C, E, F, G, H,	-	Brass	Steel	2CZ 139911	1	4	2CZ.139912	1
		1, 2, 3, 4	16		5.6.7	37	Brass						

These codes represent the various contact arrangements that are illustrated on fig. 20.

TABLE 15

Contacts (fig. 21)

Socket contacts

Type A (used in stages 1, 2 and 3 of the free unit)

Contacts	Part No.	Ref. No.
7A	Z.27330	5X/3237
7A (special)	Z.28143	5X/3239
19A	Z.28144	5X/3241

Type B (used in stages 1, 2, 3, 4 and 5 of the free unit; is obsolete and must not now be used)

Contact	Part No.	Ref. No.
37A	Z.60366	5X/6951
64A	CZ.56408	5X/6400

Type C (used in stages 4 and 5 of the free unit; is obsolete and must not now be used)

Contact	Part No.	Ref. No.
7A	Z.56404	5X/6924
7A (special)	Z.56480	5X/6949
19A	Z.56405	5X/6950

Type D (used in stages 6, 7 of the free unit and in stages 1, 2, 3, if the front and rear insulators are the same as in stage 6 or 7)

Contact	Part No.	Ref. No.
7A	508/1/11188	5X/7516
7A (special)	508/1/11189	5X/7517

Type D (used in stages 6, 7 of the free unit and in stages 1, 2, 3, 4, 5, if the front and rear insulators are the same as in stage 6 or 7)

Contact	Part No.	Ref. No.
19A	508/1/11190	5X/7331

Type D (used in stages 4, 5, 6 and 7 of the free unit)

Contact	Part No.	Ref. No.
37A	508/1/11191	5X/7514
64A	508/1/11192	5X/7520

TABLE 15 continued

Type E (used in stages 4, 5, 6 and 7 of the free unit)

Contact	Part No.	Ref. No.
19A	508/1/11190	5X/7331
37A	508/1/11191	5X/7514
64A	508/1/11192	5X/7520

Pin contacts

PROGRAMM	Par	t No.
Contact	Fixed unit	Bulkhead unit
7A	508/2/11245	508/2/11250
7A (special)	508/2/11246	508/2/11251
19A	508/2/11247	508/2/11252
37A	508/2/11248	508/2/11253
64A	508/2/11249	508/2/11254

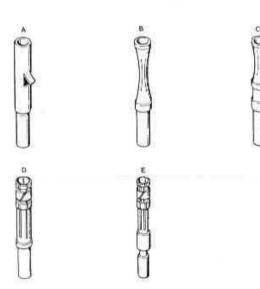


Fig. 21. Contacts

TABLE 16
Dimensions and Panel Piercing Details—(Fixed Unit) (fig. 22)

Shell			Fixing				
size	A	В	C	D	E	F	holes
A	0.941	1.384	0.497	0.781	0.937	0.720	6 B.A.
Z	0.941	1 - 509	0.679	0.934	1.125	0-875	6 B.A.
В	0.941	1 - 509	0.897	1-153	1.250	1.000	6 B.A.
C	0.941	1 - 509	1.047	1 - 341	1 - 437	1-187	6 B.A.
D	0.941	1-509	1.416	1-715	1 - 750	1-469	6 B.A.
E	0.941	1 - 509	1.672	1.965	2.000	1-687	4 B.A.

Shell		Din	ensions (in		recommended minimum	
size	G	H	J	K	L	distance between centres of similar size units (in.)
Α	0.797	0.720	0.120	0.957	0.625	1.125
Z	0.953	0.875	0.120	1-125	0.687	1 · 250
В	1 - 171	1.000	0.120	1 - 250	0.812	1 · 500
C	1 - 359	1-187	0.120	1.437	0.875	1.625
D	1 - 734	1-469	0.120	1-750	1.062	2.000
E	1.984	1 - 687	0.152	2.000	1-187	2-250

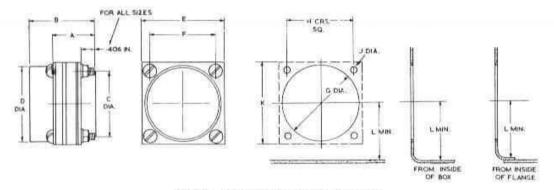


Fig. 22. Panel piercing details, fixed unit

TABLE 17

Dimensions and Panel Piercing Details—(Bulkhead Unit) (fig. 23)

Shell		Dimensions (in.)						
size	A	В	C	D	Е	holes		
Α	1.182	1:625	0.937	0.781	0.720	6 B.A.		
Z	1 - 307	1.875	1-125	0.934	0.875	6 B.A.		
В	1.307	1-875	1.250	1-153	1.000	6 B.A.		
C	1 - 307	1.875	1-437	1-341	1-187	6 B.A.		
D	1 - 307	1.875	1.750	1.715	1 - 469	6 B.A.		
E	1.307	1-875	2.000	1.965	1.687	4 B.A.		

Shell		Dir	nensions (ir	recommended minimu distance between centr		
size	G	Н	J	K	L	L of similar size units (in.
A	0.797	0.720	0.120	0.957	0.625	1-125
Z	0.953	0.875	0.120	1-125	0.687	1-250
В	1 - 171	1-000	0.120	1-250	0.812	1 - 500
C	1 - 359	1-187	0.120	1-437	0.875	1.625
D	1-734	1.469	0-120	1 - 750	1.062	2.000
E	1.984	1.687	0.152	2.000	1-187	2.250

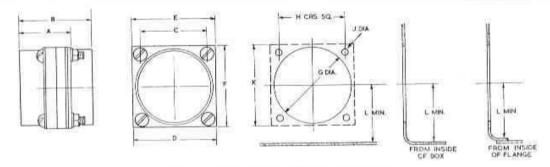


Fig. 23. Panel piercing details, bulkhead unit

TABLE 18

Dimensions and panel piercing details—(pressurized bulkhead unit) (fig. 24)

Shell			Fixing	Holes No. off				
size	Α	В	C	D	E	F	holes	500.00
Α	1.201	1.763	1-572	0-781	90°	1.018	6 B.A.	4
A Z	1 - 327	2.036	1-812	0.934	90°	1-237	6 B.A.	4
B	1 - 327	2.036	2.000	1 - 153	45°	1.414	6 B.A.	8
C	1-327	2.036	2:312	1 - 341	45°	1.678	6 B.A.	8
D	1-327	2.036	2-687	1.715	45"	2-076	6 B.A.	8
E	1-327	2.036	3.062	1-965	45°	2-386	4 B.A.	8

Shell	Dimensions		(in.)	recommended minimum distance between centres
size	G	Н	J	of similar size units (in.)
Α	0.797	1-018	0.120	1.625
Z.	0.953	1-237	0.120	1-875
В	1-171	1-414	0.120	2.062
C	1-359	1-678	0.120	2.375
D	1 - 734	2.076	0.120	2.750
E	1.984	2-386	0.152	3 · 125

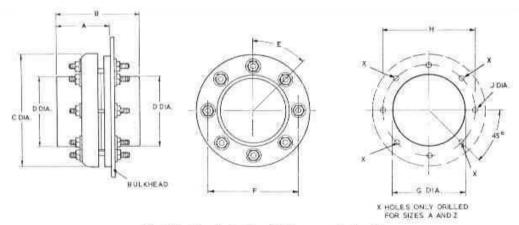


Fig. 24. Panel piercing details, pressurized unit

TABLE 19
Dimensions and Panel Piercing Details—Heavy-duty Bulkhead Unit (fig. 25)

A 3.62 3.62 mensions (in.)	B 3·62 3·62	C 0.937 0.937 Recommended distance betwee	D 2 · 25 2 · 25 minimum
3-62 mensions (in.)	3-62	0.937	2·25
nensions (in.)		Recommended	minimum
		Recommended	minimum
199		distance between	n centres
H	J	of similar size u	inits (in.)
3.062	0.152	3 · 687	
		-(

TABLE 20

Fig. 25. Panel piercing details, heavy duty bulkhead unit

Shell size			Dir	Mated Pair nensions (ir	1.)		
Size	A	В	C	D	E	F	G
В	4-75	1 - 59	1-180	4.30	2.20	1 · 70	2 · 23
		Shell size	Free U	Dimensions	(in.)		
		В	1+7	66	1.187		
1			D4 (- ja (170 W.
	D - MATED PA	-10/20-0				2 HOLES 1035 IN. DIA	171 IN. DIA

FREE UNIT
Fig. 26. Panel piercing details, quick release unit

TABLE 21
Dimensions—Fixed Unit (Detachable Leads fig. 27)

Dimensions (in.)										
Shell size	A	В	СС							
A	1-019	0.784	0.937							

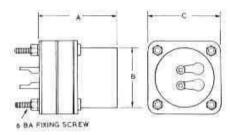


Fig. 27. Dimensions fixed unit detachable leads

TABLE 22 Dimensions—Free Unit (fig. 28)

Shell								
size	Α	В	С	D				
Α	0.610	1 - 750	0.885	0·692 24 T.P.I.				
Z	0-735	1 - 750	1.050	0·875 20 T.P.I.				
В	0.735	1-812	1-250	1 · 062 20 T.P.I.				
C	0.735	1-812	1-435	1 · 250 20 T.P.I.				
D	0-735	2.375	1.810	1-625 20 T.P.J.				
E	0.735	2-394	1.995	1-875 20 T.P.I.				

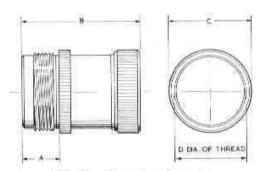


Fig. 28. Dimensions free unit

TABLE 23 Dimensions-Short-reach Free Unit (fig. 29)

Shell			Dimens	sions (in.)			
size	Α	В	С	D	E	F	
A	1-715	0-609	0.692	1 - 120	1.332	0.692	

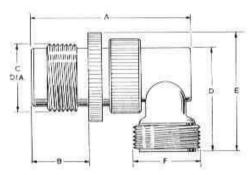


Fig. 29. Dimensions short reach free unit

TABLE 24 Spares and Replacements (Uprated Versions)

Paramatan Santana	March 1			Part Nu	mbers		
Description	Material	A	Z	В	С	D	E
Fixed or Bulkhead Unit Shell	Aluminium	508/2/11330	/11355 /11331*	/11334 /11333*	/11936 /11335*	/11337	/11338
Onit Shell	Steel	508/2/11339	/11341 /11340*	/11343 /11342*	/11345 /11344*	/11346	/11347
Fixed or Bulkhead Unit Shell Gasket	Asbestos Fibre	508/4/06069/001	/002	/003	/004	/005	/006
Fixed or Bulkhead Unit Insulator Gasket	Asbestos Fibre	508/4/11290/001	/002	/003	/004	/005	/006
Fixed or Bulkhead Unit Seating Gasket	Silicone Rubber	508/4/11288/001	/002	/003	/004	/005	/006
Bulkhead Unit Re- verse Seating Gasket	Silicone Rubber	508/4/11289/001	/002	/003	/004	/005	/006
Free Unit Shell	Aluminium Steel	508/2/11354 508/2/11360	/11331 /11361	/11356 /11362	/11357 /11363	/11358 /11364	/11359 /11365
Circlip	Steel	2Z.110344	2Z.110343	2Z.110345	2Z.110346	2Z.110347	2Z.111197
Insulating Ring	Glass Fibre (P.T.F.E. Coated)	508/4/11293	/11294	/11295	/11296	/11297	/11298
Insulating Sleeve	Glass Fibre (P.T.F.E. Coated)	508/4/11300	/11301	/11302	/11303	/11304	/11305
Free Unit Ferrule Gasket	Asbestos Fibre	508/4/11291/001	/002	/003	/004	/005	006
Free Unit Scaling Gasket†	Synthetic Rubber	508/4/11292/001	/002	/003	/004	/005	/006
Thrust Washer	Steel	508/2/11299/001	/002	/003	/004	/005	/006
Packing Cap Fixed or Bulkhead Unit	Polythene	099/4/00032/018	/021	/023	/025	/029	/032
Packing Cap Free Unit	Polythene	999/4/00032/015	/019	/022	/024	/028	/031

Required on fixed units containing all 7 amp. pins (codes 4, 7 and 13).
 † A Free Unit Sealing Gasket is supplied with each free unit to enable it to mate with an early version of fixed or bulkhead unit-When mating units are both of the uprated version, the gasket should be discarded.

TABLE 25 Fixed Unit Sealing Cap (fig. 30)

Size	Part No.	Ref. No.	A (în.)	Weight (oz.)	
Α	508/4/11180	5X/1963	0.250	0.11	
Z	508/4/11181	5X/1964	0.250	0.16	
В	508/4/11182	5X/1965	0.250	0.22	
C	508/4/11183	5X/1966	0.250	0.25	
D	508/4/11184	5X/1967	0.250	0 - 39	
E	508/4/11185	5X/2185	0.250	0.48	

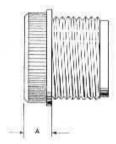


Fig. 30. Fixed unit sealing cap

TABLE 26 Fixed Unit Screening Cap (fig. 31)

Size	Part No.	Ref. No.	A (in.)	Weight (oz.)
Α	Z.13031	5X/1097	0.250	0.20
Z	Z.13106	5X/1088	0.250	0-29
В	Z.13032	5X/1089	0.250	0-37
C	Z.13033	5X/1575	0.250	0.46

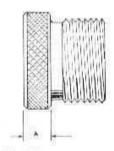


Fig. 31. Fixed unit screening cap

TABLE 27 Coupling Unit (fig. 32)

	ALU	MINIUM			TEEL kel Plated)		Dimensions	i
Size	Part No.	Ref. No.	Weight (oz.)	Part No.	Ref. No.	Weight (oz.)	A (in.)	B (in.)
Α	508/2/11410	5X/6312	0-11	508/2/11416	5X/6301	0.34	0.692×24 T.P.I.	0+585
Z	508/2/11411	5X/6500	0-18	508/2/11417	5X/6293	0.53	0.875×20 T.P.I.	0.723
В	508/2/11412	5X/6405	0.21	508/2/11418	5X/6294	0.65	1.062×20 T.P.I.	0.877
A Z B C	508/2/11413	5X/6424	0.26	508/2/11419	5X/6295	0.78	1-250×20 T.P.I.	1-022
D	508/2/11414	5X/6425	0-33	508/2/11420	5X/6296	0.99	1-625 × 20 T.P.I.	1 - 440
E	508/2/11415	5X/6820	0-42	508/2/11421	5X/6325	1.27	1.875×20 T.P.L.	1.567

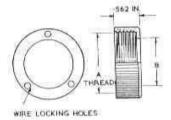


Fig. 32. Coupling unit

TABLE 28 Fixed Unit Shroud (fig. 33)

	ALU	MINIUM		STI (Nickel	EEL plated)		
Size	Part No.	Ref. No.	Wt. (oz.)	Part No.	Ref. No.	Wt. (oz.)	A (in.)
Α	508/2/11203	5X/282	0.2	508/2/11209/006	5X/	0.3	0.750
Z	508/2/11204	5X/283	0.3	508/2/11210/006	a 1110.7	0.8	0.750
В	508/2/11205	5X/284	0.3	508/3/11226/006	-	0.9	0.750
C	508/2/11206	5X/285	0.4	508/2/11227/006	-	1-3	0.750
D	508/2/11207	5X/286	0.6	508/2/11228/006	-	1 - 7	0-750
E	508/2/11208	5X/287	0.8	508/2/11229/006		2.3	1.375

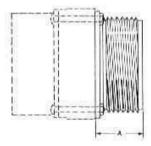


Fig. 33. Fixed unit shroud

TABLE 29 Ferrule Plate Assembly (fig. 34)

Size	Part No.	Ref. No.	Ferrule T	ubing size	Α	В	Wt.	Clamp ring Part No.	Ref. No
		200120180	200760		2552	107	(2002)	1933/10R(6)3385) TREES OF
A	CZ,24626	5X/6850	A	3	0.722	1-000	0-27	508/2/11407/100	5X/1529
	CZ.24628	5X/6631	Z	¥	0.909	1.000	0.45	508/2/11407/002	5X/6440
Z	CZ.24632	5X/6603	Z	1/2	0.722	1-187	0-35	508/2/11407/002	5X/6440
	CZ.24634	5X/6797	В	ā	0.909	1.187	0.54	508/2/11407/003	5X/6488
B	CZ.24636	-	Z	1	0.909	1.312	0.39	508/2/11407/002	5X/6440
	CZ.24638	5X/6604	В	4	0.722	1.312	0.42	508/2/11407/003	5X/6488
	CZ.24640	5X/6605	C	2	0.909	1.312	0-73	508/2/11407/004	5X/6489
C	CZ.24642	-	В	8	0-909	1.500	0.46	508/2/11407/003	5X/6488
	CZ.24644	5X/6177	C	3	0.722	1 · 500	0-83	508/2/11407/004	5X/6489
	CZ.24646	5X/6178	D	1	1.026	1.500	1.00	508/2/11407/005	5X/3143
D	CZ.24648	5X/6628	C	7	0.909	1.812	0.60	508/2/11407/004	5X/6489
	CZ.24650	5X/6180	D	1	0.839	1.812	1-35	508/2/11407/005	5X/3143
	CZ.24652	-	E	11	1.026	1.812	1-12	508/2/11407/006	5X/6490
E	CZ.24654	-	D	1	1.026	2.06	2.0	508/2/11407/005	5X/3143
	CZ.24656	5X/6606	E	11	0.839	2.06	1.6	508/2/11407/006	5X/6490
	CZ.24658	-	dia. 1-525	1 1	1-151	2.06	1-75	508/2/11407/007	

Panel piercing details are shown on Table 16. Dimension "A" Tolerance ± 0.064 in. All these assemblies are electro-tin finish except CZ.24634 and CZ.24640 which are dull nickel plate.

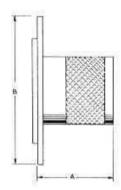


Fig. 34. Ferrule plate assembly

TABLE 30 Clamp Rings (fig. 35)

		YPE /BRASS) um Plated)			/ TYPE (STEEI mium Plated)	_)
Size	Part No.	Ref. No.	Wt. (oz.)	Part No.	Ref. No.	Wt. (oz.)
A	508/2/11407/100	5X/1529	0.04	_	-	- (1
A Z B	508/2/11407/200	5X/1530	0.07	CZ.23144/Z	5X/6440	0.24
B	508/2/11407/300	5X/1531	0.07	CZ.23144/B	5X/6488	0.25
C	508/2/11407/400	5X/1532	0.09	CZ.23144/C	5X/6489	0.26
D	508/2/11407/500	5X/1533	0.14	CZ.23144/D	5X/3143	0.30
F	508/2/11407/600	5X/1534	0.18	CZ.23144/E	5X/6490	0.35
Dia. 1-525 (in.) 508/2/11407/700	5X/1535	0.23	CZ.23144/F	inversity 75 tirba. S	0.38

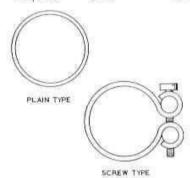


Fig. 35. Clamp rings

TABLE 31 Inner and Outer Ferrules (fig. 36)

		INNE	R				OUT	ER		
Size	Part No.	Ref. No	A (in.)	B (in.)	Wt. (oz.)	Part No.	Ref. No.	A (in.)	B (in.)	Wt. (oz.)
A	508/2/11422/100	5X/-	0.250	0.628	0:04	508/2/11423/106	5X/-	0.256	0.628	0.04
Z	508/2/11422/200		0.325	0.800	0.07	508/2/11423/206		0.325	0-800	0.07
B	508/2/11422/300		0.360	0.990	0.10	508/2/11423/306		0-360	0.990	0-11
C	508/2/11422/400		0.395	1 - 175	0.14	508/2/11423/406	-	0.395	1 - 175	0-15
D	508/2/11422/500	-	0.450	1 - 547	0.23	508/2/11423/506	1	0.450	1 - 547	0.25
A Z B C D E	508/2/11422/600		0.562	1.795	0.37	508/2/11423/606		0.562	1 - 795	0.39

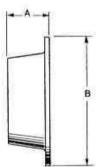


Fig. 36. Inner and outer ferrules

TABLE 32 Ferrules for Plastic Tubing (fig. 37)

		STAN	DARD Tubing					OVE	RSIZE Tubing			
Size	Part No.	Ref. No.	Size I/D (in.)	(in.)	B (in.)	Wt. (oz.)	Part No.	Ref. No.	Size I/D (in.)	A (in.)	(in.)	Wt.
A	508/2/11405/100	5X/1522	0-375	0.750	0.628	0-14	508/2/11406/100	5X/1546	0.500	0-937	0-628	0-20
Z	508/2/11405/200	5X/1523	0-500	0-750	0.800	0-19	508/2/11406/200	5X/1547	0-625	0-937	0.800	0-21
B	508/2/11405/300	5X/1524	0.625	0.750	0.990	0.22	508/2/11406/300	5X/1548	0-750	0.937	0-990	0-34
C	508/2/11405/400	5X/1525	0.750	0.750	1-175	0-30	508/2/11406/400	5X/1549	1.000	1.062	1-175	0.53
D	508/2/11405/500	5X/1526	1.000	0.875	1-547	0-58	508/2/11406/500	5X/1550	1-250	1.062	1-547	0.77
E	508/2/11405/600	5X/1527	1 - 250	0.875	1-795	0.81	508/2/11406/600	5X/2187	1 - 500	1+062	1-795	0-96

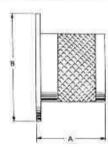


Fig. 37. Ferrules for plastic tubing

TABLE 33 Conduit Ferrule Type "H" (fig. 38)

	Conduit	ALUMI	NIUM		BR/ /Nickel				DIMEN	SIONS	
Size	Size (in.)	Part No.	Ref. No.	Wt. (oz.)	Part No.	Ref. No.	Wt. (oz.)	A (in.)	(in.)	C (in.)	D (in.)
Α	£	508/2/11366/001	5X/1570	0.04	508/2/11782/016	5X/-	0.09	0-250	0.447	0.437	0.628
Z	1	508/2/11366/019	5X/1344	0.04	508/2/11424/006	2530	0-11	0.375	0.572	0.437	0.628
Z	i	508/2/11366/018	5X/1571	0.05	508/2/11782/126	2	0-13	0-375	0.572	0.437	0.800
	1	508/2/11366/017	5X/1343	0.05	508/2/11782/116		0.14	0-500	0.697	0.437	0.800
	- 1	508/2/11366/016	5X/1074	0.06	508/2/11782/026		0.21	0.375	0.572	0-437	0-990
B	ii.	508/2/11366/009	5X/1327	0.07	508/2/11782/046		0-21	0-625	0-828	0-500	0-990
	7	508/2/11366/011	5X/1328	0.07	508/2/11782/096		0.19	0-500	0-697	0-437	0.990
C	ă .	508/2/11366/004	5X/1325	0.09	508/2/11782/106		0-26	0 625	0.828	0+500	1.173
	3	508/2/11366/003	5X/909	0.08	508/2/11782/056	224	0.24	0.750	0.982	0-500	1-175
D		508/2/11366/012	5X/1329	0-13	508/2/11782/146		0+30	0.750	0.982	0 500	1 574
1997	11	508/2/21366/013	5X/912	0-15	508/2/11782/166		0-45	1.000	1-267	0 562	1 574
E	i	508/2/11366/015	5X/1330	0-19	508/2/11782/066		0-50	1 000	1-267	0-625	1 - 800

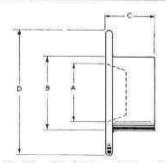


Fig. 38. Conduit ferrule Type H

TABLE 34 Conduit Ferrule Type G (fig. 39)

	AI	.UMINIUM			BRASS (Nickel Plated)			Dimension	5
Conduit Size (in.)	Part No.	Ref. No.	Wt. (oz₊)	Part No.	Ref. No.	Wt. (oz.)	A (in.)	B (in.)	C (in.)
3	Z.1431	5X/2073	0.03	2Z.139938	5X/-	-	0.375	0.572	0-437
À	Z.1432	5X/2074	0.04	2Z.139939	-	0.12	0.500	0.697	0.437
ě	Z.1433	5X/1342	0.05	2Z.139940	-	0.14	0.625	0.828	0.437
3	Z.1434	5X/2075	0.07	2Z.139941			0.750	0.982	0 - 500
î.	Z.1435	5X/2076	0-11	2Z.139942	\equiv	0.30	1.000	1-267	0-625
11	Z.1450	5X/2077	0.11	esemental annie	-	0.000.000	1 - 250	1-522	0-625

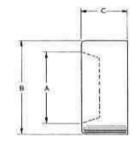


Fig. 39. Conduit ferrule Type G

TABLE 35 Elbow Assembly (fig. 40)

Size	Part No.	Ref. No.	A (in.)	B (in.)	Wt. (oz.)
A	508/1/11456	5X/-	0.70	0.81	1-20
Z	508/1/11457	-	0.72	0.93	1.42
В	508/1/11458		0.84	1.02	1.80
C	508/1/11459		0.94	1.02	2.56
D	508/1/11460	9-0	1.12	1.31	4.18
E	508/1/11461		1-18	1.50	5.24

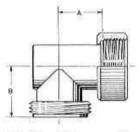


Fig. 40. Elbow assembly

TABLE 36 Tee Connector

Siza	Part No.	Δ	В	Wt.	
Size	111(110)	(in.)	(in.)	(oz.)	
A	2CZ.139950	2.02	0.81	1.09	
Z	2CZ.139951	2.24	0.93	2.12	
В	2CZ.139952	2.50	1.02	3-34	
C	2CZ.139953	2.74	1.02	3-55	
D	2CZ.139954	3.00	1-31	6.86	
E	2CZ.139955	3.25	1.50	6.96	

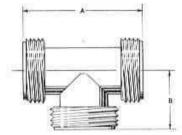


Fig. 41. Tee connector

TABLE 37 Cut Ferrule (Round Base) (fig. 42)

Size	Part No.	Ref. No.	Wt. (oz.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)
	508/2//006	5X)						
	07871	8668	0.22	0.275	0.375	0.625	0.036	0.625
A	07872	8724	0-21	0.355	0-500	0.687	0.036	0.625
100	07873	8718	0-23	0.405	0-468	0.625	0.036	0.625
	07874	8959	0.23	0.442	0-500	0.687	0.020	0.625
	508/2//006	5X/						
Z	15485	8708	0.33	0.355	0.437	0.750	0.036	0.800
	15486	8961	0.33	0.505	0.625	0.687	0.020	0.800
	508/2//006	5X/						0.20
	07878	8962	0.42	0.355	0-500	1 -000	0.048	0.990
	07879	8963	0.35	0.405	0.593	$1 \cdot 187$	0.036	0+990
	07880	8964	0.40	0.505	0.650	1.187	0.036	0-990
В	07881	8965	0.40	0.605	0.725	0.687	0.020	0.990
	07882	8966	0.43	0.723	0.812	0.687	0.020	0.990
	07883	8967	0.43	0.755	0.812	0.687	0.020	0-990
	508/2//006	5X/			0.000	0 1227	2021	D 000
	1.5487	8968	0.54	0.405	0.593	1.187	0.048	1-175
	15488	8489	0 - 50	0.605	0.781	1-187	0.036	1-17
C	15489	8665	0.56	0.705	0.906	1-187	0.036	1-17:
	15490	8974	0.46	0.905	1.000	0.875	0.036	1 - 175
	508/2//006	5X/			non mananan	o management	TOWN OF SERVE	0.0000000000000000000000000000000000000
D	15491	8669	0.68	0+805	1+000	1-125	0.036	1-55
	15492	8709	0.78	1.005	1-281	1-125	0.036	1-550
	508/2//006	5X/			17.71.0427.0	rannera en		114111 APR 441
E	15493	8974	0-95	1 - 205	1.500	1.125	0.036	1.80
	15494	8490	0.94	1.255	1-537	0.875	0.036	1.80

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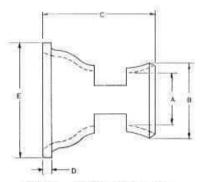


Fig. 42. Cut ferrule round base

TABLE 38 Cut Ferrule (Square Base) (fig. 43)

Size	Part No.	Ref. No.	Wt. (oz.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)
	508/2/	5X/						
	15495	10163	0.47	0-320	0.406	0.875	0.036	0.937
A	15496	10164	0-48	0.405	0.468	0.875	0.036	0.937
	15497	10165	0.56	0-405	0.500	0.750	0.036	0.937
Z	508/2/15498	5X/						
	W 16	10166	0.56	0.500	0.562	1-187	0.036	1.125
	508/2/	5X1						
	15499	10167	0.56	0.500	0.593	1-187	0.036	1 - 250
	15500	10168	0.56	0.505	0.625	1-187	0.036	1.250
В	15501	10169	0.56	0.600	0.687	1-187	0.036	1-250
	15502	10170	0-58	0.687	0.750	1-187	0.036	1 - 250
	15503	10171	0-64	0.705	0.906	1.187	0.036	1 - 250
	15504	10172	0.68	0.905	1.000	0.875	0.036	1 - 250
		5X/						
C	508/2/15505	10173	0.75	0.750	0.812	1 - 187	0.036	1 -437
		5X/						
	508/2/15506	10174	0.82	0.805	0.875	1 - 375	0.036	1 - 750
D	508/2/15507	10175	0.84	1-000	1.062	1.500	0.036	1 - 750

Note: Panel piercing details are shown on Table 16.

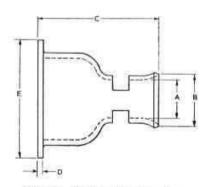


Fig. 43. Cut ferrule square base

TABLE 39 Ejector Tool (fig. 19)

Tool to fit contact size	Part No.	Ref. No.
7A (special)	CZ,23294	5X/2236
7A	CZ.23306	5X/2237
19A	CZ.23300	5X/2238
	CZ.23295	5X/2239
37A 64A	CZ.23291	5X/2240
	Tarrest of Estate Convention	SAMELE FORM