



PROMATEC

PROGRESSIVE MATERIALS AND TECHNOLOGIES, INC.

PROCEDURE :	PROCEDURE NUMBER :
INSTALLATION OF THREE HOUR FIRE PROTECTIVE WRAP SYSTEM	<u>IP -001</u>

PROCEDURE ISSUE SUMMARY

ISSUE DATE	PREPARED	APPROVED	COMMENTS
4/15/86 C ISSUE	<i>Ken Harris</i> Ken Harris	<i>Roy Bonebrake</i> Roy Bonebrake <i>Randy Brown</i> Randy Brown	Revised for Clarification and to add Fig. 6 & 7.
D Issue 06 17 86	<i>R. Brown</i> R. Brown	<i>R. Glenn</i> R. Glenn <i>R. Bonebrake</i> R. Bonebrake	Revised as noted. Issued for use.

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PDR ORG NRRB
PDR

FORM 203
06/01/82 (Rev 1) 06/06/84

5-25555555-555555

NO. 301 451 40 (FROM THE ...)



INSTALLATION OF THREE HOUR
FIRE PROTECTIVE WRAP SYSTEMS

CONDUITS / THREE SIDED WRAP / CABLE DROPS

1.0 PURPOSE

To establish methods and guidelines for the installation of the Promatec Three Hour Fire Protective Wrap Systems in accordance with established design criteria.

2.0 SCOPE

- 2.1 To provide methods and sequence steps for installation of inner blanket assemblies, foil barrier and the outer blanket assemblies.
- 2.2 To establish dimensional requirements for installation.
- 2.3 To provide requirements and methods for field repairs and modifications.
- 2.4 Inform craft personnel of the Quality Control inspection notification points to assure work does not proceed until such inspection is performed.

3.0 REFERENCES

- 3.1 Procedure No. QCP-0041, INSTALLATION INSPECTION OF THREE HOUR FIRE PROTECTIVE WRAP SYSTEMS
- 3.2 Typical Design Details B-495 and B-496

4.0 C FINITIONS

- 4.1 INNER BLANKET -- Total one (1) inch thickness of alumina silica blanket enveloped with fiberglass cloth.
- 4.2 FOIL BARRIER -- .002 thick Stainless Steel Foil
- 4.3 OUTER BLANKET -- A multi-layered outer blanket assembly consisting of a one and one half (1 1/2) inch alumina silica blanket and a separate prefabricated fiberglass assembly containing a powdered ingredient with either both enveloped by a fire resistant outer fabric or as two separate components with alumina silica blanket enveloped with a fire resistant fabric, only.

ISSUE INDICATION IN THIS COLUMN INDICATES CURRENT CHANGE.

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5.0 RESPONSIBILITY

- 5.1 The Construction Manager or Designee shall be responsible for the development, review, approval and proper implementation of this procedure in accordance with established design requirements.
- 5.2 The Quality Assurance Manager or Designee shall be responsible for the review and approval of this procedure to assure conformance to established design requirements.
- 5.3 The assigned Engineer shall be responsible for defining work scopes and for providing the information required to perform installation activities described herein.
- 5.4 Craft personnel shall be responsible for performing the installation activities in accordance with this procedure.

6.0 PROCEDURE

- 6.1 Only approved materials, issued under controlled conditions, shall be used in the installation, modification and repair of Three Hour Fire Protective Wrap System components.
- 6.2 Conduit/Junction Box Installation
 - 6.2.1 Installation of Inner Blanket Assemblies
(Refer to FIRST STEP as shown on Figure 1)
 - 6.2.1.1 Install first inner blanket around the conduit/junction box assuring that the shiplap joint is as tight as possible. Maximum allowable gap is 1/2".
 - 6.2.1.2 Utilize duct tape to hold blanket firmly in place (apply duct tape completely around blanket to provide tape to tape adhesion).
 - 6.2.1.3 Install subsequent blankets per 6.2.1.1 assuring that lengthwise shiplap joints are as tight as possible. Maximum allowable gap is 1/2".
 - 6.2.1.4 Duct tape per 6.2.1.2.
 - 6.2.1.5 Notify Quality Control for inspection prior to proceeding.
 - 6.2.2 Installation of Stainless Steel Foil Barrier
(Refer to SECOND STEP as shown on Figure 1)
 - 6.2.2.1 Install foil strips lengthwise around the conduit/junction box providing a MINIMUM six (6) inch overlap on ends and edges.



- D
- 6.2.2.2 In cases where a 6" overlap cannot be achieved due to conduit curvature, foil strips shall be installed with a minimum 2" overlap.
- 6.2.2.3 Utilize duct tape to hold foil strips firmly in place. Duct tape and/or aluminum foil tape may be used at the edges of the strips if gap appears excessive due to conduit curvature.
- 6.2.2.4 Notify Quality Control for inspection prior to proceeding.

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6.2.3 Installation of Outer Blanket Assemblies
(Refer to THIRD STEP as shown on Figure 2)

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- 6.2.3.1 Install first outer blanket around conduit assuring that the shiplap joint is as tight as possible. Maximum allowable gap is 1/2".
- D
- 6.2.3.2 Connect ends by fastening 16 ga. S.S. tie wire between each corresponding lacing hook. Recheck final positioning and tighten securely exercising caution to prevent blanket damage.

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Note: An additional tie wire may be used after blanket is in final position as necessary to assure a snug fit.

- D
- 6.2.3.3 Install subsequent blankets per 6.2.3.1 and 6.2.3.2 assuring that lengthwise shiplap joints are properly aligned.

- D
- 6.2.3.4 Connect adjoining blankets at circumferential shiplap joints by fastening 16 ga. S.S. tie wire between each corresponding lacing hook.

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Note: An additional tie wire may be used after blanket is in final position as necessary to assure a snug fit.

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- 6.2.3.5 Notify Quality Control for final inspection.

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6.3 Three Sided Wrap Installation
(Refer to Typical Design Drawings B-495 and B-496)

A three sided or similar installation is required in the event that the conduit or a junction box is installed in close proximity to a wall or floor preventing installation of a wrap surrounding the conduits.

This type of installation requires attachment to the concrete



surface utilizing site approved concrete anchoring devices as outlined herein. If anchors are installed by others, notify Quality Control for inspection per 6.3.3 prior to proceeding with blanket installation.

6.3.1 Install site approved concrete anchors (minimum 1/4" diameter recommended) on maximum 12" centers. Distance from sides of conduit or junction boxes to be determined by Engineering.

Factors to consider are: 1) blanket size, 2) surface characteristics of concrete, 3) number and type of interferences

6.3.2 Anchors should be pre-set before blankets are impaled onto studs

6.3.3 Notify Quality Control for inspection before proceeding

6.3.4 Place inner blanket around conduit or junction box and impale on studs going from side to side to assure proper alignment. Maintain a one (1) inch nominal thickness of inner blanket.

6.3.5 Utilize duct tape to keep joints flush and to hold blanket(s) in position.

6.3.6 Edge of inner blanket shall extend a minimum of two (2) inches from center of studs.

6.3.7 Notify Quality Control for inspection before proceeding.

6.3.8 Install SS foil barrier over inner blanket providing a Minimum six (6) inch overlap on all joints. In cases where 6" overlap cannot be achieved due to sharp curvatures install foil strips with a minimum 2" overlap.

6.3.9 Impale foil over studs allowing for the two (2) inch minimum requirement.

6.3.10 Utilize duct tape to hold foil firmly in place. Aluminum foil tape may be utilized if gaps are excessive.

6.3.11 Notify Quality Control for inspection before proceeding.

6.3.12 Install outer blanket over foil barrier and impale over studs. Edge of outer blanket shall extend a minimum of two (2) inches over studs. Maintain a two one half (2 1/2) inch nominal thickness of outer blanket.

6.3.13 Install fender washers and/or B 72 strut and/or flat bar retainer strap over studs assuring that blanket assemblies are not wrinkled or bunched.



6.3.14 Install appropriate sized locknuts (or double nuts) and securely tighten. Do not overtighten. Depression of blanket shall not exceed 3/4".

6.3.15 Connect adjacent blankets or edges of a prefabricated blanket together with 16 ga tie wire between each corresponding lacing hook.

Note: An additional tie wire may be used after blanket is in final position as necessary to assure a snug fit.

6.3.16 Recheck final positioning and tighten securely. Exercise caution to prevent damage to blanket assemblies.

6.3.17 Notify Quality Control for final inspection.

6.4 Field Modifications and Repairs

6.4.1 Should an opening in the wrap system exist due to installation conditions, fill with appropriate inner blanket, alumina silica blanket/fiber, foil barrier and/or outer blanket materials. Engineering to determine size of such small assemblies required.

If hog rings are to be used to close blanket assembly, rings are to be installed on one (1) inch MAXIMUM centers. Q24 quartz thread may be used in lieu of hog rings for inner and/or outer blanket.

Site craft installers to fabricate under supervision of Engineering. Quality Control to provide inspection of such fabrication and/or installation.

6.4.2 Non-electrical interferences (piping, hangers, supports, etc.) shall be protected with a total four (4) inch thickness of alumina silica blanket. The outer layer of alumina silica blanket shall be enveloped with an approved outer fabric. Wrap for a minimum distance of eighteen (18) inches or for full length of interference if less than 18 inches as shown on Figure 3, page 12 of this procedure. Install a sufficient number of lacing hooks and tie wire to close longitudinal seam and to secure wrap to primary system.

6.4.3 When a protected conduit is in close proximity to an electrical cable tray, the interfering portion of the tray shall be included within the conduit wrap system.

Insert alumina silica blanket/fiber around cables for a minimum distance of eighteen (18) inches from each side of the protected conduit as shown on Figure 4, page 13 of this procedure.



6.4.4 Craft installers shall repair damaged blanket assemblies under supervision of Engineering. Only acceptable materials shall be utilized.

6.4.4.1 Patches of proper fabric type shall be cut to a size sufficient to cover a tear or hole overlapping a minimum two (2) inches onto undamaged fabric. Patches shall have a finished edge on all sides. Install as shown on Figure 5, page 13 of this procedure.

NOTE: Small tears not exceeding two (2) inches in length can be loop stitched with Q-24 thread at maximum spacing of 1/2". Holes or tears in fiberglass cloth and outer fabric not exceeding 1" shall not require repair.

6.4.4.2 If inner alumina silica blanket material is damaged or has a void, add additional material as necessary.

6.4.4.3 Engineering concurrence shall be obtained for any repair activities. Upon completion, notify Quality Control for inspection.

6.4.5 Additional lacing hooks may be added as needed in conjunction with original installation or modification.

6.5 Cable Drop Installation

6.5.1 Installation of Inner Blanket Assemblies
(Refer to first step as shown in Figure 6)

6.5.1.1 Bundle cables into as nearly a round configuration as feasible. Duct tape or cable tie wraps may be used to maintain this configuration.

6.5.1.2 Install first inner blanket around cable bundle assuring that shiplap joint is as tight as possible. Maximum allowable gap is one half (1/2) inch.

6.5.1.3 Utilize duct tape to hold blanket firmly in place (apply duct tape completely around blanket to provide tape to tape adhesion).

6.5.1.4 Install subsequent blankets (if required) per 6.5.1.2 assuring the lengthwise shiplap joints are as tight as possible.

6.5.1.5 Duct tape per 6.5.1.3.

6.5.1.6 Notify Quality Control for inspection prior to proceeding.



6.5.2 Installation of Stainless Steel Foil Barrier
(Refer to SECOND STEP as shown in Figure 6)

6.5.2.1 Install foil strips length wise around the cable bundle providing a minimum six (6) inch overlap on ends and edges.

6.5.2.2 Utilize duct tape to hold foil strips firmly in place. Duct tape and/or aluminum foil tape may be used at the edges of the strips if gaps appear excessive due to curvature of the cable drop bundle.

6.5.2.3 Notify Quality Control for inspection prior to proceeding.

6.5.3 Installation of Outer Blanket Assemblies
(Refer to THIRD STEP as shown on Figure 7)

6.5.3.1 Install first outer blanket around conduit assuring that the shiplap joint is as tight as possible. Maximum allowable gap is 1/2".

6.5.3.2 Connect ends by fastening 16 ga. S.S. tie wire between each corresponding lacing hook. Recheck final positioning and tighten securely exercising caution to prevent blanket damage.

Note: An additional tie wire may be used after blanket is in final position as necessary to assure a snug fit.

6.5.3.3 Install subsequent blankets per 6.2.3.1 and 6.2.3.2 assuring that lengthwise shiplap joints are properly aligned.

6.5.3.4 Connect adjoining blankets at circumferential shiplap joints by fastening 16 ga. S.S. tie wire between each corresponding lacing hook.

Note: An additional tie wire may be used after blanket is in final position as necessary to assure a snug fit.

6.5.3.5 Notify Quality Control for final inspection.

6.6 Alternate method for installing outer blanket assemblies.

6.6.1 Wrap tube assembly around foil barrier assuring that ends abutt with no apparent gaps. Install duct tape completely around assembly with tape-to-tape adhesion at sufficient spacing to assure no gaps at longitudinal joint.

YOUR INVESTIGATION IN THIS COLUMN INDICATES CURRENT TRENDS.



6.6.2 Install subsequent tube assemblies per 6.6.1 assuring that circumferential joints firmly abutt with no apparent gaps and that longitudinal joints are properly aligned. Apply duct tape lengthwise across each circumferential joint to hold in place.

6.6.3 Notify Quality Control for inspection prior to proceeding.

6.6.4 Install alumina silica blanket around tube assembly assuring that ends abutt with no apparent gaps. Stagger longitudinal and circumferential joints a minimum 6 inches from respective tube assembly joints.

6.6.5 Connect longitudinal joint by fastening S.S. tie wires between each adjacent lacing hook.

Note: An additional tie wire may be used after blanket is in final position as necessary to assure a snug fit.

6.6.6 Notify Quality Control for inspection after each blanket is installed.

6.6.7 Install subsequent blankets as noted above. Stagger circumferential joints a minimum 6 inches from tube assembly joints.

6.6.8 Connect adjoining blankets by fastening S.S. tie wire between each adjacent lacing hook at circumferential joints assuring tight fit with no apparent gaps.

Note: An additional tie wire may be used after blanket is in final position as necessary to assure a snug fit.

6.7 Raceway Identification tags

6.7.1 Upon completion of wrap system installation, raceway identification tags (as furnished by the client) shall be affixed on both ends with S.S. tie wire as follows:

6.7.1.1 If conduit runs 5 feet or longer, affix tags at all entrance and exit points (walls, floors) and at the origin and destination points (cable tray, junction box, etc.).

6.7.1.2 If conduit run is less than 5 feet, affix one tag at a central location or at the most visible location of the conduit. Conduits shall be identified at intervals not greater than 15 feet.

ISSUE IN THIS COLUMN INDICATES CURRENT ISSUE

ISSUE: D

6/17/86



PROMATEC

PROMATEC MATERIALS AND TECHNOLOGIES INC.

NO: IP-001

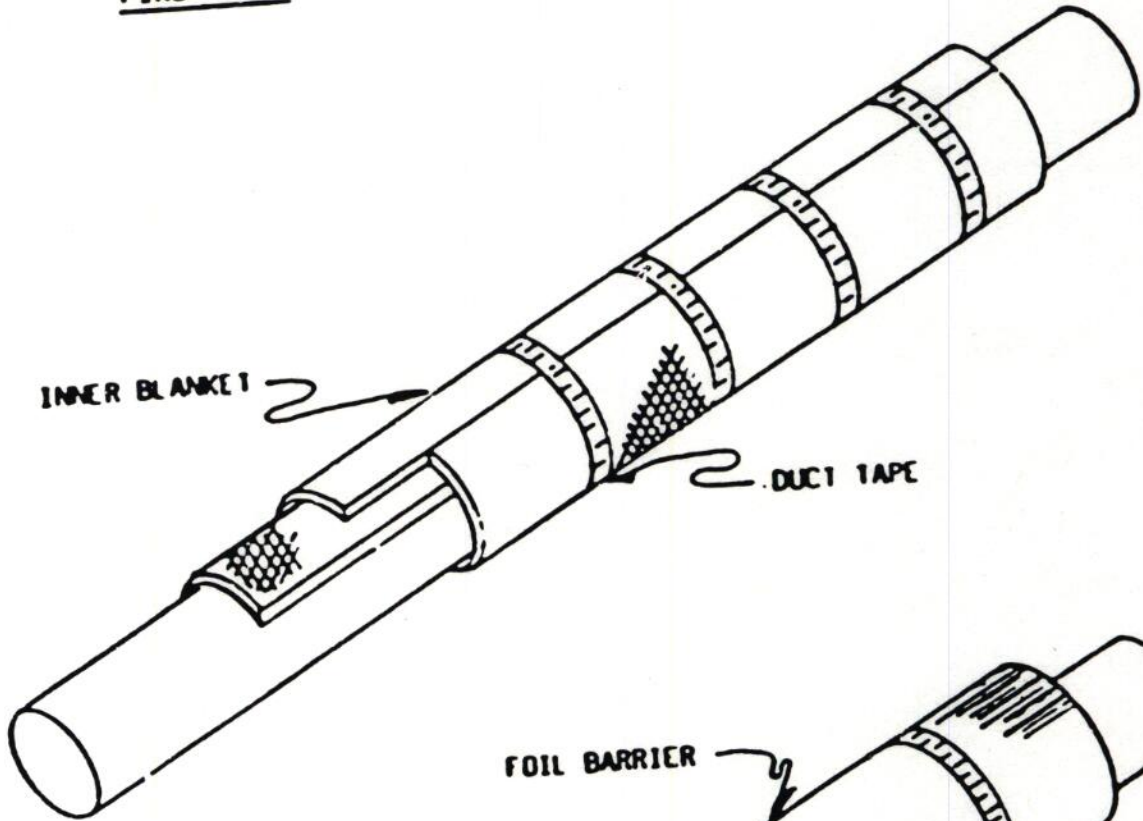
PAGE: 10 of 17

D 7.0 ATTACHMENTS

None

ISSUE IN SIGNATURE IN THIS COLUMN INDICATE'S SIGNATURE IN THIS COLUMN

FIRST STEP



INNER BLANKET

DUCT TAPE

SECOND STEP

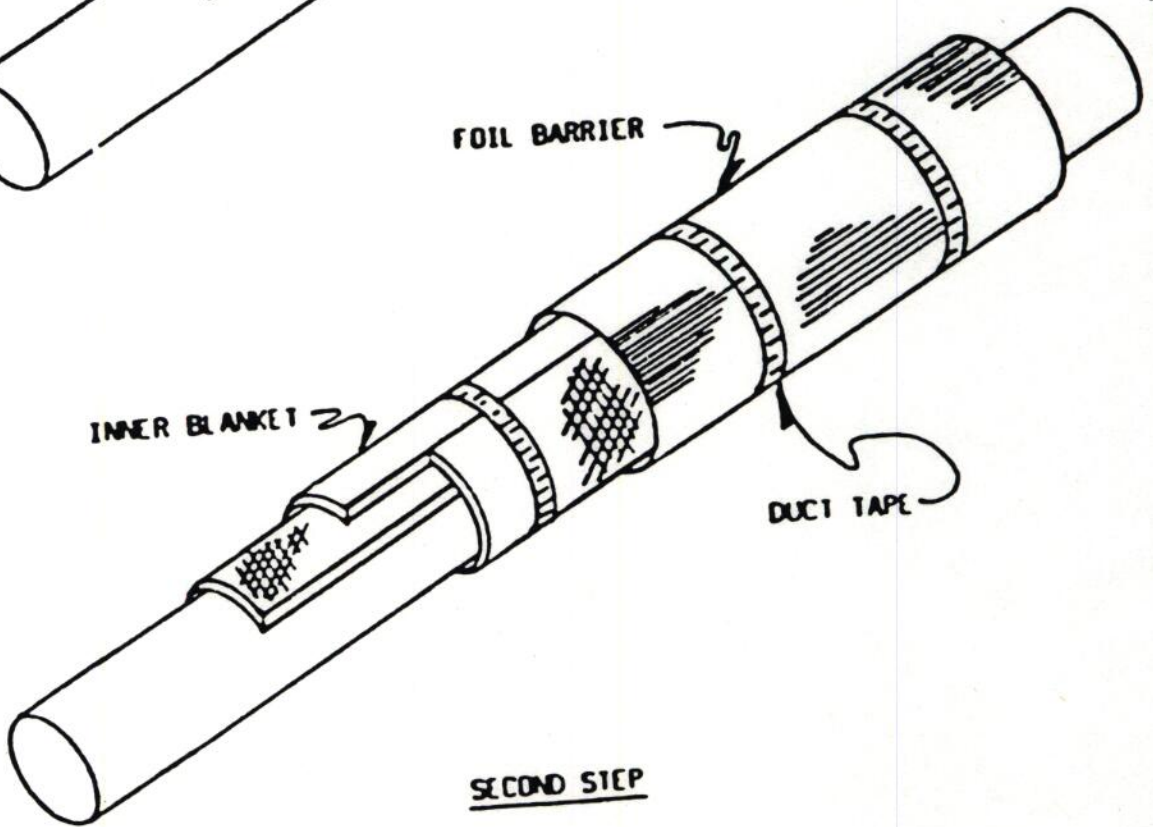
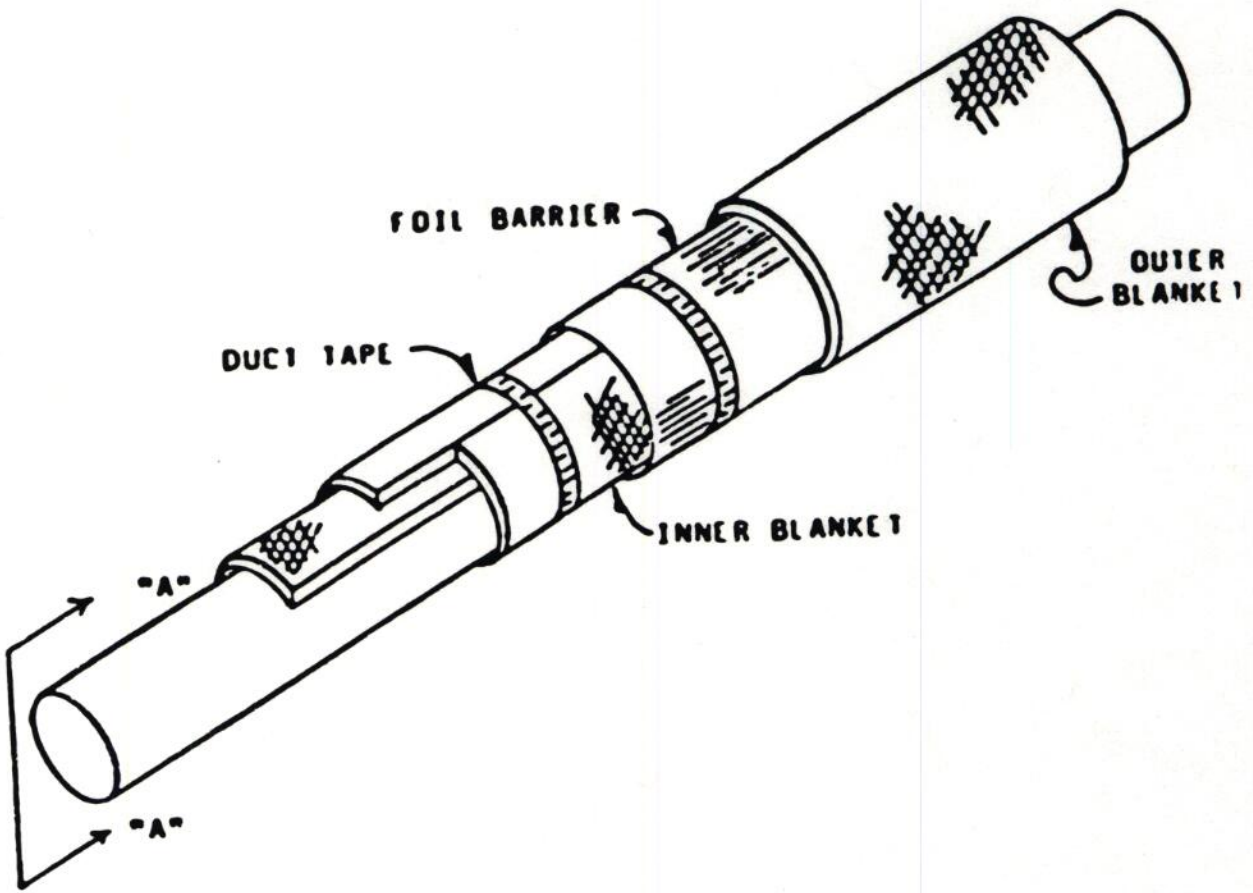


FIGURE - 1



THIRD STEP



SECTION "A"-"A"

FIGURE - 2

FRONT VIEW'S LIBRARY INDICATES THIS COLUMN INDICATES THIS COLUMN INDICATES THIS COLUMN

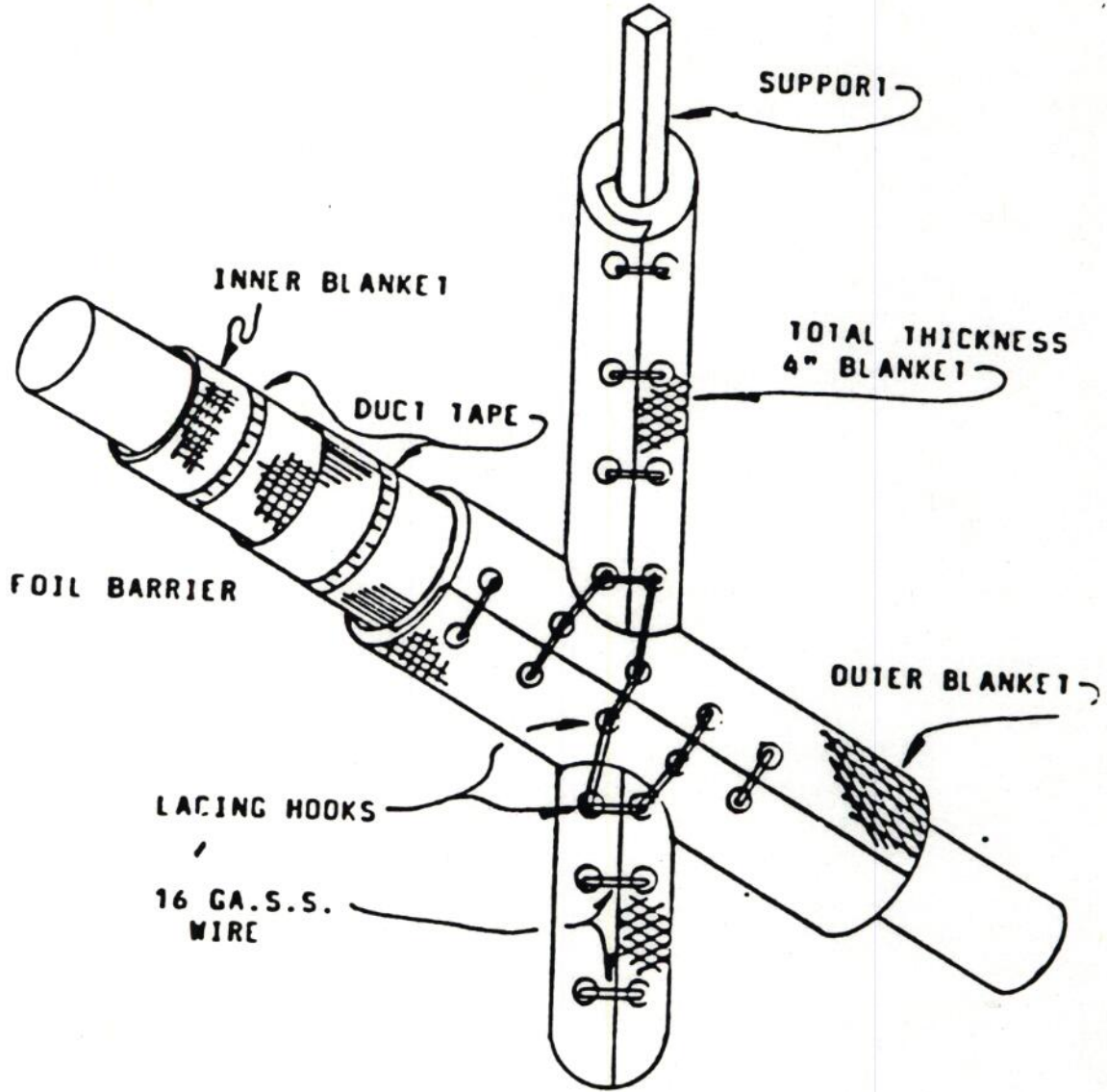


FIGURE - 3

SCALE INDICATION IN THIS COLUMN INDICATE'S CURRENT FIGURE.



FOR INFORMATION IN THIS COLUMN INDICATE'S CURRENT WORK

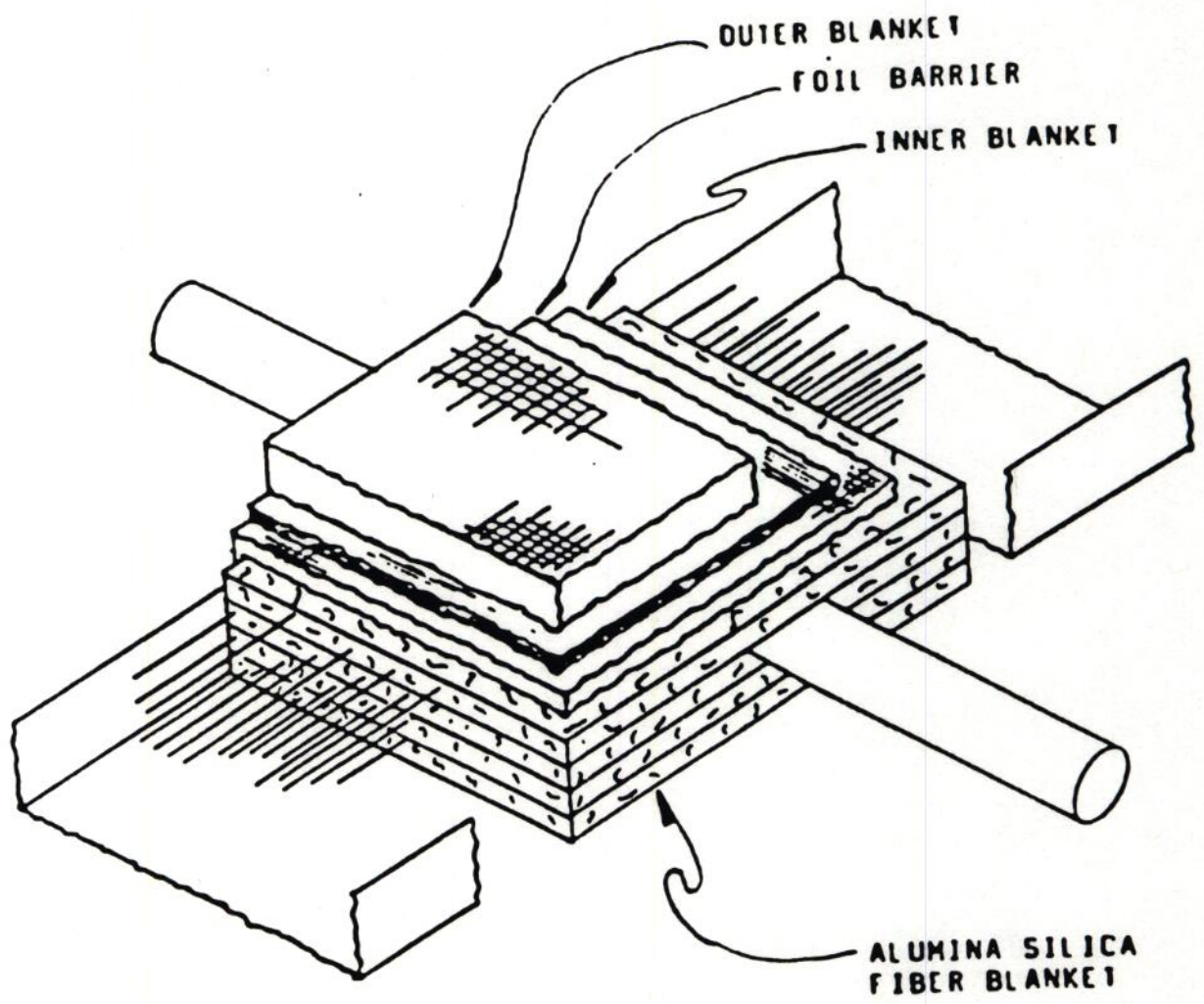
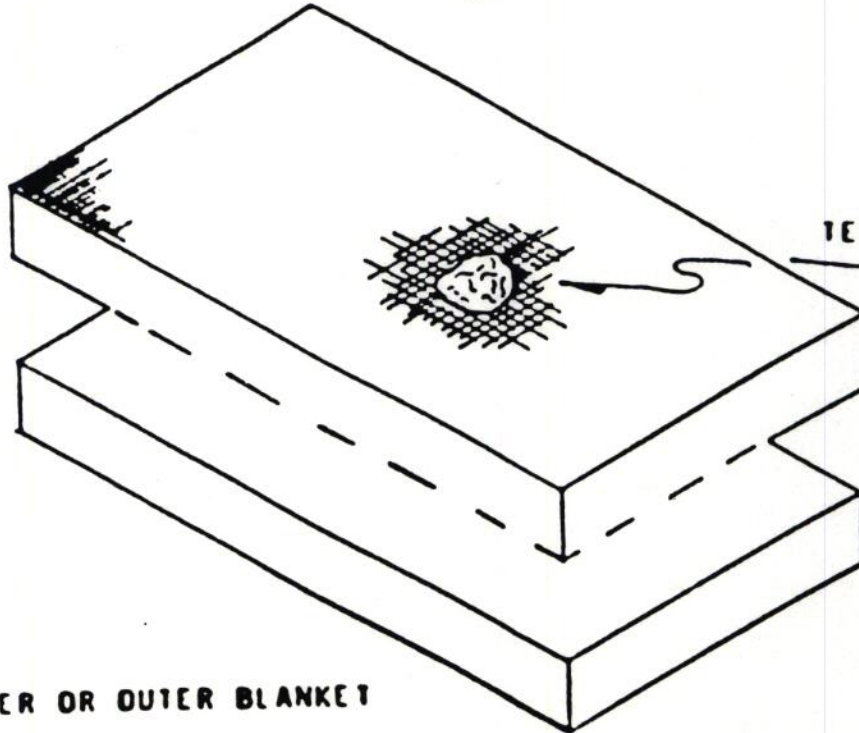
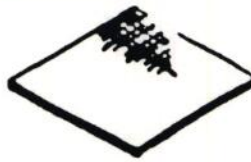


FIGURE - 4



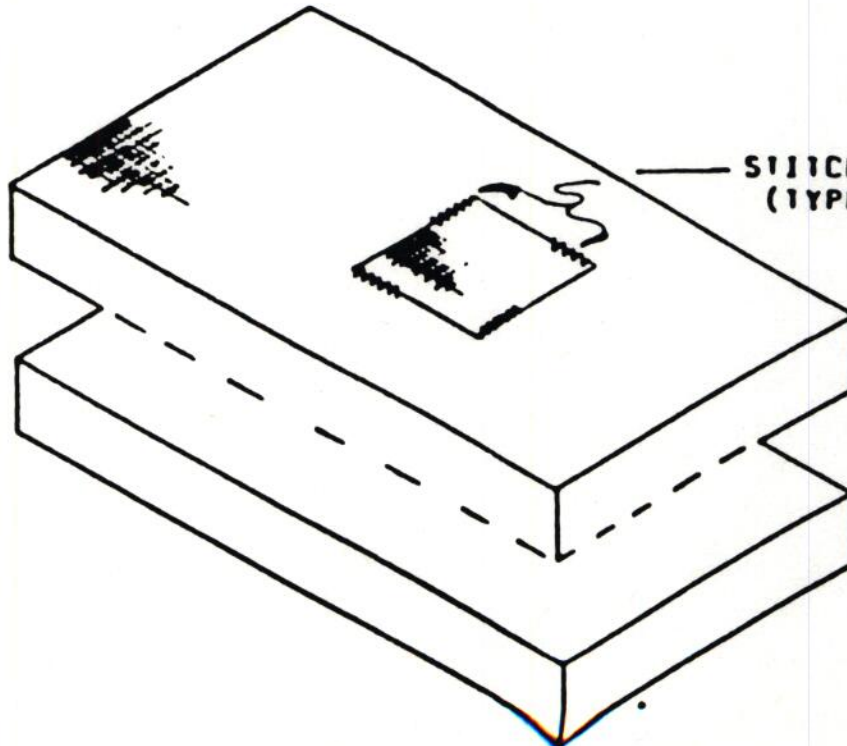
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PATCH



TEAR OR HOLE

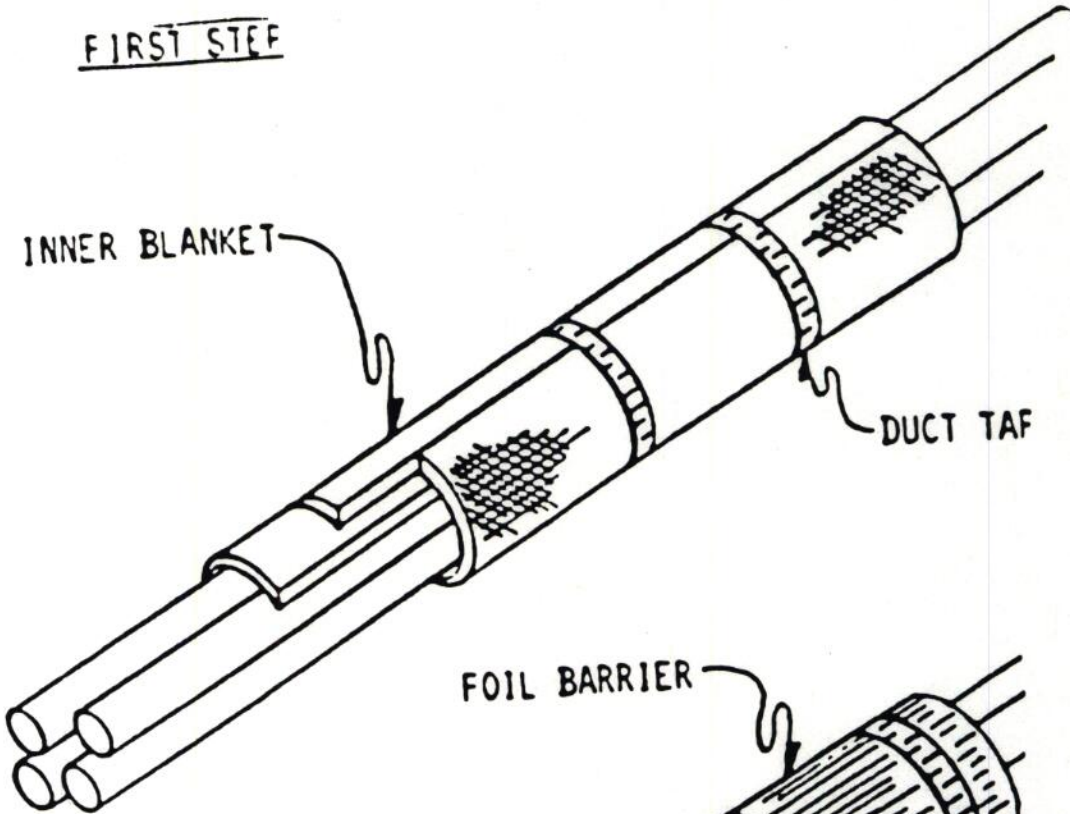
INNER OR OUTER BLANKET



STITCHING ALL AROUND
(TYPE-Q-24 THREAD)



FIRST STEP



SECOND STEP

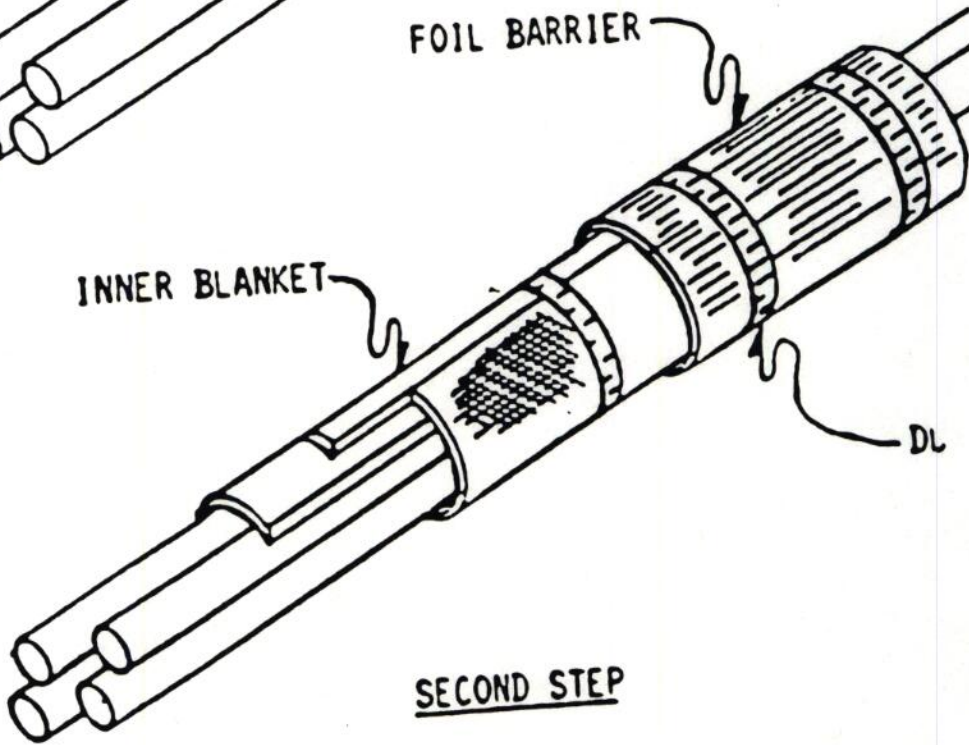


FIGURE 6



THIRD STEP

PROMATEC IN THIS COLUMN INDICATES (L) (R) (D) (U) (V) (W) (X) (Y) (Z) (AA) (AB) (AC) (AD) (AE) (AF) (AG) (AH) (AI) (AJ) (AK) (AL) (AM) (AN) (AO) (AP) (AQ) (AR) (AS) (AT) (AU) (AV) (AW) (AX) (AY) (AZ) (BA) (BB) (BC) (BD) (BE) (BF) (BG) (BH) (BI) (BJ) (BK) (BL) (BM) (BN) (BO) (BP) (BQ) (BR) (BS) (BT) (BU) (BV) (BW) (BX) (BY) (BZ) (CA) (CB) (CC) (CD) (CE) (CF) (CG) (CH) (CI) (CJ) (CK) (CL) (CM) (CN) (CO) (CP) (CQ) (CR) (CS) (CT) (CU) (CV) (CW) (CX) (CY) (CZ) (DA) (DB) (DC) (DD) (DE) (DF) (DG) (DH) (DI) (DJ) (DK) (DL) (DM) (DN) (DO) (DP) (DQ) (DR) (DS) (DT) (DU) (DV) (DW) (DX) (DY) (DZ) (EA) (EB) (EC) (ED) (EE) (EF) (EG) (EH) (EI) (EJ) (EK) (EL) (EM) (EN) (EO) (EP) (EQ) (ER) (ES) (ET) (EU) (EV) (EW) (EX) (EY) (EZ) (FA) (FB) (FC) (FD) (FE) (FF) (FG) (FH) (FI) (FJ) (FK) (FL) (FM) (FN) (FO) (FP) (FQ) (FR) (FS) (FT) (FU) (FV) (FW) (FX) (FY) (FZ) (GA) (GB) (GC) (GD) (GE) (GF) (GG) (GH) (GI) (GJ) (GK) (GL) (GM) (GN) (GO) (GP) (GQ) (GR) (GS) (GT) (GU) (GV) (GW) (GX) (GY) (GZ) (HA) (HB) (HC) (HD) (HE) (HF) (HG) (HH) (HI) (HJ) (HK) (HL) (HM) (HN) (HO) (HP) (HQ) (HR) (HS) (HT) (HU) (HV) (HW) (HX) (HY) (HZ) (IA) (IB) (IC) (ID) (IE) (IF) (IG) (IH) (II) (IJ) (IK) (IL) (IM) (IN) (IO) (IP) (IQ) (IR) (IS) (IT) (IU) (IV) (IW) (IX) (IY) (IZ) (JA) (JB) (JC) (JD) (JE) (JF) (JG) (JH) (JI) (JJ) (JK) (JL) (JM) (JN) (JO) (JP) (JQ) (JR) (JS) (JT) (JU) (JV) (JW) (JX) (JY) (JZ) (KA) (KB) (KC) (KD) (KE) (KF) (KG) (KH) (KI) (KJ) (KK) (KL) (KM) (KN) (KO) (KP) (KQ) (KR) (KS) (KT) (KU) (KV) (KW) (KX) (KY) (KZ) (LA) (LB) (LC) (LD) (LE) (LF) (LG) (LH) (LI) (LJ) (LK) (LL) (LM) (LN) (LO) (LP) (LQ) (LR) (LS) (LT) (LU) (LV) (LW) (LX) (LY) (LZ) (MA) (MB) (MC) (MD) (ME) (MF) (MG) (MH) (MI) (MJ) (MK) (ML) (MM) (MN) (MO) (MP) (MQ) (MR) (MS) (MT) (MU) (MV) (MW) (MX) (MY) (MZ) (NA) (NB) (NC) (ND) (NE) (NF) (NG) (NH) (NI) (NJ) (NK) (NL) (NM) (NN) (NO) (NP) (NQ) (NR) (NS) (NT) (NU) (NV) (NW) (NX) (NY) (NZ) (OA) (OB) (OC) (OD) (OE) (OF) (OG) (OH) (OI) (OJ) (OK) (OL) (OM) (ON) (OO) (OP) (OQ) (OR) (OS) (OT) (OU) (OV) (OW) (OX) (OY) (OZ) (PA) (PB) (PC) (PD) (PE) (PF) (PG) (PH) (PI) (PJ) (PK) (PL) (PM) (PN) (PO) (PP) (PQ) (PR) (PS) (PT) (PU) (PV) (PW) (PX) (PY) (PZ) (QA) (QB) (QC) (QD) (QE) (QF) (QG) (QH) (QI) (QJ) (QK) (QL) (QM) (QN) (QO) (QP) (QQ) (QR) (QS) (QT) (QU) (QV) (QW) (QX) (QY) (QZ) (RA) (RB) (RC) (RD) (RE) (RF) (RG) (RH) (RI) (RJ) (RK) (RL) (RM) (RN) (RO) (RP) (RQ) (RR) (RS) (RT) (RU) (RV) (RW) (RX) (RY) (RZ) (SA) (SB) (SC) (SD) (SE) (SF) (SG) (SH) (SI) (SJ) (SK) (SL) (SM) (SN) (SO) (SP) (SQ) (SR) (SS) (ST) (SU) (SV) (SW) (SX) (SY) (SZ) (TA) (TB) (TC) (TD) (TE) (TF) (TG) (TH) (TI) (TJ) (TK) (TL) (TM) (TN) (TO) (TP) (TQ) (TR) (TS) (TT) (TU) (TV) (TW) (TX) (TY) (TZ) (UA) (UB) (UC) (UD) (UE) (UF) (UG) (UH) (UI) (UJ) (UK) (UL) (UM) (UN) (UO) (UP) (UQ) (UR) (US) (UT) (UU) (UV) (UW) (UX) (UY) (UZ) (VA) (VB) (VC) (VD) (VE) (VF) (VG) (VH) (VI) (VJ) (VK) (VL) (VM) (VN) (VO) (VP) (VQ) (VR) (VS) (VT) (VU) (VV) (VW) (VX) (VY) (VZ) (WA) (WB) (WC) (WD) (WE) (WF) (WG) (WH) (WI) (WJ) (WK) (WL) (WM) (WN) (WO) (WP) (WQ) (WR) (WS) (WT) (WU) (WV) (WW) (WX) (WY) (WZ) (XA) (XB) (XC) (XD) (XE) (XF) (XG) (XH) (XI) (XJ) (XK) (XL) (XM) (XN) (XO) (XP) (XQ) (XR) (XS) (XT) (XU) (XV) (XW) (XX) (XY) (XZ) (YA) (YB) (YC) (YD) (YE) (YF) (YG) (YH) (YI) (YJ) (YK) (YL) (YM) (YN) (YO) (YP) (YQ) (YR) (YS) (YT) (YU) (YV) (YW) (YX) (YZ) (ZA) (ZB) (ZC) (ZD) (ZE) (ZF) (ZG) (ZH) (ZI) (ZJ) (ZK) (ZL) (ZM) (ZN) (ZO) (ZP) (ZQ) (ZR) (ZS) (ZT) (ZU) (ZV) (ZW) (ZX) (ZY) (ZZ)

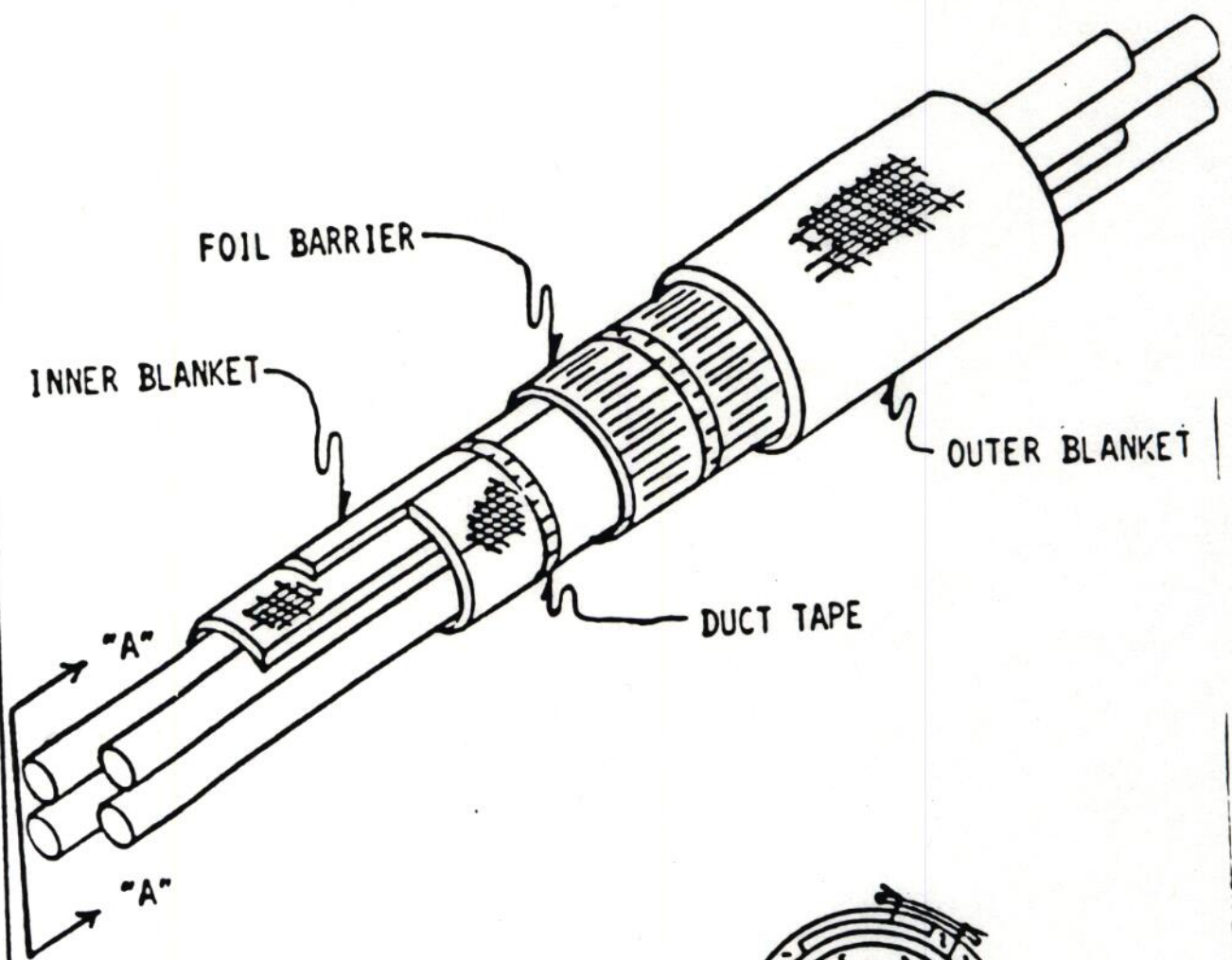


FIGURE 7



PROMATEC

PROGRESSIVE MATERIALS AND TECHNOLOGIES, INC.

PROCEDURE FOR: FABRICATION PROCEDURE FOR THREE HOUR FIRE M.T. BARRIER COMPONENTS	PROCEDURE NUMBER: <u>IP-002</u>
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PROCEDURE ISSUE SUMMARY

ISSUE/DATE	PREPARER	APPROVED	COMMENTS
A ISSUE 4/18/86	<i>Ray Bonebrake</i> Ray Bonebrake	<i>Randy Pearson</i> Randy Pearson <i>Randy Brown</i> Randy Brown	Issue for Construction

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PDR ORG NRRB
PDR

Form 205
06/01/82 (Rev 1) 06/06/84



FABRICATION PROCEDURE FOR THREE
HOUR FIRE M.I. BARRIER COMPONENTS

1.0 PURPOSE

The purpose of this procedure is to assure that the fabrication of the Three Hour Fire M.I. Barrier Components are consistent with the system components as tested in PROMATEC Three Hour Fire qualification tests.

2.0 SCOPE

The PROMATEC Three Hour M.I. Barrier System is comprised of Three component assemblies: 1) Inner Blanket Assembly, 2) Moisture Barrier, 3) Outer Blanket Assembly. This procedure shall address the Inner Assembly and Outer Assembly only and shall provide the methods and guidelines utilized in the fabrication of these assemblies.

3.0 REFERENCES

- 3.1 Fabrication Order (Form QC-59). See Attachment 7.1.
- 3.2 QCP-0042 -- Fabrication Inspection for PROMATEC protective wrap envelopes (Blankets).
- 3.3 QCP-0041 -- Packaging, shipping, receiving, handling and storage of PROMATEC protective wrap components

4.0 DEFINITIONS

- 4.1 Hot Side -- The outermost surface of a blanket assembly. See Attachment 7.2, Figure 3.
- 4.2 Cold Side -- The innermost surface of a blanket assembly. See Attachment 7.9, Figure 7.

5.0 RESPONSIBILITY

- 5.1 The Construction Manager or designee shall be responsible for the preparation and processing Fabrication Orders (QC-59) in accordance with PROMATEC field engineering and/or client requirements.
- 5.2 The Technical Services Manager or designee shall be responsible for providing assistance and direction for unique design configurations.
- 5.3 The authorized fabricator shall follow Fabrication Order form (QC-59), fabrication procedure, and Quality Control Procedure. The Quality Assurance Manager or designee shall be responsible for the development and implementation of appropriate procedures for shop field and source inspection of fabricated components to verify conformance with design requirements.

TYPE OF SITUATION IN THIS COLUMN INDICATES CURRENT CHANGE



6.0 PROCEDURE

- 6.1 This procedure applies to the fabrication of the Three Hour M.I. Barrier Components by PROMATEC at the shop and field level, by PROMATEC qualified fabrication sources, and by client or their contractors (when written agreements allow).
- 6.2 Fabrication performed by any organization other than PROMATEC shall require qualification of such organizations and approval of programs established for controlling fabrication.
- 6.3 PROMATEC Quality Assurance shall have right of access for source inspection and/or audit to verify compliance with design and quality requirements.
- 6.4 Prior to the fabrication of any blankets the applicable portions of Fabrication Order Forms (QC-59) shall be completed as outlined in Fabrication Inspection (QCP-0042) guideline. Only acceptable materials listed on Attachment 7.2 will be utilized for fabrication.
- 6.5 Fabrication of Inner Blanket Assembly
- 6.5.1 Cut alumina/silica fiber blanket to proper dimensions per Fabrication Order Form (QC-59), to assure finished edge. Cut alumina/silica fiber back six inches as shown on fabrication order to allow for ship lap. See figure 1, Attachment 7.3.
- 6.5.2 Cut two pieces of fiberglass cloth to proper dimensions for alumina/silica blanket. Allow enough fiberglass cloth to assure all ends have a min. 3/8" tuck. See figure 2, Attachment 7.4.
- 6.5.3 Place fiberglass cloth and alumina/silica fiber blanket in appropriate position, allow for 3/8" min. tuck on ends and hog ring all edges of fiberglass cloth on hot side of envelope. For spacing of hog rings and clarification of finish edge see figure 3, Attachment 7.5.
- 6.6 Fabrication of Outer Blanket Assembly
- 6.6.1 The outer blanket assembly consists of two subassemblies, enveloped in silica dioxide fabric cloth. These subassemblies consist of, alumina/silica fiber blanket and powder (Honey Comb and/or straight tube) envelope.
- 6.6.2 Fabrication of the powder envelope (Honey Comb).
- 6.6.2.1 Cut three pieces of coated fiberglass cloth to dimensions assuring proper finished edges as per fabrication order form.



- 6.6.2.2 Lay all three pieces of coated fiberglass cloth together and sew a single stitch the length of the fabric $1/2"$ ($\pm 1/4"$) from the edge on one side only.
- 6.6.2.3 Sew top and center layers of cloth $3/8"$ ($\pm 1/8"$) from first sewn edge. Sew with a single stitch the length of the fabric.
- 6.6.2.4 Fold bottom end of fabric (across grain of tubes) $1/2"$ ($\pm 1/4"$) and sew across the length of fold with a single stitch.
- 6.6.2.5 Alternate sewing with a single stitch the length of the fabric from the top and center layers and the bottom and center layers every $7/8"$ ($\pm 1/8"$). See figure 4, Attachment 7.6.
- 6.6.2.6 Fold bottom end of fabric (across grain of tubes) $1/2"$ ($\pm 1/4"$) and sew across the length of fold with a single stitch.
- 6.6.2.7 Fill each tube with powder to the size required for each assembly. As per Fabrication form (QC-59).
- 6.6.2.8 Fold top end of fabric (across grain of tubes) $1/2"$ ($\pm 1/4"$) and sew across fabric with a single stitch to seal tubes. See figure 5, Attachment 7.7.
- 6.6.3 Alternate-Fabrication of the powder envelope (straight tubes).
- 6.6.3.1 Cut two pieces of coated fiberglass cloth to dimension assuring proper finished edges as per fabrication order form.
- 6.6.3.2 Lay the two pieces of coated fiberglass cloth together and sew a single stitch the length of the fabric $1/2"$ ($\pm 1/4"$) from the edge on one side only.
- 6.6.3.3 Continue to sew the length of the fabric every $5/8"$ ($\pm 1/8"$) from the first sewn edge with a single stitch. See figure 6, Attachment 7.8.
- 6.6.3.4 Fold bottom end of fabric (across grain of tubes) $1/2"$ ($\pm 1/4"$) and sew across the length of fold with a single stitch.



ISSUE DESIGNATION IN THIS COLUMN INDICATES CURRENT CHANGE.

- 6.6.3.5 Fill each tube with powder to the size required for each assembly. As per Fabrication form (QC-59)
- 6.6.3.6 Fold top of fabric (across fabric of tubes) 1/2" ($\pm 1/4$ ") and sew across fabric with a single stitch to seal tubes. Reference of finished assembly, see figure 5, Attachment 7.7.
- 6.7 Cut Alumina/Silica Fiber Blanket to proper dimensions per Fabrication Order Form (QC-59) to assure finished edge.
- 6.7.1 Cut two pieces of silica dioxide cloth to proper dimensions to make one envelope for alumina/silica fiber blanket and powder assembly.
- 6.7.2 Place silica dioxide cloth, alumina/silica fiber blanket, and powder assembly in proper layer. Adjust alumina/silica fiber blanket as shown on fabrication order to allow for 6" ship lap design. Hog ring silica dioxide cloth on cold side of outer blanket assembly. See figure 7, Attachment 7.9.
- 6.7.3 Alternate method for hog rings on outer blanket assembly, is the use of (Type Q-24) teflon coated thread.
- 6.7.4 Lacing hooks shall be placed 7-1/2" ($\pm 1/4$ ") from finished edges. They shall be placed on all top ship lap edges 1-1/2" ($\pm 1/4$ ") from the edge. Lacing hooks to be spaced on maximum of 6" centers. See figure 8, Attachment 7.10.
- 6.8 Identification Markings of Inner and Outer Blankets
- 6.8.1 Identification markings shall be placed on every blanket assembly, both inner and outer at a minimum of two locations as follows:
- In close proximity to one of the lengthwise edges of the hot side surface.
 - In close proximity to one of the end edges on the hot side surface.
 - Various project requirements may specify that these markings are also provided on the cold side surface.
- 6.8.2 These markings shall be the blanket number as shown on Fabrication Order Form (QC-59).
- 6.8.3 These markings shall be of a site approved waterproof paint and/or ink which will retain the marking, withstand weather deterioration, other handling effects and shall not be deleterious to the fabrics.



PROMATEC

A ISSUE
04/18/86
FABRICATION ORDER

ATTACHMENT 7.1

NO: 11'-002
PAGE: 7 of 17

PFO-

PROJECT NAME	CUSTOMER	CUSTOMER ORDER NO.	JOB NO.
--------------	----------	--------------------	---------

TYPE _____ QUANTITY _____

LENGTH _____ WIDTH _____ THICKNESS _____ TOTAL FT² _____

SCHEMATIC DRAWING REF. _____ SCHEMATIC NO. _____

I.D. NO. _____

ORDERED BY _____ DATE _____

SKETCH

CERTIFICATE OF CONFORMANCE

We hereby certify that all items furnished were fabricated with materials provided by PROMATEC and conform to the requirements of Purchase Order No. _____.

Signature _____ Company _____ Date _____

PROMATEC QUALITY ASSURANCE ACCEPTANCE

Signature _____ Title _____ Date _____



ATTACHMENT 7.2

Only approved materials as listed below shall be utilized in the fabrication of PROMATEC's protective wrap components.

1. Silica Dioxide Cloth
 - a. Siltemp SB4 and/or 84 SRWR
 - b. Santex
 - c. Refrasil
2. Fiberglass cloth (Inner Blanket).
 - a. Alpha 76281-4634
 - b. J.P. Stevens 3582 3910
 - c. J.P. Stevens 2025
 - d. Havaglass
3. Coated fiberlass cloth
 - a. Alpha 76281-4634
 - ~~b. J.P. Stevens 3582 3910~~
4. Alumina Silica Fiber Blanket - 1" and 1-1/2" nom.
 - a. Johns Manville Cerablanket, 8# density 2400^o F.
 - b. Babcock & Wilcox Kaowool Blanket, 8# density 2300^o F. Carborundum Durablanket, 8# density 2300^o F.
5. Trihydrate Alumina Grade 30
 - a. Alcoa-C30 and/or B. Solem-SB30
6. Hog Rings
 - a. Spenaz 16SS-110
 - b. Or approved equal
7. Lacing Hooks
 - a. Alpha-Maritex 2-1/2" AML-1201-SS
 - b. Erico Jones
 - c. Or approved equal.
8. Nylon Thread
 - a. Tex 90 Spun Kevlar
9. Quartz Thread
 - a. Astroquartz - Type Q-24 teflon coated and/or
 - b. Alphaquartz - Type Q-24 teflon coated

ISSUE DESIGNATION IN THIS COLUMN INDICATES CURRENT CHANGE



INNER BLANKET ASSEMBLY
ALUMINA/SILICA FIBER BLANKET

ONE - ONE HALF - TWO INCH THICK

ISSUE DESIGNATION IN THIS COLUMN INDICATES CURRENT CHANGE.

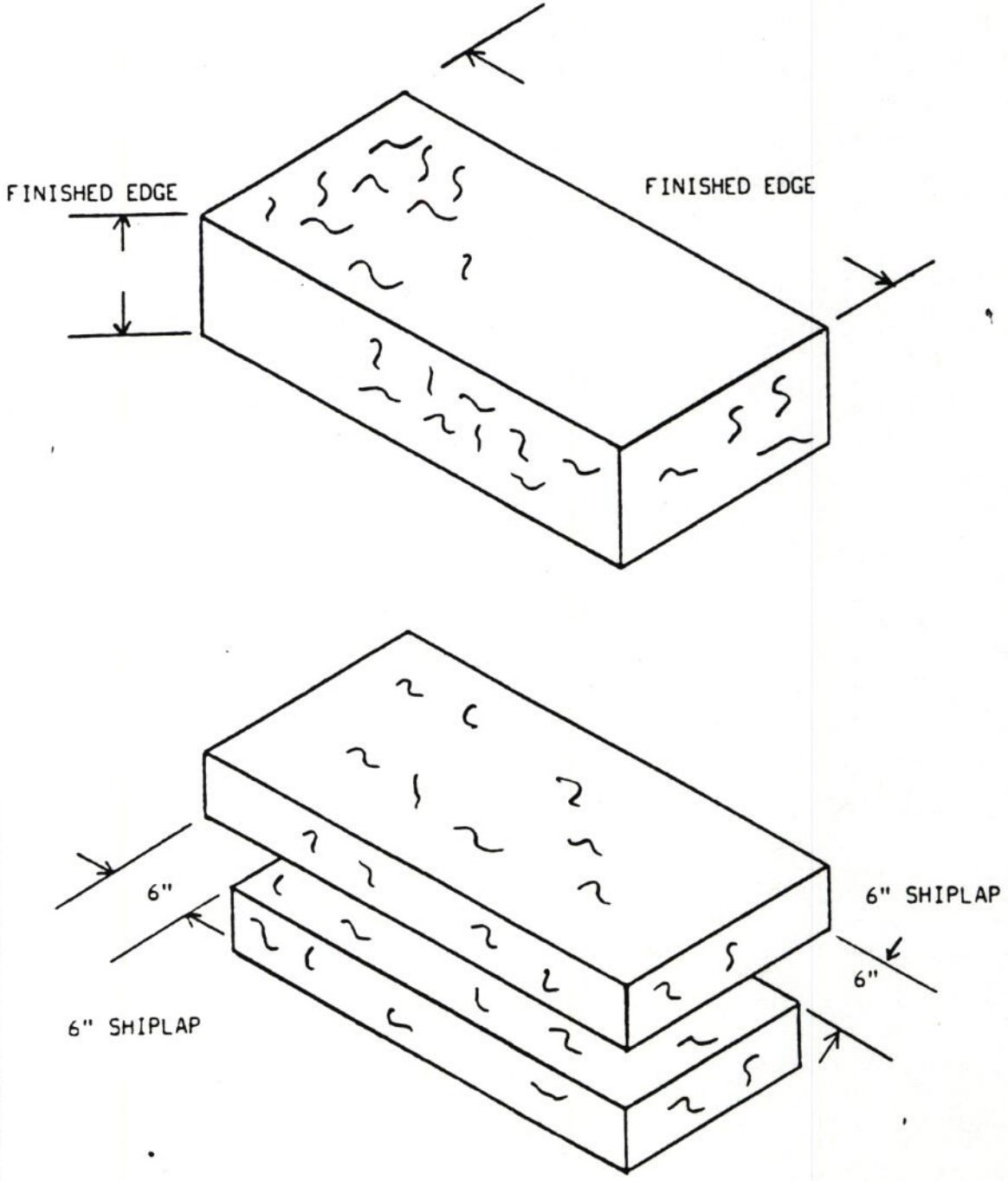
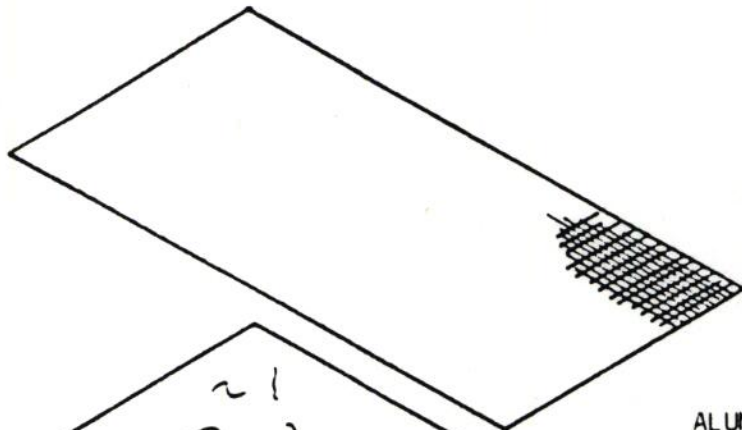


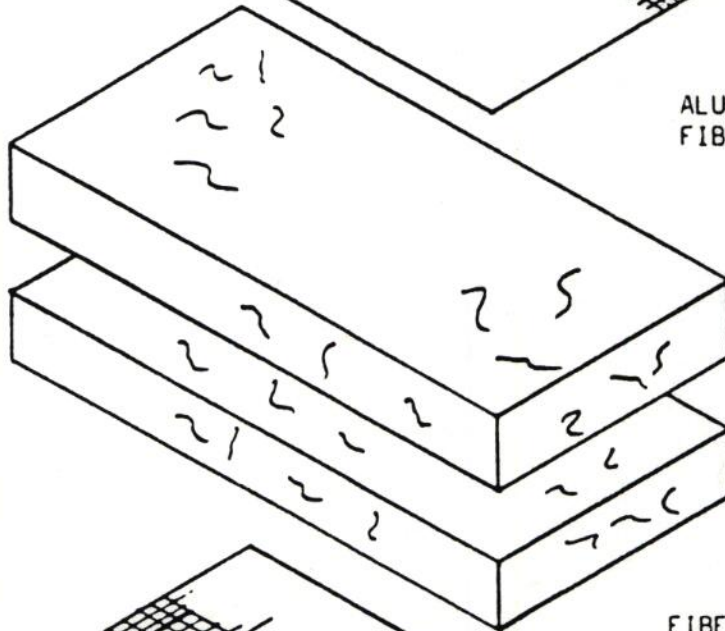
FIGURE 1

INNER BLANKET ASSEMBLY

FIBER GLASS CLOTH



ALUMINA/SILICA
FIBER BLANKET



FIBERGLASS CLOTH

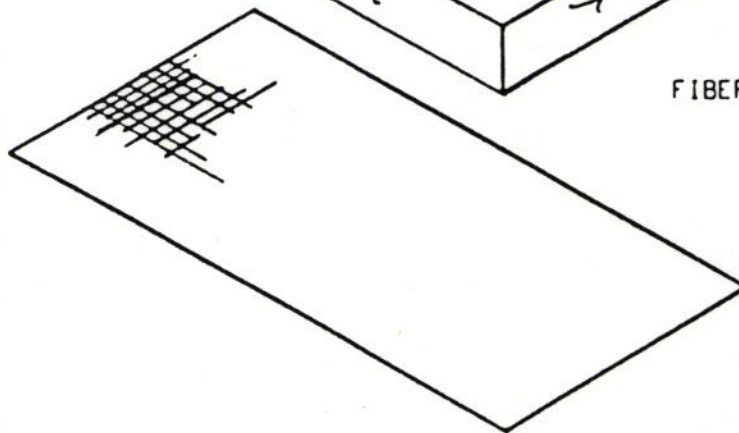


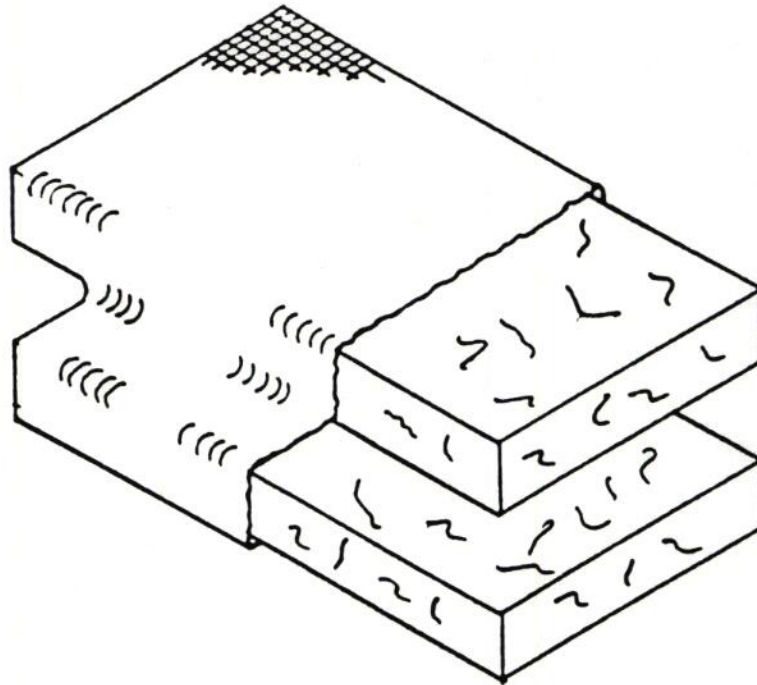
FIGURE 2



INNER BLANKET ASSEMBLY

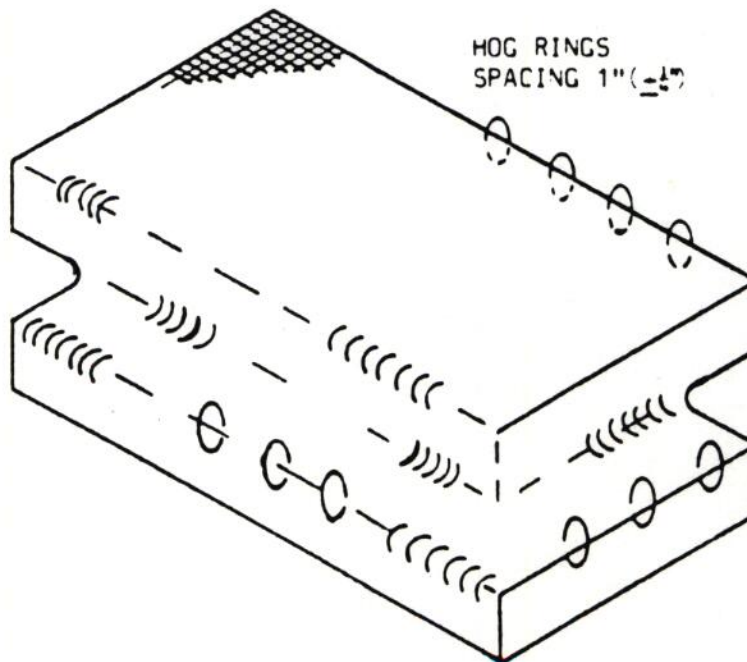
FIBERGLASS CLOTH

ALUMINA/SILICA
FIBER BLANKET



3/8" TUCK

INNER BLANKET
ASSEMBLY



HOG RINGS
SPACING 1" (± 0.05)

HOT SIDE

FIGURE 3



HONEY COMB TUBE ASSEMBLY

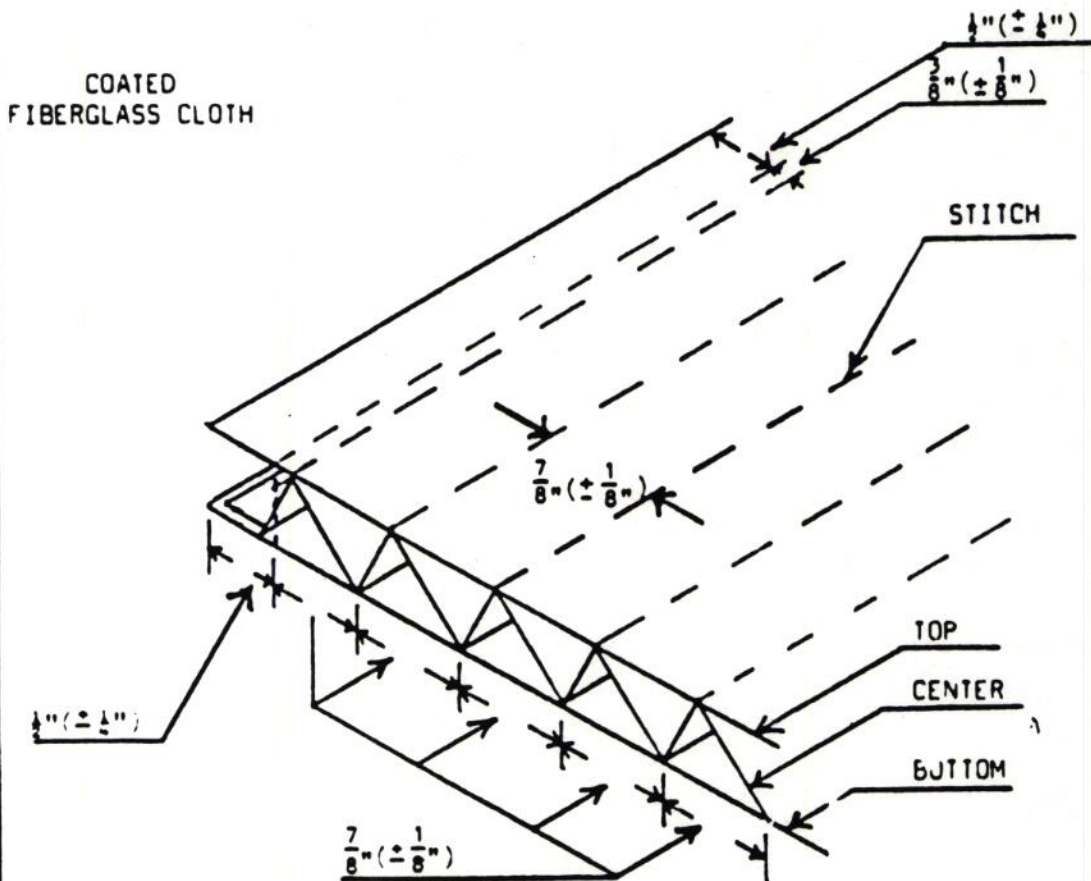


FIGURE 4



HONEY COMB TUBE ASSEMBLY

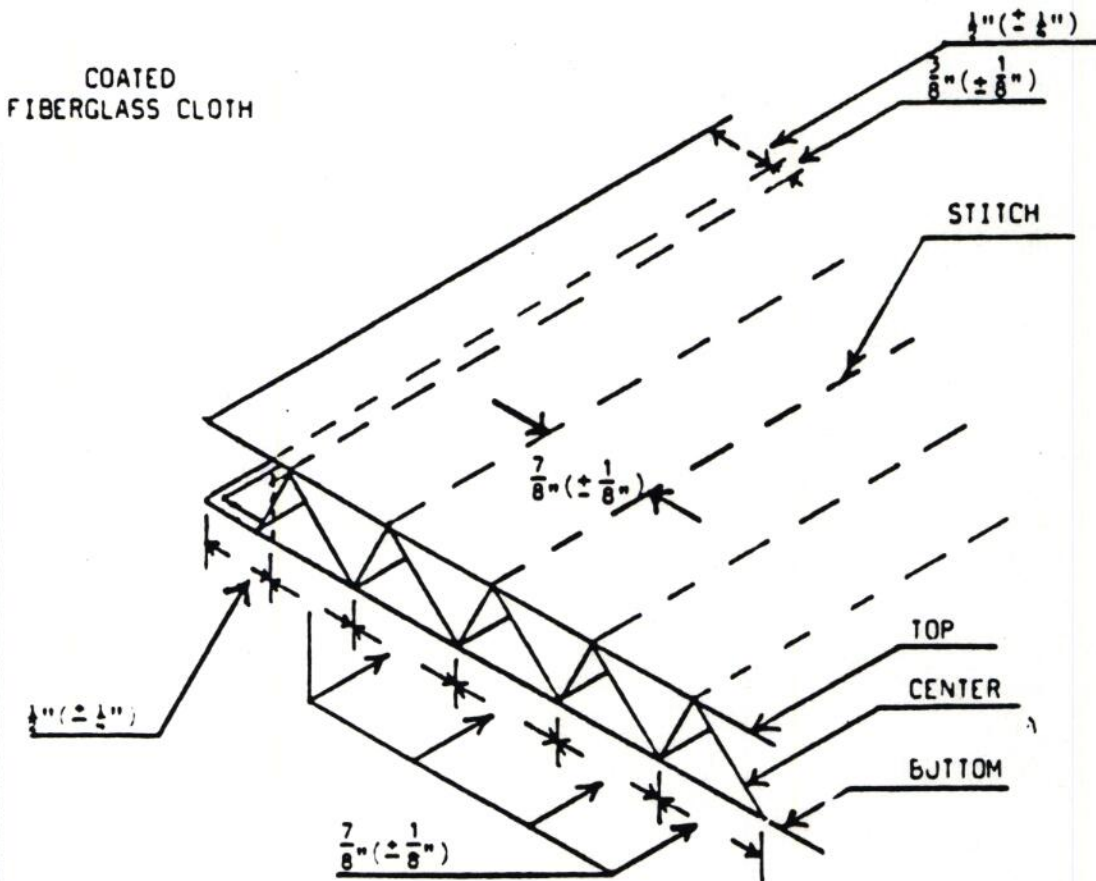


FIGURE 4

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HONEY COMB AND/OR STRAIGHT TUBE POWDER ASSEMBLY

ISSUE DESIGNATION IN THIS COLUMN INDICATES CURRENT NUMBER

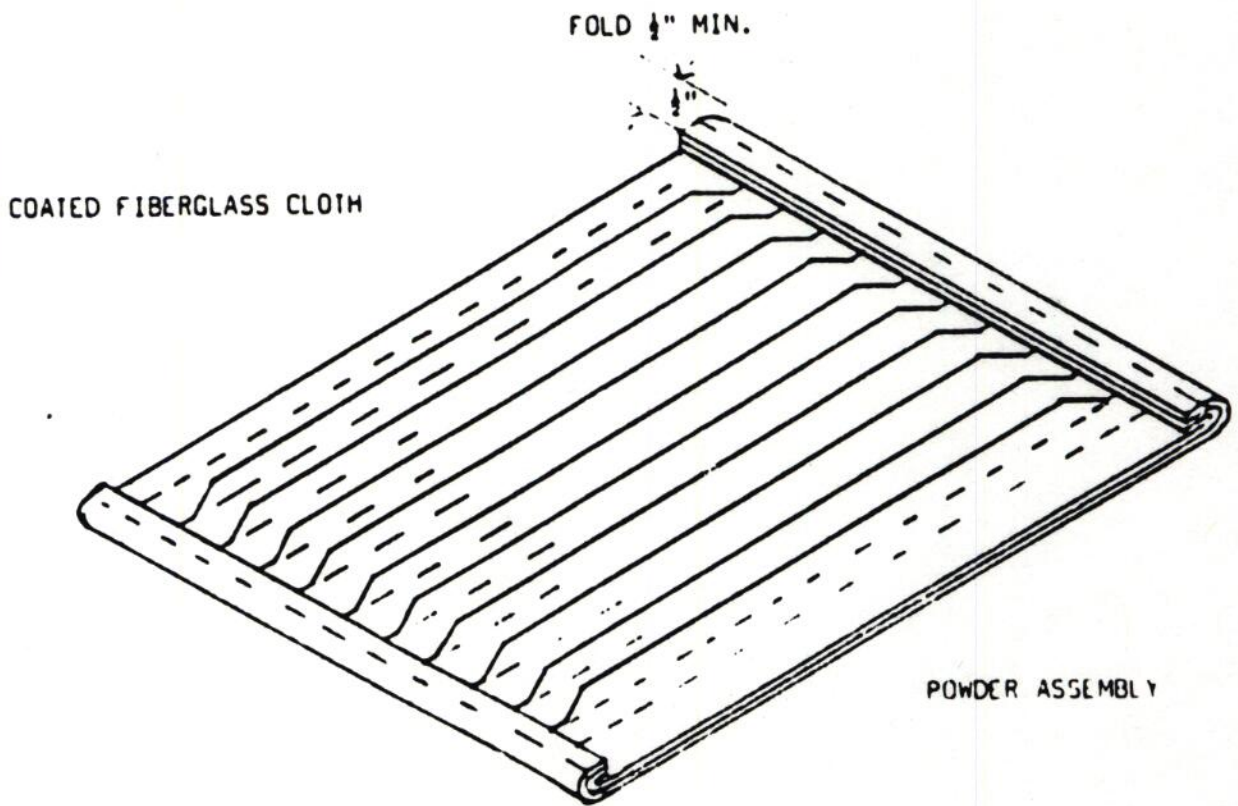


FIGURE 5

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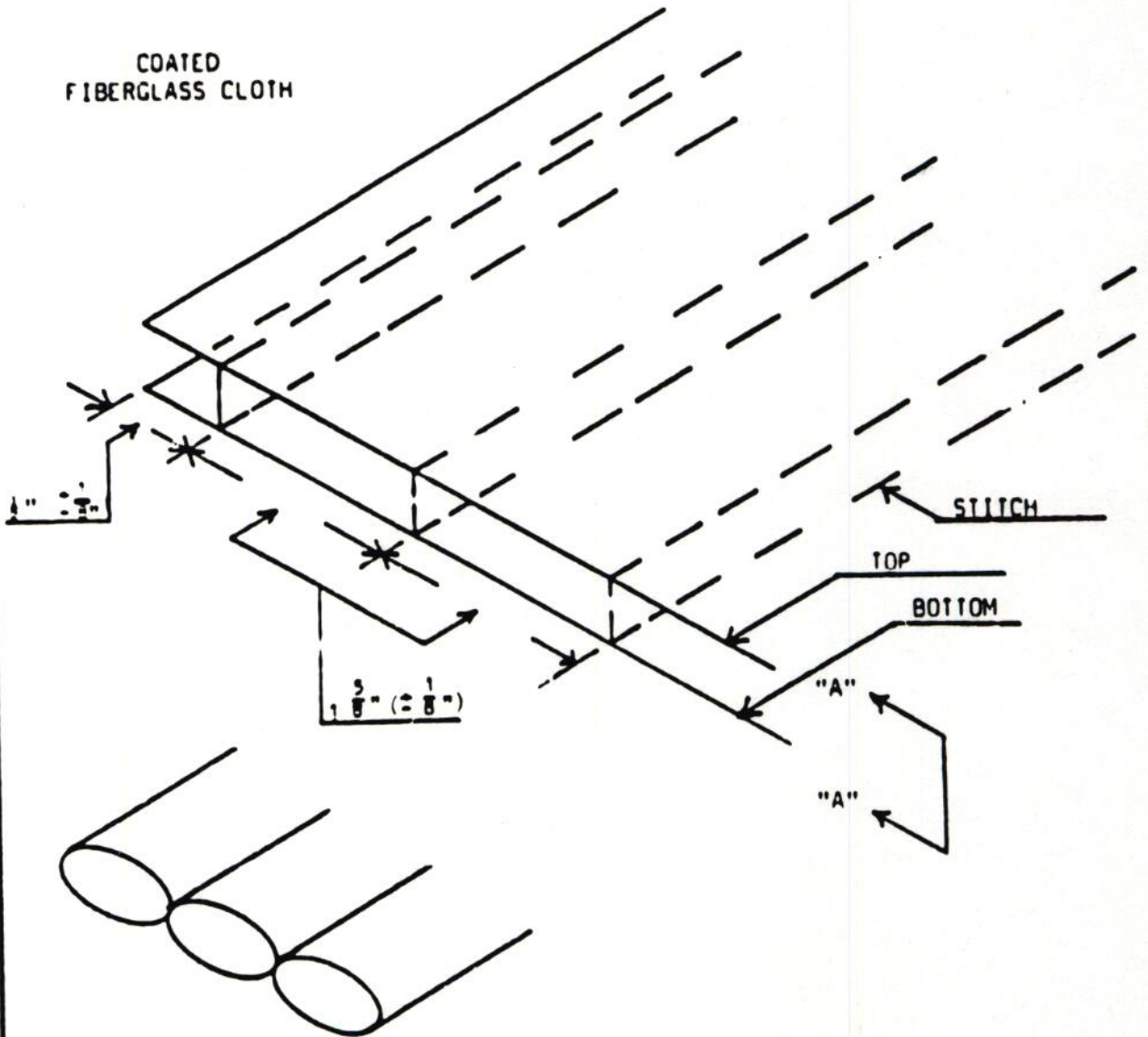
NO: IP-002

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STRAIGHT TUBE ASSEMBLY

ISSUE DESIGNATION IN THIS COLUMN INDICATES CURRENT ISSUE

COATED
FIBERGLASS CLOTH



SECTION "A"- "A"

FIGURE 6



OUTER BLANKET ASSEMBLY

SILTEMP CLOTH

SHIPLAP
6"MIN.

HOG RINGS
SPACING 1" ± 1/8"

COLD SIDE

ALUMINA/SILICA
FIBER BLANKET

POWDER ASSEMBLY

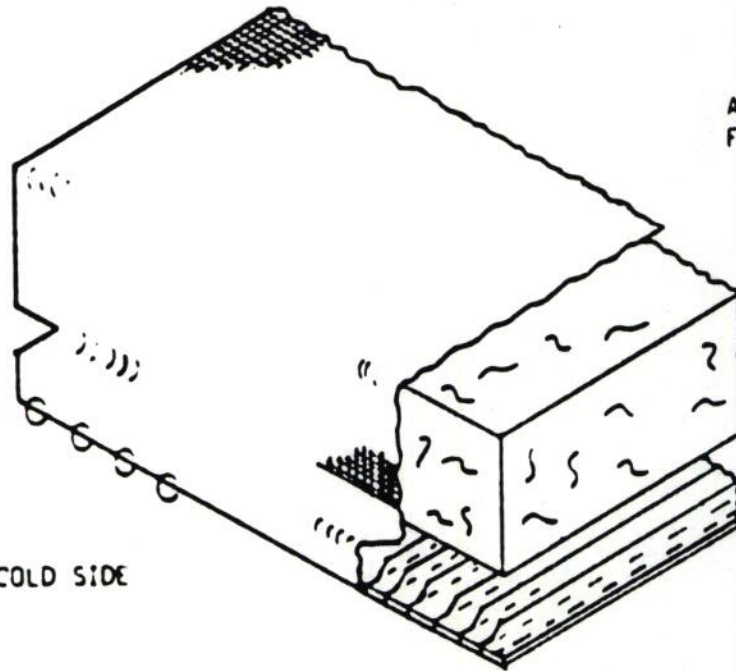


FIGURE 7

OUTER BLANKET ASSEMBLY

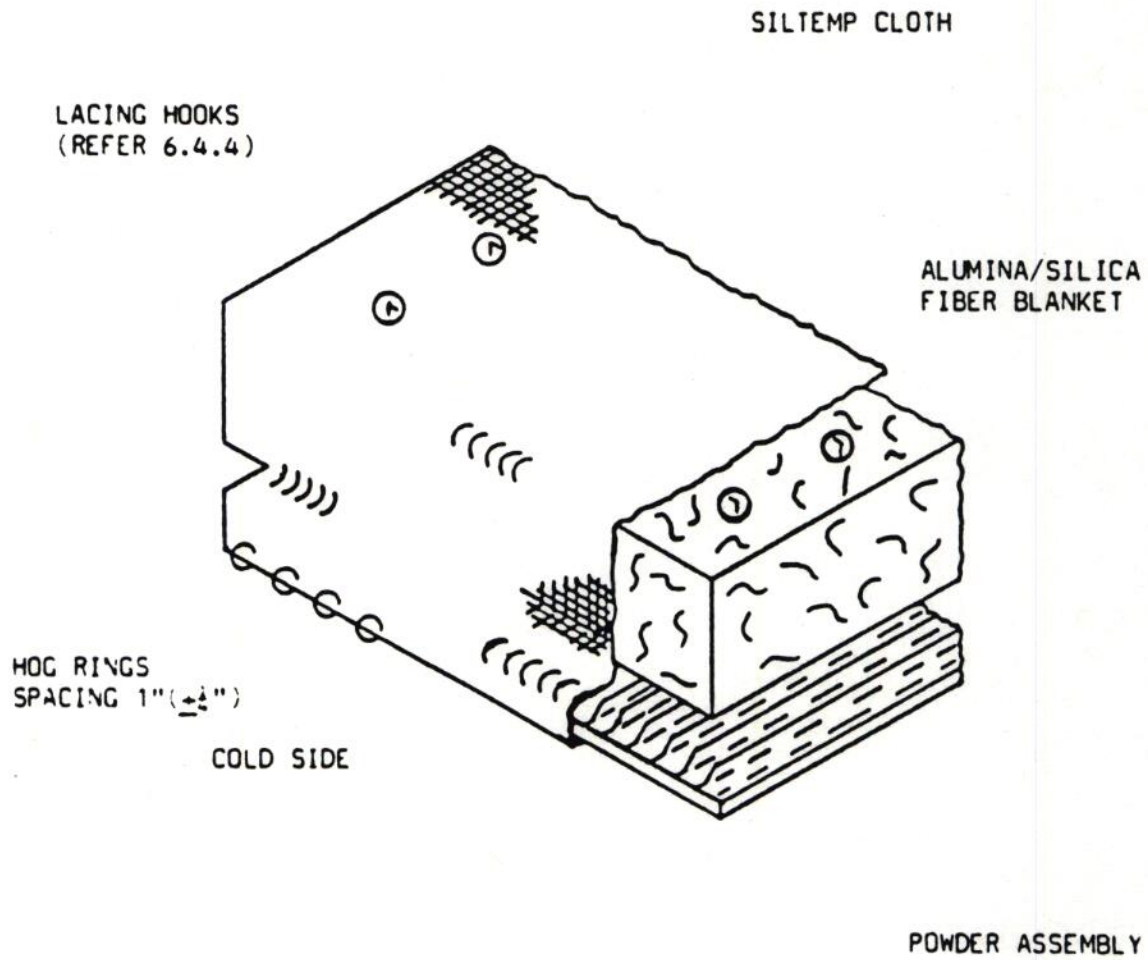


FIGURE 8

ISSUE:
A ISSUE
4/18/86



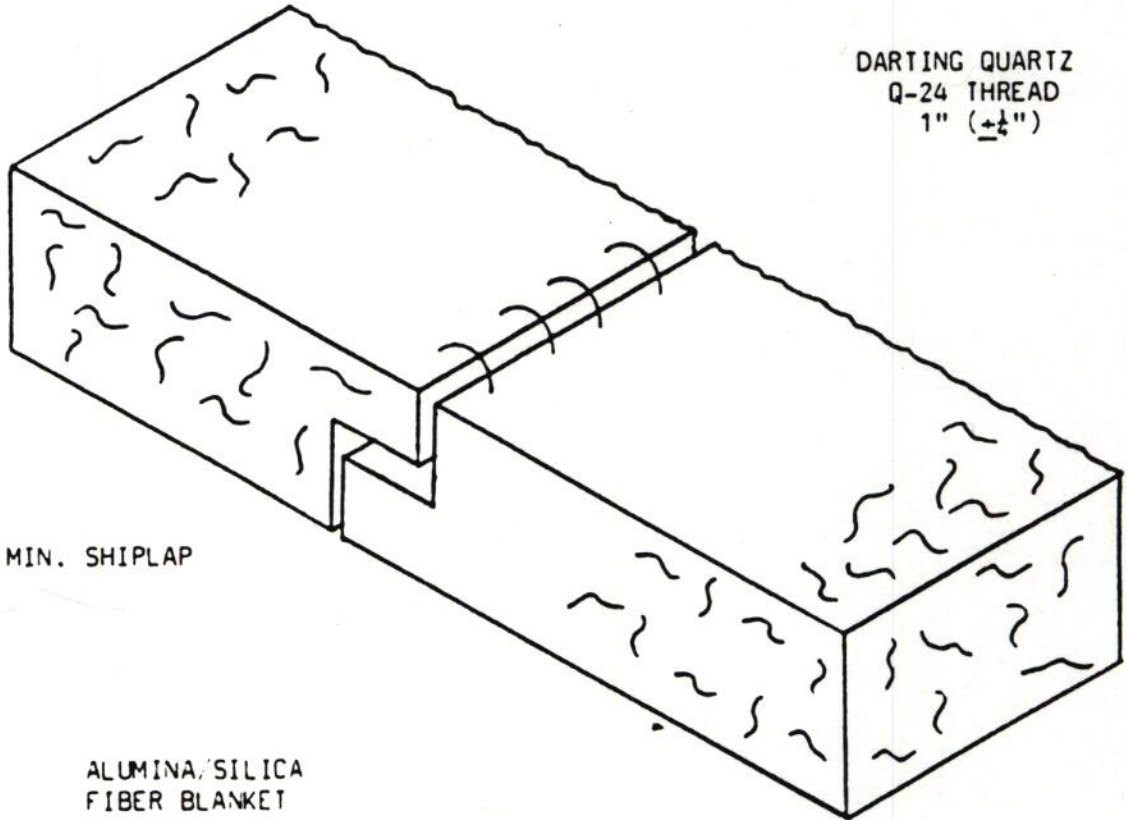
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MULTIPLE ALUMINA/SILICA FIBER BLANKET



DARTING QUARTZ
Q-24 THREAD
1" ($\pm \frac{1}{4}$ ")

6" MIN. SHIPLAP

ALUMINA/SILICA
FIBER BLANKET

ISSUE DESIGNATION IN THIS COLUMN INDICATES CURRENT CHANGE.

FIGURE 9



PROMATEC

PROGRESSIVE MATERIALS AND TECHNOLOGIES, INC

PROCEDURE FOR:

INSTALLATION INSPECTION OF THREE HOUR
PROTECTIVE FIRE WRAP SYSTEMS

PROCEDURE NUMBER:

DCP-0041

PROCEDURE ISSUE SUMMARY

ISSUE DATE	PREPARER	APPROVED	COMMENTS
A Issue 2/19/86	<i>Ronald Brown</i> R. Brown	<i>R. Bonebrake</i> R. Bonebrake <i>Ronald Brown</i> R. Brown	Issue for use.
B Issue 06/06/86	<i>R. Brown</i> R. Brown	<i>R. Pearson</i> R. Pearson	Revised as noted. Issue for use.
C Issue 06/17/86	<i>R. Brown</i> R. Brown	<i>R. Bonebrake</i> R. Bonebrake <i>Randy Glenn</i> R. Glenn	Revised as noted. Issue for use.

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PDR ORG NRRB
PDR

Form DC 1
06/01/82 (Rev 1) 06/06/84



6 17 96

INSTALLATION INSPECTION OF THREE HOUR PROTECTIVE FIRE WRAP SYSTEMS

1.0 PURPOSE

To establish inspection methods and acceptance criteria to assure three hour protective wrap systems are installed in accordance with established installation procedures.

2.0 SCOPE

- 2.1 To provide methods for the inspection of protective wrap components during installation to verify correct materials are issued.
- 2.2 To provide methods for in-process and final inspection of protective wrap systems to verify conformance to design requirements.
- 2.3 To establish requirements for recording inspection activities to provide documentary evidence proper installation.

3.0 REFERENCES

- 3.1 Procedure No. IP-001, Installation of Three Hour Fire Protective Wrap Systems
- 3.2 Typical design details B-495 and B-496
- 3.3 Procedure No. QCP-0042, Fabrication Inspection of Three Hour Protective Wrap Components

4.0 DEFINITIONS

- 4.1 APPROVED MATERIALS -- Materials qualified for use as protective wrap system components and issued for installation under controlled conditions.
- 4.2 HOLD POINT -- Critical steps in the installation process that require Quality Control inspection and acceptance prior to proceeding.
- 4.3 CHECK POINT -- Random sample inspection of installation processes performed at the discretion of Quality Control. Notification is not required.



5.17 86

5.0 RESPONSIBILITIES

- 5.1 The Quality Assurance Manager or Designee shall be responsible for the development and proper implementation of this procedure.
- 5.2 The assigned Quality Control Inspector shall be responsible for performing activities established in this procedure.
- 5.3 The Construction Manager or Designee shall be responsible for assuring that craft personnel notify Quality Control for inspections as referenced in IP-001.

6.0 PROCEDURE

- 6.1 Inspection instruments required to perform the activities described in this procedure include a six (6) inch scale and a measuring tape. Calibrated instruments are not required.
- 6.2 Inspection activities required by this procedure shall be documented on form no. QC-117 (Three Hour Fire Protective Wrap Inspection Report).
- 6.3 Inspection activities described herein are mandatory hold points. Release for work to proceed shall be given by the assigned Quality Control Inspector upon satisfactory completion of all inspection activities required for each hold point and sign-off of form QC-117.
- 6.4 Random sample check points may be performed at anytime at the discretion of Quality Control. Such inspections are not mandatory and need not be documented unless discrepancies are identified.
- 6.5 Minor deviations identified during in-process inspection may be corrected without the issuance of Nonconformance Reports provided corrective action is taken immediately and documented on form QC-117. Minor deviations that cannot be corrected immediately shall be documented on form No. QC-121 and processed in accordance with Procedure No. QCP-0018.
- 6.6 Nonconforming conditions that could adversely affect product integrity shall be documented on form No. QC-16 and processed in accordance with Procedure No. QCP-0018.
- 6.7 Copies of Installation Procedure No. IP-001 shall be issued in conjunction with this procedure to each assigned Quality Control Inspector for field use and reference.
- 6.8 Conduit, cable drop and junction box wrap inspection
 - 6.8.1 Hold Point One -- Inner blanket inspection



2 17 82

- C 6.8.1.1 For cable drops, verify that cables are bundled tightly with duct tape, cable tie wrap or other suitable means.
- C 6.8.1.2 Upon completion of installation, verify that serial number for each blanket is clearly visible and record on form QC-117.
- C 6.8.1.3 Visually examine each blanket for damage. Holes and tears exceeding 1 inch shall be repaired in accordance with IP-001 and reinspected per section 6.13 of this procedure.
- C 6.8.1.4 Inspect shiplap joints on each blanket for tightness and verify that gaps, if any, do not exceed 1/2", including blanket to blanket joints.
- C 6.8.1.5 Inspect duct tape and verify application at full circumference around each blanket with tape to tape adhesion.

6.8.2 Hold Point Two -- Foil barrier inspection

- C 6.8.2.1 Upon completion of installation visually examine each foil barrier strip for damage. Cuts, tears and holes shall be repaired with additional strips of foil exceeding 1 inch and reinspected prior to installation of outer blankets.
- 6.8.2.2 Inspect each foil barrier strip for lengthwise application and verify a minimum 6" overlap on ends and edges (2 inches for sharp curvatures).
- C 6.8.2.3 Inspect tape for sufficient spacing to assure no excessive gaps exist in overlaps with particular emphasis on conduit curvatures.

6.8.3 Hold Point Three - Outer Blanket Inspection

- C 6.8.3.1 Upon completion of installation, verify that serial number for each blanket is clearly visible and record on form QC-117.
- C 6.8.3.2 Visually examine each blanket for damage. Holes and tears exceeding 1 inch shall be repaired in accordance with IP-001 and reinspected per section 6.13 of this procedure.



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COMMENTS INDICATED IN THIS COLUMN INDICATE THE LOCATION OF THE DEFECTS IN THIS SECTION.

6.8.3.3 Inspect shiplap joints for tightness and proper alignment. Verify that gaps, if any, do not exceed 1/2". Inspect each lacing hook and verify 16 gage s.s. tie wire is securely fastened between each adjacent hook.

6.8.4 Hold Point Four - Final Inspection

6.8.4.1 Perform final examination of completed system to assure correct installation in accordance with this section.

6.8.4.2 Verify that correct raceway identification tags are affixed at all entrance and exit points (walls, floors) and at origin and destination points on runs 5 feet and longer or at the most visible location on runs less than 5 feet.

6.9 Three sided wrap installation inspection

6.9.1 Hold Point One -- Concrete anchor inspection

6.9.1.1 Upon completion of installation inspect anchors for compliance to site requirements.

6.9.1.2 Measure anchor spacing for maximum 12 inch centers and verify that each anchor is pre-set.

6.9.2 Hold Point Two -- Inner blanket inspection

6.9.2.1 Upon completion of installation inspect each blanket in accordance with subsection 6.8.1 of this procedure. Additionally:

6.9.2.2 Inspect each blanket and verify proper alignment following impalement through studs.

6.9.2.3 Measure from edges of each inner blanket to center of corresponding studs and verify minimum 2" extension.

6.9.3 Hold Point Three -- Foil barrier inspection

6.9.3.1 Upon completion of installation inspect each foil barrier strip in accordance with subsection 6.8.2. Additionally:

6.9.3.2 Inspect each foil barrier strip and verify proper alignment following impalement through studs.



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6.9.3.3 Measure from edges of foil barrier to center of studs on each barrier strip and verify minimum 2" extension.

6.9.4 Hold Point Four -- Outer blanket inspection

6.9.4.1 Upon completion of installation inspect each blanket in accordance with subsection 6.8.3 additionally:

6.9.4.2 Inspect blanket and verify proper alignment following impalement through studs.

6.9.4.3 Inspect anchor assembly and verify that fender washers and/or B72 Struts and/or flat bars are in place and that locknuts (or double nuts) are securely tightened.

6.9.4.4 Visually examine blanket assembly for wrinkles and bunches, and verify that assembly is not depressed over 3/4" at anchors.

6.9.5 Hold Point Five -- Final inspection

6.9.5.1 Perform final examination of completed system to assure correct installation in accordance with this section.

6.9.5.2 Verify that correct raceway identification tags are affixed at all entrance and exit points (walls, floors) and at origin and destination points on runs 5 feet and longer or at the most visible location on runs less than 5 feet.

6.10 Field modification inspection - Non-electrical interferences

6.10.1 Hold Point One - Fabrication Inspection

6.10.1.1 Upon issuance of alumina silica blankets and outer fabric for fabrication record lot number(s) and receiving report number(s) on form no. QC-117.

6.10.2 Hold Point Two - Installation Inspection

6.10.2.1 Upon completion of fabrication and installation, verify correct thickness based alumina silica blanket size issued (actual measurement is not required due to blanket compression factor). Measure for minimum distance of 18" from point of interference or full length if interference is less than 18".



6.10.2.2 Inspect lacing hooks and tie wire fasteners for sufficient spacing and tightness (6" minimum spacing is not required for interferences).

6.10.2.3 Inspect blanket joint and seam, and verify that no apparent gaps exist.

6.11 Cable tray interference installation inspection

6.11.1 Field Point -- Cable Inspection

Upon issuance of alumina silica blankets, record lot number and receiving report number on form

Upon installation inspect alumina blankets and verify that distance from each conduit is a minimum of 18".

6.11.2 Cable tray interference installation inspection

6.11.2.1 Installation inspection of cable tray systems shall be in accordance with the procedure and design details as established by Engineering.

6.12 Inspection of field fabricated components

6.12.1 Primary wrap components fabricated in the field shall be inspected and documented in accordance with QCP-0042 prior to installation.

6.12.2 Field fabrication of items used for modification of existing wrap components shall be inspected in accordance with the applicable sections of QCP-0042. Inspection results and material traceability shall be recorded on form QC-117 in lieu of form QC-60 and QC-61.

6.13 Field repair inspection

6.13.1 Record lot numbers and receiving report numbers for materials issued for use on form no. QC-117.

6.13.2 Upon completion of installation inspect for tightness and verify that patch overlaps a minimum of 2" on undamaged fabric, and that patches have finished edges.

6.13.3 Inspect Q-24 thread stitching on patches and tears 2" and under and verify minimum spacing of 1/2".



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C 6.14 When the alternate method for installing outer blanket assemblies is utilized as described in subsection 6.6 of IP-001, the following inspection Hold Points shall apply in lieu of subsection 6.8.3 and 6.8.4.

C 6.14.1 Hold Point Three -- Tube Assembly Inspection

C 6.14.1.1 Upon completion of tube assembly installation, verify that serial numbers are clearly visible and record on form QC-117.

C 6.14.1.2 Visually examine each component for damage and verify that tubes are parallel with system run. Holes and tears shall be patched with aluminum or duct tape to prevent powder leakage. If holes and tears result in excessive powder loss, the affected component shall be replaced.

C 6.14.1.3 Inspect circumferential and longitudinal joints and verify abutting fit with no apparent gaps. Inspect duct tape for sufficient spacing and tape to tape adhesion.

C 6.14.2 Hold Point Four -- Alumina Silica Blanket Inspection

C 6.14.2.1 Upon completion of installation of each alumina silica blanket, verify that serial number is clearly visible and record on form QC-117.

C 6.14.2.2 Visually examine each blanket for damage. Holes or tears in fabric exceeding 1 inch shall be repaired per IP-001 and inspected per section 6.13 of this procedure.

C 6.14.2.3 Verify that circumferential and longitudinal joints are staggered a minimum 6 inches from tube assembly joints.

C 6.14.2.4 Inspect longitudinal and circumferential joints for tightness with no apparent gaps. Verify that 16 ga. ss tie wire is securely fastened between adjacent lacing hooks.

C 6.14.3 Hold Point Five -- Final inspection

C 6.14.3.1 Upon completion of total system installation perform final visual inspection of system to assure compliance with all applicable requirements.

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6.14.3.2 Verify that correct raceway identification tags are affixed in accordance with paragraph 6.8.4.2.

7.0 ATTACHMENTS

7.1 Form No. QC-117, Three Hour Protective Wrap Inspection Report

7.2 Form No. QC-122, 3 Hr MT Barrier Installation Inspection Report Register



WVBC

**INSTALLATION INSPECT REPORT
THREE HOUR MT BARRIER**

Net No. /

Project Name:		Job No.:	Runaway I.O. No.:	Schematic No.:	System Description:	Area:	Elevation:										
Component Identification Number	Hold Point Type No.	Taps/Marking	Visual	Shiplap Overlap	Seam/Joint	Inlet Tape	Stagger	Tieing Hooks	Tie Wire	Anchors	Bolting	Cable-Breaker/Strap	Length/Thickness	Repair/Modif.	Insp. Initial	Insp. Date	
		A U	A U	A U	A U	A U	A U	A U	A U	A U	A U	A U	A U	A U	A U		

REMARKS:

SUPPLEMENTAL MATERIALS TRACEABILITY

LOT NO. APPLICATION

LOT NO. APPLICATION

Date: _____ Client Acceptance: _____

Project Name _____

Project No. _____

3 HR MT BARRIER

INSTALLATION INSPECTION REPORT REGISTER

Report Number	Raceway I.D. Number	Schematic Number	System Description	Release Date	Acceptance Date	Comments





PROMATEC

PROGRESSIVE MATERIALS AND TECHNOLOGIES, INC.

PROCEDURE FOR: FABRICATION INSPECTION OF THREE HOUR PROTECTIVE WRAP COMPONENTS	PROCEDURE NUMBER: <u>DCE-0042</u>
---------------------------------------------------------------------------------------	------------------------------------------

PROCEDURE ISSUE SUMMARY

ISSUE/DATE	PREPARER	APPROVED	COMMENTS
A Issue 05/02/86	<i>Andy Glenn</i> R. Glenn	<i>R. Brown</i> R. Brown <i>L. Spriggs</i> L. Spriggs	Issue for use.

9308270332 930813
PDR ORG NRRB
PDR



FABRICATION INSPECTION OF
THREE HOUR PROTECTIVE WRAP COMPONENTS

1.0 PURPOSE

- 1.1 To establish inspection methods and acceptance criteria to assure three hour protective wrap systems are fabricated in accordance with established fabrication procedures.

2.0 SCOPE

- 2.1 Provide methods for the inspection of protective wrap components during fabrication to verify correct materials are utilized.
- 2.2 Provide methods for the inspection of protective wrap components during fabrication to verify conformance to fabrication procedures.
- 2.3 Provide methods for the final inspection of completed protective wrap components to verify conformance to design requirements.
- 2.4 Establish requirements for recording inspection activities to provide documentary evidence of proper fabrication.

3.0 REFERENCES

- 3.1 Procedure No. IP-002, Fabrication Procedure for Three Hour Fire Protective components.

4.0 DEFINITIONS

- 4.1 Approved Materials -- Materials qualified for use as protective wrap components and issued for fabrication under controlled conditions.
- 4.2 Hold Point -- Critical steps in the fabrication process that require Quality Control inspection and acceptance prior to proceeding.
- 4.3 Check Point -- Random sample inspection of fabrication process performed at the discretion of Quality Control. Notification is not required.
- 4.4 Hot Side -- Outer surface of wrap design.
- 4.5 Cold Side -- Inner surface of wrap design.
- 4.6 In-Process Inspection -- Hold Point I and II.
- 4.7 Final Inspection -- Hold Point III.



5.0 RESPONSIBILITIES

- 5.1 The Quality Assurance Manager or Designee shall be responsible for the development and proper implementation of this procedure.
- 5.2 The assigned Quality Control Inspector shall be responsible for performing activities established in this procedure.

6.0 PROCEDURE

- 6.1 Inspection instruments required to perform the activities described in this procedure include a measuring tape. Calibrated instruments are not required.
- 6.2 Inspection activities (Hold Point I, Hold Point II, Hold Point III) required by this procedure shall be documented on Form QC-61 (Fabrication Inspection Register).
- 6.3 Approved material traceability identification shall be documented on Form QC-60 (Traceability ID Register).
- 6.4 Non-conforming conditions identified in paragraph 6.8 shall be documented on Form QC-16 (Nonconformance Report) and dispositioned in accordance with QCP-0018.
- 6.5 Inspection activities described herein are mandatory hold points. Release for work to proceed shall be given by the assigned Quality Control Inspector upon satisfactory completion of all inspection activities required for each hold point.
- 6.6 Check point inspections may be performed at any time at the discretion of Quality Control. Such inspections are not mandatory and need not be documented unless discrepancies are identified.
- 6.7 Discrepancies identified during in process inspection that can be corrected within a 24, twenty four hour period in accordance with Procedure No. IP-002 may be accomplished without generating a non conformance report.
- 6.8 Non conformance reports shall be generated when any of the following conditions exist.
 - 6.8.1 Discrepancies identified during in-process inspection are not corrected in accordance with IP-002 within 24) twenty four hours.
 - 6.8.2 Discrepancies identified during final inspection where dispositioning party plans to recommend use-as-is, repair or reject dispositions (as defined in QCP-0018).



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- 6.8.3 Any failure to notify Quality Control for hold point inspection prior to proceeding or proceeding prior to acceptance by Quality Control of each inspection attribute required, including satisfactory completion of any discrepancies identified.
- 6.9 A fabrication order shall be initiated and complete, for the exception of the final release signatures at the bottom of Form QC-59, prior to any fabrication.
- 6.10 Copies of Fabrication Procedure No. IP-002 shall be issued in conjunction with this procedure to each assigned Quality Control Inspector for use and reference.
- 6.11 Hold Point One -- Material inspection
- 6.11.1 Only approved materials as listed in IP-002 shall be utilized in the fabrication of three hour fire protective components.
- 6.11.2 Document individual blanket material traceability on Form QC-60. Document Hold Point I on Form QC-61 after completion of Form QC-60.
- 6.12 Hold Point Two -- Inspection of inner blanket.
- 6.12.1 Inspect alumina silica fiber blanket for proper dimensions in accordance with fabrication order. Verify 6" min. ship-lap with 1/2" x 1/4" deep trim in ceramic fiber blanket.
- 6.12.2 Inspect fiberglass cloth for proper dimensions in accordance with fabrication order. Verify 3/8" min. tuck allowed for securing hog rings. Verify hog rings are spaced 1" max apart around edges of fiberglass cloth on hot side of envelope.
- 6.13 Hold Point Two -- Inspection of outer blanket.
- 6.13.1 The outer blanket consists of two sub-assemblies, enveloped into a silica dioxide cloth. The sub-assemblies consist of, powder envelope (honeycomb and/or straight tubes) and the alumina/silica fiber blanket.
- 6.13.2 Inspect honeycomb tube powder envelope coated fiberglass cloth for stitching spaced 7/8" x 1/8" apart before powder fill. Verify two sides are stitched 1/2" min. from edge of cloth. Verify two adjacent sides are folded across grain of tube 1" x 1/4" and double stitched. Verify 100% fill of powder in tubes. Verify overall dimensions are in accordance with fabrication order 3/4".

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- 6.13.3 Inspect straight tube powder envelope coated fireglass cloth for stitching spaced $1\frac{5}{8} \pm \frac{1}{8}$ " apart before powder fill. Verify two sides are stitch $\frac{1}{2}$ " min. from edge of cloth. Verify adjacent two sides are folded across grain of tubes $1 \pm \frac{1}{4}$ " and double stitched. Verify 100% fill of powder in tubes. Verify overall dimensions are in accordance with fabrication order $\frac{3}{4}$ ".
- 6.13.4 Inspect alumina/silica fiber blanket for proper dimensions in accordance with fabrication order. Inspect siltemp for proper dimensions in accordance with fabrication order. Verify siltemp envelope and sub-assemblies (powder envelope and alumina/silica fiber blanket) are placed in proper order and are arranged to allow for min. 6" ship lap design in accordance with fabrication order. Verify siltemp has $\frac{3}{8}$ " min. tuck for securing hog rings. Verify hog rings are spaced 1" min. around edges of siltemp on cold side of envelope. Type Q-24 teflon coated nylon thread may be used in lieu of hog rings on outer blanket. Verify lacing hooks are placed on hot side $1\frac{1}{2} \pm \frac{1}{4}$ " from edge of all upper shiplap edges and are spaced on maximum of 6" centers. Verify lacing hooks are placed on hot side $7\frac{1}{2} \pm \frac{1}{4}$ " from edge of all inner ship lap edges and spaced on 6" centers.
- 6.13.5 Verify that inner and outer blankets are marked with appropriate blanket identification numbers from applicable fabrication order. These markings shall be in min. $\frac{3}{4}$ " lettering. Marking shall be made with waterproof paint and/or ink which will retain the marking, withstand weather deterioration other handling effects and shall not be deleterious to the fabrics. These markings shall be in close proximity of the edges of any (2) two adjacent sides on the hot side of blanket.
- 6.13.6 A maximum of two pieces of ceramic fiber blanket utilized in one envelope are acceptable only with the use of ship lap design and darning with approved thread to avoid separation.
- 6.13.7 A maximum of two pieces of siltemp utilized in one side of envelope are acceptable only with the use of splicing by double stitching. Verify first stitch is $\frac{1}{2} \pm \frac{1}{4}$ " from edges of siltemp and second stitch is $\frac{1}{2} \pm \frac{1}{4}$ " from first stitch.
- 6.14 Hold Point III - Final Inspection
- 6.14.1 Inspect completed three hour fire protective blankets for damage, proper dimensions and markings in accordance with fabrication order.
- 6.14.2 Verify Q.C. Forms 59, 60 and 61 are accurately completed.

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7.0 ATTACHMENTS

- 7.1 Instructions for completion of tractability ID Register. (Form QC-60)
- 7.2 Form QC-60
- 7.3 Instruction for completion of Fabrication Inspection Register (Form QC-61)
- 7.4 Form QC-61
- 7.5 Instructions for completion of Fabrication Order (Form QC-59).
- 7.6 Form QC-59

INDICATE'S CURRENT NUMBER

INDICATION IN THIS CI

ATTACHMENT 7.1
INSTRUCTIONS FOR COMPLETION OF TRACEABILITY ID REGISTER
FORM QC-60

Report Number

This is a two part number utilizing the numerical portion of the project number and the numerical sequence of the individual report sheet initiated in this project. (i.e. 027/011. This defines the eleventh QC-60 used on project number PMT-027).

Project Name

Name of the project or plant.

Project Number

The PROMATEC job number (i.e. PMT-027)

Fabricaator

Name of company fabricating.

MT Barrier Wrap Identification Number

Identification number assigned on fabrication order (form QC-119)

MFG

Name of appropriate material manufacturer.

Type

Name of appropriate material type/description

I.D. No.

Manufacturers ID/lot number (if applicable).

R.R.#

Promatecs' assigned receiving report number

Inspector
By/ date

Inspectors initials and date of inspection.

ATTACHMENT 7.3
INSTRUCTION FOR COMPLETION OF FABRICATION INSPECTION REGISTER
FORM QC-61

Report Number	This is a two part number utilizing the numerical portion of the project number and the numerical sequence of the individual report sheet initiated on this project (i.e. 027/011. This defines the eleventh QC-61 used on project number PMT-027.)
Project Name	Name of project or plant.
Project Number	The Promatec job number (i.e. PMT-027).
Fabricator	Name of company fabricating blanket.
MT Barrier Wrap Identification Number	Identification number assigned on fabrication order (form QC-119).
QC-60 Number	Report number of the QC-60, Traceability ID Register for reference to traceability.
Hold Point One	
Reject/Accept	Place check mark in appropriate column.
By	Inspectors initials.
Date	Date of inspection.
Hold Point Two	
Reject/Accept	Place check mark in appropriate column.
By	Inspectors initials.
Date	Date of inspection.
Hold Point Three	
Reject/Accept	Place check mark in appropriate column.
By	Inspectors initials.
Date	Date of inspection.

ATTACHMENT 7.5
INSTRUCTIONS FOR COMPLETION OF FORM QC-59

PFO	Promatec fabrication order. Assigned by Corporate Q.A. document control. Prefix with numeric portion of job number. Second portion is numerical sequence on that job. (027/011 represents the eleventh PFO on job #027).
ENG. PORTION	To be completed by Promatec Field Engineers.
PROJECT NAME	Project name.
CUSTOMER	Client
CUSTOMER ORDER NO.	Client order number
JOB NO.	Promatec assigned job number
TYPE	Name of fire protective wrap
QUANTITY	Number of pieces
LENGTH	Dimension in inches
WIDTH	Dimension in inches
THICKNESS	Dimension in inches
TOTAL FT 2	Dimension in feet
SCHEMATIC DRAWING REF.	
SCHEMATIC NO.	
ID NO.	Individual wrap I.D. No. Ordered by Corporate QA Document Control.
ORDERED BY	Eng. signature
DATE	Date ordered
SKETCH	Eng. to sketch wrap and assign dimension.
CERTIFICATE OF CONFORMANCE	To be completed by Fabricator.
PROMATEC QUALITY ASSURANCE ACCEPTANCE	Promatec Quality Control signature.