A. Implosion Protection Systems

1. Laminating

2. Banded - Domestic
   a. Kimcode
   b. T-Band

3. Banded - European
   a. Push Thru

B. Theory of Implosion Protection

To retard the propagation of cracks for a fraction of a second while the tube goes to air during impact, thermal shock or any accident in handling.

C. Purpose of Implosion Protection

To provide a safe system for tube builders, set manufacturers, servicing technicians and the customer.

D. Agency Monitoring

   U.S. - Underwriters Laboratory
   Canada - CSA
   England - BSI
   Germany - VDE
   Scandinavian Countries - Dæmko

E. Types of Implosion Protection - Bill of Materials B.S. 3-1T-25V (90°)

1. Laminated
   a. Polyester Resin - P-901C
   b. MBK Peroxide Catalyst - C665D
   c. Safety Window - 3665 - 900A
   d. Tape - T-264F
   e. Slitted Filler Valve - FM60706
   f. Filler Valve - M-6155
   g. Retaining Ring - M6156
   h. Tape - T-264D

2. Banded Domestic

   2A. Kimcode
       a. Epoxy Resin - R-290A
       b. Catalyst - R290B
       c. Rimbands - M9064
d. Crimp Seals - M9002
e. Steel Strapping - R9052
f. Mounting lug - M9067A

2b. T-Band

a. Steel Strapping - R-9052
b. Mounting lugs - M-9053
c. Crimp Seal - R9002, R9077
d. Tape - T285A, T901A

3. Banded European - Push-thru (PT)

a. Epoxy Resin - R290A
b. Catalyst - R290B
c. Rimbands (lugs attached) - M9055D
d. Steel Strapping - R9052
e. Crimp Seal - M-9002
f. Black Tape - T-909D
g. R-Bars (23V) - M-9043

F. Process

1. Laminating B.S. 34-40-54 Schedule 2
   (There are four laminating schedules)

1. Clean panel and safety window.
2. Place window on panel and put filler button retainer on with tape.
3. Space window and tape.
4. Cut out tape hole for fill button.
5. Place on conveyor and fill with laminating resin.
6. Remove tube and clean resin.

Common Problems:              Cause:

1. Bubbles                     Trapped Air
2. Dirt                        Tube or window not cleaned properly
3. Under fill                  Insufficient resin, poor taping, too
4. Striations                  many leaks
5. Pre-Gel                     Poor resin and catalyst mixing,
6. Delamination                excessive cleaning solution trapped
                                between window and tube

5. Pre-Gel
6. Delamination

Incoming Inspection Tests

Laminating Resin
2. Kimcode E.S. 34-40-500 Schedule 7  
(There are 19 Kimcode type Schedules)

1. Mix Epoxy Resin - 2 parts resin and 1 part hardener. Resin is white, hardener is black. Mixed resin is dark grey.
2. Apply to rimbande
3. Placerimbands on tube
4. Place steel strapping around tube and tension to desired value.
5. Crimp the seal; remove the tensioning tool.
6. With mounting lugs, the lugs have epoxy on the skirt and are placed in a holding fixture before the application of the tension band.
7. Lug "Z" height is checked with a mounting lug gauge.

Common Problems:

1. Crimp seal in the wrong location
2. Excessive Resin on Tube or Hardware
3. Exceeding ,078" eyebrow gap or specified gap for tube type
4. T-Band location too high or too low
5. Mounting lug at wrong "Z" height
6. Low tension
7. Poor Resin Coverage
8. Soft Resin

See E.S. for proper tube type
Improper cleaning and handling
Poor machine set-up, tube movement or poor glass and rimband fit
Poor machine set-up, tube movement
Poor machine set-up, tube movement
Tool wear, low air pressure and improper crimping
Low amount of resin used
Improper proportions

Incoming Inspection Tests

1. Gel Time
2. Hardness
3. Color
IMPLESION - PROOFING EQUIPMENT

I. LAMINATED TUBE TYPES

A. TAPING MACHINE L2872A (PPG)

B. LAMINATING CONVEYOR L2799CP2

C. RESIN MIX AND DISPENSE EQUIPMENT L2856DN (NOTE: A 3 COMPONENT SYSTEM MODIFIED FOR 2 COMPONENTS) (MATEER)

II. BANDED TUBE TYPES

A. KIMCODE (WITH OR WITHOUT MOUNTING LUGS)
   1. RESIN DISPENSER L2856NS1 (HULL)
   2. TENSION BANDING MACHINE L2872S1 (RCA)
   3. CLEAN-UP STATION (VARIOUS RCA DESIGNS)
   4. INSPECTION GAUGES
      a. ACME TENSION TESTER
      b. DETROIT TENSILE TESTER
      c. PINBALL GAUGE L2906GY TO CHECK Z HEIGHT ON MOUNTING LUGS

B. T-BAND
   1. TAPING MACHINE M2872F (IF REQUIRED)
   2. BANDING MACHINE L2872S1 WITH APPROPRIATE FIXTURE TOP
   3. RESIN DISPENSER L2856NS1 (IF REQUIRED)

C. PUSH THRU
   1. PAN-O-PLY (WELDED TENSION BAND)
      a. RESIN DISPENSER L2856NS1
      b. STRAP WELDER L2755DW
         (NOTE: THE L2872S2 BANDING MACHINE WAS DESIGNED AS A LOW VOLUME, LOWER COST UNIT TO WELD PUSH-THRU AND IS IN USE IN BRAZIL.)
   2. CRIMP SEAL DOUBLE BANDED PUSH THRU
a. RESIN DISPENSER L2856NS1

b. BANDING MACHINE L2872S1 WITH A DOUBLE BANDING ROTATING FIXTURE TOP

III. P-SHELL

A. P-SHELL PROCESS STATION L2799CZ1

IV. SHELL BOND

A. ROTATING HOLDING FIXTURE
B. CENTERING GAUGE
C. HAMILTON BEACH BLENDER FOR RESIN MIXING
D. LAMINATING LINE FOR CURING