

96" MONOLITHIC FIELD REPAIR

Procedural Steps

Safety Equipment: safety glasses, hearing protection, dust masks, gloves, bottle/floor jack

Lower

1. Open up Rear End of Boiler
2. Swing out door, and fully secure all the doors weight by using an external jacking system.
(I.e. Floor / bottle jacks)
3. Remove all old castable and insulation
4. Repair or replace any damaged anchors and (cut out the STEEL BAFFLE TRAY leaving the upper solid baffle bar to act as a stiffener if the repair is a brick to monolithic conversion)
5. Using the supplied pin layout drawing, mark out all the pin locations
6. Weld all the pins in the specified locations including the 5 X-Tree Anchors
7. Wrap the steel baffle with the 16" x 1/8" exp. paper using the supplied adhesive
8. Place 1/4" peep sight gasket over the peep sight hole coupling cutting out the 2" hole
9. Using the drawing as a guide, install insulation layers 1-3 on the floor making sure all the joints are tight
10. Install the speed clips over the pins pressing them in firmly against the board
11. Trim a 45 Deg. Angle on layer 2 and 3 around the Peep sight hole
12. Install I.F.B. arch brick on the wall with the supplied mortar
13. Place 1/4" by 2" exp. paper on wall below the flange lip with supplied adhesive
14. Install insulation layers 4-6 on the wall
15. Install the speed clips over the pins pressing them in firmly against the board
16. Bend all wavy anchors to a 60 Deg. angle and tape anchor ends with masking tape to allow for expansion
17. Install layer 7 (1 1/2" K-FAC SR) on the floor and wall above the steel baffle . Keep the wall board down 2" from the flange and install on an angle so that the board is buried behind the castable
18. Place sealing neoprene gasket around flange, keeping it in 1/8" from the inside of flange
(helps form a tight seal between the form and steel shell)
19. Clean and oil the fiberglass form using a 50/50 mixture consisting of motor oil and slick 50
20. Bolt form in place.
use 1" x 5 1/2" long bolts with wide flange nuts and washers
21. Install peep sight mandrel
22. Mixing and Placing: 5-c-45 3 min. mixing time
3.171 -3.6995 Quarts (liquid) per 55 lb. Bag
23. Trowel off the castable as shown on drawing 100021. The castable should be 2" above the steel baffle
24. Cover with plastic

Tools Required

Adjustable wrench, jack hammer, pry bar, grinder for anchors,
shovel, waist bin, broom, welding machine, welding rod, helmet

pin marker, welding machine, stainless steel welding rod,
helmet, tape measure

cutting knife, tape measure, mallet,
masking tape

use a 4" long by 1" dial. pipe to bend anchors,

clean rag, concrete release agent, oil applying brush,
adjustable wrenches, additional clamp for bottom of form
if required

Min. 4 cu. Ft. paddle mixer, internal vibrator with high frequency
and 1 1/2" vibrating head, measuring jug, stop watch, wheel barrow,
shovel, trowel

Use internal vibrator for every 2 bags placed

VIBRATING NOTES.

Place 5-c-45 mat'l between mold and insulation, using the vibrator steady for every 2 bags placed.

Fully submerge vibrator head into castable and withdraw vibrator head slowly to avoid trapped air pockets.

Upper

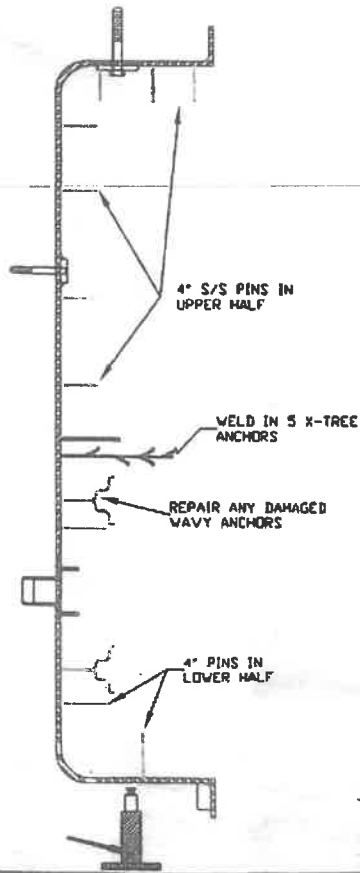
Tools required

25. Weld pins on floor and wall using the supplied pin layout template	
26. Install layer 1 on floor	
27. Install layer 2 on wall (10" wide piece), using extra clips to hold in place	utility knife
28. Install layer 3 on the floor	
29. Install the floor screen	
30. Place speed clips over pins and fold pins over to help hold screen in place	tin snips, pin bender, utility knife
31. Install Layer 4 on the wall using extra clips to help hold the blanket in place and then folding the blanket at the top knuckle	
32. Install layer 5 on wall (last layer, 12" piece) <i>Notes: Make sure all the seams and joints are tight, including where the wall meets the baffle stuff any voids with blanket.</i>	
33. Install the wall screen 1/2" below the top of flange	
34. Place speed clips over pins and fold pins over to help hold the screen in place	
35. Apply a bead of LDS Moldable to the joint where the castable and blanket meet.	caulking gun
36. Allow castable to set before removing the peep sight mandrel and fiberglass form Remove the neoprene gasket sealing tape	adjustable wrenches

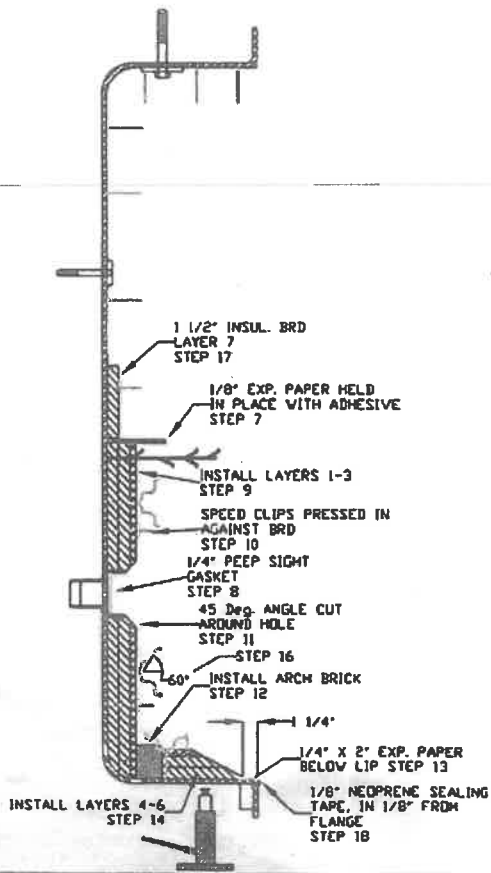
Guidelines for Dry-Out and Initial Heating -- Conventional Castable

STEP	TEMPERATURE LEVEL	RATE OF RISE	DURATION
1	Ambient temperature (70-90°F)	Hold	Keep moist for 24 hours with membrane, curing compound, plastic sheet or water mist spray.
2	Ambient to 300°F	50°F per hour	
3	300°F	Hold	1 hour per inch of lining thickness (6 hrs. min.)
4	300°F to 600°F	50°F per hour	
5	600°F	Hold	1 hour per inch of lining thickness (6 hrs min.; 12 hrs. max.)
6	600°F to 1000°F	50°F per hour	
7	1000°F	Hold	1 hour per inch of lining thickness (6 hrs. min.)
8	Cool or Raise to Operating Temperature	100°F per hour	

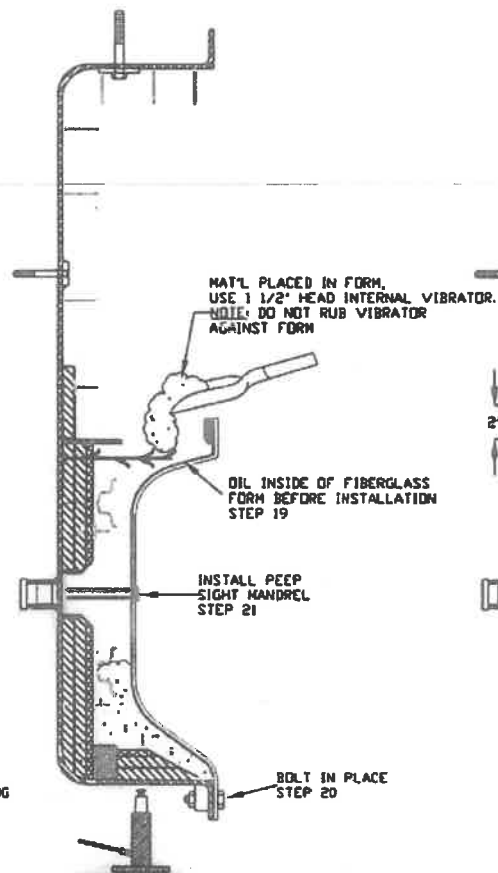
STEPS 4-6



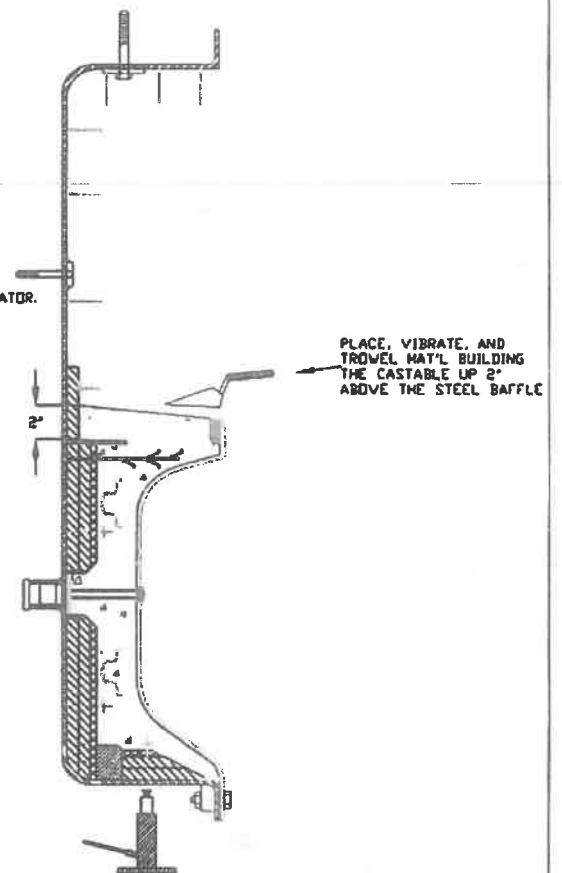
STEPS 7-18



STEPS 19-21



STEPS 22-24



REVISIONS

DWGNO.

ALL MATERIAL SIZES ON BILL OF MATERIAL ARE FOR REFERENCE ONLY. DRAWING DIMENSIONS MUST BE FOLLOWED.

SCALE
N.T.S.
DATE:
05/05/00
DRAWN BY
S.J.S.

Cleaver Brooks
BY: JERRY OREN
ILLUSTRATION: JERRY OREN

REAR HEAD, 96" MONOLITHIC
FIELD REPAIR, LOWER

DRWG. NO. 100021

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FIBREGLASS MOLD - PART No. 797-7217
 POURING A BRICK TO MONOLITHIC
 INSULATION

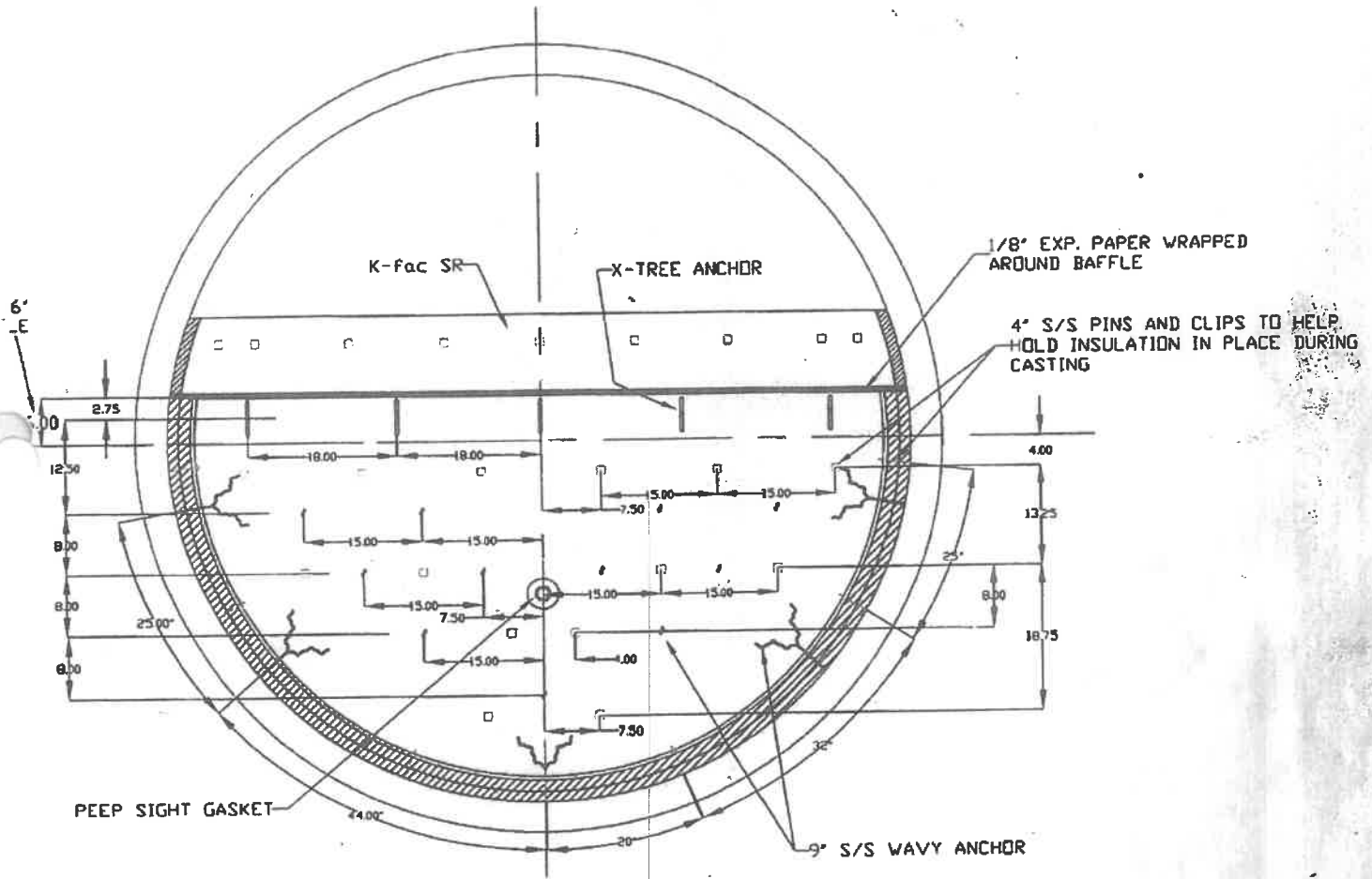
FORM MUST BE RAISED UP AN ADDITIONAL
 MAINTAIN PROPER ROPE LOCATION
 AT THE VESSEL

LINE OF REAR HEAD SHELL TO
 LINE OF ROPE

BRICK - 4 3/4"
 RICK - 4 3/8"
 ONO - 3 3/4"

NOTES:

1. BEND ANCHORS AFTER INSTALLING INSULATION, AND TAPE ALL ANCHOR ENDS PRIOR TO POURING CASTABLE INSULATION IN PLACE DURING CASTING
2. PINS AND CLIPS ARE USED TO HOLD BRD. INSULATION IN PLACE DURING CASTING
3. VISUALLY LOOK BETWEEN THE FORM AND STEEL SHELL AFTER THE FORM IS ATTACHED AND MAKE SURE THERE IS A MINIMUM DISTANCE OF 1" FROM ANY ANCHOR TO THE FIBREGLASS FORM



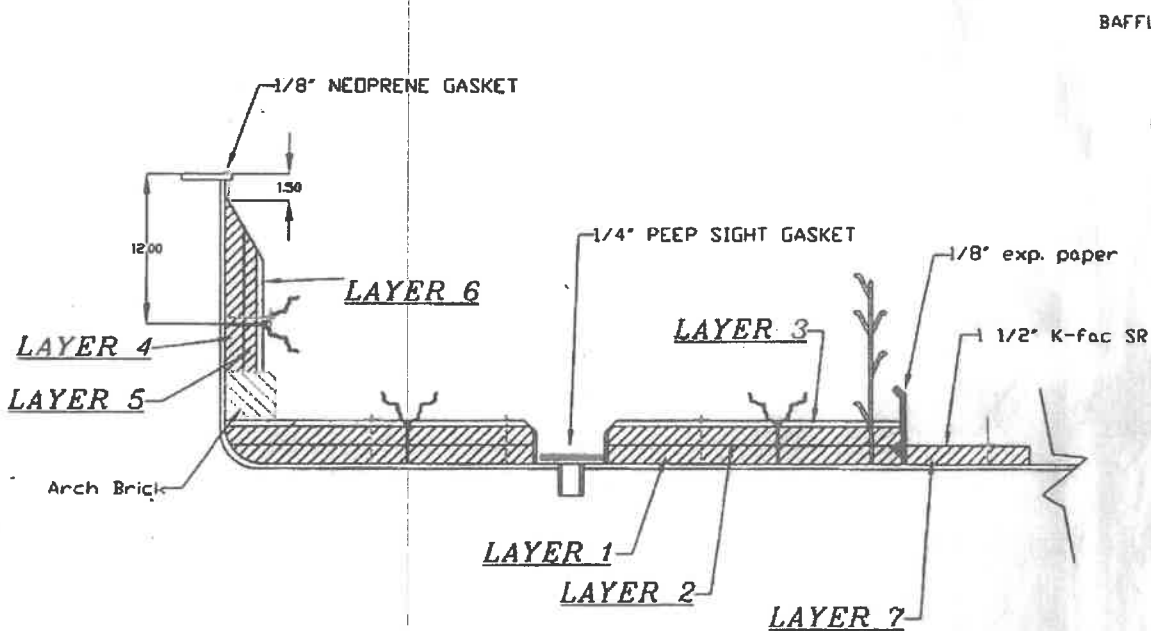
FLOOR PIN LAYOUT

DWGNO.	ALL MATERIAL SIZES ON BILL OF MATERIAL ARE FOR REFERENCE ONLY. DRAWING DIMENSIONS MUST BE FOLLOWED.	SCALE N.T.S.	Cleaver Brooks <small>GREENVILLE, MS. STRATFORD, CT. THOMASVILLE, GA.</small>
		DATE: 10/05/00	
		DRAWN BY S.J.S.	96" REAR HEAD, BACK-UP INSULATION, LOWER HALF DRWG. NO. 100023

02

INSTALLATION NOTES:

1. USING PIN LAYOUT DRAWING, MARK OUT ALL PIN LOCATIONS, BOTH ON THE FLOOR AND WALL
2. WELD IN X-TREE ANCHORS AND ANY 9' WAVY ANCHORS THAT NEED REPAIR.
3. WELD SUPPLIED 4" PINS IN PLACE (20 PINS), PLUS THE 15 ABOVE THE STEEL BAFFLE ON THE FLOOR AND WALL
4. INSTALL 1/8" EXP. PAPER AROUND STEEL BAFFLE WITH SUPPLIED ADHESIVE
5. INSTALL 1/4" PEEP SIGHT GASKET OVER PEEP SIGHT HOLE
6. INSTALL LAYER 1-3 ON THE FLOOR
7. INSTALL SPEED CLIPS OVER PINS - PUSH CLIPS IN TIGHT TO INSULATION
8. INSTALL THE ARCH BRICK AROUND THE PERIMETER OF THE LOWER HALF OF THE SHELL
9. INSTALL LAYERS 4-6 ON THE WALL
10. INSTALL SPEED CLIPS OVER PINS - PUSH CLIPS IN TIGHT TO INSULATION
11. BEND OVER ALL WAVY ANCHORS TO A 60 DEG. ANGLE, AND TAPE ENDS TO ALLOW FOR EXPANSION
12. PLACE 1/8" SEALING NEOPRENE GASKET AROUND FLANGE, KEEPING IT IN 1/8" FROM THE INSIDE OF THE FLANGE
13. OIL AND INSTALL FIBERGLASS FORM
14. INSTALL PEEP SIGHT MANDREL



BAFFLE WEL
ABOV

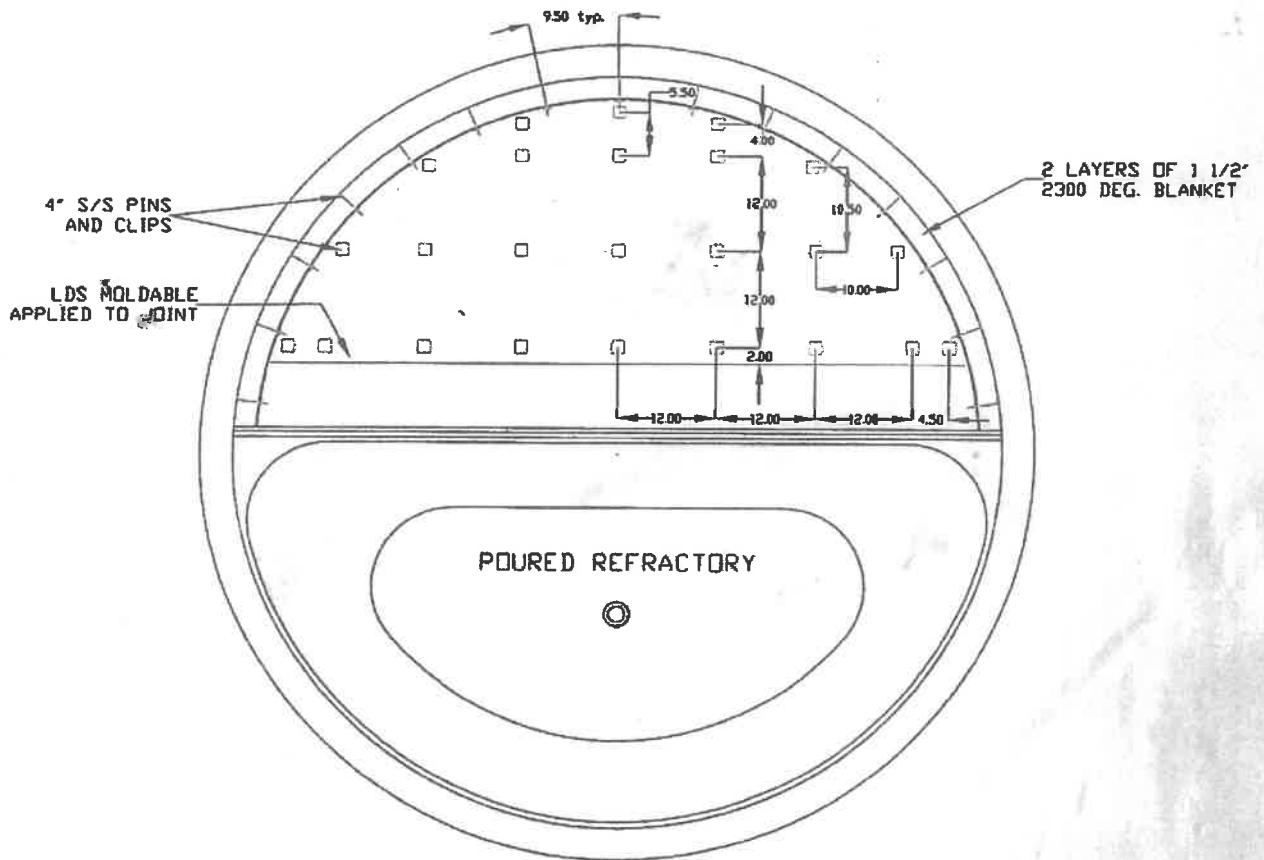
CENTER

CROSS SECTION OF BOARD
INSULATION

REVISIONS

CHANGED 'TEMPLATE' TO 'DRAWING'
UNDER STEP 1. JUNE 28/00

CHANGED 'CENTRE LINE OF BAFFLE'
TO 'CENTRE LINE OF REAR HEAD'
SHELL. JUNE 29/00



FLOOR PIN LAYOUT

DWGNO.

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SCALE
N.T.S.

DATE:
11/05/00
DRAWN BY
S.J.S.

Cleaver Brooks
DR. AGA-CHI INC. MELBARK, AUSTRALIA
ONEVILL, MS. STRATFORD, ONT. THOMASVILLE, GA.

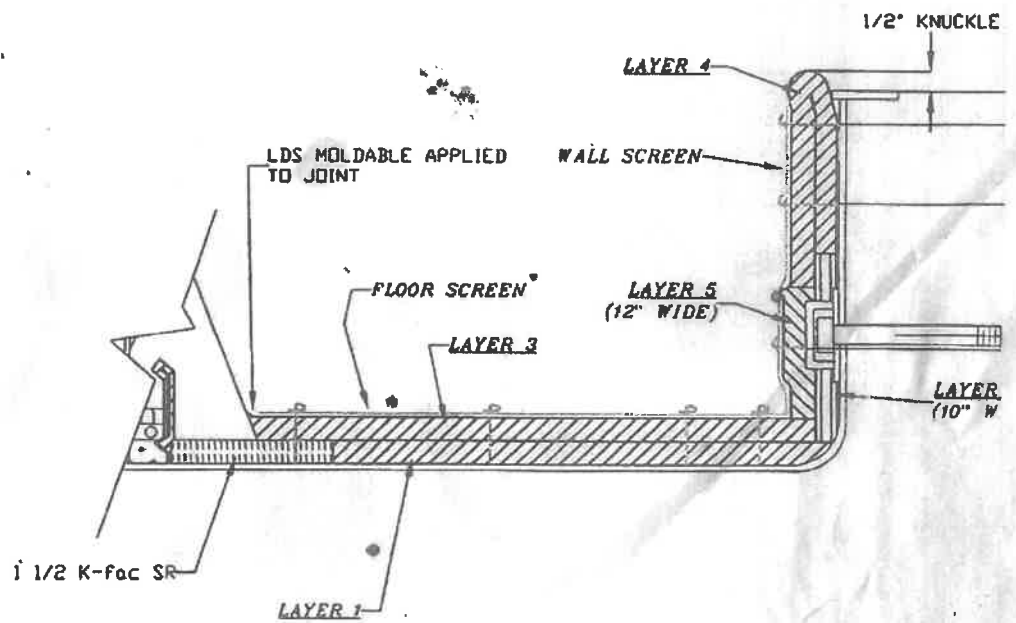
**96" REAR HEAD
INSULATION, UPPER KIT**

DRWG. NO. 100024

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INSTALLATION NOTES:

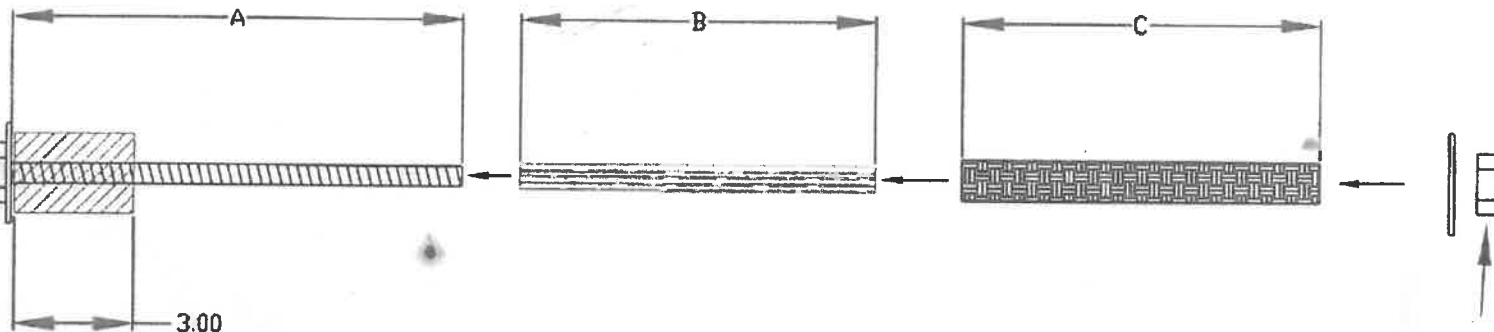
1. USE SUPPLIED PIN LAYOUT TEMPLATE TO MARK OUT ALL PIN LOCATIONS
2. WELD SUPPLIED 4" PINS IN PLACE (65 PINS)
3. INSTALL LAYER 1 ON FLOOR
4. INSTALL LAYER 2 ON WALL (10" WIDE PIECE). EXTRA CLIPS SENT IN KIT TO AID IN INSTALLATION
5. INSTALL LAYER 3 ON FLOOR
6. INSTALL FLOOR SCREEN AND CLIPS PRESSING CLIPS IN SNUG TO THE BLANKET
7. BEND OVER ALL PINS
8. INSTALL LAYER 4 ON WALL. USE EXTRA CLIPS TO HOLD BLANKET UP BEFORE FOLDING BLANKET OVER AT KNUCKLE
9. INSTALL LAYER 5 ON WALL (12" WIDE PIECE). ALL JOINTS ARE TO BE TIGHT
10. INSTALL WALL SCREEN AND SPEED CLIPS PRESSING IN SNUG TO BLANKET
11. BEND OVER ALL PINS
12. APPLY LDS MOLDABLE TO THE BLANKET AND BRICK JOINT AND ANY OTHER GAPS THAT NEED FILLING



**CROSS SECTION OF
BLANKET INSULATION**

REVISIONS

ITEM NO.	QTY.	DESCRIPTION	48"	60"	78"	96"
A	1	1/2" DIA. ROUND FULLY THREADED ROD	13"	13"	16"	18"
B	1	5/8" DIA. ROUND COPPER PIPE	7"	8"	9"	10"
C	1	1" OUTER DIAMETER RUBBER HOSE	7"	8"	9"	10"



3.00
1/4" EXP. PAPER
ROLLED TO 2.00 O.D.
TO FIT INTO 2.00 COUPLING

1/2" NUT C/W 2 1/2"
OUTER DIAMETER FLAT
WASHER

1/2" NUT C/W 2 1/2"
OUTER DIAMETER FLAT
WASHER

REVISIONS

DWGNO.

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SCALE
N.T.S.
DATE:
05/06/00
DRAWN BY
S.J.S.

GEMCAST
MANUFACTURING INC.
201 BRIDGEWAY ST.
SILVERDALE, PA.
PHONE: 877-891-3979
FAX: 412-991-8754

PEEP SIGHT MANDREL

DRWG. NO. 100030

00

Cleaver-Brooks genuine poured rear door to OEM specification.

Conclusion

Contact your Cleaver-Brooks parts analyst for part number, price and availability for the material used in this process.

These kits provide a long lasting solution yet install quickly with minimum set-up requirements. The kits also offer the most in safety benefits because there is no need to remove the heavy, hard to reach doors.

Monolithic

96" REAR HEAD FIELD KITS

BILL OF MATERIALS

<u>PART No.</u>	Lower Back-Up Kit	880-778	<u>Packaging</u>
	Back-Up Kit + Castable (3850 lbs.)	880-896	- 3 boxes
	Fiberglass Mold	797-7216 - Mono Mold	
		797-7217 - LE Mold	
	Upper blanket kit	880-00774	- 2 boxes

**LOWER
ITEM:**

QTY:

5-C-45 CASTABLE	3850 lbs./ 70 bgs
1 1/2" K-FAC SR	80 SF
1" K-FAC SR	18 SF
1/2" M-BOARD	36 SF
4" S/S PINS	35
S/S SPEED CLIPS	35
1/8" EXPANSION PAPER (BAFFLE)	10 SF
1/4" x 2" EXPANSION PAPER	10 LF
1/8" NEOPRENE GASKET	14 LF
1/4" PEEP SIGHT GASKET	2
ADHESIVE	1 can
ARCH BRICK	32
9" WAVY ANCHORS	17 (to be used if needed)
X-TREE ANCHORS	5
SAIRSET MORTAR	1 PAIL / (4 L.)

**UPPER
ITEM:**

QTY:

1 1/2" CERAMIC FIBRE BLANKET	100 SF
4" S/S PINS	65
S/S SPEED CLIPS	90
GALV. SCREEN	60 SF
LDS MOLDABLE	2 tubes
PIN LAYOUT TEMPLATE	1

extra speed clips packaged to aid in the installation of the wall blanket

COMES WITH INSTALLATION DRAWINGS + INSTRUCTION MANUAL

<u>KIT WEIGHT</u>	4325 lbs. LOWER
	175 lbs. UPPER
	<u>TOTAL</u> 4500 lbs.

8/3/01
rev 2