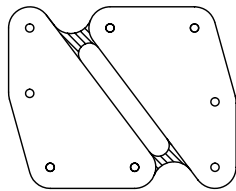


## 05 – FUSELAGE – CENTER SECTION

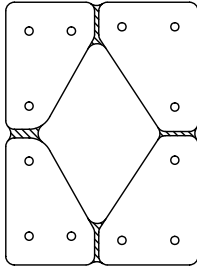
|                                                       |         |
|-------------------------------------------------------|---------|
| BUILDER MODIFIED PARTS .....                          | 05-01   |
| GEAR BLOCK ATTACH .....                               | 05-02   |
| SPAR CARRY-THRU NUT PLATE ORIENTATION .....           | 05-07   |
| ANGLE GEAR ATTACH MODIFICATION .....                  | 05-13   |
| FLAP MECHANISM REINFORCEMENT PLATE INSTALLATION ..... | 05A-02  |
| FAIR LEADS MODIFICATION .....                         | 05A-06  |
| REAR SPAR BULKHEAD SUPPORT ANGLE .....                | 05A-07  |
| REAR SPAR CARRY-THRU RIVET SCHEDULE .....             | 05A-08  |
| FUSELAGE SIDE SKIN BENDING .....                      | 05B-01  |
| FUSELAGE SIDE SKIN BENDING DETAIL .....               | 05B-01A |
| CABIN SIDE SKIN MODIFICATION .....                    | 05B-02  |
| STIFFENERS AND STRINGERS JOGGLES .....                | 05B-03  |
| STIFFENERS AND STRINGERS JOFFLE METHOD .....          | 05B-03A |
| RIB – CABIN WALL MODIFICATION .....                   | 05B-04  |
| RIB – CABIN WALL MODIFICATION .....                   | 05B-04A |
| CLIP MODIFICATION .....                               | 05B-05  |
| LONGERON MODIFICATION .....                           | 05B-08  |
| FORWARD LONGERON MODIFICATION .....                   | 05B-08A |
| GUSSET MODIFICATION .....                             | 05B-11  |
| BELLY SKIN – CABIN MIDDLE ORIENTATION .....           | 05B-13  |
| SIDE SKIN MIDIFICATION .....                          | 05C-04  |
| FUSELAGE CENTER SECTION – RIVET SCHEDULE .....        | 05C-06  |
| FUSELAGE CENTER SECTION – RIVET SCHEDULE .....        | 05C-06A |



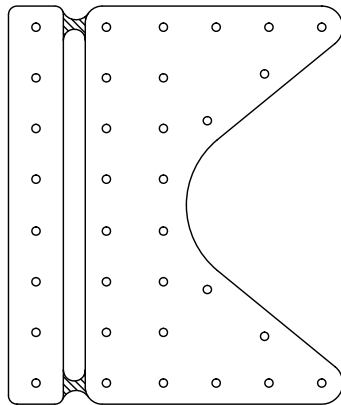
KPFU0570

MODIFY PARTS AS SHOWN BY  
REMOVING HATCHED AREAS.  
PARTS ARE NOT SHOWN FULL  
SIZE.

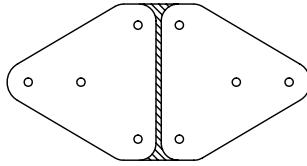
MARK PARTS AS NEEDED FOR  
LATER IDENTIFICATION.



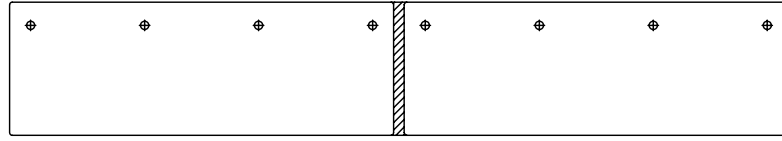
KPFU0567



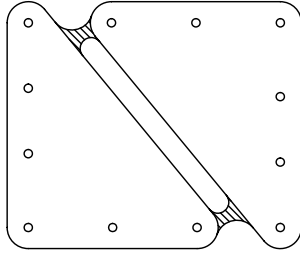
KPFU0525



KPIP0099



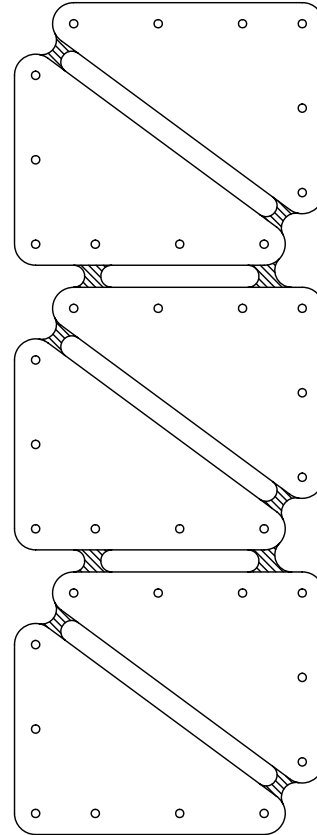
KPFU0584



KPFU0571

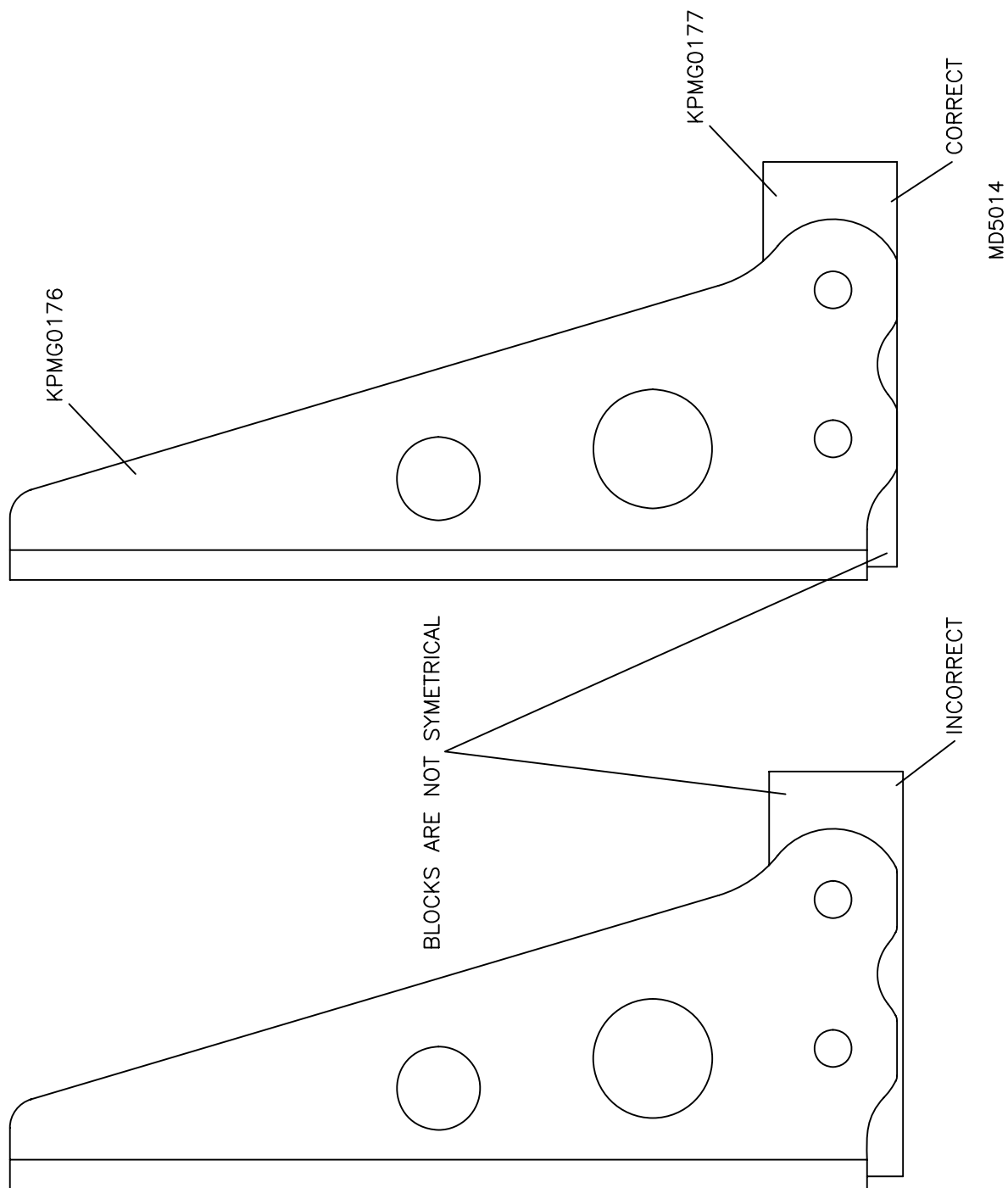


KPFU0501



KPFU0421

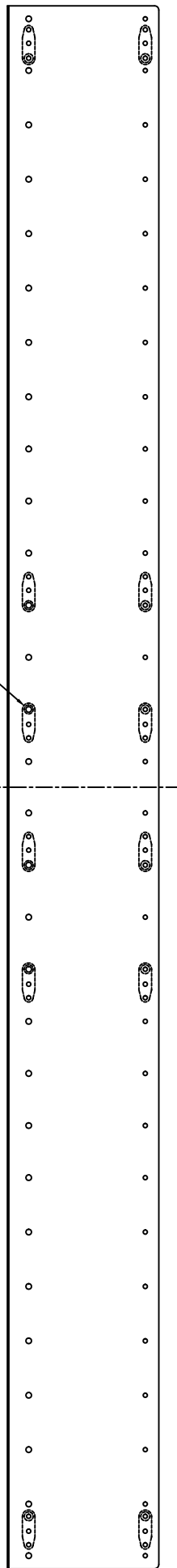
# **RAMS S-19 VENTERRA** **BUILDER MODIFIED PARTS** **FIGURE 05-01**



**RRR S-19 VENTERRA**  
**GEAR BLOCK ATTACH**  
**FIGURE 05-02**

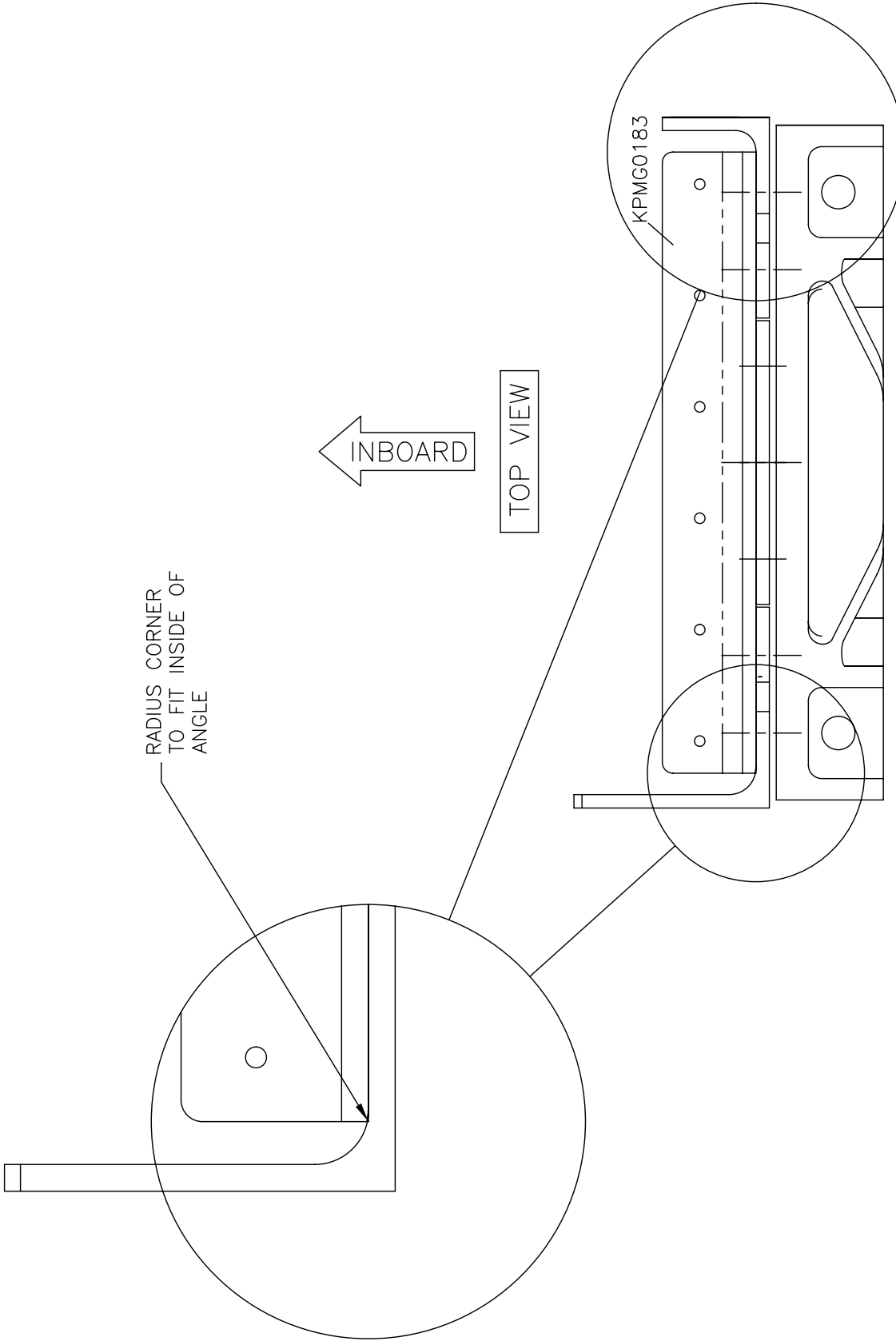


TRANSFER DRILL 1/4"  
(12 PLACES)



MD5238

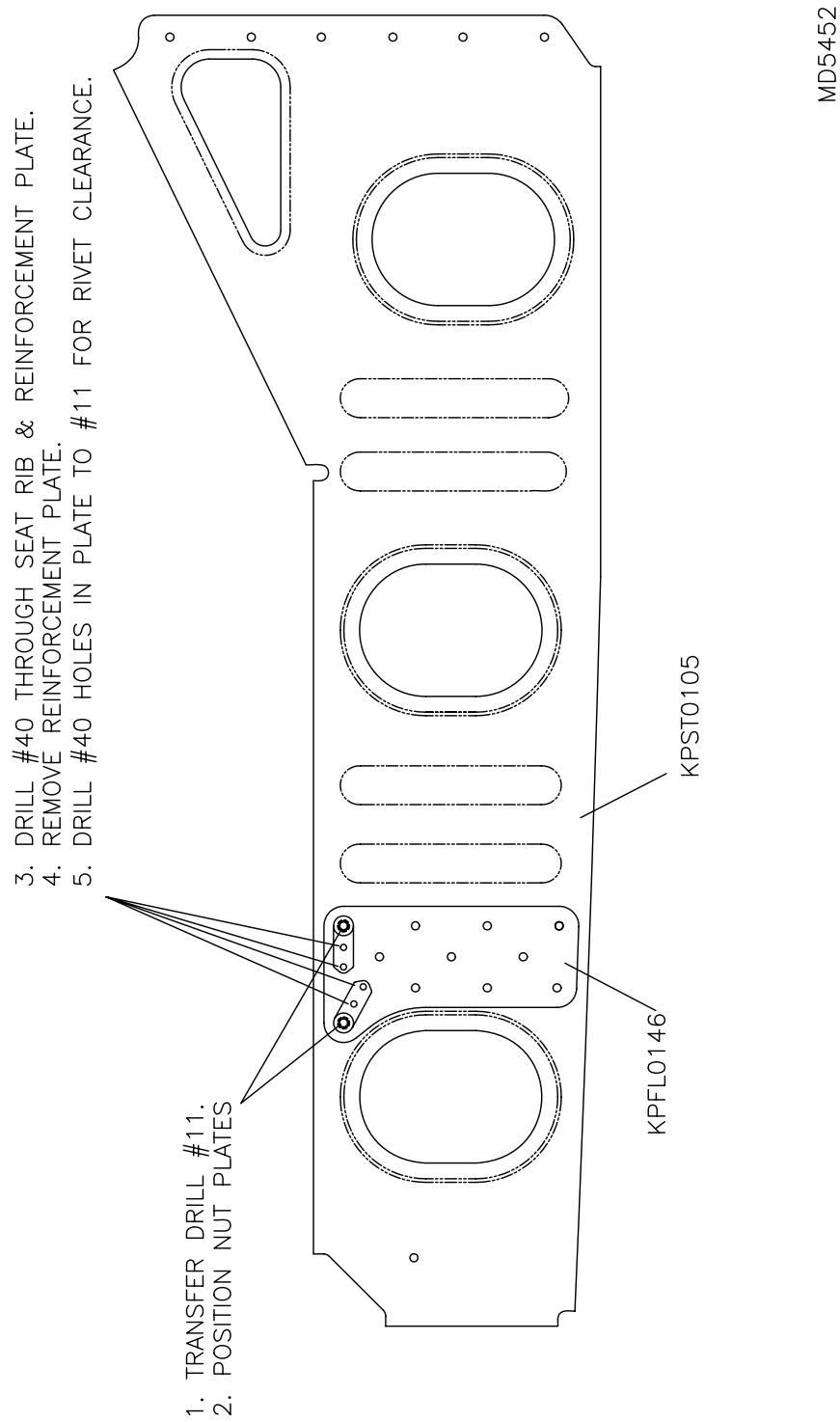
**RRMS S-19 VENTERRA**  
**SPAR CARRY-THRU NUT PLATE ORIENTATION**  
**FIGURE 05-07**

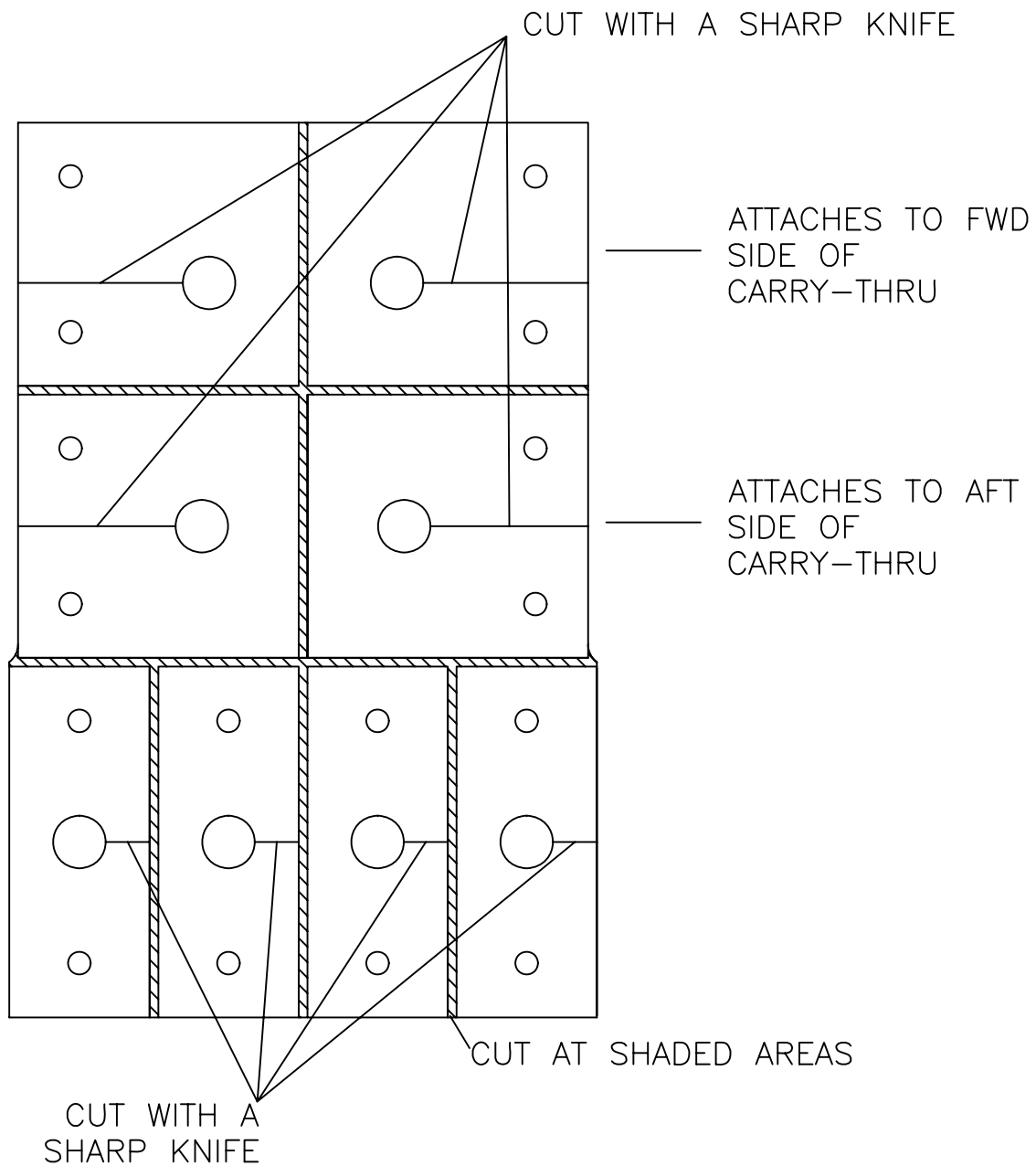


MD4812

**RRM S-19 VENTERRA**  
**ANGLE GEAR ATTACH MODIFICATION**  
**FIGURE 05-13**

# RAM S-19 VENTERRA FLAP MECHANISM REINFORCEMENT PLATE INSTALLATION FIGURE 05 A-02





CUT APART AS SHOWN

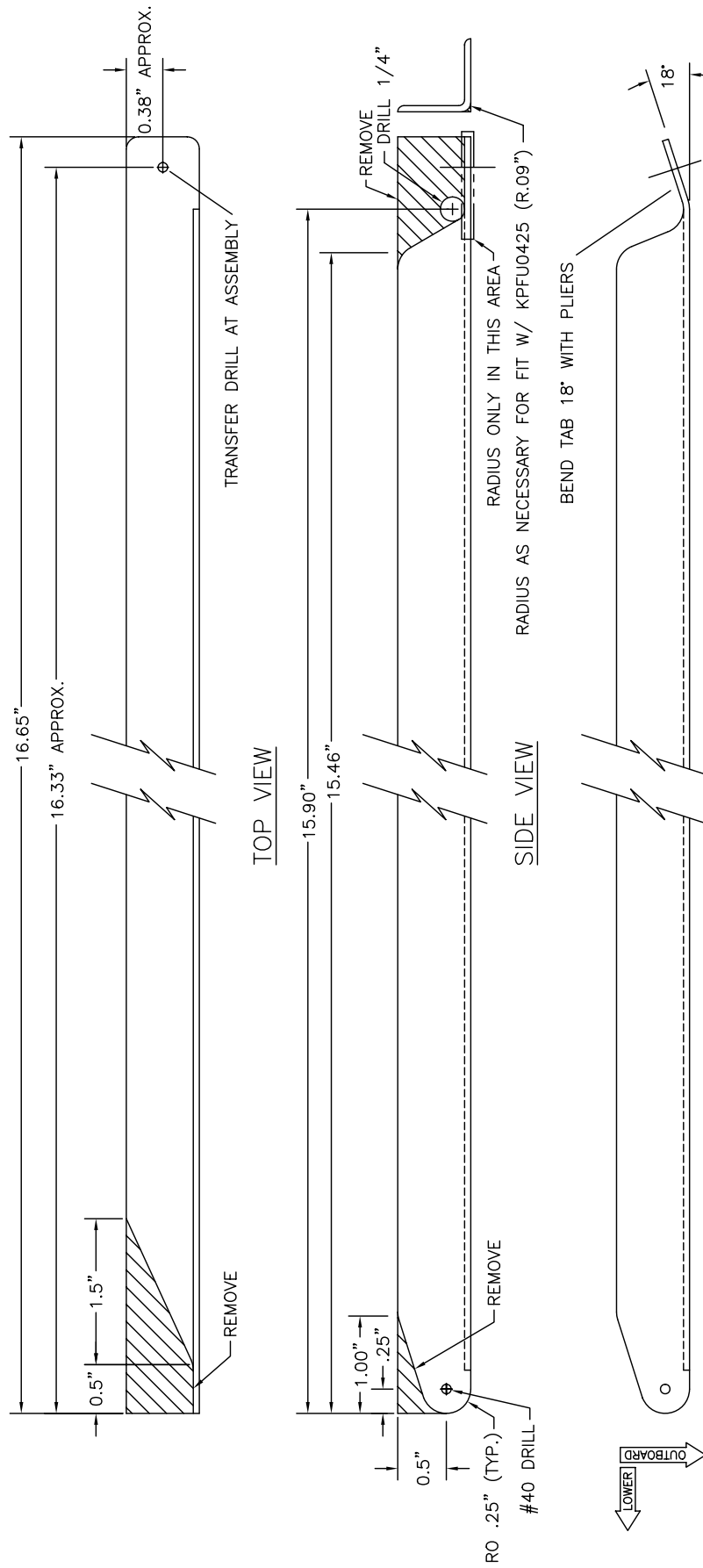
1:1

**RANS S-19 VENTERRA**  
**FAIR LEADS MODIFICATION**  
**FIGURE 05A-06**

MD5074

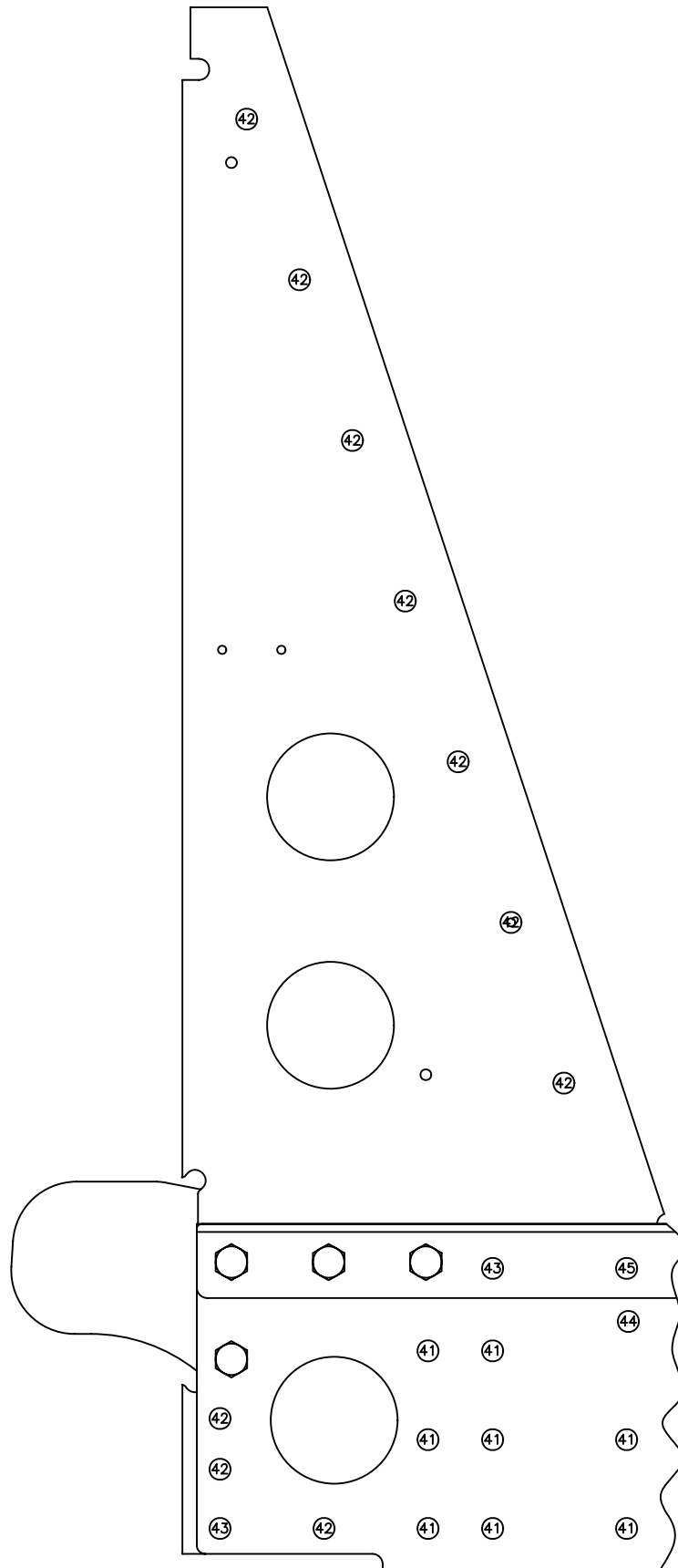
04/01/2011

LEFT AND RIGHT REQ'D (LH SHOWN)



MD5115

**RRM S-19 VENTERRA**  
**REAR SPAR BULKHEAD SUPPORT ANGLE**  
**FIGURE 05A-07**

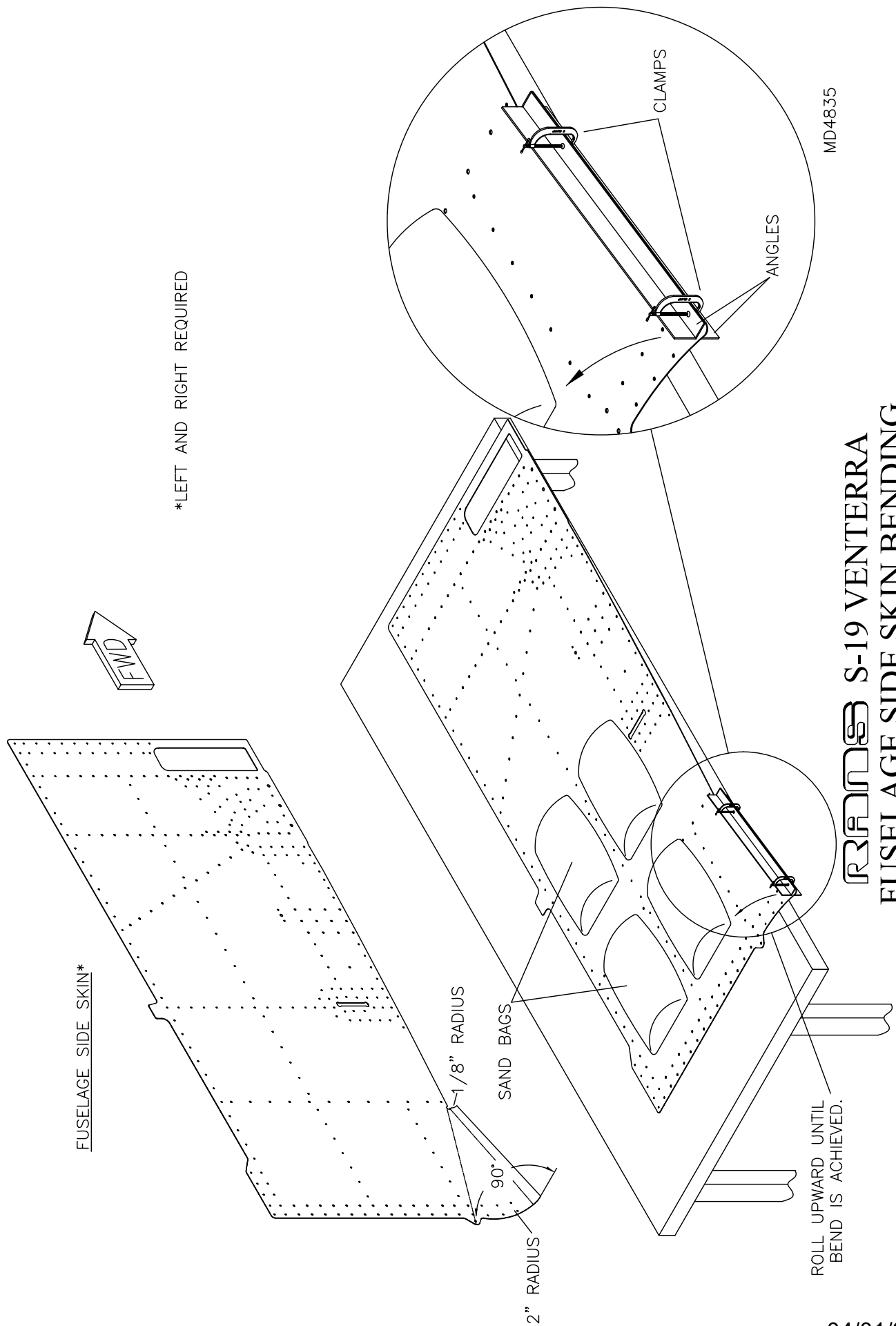


ALL RIVETS CCPQ-XX

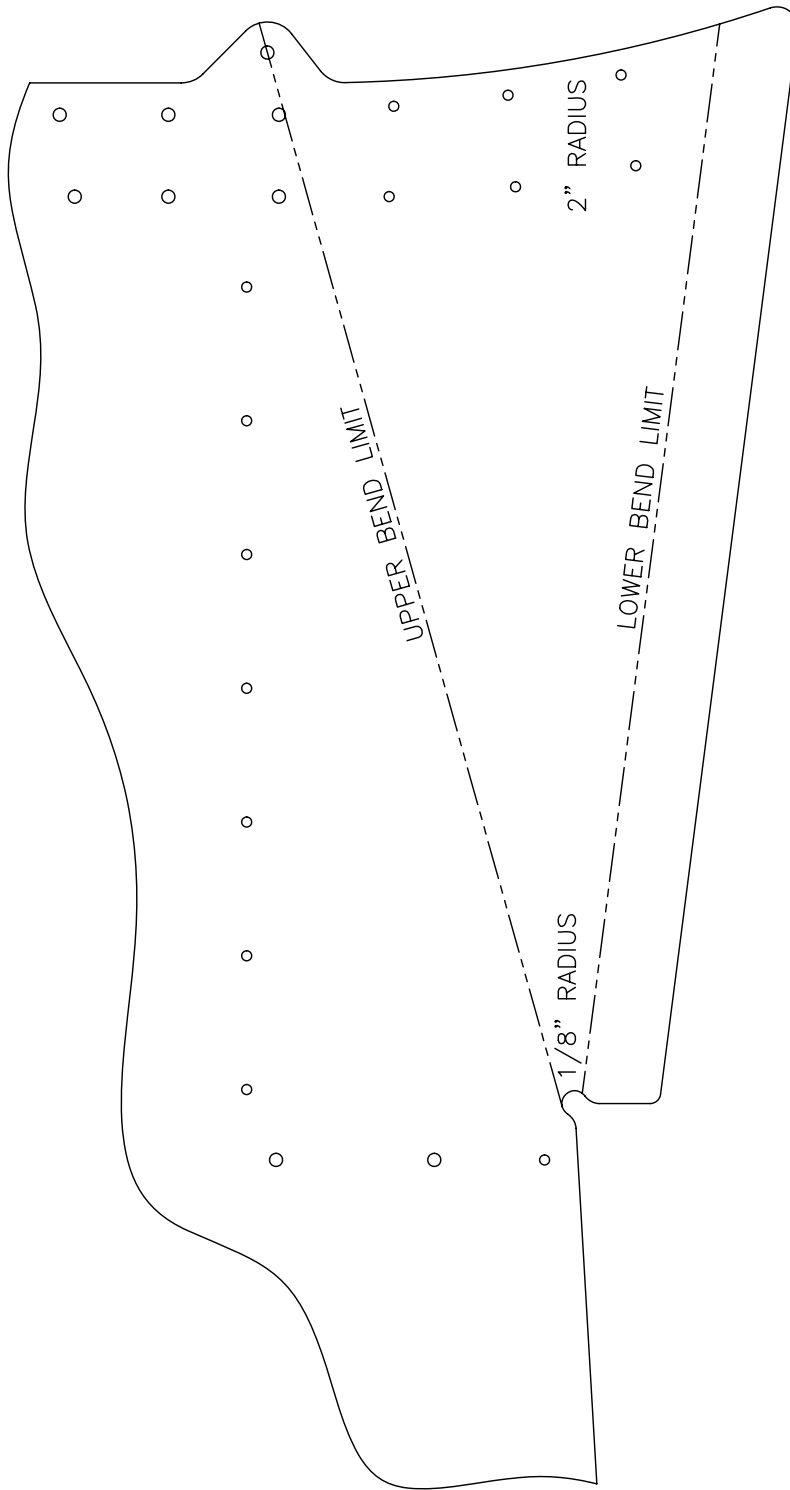
MD5234

**RANS S-19 VENTERRA**  
**REAR SPAR CARRY-THRU RIVET SCHEDULE**  
**FIGURE 05A-08**

04/01/2011

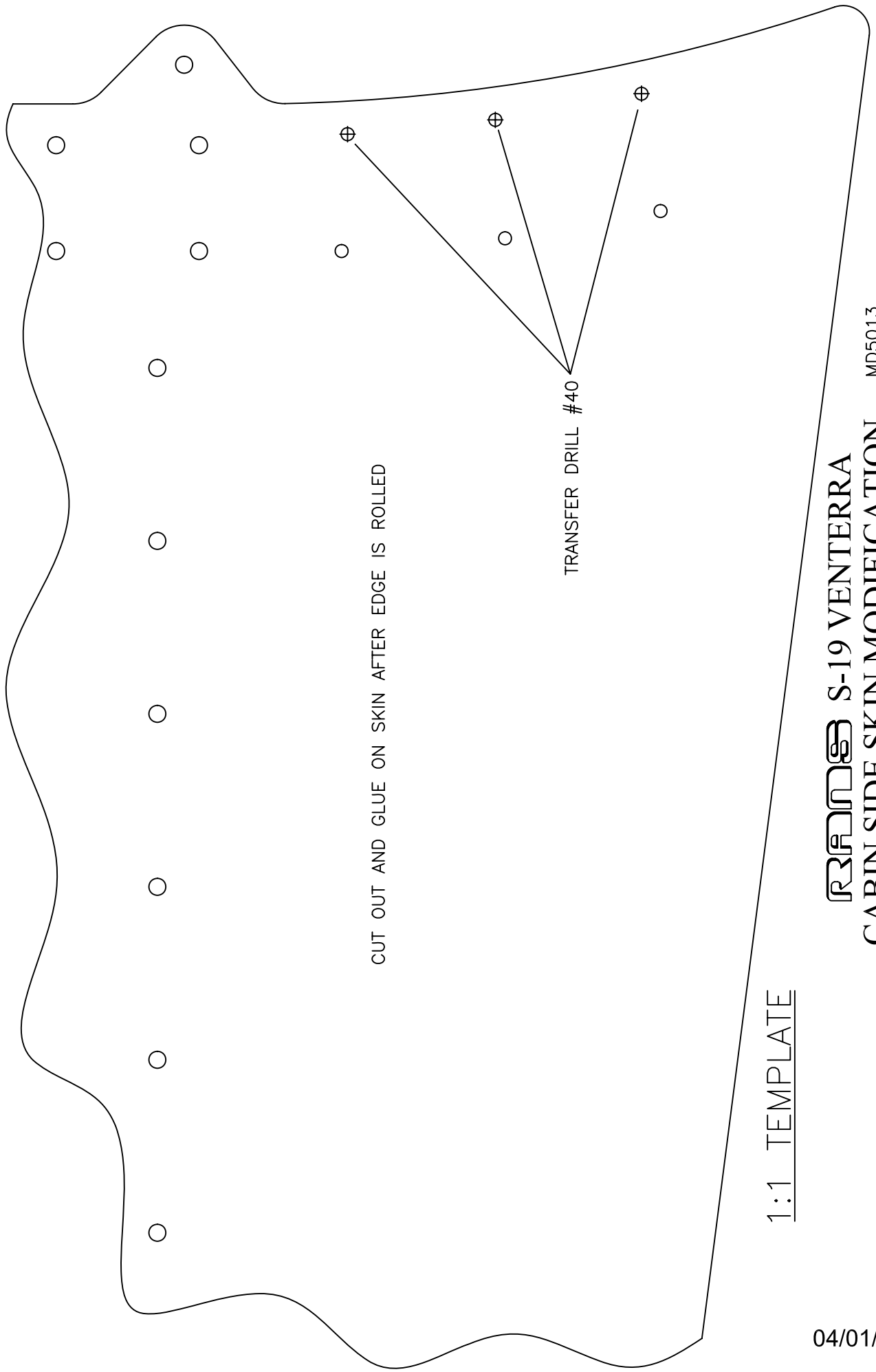


**S-19 VENTERRA**  
**FUSELAGE SIDE SKIN BENDING**  
**FIGURE 05B-01**



MD4835

**RRMO S-19 VENTERRA**  
**FUSELAGE SIDE SKIN BENDING DETAIL**  
**FIGURE 05B-01A**



CUT OUT AND GLUE ON SKIN AFTER EDGE IS ROLLED

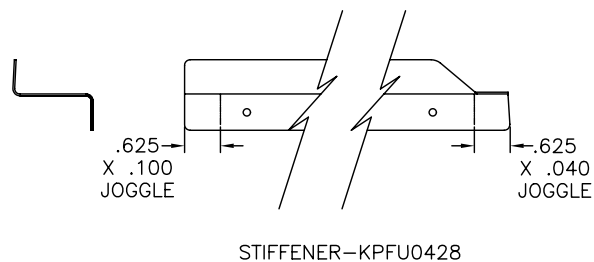
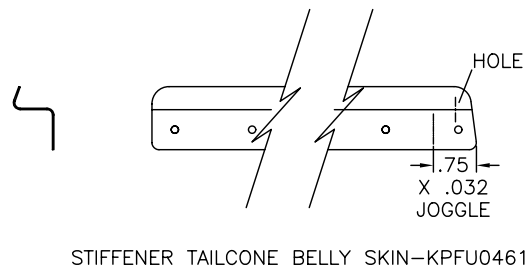
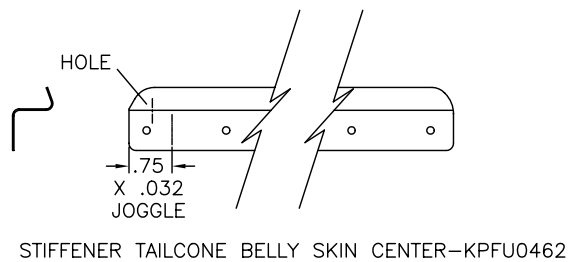
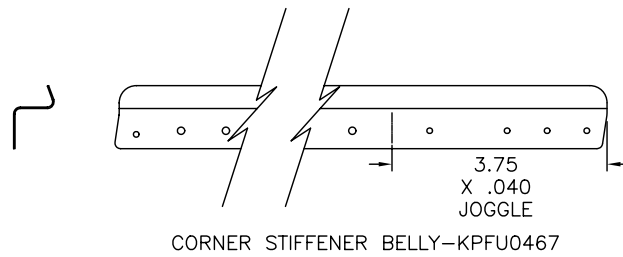
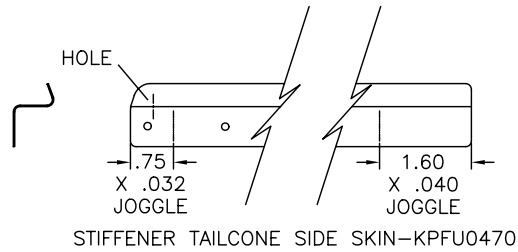
TRANSFER DRILL #40

1:1 TEMPLATE

**RRM S-19 VENTERRA**  
**CABIN SIDE SKIN MODIFICATION**

**FIGURE 05B-02**

MD5013

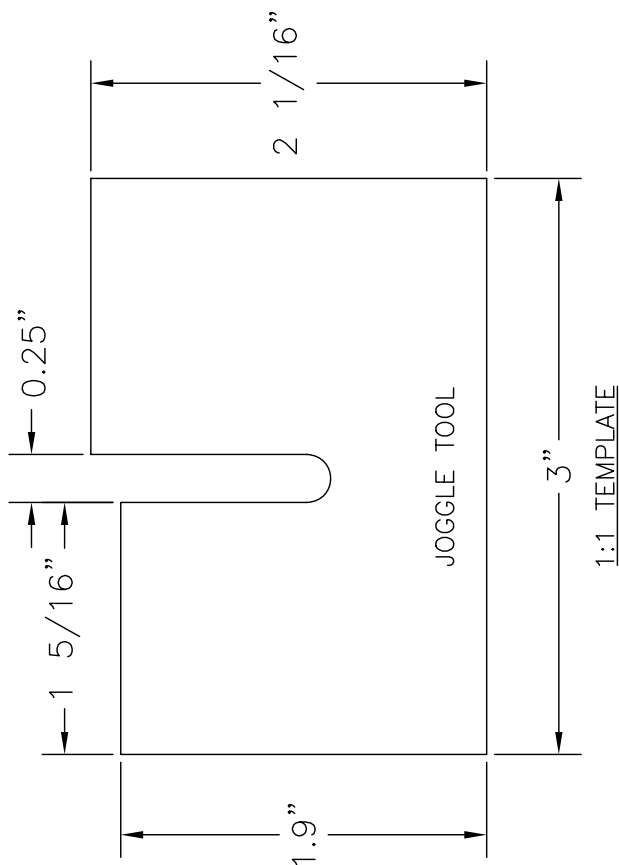


MD4843

# **RANS S-19 VENTERRA** **STIFFENERS AND STRINGERS JOGGLES** **FIGURE 05B-03**

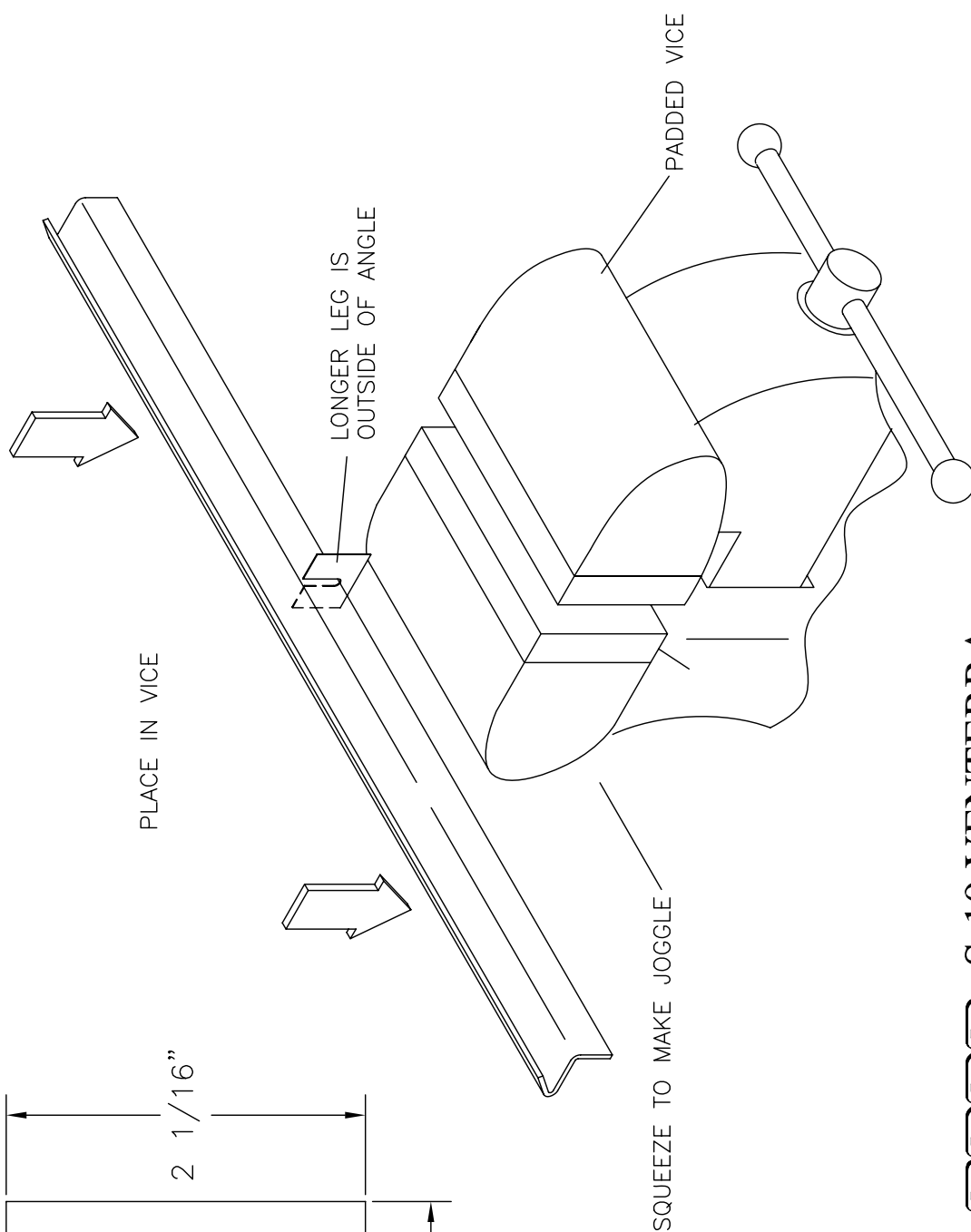
04/01/2011

\*FABRICATE 1 FROM 0.050" AND 1 FROM 0.100" ALUMINUM SHEET

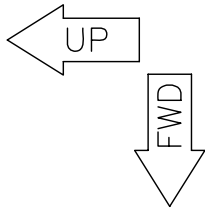
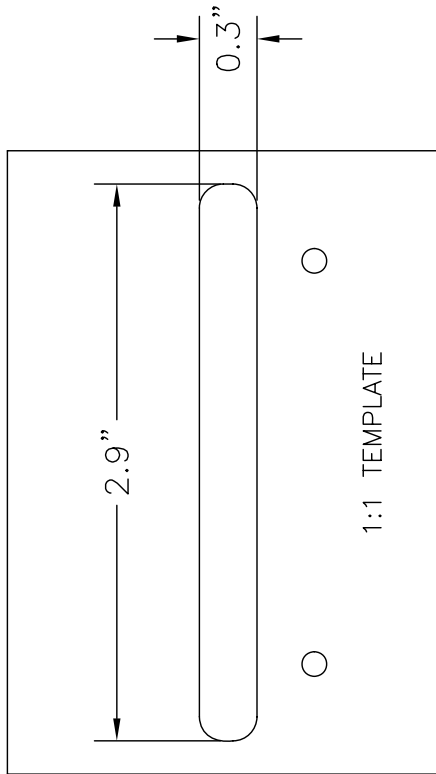


\*USE THE 0.050" TOOL FOR 0.032" AND 0.040" JOGGLES AND THE 0.100" FOR 0.100" JOGGLES.

HINT: TO MAKE JOGGLE MORE PRONOUNCED TAPE A PIECE OF SCRAP .100" MATERIAL ON ONE OR BOTH JAWS OF THE VICE.



**S-19 VENTERRA**  
**STIFFENERS AND STRINGERS JOGGLE METHOD**  
**FIG. 05B-03A**

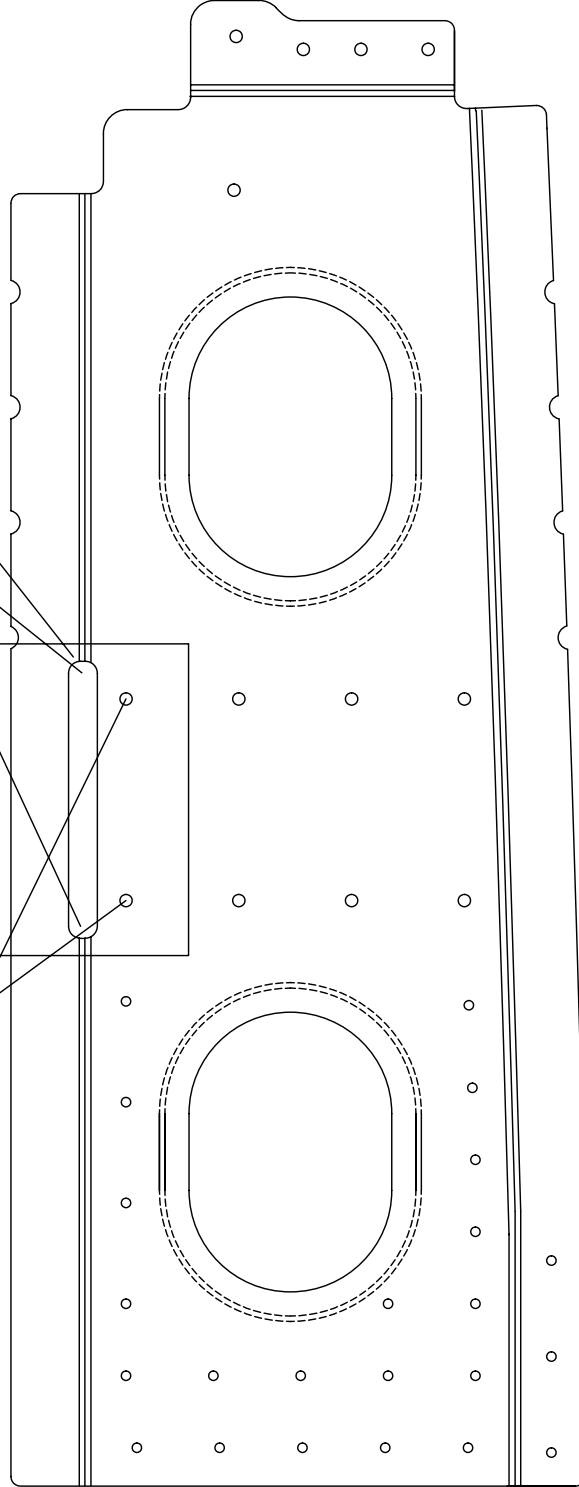


MARK OUTLINE OF SLOT AND REMOVE TEMPLATE.  
 DRILL CORNERS #11. FINISH  
 SLOT WITH ROTARY TOOL.

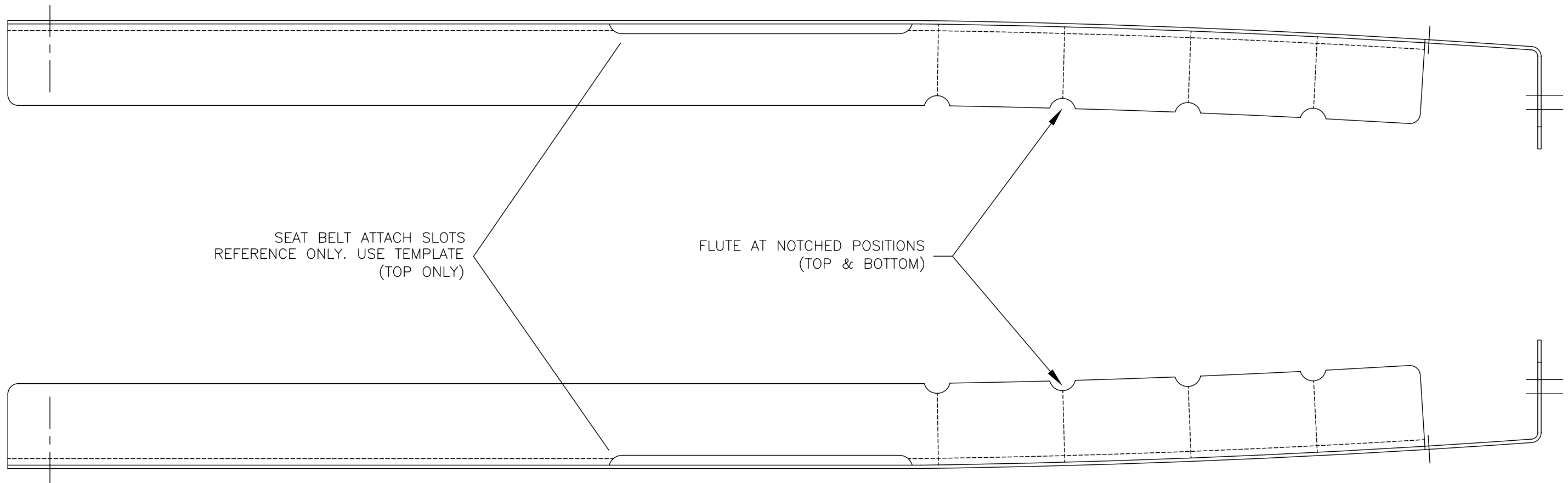
CUT OUT

CLECO

RIB - CABIN SIDE WALL  
 (KPFU0422-L/R)



**RRR S-19 VENTERRA**  
**RIB-CABIN WALL MODIFICATION**  
**FIGURE 05B-04**



BUILDER FORMS TO MATCH FULL SIZE DRAWING  
KPFU0422L/R

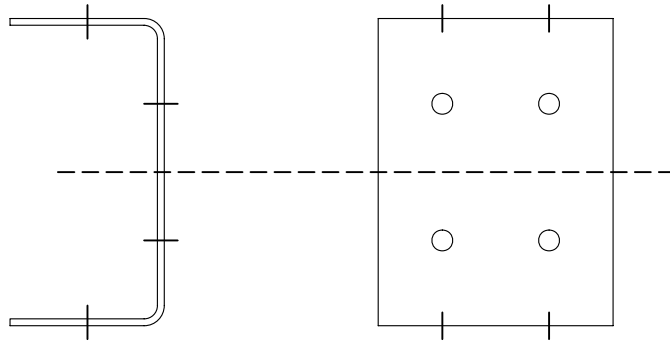
1:1 TEMPLATE

MD4856

**RAAS S-19 VENTERRA**  
**RIB - CABIN WALL MODIFICATION**  
**FIGURE 05B-04A**

04/01/2011

CUT 2 PARTS  
MAKING 4 PARTS

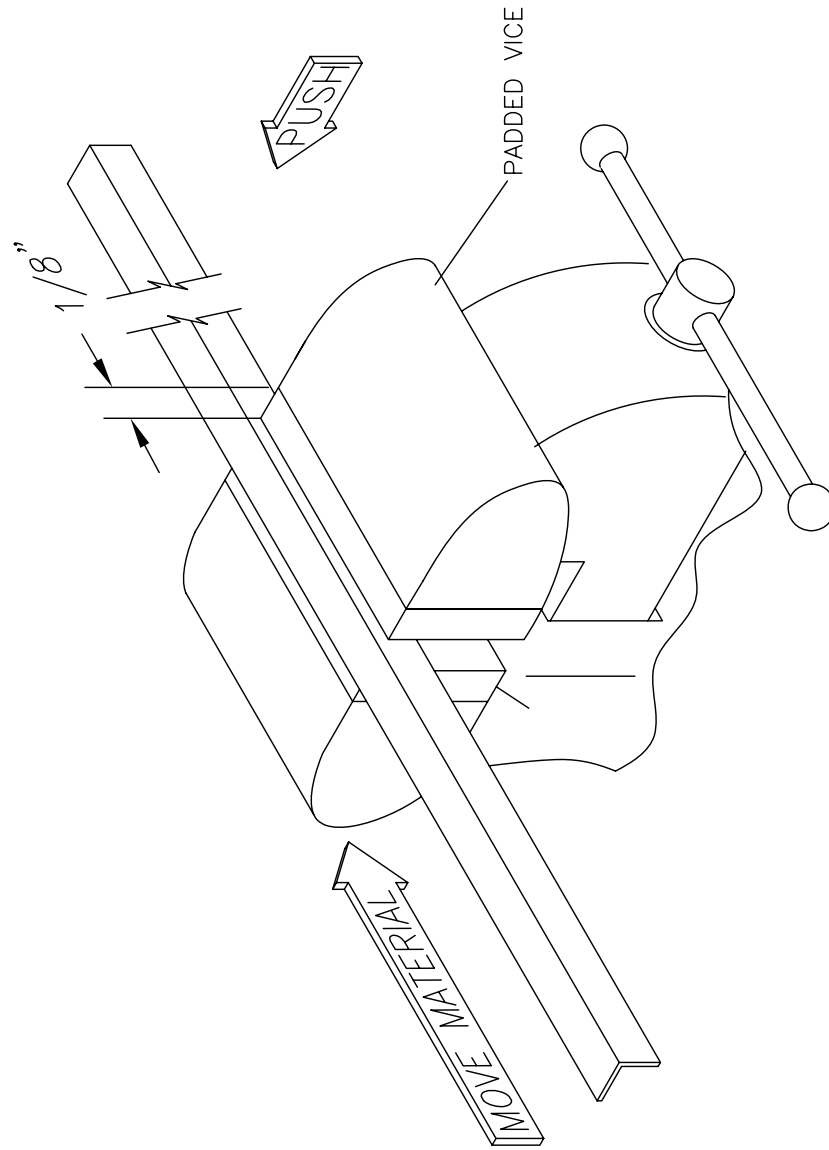


KPFU0520

MD5009

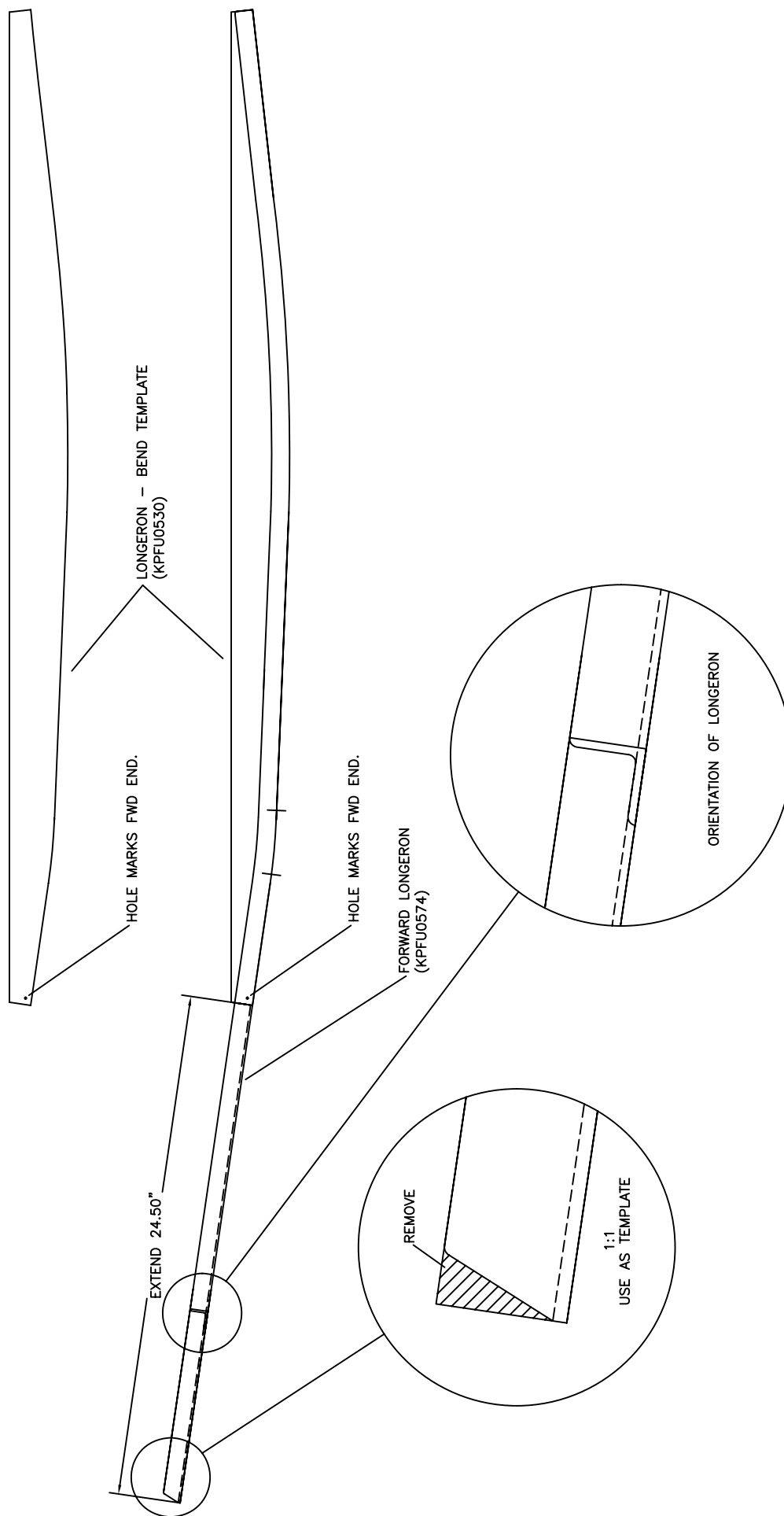
**RAMBER** S-19 VENTERRA  
CLIP MODIFICATION  
FIGURE 05B-05

TRY FIRST ON SCRAP PIECE OF METAL  
 MOVE MATERIAL IN 1/8" INCREMENTS TO ACHIEVE GRADUAL BEND  
 VERIFY AGAINST TEMPLATE EVERY INCH  
 BEND A RIGHT AND LEFT HAND PART.



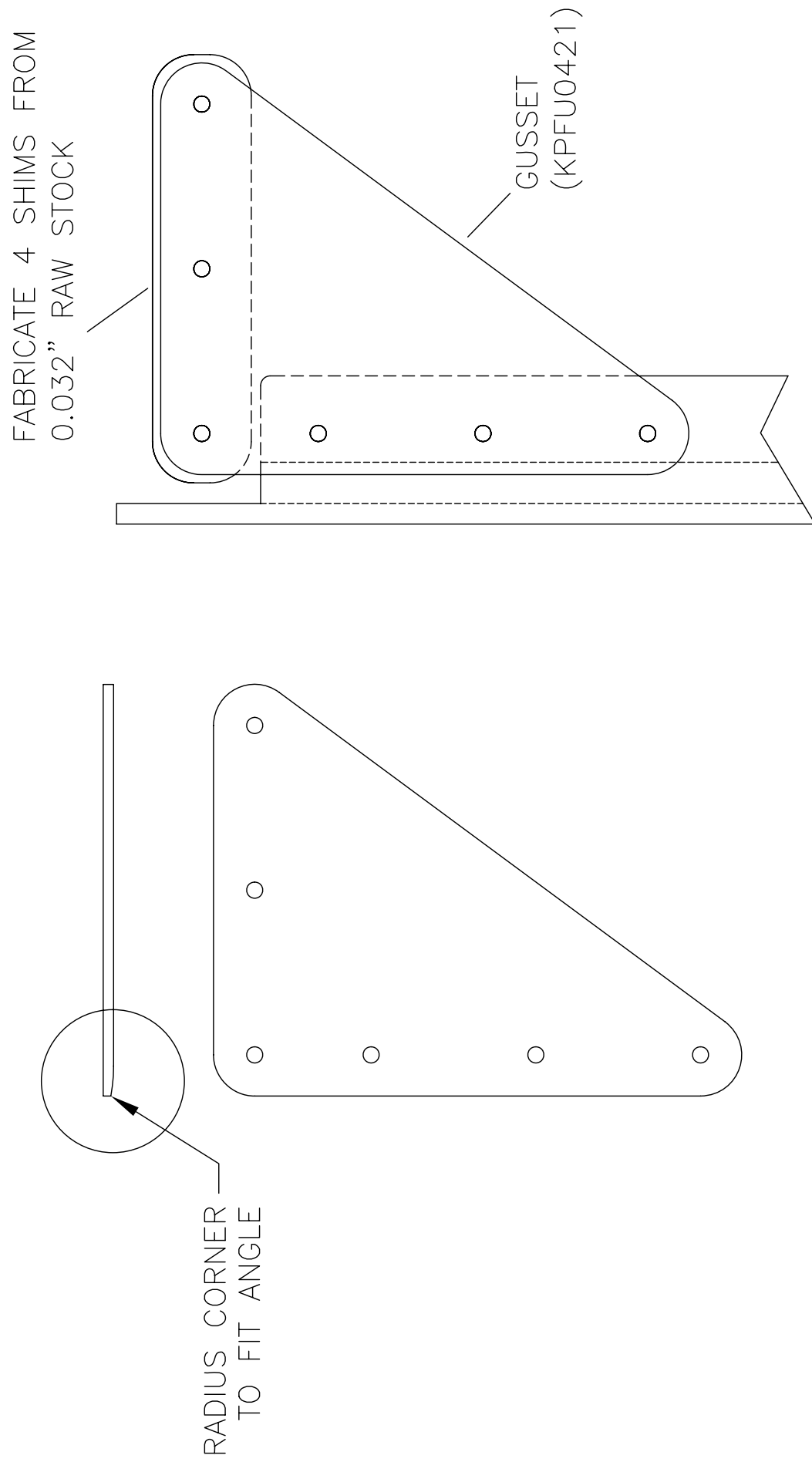
MD4837

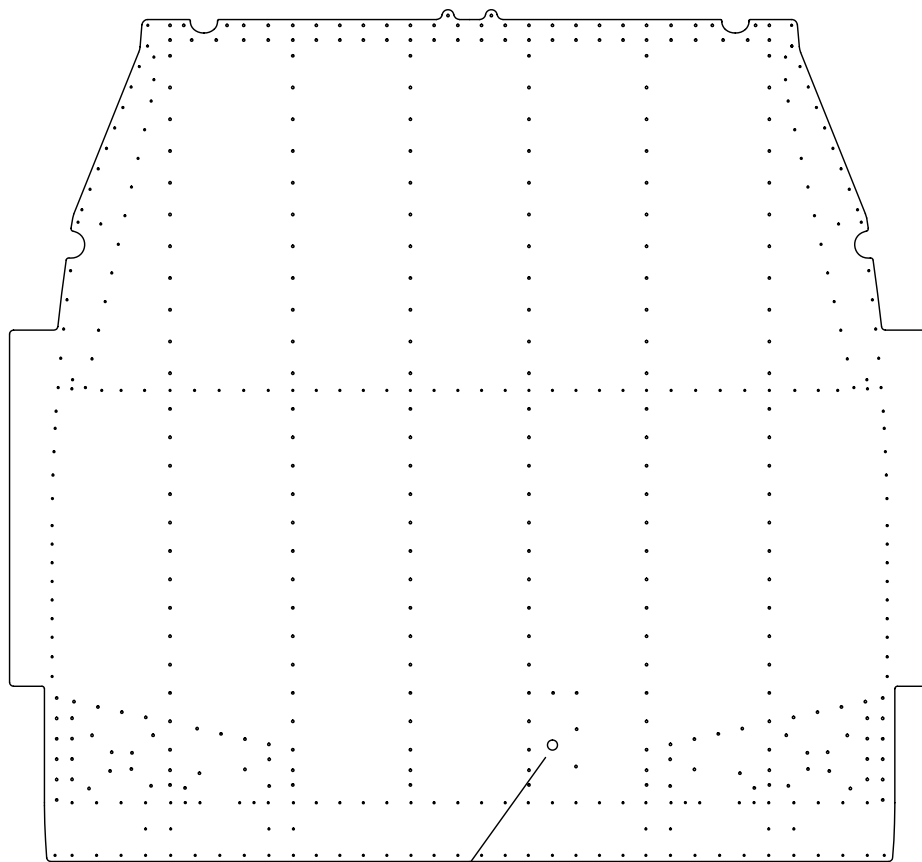
**RRR S-19 VENTERRA**  
**LONGERON MODIFICATION**  
**FIGURE 05B-08**



**RRM S-19 VENTERRA**  
**FORWARD LONGERON MODIFICATION**  
**FIGURE 05B-08A**

MD5046





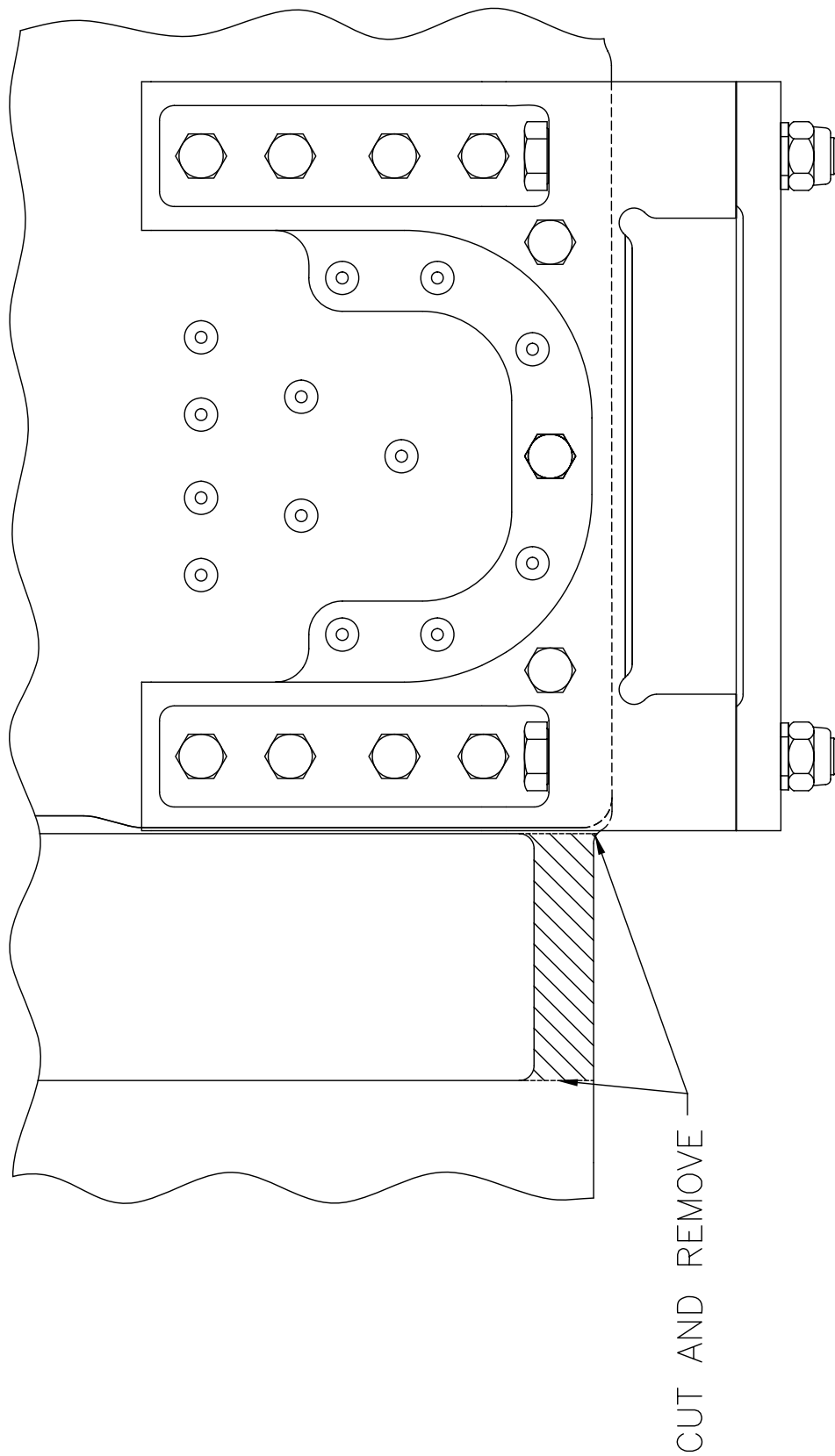
DENOTES RIGHT HAND  
SIDE OF SKIN



AS VIEWED FROM BELOW

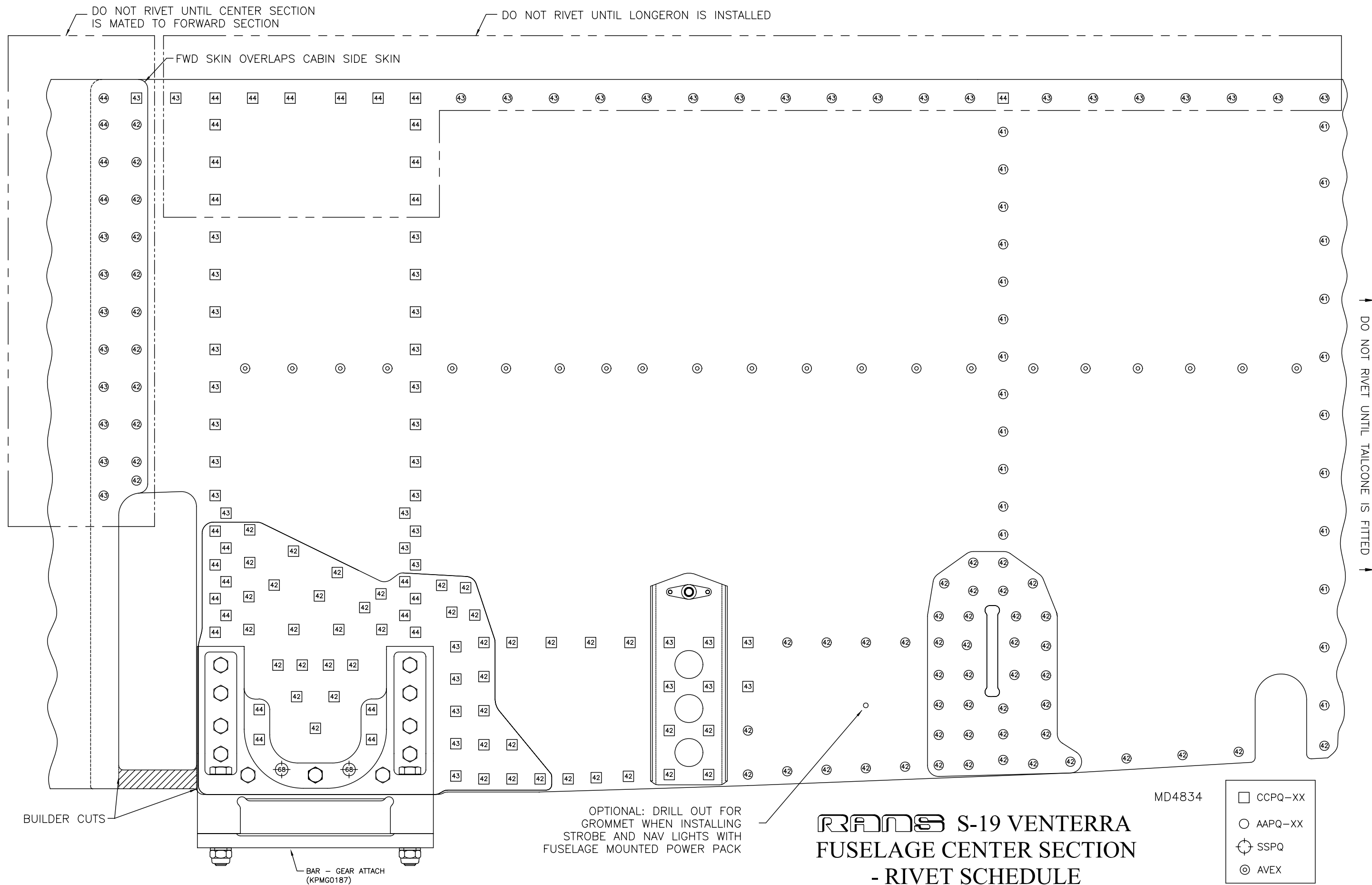
**RRF S-19 VENTERRA**  
**BELLY SKIN - CABIN MIDDLE ORIENTATION**  
**FIGURE 05B-13**

MD5524

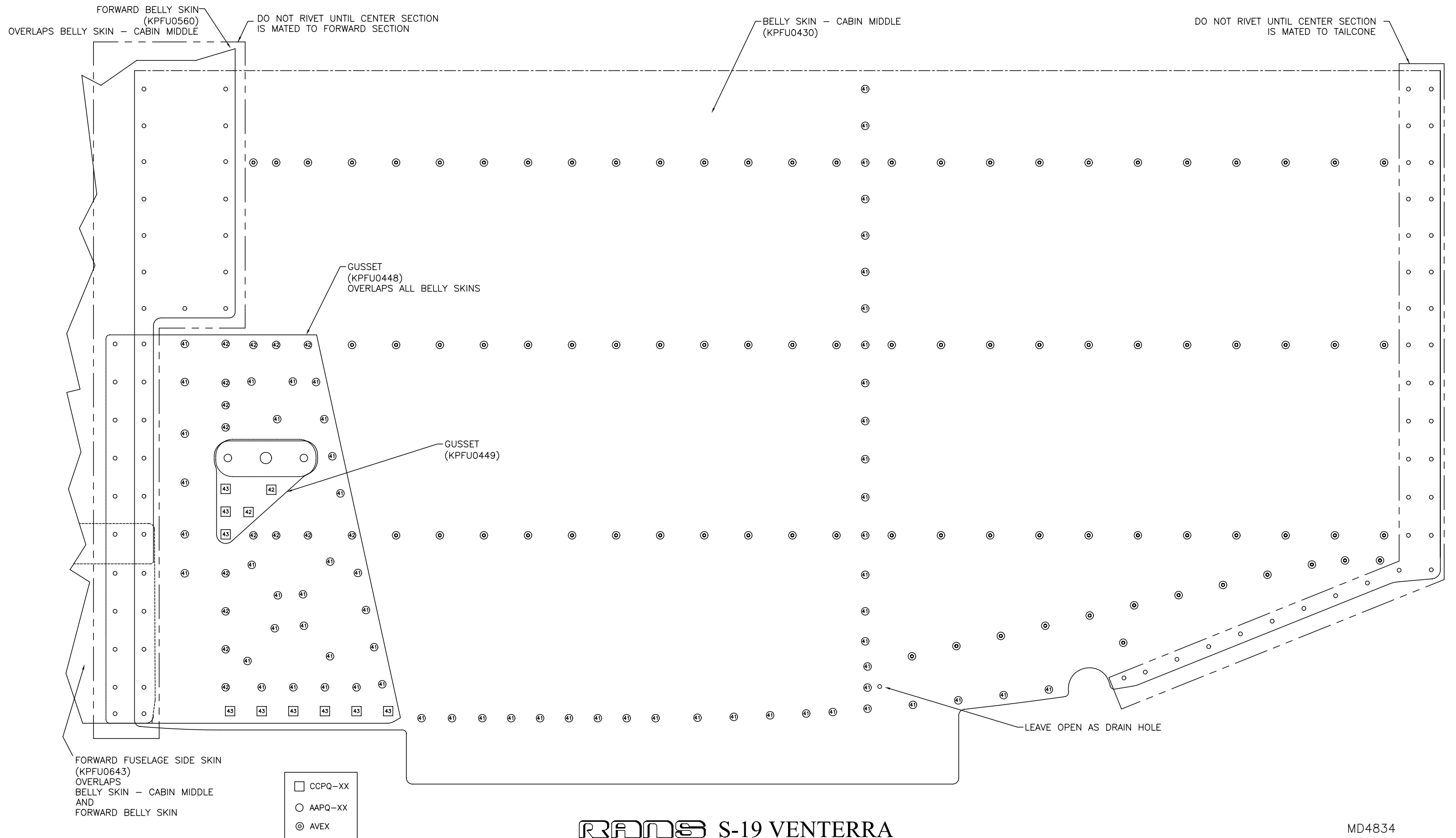


MD4834

**RRF S-19 VENTERRA**  
**SIDE SKIN MODIFICATION**  
**FIGURE 05C-04**



**RANS S-19 VENTERRA**  
**FUSELAGE CENTER SECTION**  
**- RIVET SCHEDULE**  
**FIGURE 05C-06**



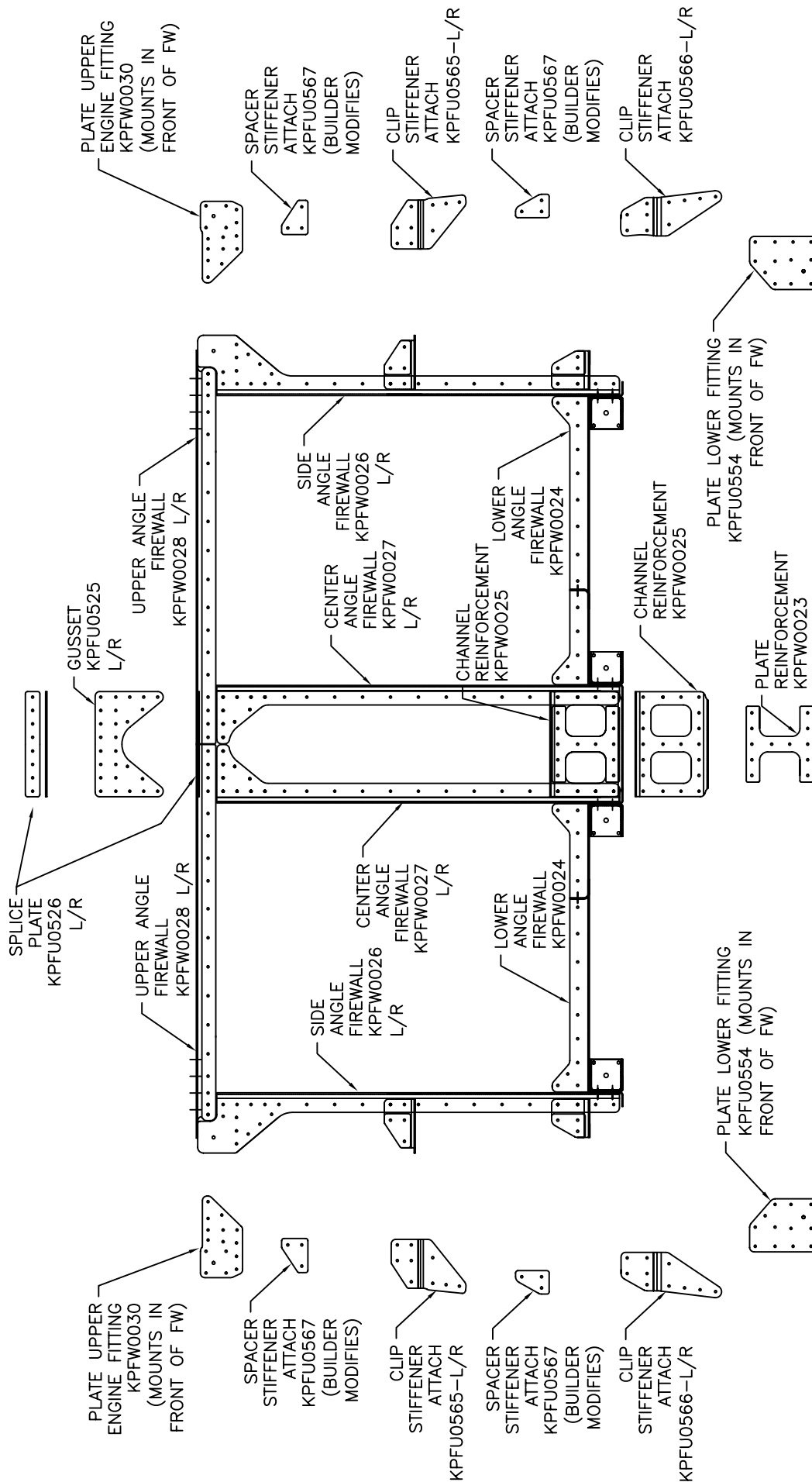
**RANS S-19 VENTERRA**  
**FUSELAGE CENTER SECTION - RIVET SCHEDULE**  
**FIGURE 05C-06A**

MD4834

04/01/2011

## 06 – FUSELAGE – FORWARD SECTION

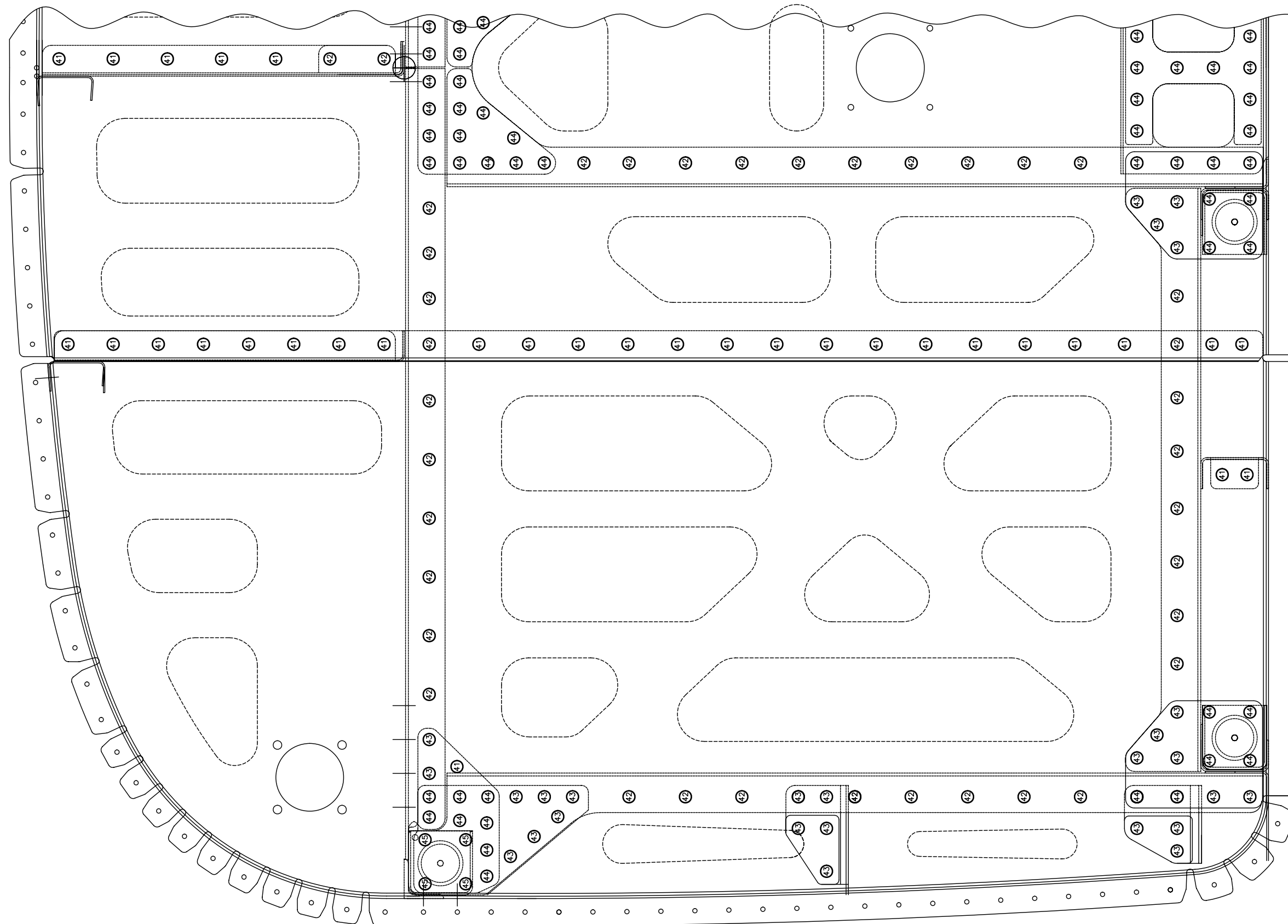
|                                                                    |         |
|--------------------------------------------------------------------|---------|
| FIREWALL ASSEMBLY .....                                            | 06A-02  |
| FIREWALL RIVET SCHEDULE .....                                      | 06A-04  |
| FIREWALL ANGLE / FLOORBOARD CHANNEL DRILLING .....                 | 06B-05  |
| RUDDER PEDAL ATTACH NUT PLATE .....                                | 06C-02  |
| DUMMY BRAKE CYLINDERS .....                                        | 06D-05  |
| STANDARD SINGLE BRAKE SYSTEM SCHEMATIC .....                       | 06D-06  |
| OPTIONAL DUAL BRAKE SYSTEM SCHEMATIC .....                         | 06D-06A |
| STANDARD SINGLE BRAKE SYSTEM SCHEMATIC W/ OPTIONAL PARK BRAKE .... | 06D-06B |
| OPTIONAL DUAL BRAKE SYSTEM SCHEMATIC W/ OPTIONAL PARK BRAKE .....  | 06D-06C |
| BRAKE LINE ROUTING .....                                           | 06D-07  |
| BRAKE LINE LOCATION .....                                          | 06D-07A |
| FIREWALL - OPTIONAL PARKING BRAKE .....                            | 06D-08  |
| CABLE KEEPER MODIFICATION .....                                    | 06D-09  |
| FWD FUSELAGE – ACCESS OPENING .....                                | 06G-00  |
| FWD FUSELAGE SIDE SKIN BENDING .....                               | 06G-01  |
| FWD FUSELAGE SIDE SKIN BENDING .....                               | 06G-01A |
| FWD FUSELAGE SIDE SKIN BENDING .....                               | 06G-01B |
| FWD FUSELAGE SIDE SKIN BENDING .....                               | 06G-01C |
| FWD FUSELAGE – TOP SKIN – RIVET SCHEDULE .....                     | 06G-05  |
| FWD FUSELAGE – BELLY SKIN - RIVET SCHEDULE .....                   | 06G-05A |
| FWD FUSELAGE – SIDE SKIN – RIVET SCHEDULE .....                    | 06G-05B |
| ROLL BAR BRACE INSTALLATION .....                                  | 06H-05  |



**RRR S-19 VENTERRA**  
**FIREWALL ASSEMBLY**  
**FIGURE 06A-02**

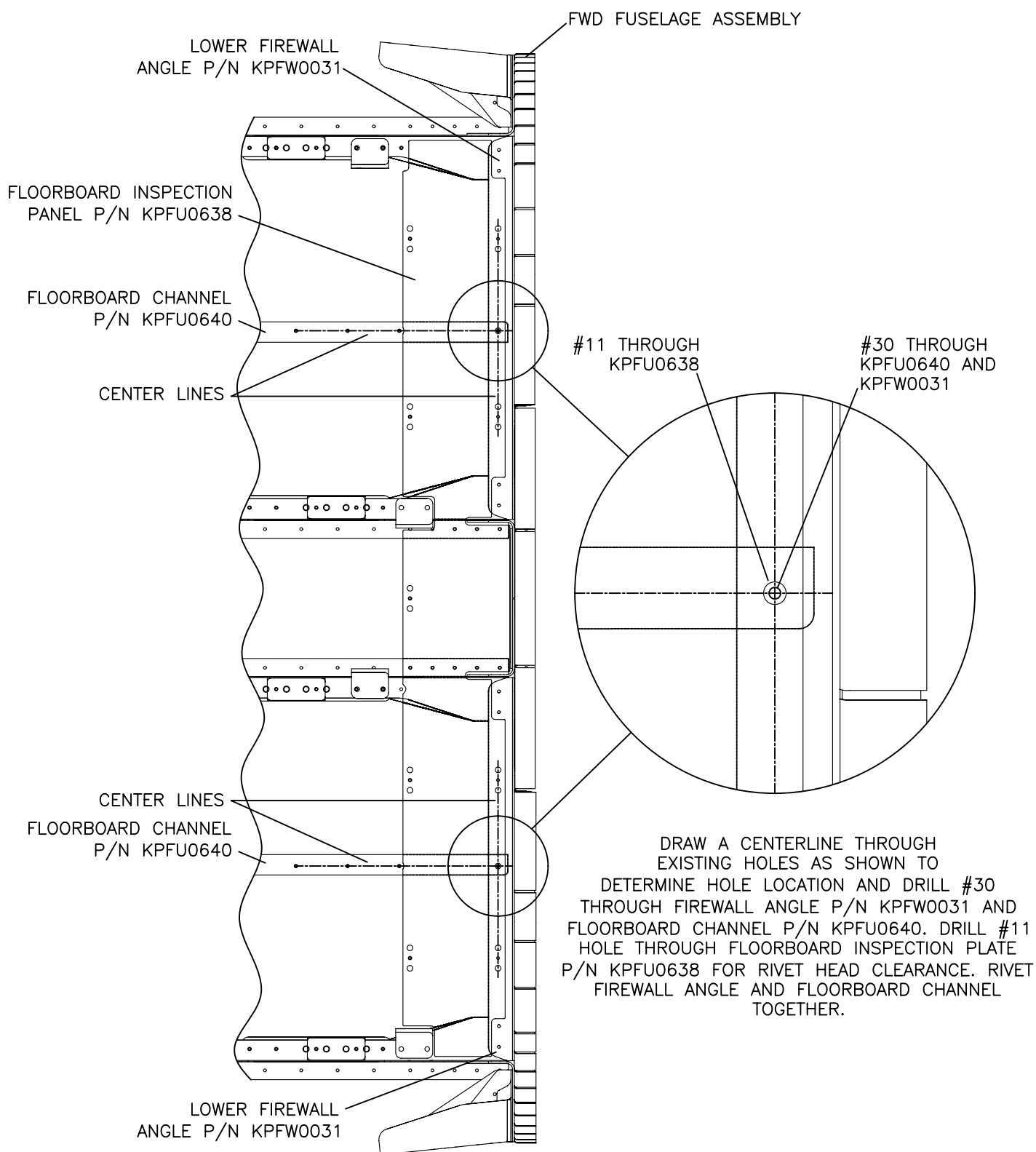
MD5044

ALL RIVETS ARE CCPQ-XX  
FIREWALL RIVETING IS SYMMETRICAL (RH SHOWN)



MD5045

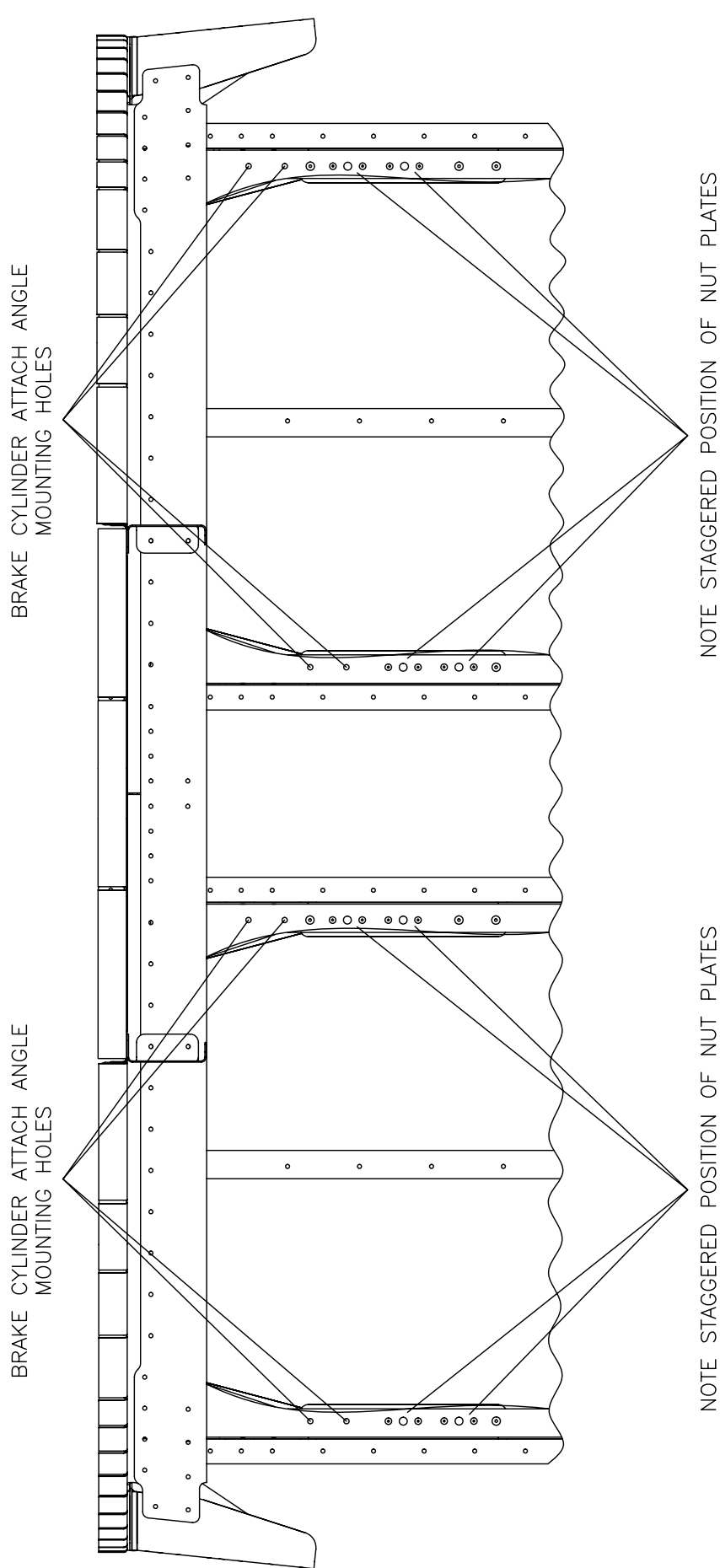
**RAMS S-19 VENTERRA**  
**FIREWALL RIVET SCHEDULE**  
**FIGURE 06A-04**



MD5233

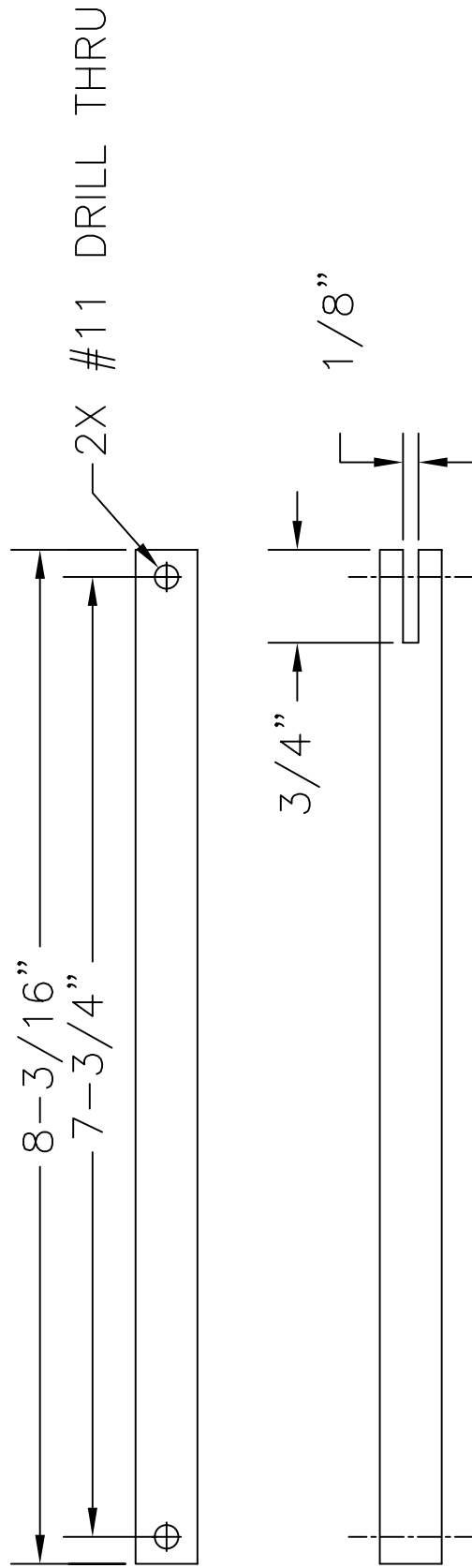
**RANS S-19 VENTERRA**  
**FIREWALL ANGLE / FLOORBOARD CHANNEL DRILLING**  
**FIGURE 06B-05**

04/01/2011



MD5060

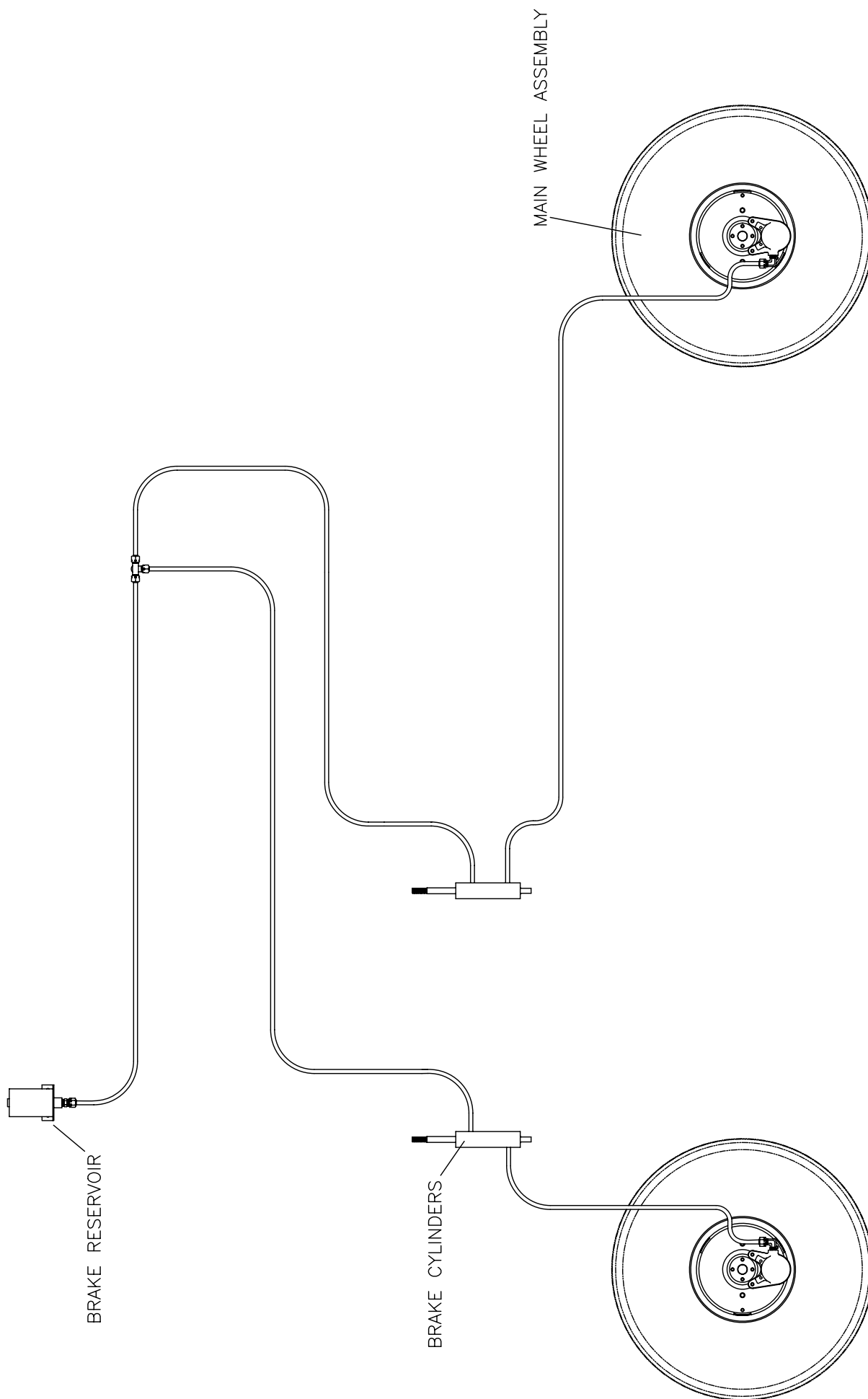
**RRR S-19 VENTERRA**  
**RUDDER PEDAL ATTACH NUT PLATE**  
**FIGURE 06C-02**



FABRICATE 2 FROM RAW STOCK

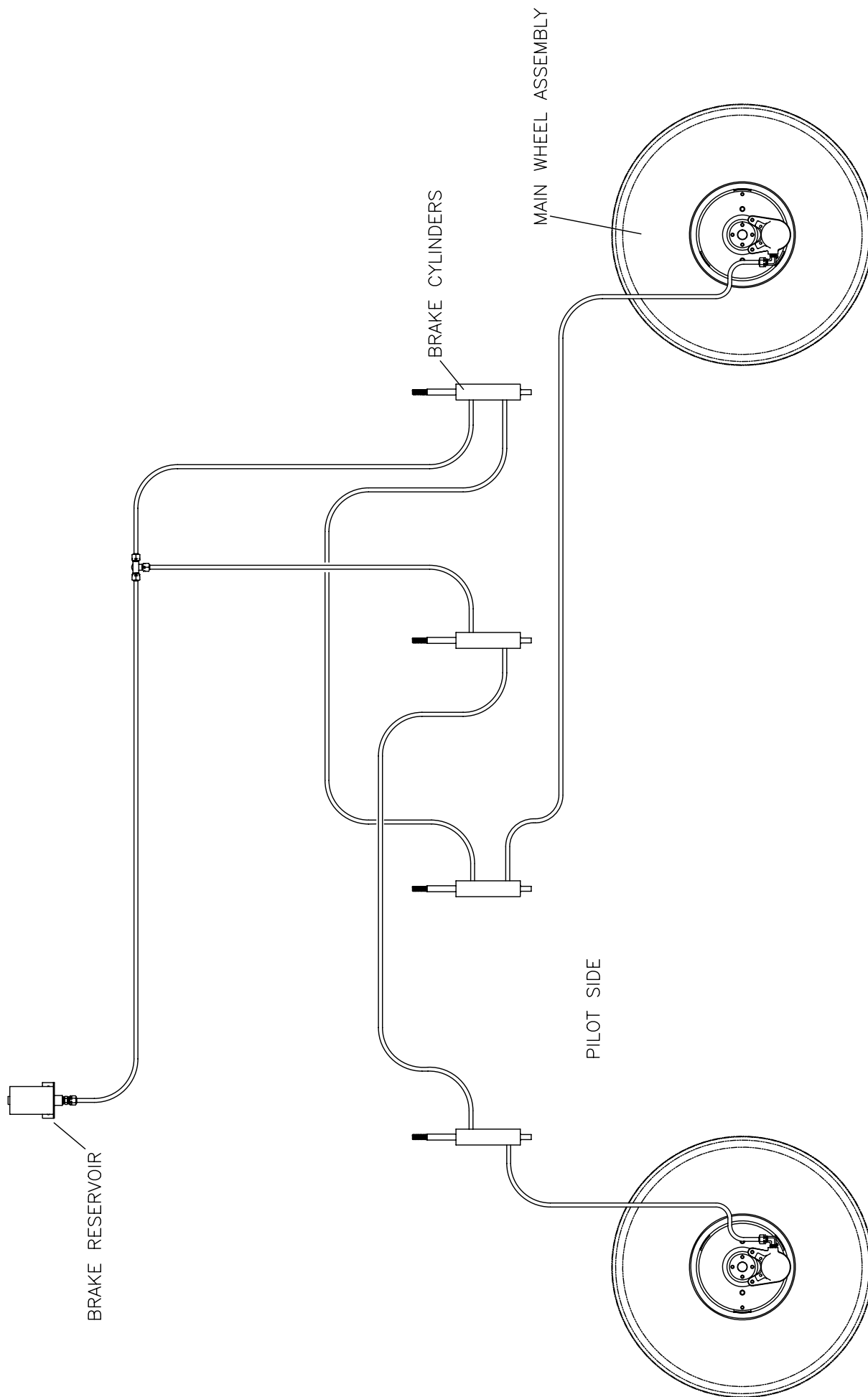
MD5211

**RRR S-19 VENTERRA**  
**DUMMY BRAKE CYLINDER**  
**FIGURE 06D-05**



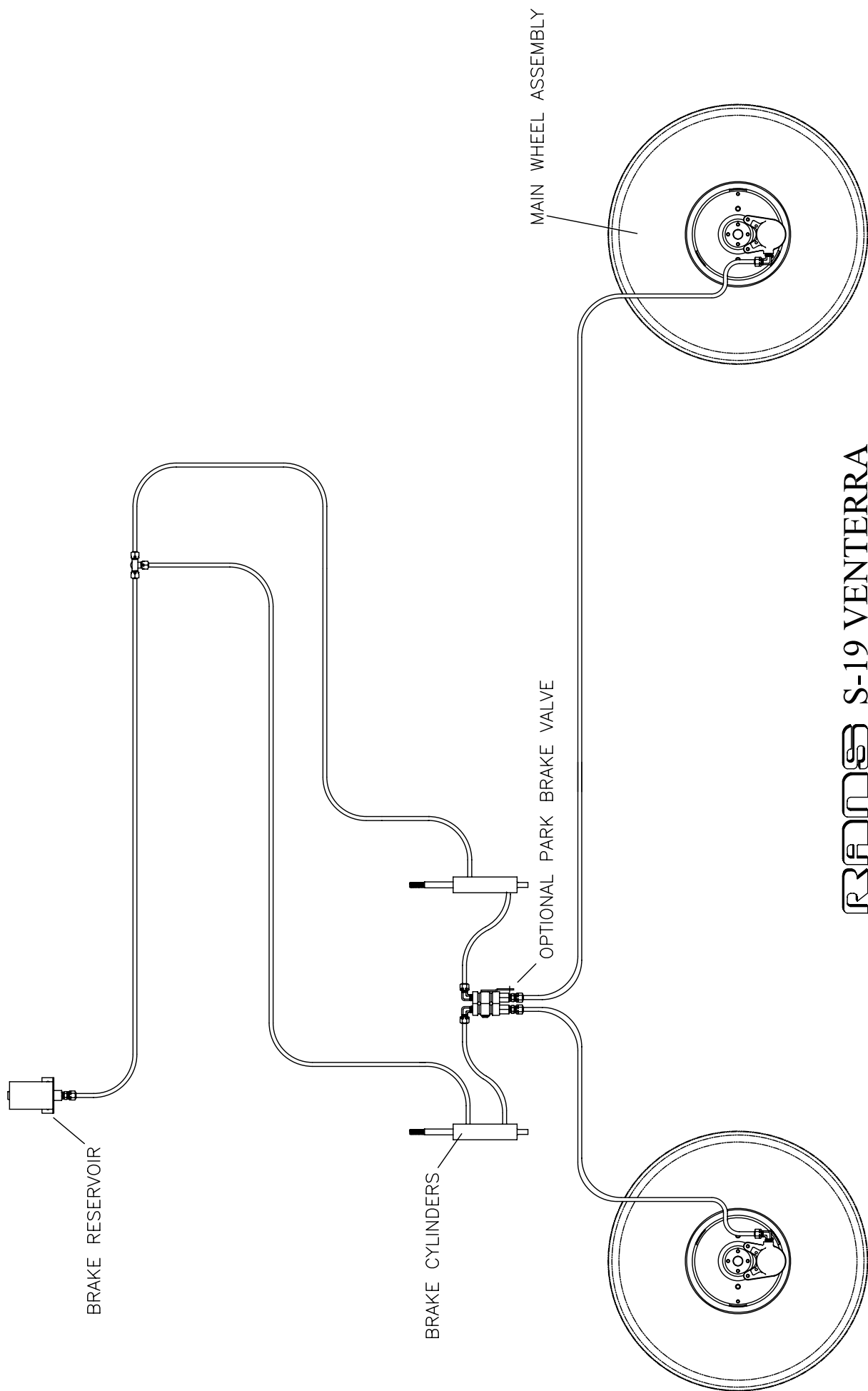
MD5079

**RAM S-19 VENTERA**  
**STANDARD SINGLE BRAKE SYSTEM SCHEMATIC**  
**FIGURE 06D-06**



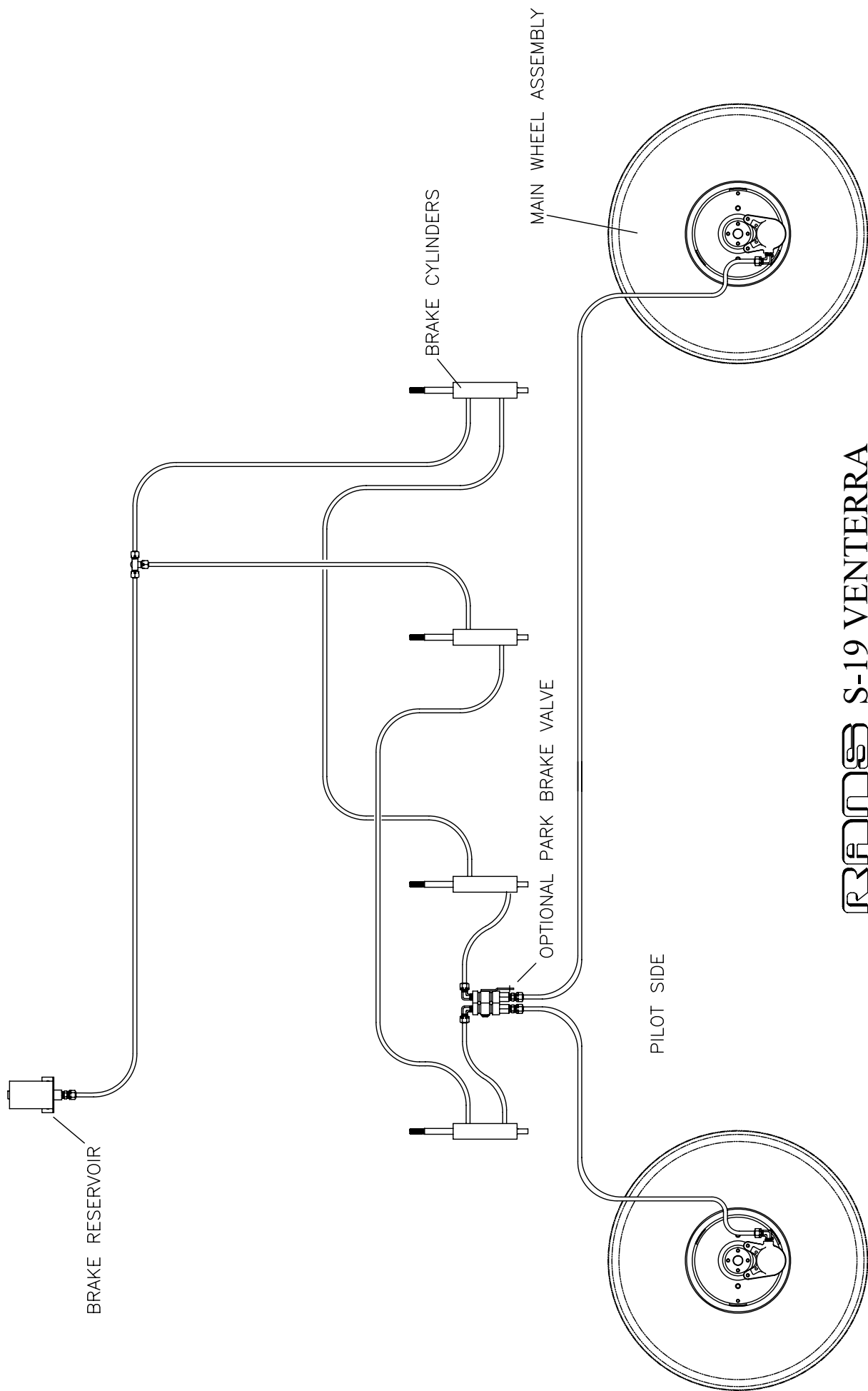
**OPTIONAL DUAL BRAKE SYSTEM SCHEMATIC**  
**FIGURE 06D-06A**

MD5079



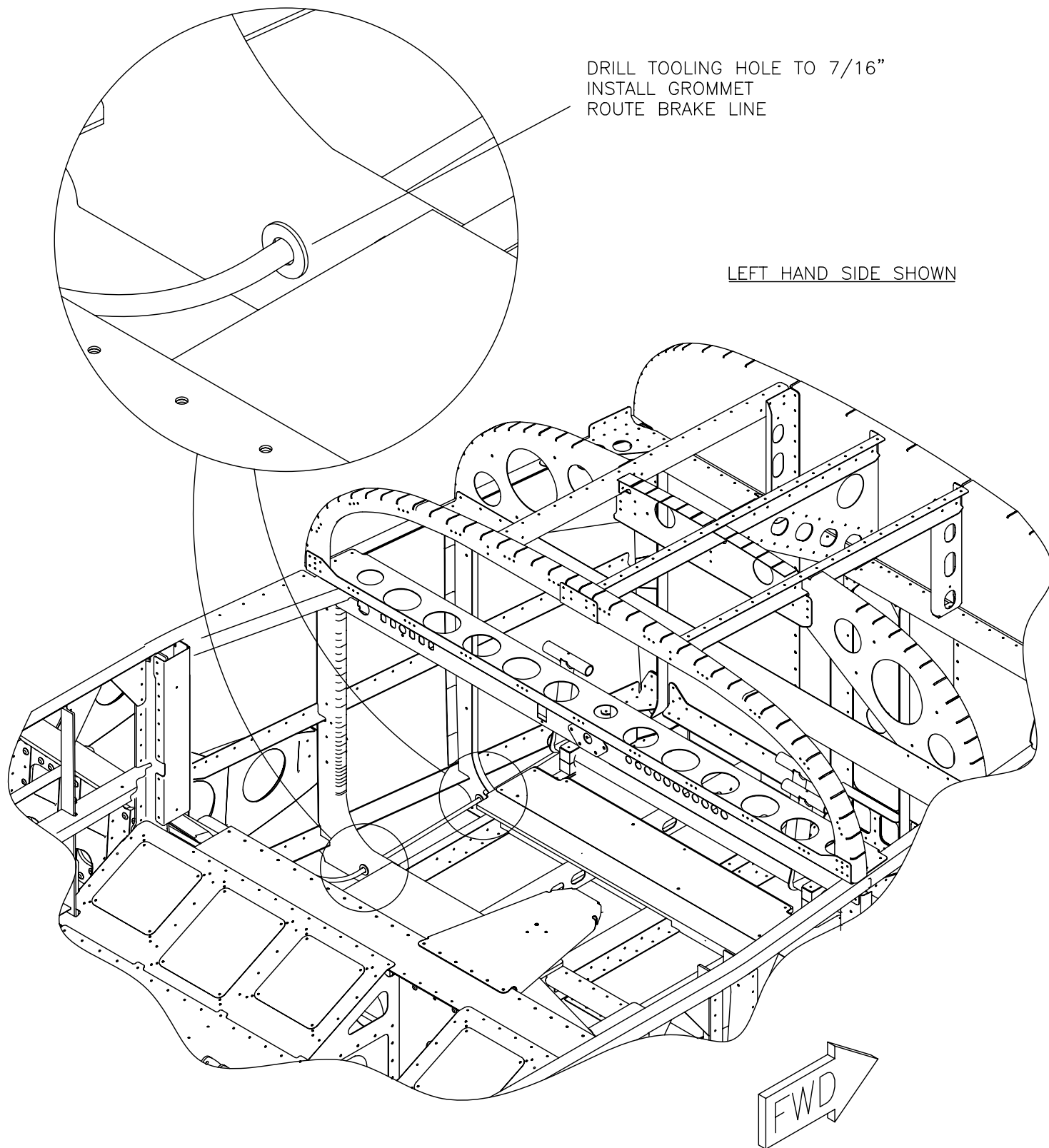
**RAM S-19 VENTERRA**  
**STANDARD SINGLE BRAKE SYSTEM SCHEMATIC**  
**WITH OPTIONAL PARKING BRAKE**  
**FIGURE 06D-06B**

MD5079



MD5079

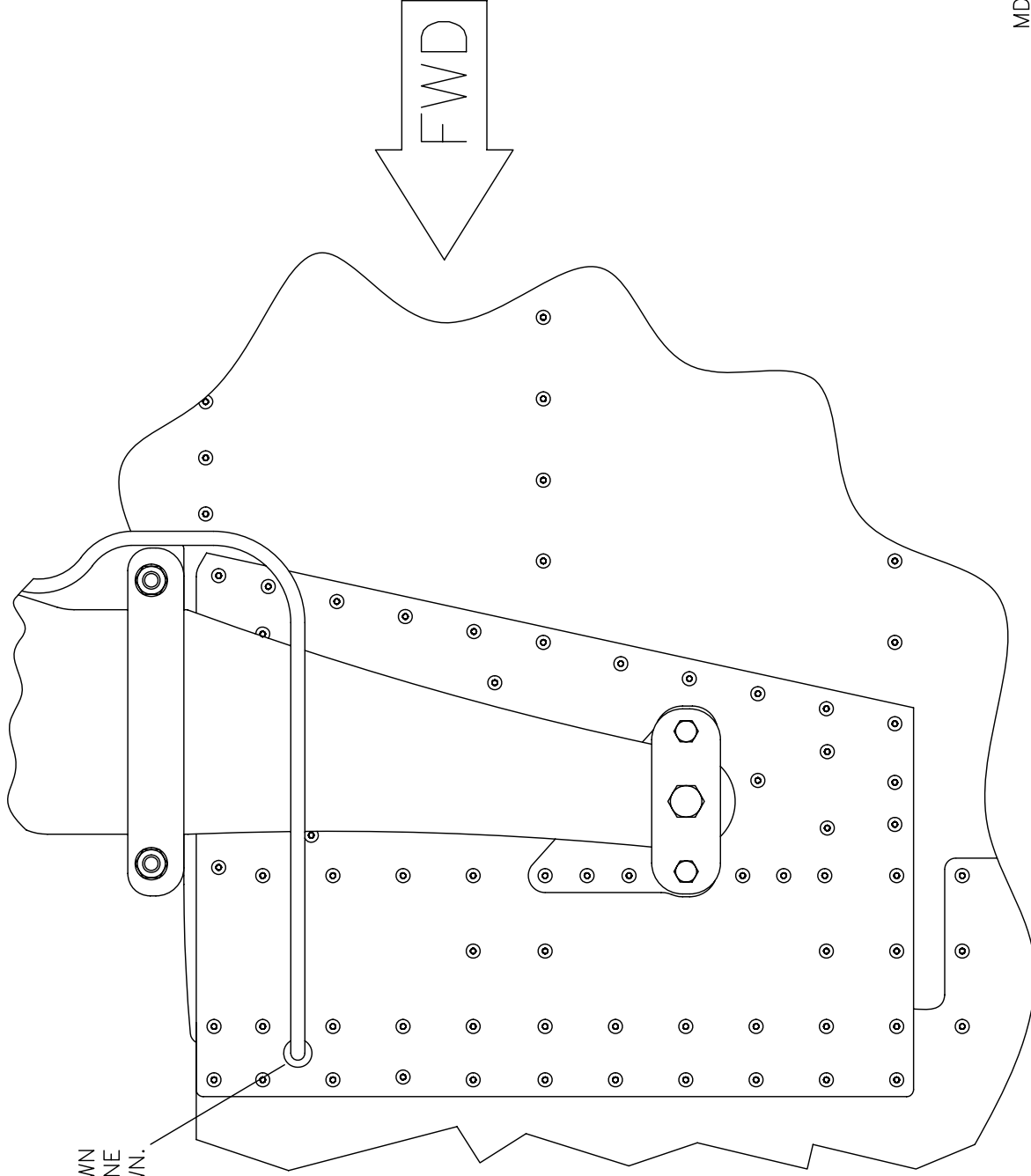
**RAM S-19 VENTERRA**  
**OPTIONAL DUAL BRAKE SYSTEM SCHEMATIC**  
**WITH OPTIONAL PARKING BRAKE**  
**FIGURE 06D-06C**



MD5467

**RANS S-19 VENTERRA**  
**BRAKE LINE ROUTING**  
**FIGURE 06D-07**

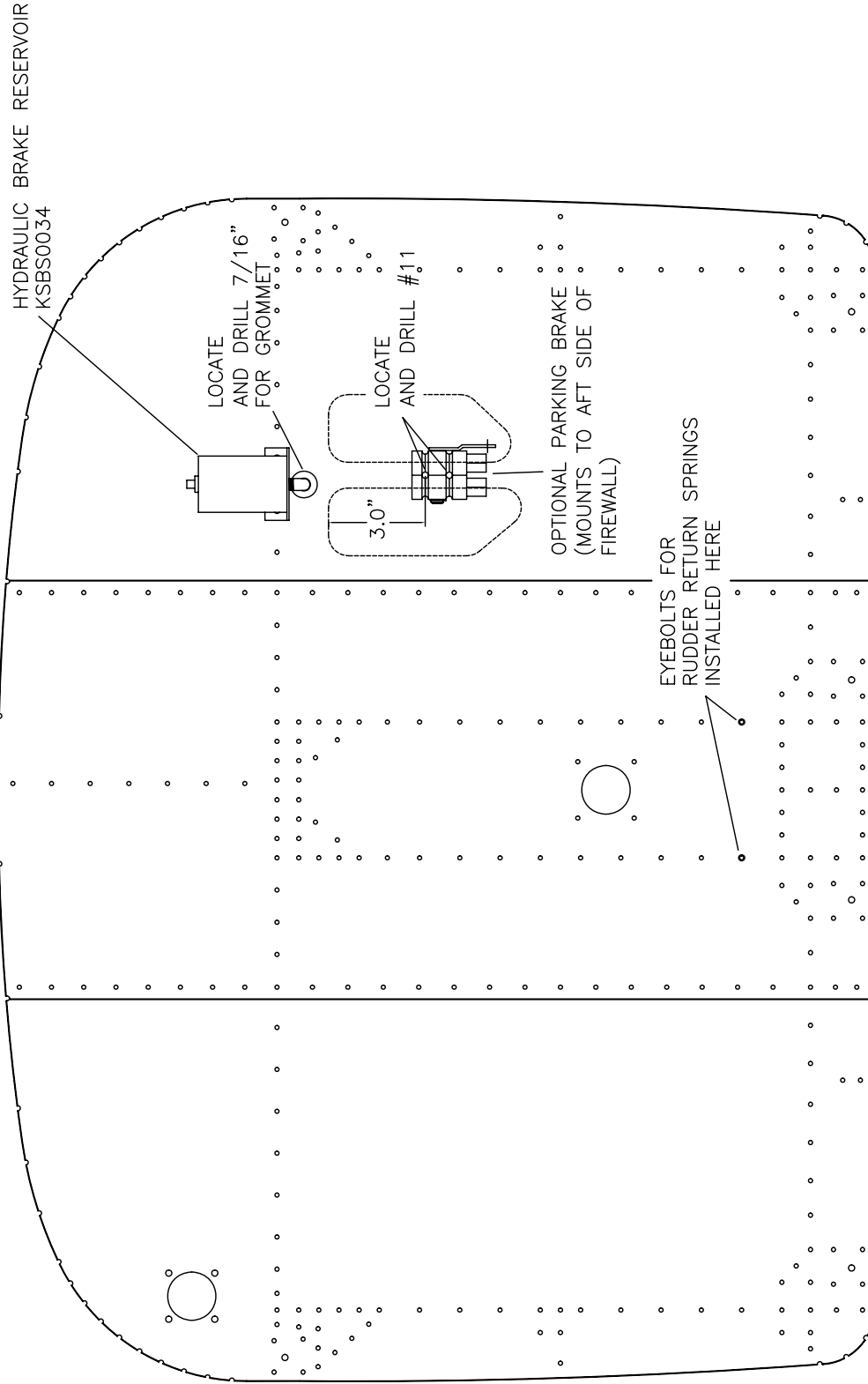
04/01/2011



MD5467

**RRAMES S-19 VENTERRA**  
**BRAKE LINE LOCATION**  
**FIGURE 06D-07A**

DRILL 7/16" DIA. HOLE AS SHOWN  
 INSERT GROMMET AND ROUTE LINE  
 AS SHOWN.



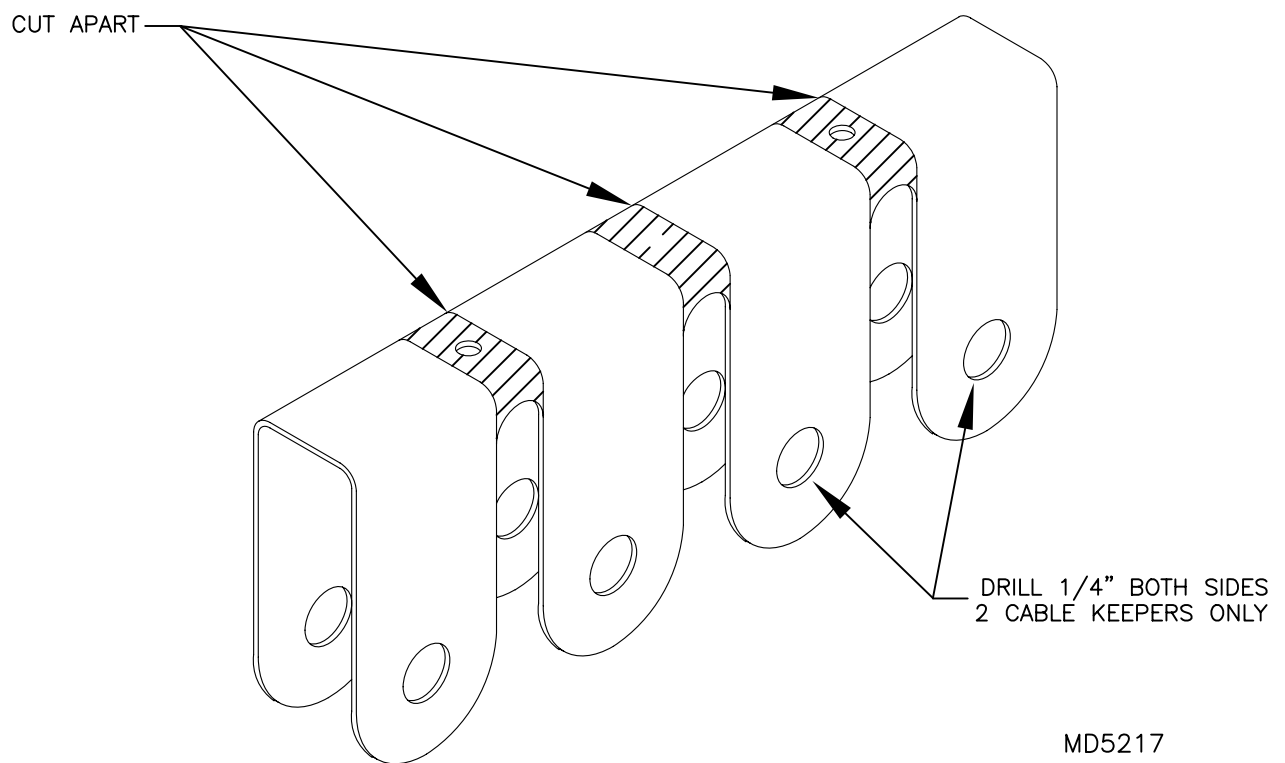
**Rammer S-19 VENTERRA**

**FIREWALL**

**OPTIONAL PARKING BRAKE**

**FIGURE 06D-08**

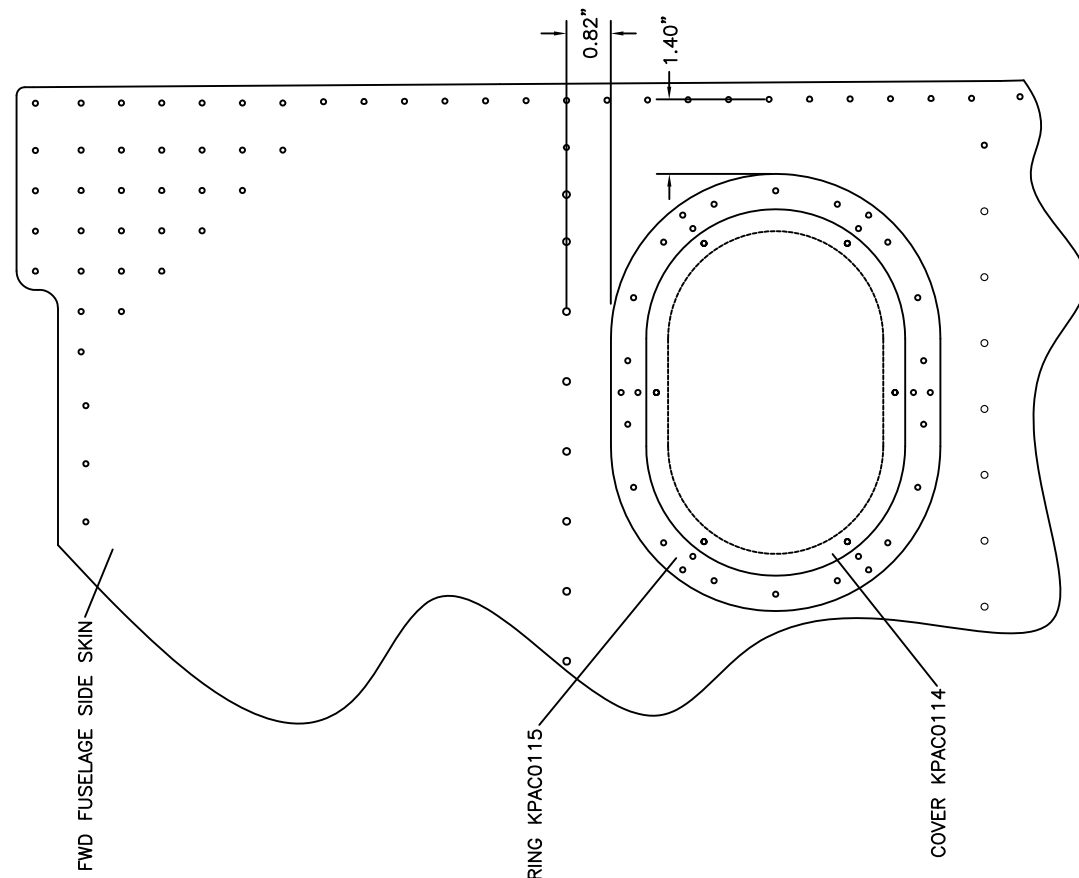
MD5230



**RANS S-19 VENTERRA**  
**CABLE KEEPER MODIFICATION**  
**FIGURE 06D-09**

| PARTS REQUIRED PER SIDE:      |             |    |  |
|-------------------------------|-------------|----|--|
| ACCESS PANEL RING             | KPAC0115    | 1  |  |
| ACCESS PANEL                  | KPAC0114    | 1  |  |
| 1/8" ALUMINUM RIVET           | AAPQ-41     | 18 |  |
| #8 SINGLE-EAR NUT PLATE       | MS21051-08  | 6  |  |
| 3/32" ALUMINUM RIVET          | 40APR1/8    | 12 |  |
| #8 TRUSSHEAD SCREW            | AN526-832R6 | 6  |  |
| FLUSH RIVETS MAY ALSO BE USED |             |    |  |

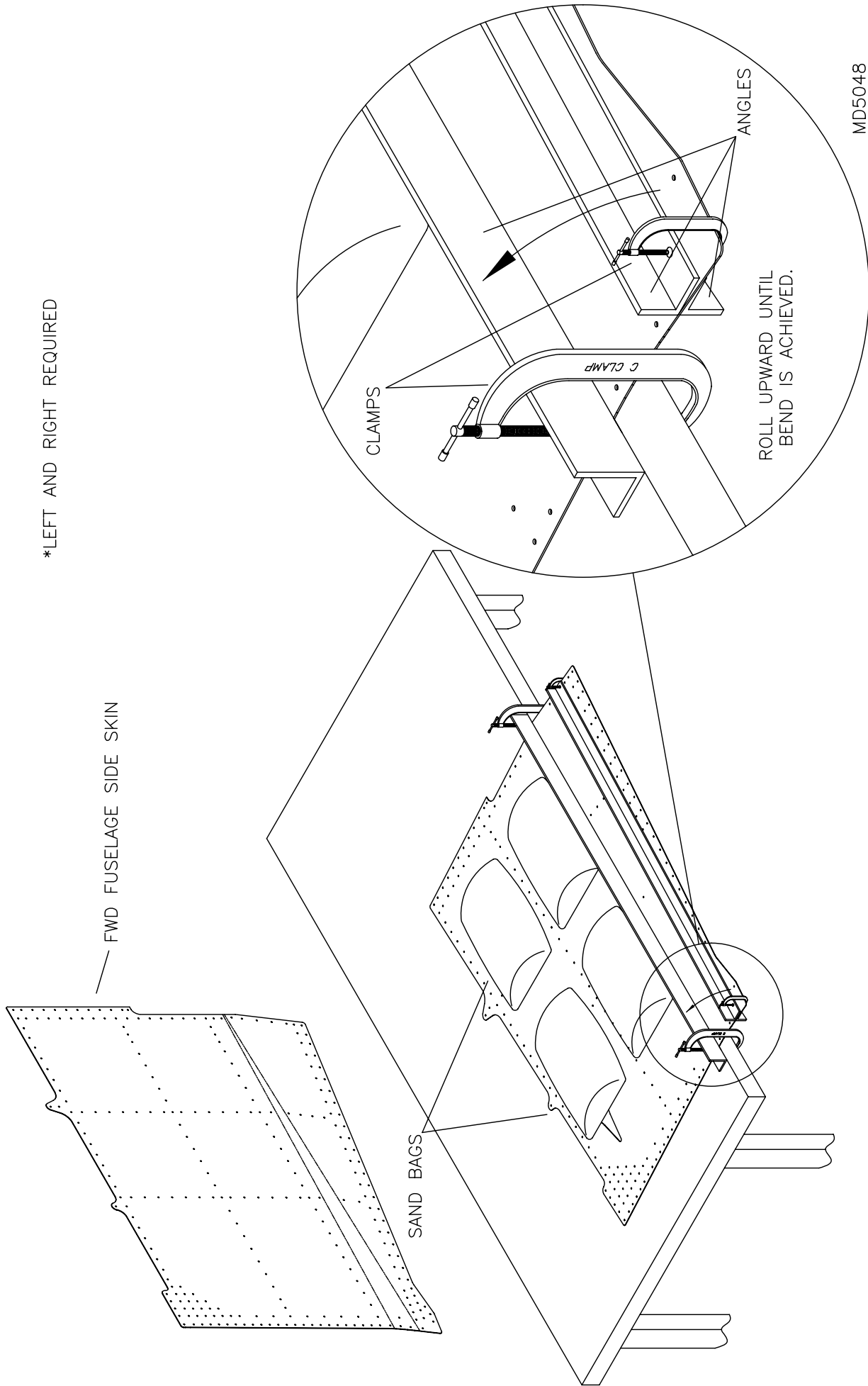
1. PLACE RING (KPAC0115) AS SHOWN AND TRANSFER DRILL HOLES INTO FWD FUSELAGE SIDE SKIN. REMOVE RING.
2. CLECO PANEL TO INNER HOLES AND USE AS TEMPLATE FOR LARGE CUT OUT.
3. RIVET RING AND NUT PLATES TO SIDE SKIN.



ACCESS PANELS MAY BE ADDED TO EACH SIDE OF FUSELAGE IF DESIRED.  
PARTS LISTED ABOVE MAY BE ORDERED FROM RANS PARTS DEPARTMENT.

MD5236

**RANS S-19 VENTERRA**  
**OPTION: FWD FUSELAGE SKIN - ACCESS PANEL**  
**FIGURE 06G-00**

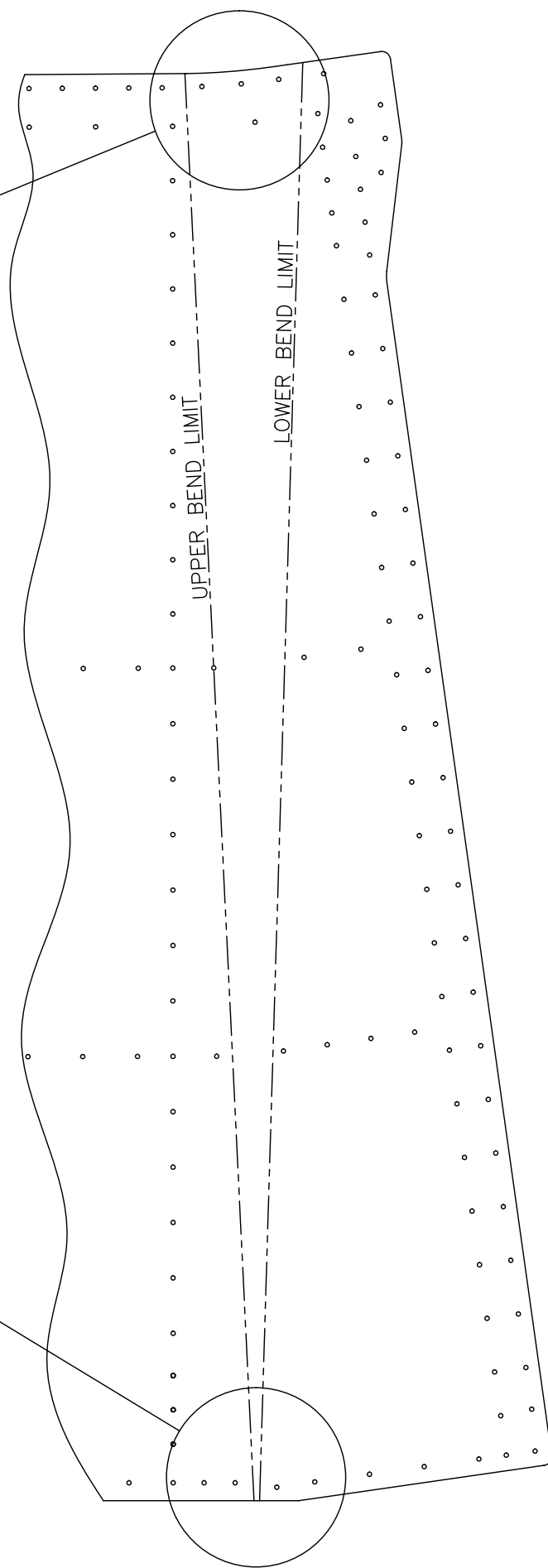


MD5048

**RAMS S-19 VENTERRA**  
**FWD FUSELAGE SIDE SKIN BENDING**  
**FIGURE 06G-01**

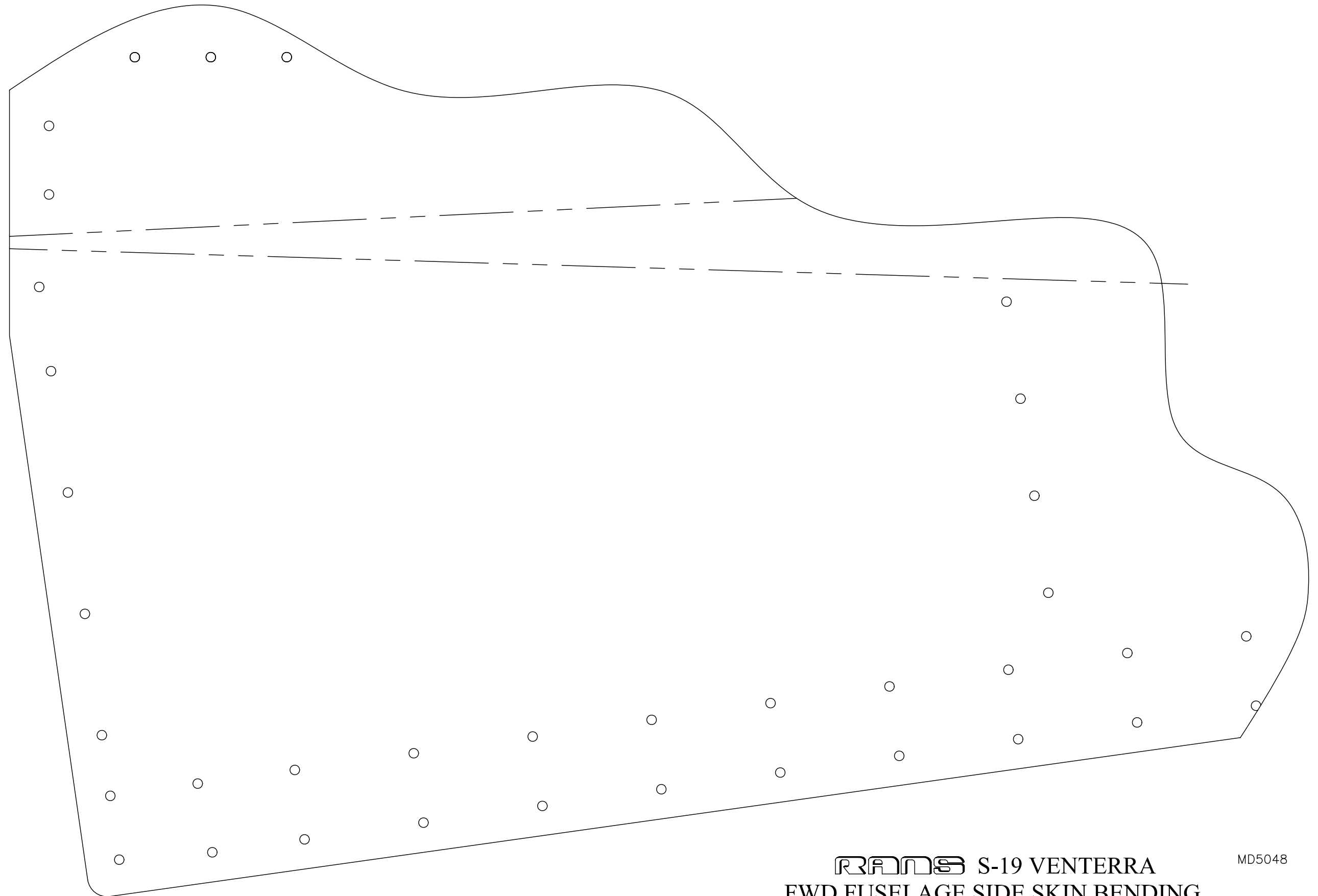
SEE FIGURE 06G-01B FOR 1:1

SEE FIGURE 06G-01C FOR 1:1



MD5048

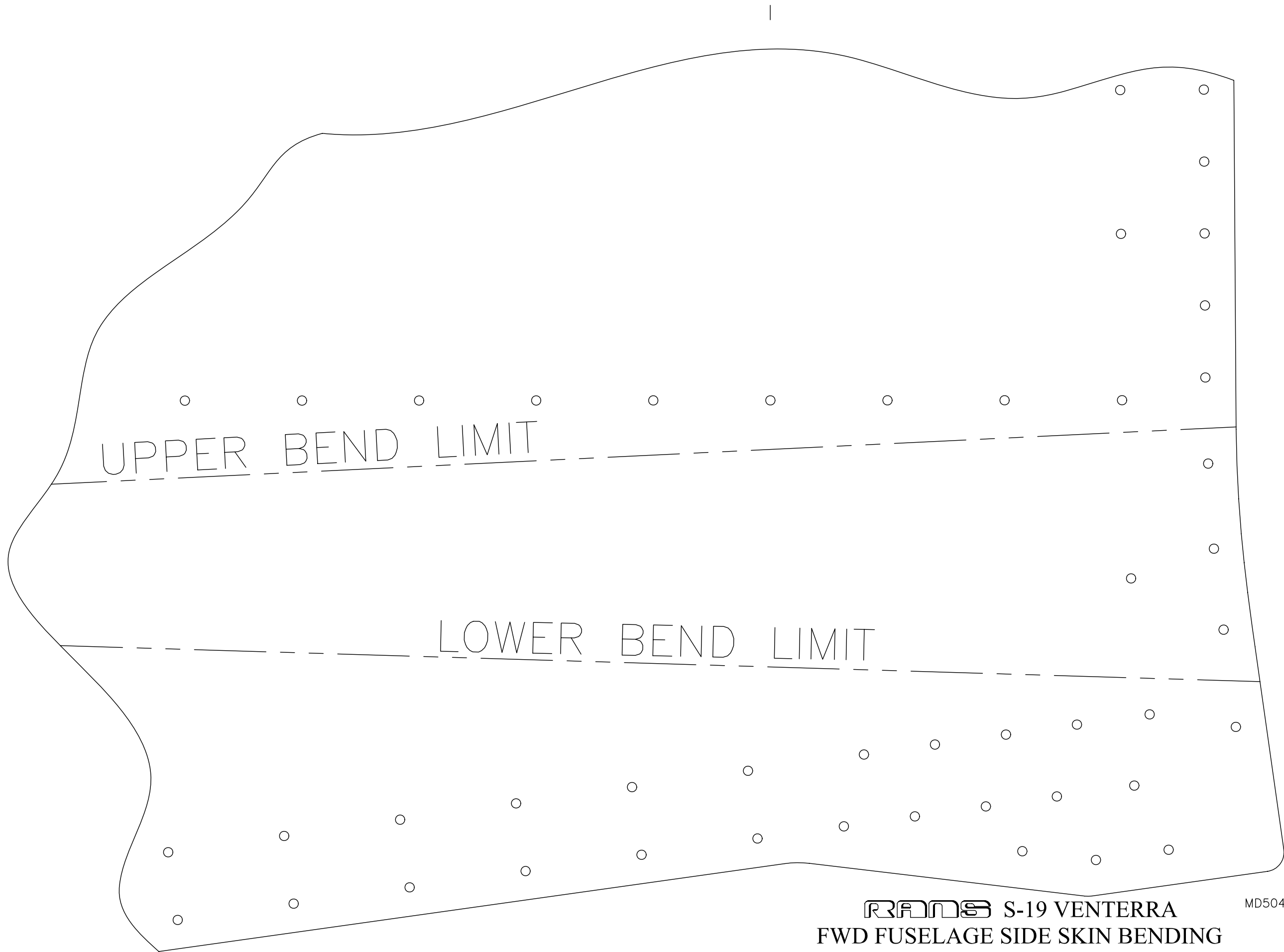
**RRAMES S-19 VENTERRA**  
**FWD FUSELAGE SIDE SKIN BENDING**  
**FIGURE 06G-01A**



**RANS S-19 VENTERRA**  
**FWD FUSELAGE SIDE SKIN BENDING**  
**FIGURE 06G-01B**

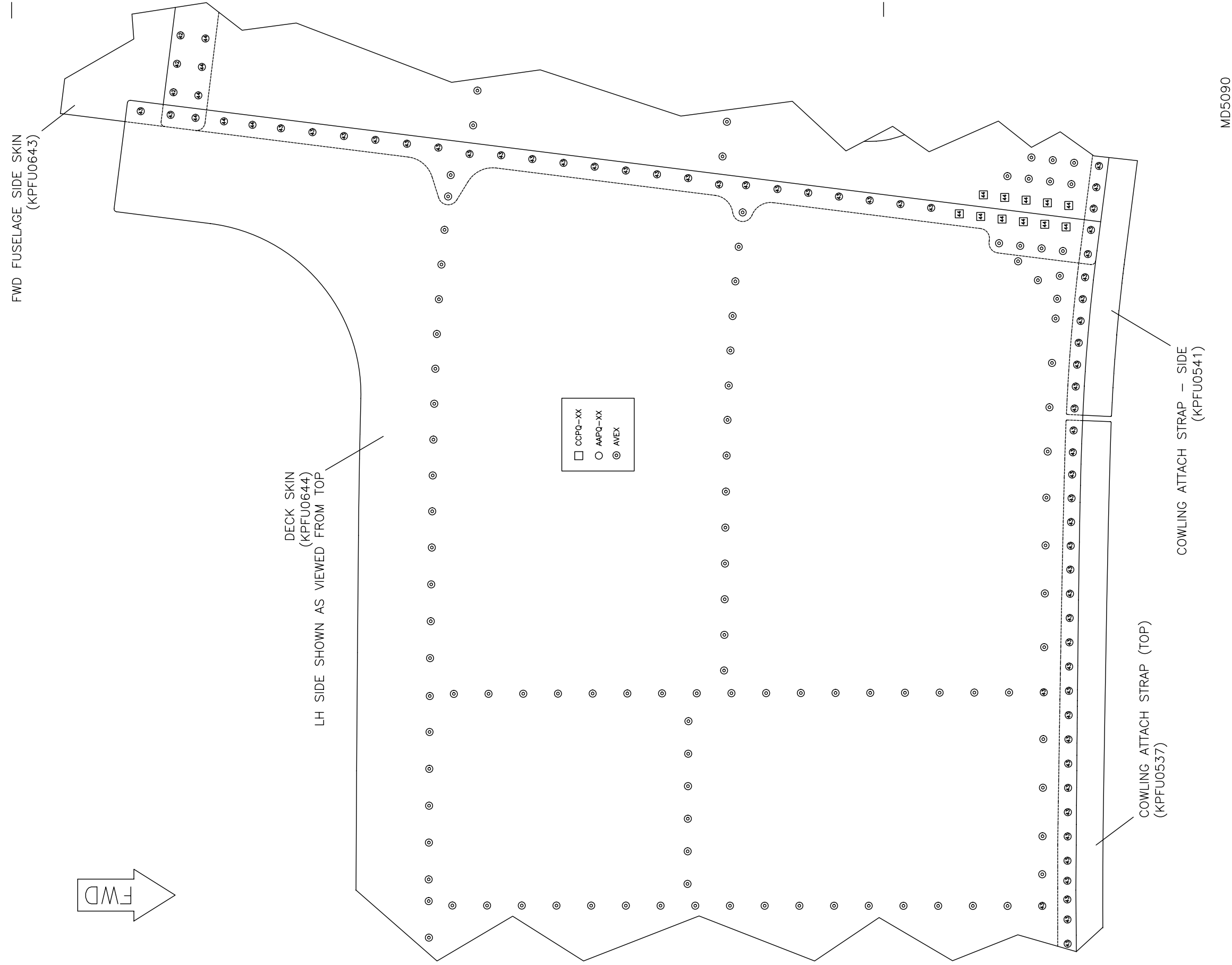
MD5048

04/01/2011

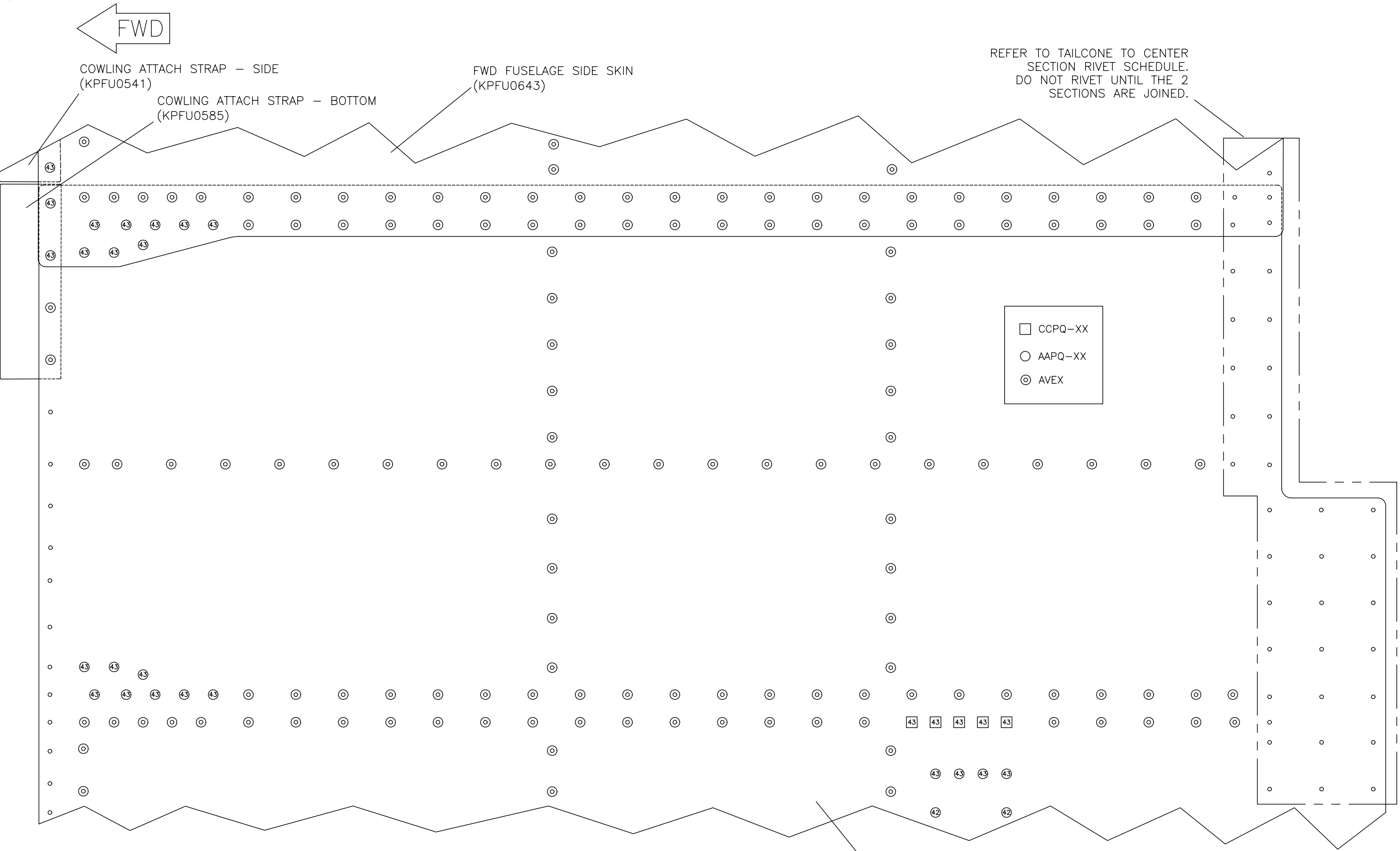


**RAMS S-19 VENTERRA**  
**FWD FUSELAGE SIDE SKIN BENDING**  
**FIGURE 06G-01C**

MD5048



**RAND S-19 VENTERRA**  
**FWD FUSELAGE - TOP SKIN - RIVET SCHEDULE**  
**FIGURE 06G-05**

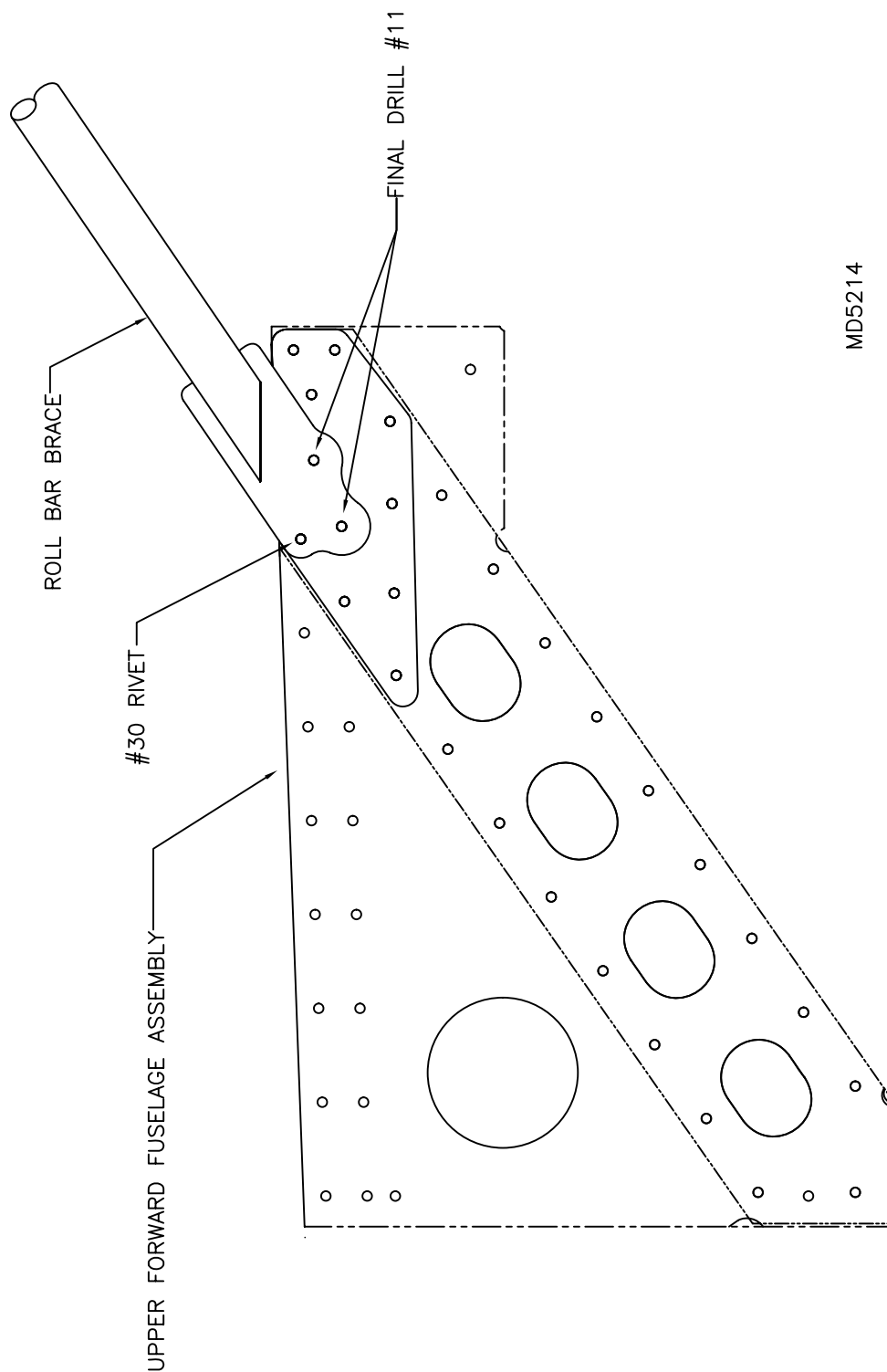


**RANS S-19 VENTERRA**  
**FWD FUSELAGE - BELLY SKIN - RIVET SCHEDULE**  
**FIGURE 06G-05A**

FWD BELLY SKIN  
(KPFU0560)  
LH SIDE SHOWN, AS VIEWED FROM BOTTOM

MD5089





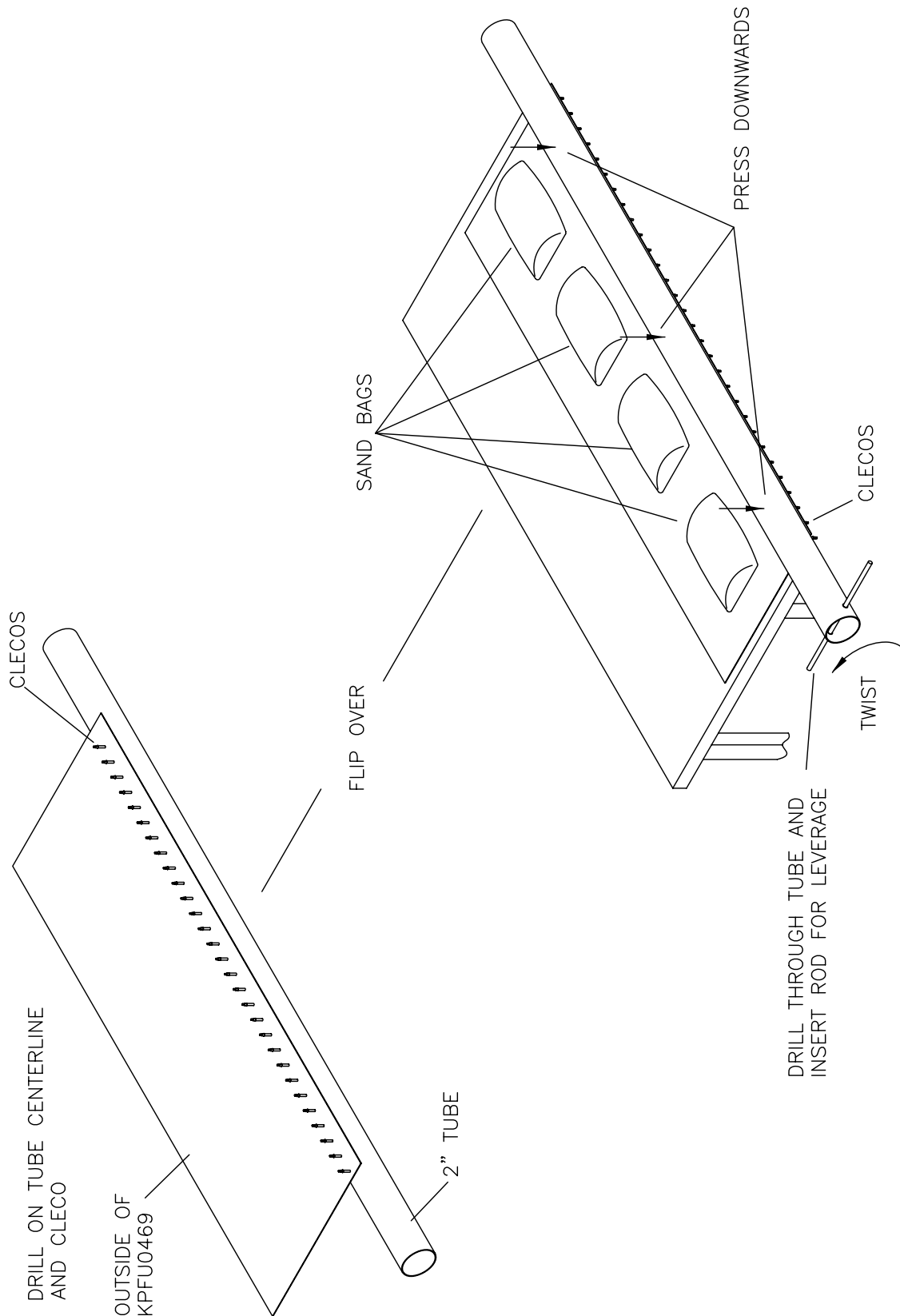
MD5214

**S-19 VENTERRA**  
**ROLL BAR BRACE INSTALLATION**  
**FIGURE 06H-05**

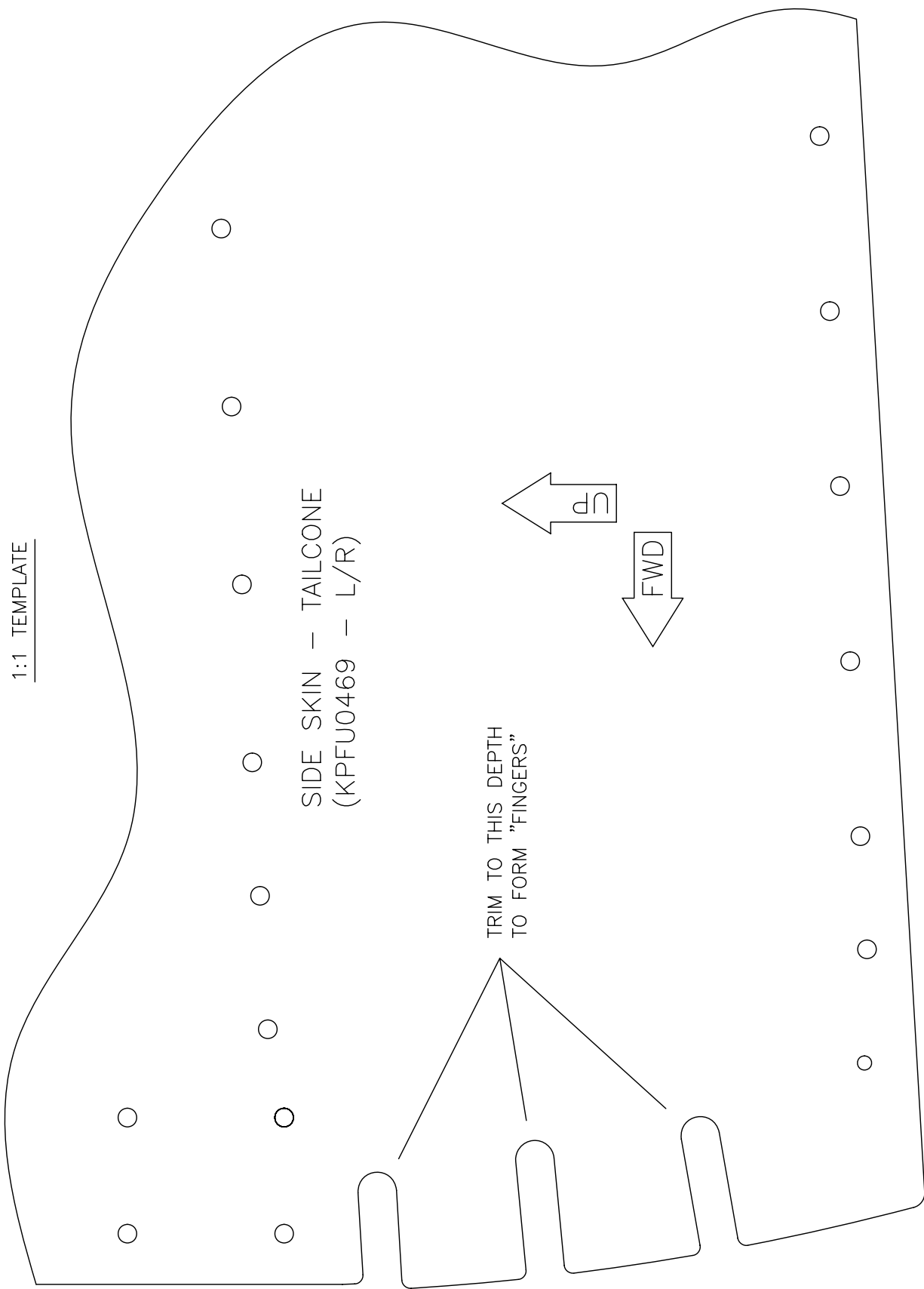
## 07 – FUSELAGE – TAILCONE

|                                                     |         |
|-----------------------------------------------------|---------|
| TAILCONE SKIN FORMING .....                         | 07-03   |
| FUSELAGE TAILCONE SIDE SKIN MODIFICATION .....      | 07-04   |
| REAR BULKHEAD SIDE STIFFENER .....                  | 07-06   |
| TAILCONE BELLY SKIN ORIENTATION .....               | 07-09   |
| BULKHEAD #5 RIVET SCHEDULE .....                    | 07-13   |
| AFT SIDE SKIN RIVET SCHEDULE .....                  | 07-15   |
| AFT BELLY SKIN RIVET SCHEDULE .....                 | 07-15A  |
| BELLCRANK ATTACH RIVET SCHEDULE .....               | 07A-02  |
| INSPECTION PANEL INSTALLATION .....                 | 07B-06  |
| BULKHEAD #1 ASSEMBLY .....                          | 07C-02  |
| UPPER BULKHEAD #1 RIVET SCHEDULE .....              | 07C-02A |
| SIDEWALL STIFFENER MODIFICATION .....               | 07C-04  |
| TAILCONE LONGERON .....                             | 07D-02  |
| TAILCONE LONGERON .....                             | 07D-03  |
| TAILCONE LONGERON .....                             | 07D-04  |
| BULKHEAD TOP #4 RIVET SCHEDULE .....                | 07F-01  |
| VERTICAL STABILIZER ALIGNMENT .....                 | 07F-06  |
| SEAT BELT GUSSET .....                              | 07G-06  |
| FWD FUSELAGE TO CENTER SECTION RIVET SCHEDULE ..... | 07H-09  |
| TAILCONE TO CENTER SECTION RIVET SCHEDULE .....     | 07H-09A |
| TAILCONE TO CENTER SECTION RIVET SCHEDULE .....     | 07H-09B |
| LOWER TAILCONE STINGER TRIMMING .....               | 07I-02  |
| TAILCONE STINGER .....                              | 07I-03  |
| TAILCONE STINGER CUT-OUT .....                      | 07I-05  |

|                                         |        |
|-----------------------------------------|--------|
| STINGER ATTACH.....                     | 07I-06 |
| TAILCONE STINGER BULKHEAD TRIMMING..... | 07I-09 |

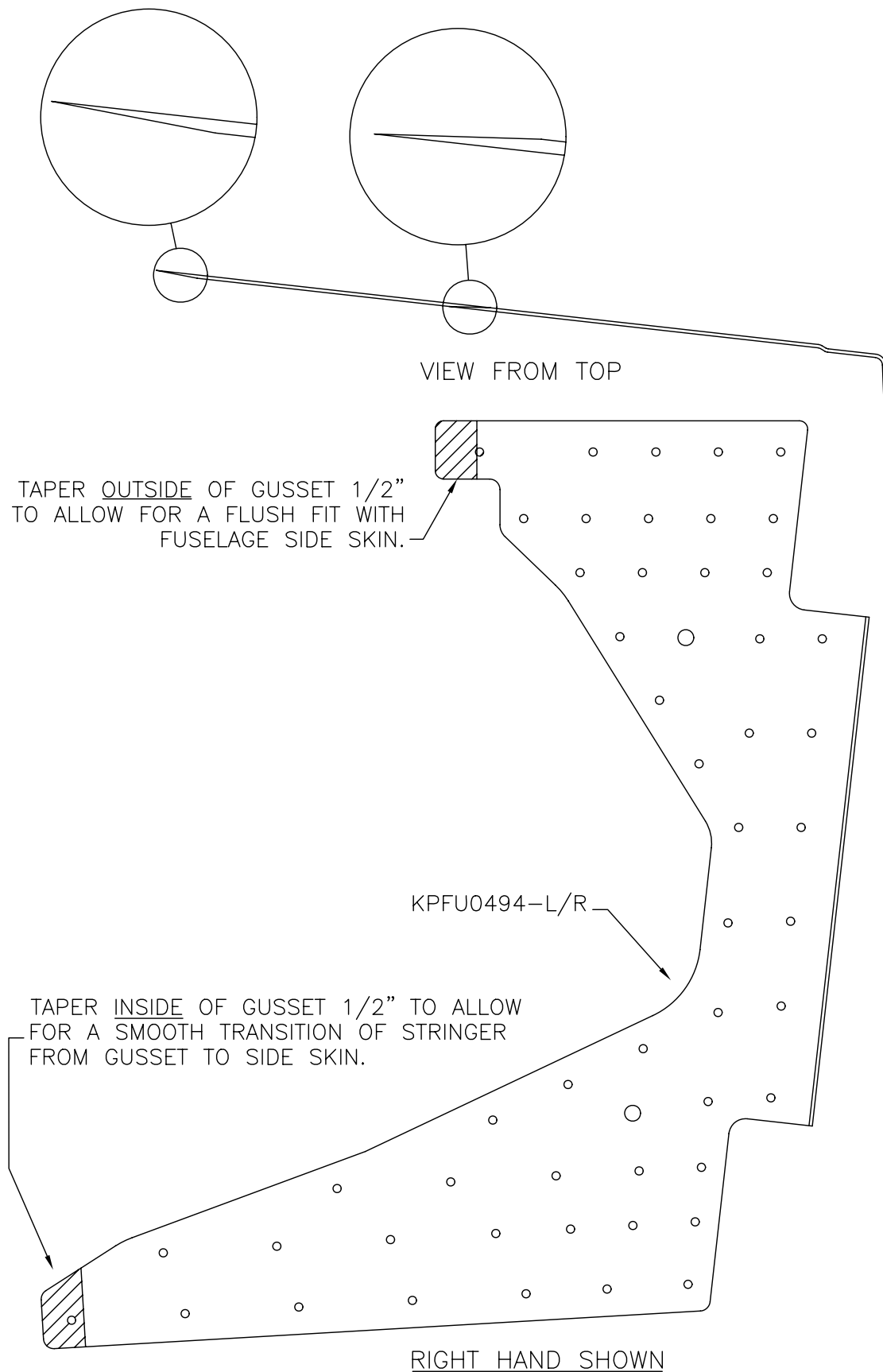


**RRM S-19 VENTERRA**  
**TAILCONE SKIN FORMING**  
**FIGURE 07-03**



MD4836

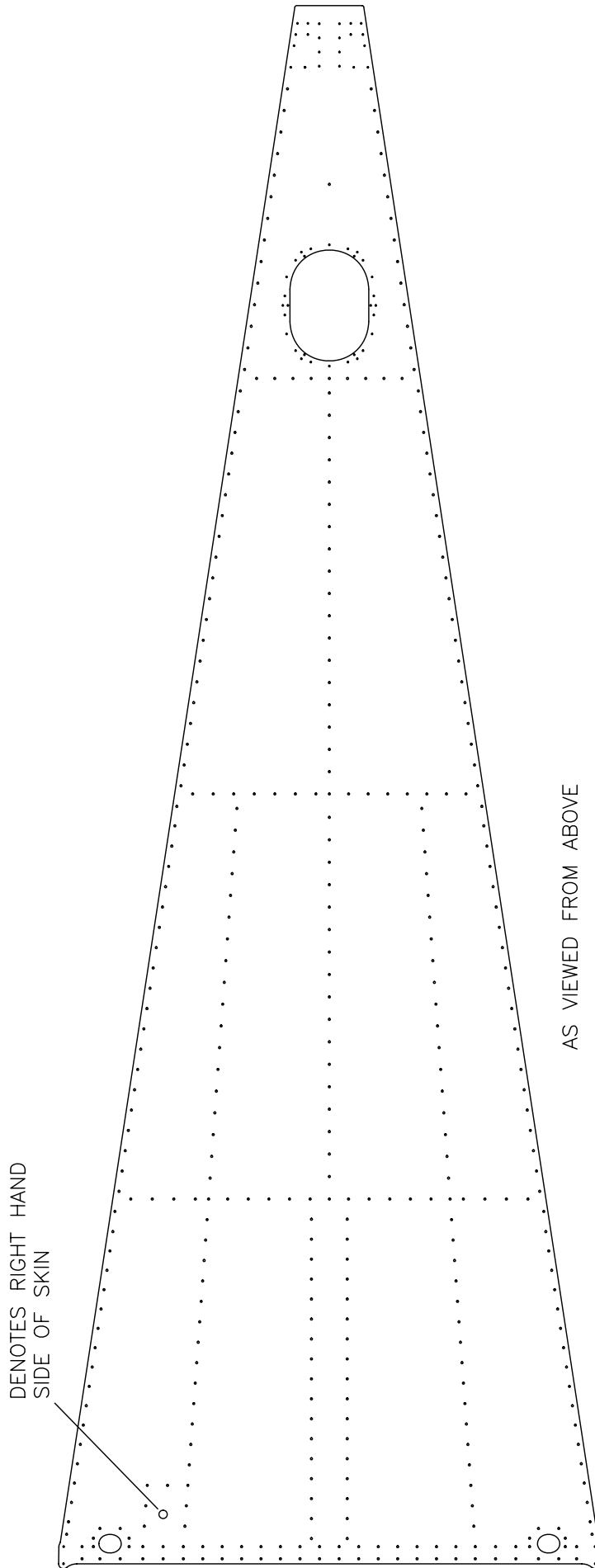
**RAMS S-19 VENTERRA**  
**FUSELAGE TAILCONE SIDE SKIN MODIFICATION**  
**FIGURE 07-04**



MD4931

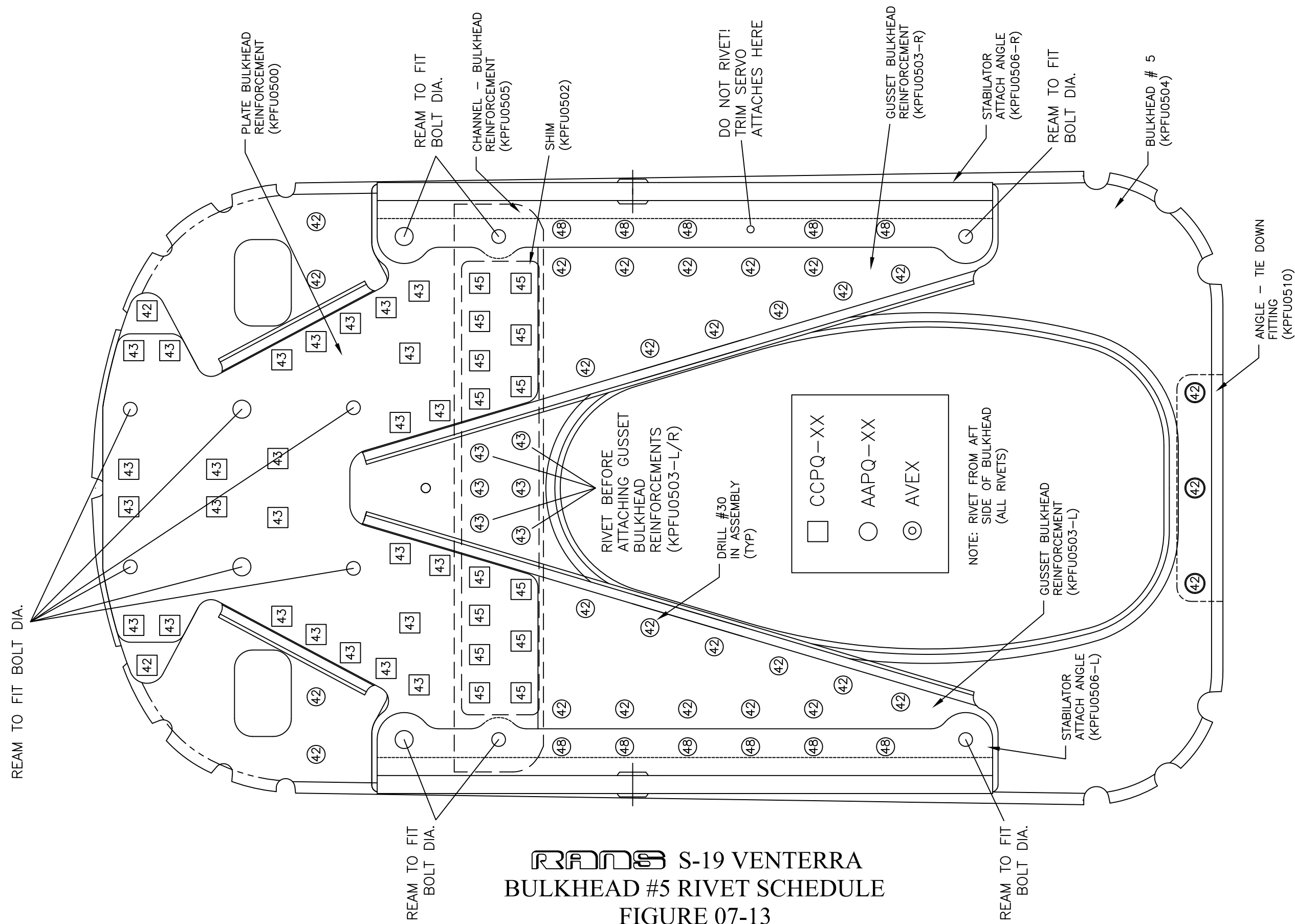
**RANS S-19 VENTERRA**  
**REAR BULKHEAD SIDE STIFFENER**  
**FIGURE 07-06**

04/01/2011

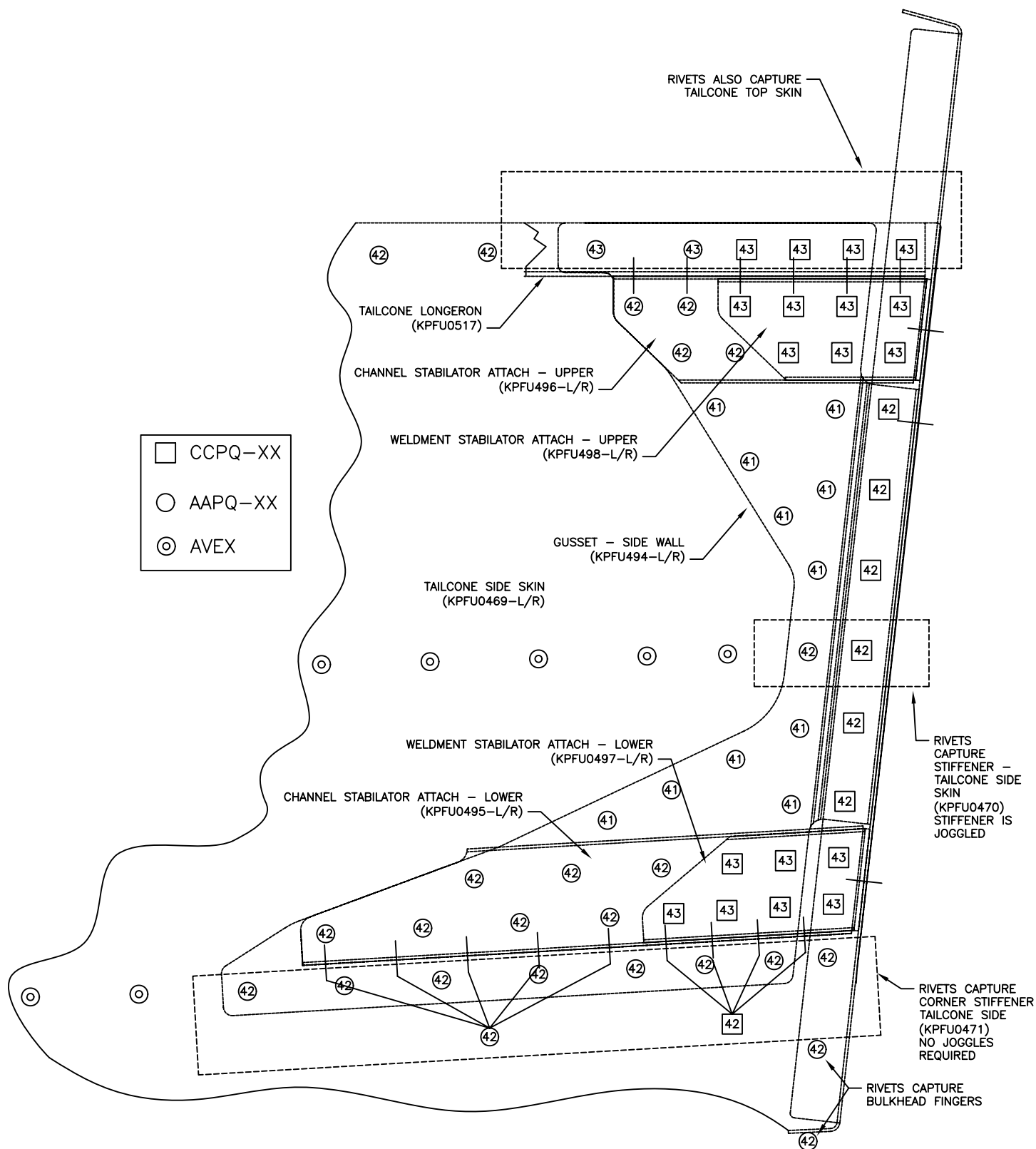


MD5525

**RRM S-19 VENTERRA**  
**TAILCONE BELLY SKIN ORIENTATION**  
**FIGURE 07-09**



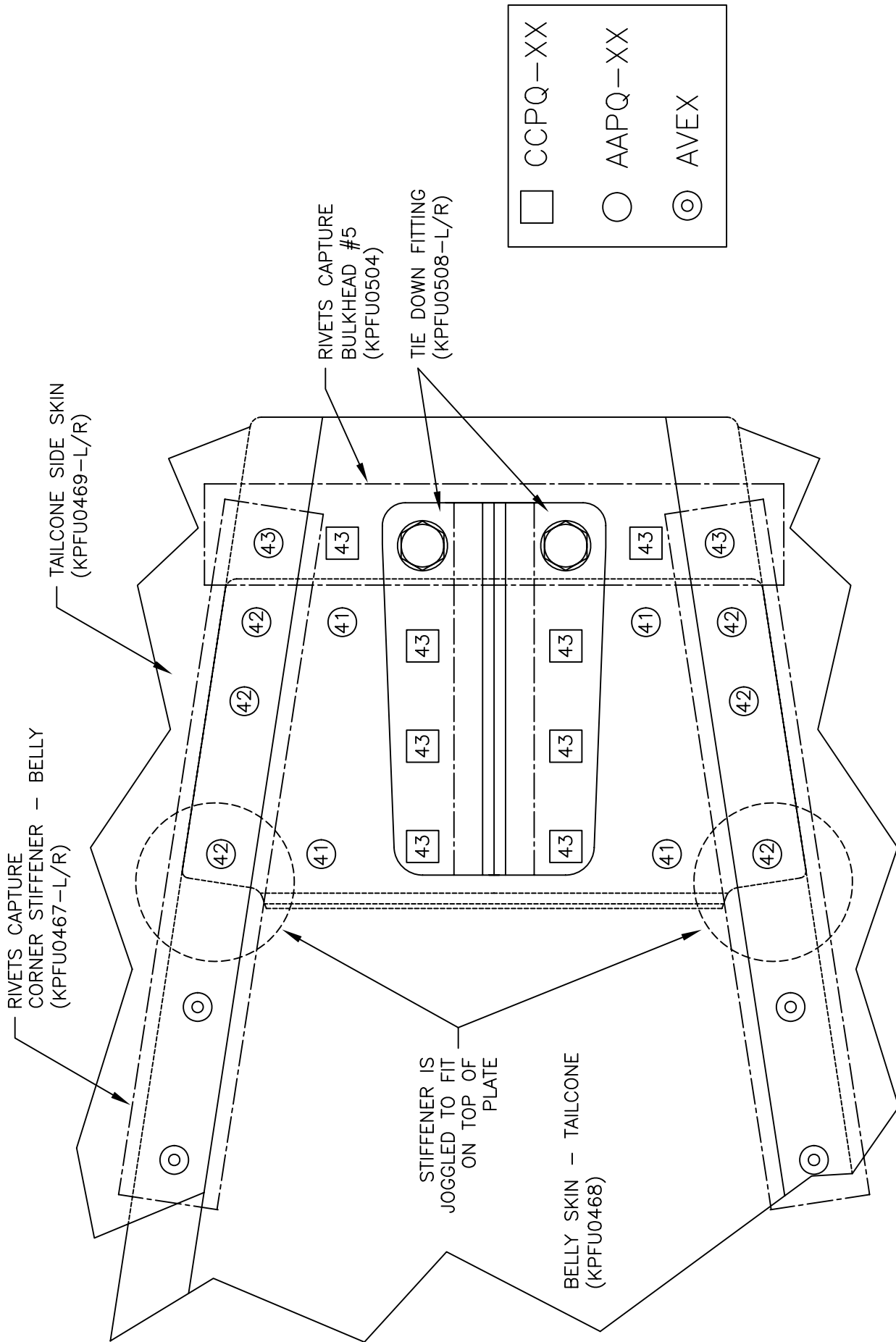
IMPORTANT: ALL PARTS ARE FINAL DRILLED OR REAMED TOGETHER IN ASSEMBLY. TIGHT FIT OF BOLTS IS REQUIRED. USE CARE WHEN DRILLING OR REAMING.



MD4994

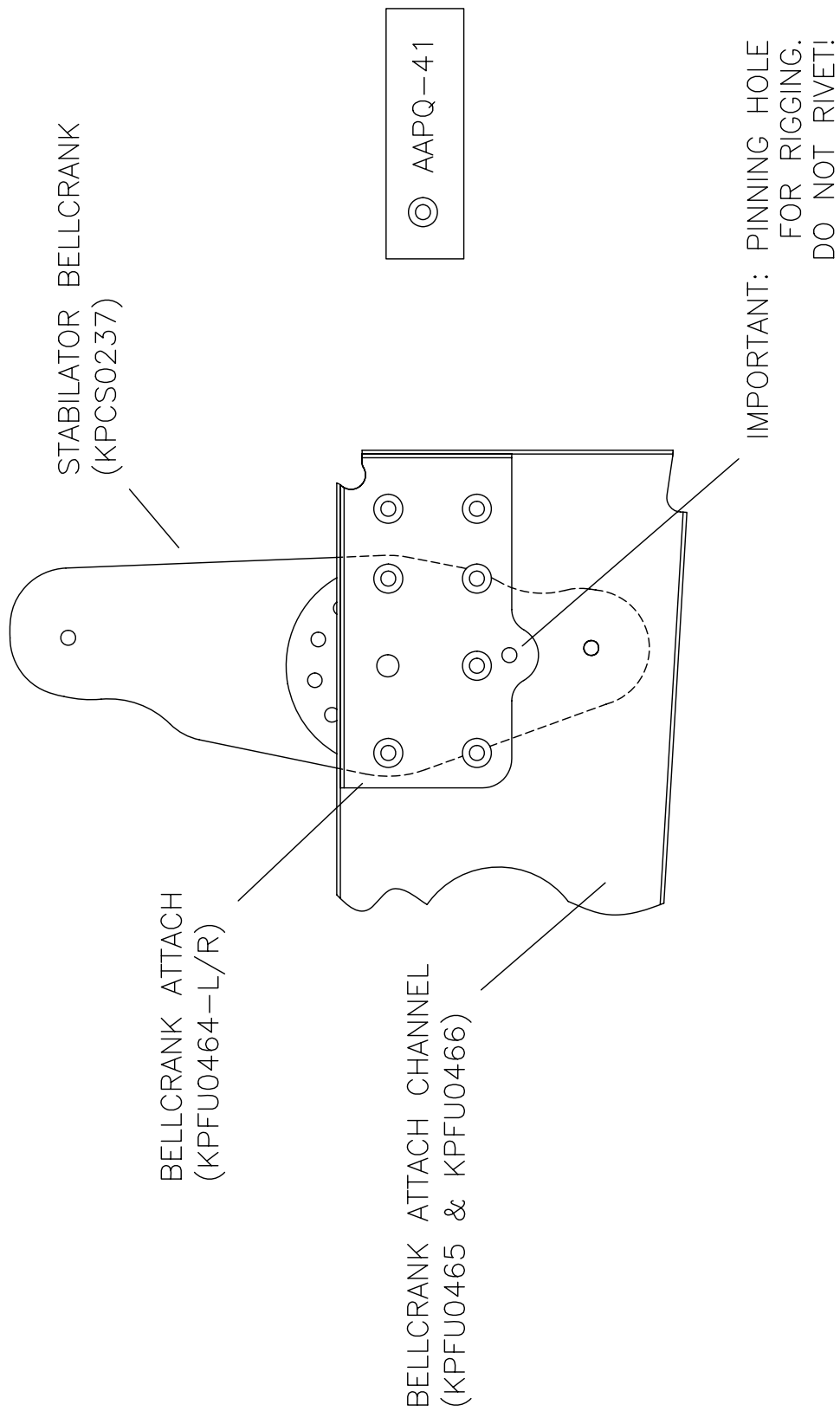
**RANS S-19 VENTERRA**  
**AFT SIDE SKIN RIVET SCHEDULE**  
**FIGURE 07-15**

04/01/2011



MD4993

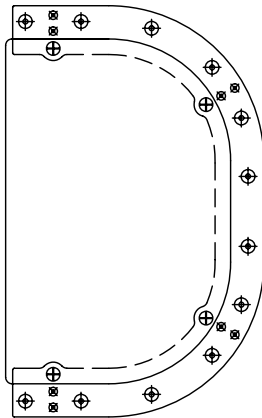
**RRM S-19 VENTERRA**  
**AFT BELLY SKIN RIVET SCHEDULE**  
**FIGURE 07-15A**



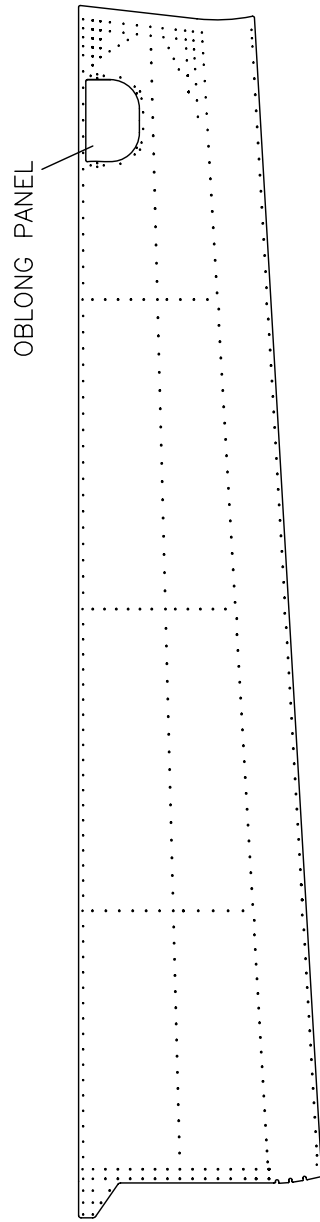
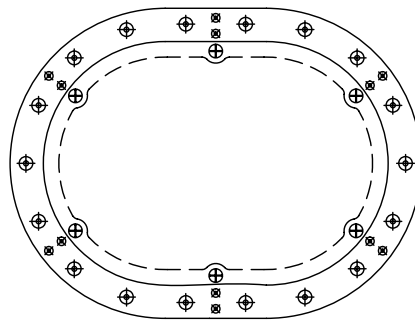
LEGEND

- ⊕ AAPQ-41
- ⊗ 40APR1/8
- ⊕ AN526-832R6

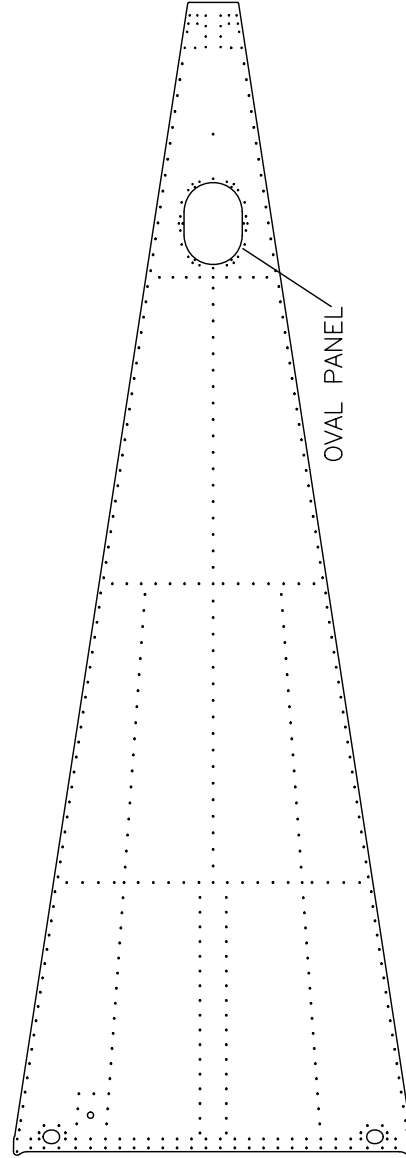
OBLONG PANEL



OVAL PANEL



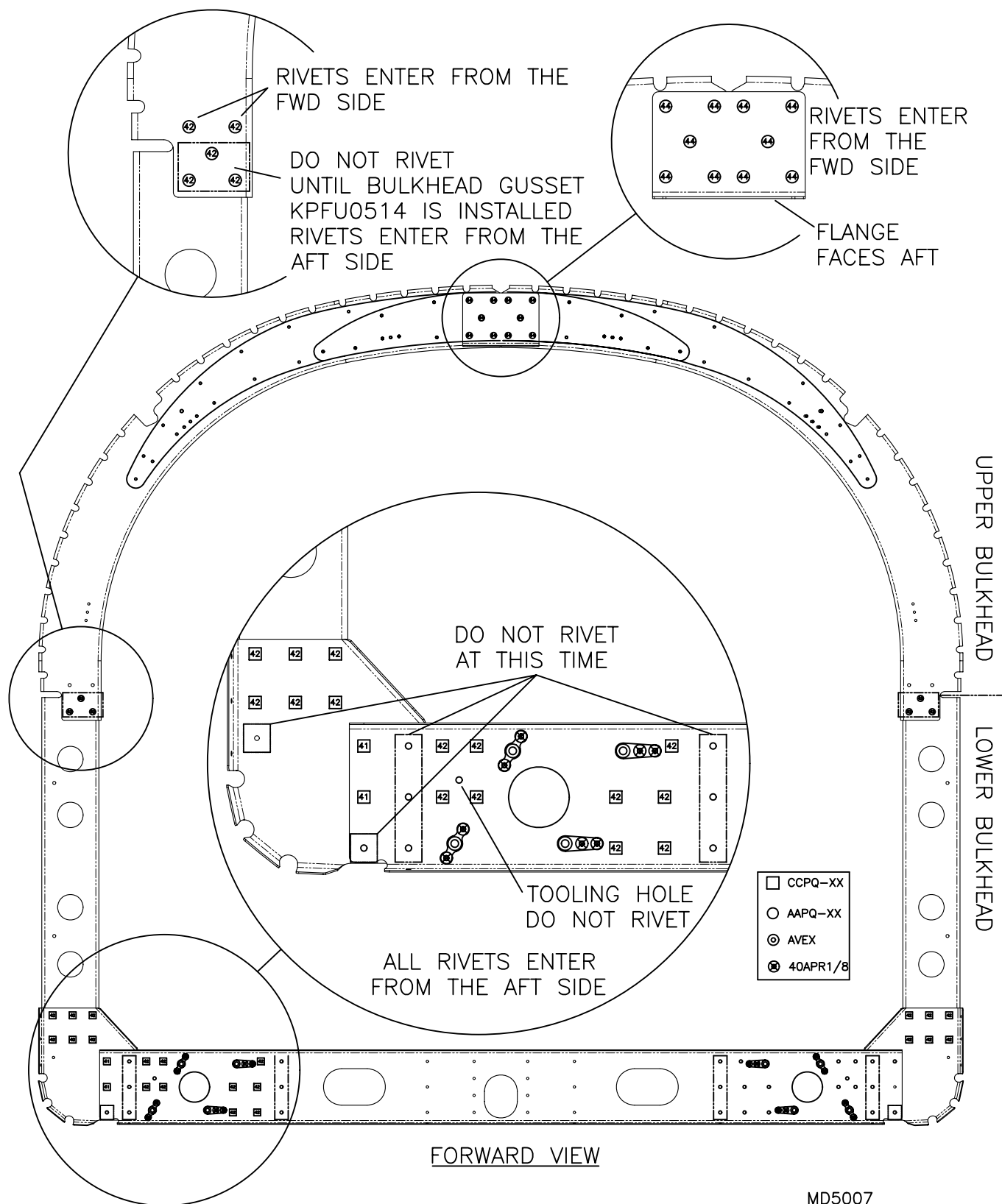
VIED FROM LEFT SIDE



VIED FROM ABOVE

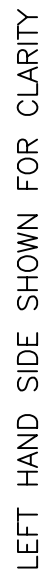
MD5027

**RAMS S-19 VENTERRA**  
**INSPECTION PANEL INSTALLATION**  
**FIGURE 07B-06**



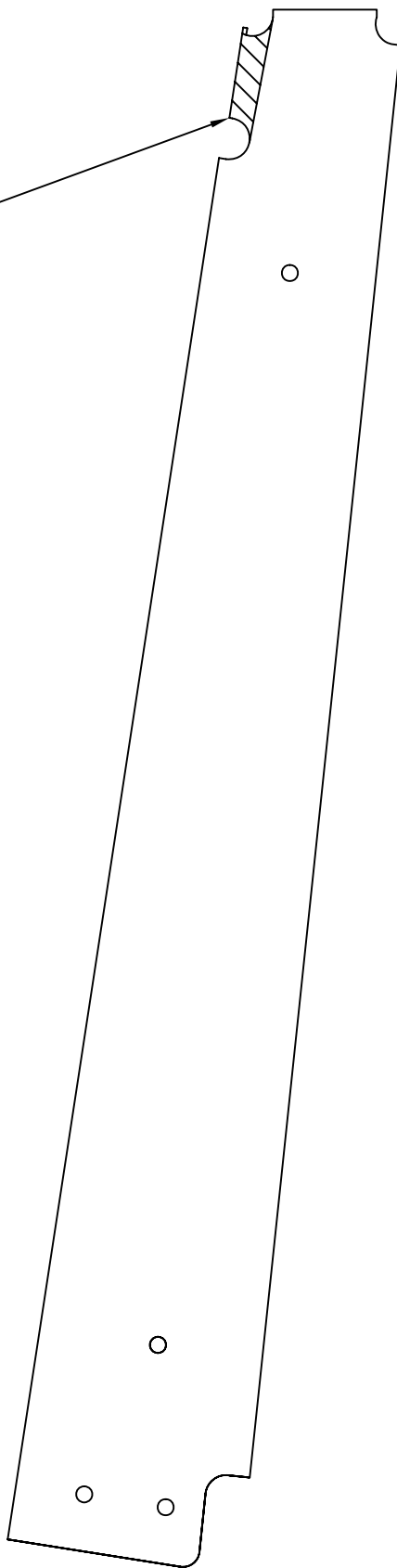
**RANS S-19 VENTERRA**  
**BULKHEAD #1 ASSEMBLY**  
**FIGURE 07C-02**

04/01/2011



**RRR S-19 VENTERRA**  
**UPPER BULKHEAD #1 RIVET SCHEDULE**  
**FIGURE 07C-02A**

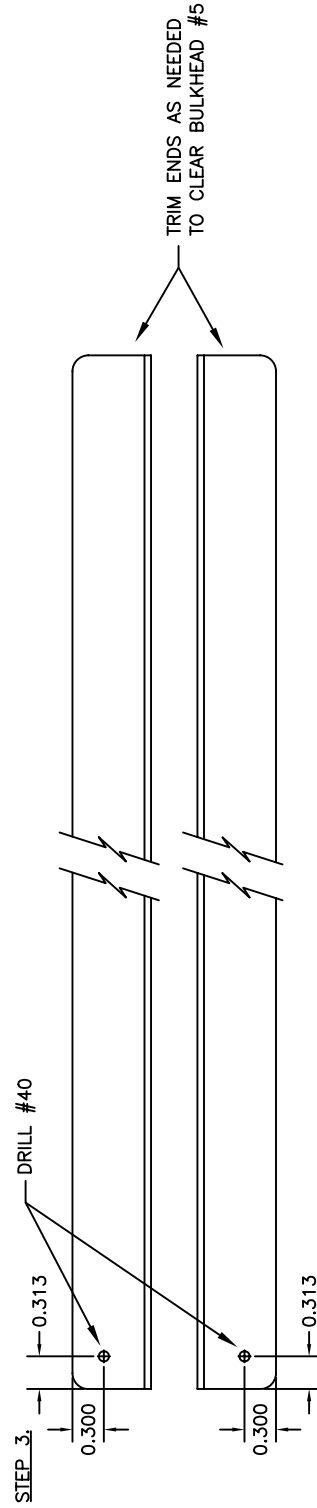
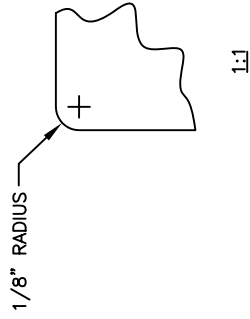
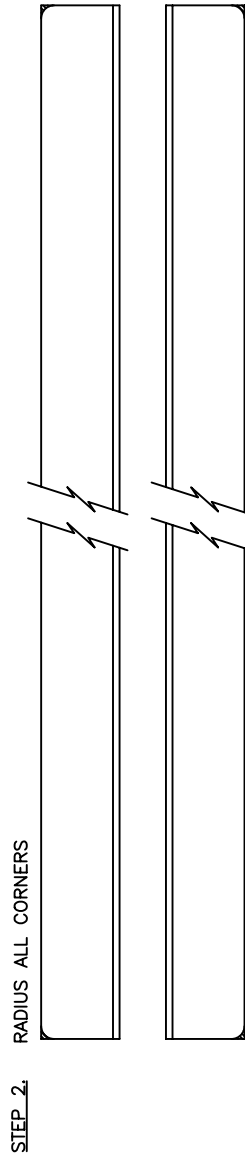
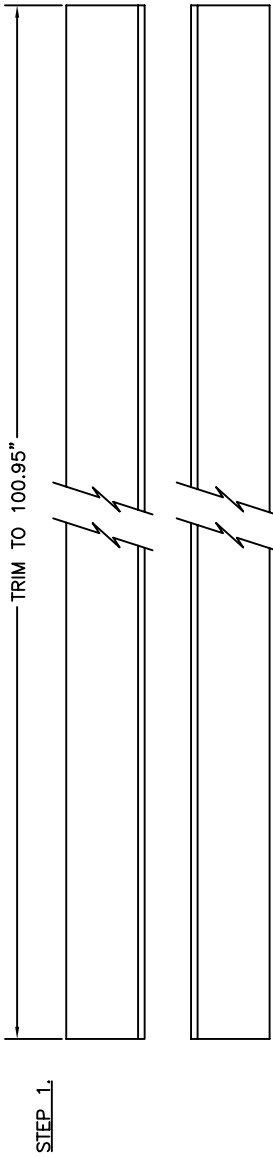
REMOVE TAB AS SHOWN  
2 PARTS ONLY (1L/1R)



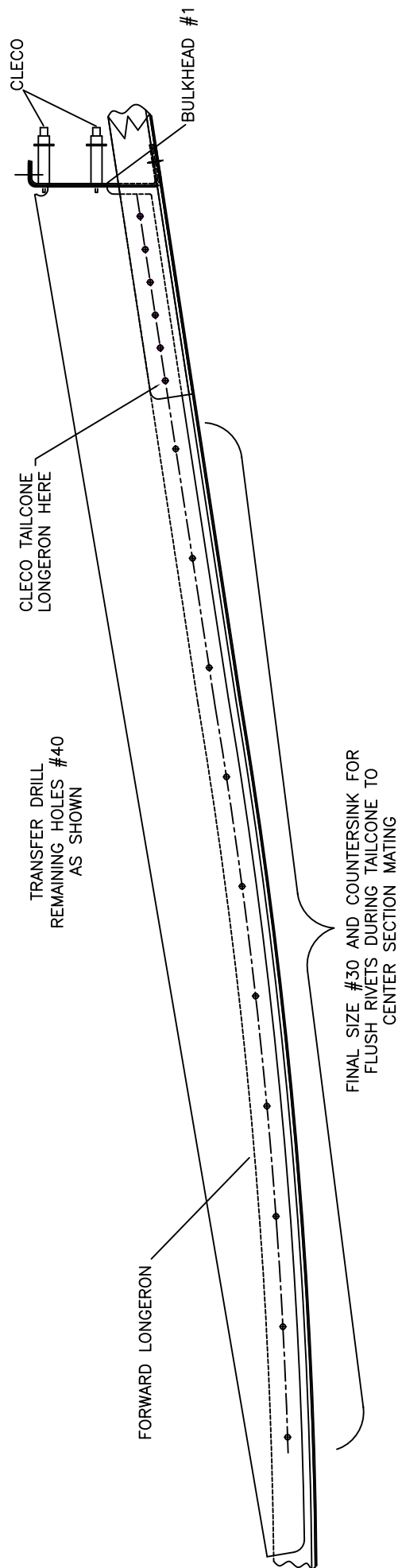
STIFFENER - SIDE WALL  
KPFU0473 - L/R

MD5008

**RAMBER** S-19 VENTERRA  
SIDEWALL STIFFENER MODIFICATION  
FIGURE 07C-04



**RAMS S-19 VENTERRA**  
**TAILCONE LONGERON**  
**FIGURE 07D-02**

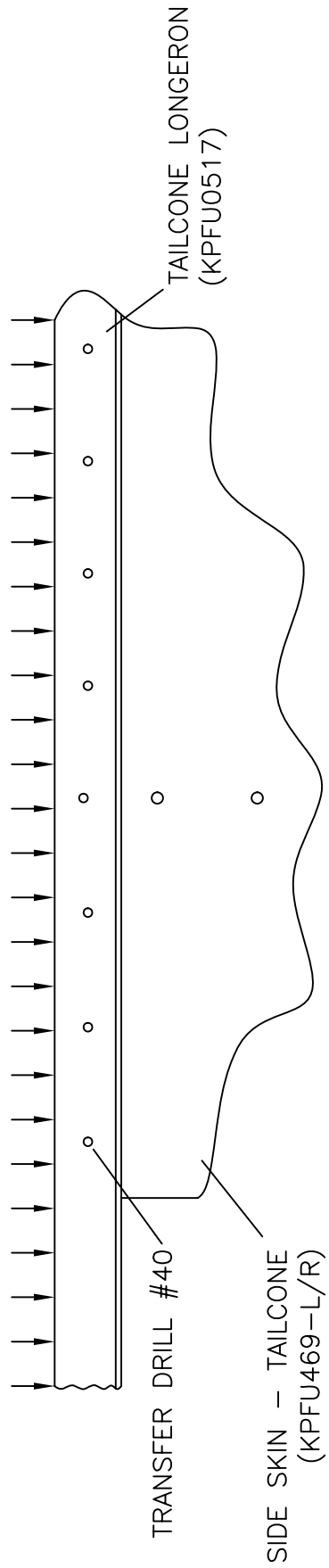


FINAL SIZE ALL HOLES #30 DURING  
TAILCONE TO CENTER SECTION MATING

MD4998  
REV. A

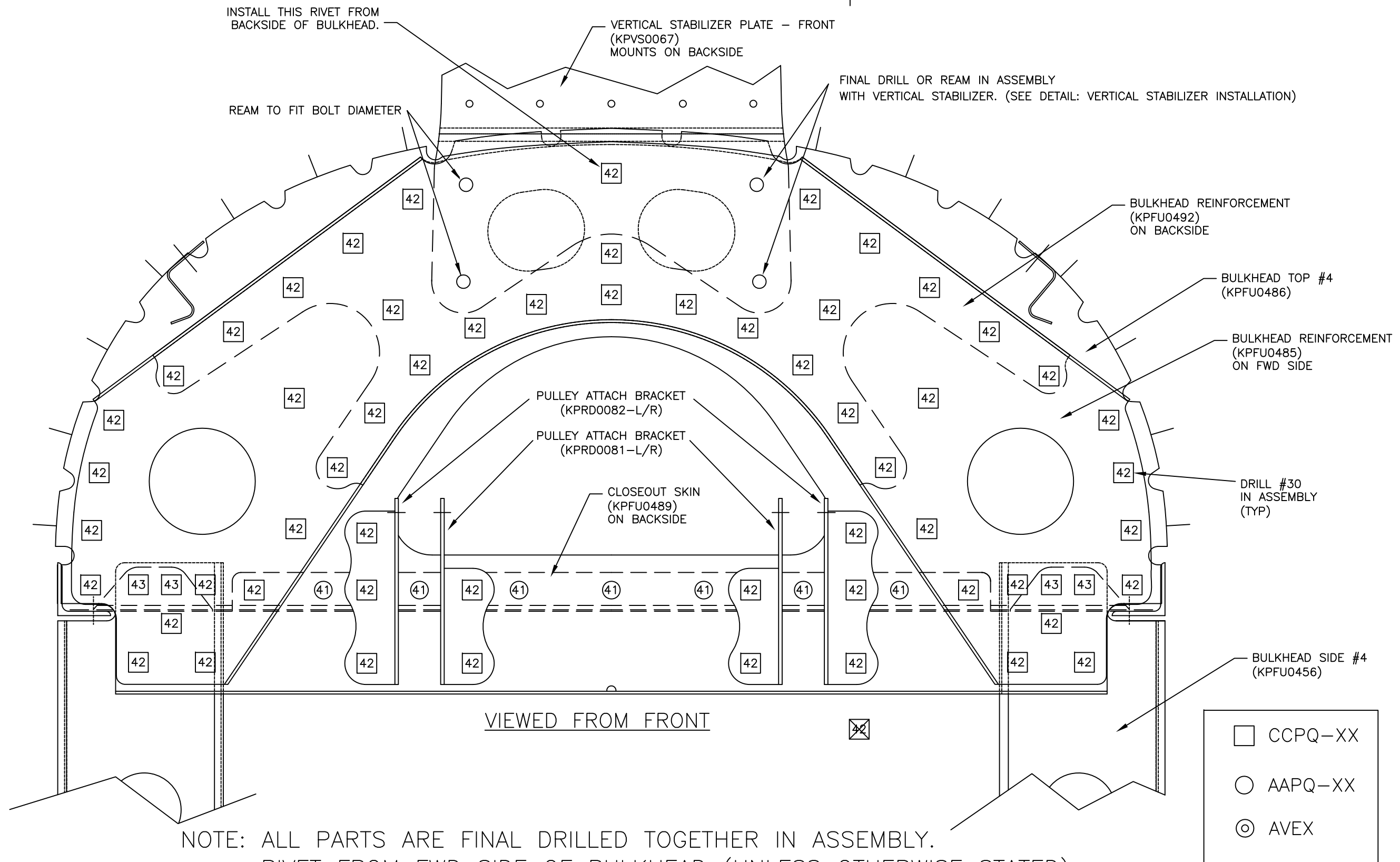
# S-19 VENTERRA TAILCONE LONGERON FIGURE 07D-03

ALIGN WITH TOP OF SKIN  
AND CLAMP IN PLACE



MD4998

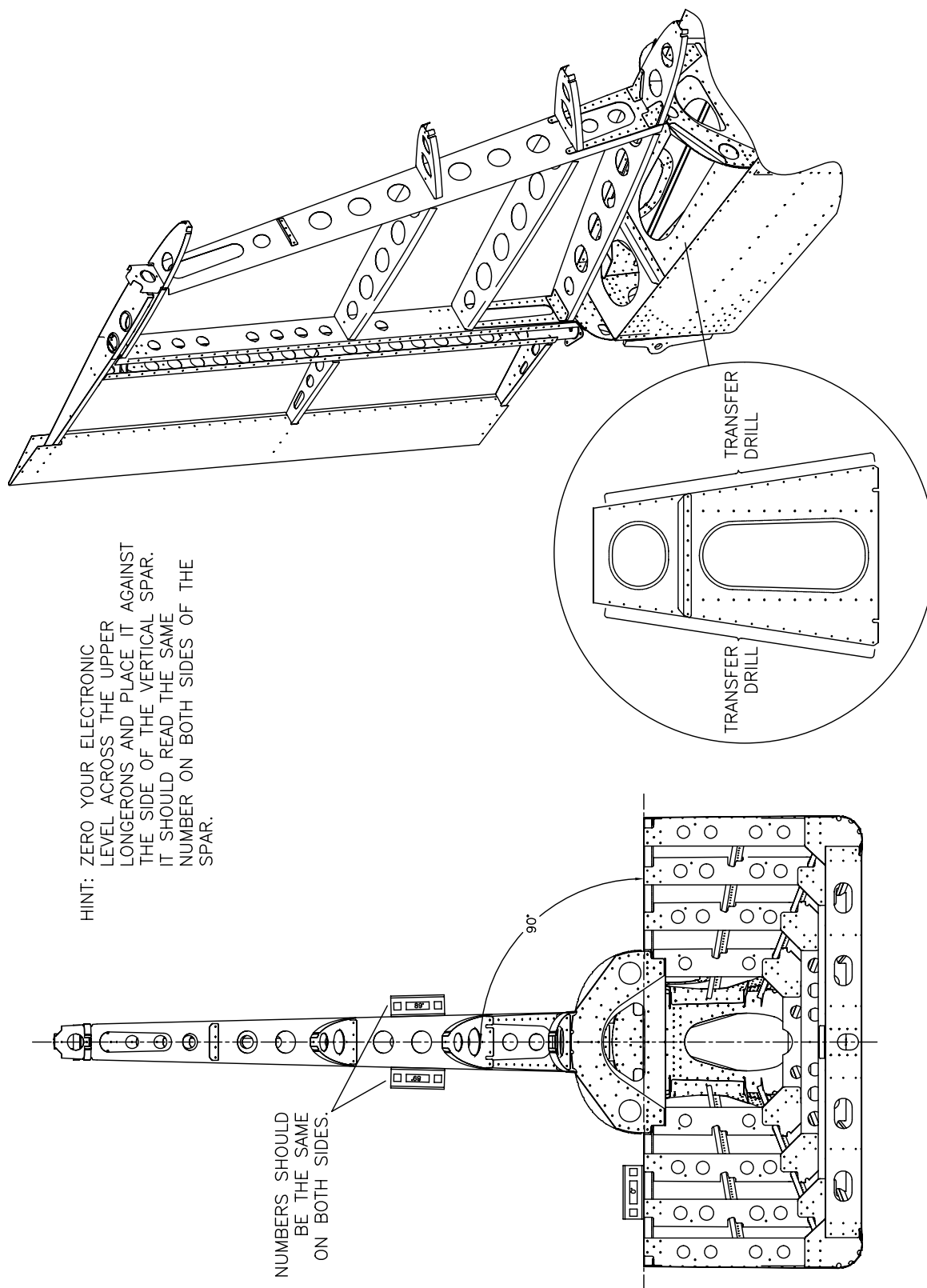
**RRR S-19 VENTERRA**  
**TAILCONE LONGERON**  
**FIGURE 07D-04**



MD4996

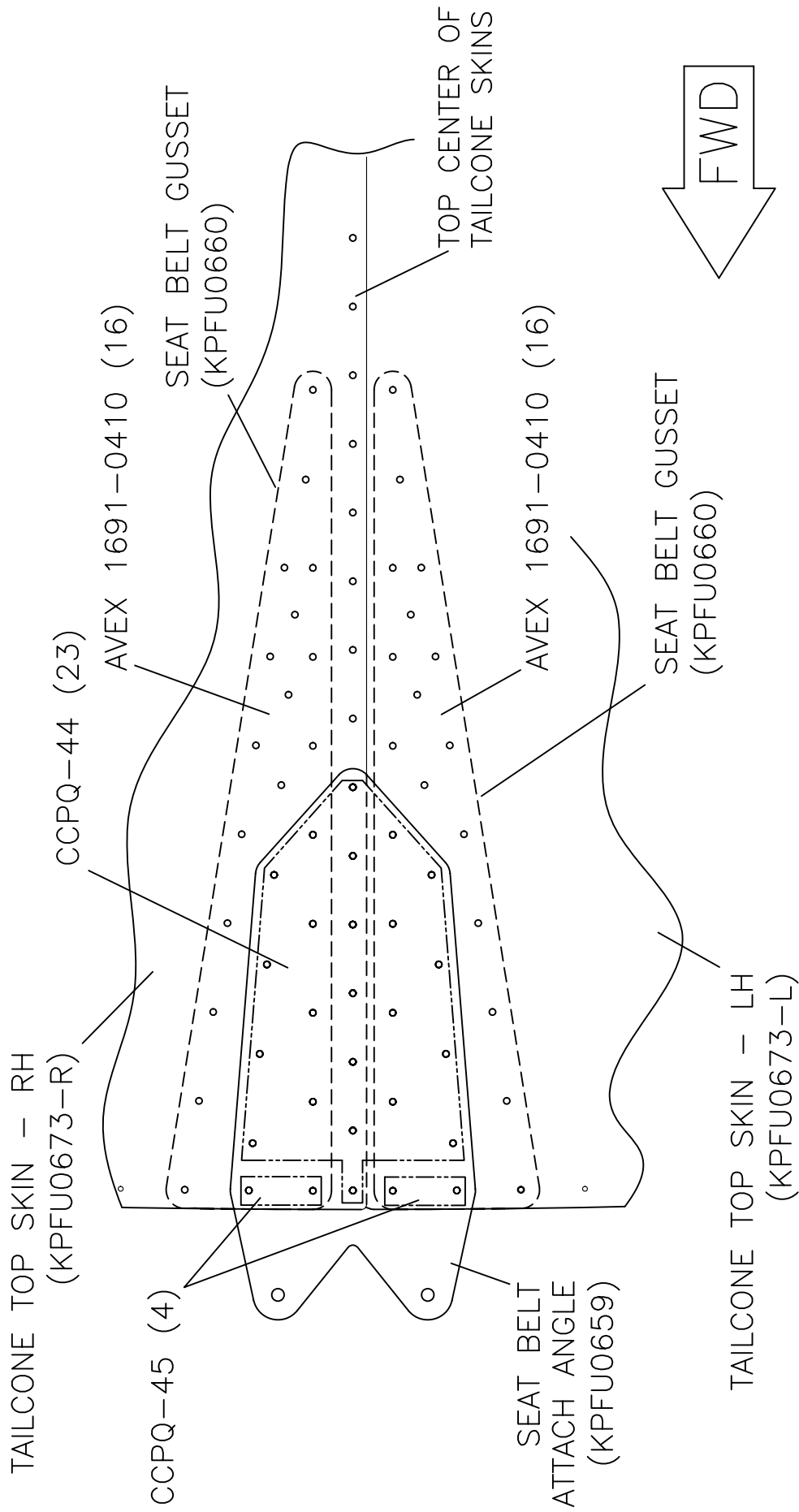
**RANS S-19 VENTERRA**  
**BULKHEAD TOP #4 RIVET SCHEDULE**  
**FIGURE 07F-01**

04/01/2011



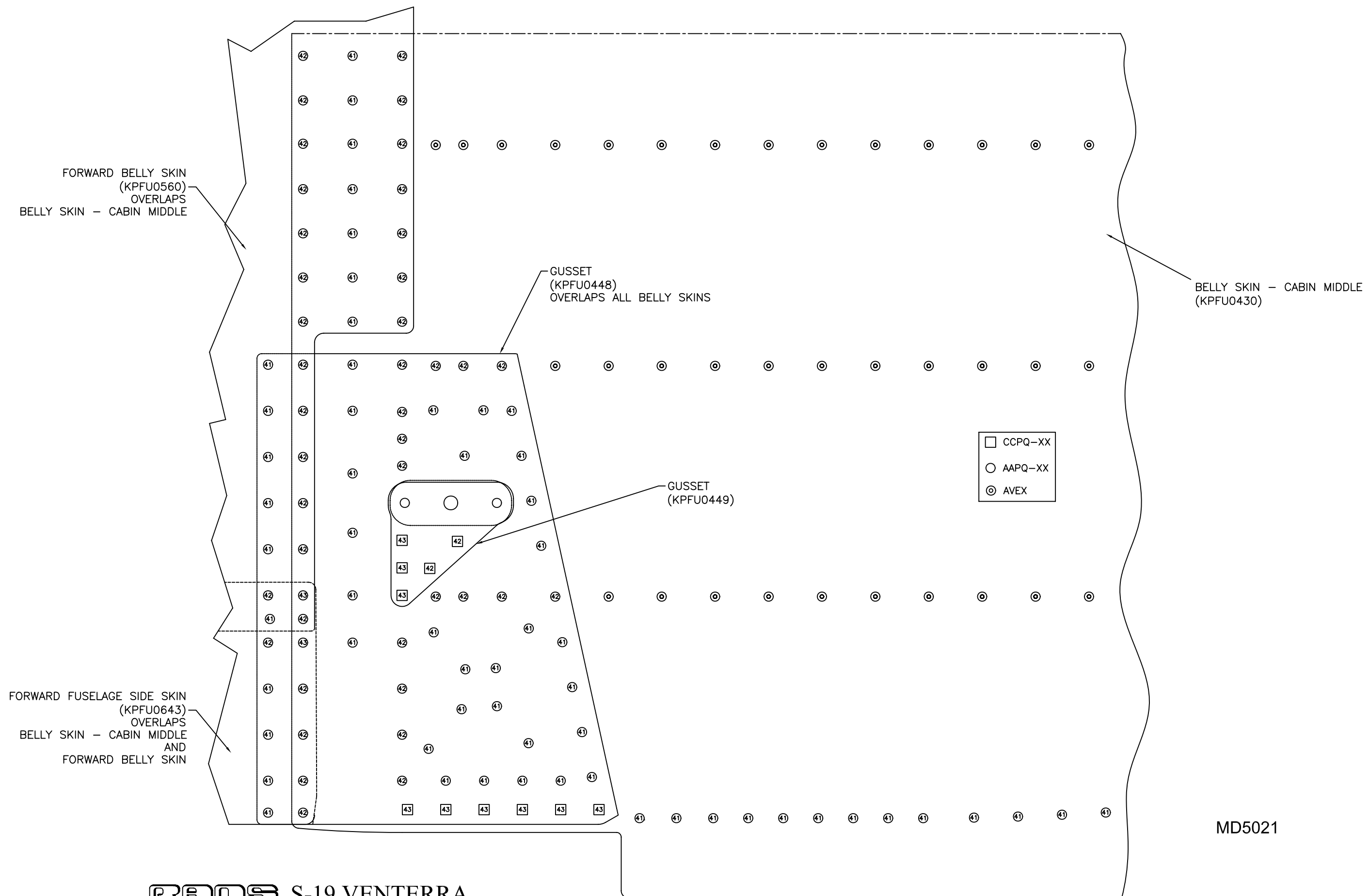
MD4930

**RAMS S-19 VENTERRA**  
**VERTICAL STABILIZER ALIGNMENT**  
**FIGURE 07F-06**

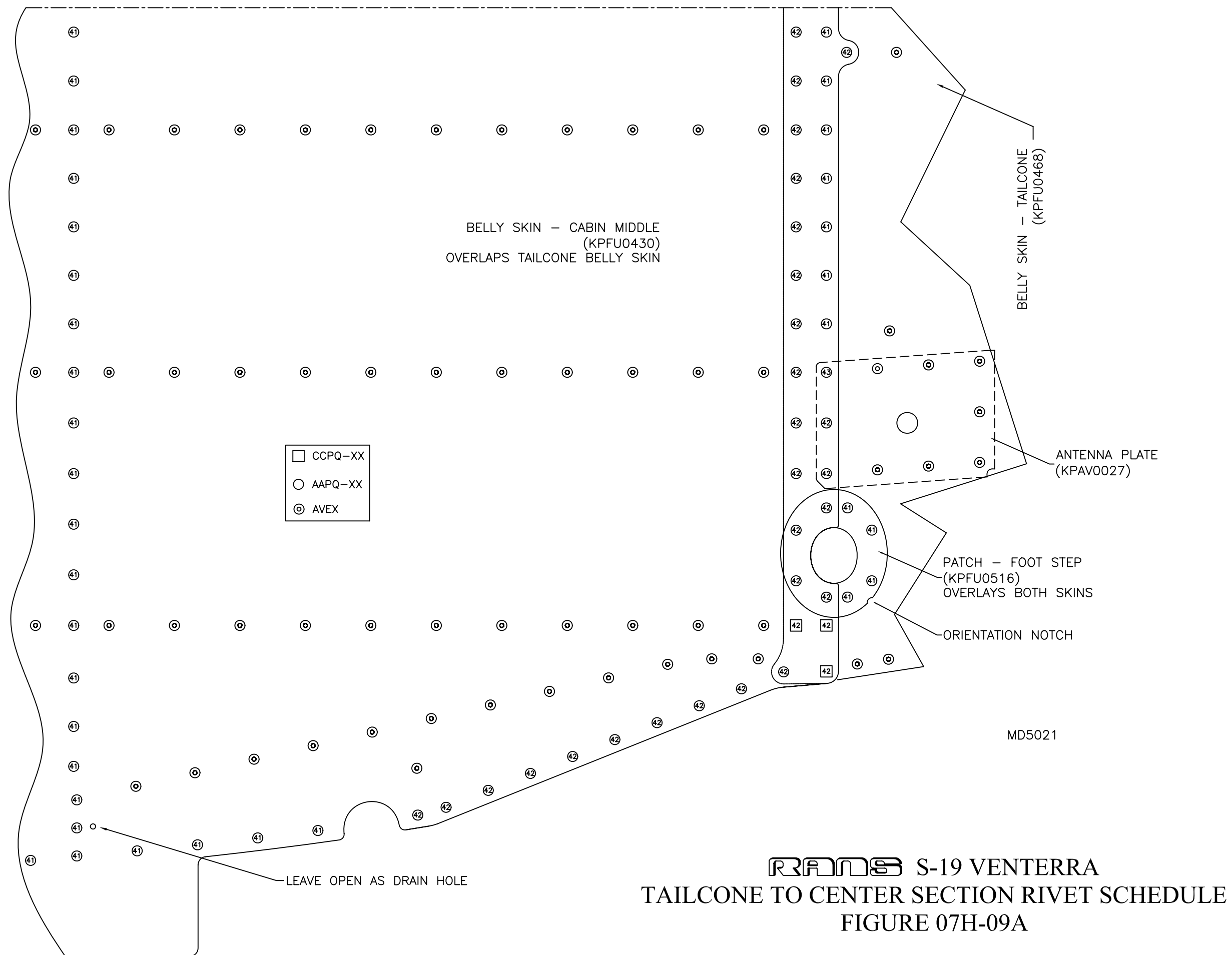


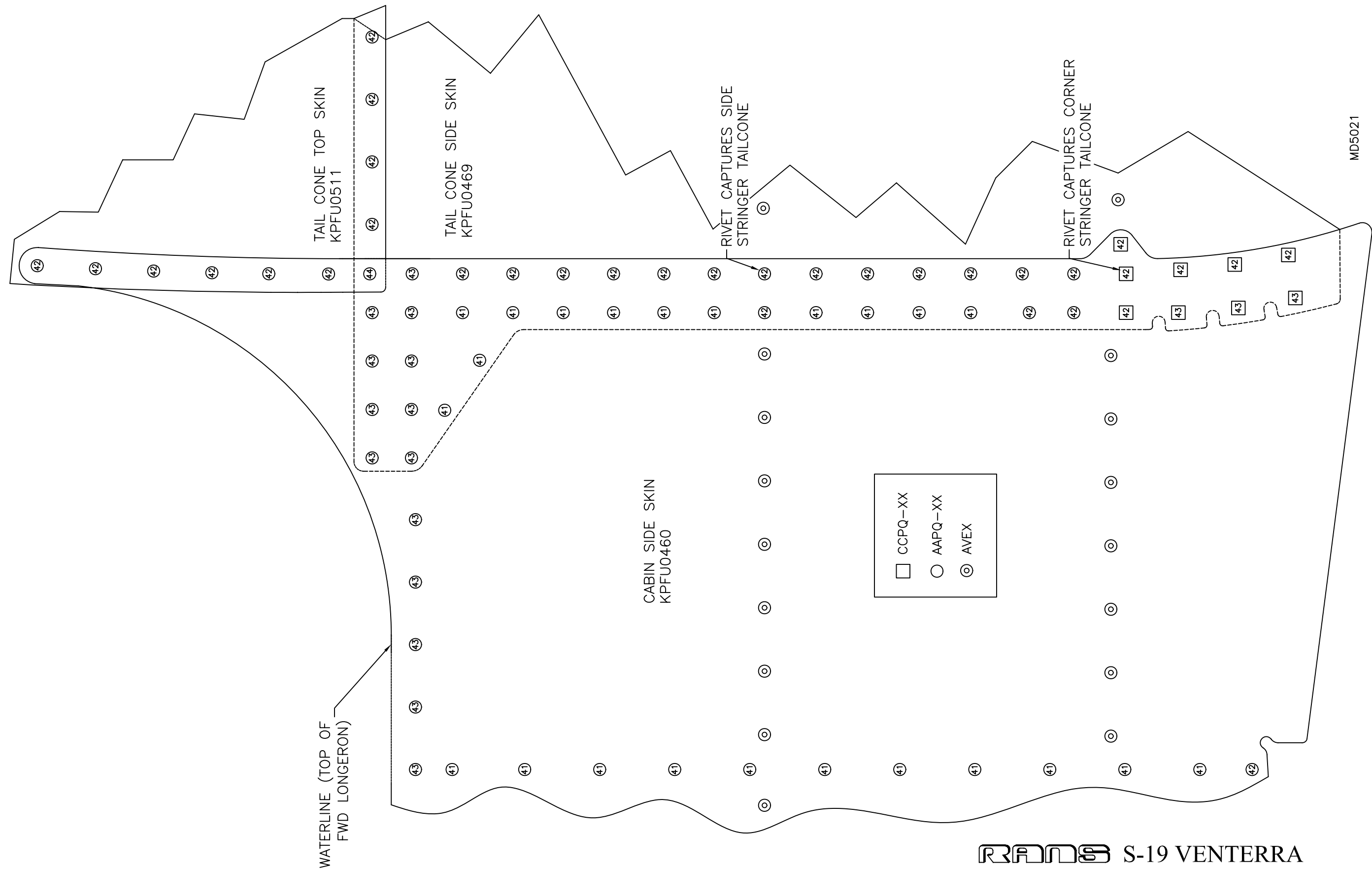
MD5227

**RAVEN S-19 VENTERRA**  
**SEAT BELT GUSSET**  
**FIGURE 07G-06**

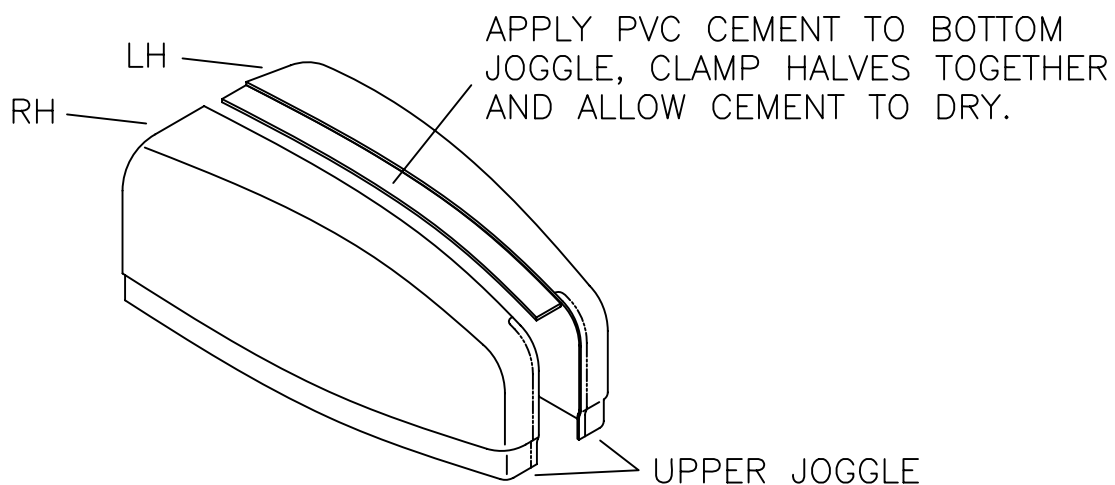
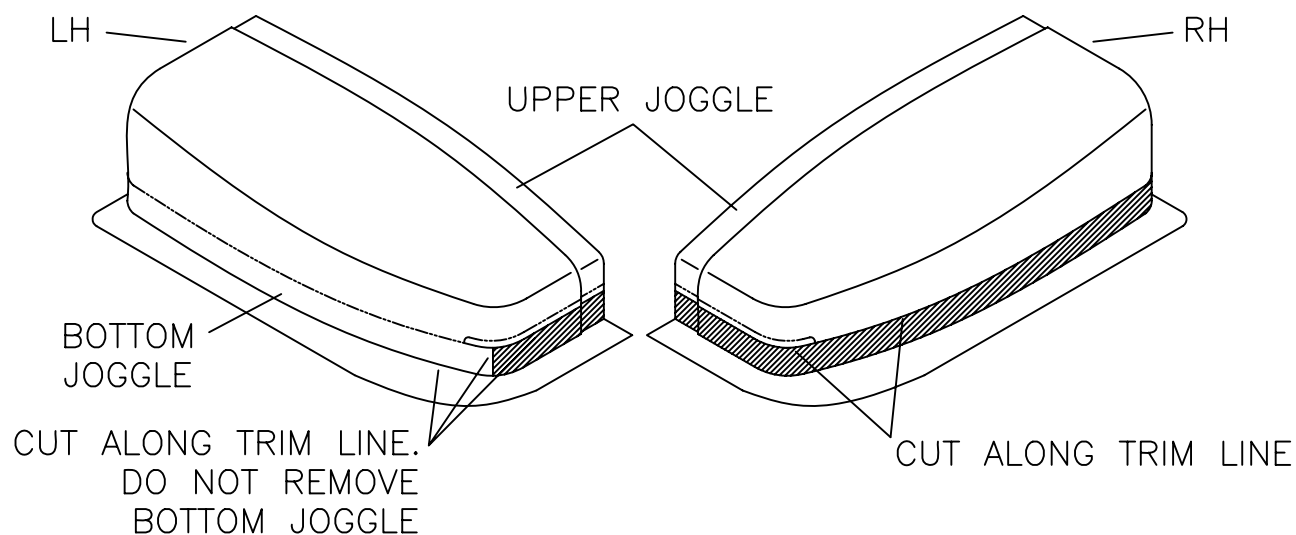
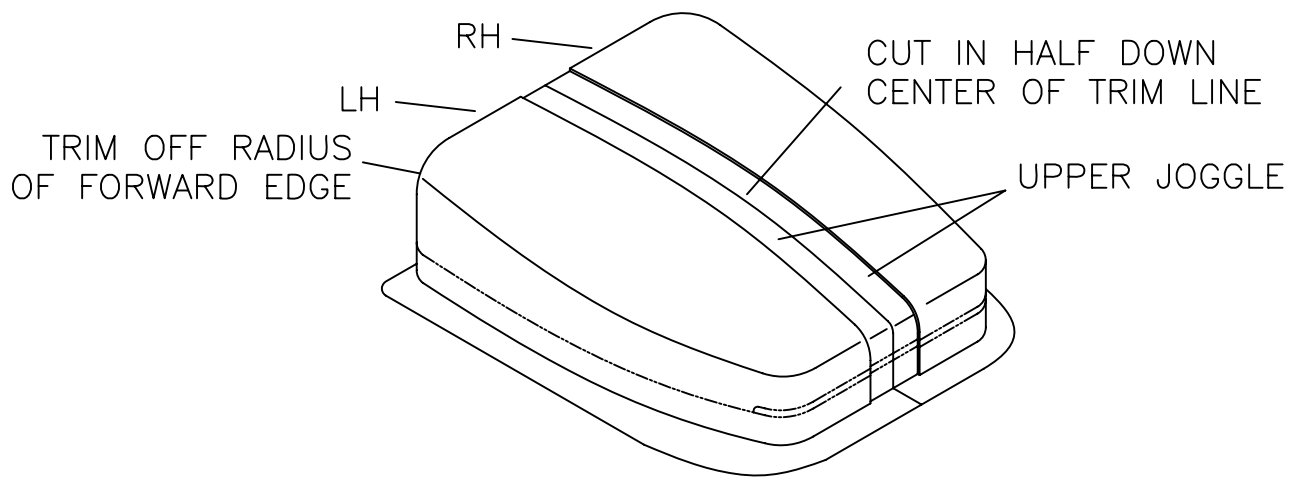


**RANS S-19 VENTERRA**  
**FWD FUSELAGE TO CENTER SECTION RIVET SCHEDULE**  
**FIGURE 07H-09**





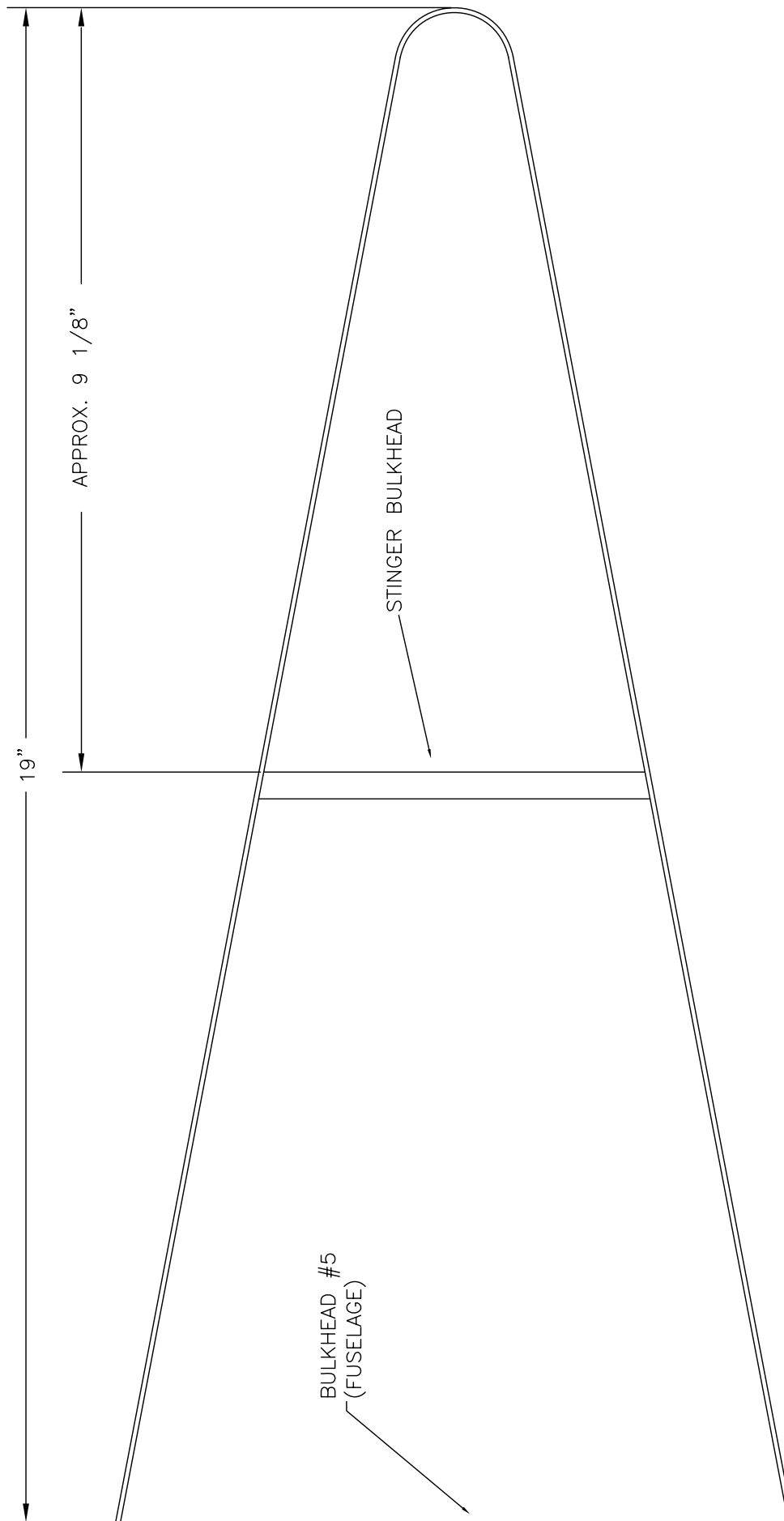
**RANS S-19 VENTERRA**  
**TAILCONE TO CENTER SECTION RIVET SCHEDULE**  
**FIGURE 07H-09B**



**RANS S-19 VENTERRA**  
**LOWER TAILCONE STINGER TRIMMING**  
**FIGURE 07I-02**

MD5474

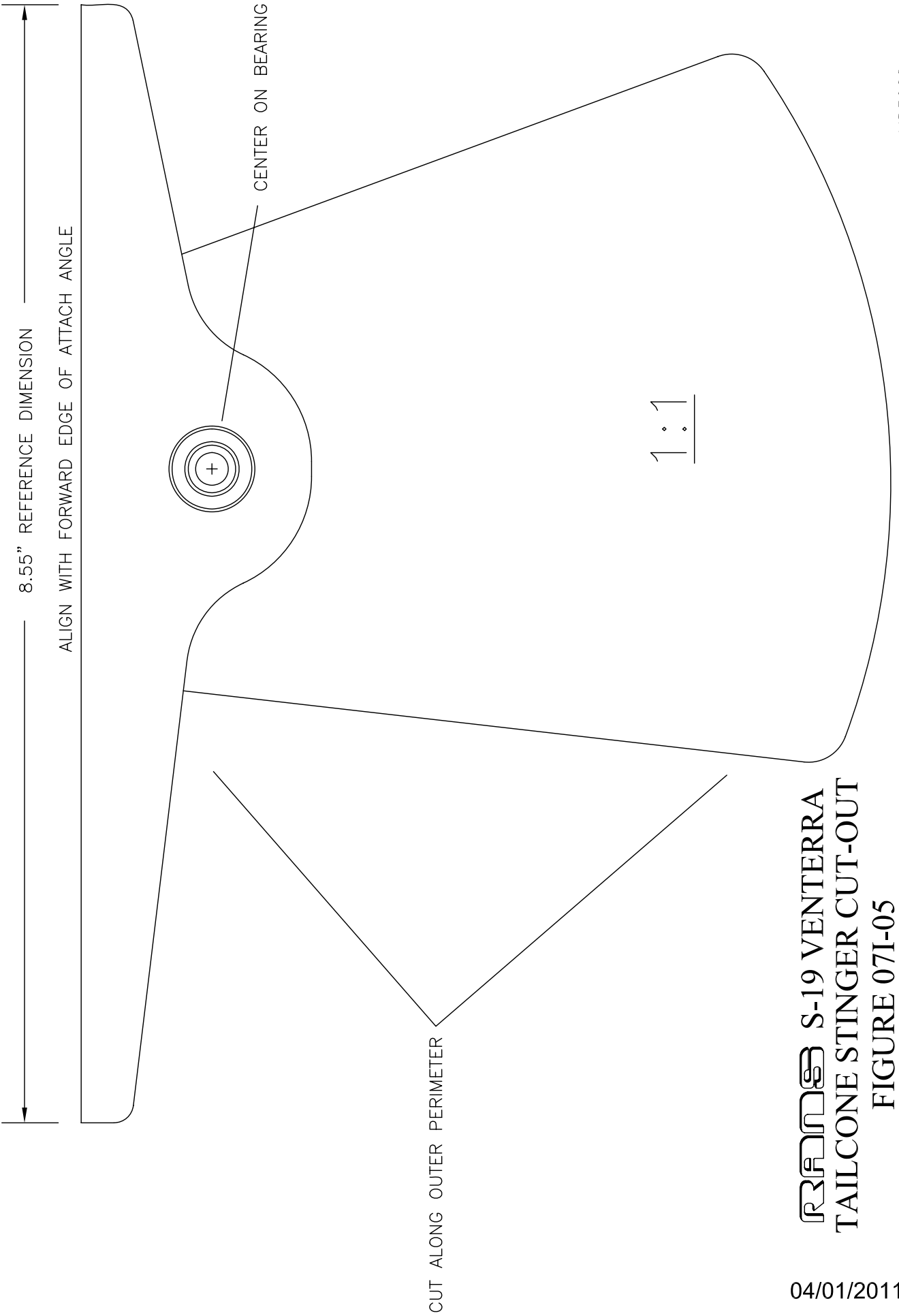
04/01/2011

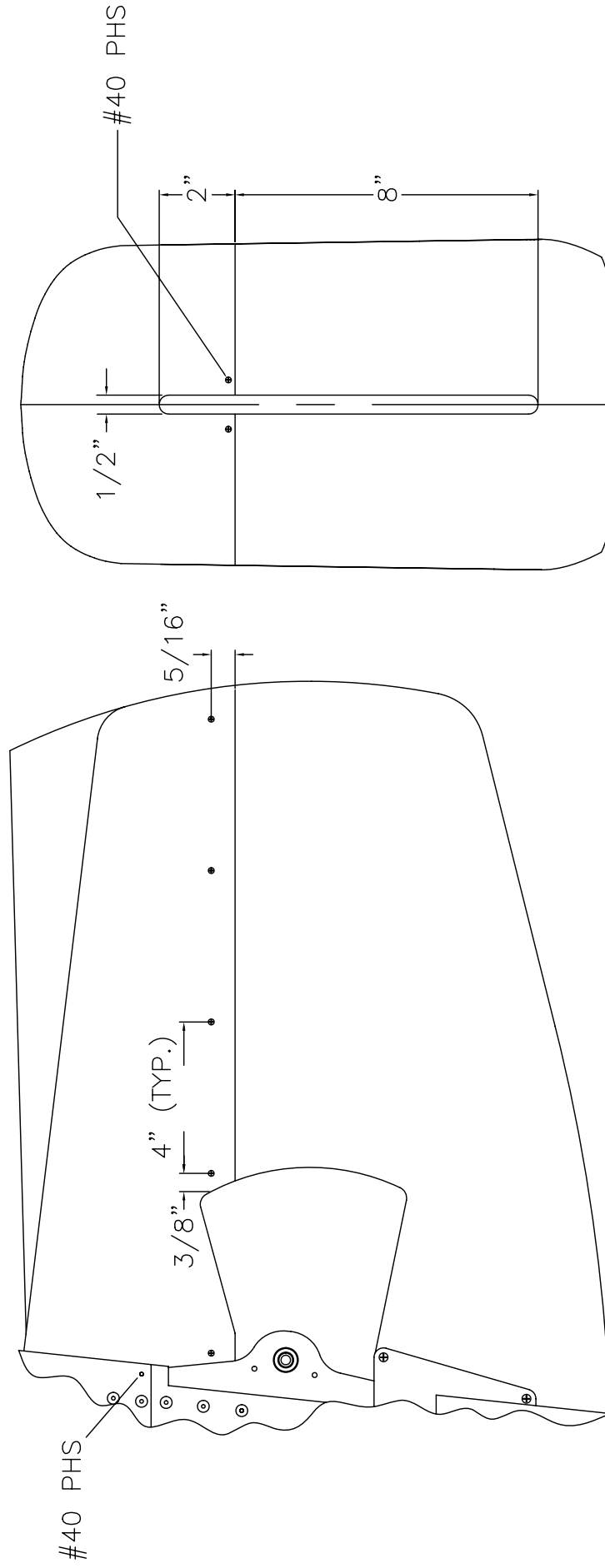


TOP VIEW OF LOWER STINGER

MD5477

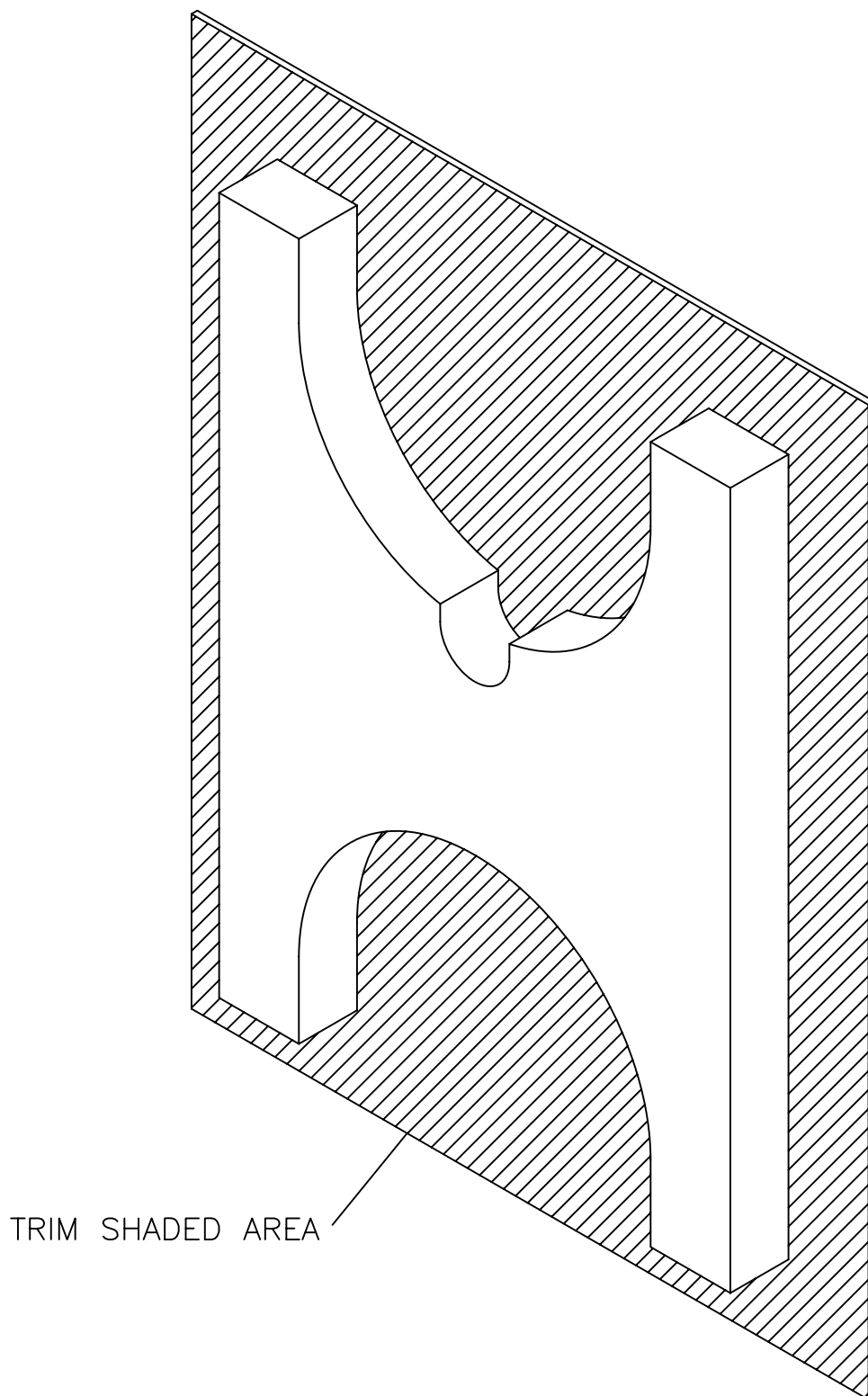
**RAMS S-19 VENTURA**  
**TAILCONE STINGER**  
**FIGURE 07I-03**





MD5218

# **RRR S-19 VENTERRA** **STINGER ATTACH** **FIGURE 07I-06**



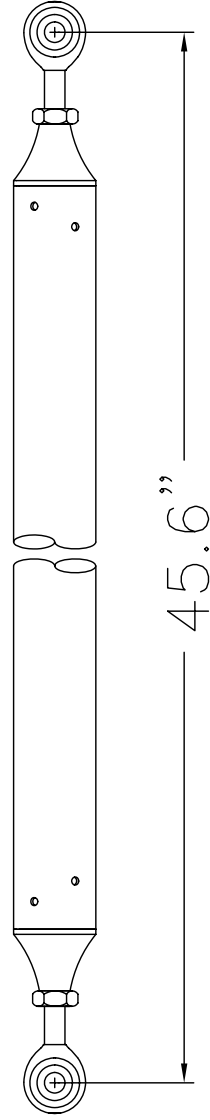
MD5478

**RANDS S-19 VENTERRA**  
**TAILCONE STINGER BULKHEAD TRIMMING**  
**FIGURE 07I-09**

04/01/2011

## 08 – FUSELAGE – SYSTEMS

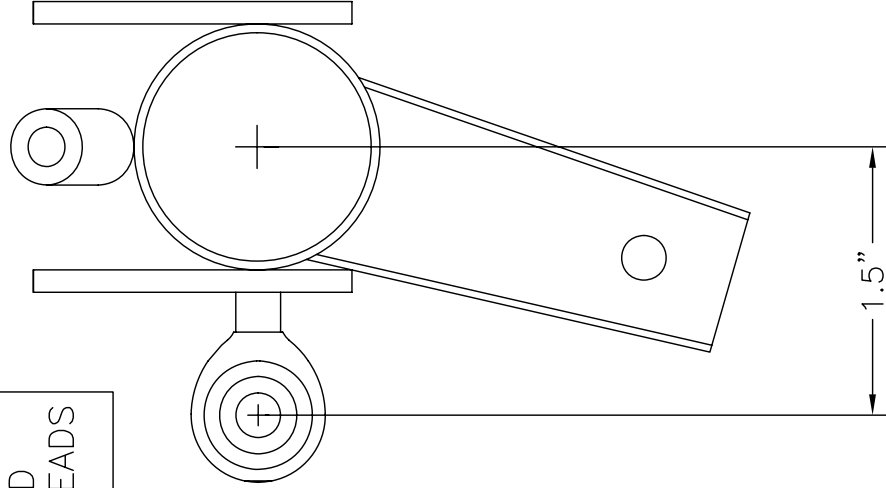
|                                                  |        |
|--------------------------------------------------|--------|
| FORWARD PUSH-PULL TUBE – STABILATOR .....        | 08-02  |
| CONTROL STICK TORQUE TUBE ROD END SETTING .....  | 08-03  |
| TYPICAL BELLCRANK ASSEMBLY .....                 | 08-09  |
| AFT PUSH-PULL TUBE – STABILATOR .....            | 08-12  |
| STABILATOR DOWN BUNGEE RIGGING INSTRUCTIONS..... | 08-17  |
| SEAT BELT ATTACH TANG MODIFICATION .....         | 08B-03 |
| FLAP RELEASE TUBE ASSEMBLY .....                 | 08B-08 |
| TRIM SERVO ATTACH .....                          | 08C-02 |
| TRIM TAB PUSH-PULL TUBE.....                     | 08C-10 |
| OPTIONAL VENT TEMPLATE .....                     | 08D-02 |
| OPTIONAL VENT TEMPLATE LOCATION .....            | 08D-03 |



CAUTION:  
ROD ENDS MUST BE ENGAGED  
A MINIMUM OF 10 FULL THREADS

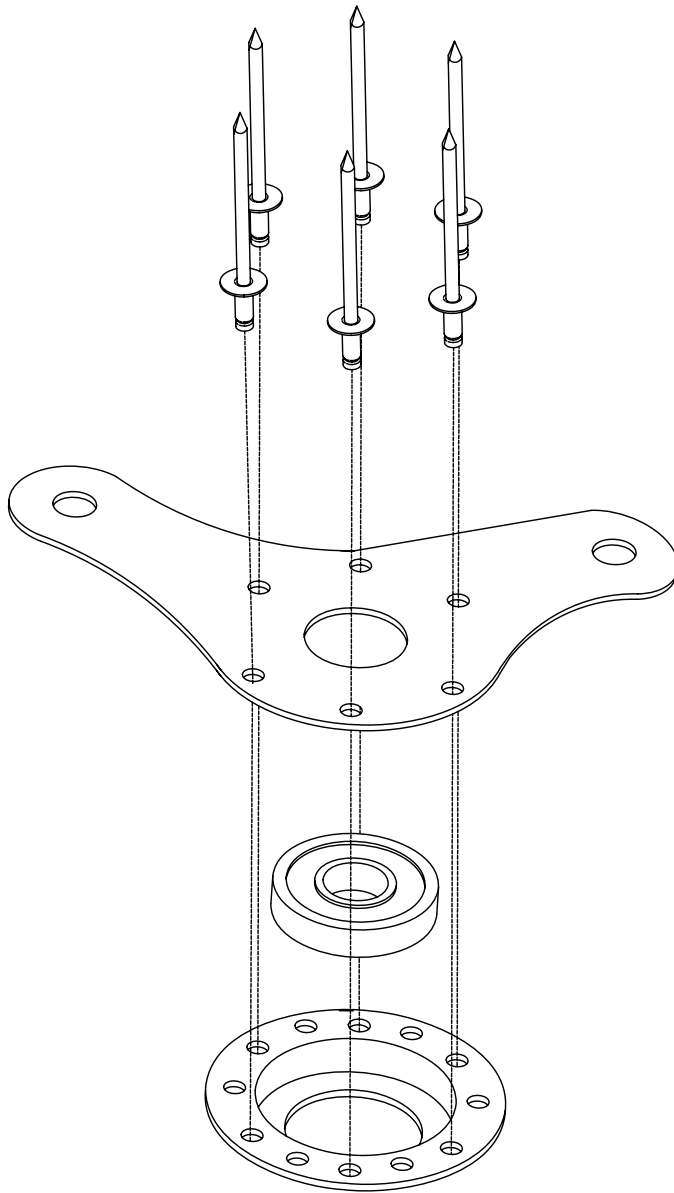
**VENTERRA S-19 VENTERRA**  
**FORWARD PUSH-PULL TUBE - STABILATOR**  
**FIGURE 08-02**

CAUTION:  
ROD ENDS MUST BE ENGAGED  
A MINIMUM OF 10 FULL THREADS



**RAVEN S-19 VENTERRA**  
**CONTROL STICK TORQUE TUBE ROD END SETTING**  
**FIGURE 08-03**

MD5080

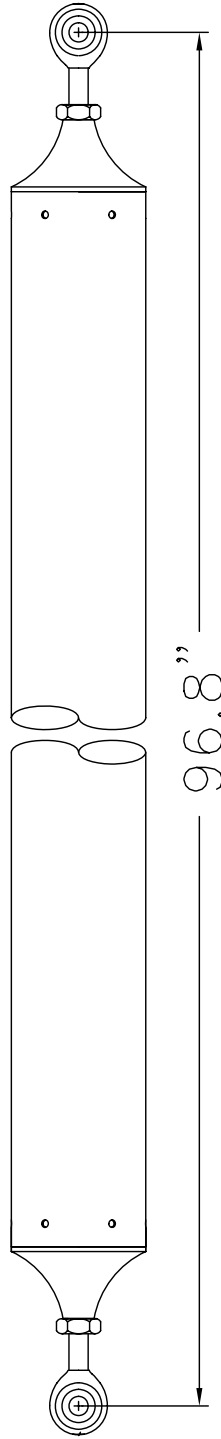


TYPICAL FOR ALL BELLCRANK ASSEMBLIES

**RANS S-19 VENTERRA**  
**TYPICAL BELLCRANK ASSEMBLY**  
**FIGURE 08-09**

MD4886

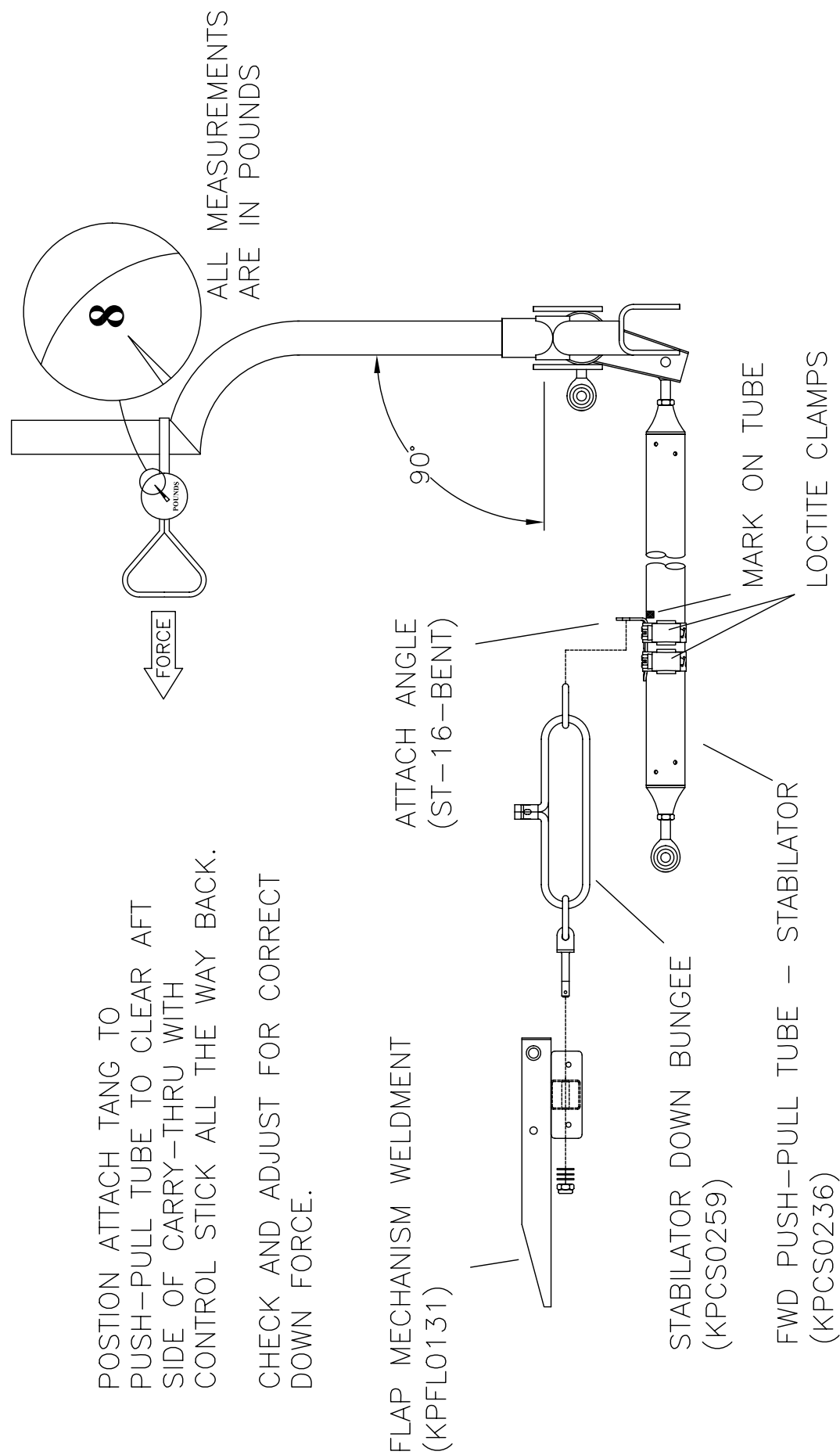
04/01/2011



CAUTION:  
ROD ENDS MUST BE ENGAGED  
A MINIMUM OF 10 FULL THREADS

**RRR S-19 VENTERRA**  
**AFT PUSH-PULL TUBE - STABILATOR**  
**FIGURE 08-12**

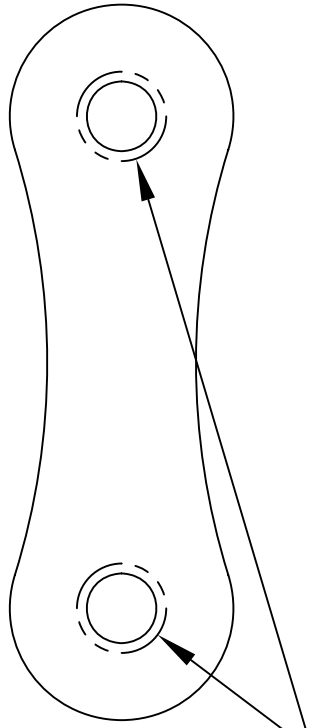
MD5080



MD5080

# **RRM S-19 VENTERRA** **STABILATOR DOWN BUNGEE RIGGING INSTRUCTIONS** **FIGURE 08-17**

HUMMERTANG  
(T12-HT6)

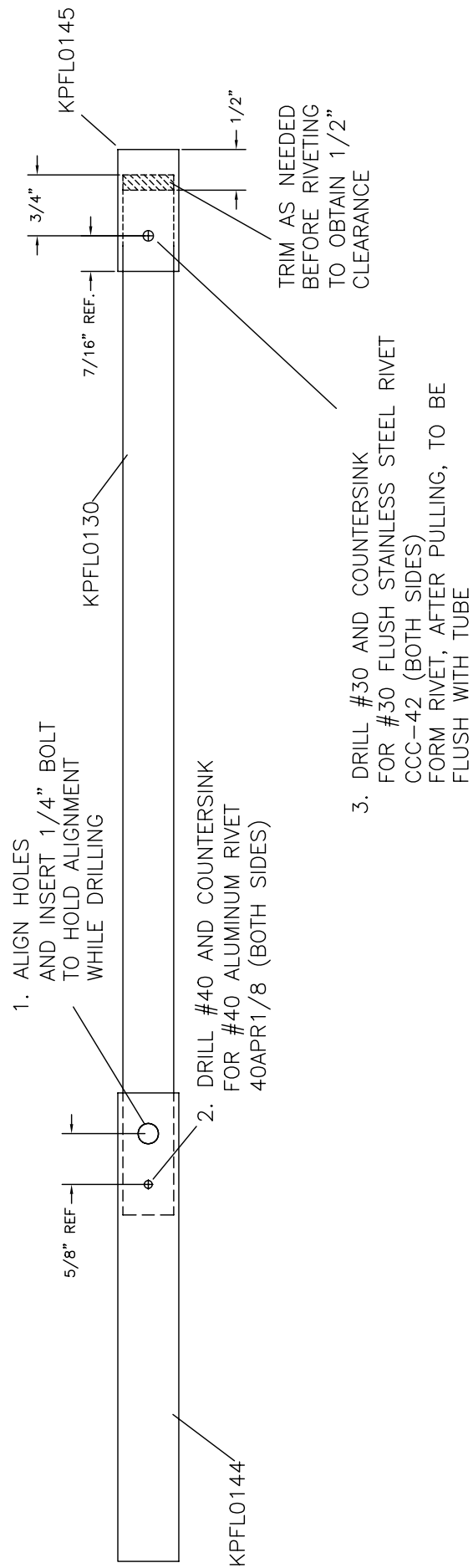


NOT TO SCALE

DRILL TO 1/4"  
AND DEBURR

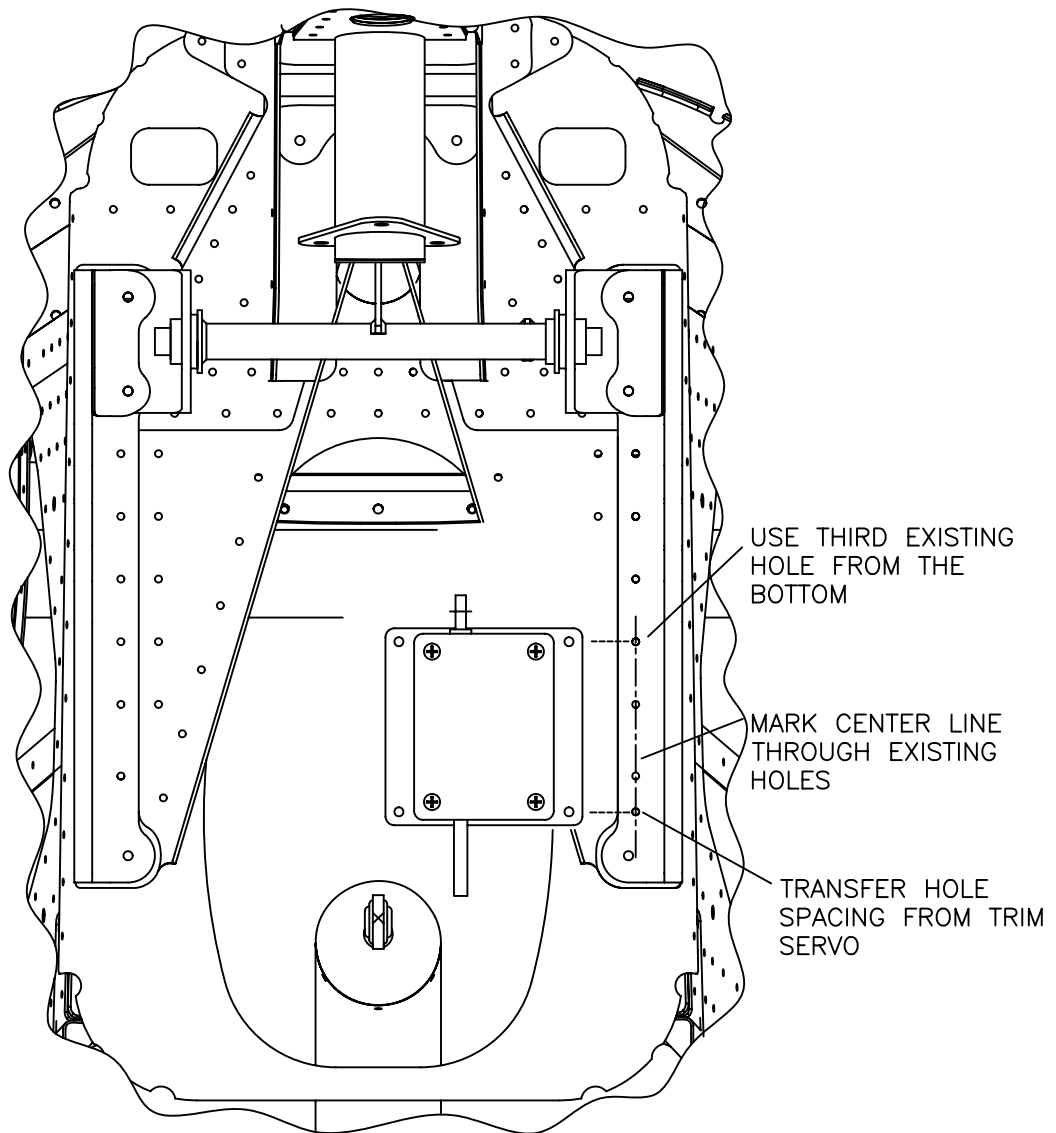
MD5222

**RRR** S-19 VENTERRA  
SEAT BELT ATTACH TANG MODIFICATION  
FIGURE 08B-03



MD5158

# **RRF S-19 VENTERRA** **FLAP RELEASE TUBE ASSEMBLY** **FIGURE 08B-08**



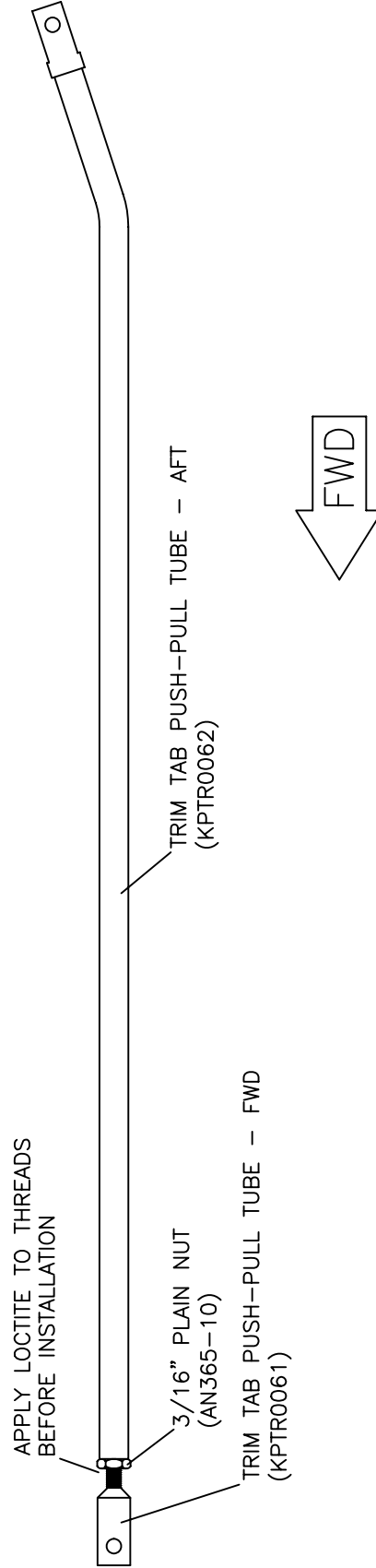
MD5219

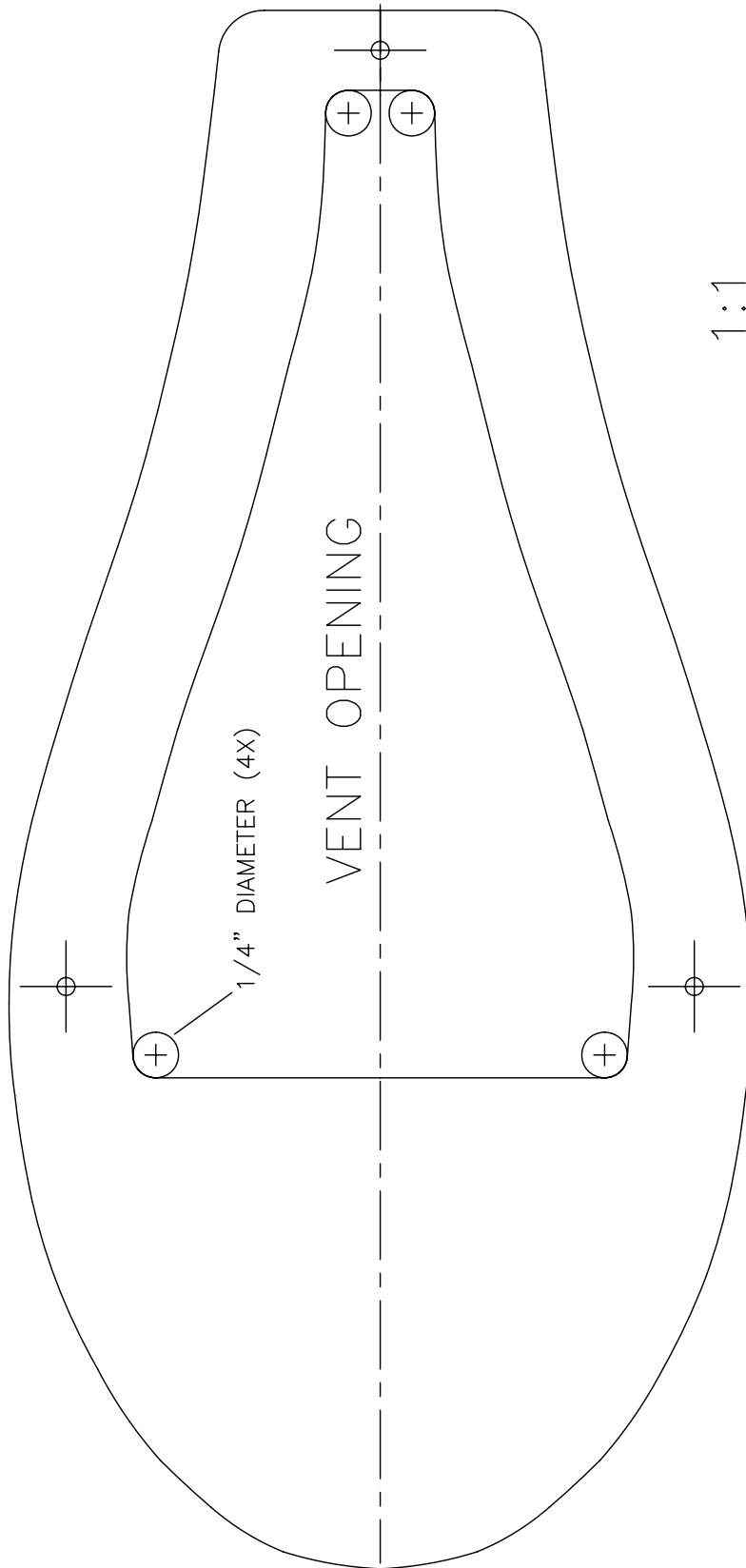
**RANS S-19 VENTERRA**  
**TRIM SERVO ATTACH**  
**FIGURE 08C-02**

04/01/2011

CAUTION:  
THREADS MUST BE ENGAGED  
A MINIMUM OF 10 FULL THREADS

ADJUST PUSH-PULL TUBE LENGTH SO  
ANTI-SERVO/TRIM TAB IS NEUTRAL WHEN  
SERVO, BELLCRANK, AND STABILATOR ARE IN  
NEUTRAL POSITION.

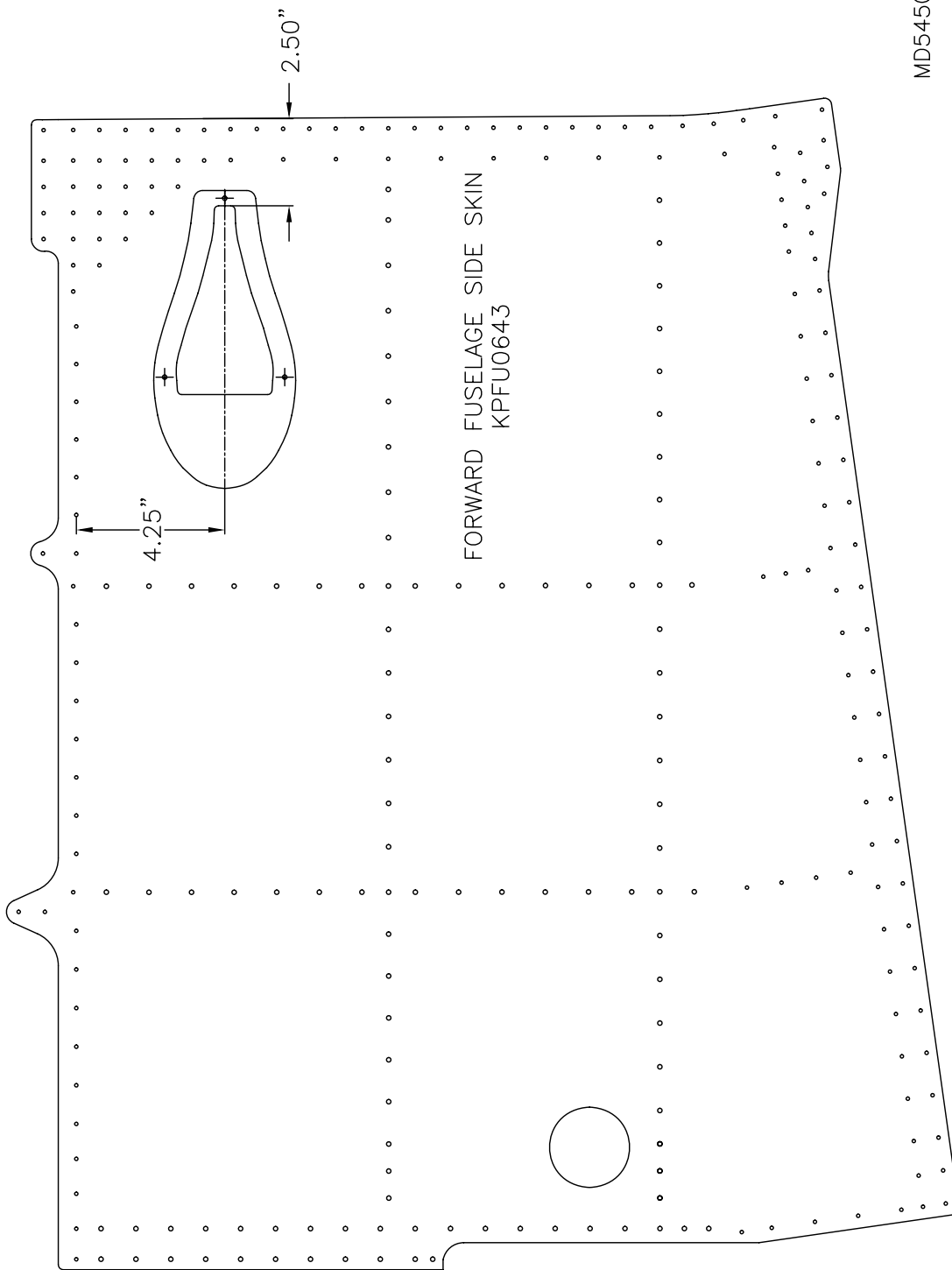




1:1

MD5449

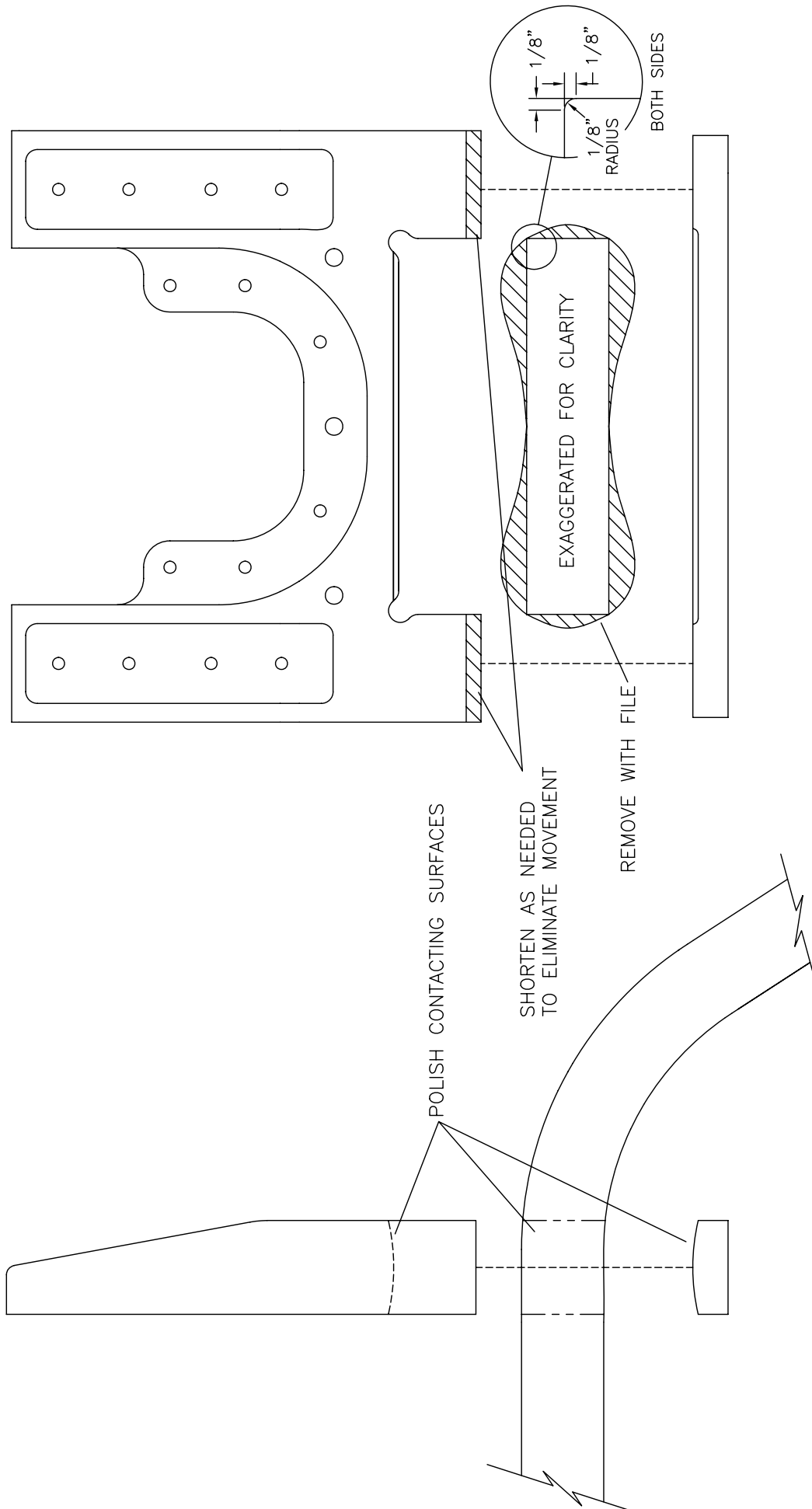
**RRR S-19 VENTERRA**  
**OPTIONAL VENT TEMPLATE**  
**FIGURE 08D-02**



**RRR S-19 VENTERRA**  
**OPTIONAL VENT TEMPLATE LOCATION**  
**FIGURE 08D-03**

## 09 – MAIN & NOSE GEAR

|                                                    |         |
|----------------------------------------------------|---------|
| LANDING GEAR INSTALLATION .....                    | 09-06   |
| LANDING GEAR INSTALLATION .....                    | 09-09   |
| LANDING GEAR INSTALLATION .....                    | 09-09A  |
| NOSE GEAR INSTALLATION.....                        | 09B-05  |
| NOSE GEAR ALIGNMENT .....                          | 09B-07  |
| SPRING WASHER MODIFICATION .....                   | 09B-15  |
| NOSE GEAR/FORK INSTALLATION.....                   | 09B-16  |
| FORK TENSION ADJUSTMENT.....                       | 09B-17  |
| NOSE WHEEL SPACER BUSHING MODIFICATION .....       | 09B-20  |
| MAIN GEAR AXLE MODIFICATION .....                  | 09C-03  |
| MAIN WHEEL PANT SPACER BLOCK.....                  | 09C-07  |
| MAIN WHEEL PANT CLEARANCE .....                    | 09C-07A |
| MAIN WHEEL PANT LEVELING.....                      | 09C-08  |
| MAIN WHEEL PANT SQUARING .....                     | 09C-09  |
| MAIN WHEEL PANT MODIFICATION .....                 | 09C-10  |
| MAIN WHEEL PANT – INNER BRACKET HOLE LOCATION..... | 09C-17  |
| MAIN WHEEL PANT DRILLING.....                      | 09C-18  |
| WHEEL PANT MODIFICATION .....                      | 09C-20  |
| NOSE GEAR TOW PLATE MODIFICATION.....              | 09D-03  |
| NOSE WHEEL PANT TRIMMING .....                     | 09D-04  |
| NOSE WHEEL PANT TRIMMING .....                     | 09D-07  |
| NOSE WHEEL PANT DRILLING.....                      | 09D-09  |
| BELLY FAIRING MODIFICATION.....                    | 09E-04  |
| NOSE GEAR TOW PLATE MODIFICATION.....              | 09F-02  |

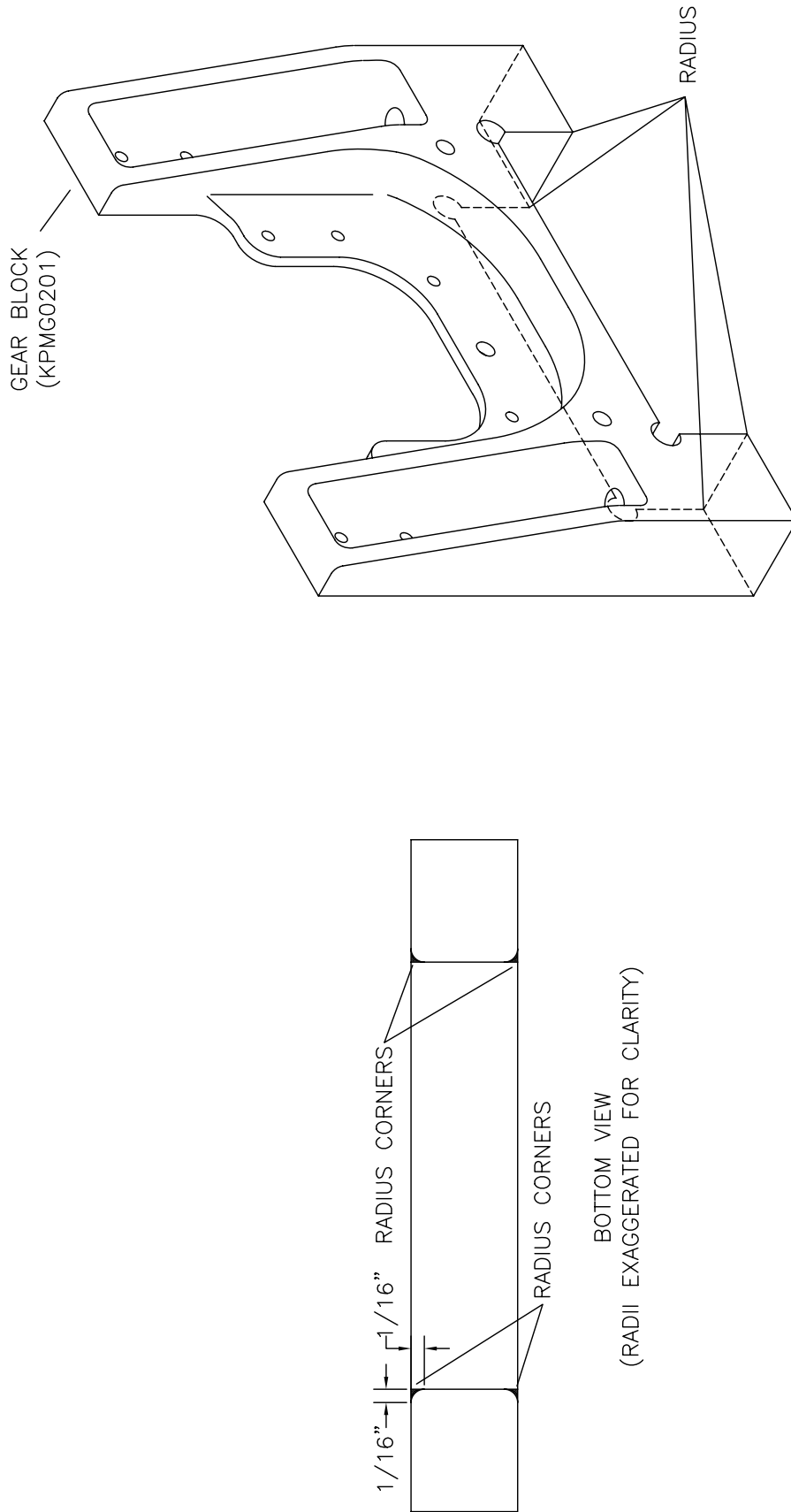


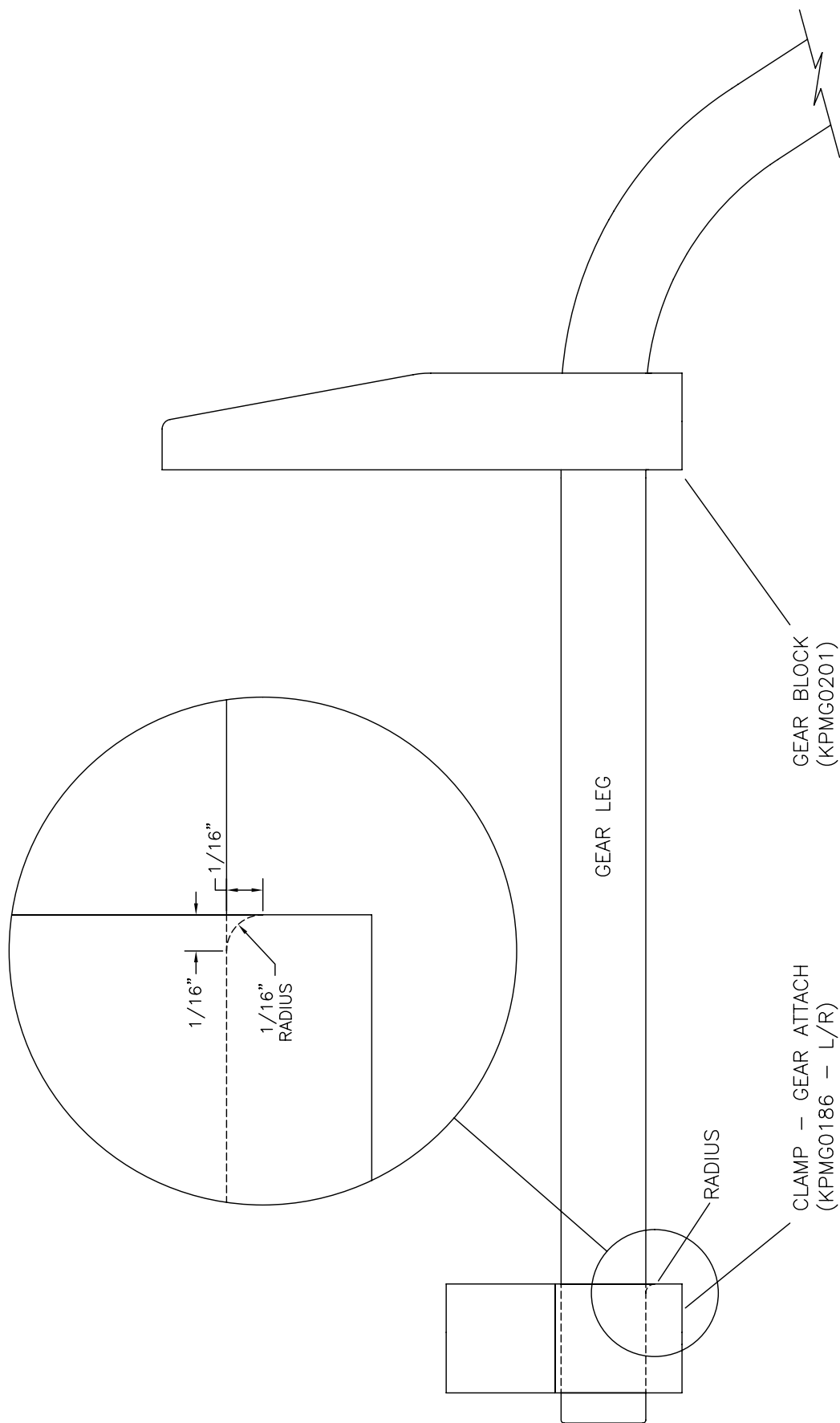
MD5076

**RRAMES S-19 VENTERRA**  
**LANDING GEAR INSTALLATION**  
**FIGURE 09-06**

# RRM S-19 VENTERRA LANDING GEAR INSTALLATION FIGURE 09-09

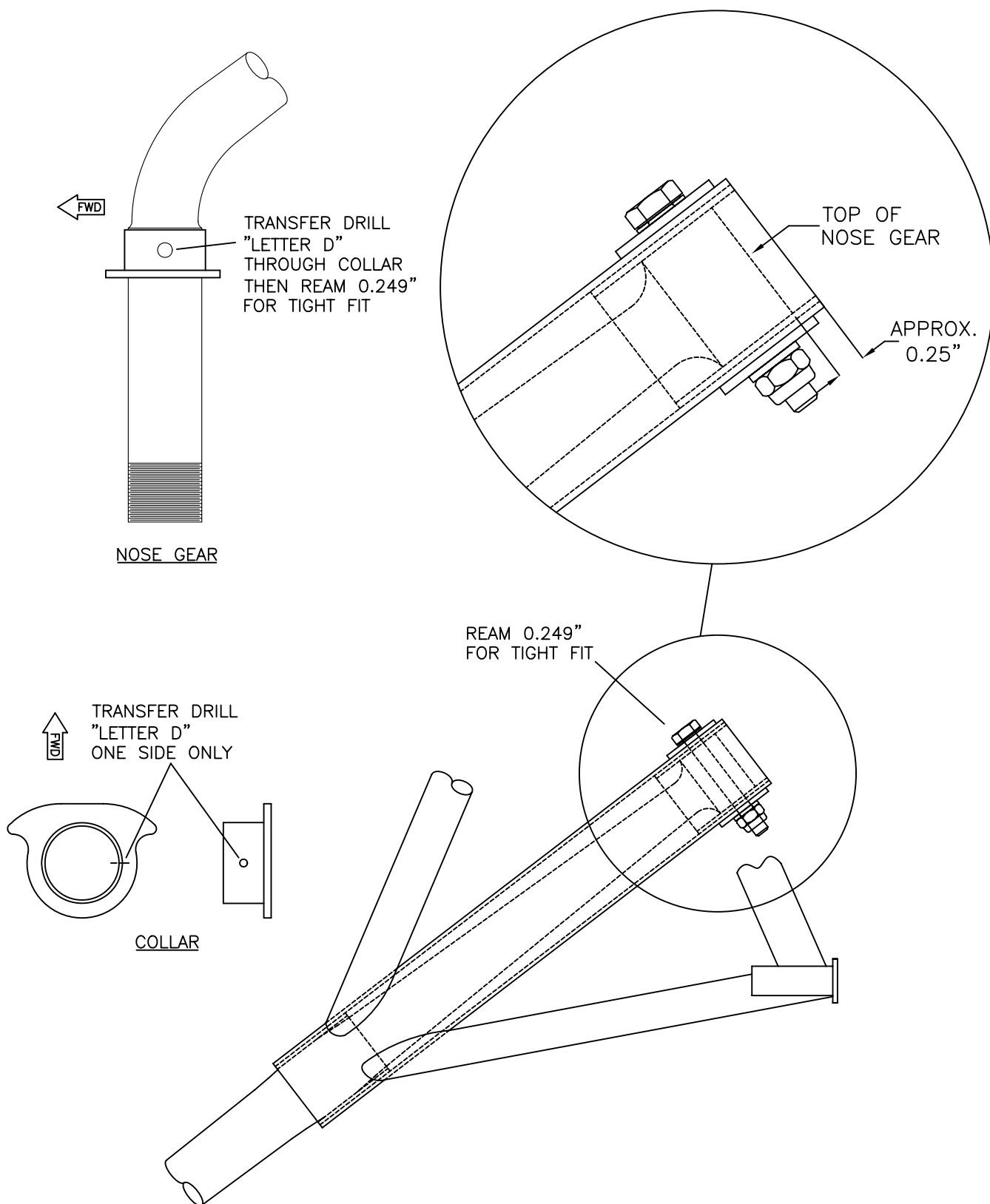
04/01/2011





MD5077

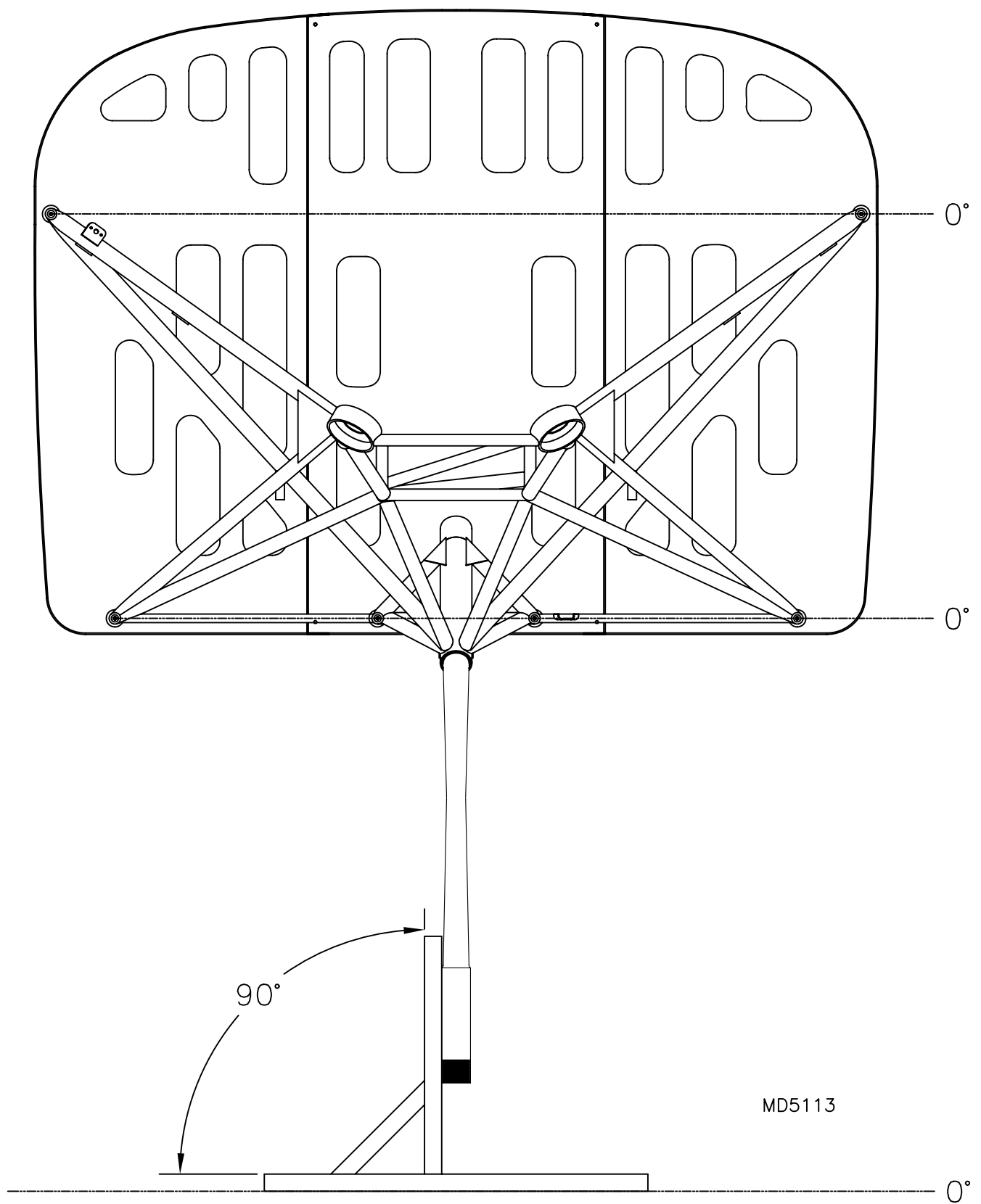
**RRM S-19 VENTERRA**  
**LANDING GEAR INSTALLATION**  
**FIGURE 09-09A**



MD5112

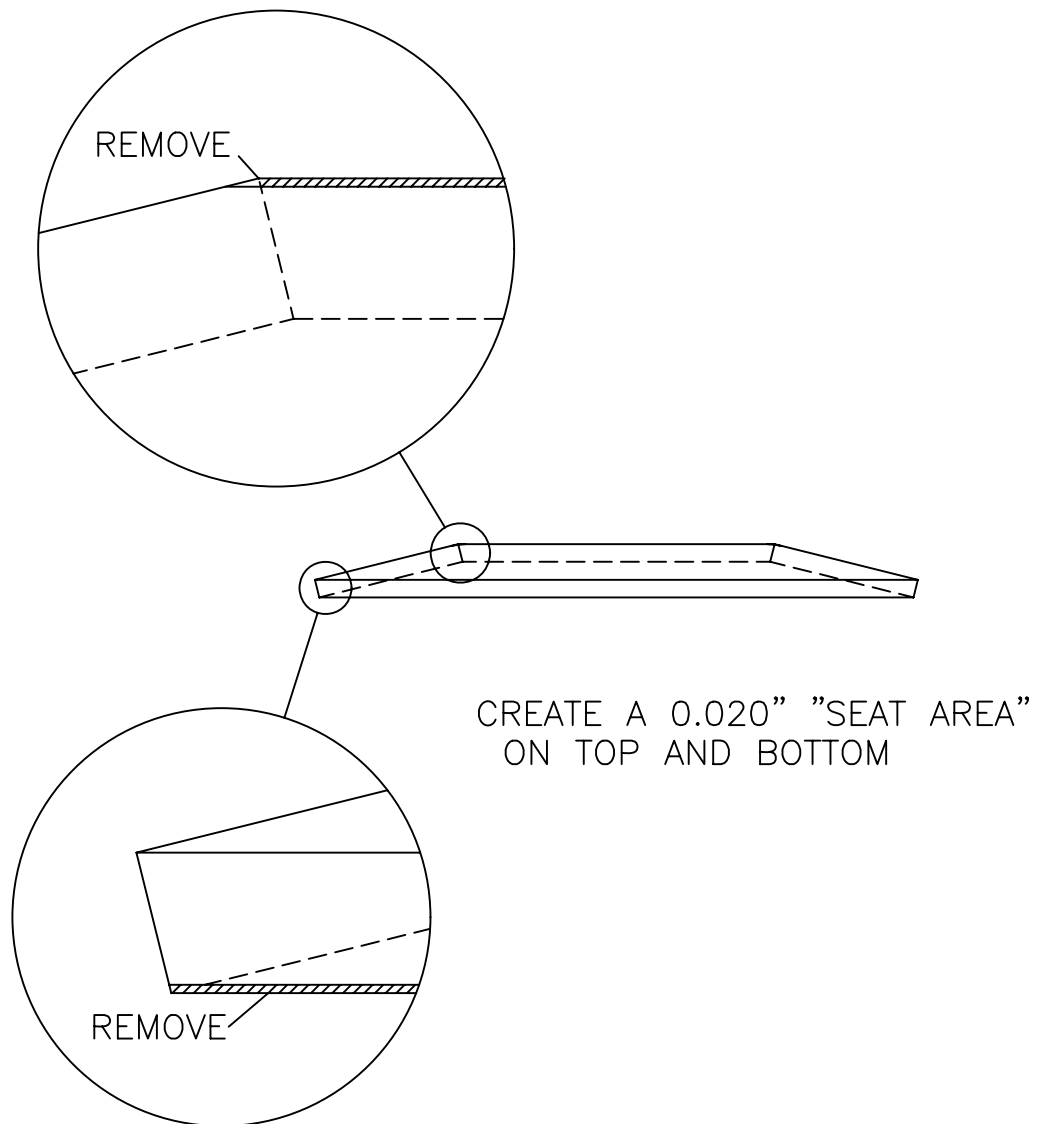
**RANS S-19**  
**NOSE GEAR INSTALLATION**  
**FIGURE 09B-05**

04/01/2011



**RANS S-19 VENTERRA**  
**NOSE GEAR ALIGNMENT**  
**FIGURE 09B-07**

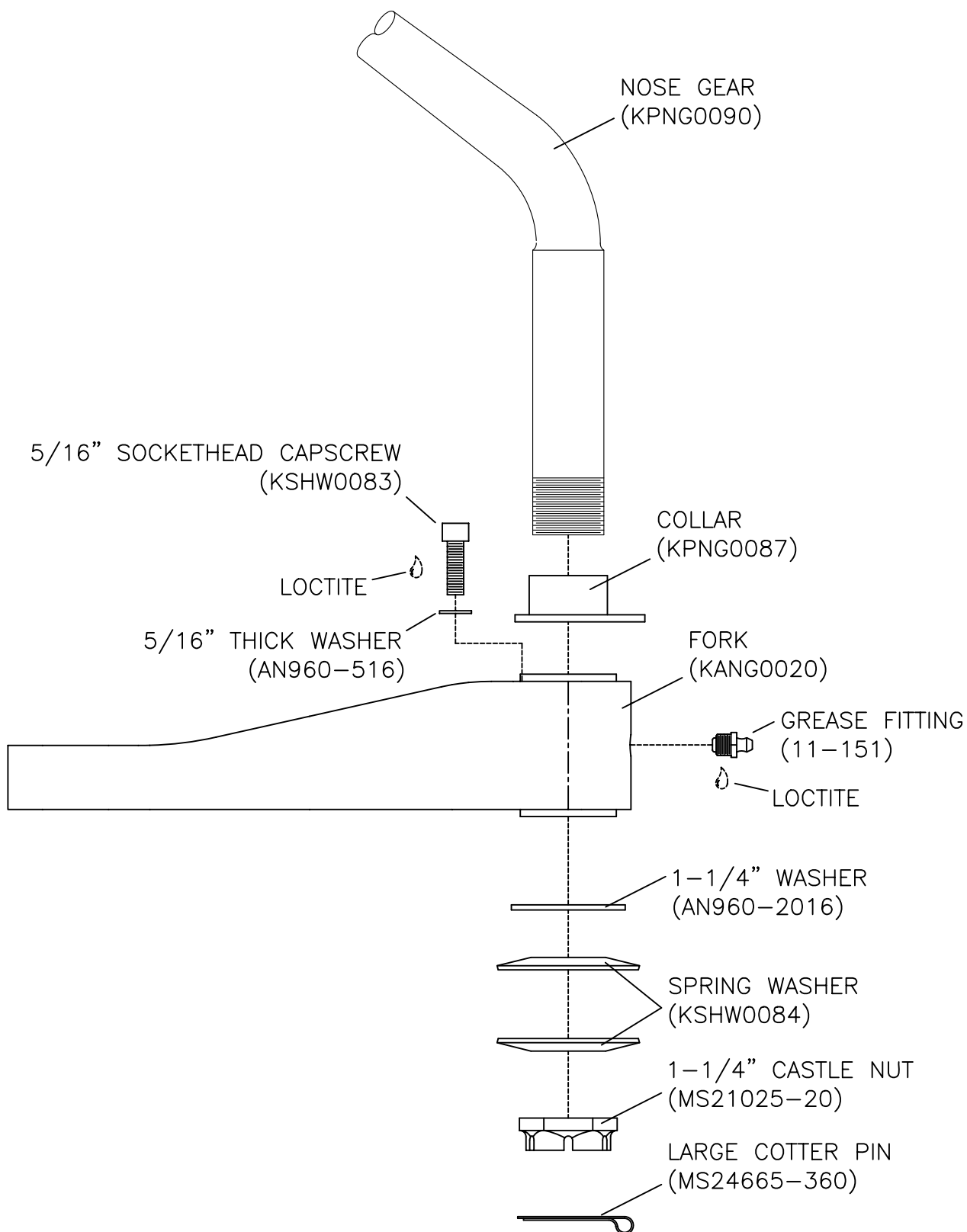
04/01/2011



**RANDS S-19 VENTERRA**  
**SPRING WASHER MODIFICATION**  
**FIGURE 09B-15**

MD5220

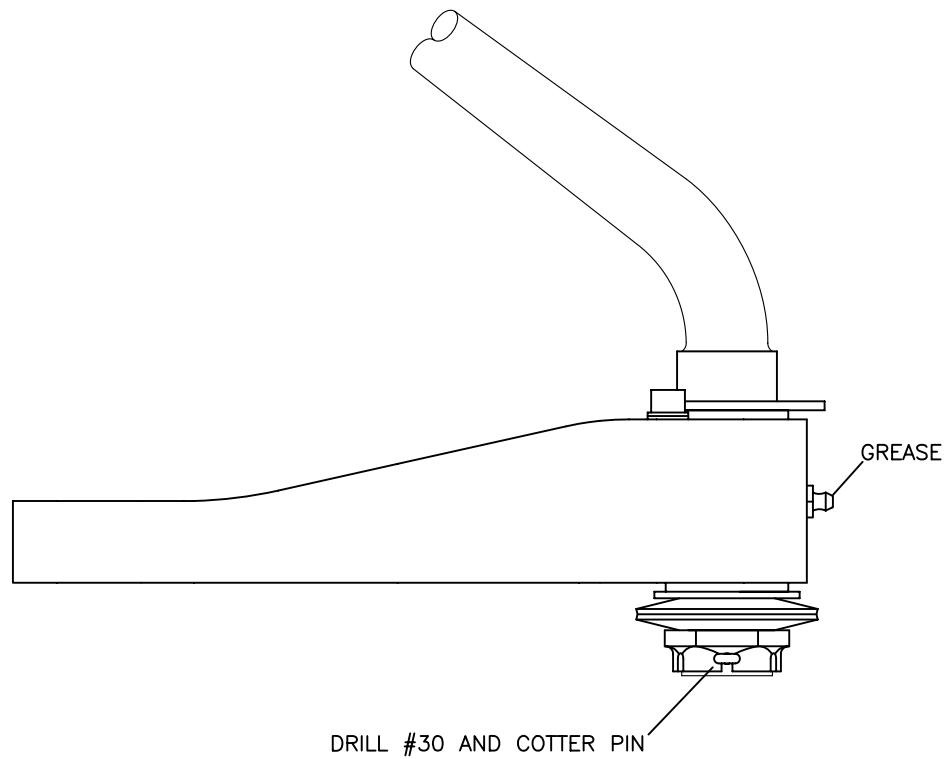
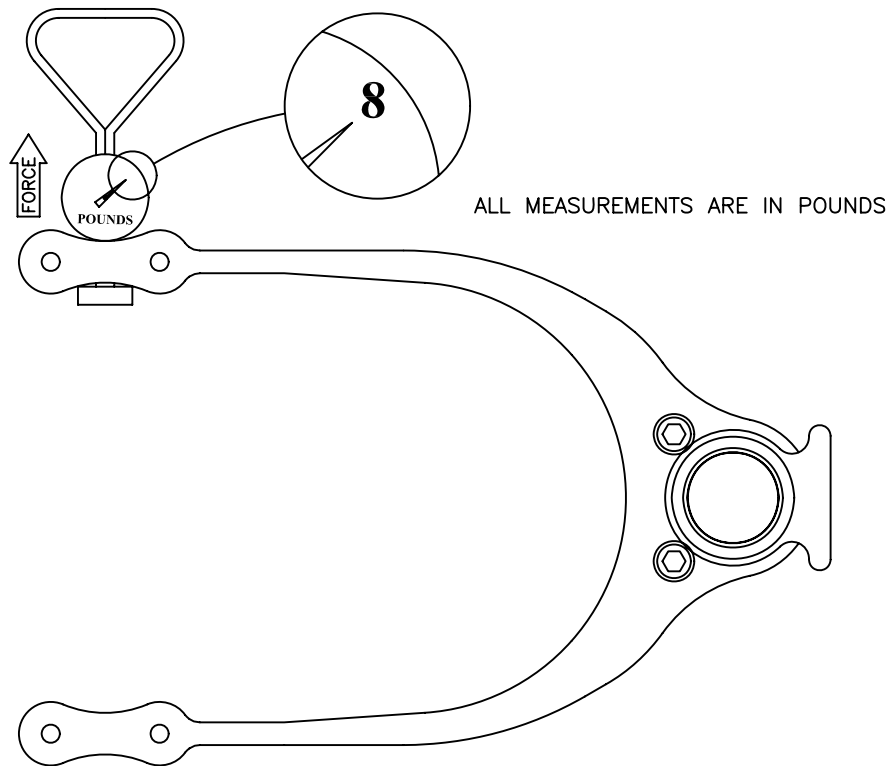
04/01/2011



MD5086

**RANS S-19 VENTERRA**  
**NOSE GEAR/FORK INSTALLATION**  
**FIGURE 09B-16**

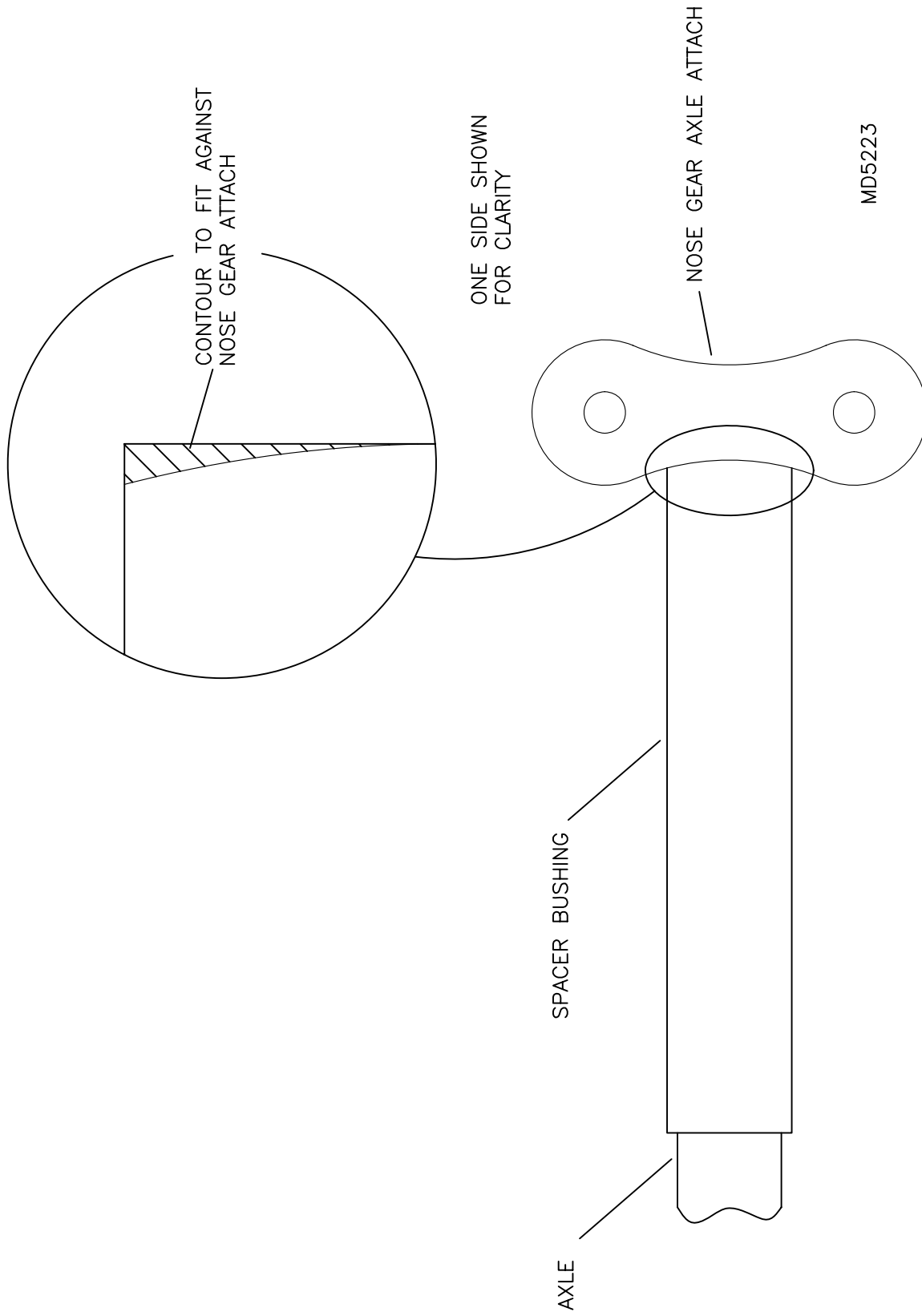
04/01/2011



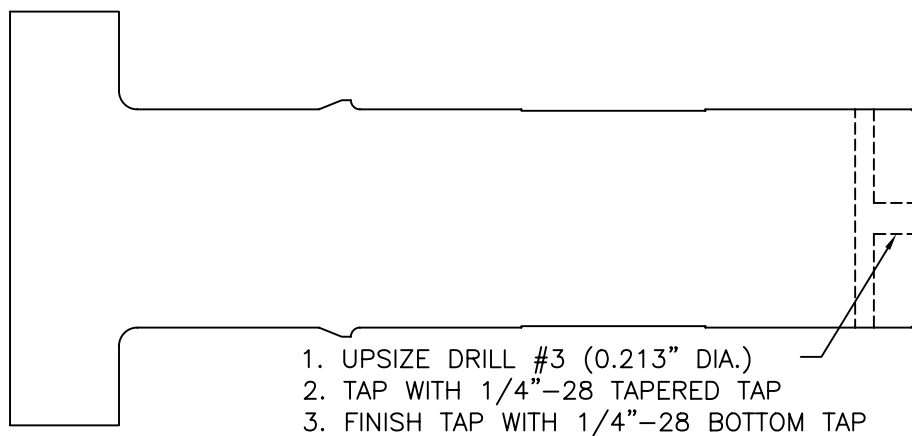
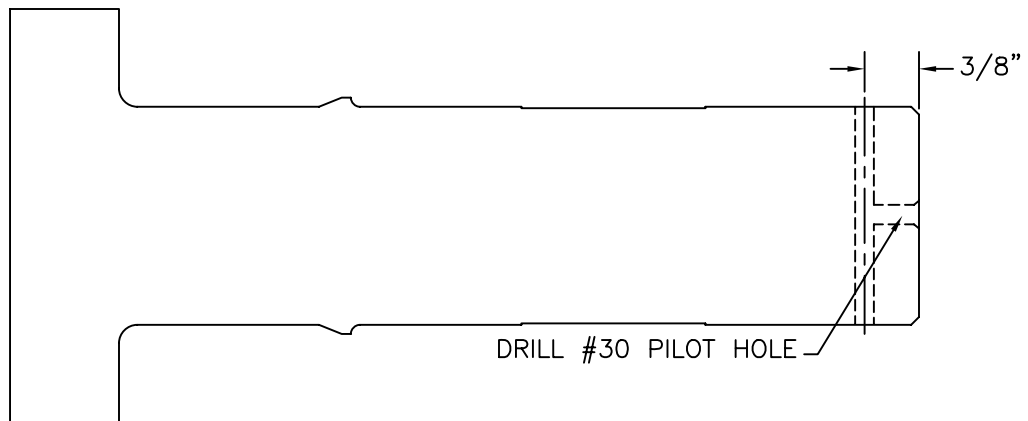
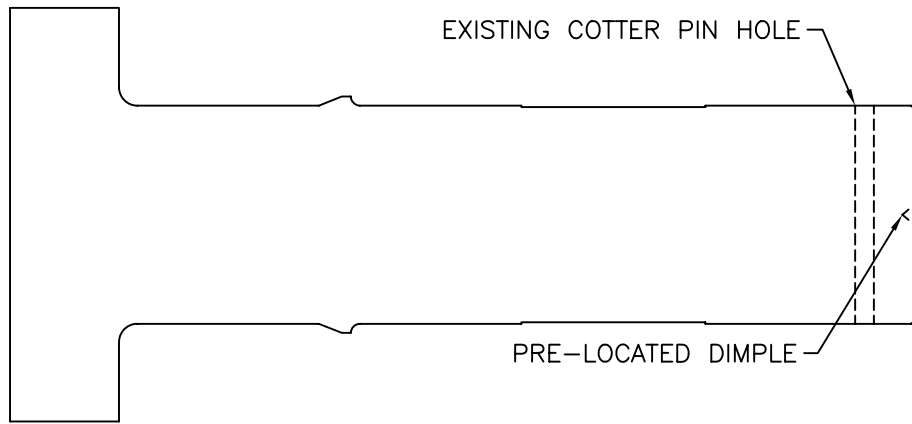
MD5111

# **RANS S-19 VENTERRA** **FORK TENSION ADJUSTMENT** **FIGURE 09B-17**

04/01/2011



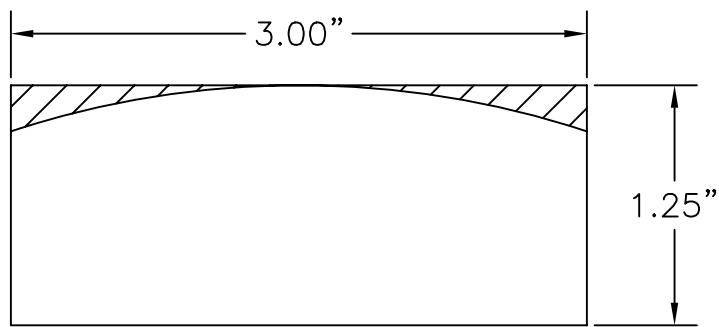
**RRR S-19 VENTERRA**  
**NOSE WHEEL SPACER BUSHING MODIFICATION**  
**FIGURE 09B-20**



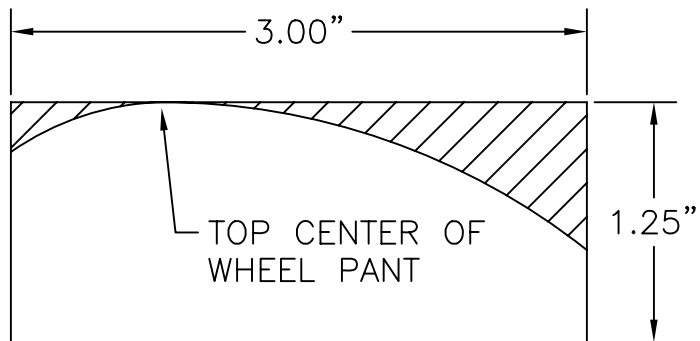
MD5489

**RAND S-19 VENTERRA**  
**MAIN GEAR AXLE MODIFICATION**  
**FIGURE 09C-03**

04/01/2011



SIDE



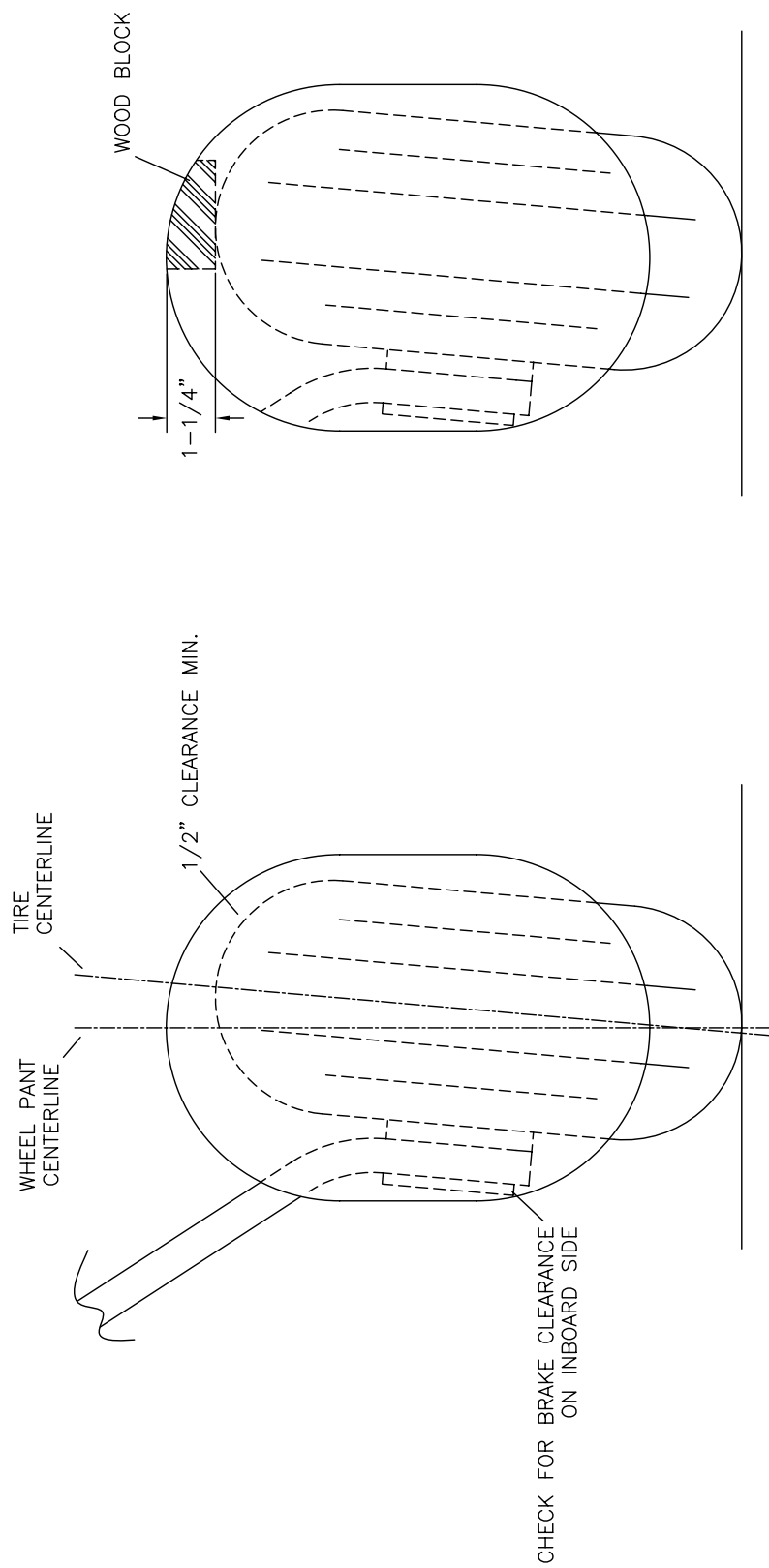
FRONT

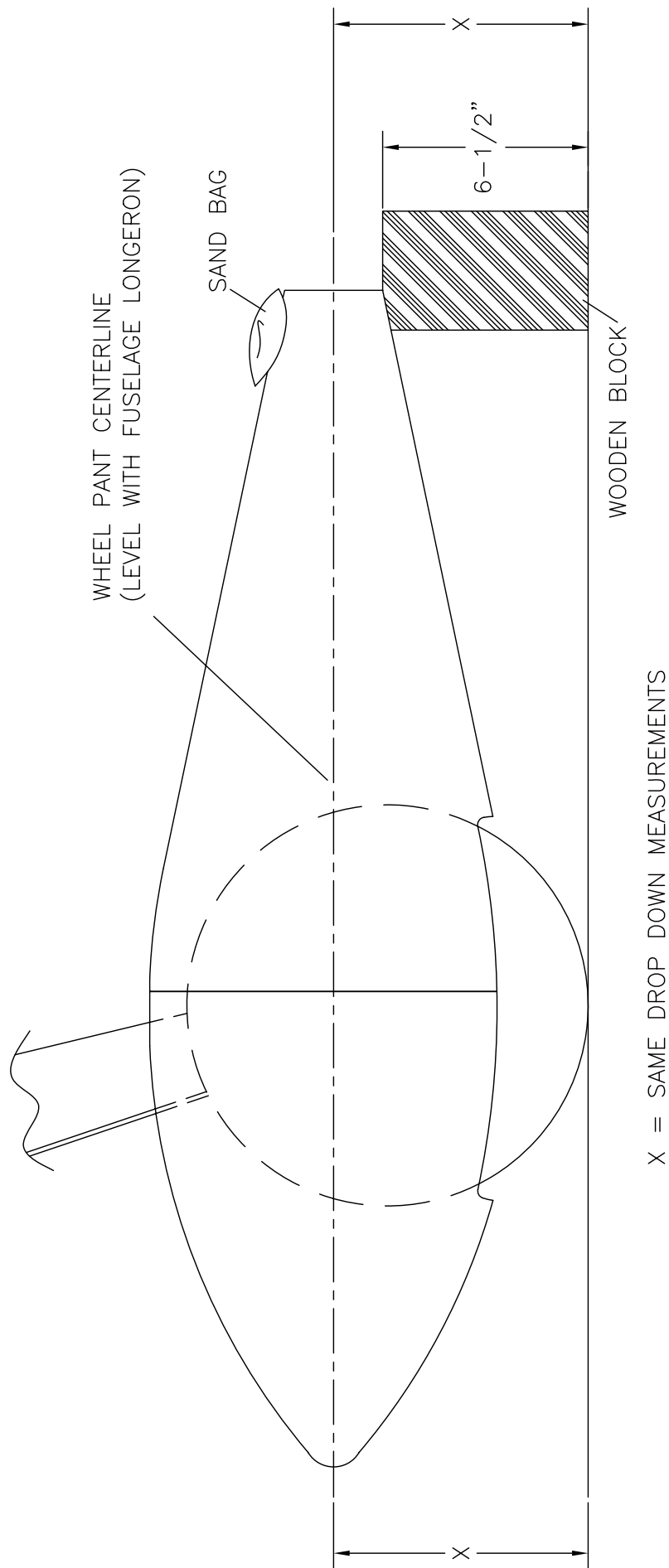
PROFILE BLOCK TO MATCH  
WHEEL PANT PROFILE

MD5488

**RANDS** S-19 VENTERRA  
MAIN WHEEL PANT SPACER BLOCK  
FIGURE 09C-07

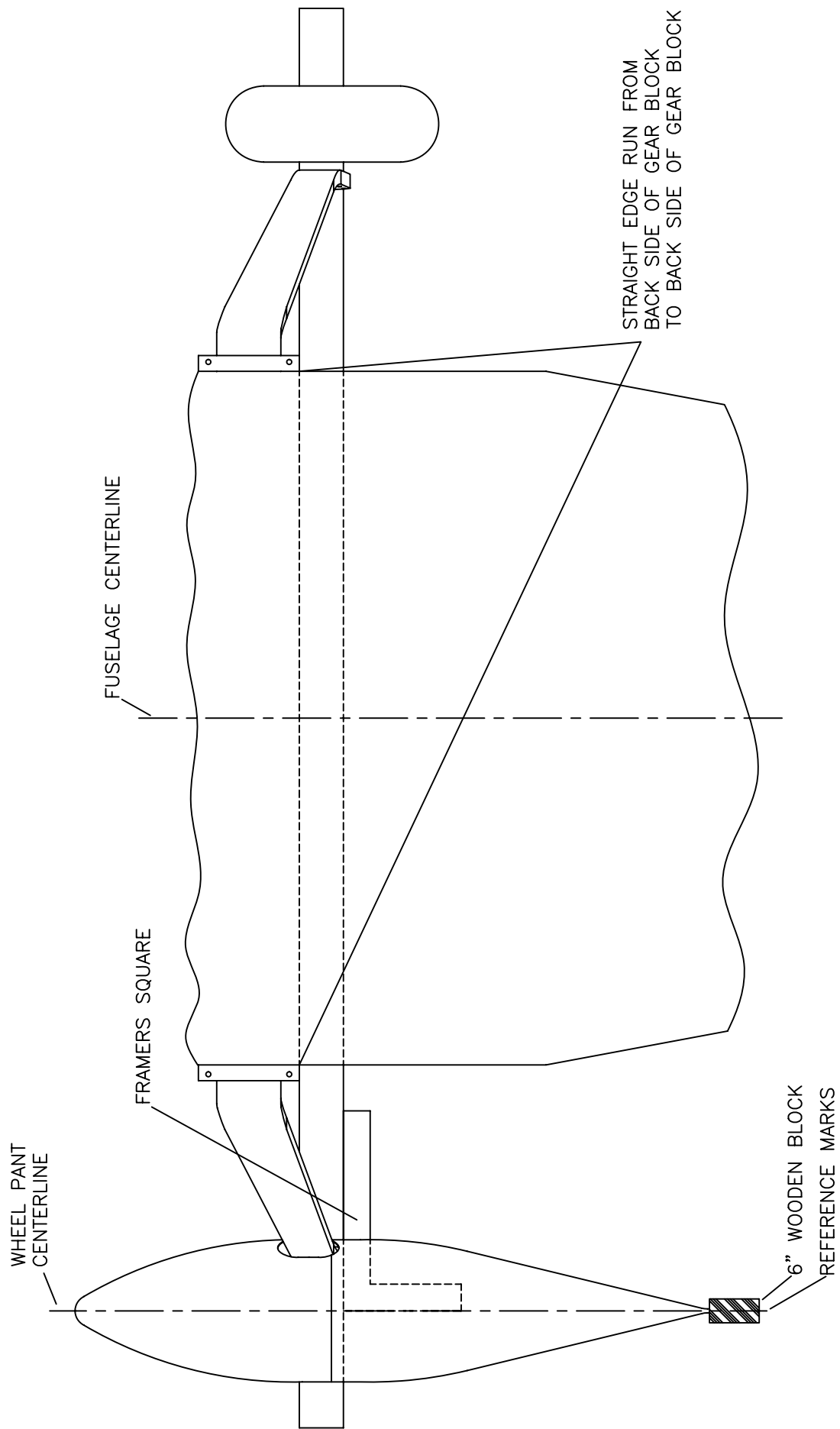
04/01/2011





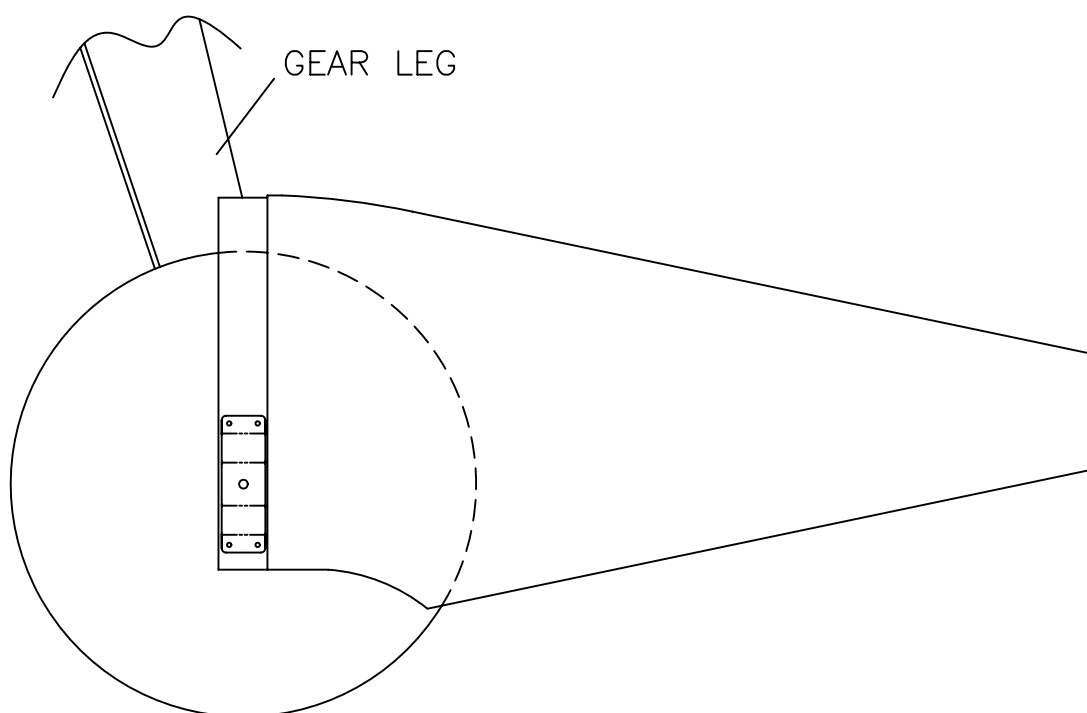
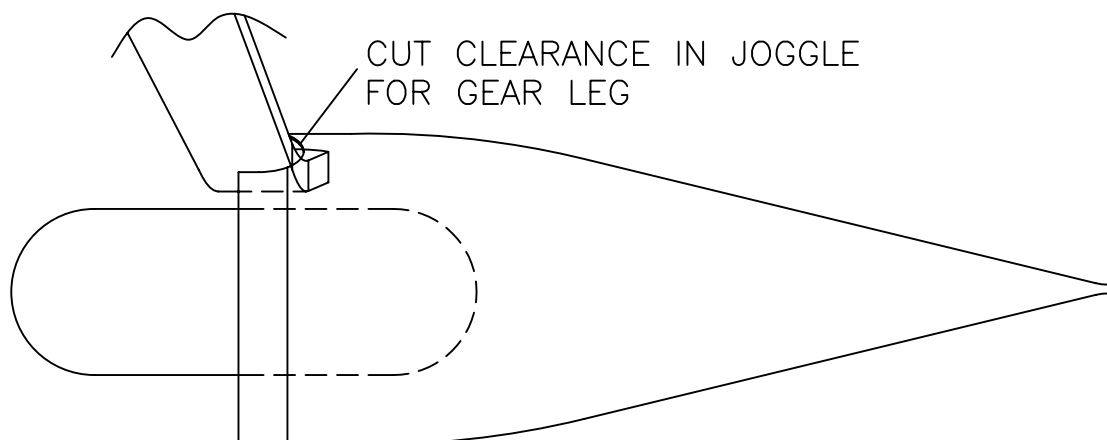
MD5492

**RRM S-19 VENTERRA**  
**MAIN WHEEL PANT LEVELING**  
**FIGURE 09C-08**



MD5491

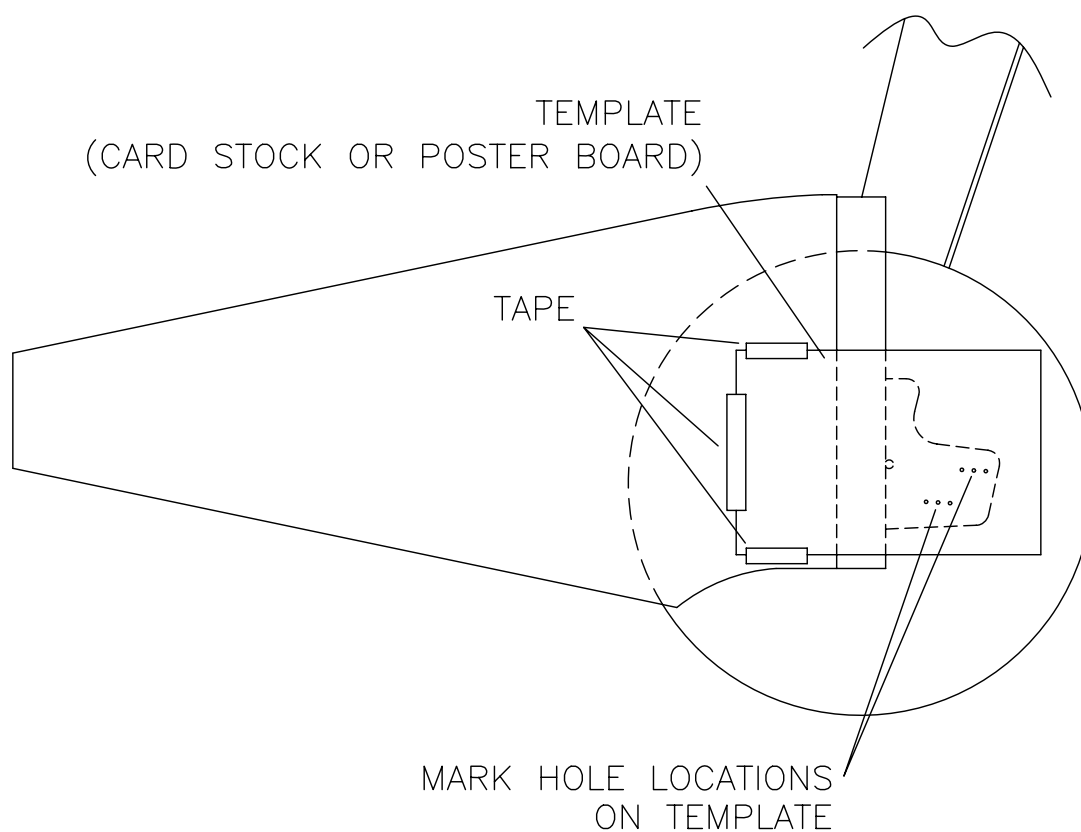
**RRM S-19 VENTERRA**  
**MAIN WHEEL PANT SQUARING**  
**FIGURE 09C-09**



MD5490

**RANS S-19 VENTERRA**  
**MAIN WHEEL PANT MODIFICATION**  
**FIGURE 09C-10**

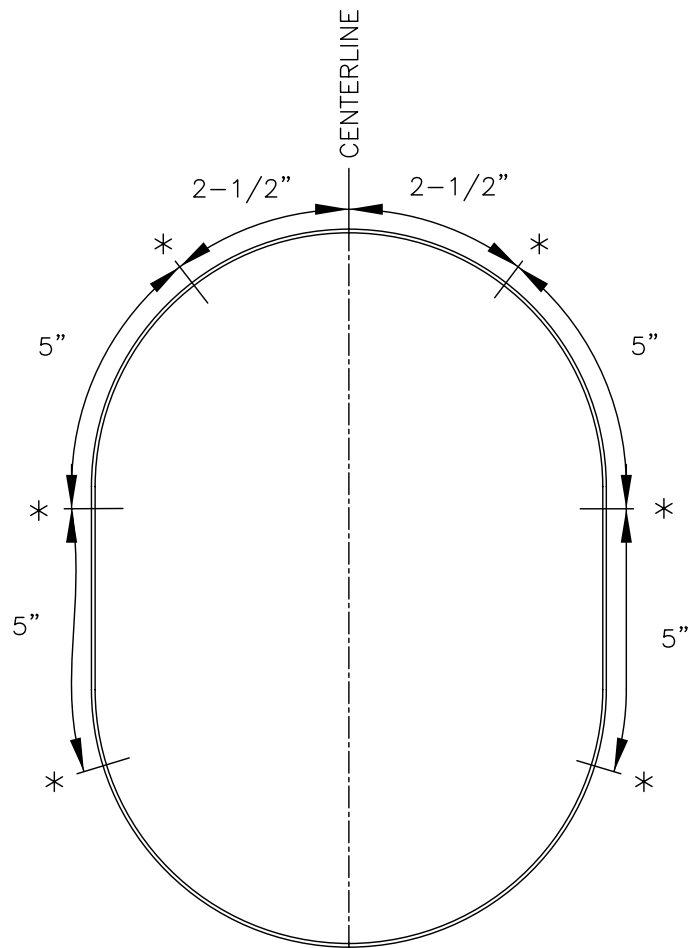
04/01/2011



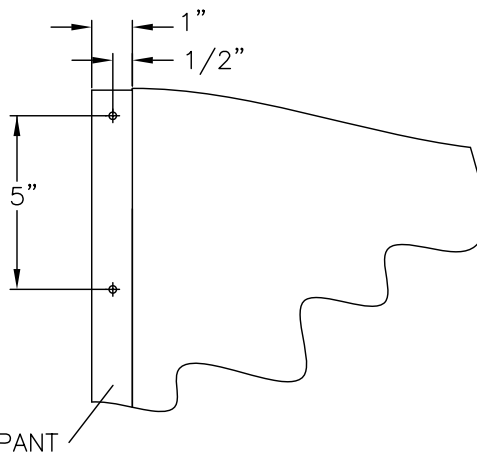
**RANS S-19 VENTERRA**  
**MAIN WHEEL PANT**  
**INNER BRACKET HOLE LOCATION**  
**FIGURE 09C-17**

MD5494

04/01/2011



\* DRILL THROUGH AT THESE 6 LOCATIONS



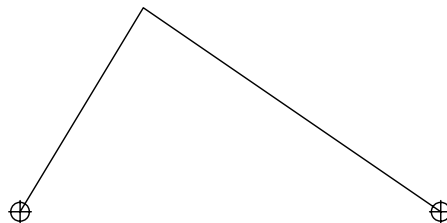
JOGGLE ON AFT WHEEL PANT

# **RANS S-19 VENTERRA** **MAIN WHEEL PANT DRILLING** **FIGURE 09C-18**

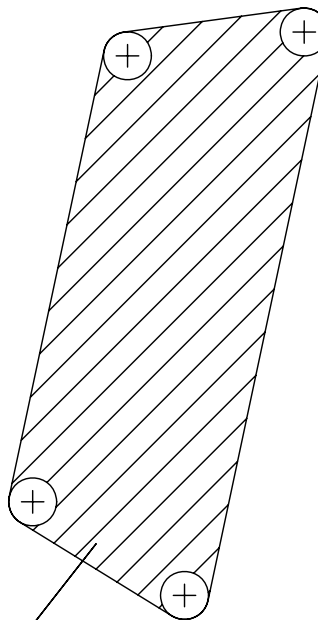
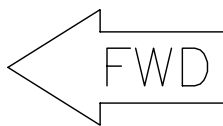
MD4897

04/01/2011

CENTER ON  
AFT WHEEL PANT  
ATTACH HOLES.  
CUT AS SHOWN



DRILL 1/4"  
EACH CORNER



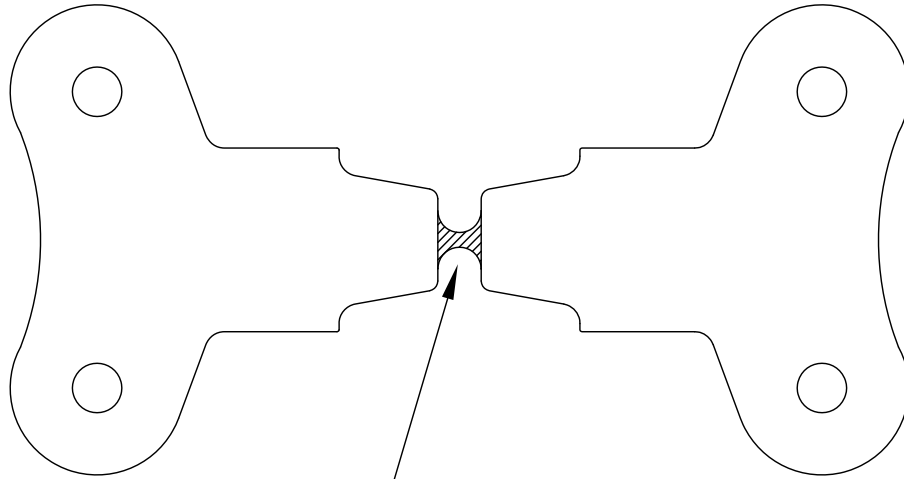
USE DREMEL  
TO CUT OUT MATERIAL

1:1 TEMPLATE

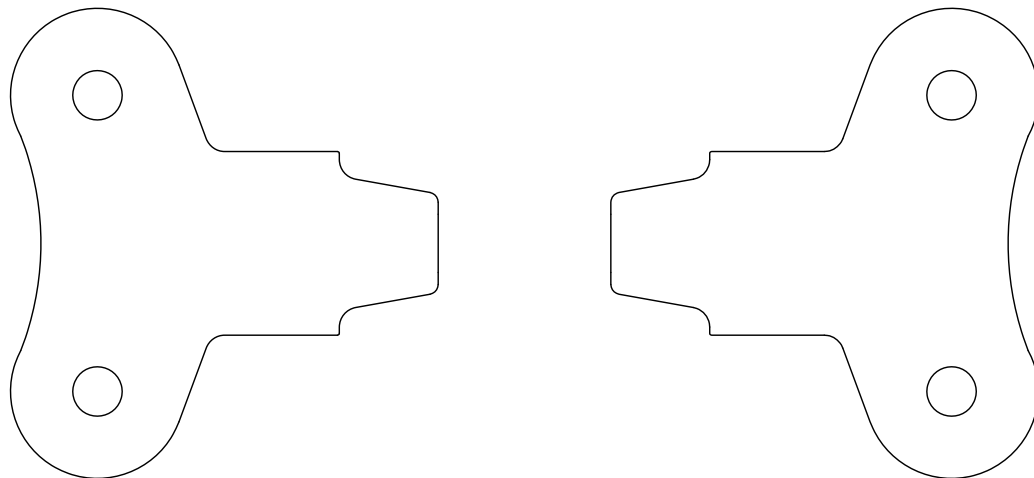
MD5514

**RANS S-19 VENTERRA**  
**WHEEL PANT MODIFICATION**  
**FIGURE 09C-20**

04/01/2011



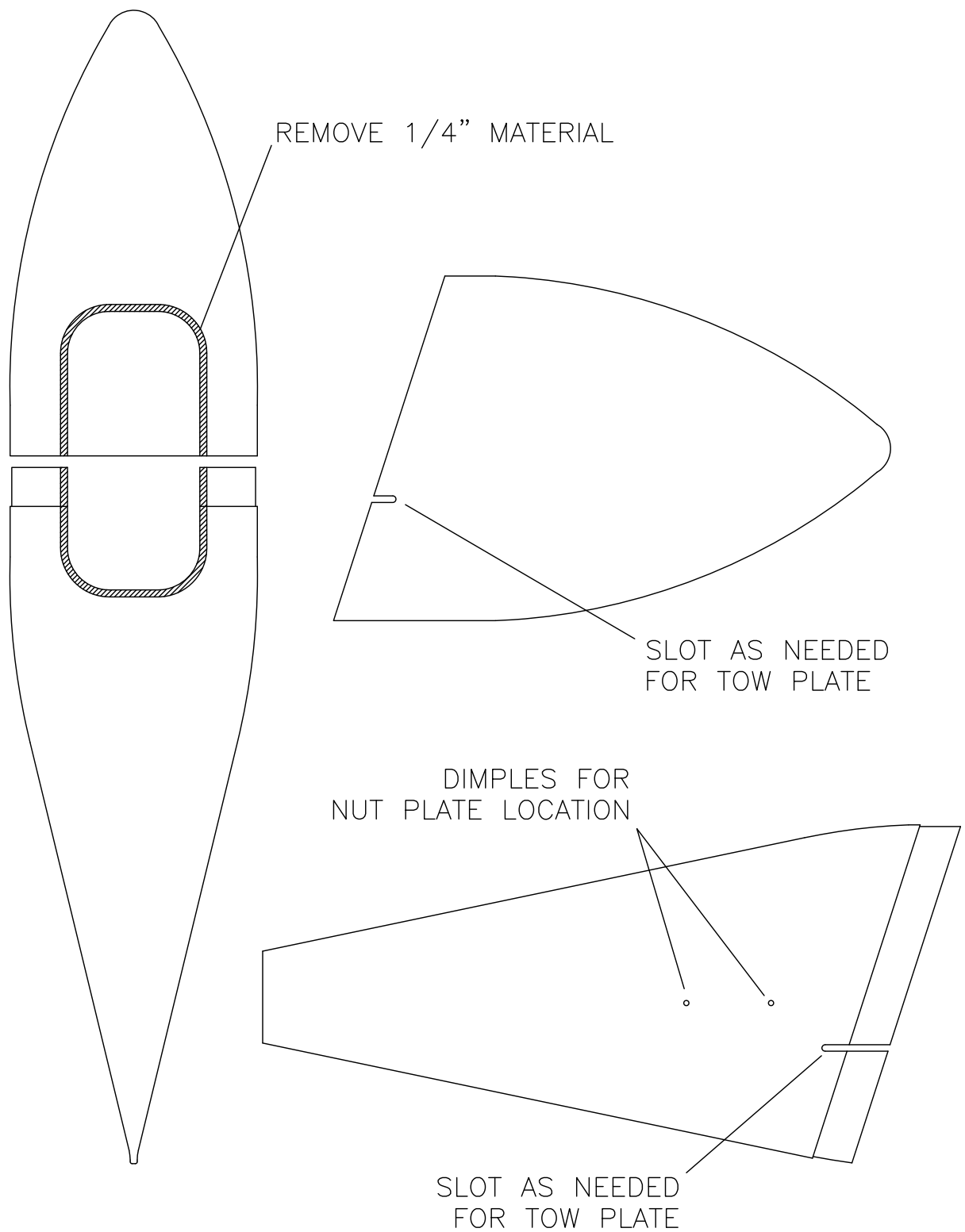
REMOVE THIS AREA  
TO MAKE 2 PARTS



MD5497

**RANS S-19 VENTERRA**  
**NOSE GEAR TOW PLATE MODIFICATION**  
**FIGURE 09D-03**

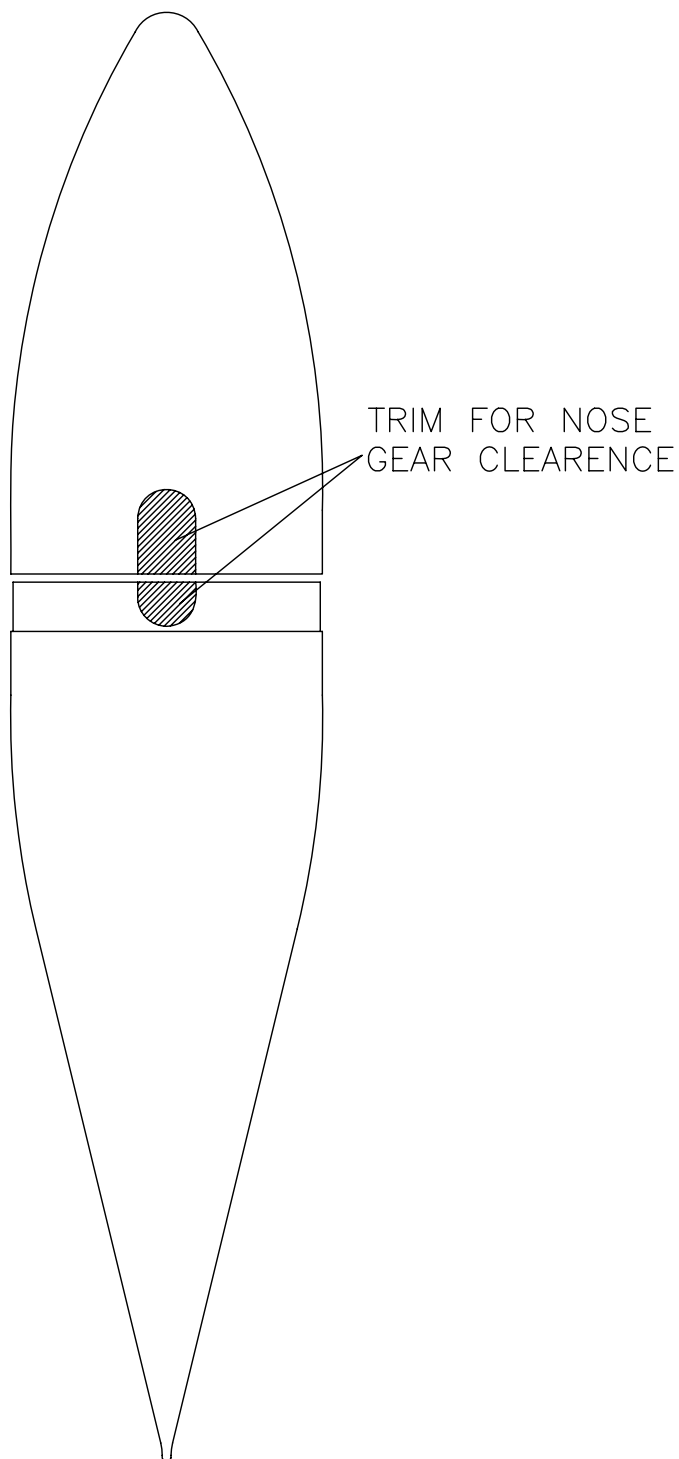
04/27/2017



MD5495

**RANS S-19 VENTERRA**  
**NOSE WHEEL PANT TRIMMING**  
**FIGURE 09D-04**

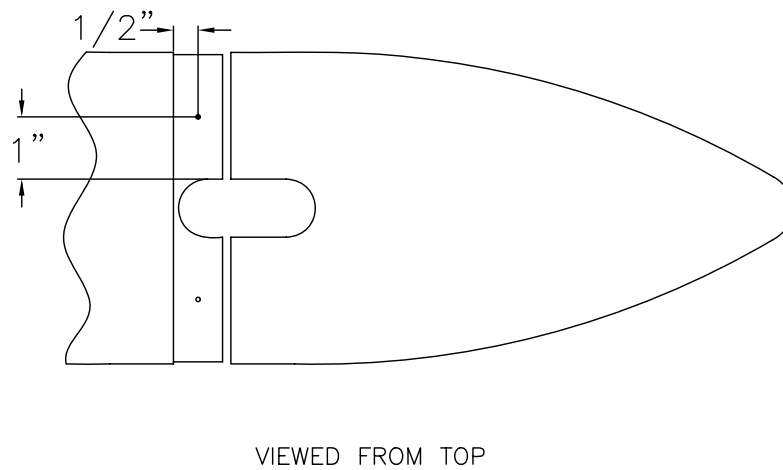
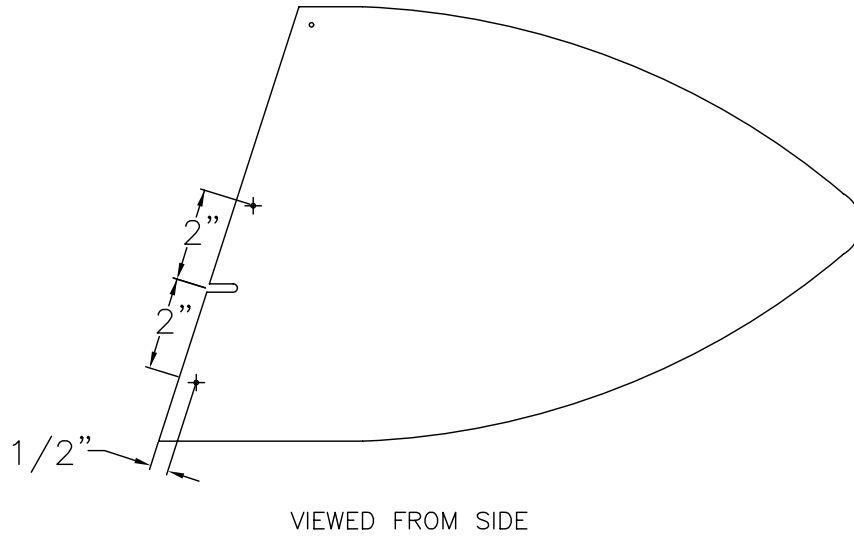
04/01/2011



MD5496

**RANS S-19 VENTERRA**  
**NOSE WHEEL PANT TRIMMING**  
**FIGURE 09D-07**

04/01/2011

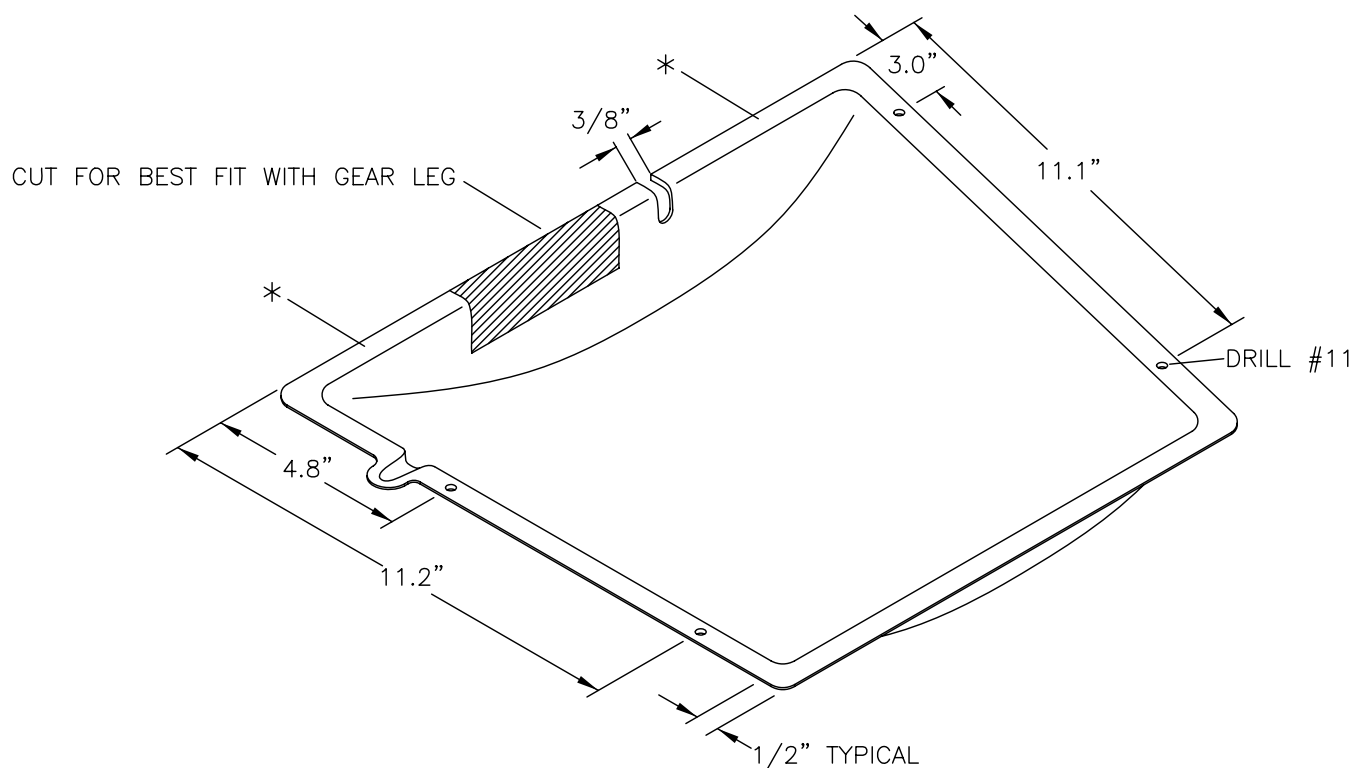


MD5497

**RANDS S-19 VENTERRA**  
**NOSE WHEEL PANT DRILLING**  
**FIGURE 09D-09**

04/01/2011

\* APPLY FOAM TO FUSELAGE ABOVE THIS EDGE

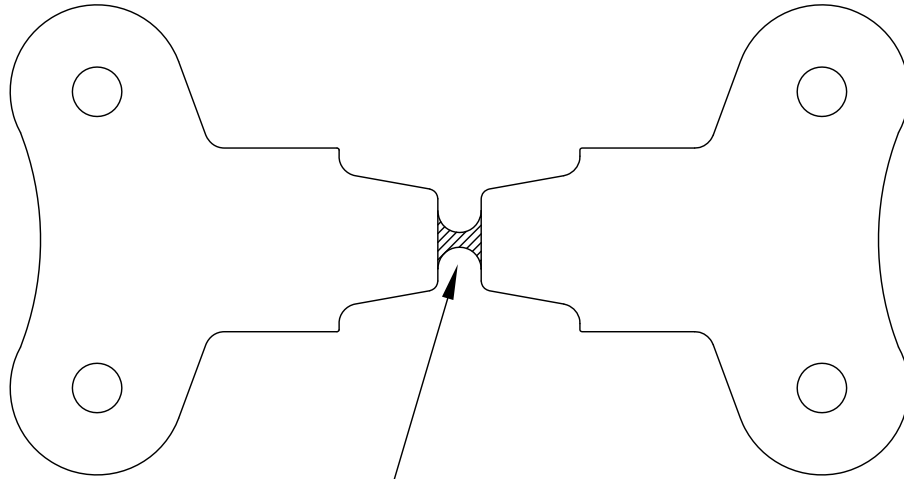


NOTE:  
DIMENSIONS ARE FOR REFERENCE ONLY.  
LOCATE HOLES AS NECESSARY TO MISS  
FUSELAGE RIBS AND INTERNAL  
SUPERSTRUCTURE.

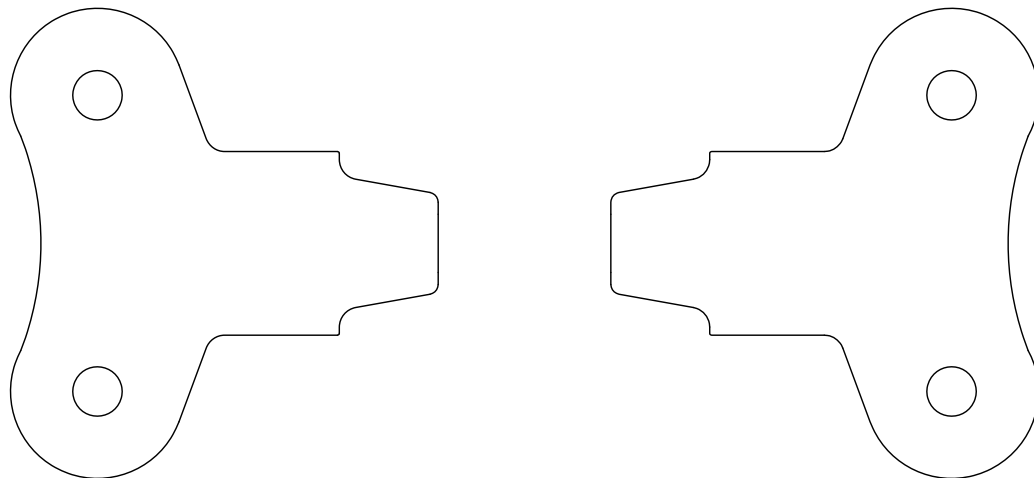
**RANS S-19 VENTERRA**  
**BELLY FAIRING MODIFICATION**  
**FIGURE 09E-04**

MD5482

04/01/2011



REMOVE THIS AREA  
TO MAKE 2 PARTS



MD5497

**RANS S-19 VENTERRA**  
**NOSE GEAR TOW PLATE MODIFICATION**  
**FIGURE 09F-02**

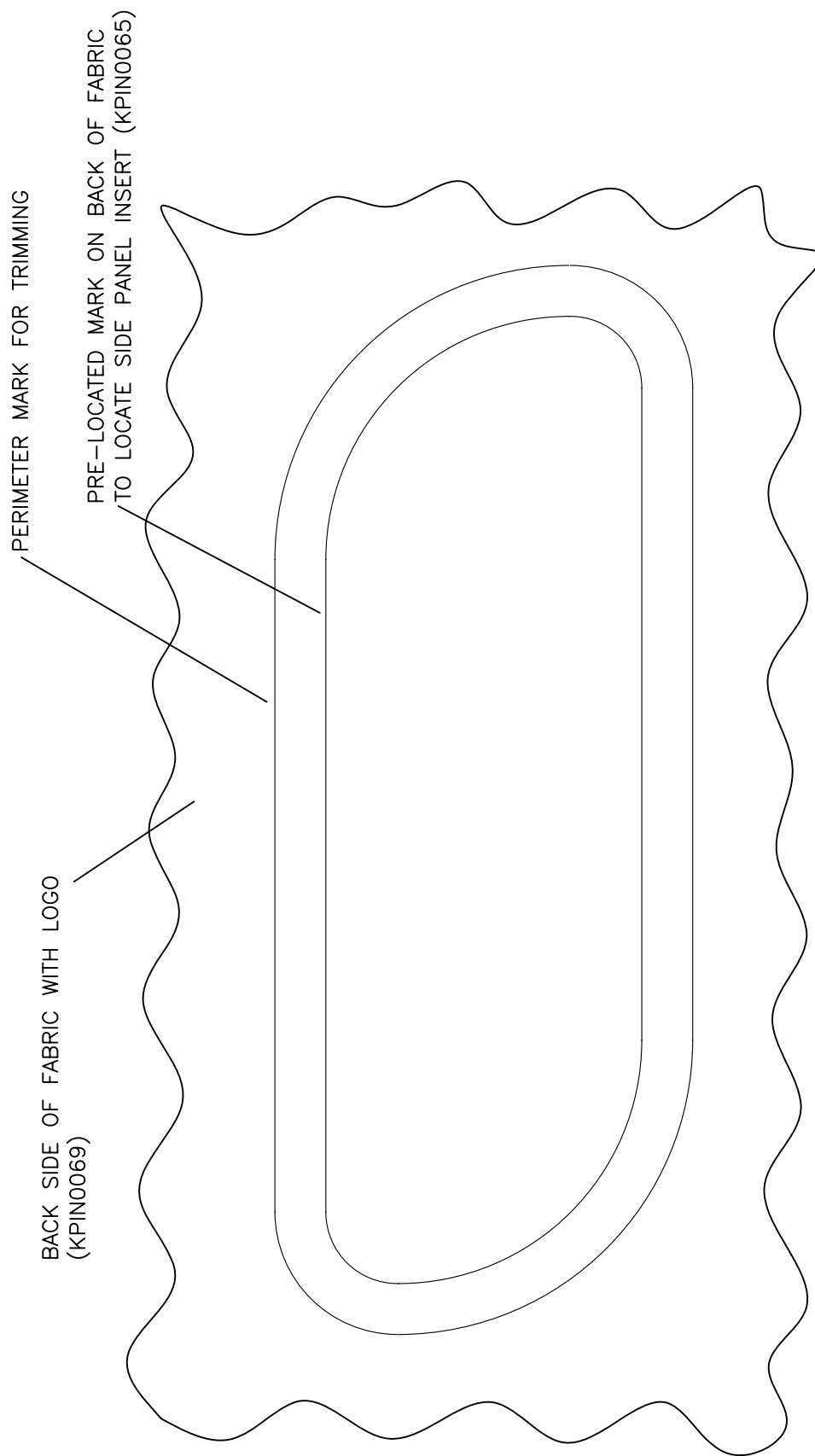
04/27/2017

**12 – OPTIONAL INTERIOR**

SIDE PANEL LOCATION.....12-03

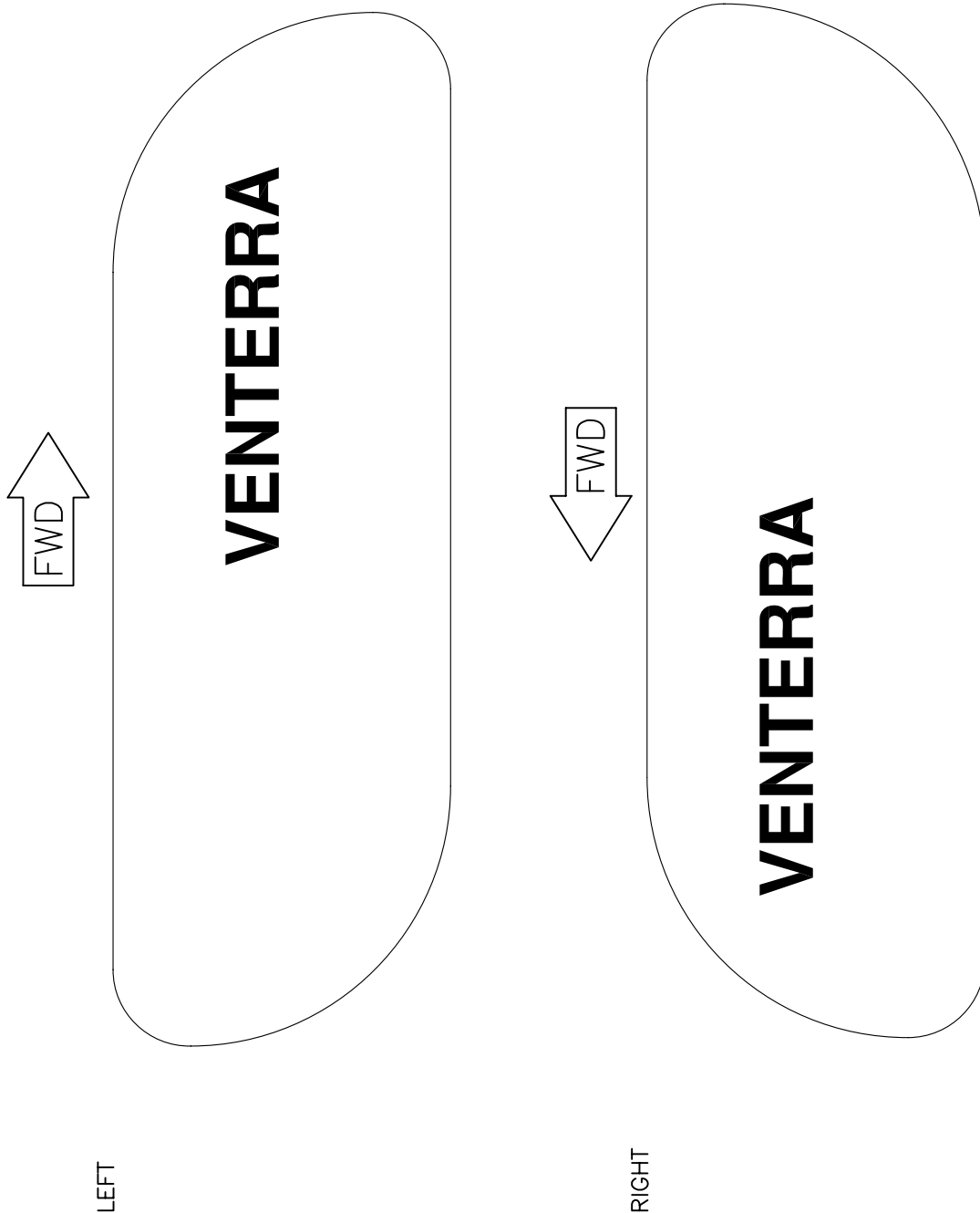
INTERIOR LOGO ORIENTATION ..... 12-03A

CLOSE OUT MARKING PINS ..... 12A-03



**RRM S-19 VENTERRA**  
**SIDE PANEL LOCATION**  
**FIGURE 12-03**

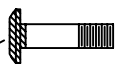
MD5520



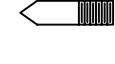
 S-19 VENTERRA  
INTERIOR LOGO ORIENTATION  
FIGURE 12-03A

MD5519

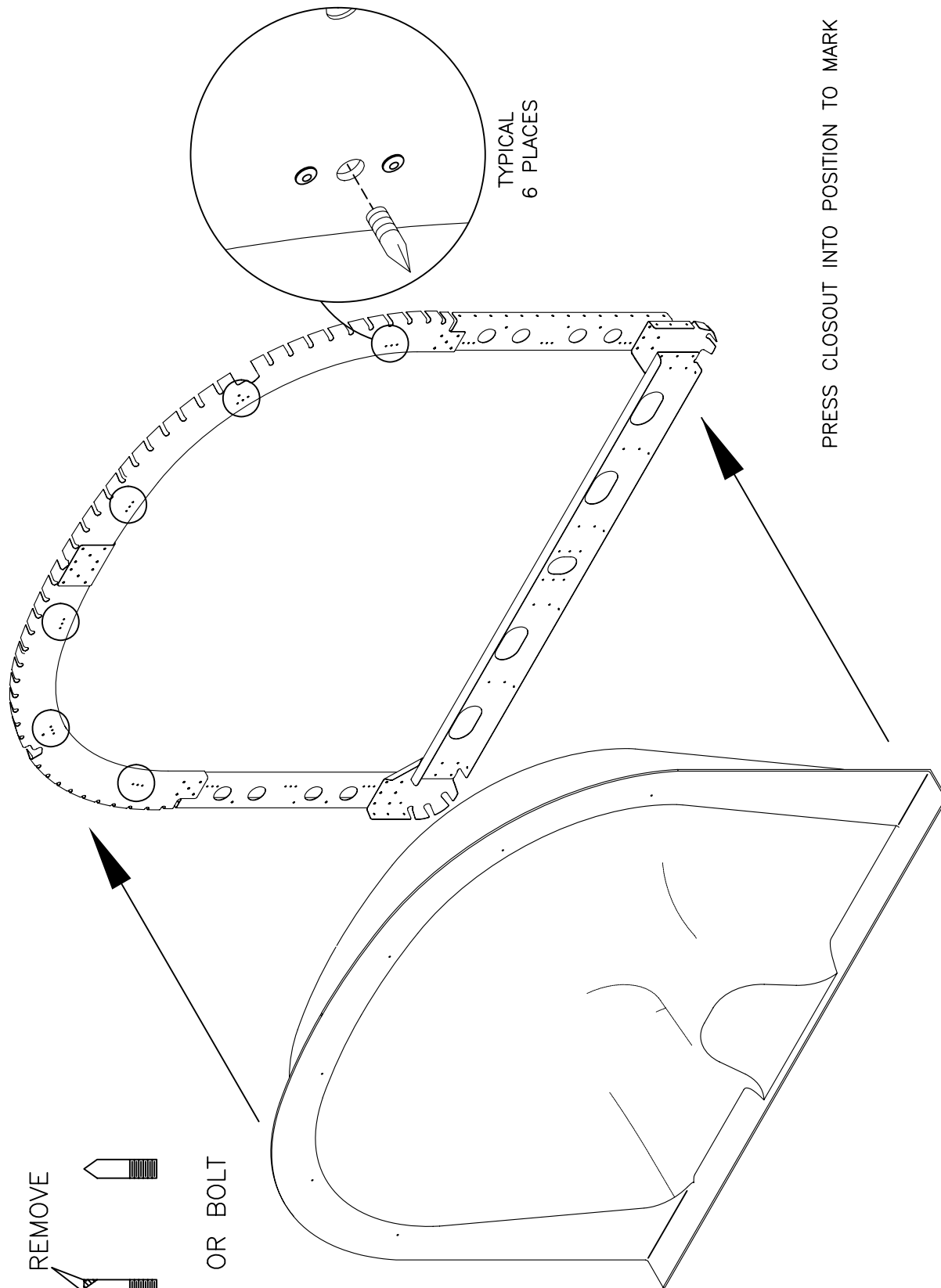
REMOVE



REMOVE



8-32 SCREW OR BOLT



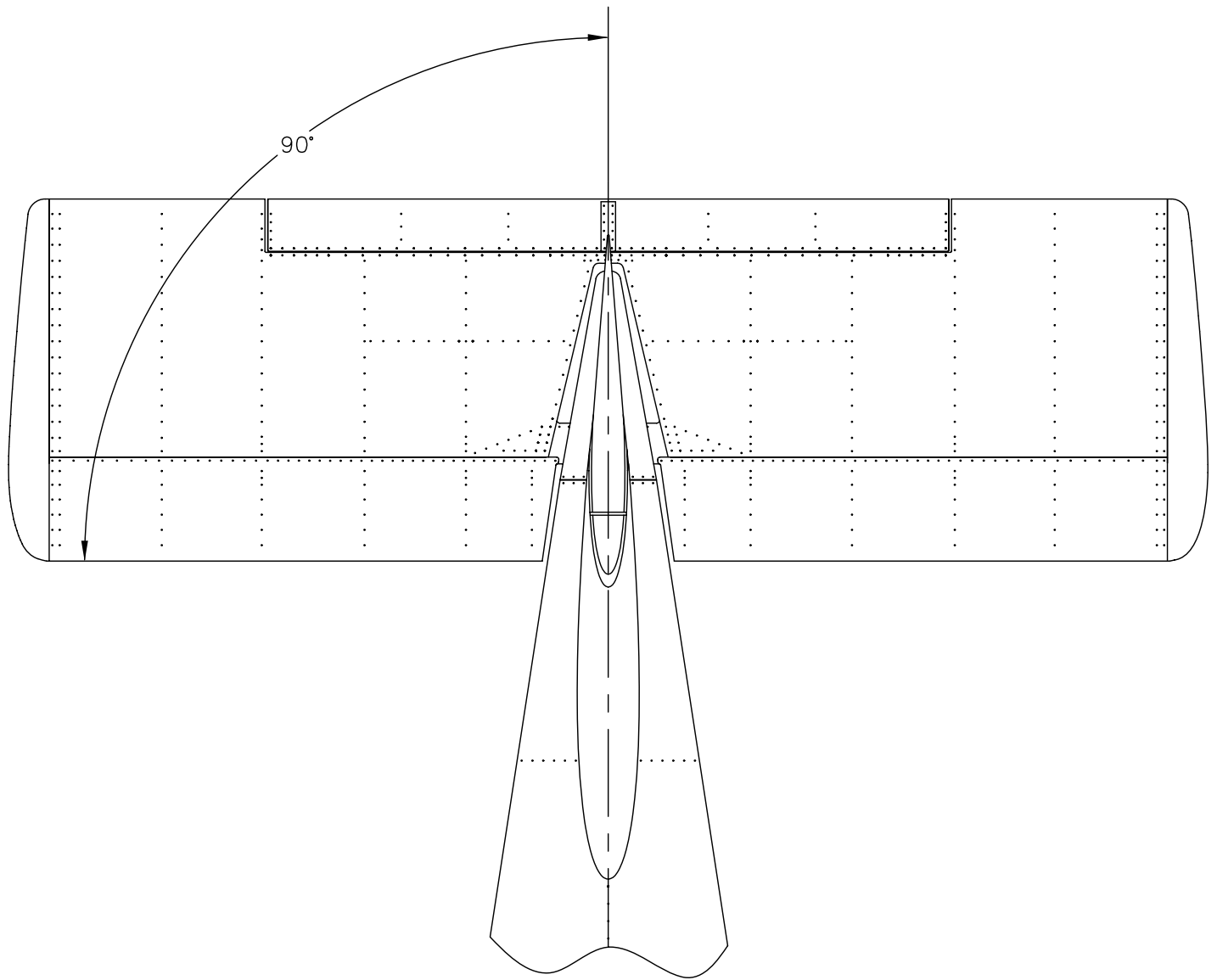
PRESS CLOSOUT INTO POSITION TO MARK

MD5139

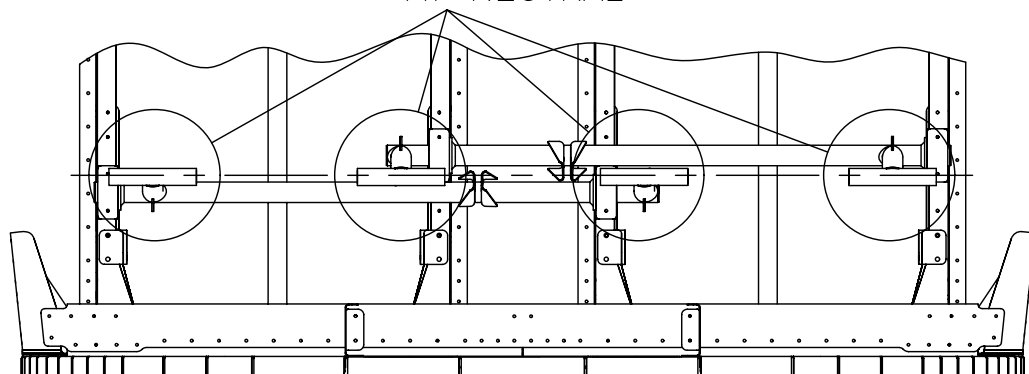
**RRR S-19 VENTERRA**  
**CLOSE OUT MARKING PINS**  
**FIGURE 12A-03**

## 15 – PREPARATION FOR FLIGHT

|                                       |        |
|---------------------------------------|--------|
| RUDDER RIGGING INSTRUCTIONS .....     | 15-01  |
| STABILATOR RIGGING INSTRUCTIONS ..... | 15-02  |
| STABILATOR LEVELING .....             | 15-02A |
| STABILATOR LEVELING JIG.....          | 15-02B |
| STABILATOR LEVELING JIG.....          | 15-02C |
| STABILATOR LEVELING JIG.....          | 15-02D |
| STABILATOR LEVELING JIG.....          | 15-02E |
| STABILATOR LEVELING JIG.....          | 15-02F |
| FLAP RIGGING.....                     | 15-04  |
| AILERON RIGGING.....                  | 15-05  |



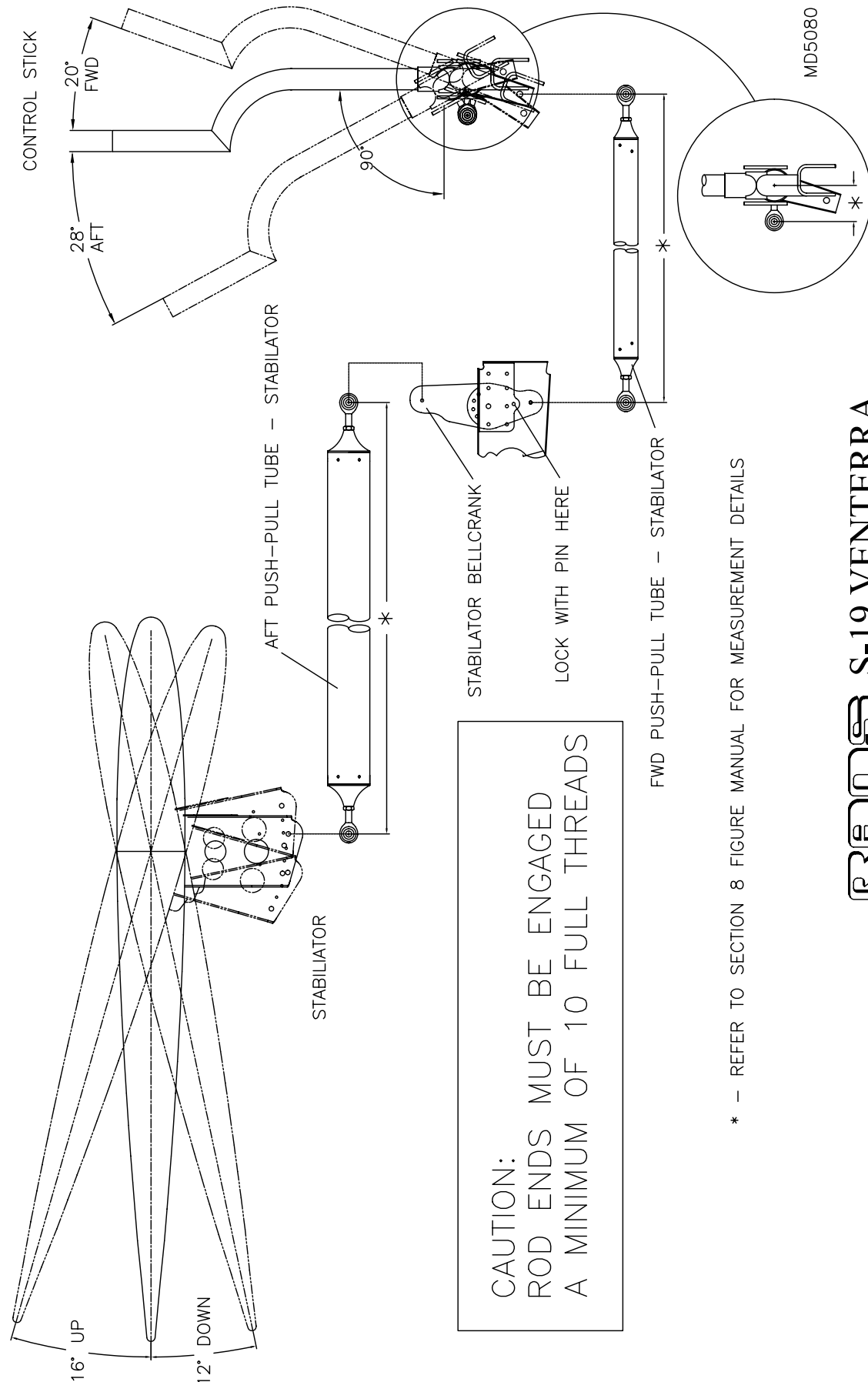
RUDDER PEDALS WILL LINE UP  
AT NEUTRAL



MD5080

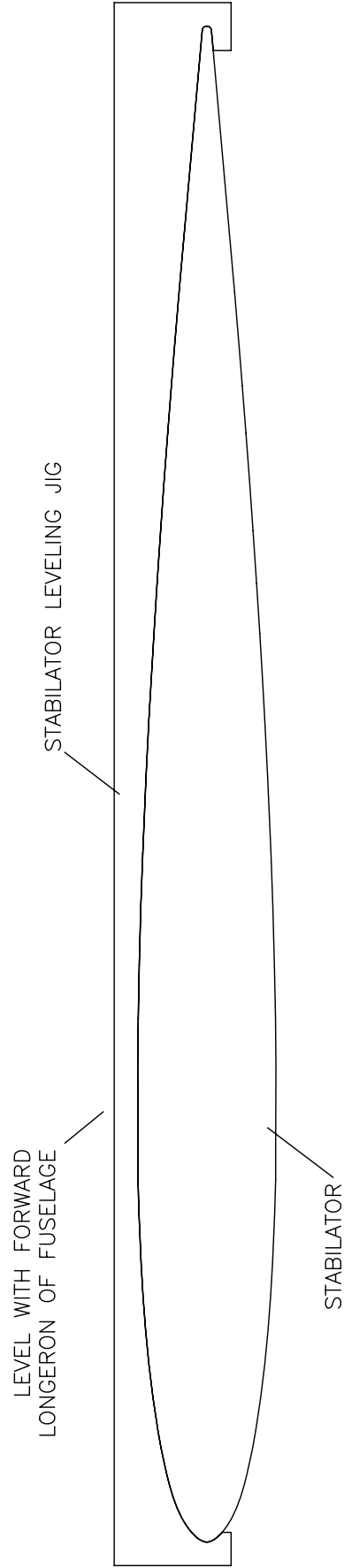
# **RANS S-19 VENTERRA** **RUDDER RIGGING INSTRUCTIONS** **FIGURE 15-01**

04/01/2011



\* - REFER TO SECTION 8 FIGURE MANUAL FOR MEASUREMENT DETAILS

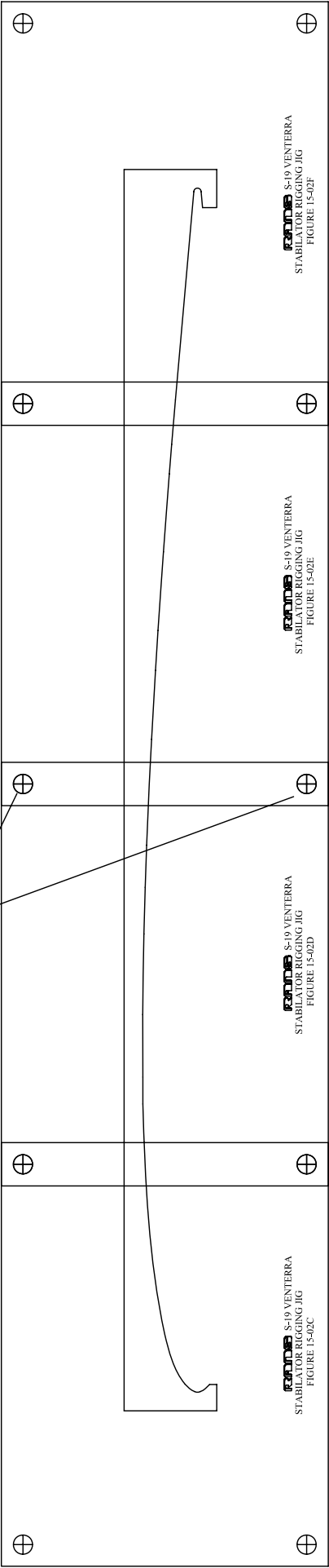
**RAMS S-19 VENTERRA**  
**STABILATOR RIGGING INSTRUCTIONS**  
**FIGURE 15-02**



MD5526

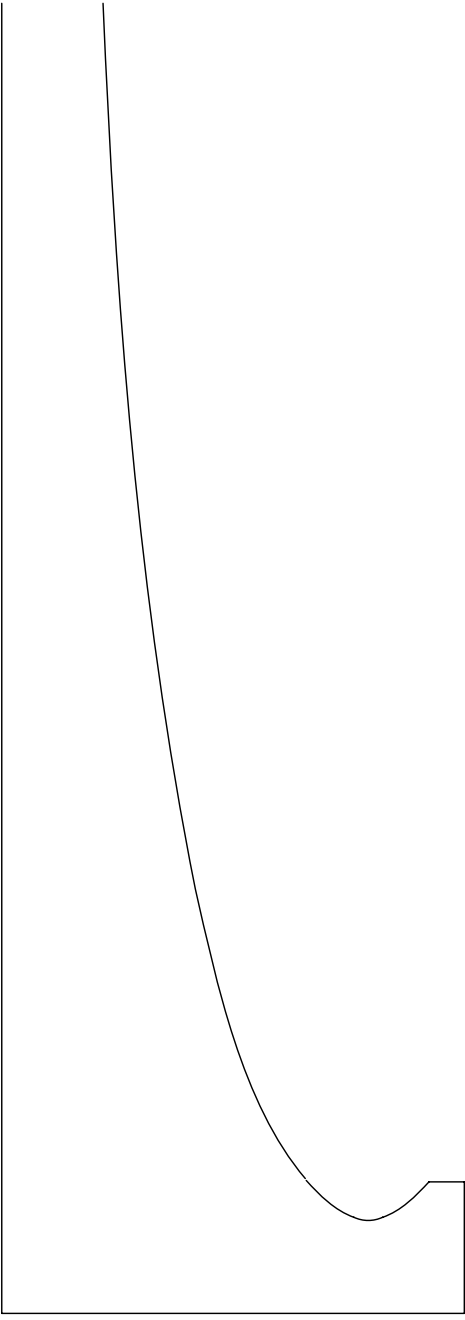
**RRF S-19 VENTERRA**  
**STABILATOR LEVELING**  
**FIGURE 15-02A**

LINE PAGES UP ON CROSS HAIRS  
(TOP AND BOTTOM)



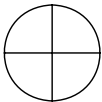
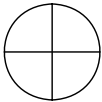
FABRICATE FROM PLY-WOOD OR SIMILAR MATERIAL  
REFER TO FIGURES 15-02C THRU 15-02F

**RAMS S-19 VENTERRA**  
**STABILATOR LEVELING JIG**  
**FIGURE 15-02B**

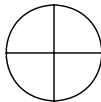


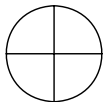
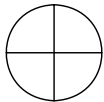
**RRM S-19 VENTERRA  
STABILATOR LEVELING JIG  
FIGURE 15-02C**

MD5526



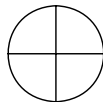
**RRR S-19 VENTERRA  
STABILATOR LEVELING JIG  
FIGURE 15-02D**

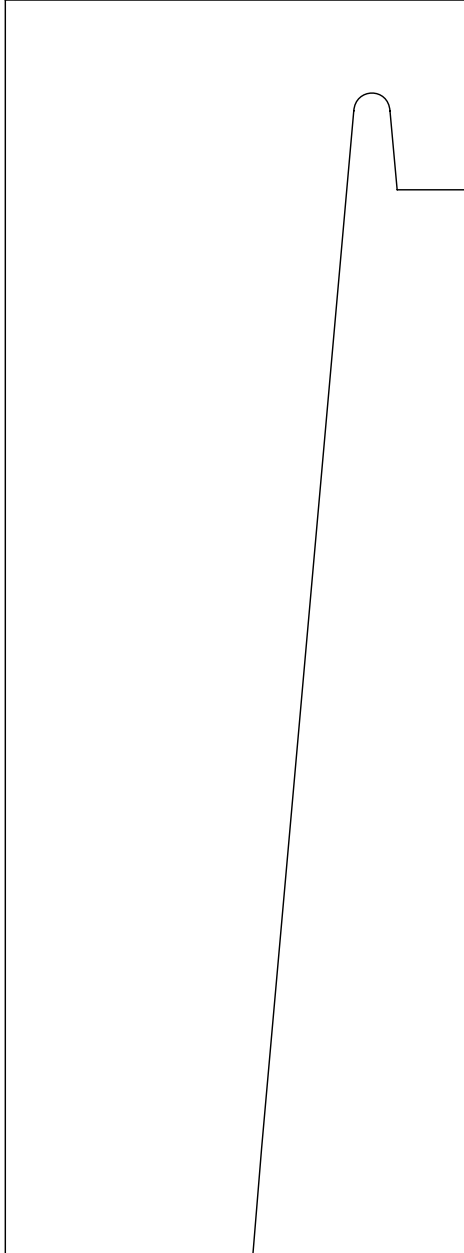




**RRM S-19 VENTERRA**  
**STABILATOR LEVELING JIG**  
**FIGURE 15-02E**

MD5526



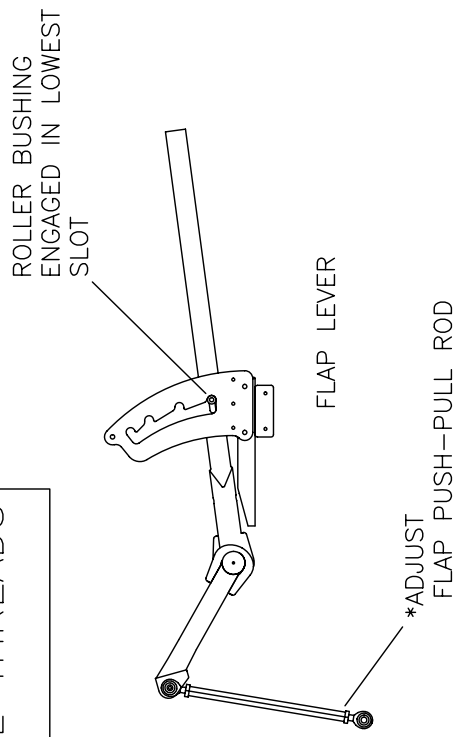


**RRM S-19 VENTERRA  
STABILATOR LEVELING JIG  
FIGURE 15-02F**

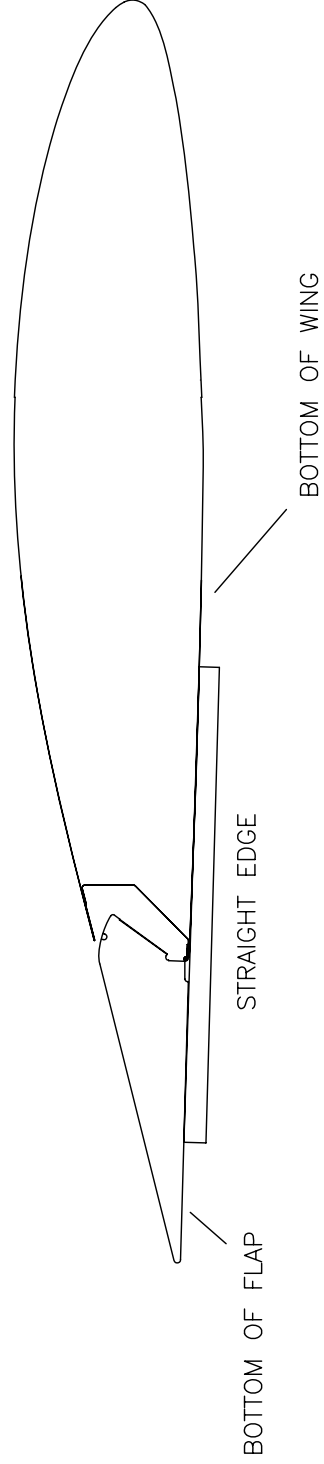
MD5526

04/01/2011

CAUTION:  
ROD ENDS MUST BE ENGAGED  
A MINIMUM OF 10 FULL THREADS

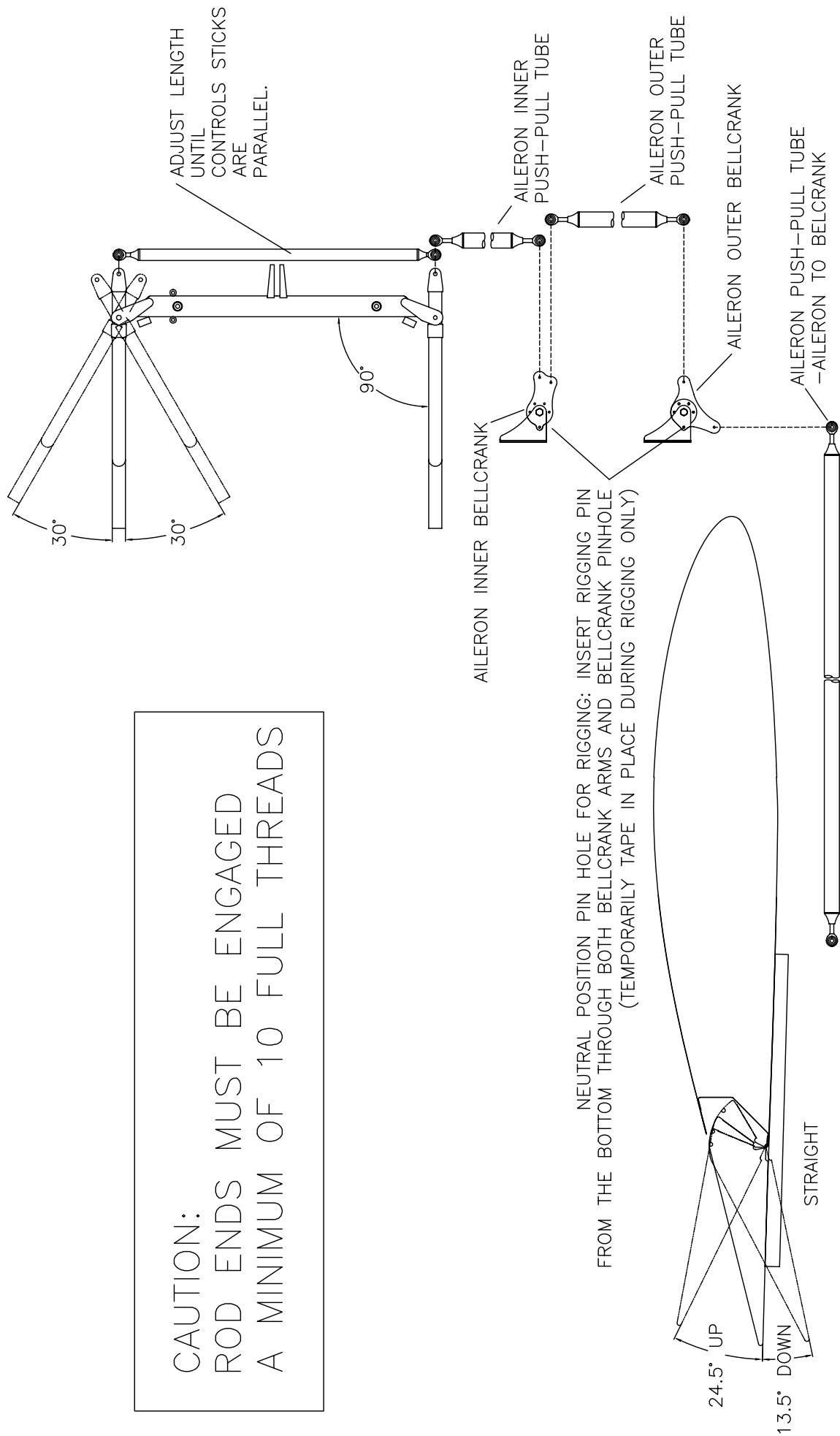


\*FLAP PUSH-PULL ROD  
SHOWN DISCONNECTED  
FROM FLAP FOR CLARITY



**RAMS S-19 VENTERRA**  
**FLAP RIGGING**  
**FIGURE 15-04**

CAUTION:  
ROD ENDS MUST BE ENGAGED  
A MINIMUM OF 10 FULL THREADS

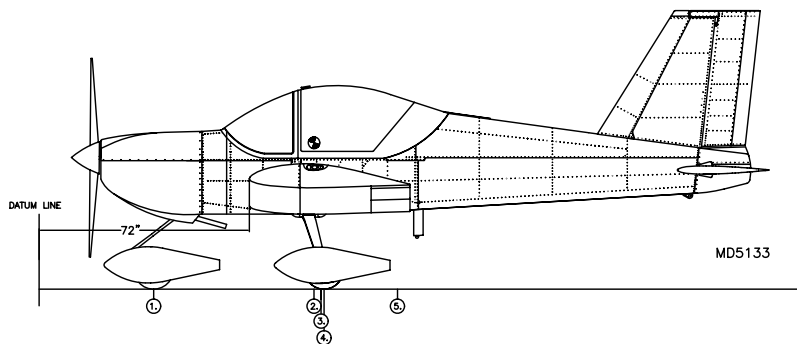


MD5080

**RRM S-19 VENTERRA**  
**AILERON RIGGING**  
**FIGURE 15-05**

## **16 – WEIGHT AND BALANCE**

|                          |       |
|--------------------------|-------|
| WEIGHT AND BALANCE ..... | 16-01 |
|--------------------------|-------|



# **RANS S-19** **WEIGHT AND BALANCE**

|                |           |
|----------------|-----------|
| N _____        |           |
| DATE WEIGHED   |           |
| ENGINE TYPE    |           |
| C.G. CONDITION |           |
| EMPTY WEIGHT   |           |
| MTOW (912 ULS) | 1320 LBS. |

ACCEPTABLE C.G. 83" TO 91.5" FROM DATUM LINE.  
DATUM LINE IS 72" AHEAD OF WINGS LEADING EDGE.

| #      | ITEM              | WEIGHT | ARM    | MOMENT   |
|--------|-------------------|--------|--------|----------|
| 1      | NOSE GEAR         | 147    | 39.3"  | 5777.1   |
| 2      | PILOT             | 175    | 94.0"  | 16450    |
| 2      | PASSENGER         | 140    | 94.0"  | 13160    |
| 3      | FUEL              | 144    | 96.3"  | 13867.2  |
| 4      | MAIN GEAR - RIGHT | 347    | 97.6"  | 33867.2  |
| 4      | MAIN GEAR - LEFT  | 345    | 97.6"  | 33672    |
| 5      | BAGGAGE*          | 22     | 122.7" | 2699.4   |
| TOTAL= |                   | 1320   | TOTAL= | 119492.9 |

$$\frac{\text{TOTAL MOMENTS}}{\text{TOTAL WEIGHT}} = \text{C.G.} = \frac{119492.9}{1320} = 90.5"$$

| #      | ITEM              | WEIGHT | ARM    | MOMENT |
|--------|-------------------|--------|--------|--------|
| 1      | NOSE GEAR         |        | 39.3"  |        |
| 2      | PILOT             |        | 94.0"  |        |
| 2      | PASSENGER         |        | 94.0"  |        |
| 3      | FUEL              |        | 96.3"  |        |
| 4      | MAIN GEAR - RIGHT |        | 97.6"  |        |
| 4      | MAIN GEAR - LEFT  |        | 97.6"  |        |
| 5      | BAGGAGE*          |        | 122.7" |        |
| TOTAL= |                   |        | TOTAL= |        |

$$\frac{\text{TOTAL MOMENTS}}{\text{TOTAL WEIGHT}} = \text{C.G.} = \frac{\quad}{\quad} = \quad$$

\* 70 POUNDS MAXIMUM BAGGAGE

# **RANS S-19 VENTERRA** **WEIGHT AND BALANCE** **FIGURE 16-01**

04/01/2011