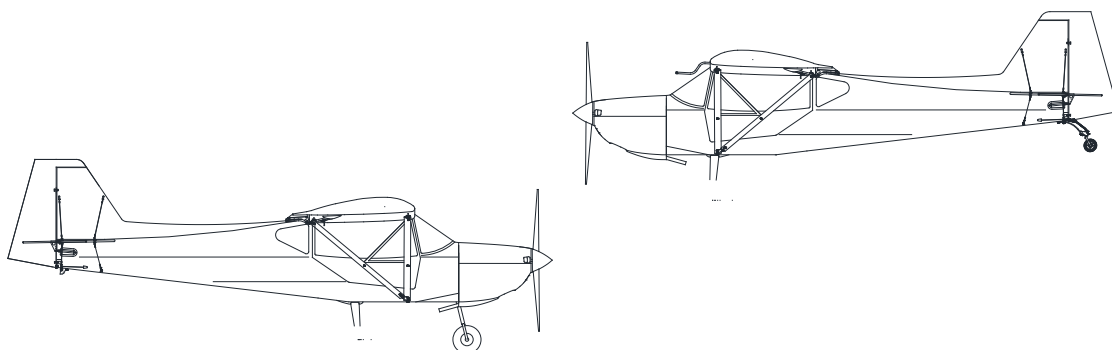




RANS

S-20 RAVEN

FIGURES MANUAL



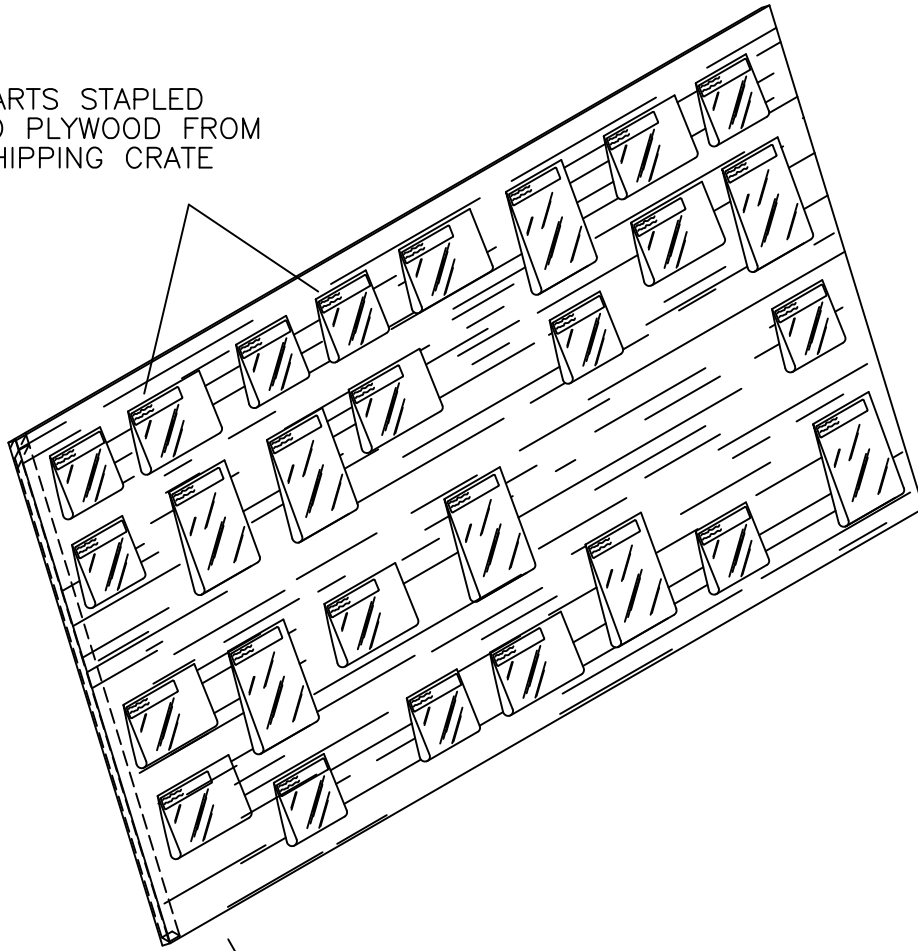
Serial Number:

Registration Number:

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RANS DESIGNS
4600 HWY 183 Alt
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www.rans.com

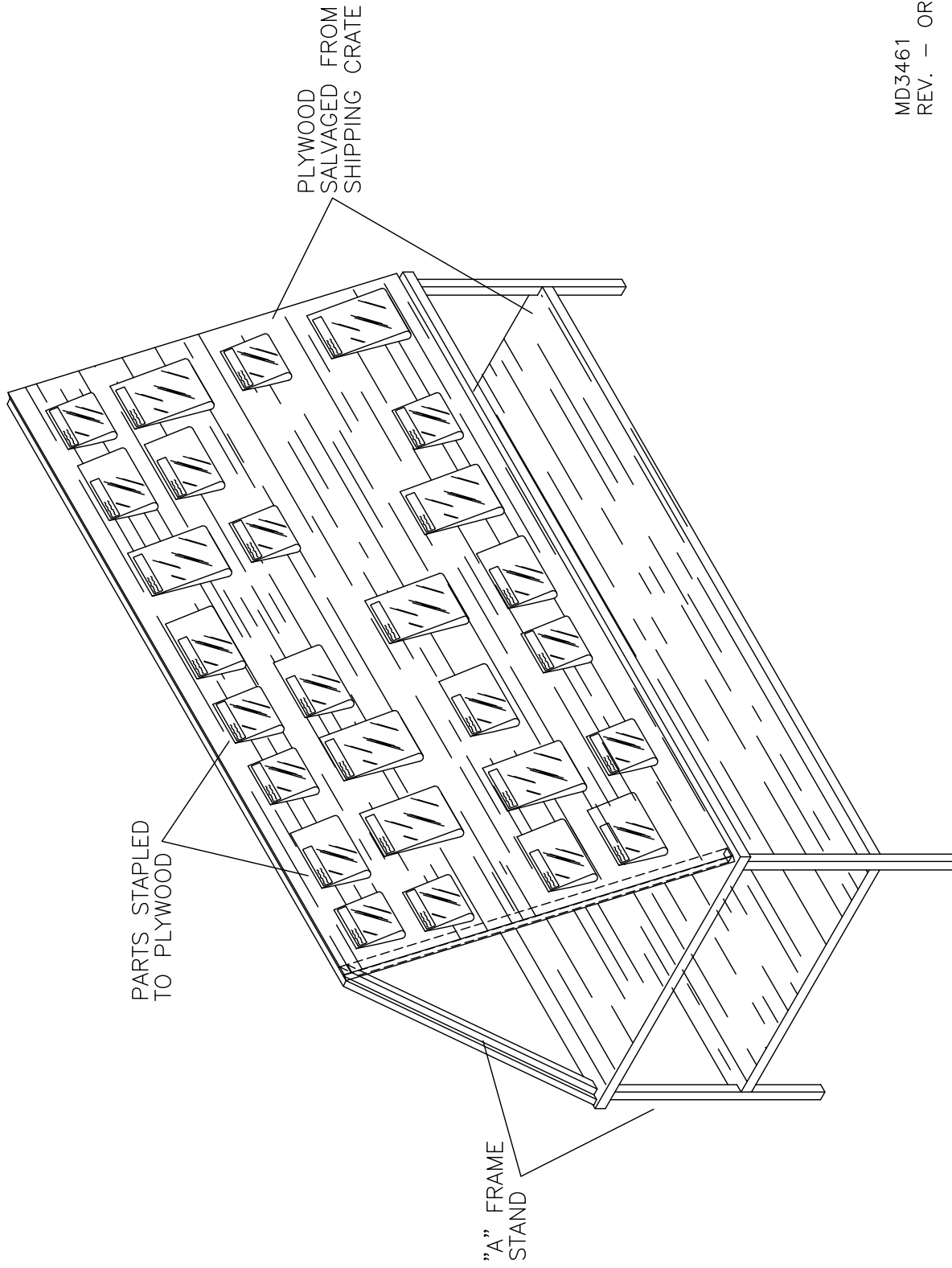
PARTS STAPLED
TO PLYWOOD FROM
SHIPPING CRATE



NAIL BOARD TO
SHOP WALL

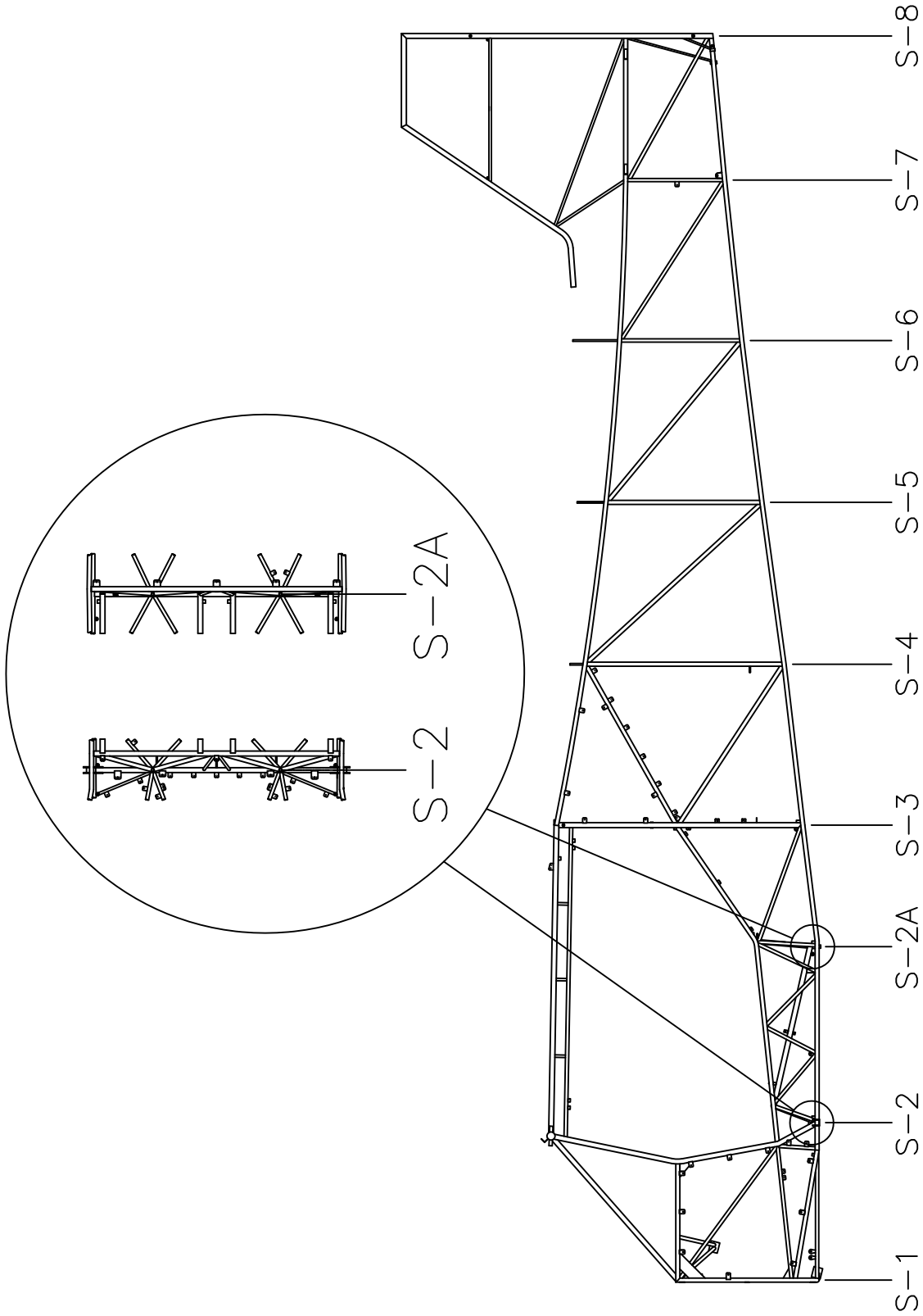
MD4363

RANS S-20 RAVEN
PARTS ORGANIZATION
FIGURE 00-01

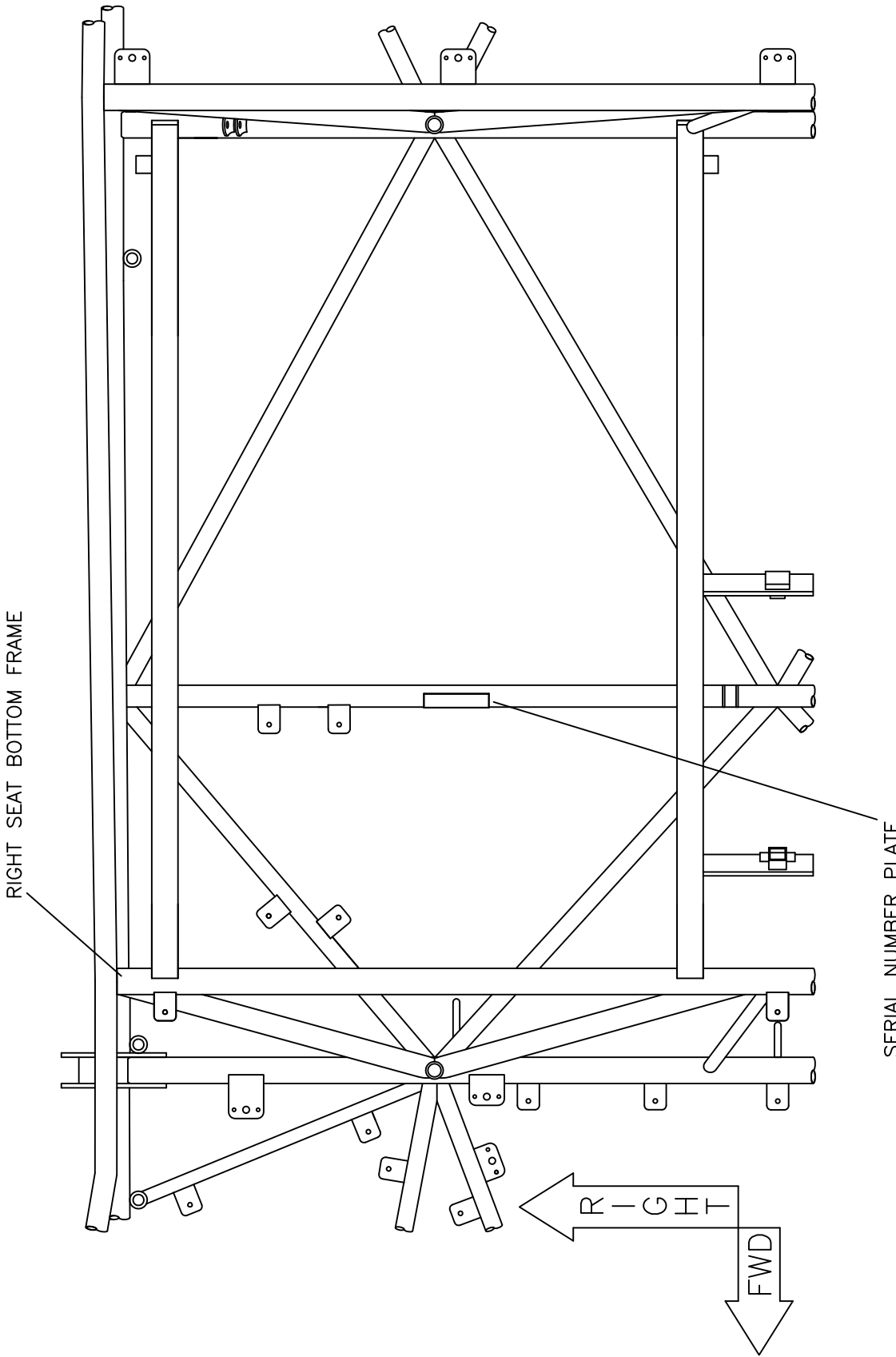


MD3461
REV. - ORIG

RAMS S-20 RAVEN
PARTS INVENTORY "A" FRAME
FIGURE 00-01A

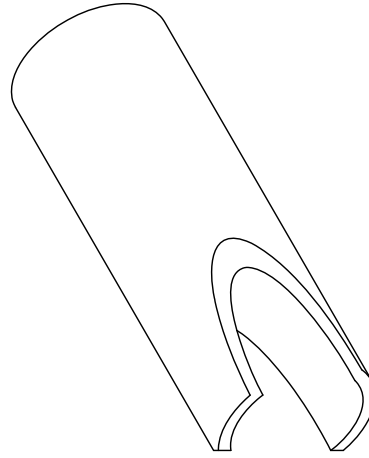
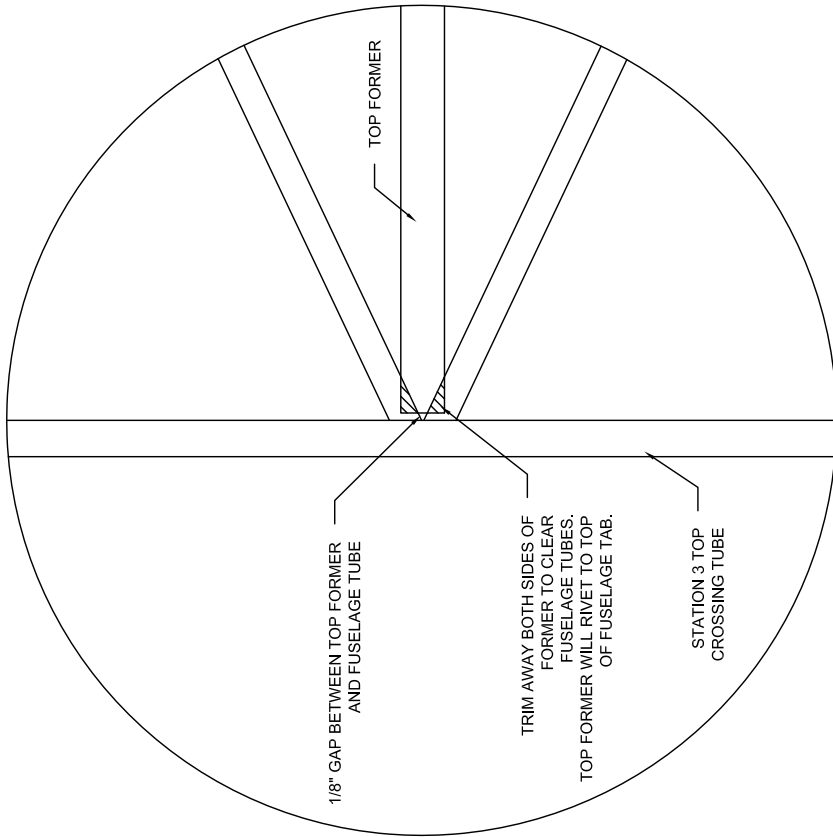


RAM S-20 RAVEN MD5601
 FUSELAGE STATION IDENTIFICATION
 FIGURE 00-02



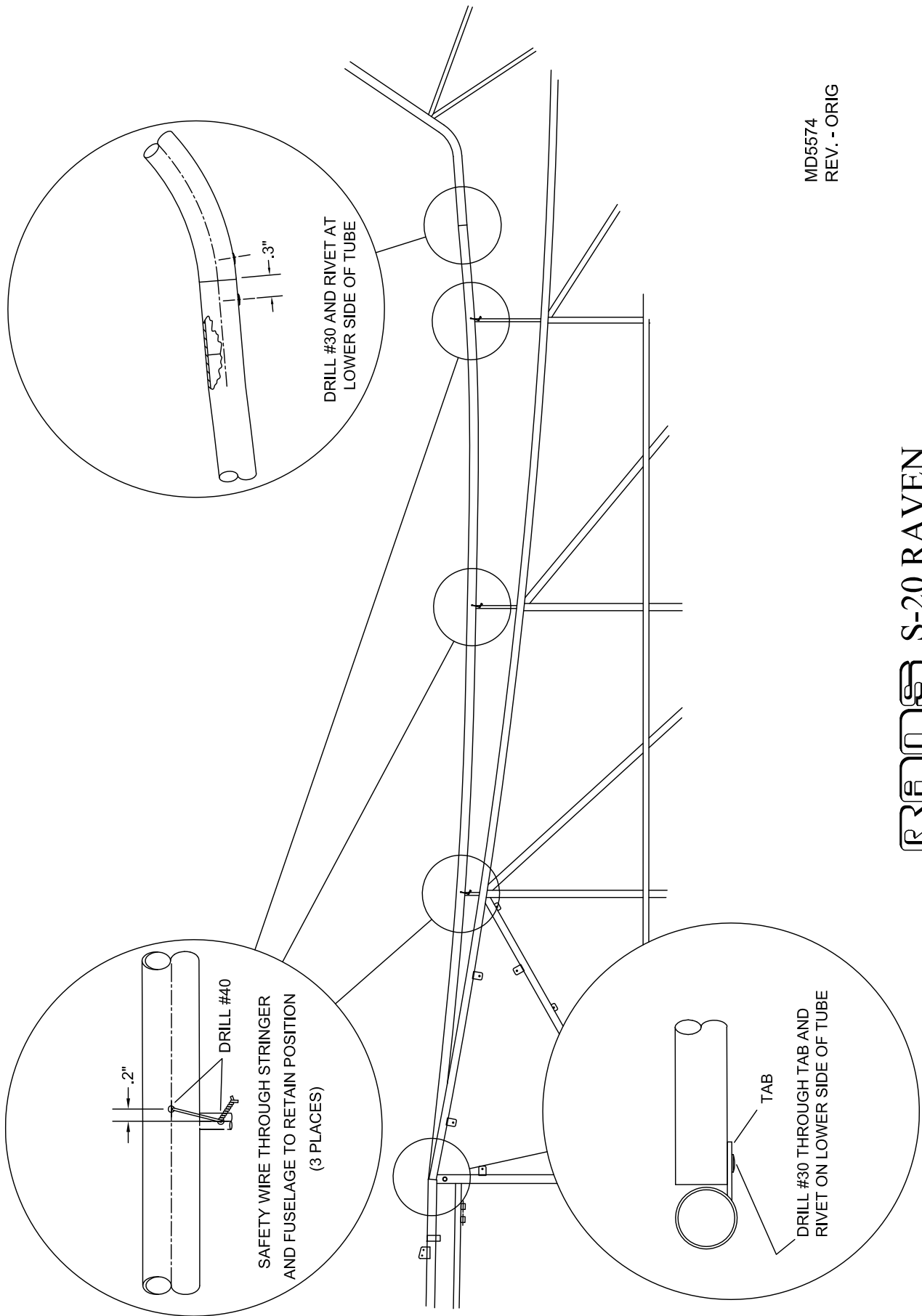
MD5602

RAVEN S-20 RAVEN
SERIAL NUMBER PLATE LOCATION
FIGURE 00-03



MD5574
REV. - ORIG

RAVEN S-20 RAVEN
TOP FORMER MODIFICATION
FIGURE 01-01

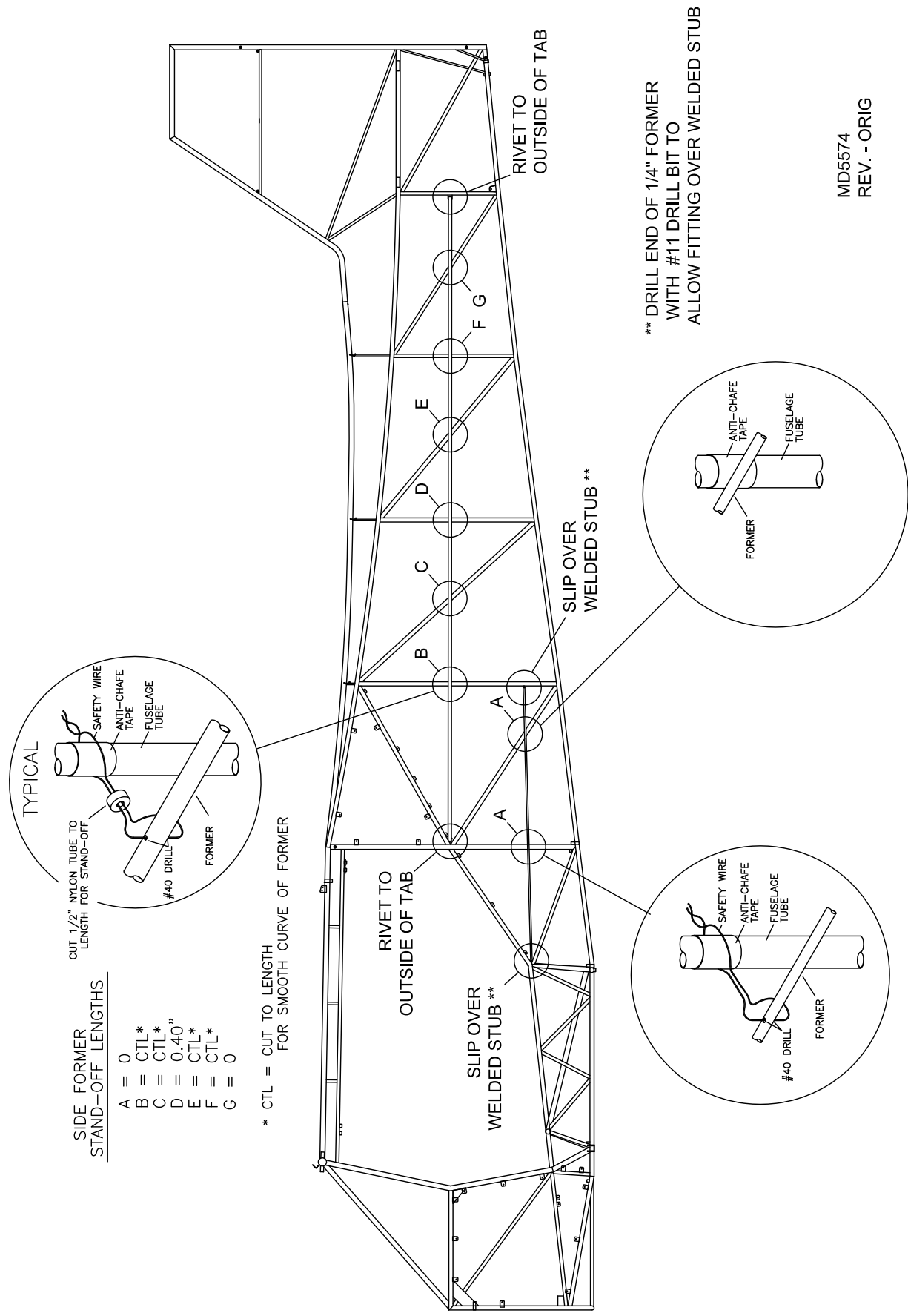


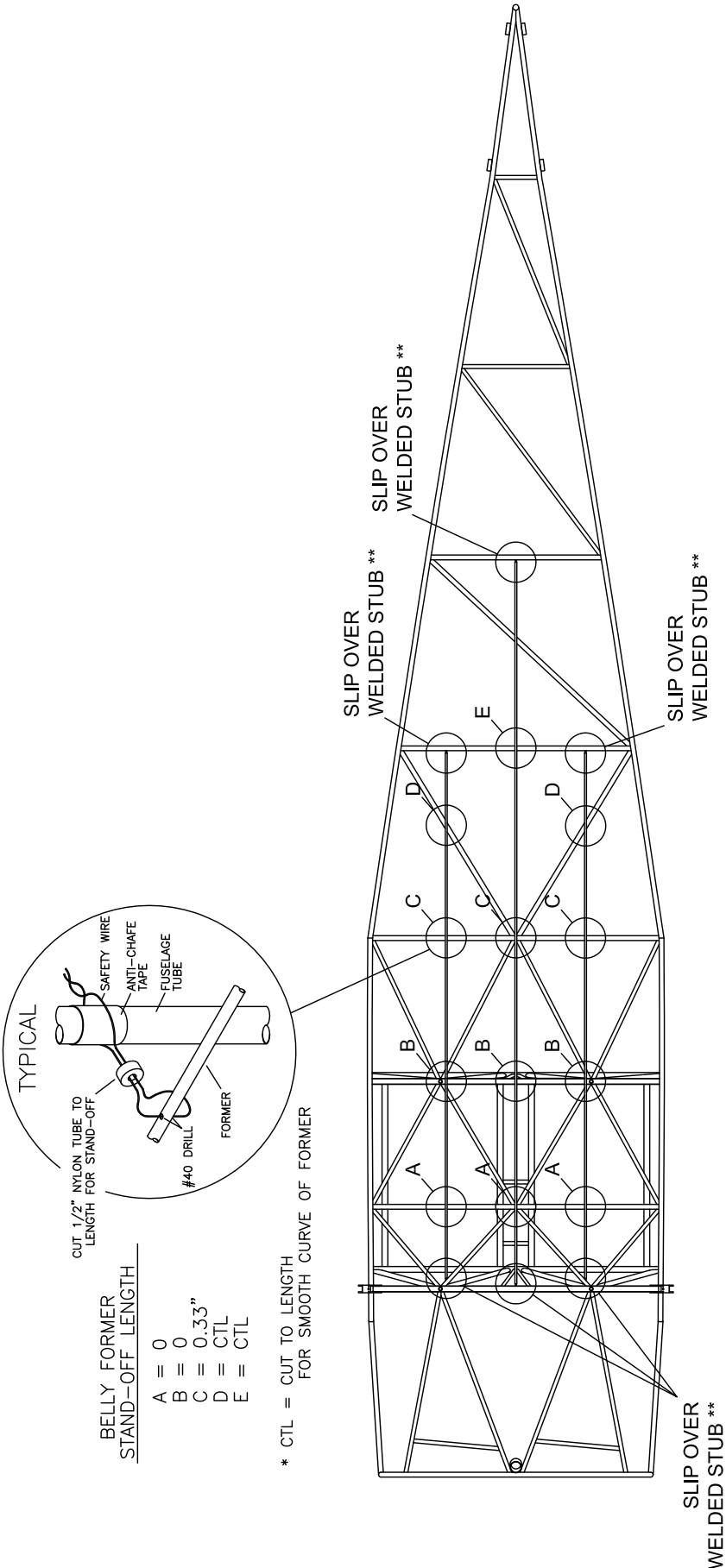
MD5574
REV. - ORIG

RRR S-20 RAVEN
TOP FORMER ATTACHMENT
FIGURE 01-04

RAVEN S-20 RAVEN
SIDE FORMER ATTACHMENT
FIGURE 01-08

MD5574
 REV. - ORIG





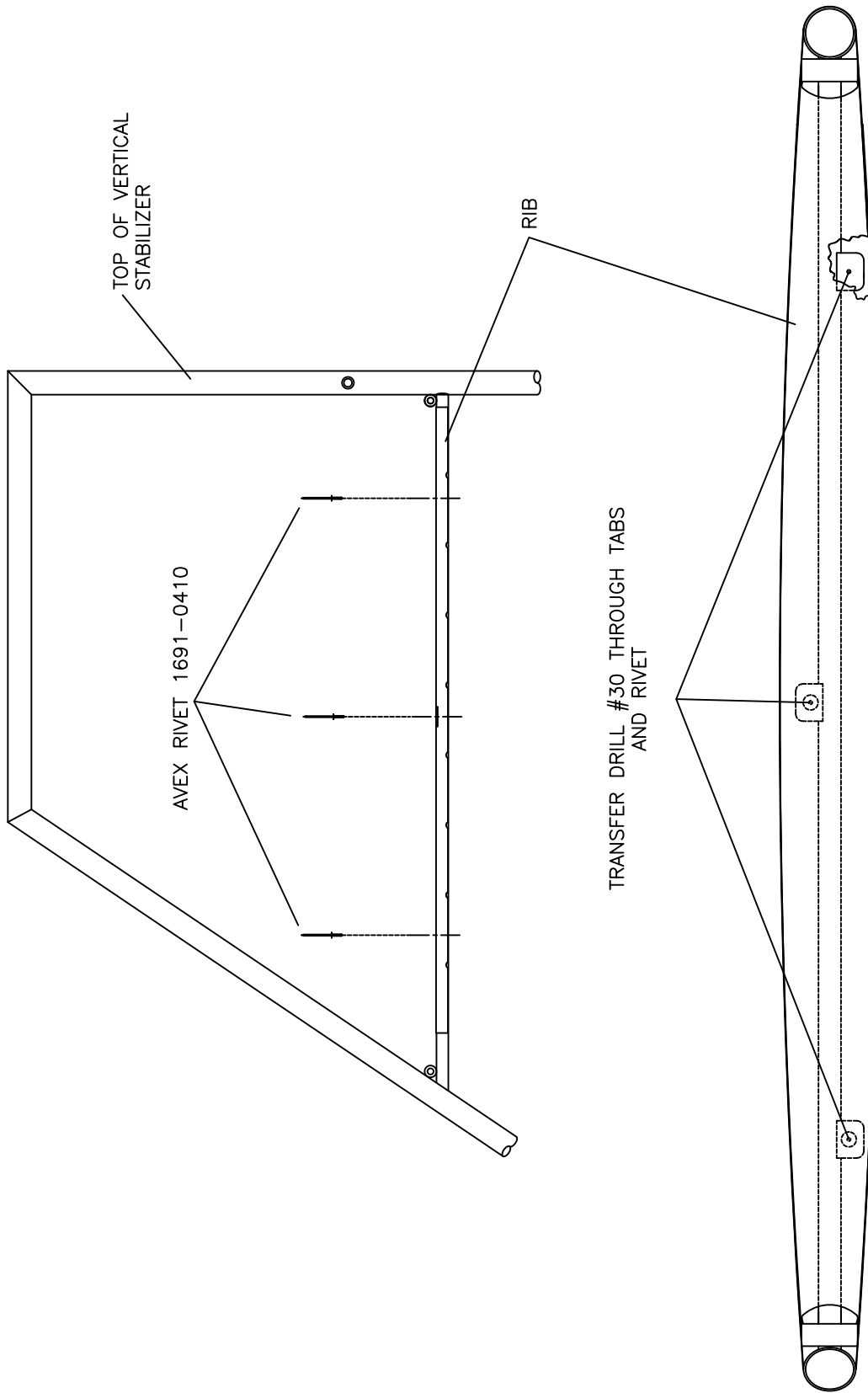
BELLY FORMER
STAND-OFF LENGTH

- A = 0
- B = 0
- C = 0.33"
- D = CTL
- E = CTL

* CTL = CUT TO LENGTH
FOR SMOOTH CURVE OF FORMER

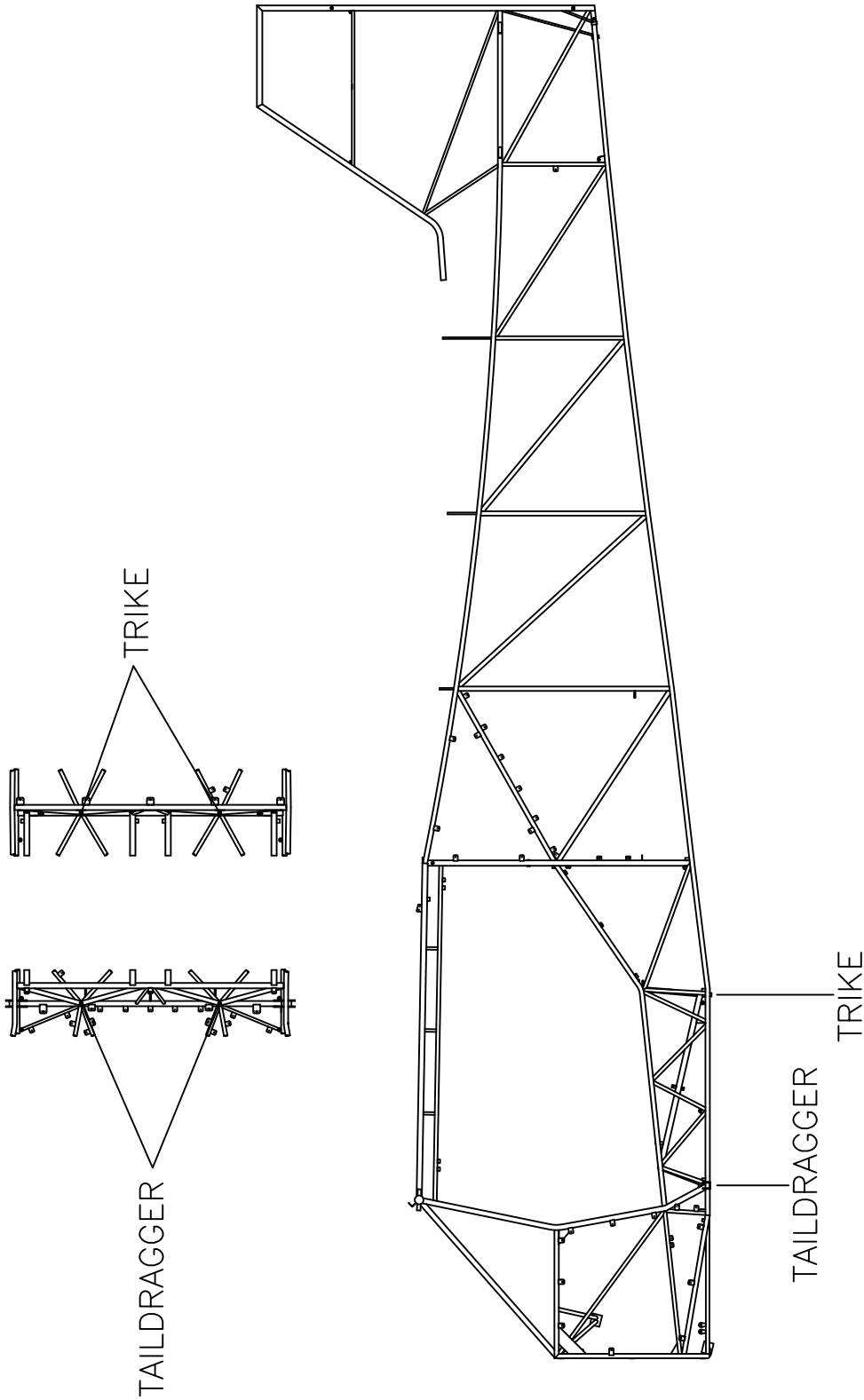
** DRILL END OF 1/4" FORMER WITH #11 DRILL BIT
TO ALLOW FITTING OVER WELDED STUB

RRR S-20 RAVEN
BELLY FORMER ATTACHMENT
FIGURE 01-15



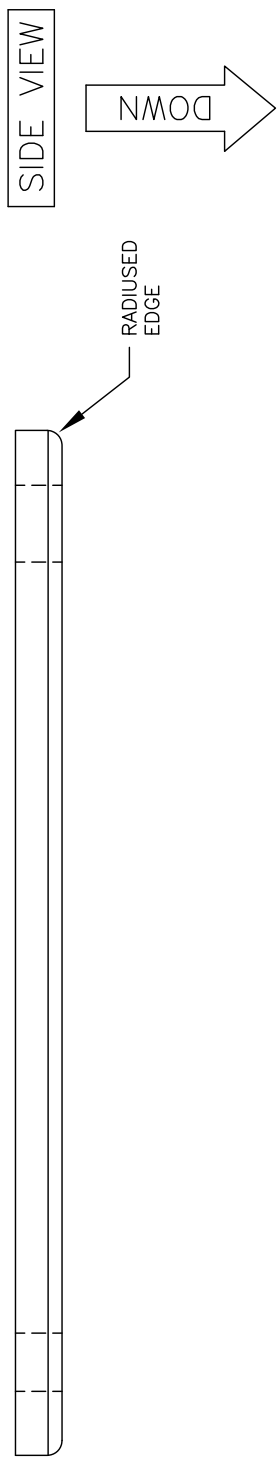
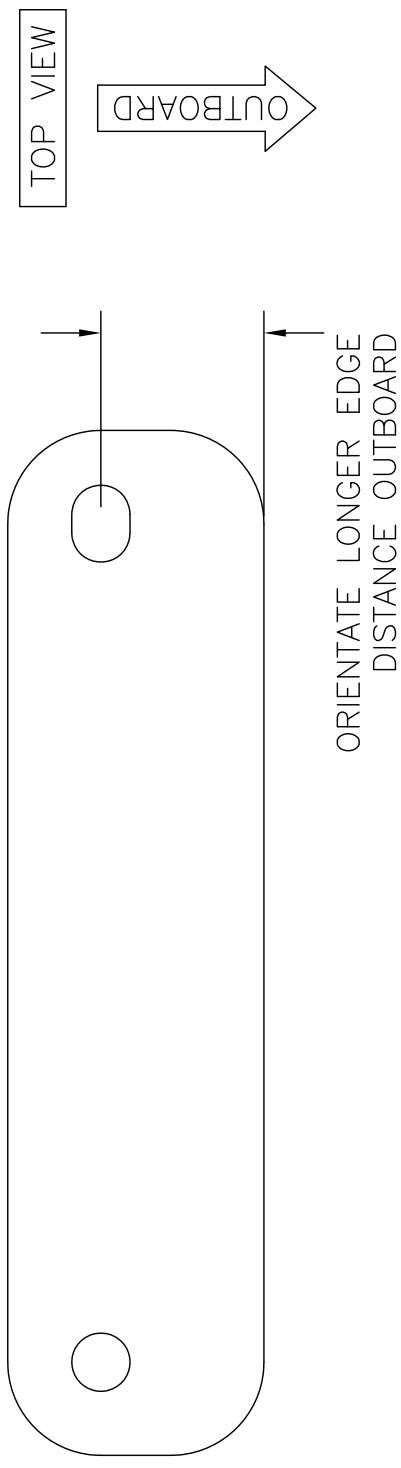
MD4282

RAVEN S-20 RAVEN
VERTICAL STABILIZER RIB
FIGURE 01-19



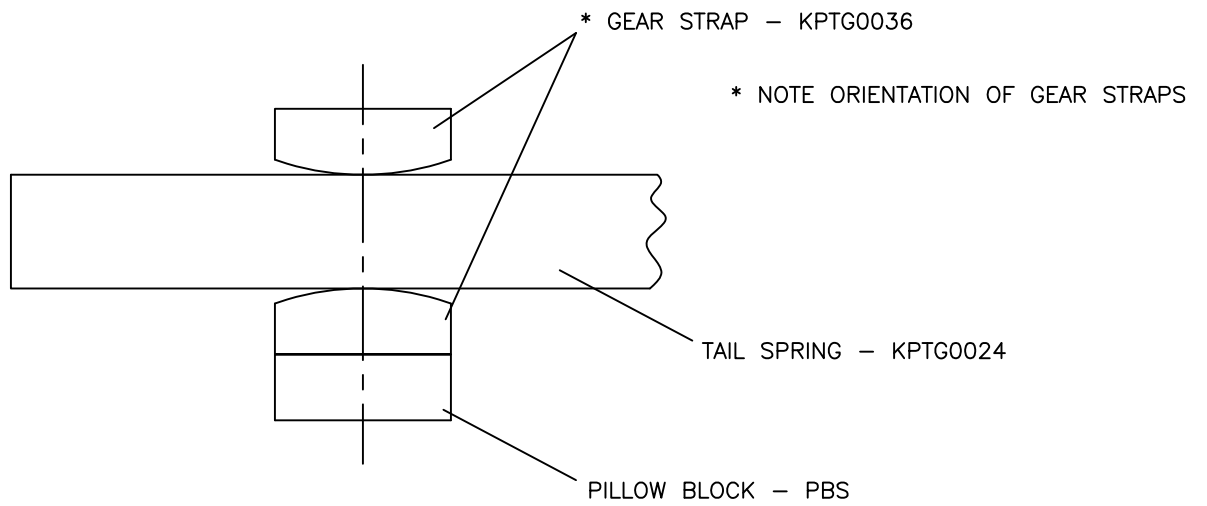
MD5603

RAVEN S-20 RAVEN
 MAIN LANDING GEAR LOCATIONS
 FIGURE 01A-04



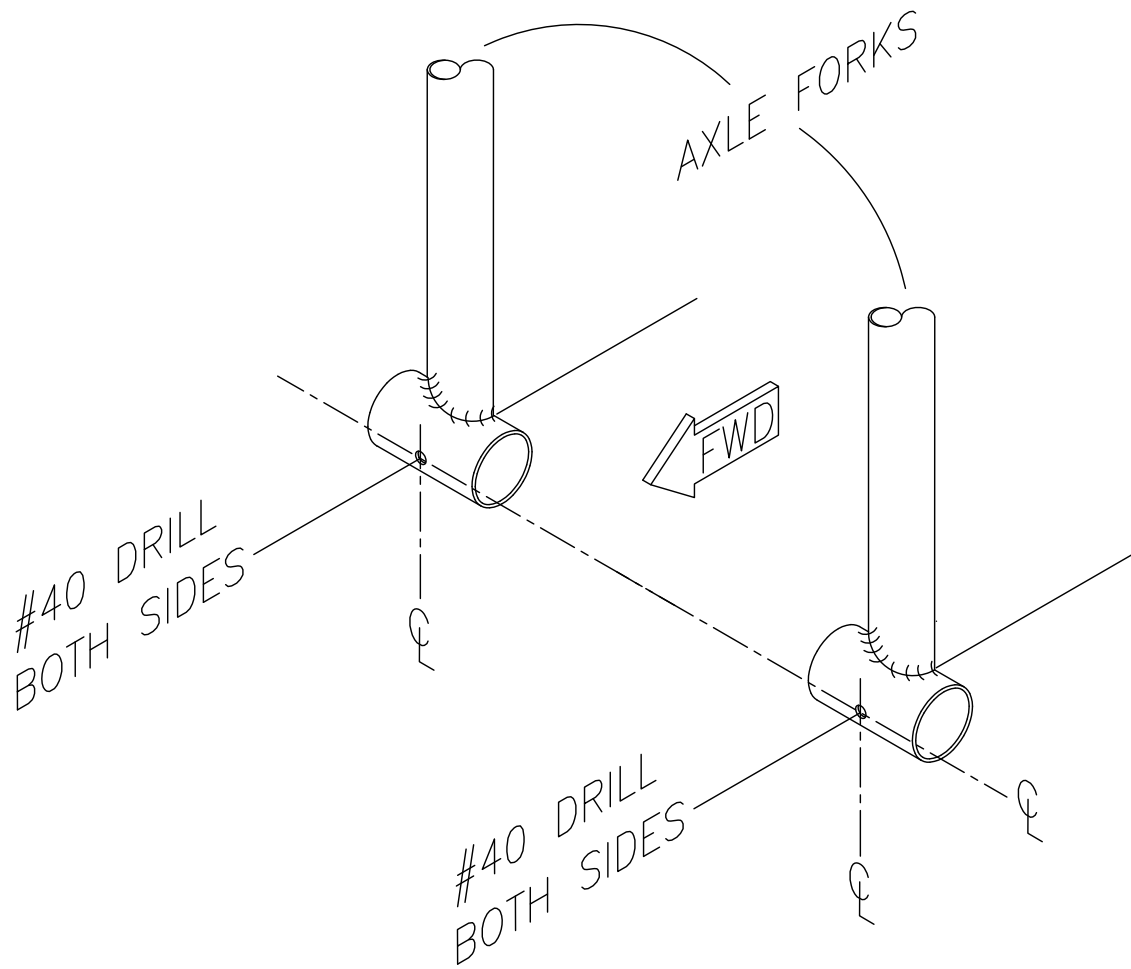
MD5600
REV. - ORIG

RRR S-20 RAVEN
TOP MAIN GEAR CLAMP PLATE ORIENTATION
FIGURE 01A-05



MD5054

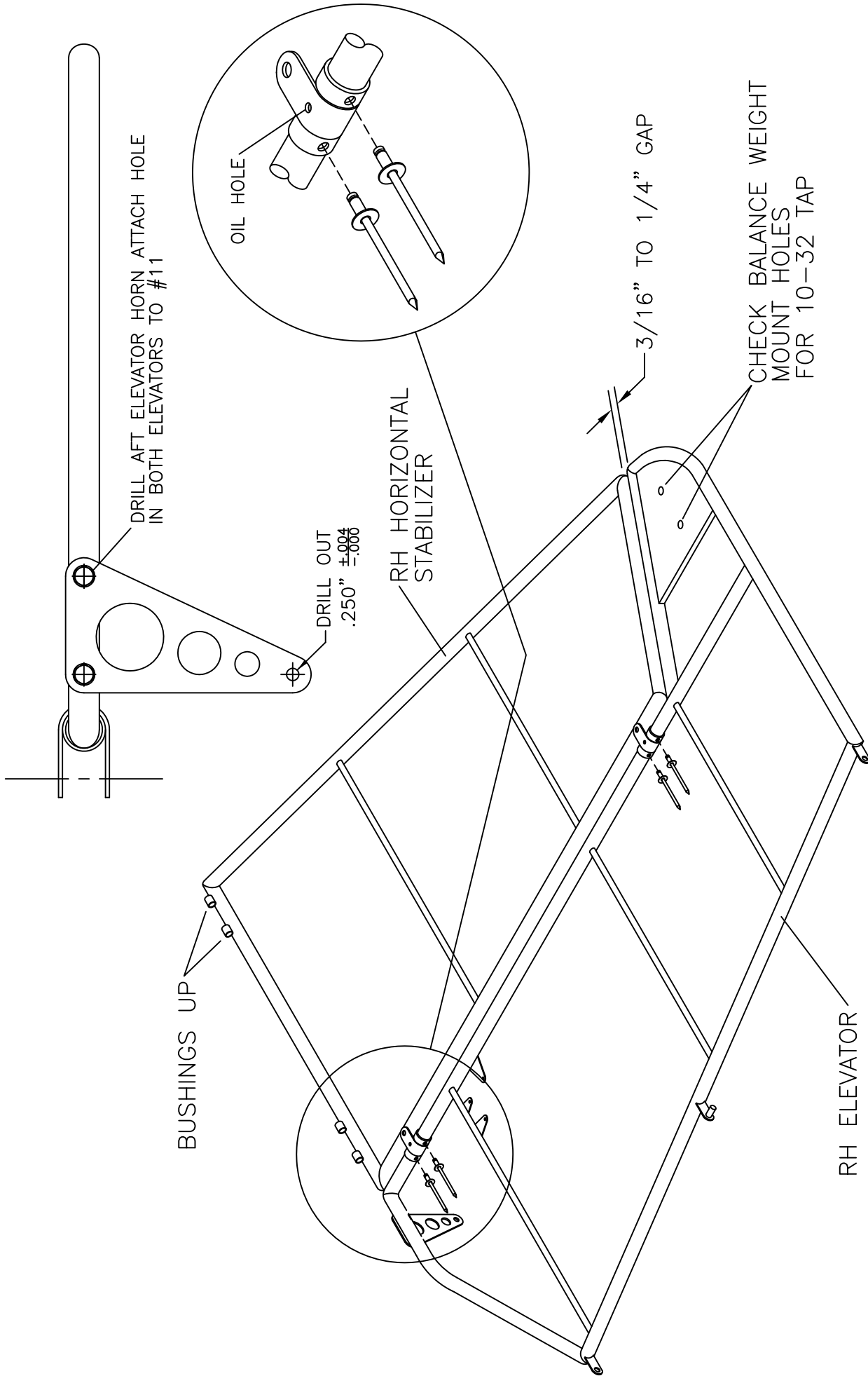
RANS S-20 RAVEN
TAIL SPRING INSTALLATION
FIGURE 01B-02



MD2958
REV. - ORIG

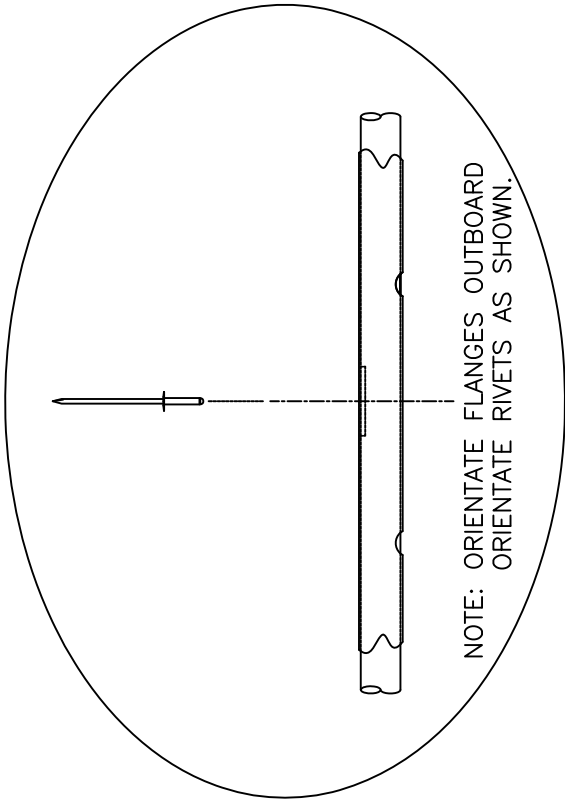
RANS S-20 RAVEN
NOSE GEAR FORK DRILLING
FIGURE 01B-12

09/01/2013



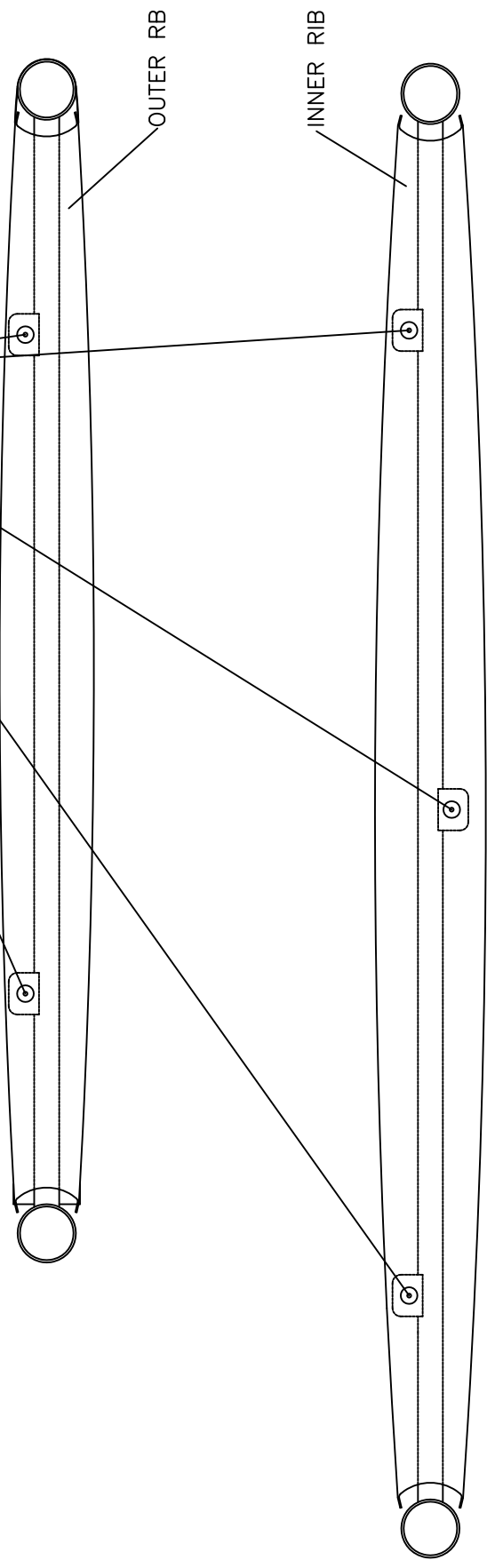
MD4286

RAMS S-20 RAVEN
 ELEVATOR HINGE ALIGNMENT
 FIGURE 01C-05



NOTE: ORIENTATE FLANGES OUTBOARD
ORIENTATE RIVETS AS SHOWN.

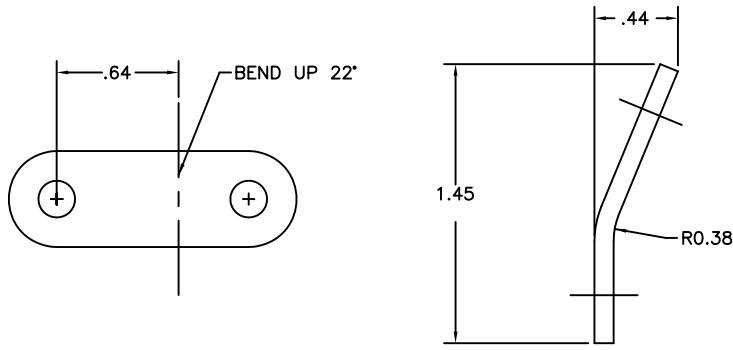
TRANSFER DRILL #30 THROUGH TABS



MD4285

RAMBLER S-20 RAVEN
HORIZONTAL STABILIZER RIBS
FIGURE 01C-09

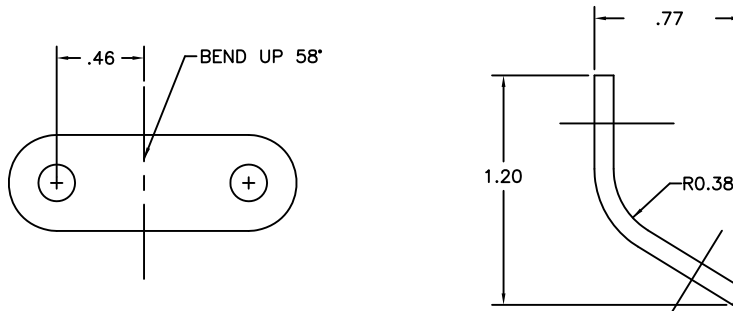
1:1



BEND PROFILE

ATTACH TANG
HORIZONTAL STABILIZER BOTTOM
MAKE (6)

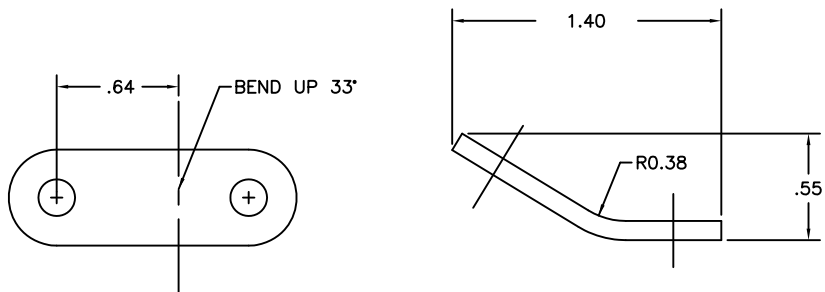
1:1



BEND PROFILE

ATTACH TANG
VERTICAL STABILIZER
MAKE (4)

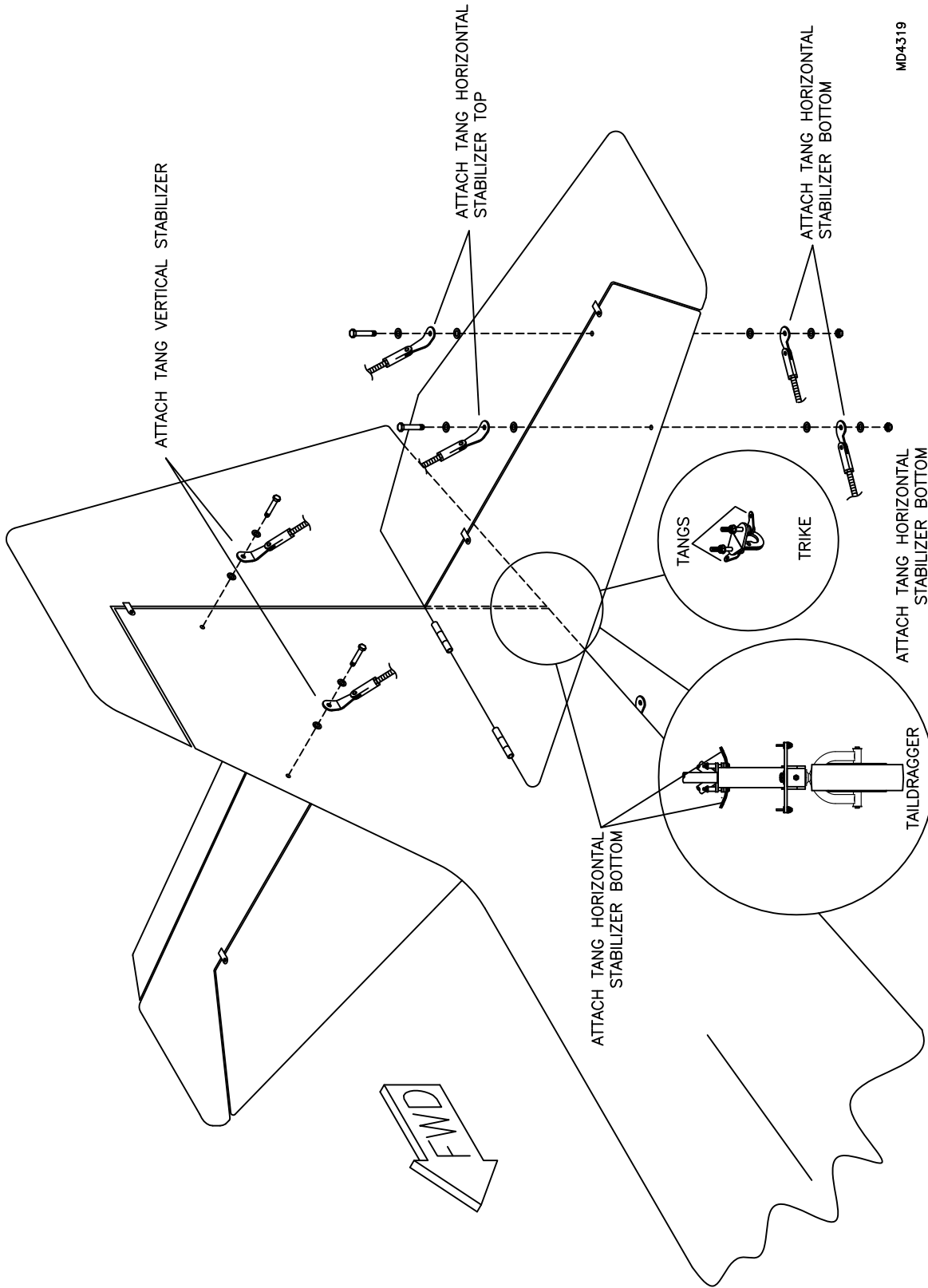
1:1



ATTACH TANG
HORIZONTAL STABILIZER TOP
MAKE (4)

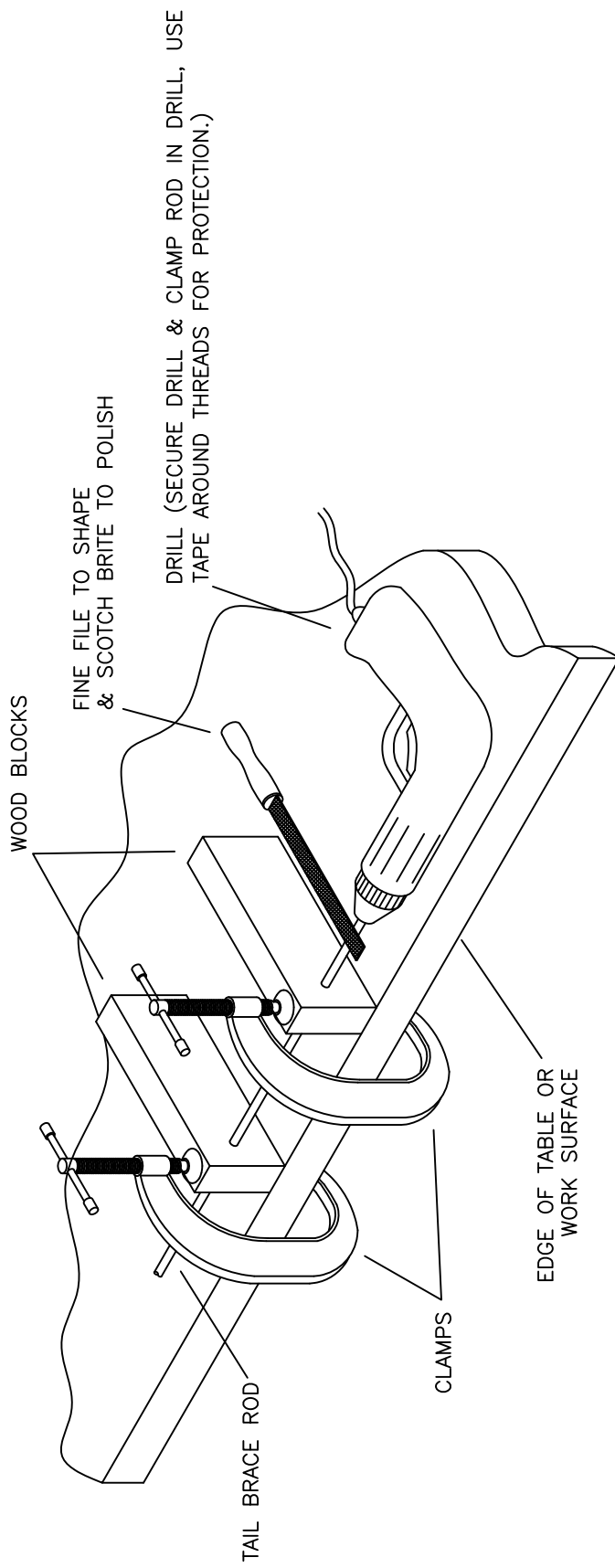
MD4313

RANS S-20 RAVEN
MODIFIED TANGS FOR TAIL BRACE ROD ATTACH
FIGURE 01C-12

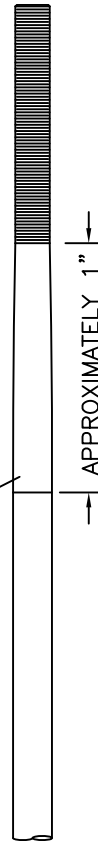


MD4319

RAMS S-20 RAVEN
TANG LOCATIONS FOR TAIL BRACE RODS
FIGURE 01C-13

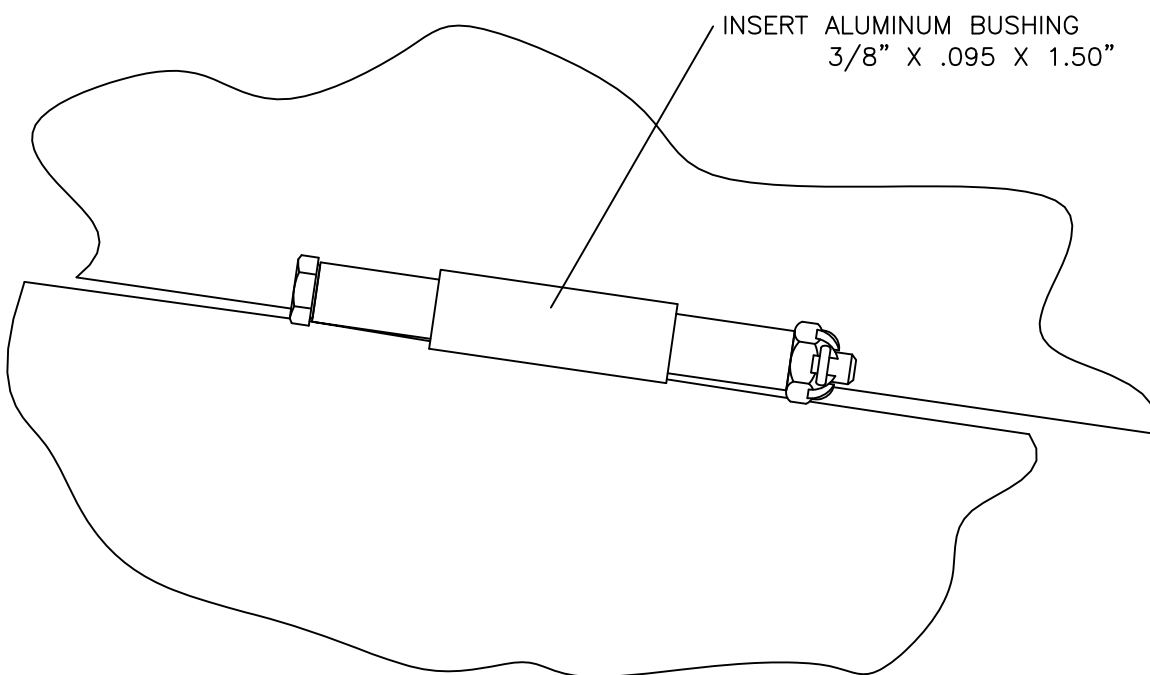


SMOOTH TRANSITION AREA FROM FULL DIA. TO THREAD DIA. - NO ABRUPT CHANGES IN CROSS SECTION.



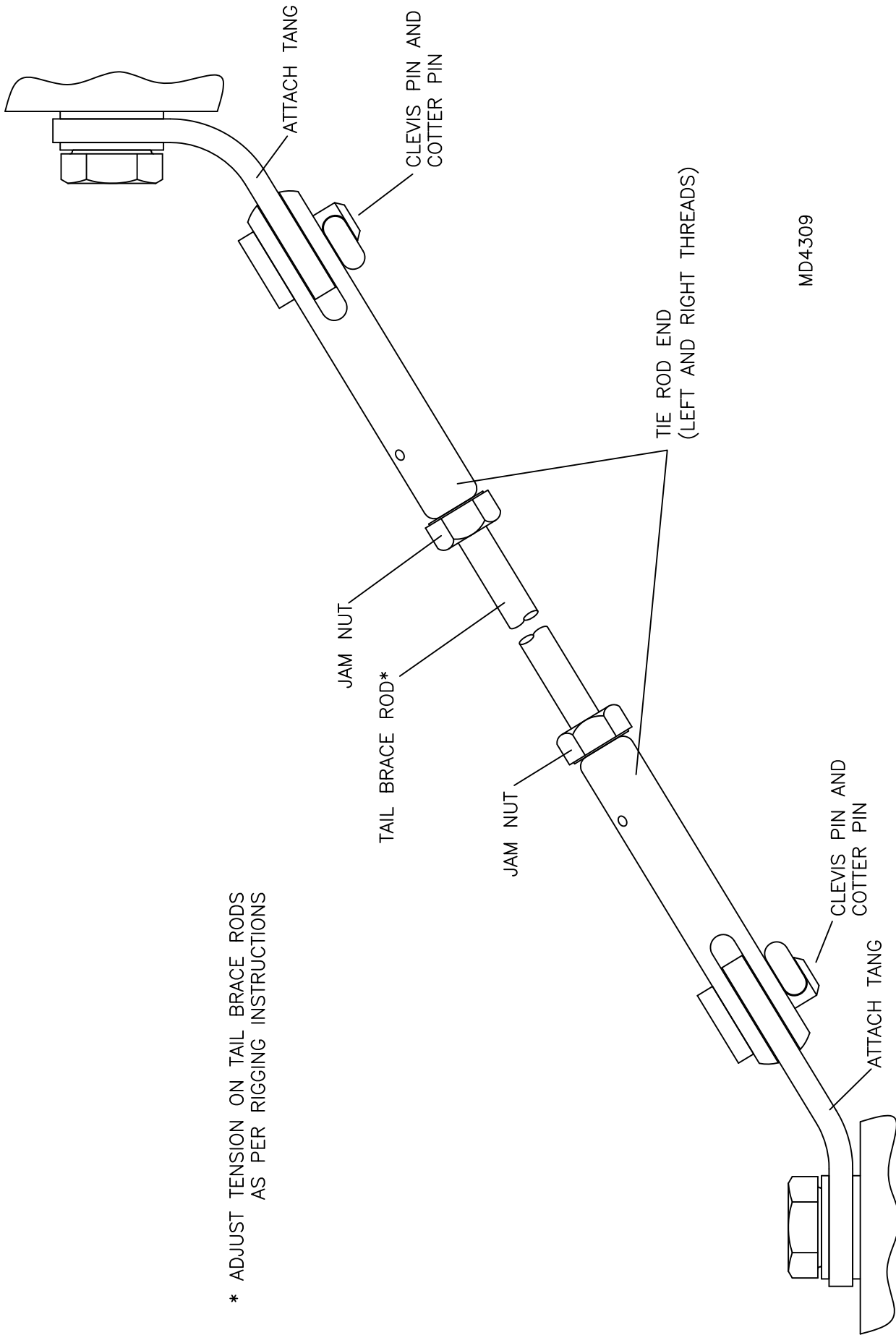
MD4464

RAVEN S-20 RAVEN
TAIL BRACE ROD MODIFICATION
FIGURE 01C-14



MD4308

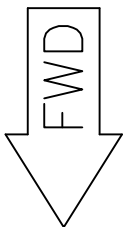
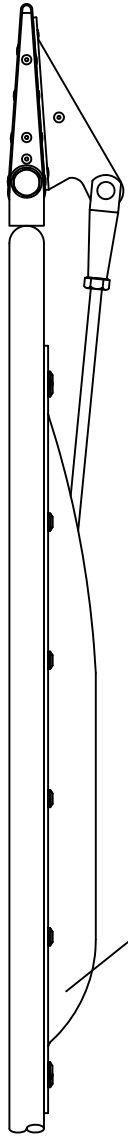
RANS S-20 RAVEN
HORIZONTAL TAIL TO FUSELAGE ATTACH
FIGURE 01C-15



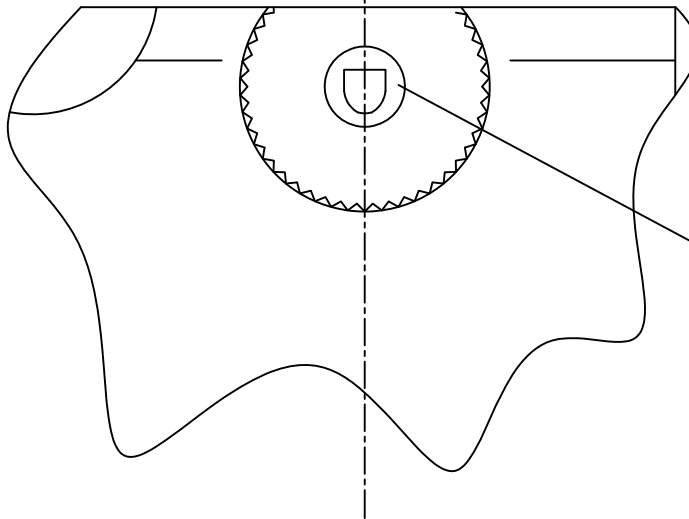
MD4309

* ADJUST TENSION ON TAIL BRACE RODS
AS PER RIGGING INSTRUCTIONS

RAVEN S-20 RAVEN
HORIZONTAL TAIL BRACING (TYPICAL)
FIGURE 01C-17

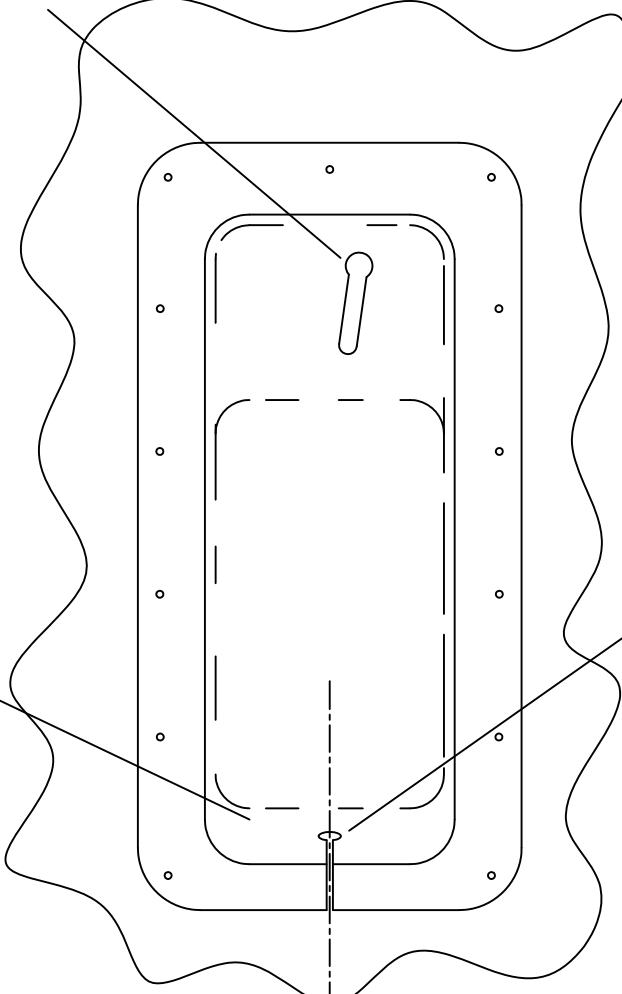


ROUND PART OF FAIRING IS FORWARD.



SERVO WIRING EXIT
ON HORIZONTAL STAB
(SEAPLANE GROMMET)

SERVO PUSH-ROD EXIT
LOCATE HOLE TO ALLOW
FULL SERVO TRAVEL EACH
WAY. (USE 1:1 TEMPLATE)



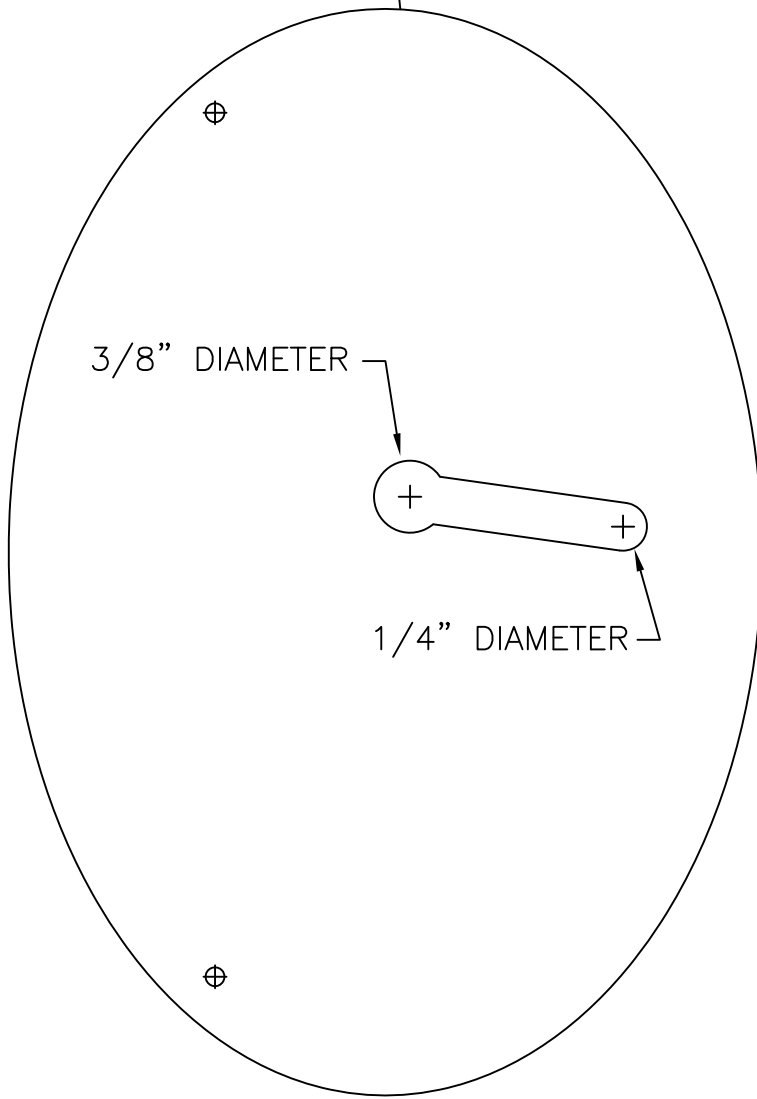
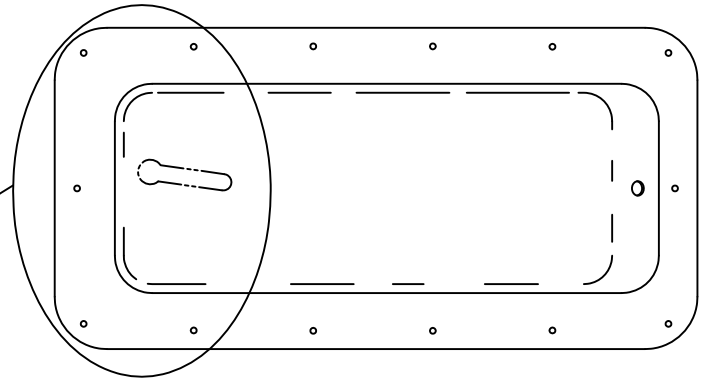
SERVO WIRING EXIT

LOCATE AND DRILL 1/4" FOR BEST FIT WITH SERVO WIRING
AND SEAPLANE GROMMET ON HORIZONTAL STABILIZER.
SLOT FAIRING IF DESIRED FOR EASY REMOVAL.
INSTALL RUBBER GROMMET IN FINAL INSTALLATION.

RAVEN S-20 RAVEN
INSTALLATION OF TRIM EXIT FAIRING
FIGURE 01C-27

MD4316

USE 1:1 TEMPLATE TO
LOCATE CUT-OUT AS SHOWN



3/8" DIAMETER

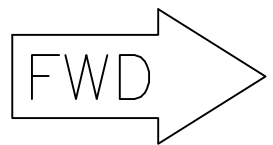
+

+

1/4" DIAMETER

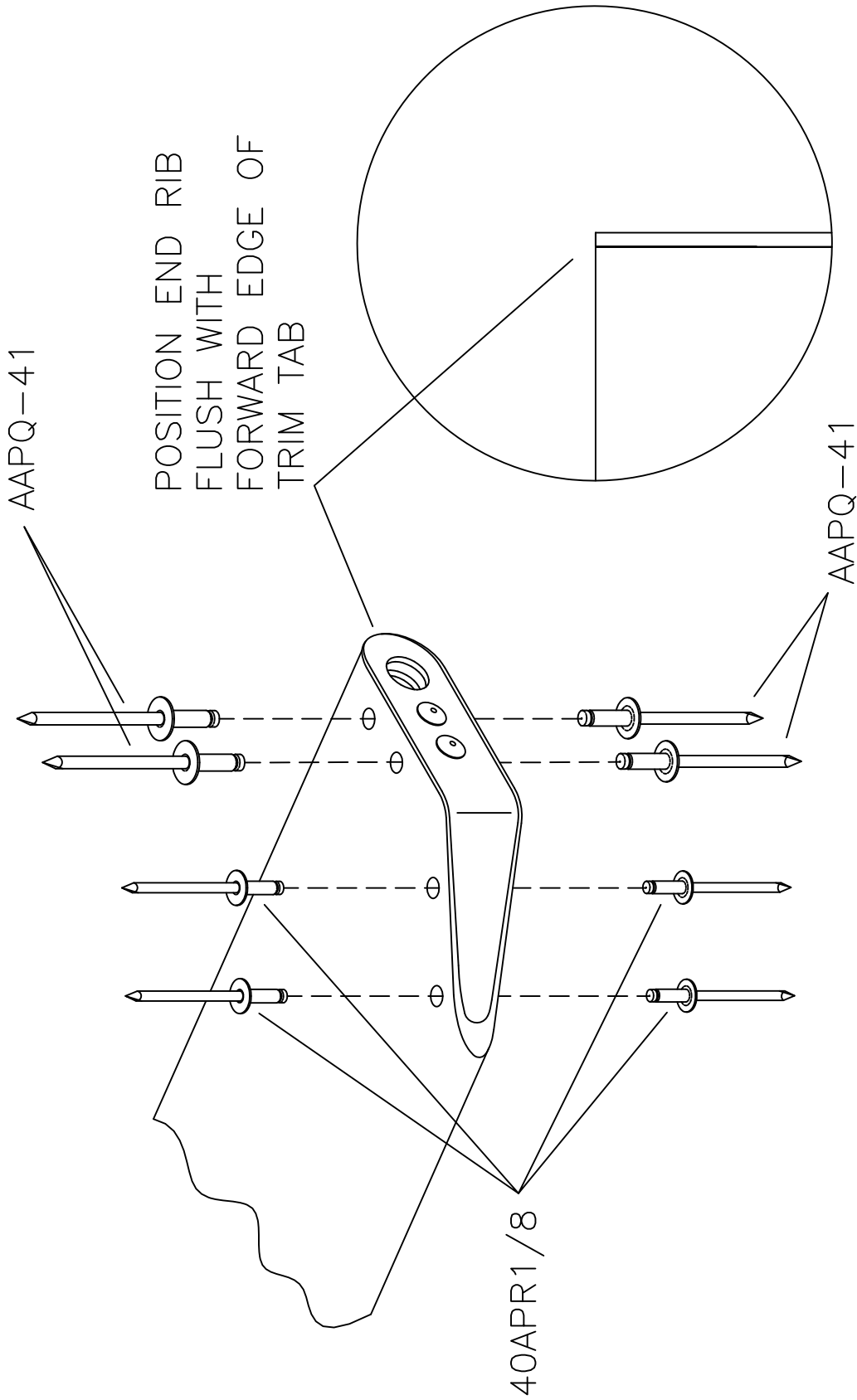
1:1 TEMPLATE

MD4487



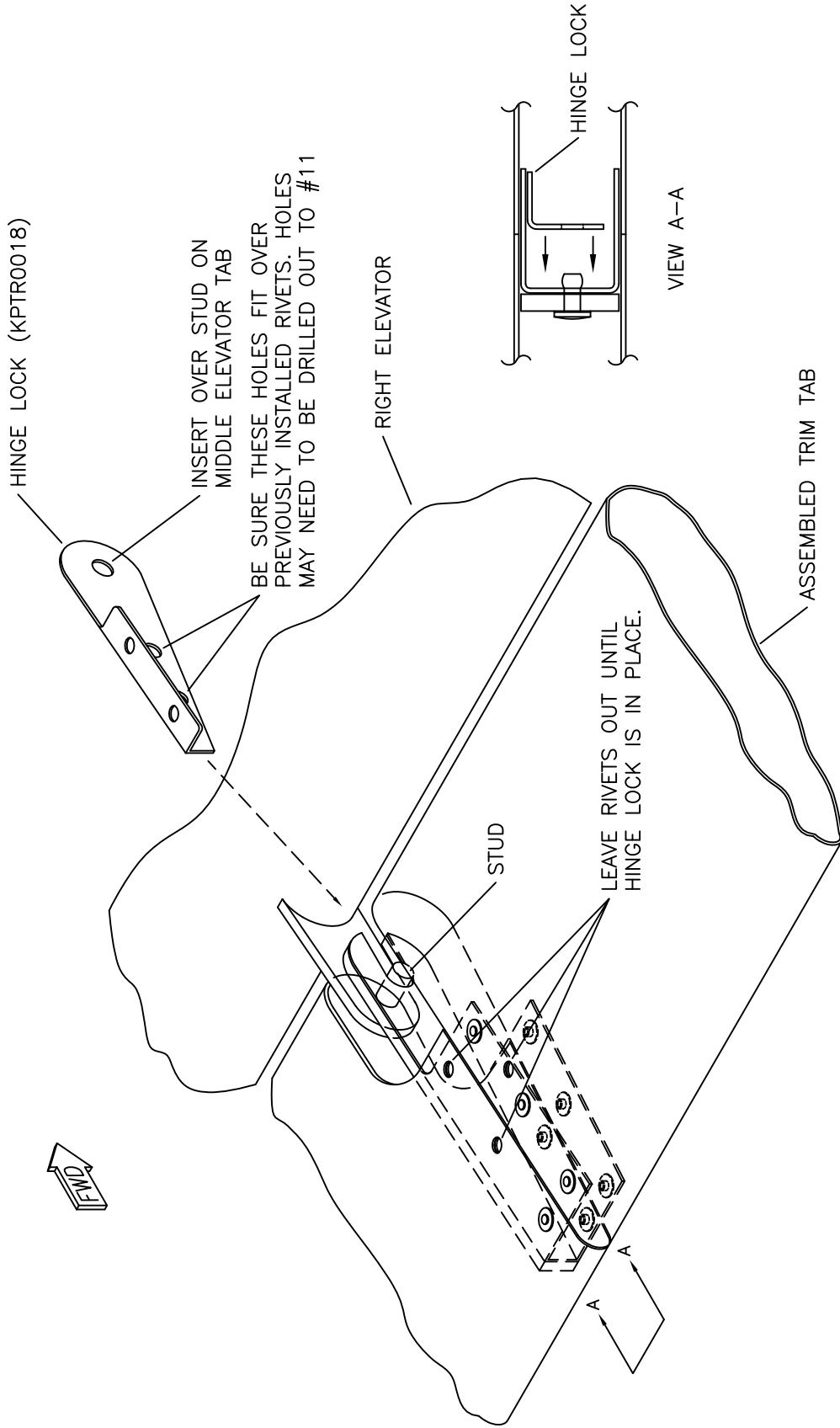
RANS S-20 RAVEN
TRIM EXIT FAIRING - SERVO PUSH-ROD EXIT
FIGURE 01C-31

09/01/2013



MD4306

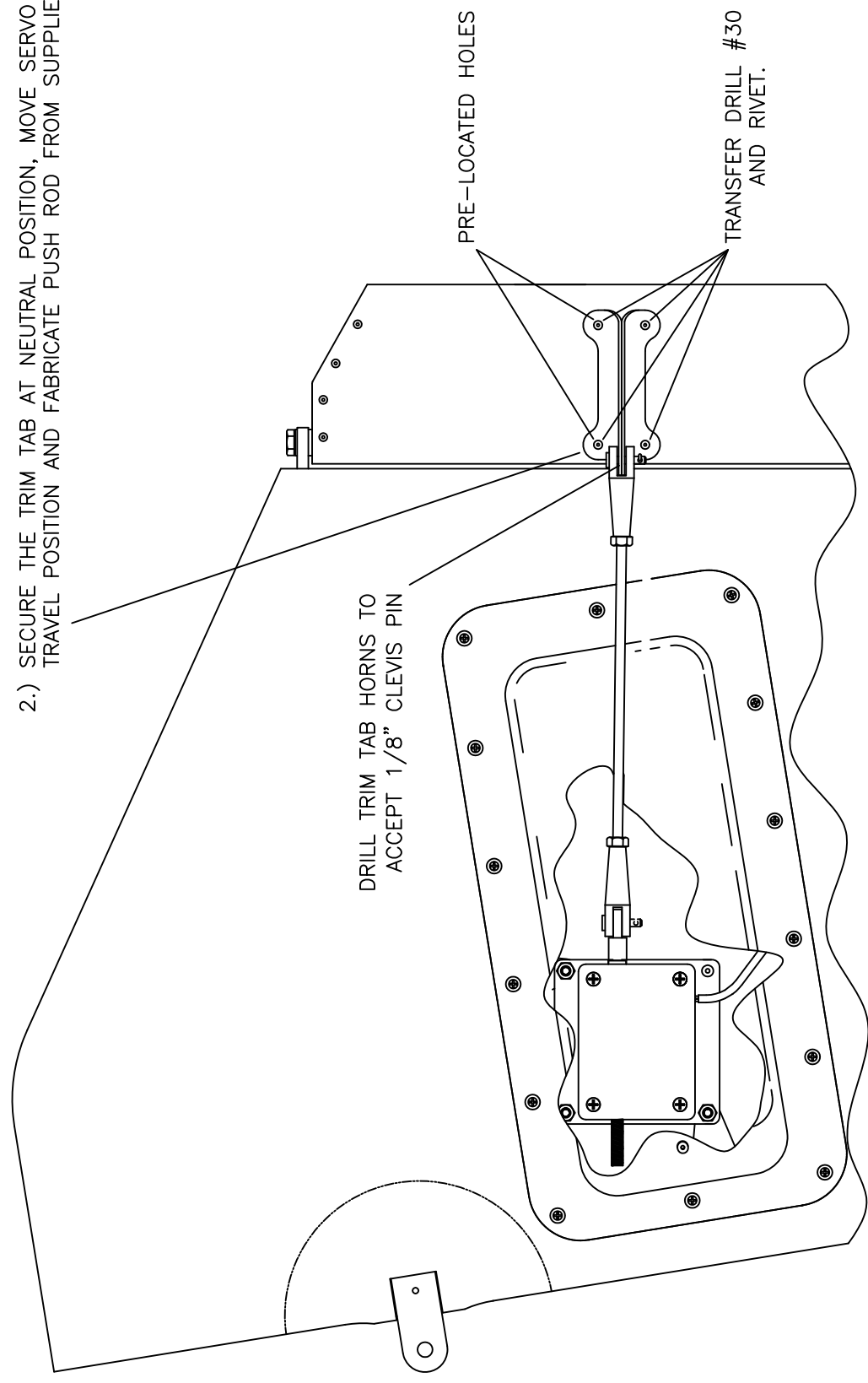
RAVEN S-20 RAVEN
TRIM TAB AND RIBS
FIGURE 01D-04



MD4297

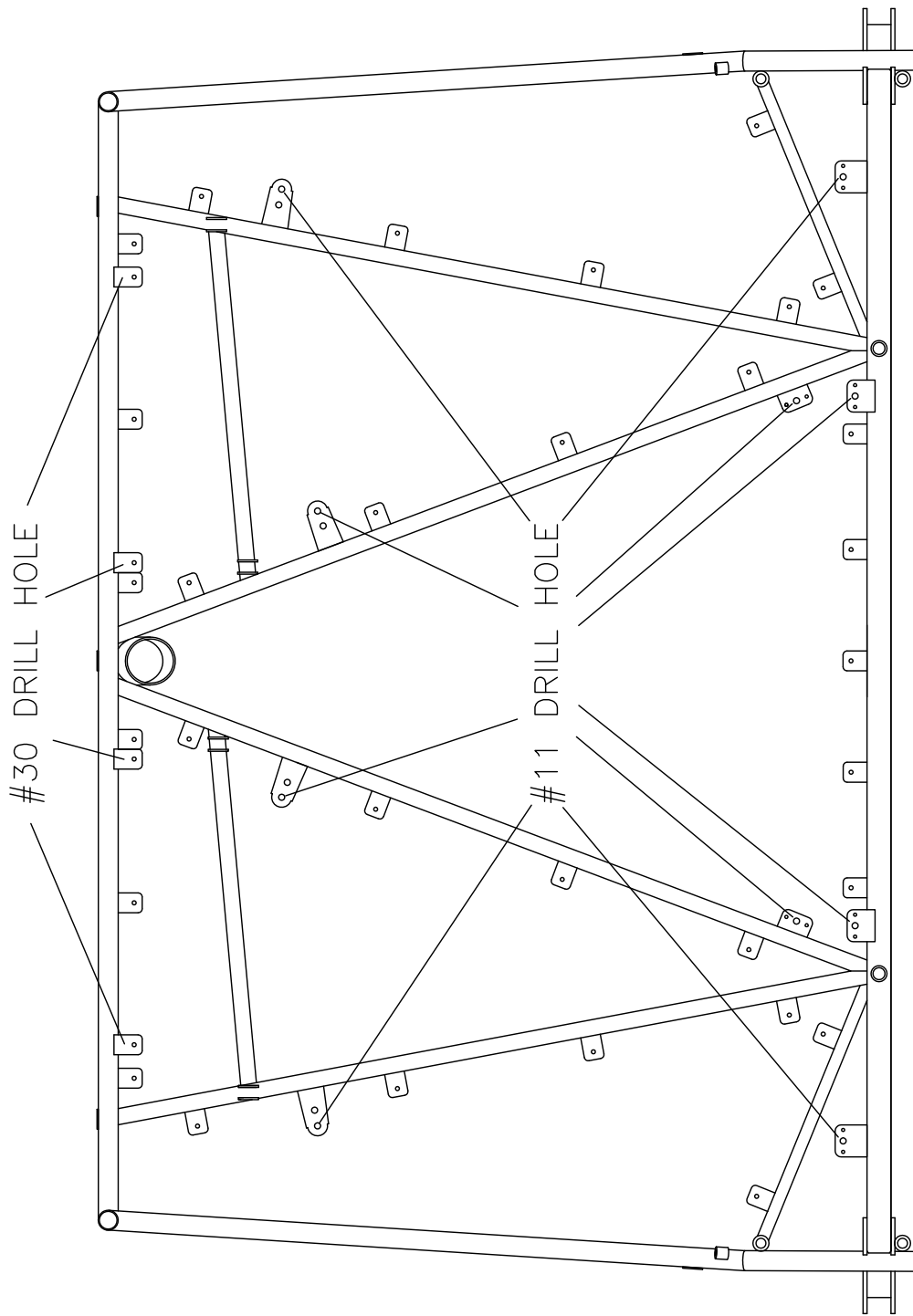
RAMS S-20 RAVEN
TRIM TAB CENTER RIB AND HINGE LOCK
FIGURE 01D-08

- 1.) LOCATE TRIM TAB HORNS USING TWO (2) PRE-LOCATED HOLES IN INBOARD TRIM TAB. TRANSFER DRILL ALL HOLES #30 AND RIVET.
- 2.) SECURE THE TRIM TAB AT NEUTRAL POSITION, MOVE SERVO TO HALF TRAVEL POSITION AND FABRICATE PUSH ROD FROM SUPPLIED MATERIAL.



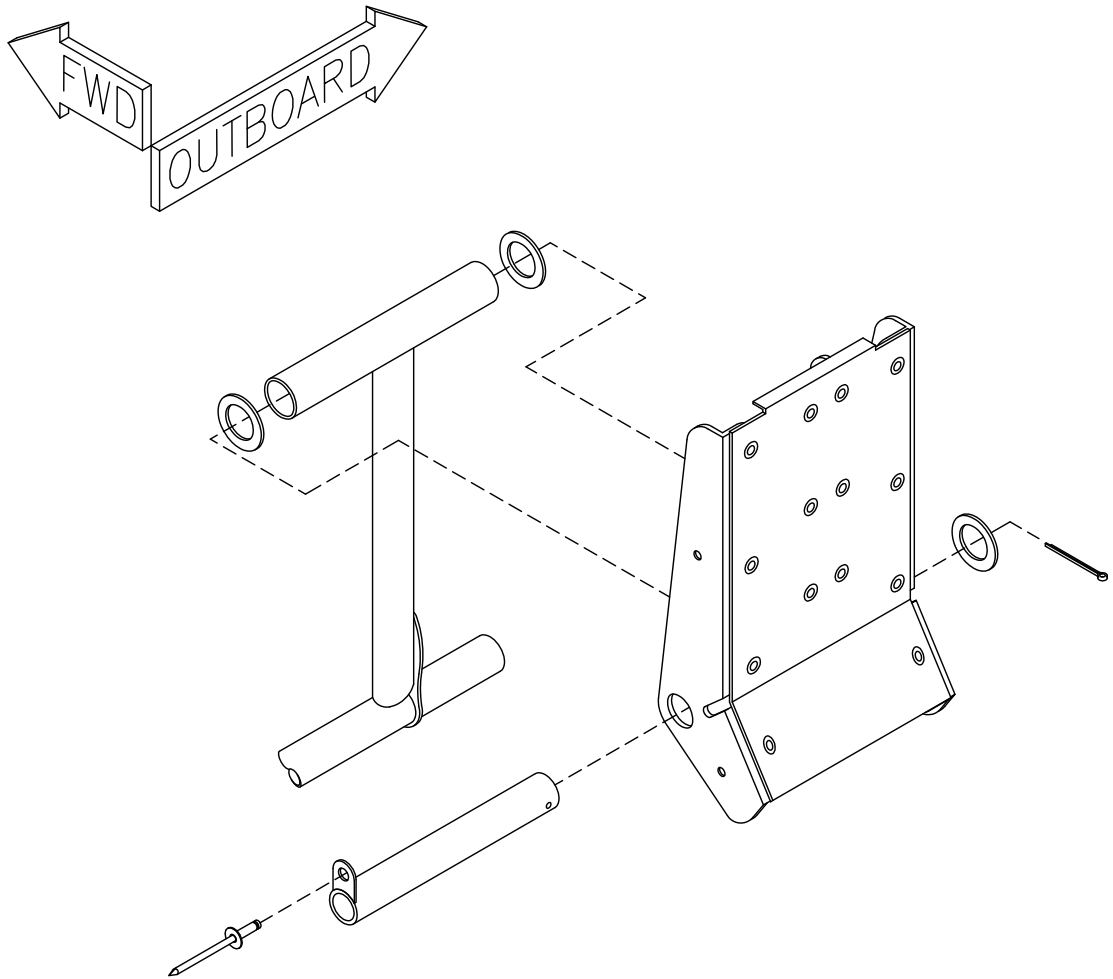
MD4317

RAMS S-20 RAVEN
TRIM TAB HORN INSTALLATION
FIGURE 01D-18



MD5604
REV. - ORIG

RAVEN S-20 RAVEN
FLOORBOARD DRILL SCHEDULE
FIGURE 01E-01

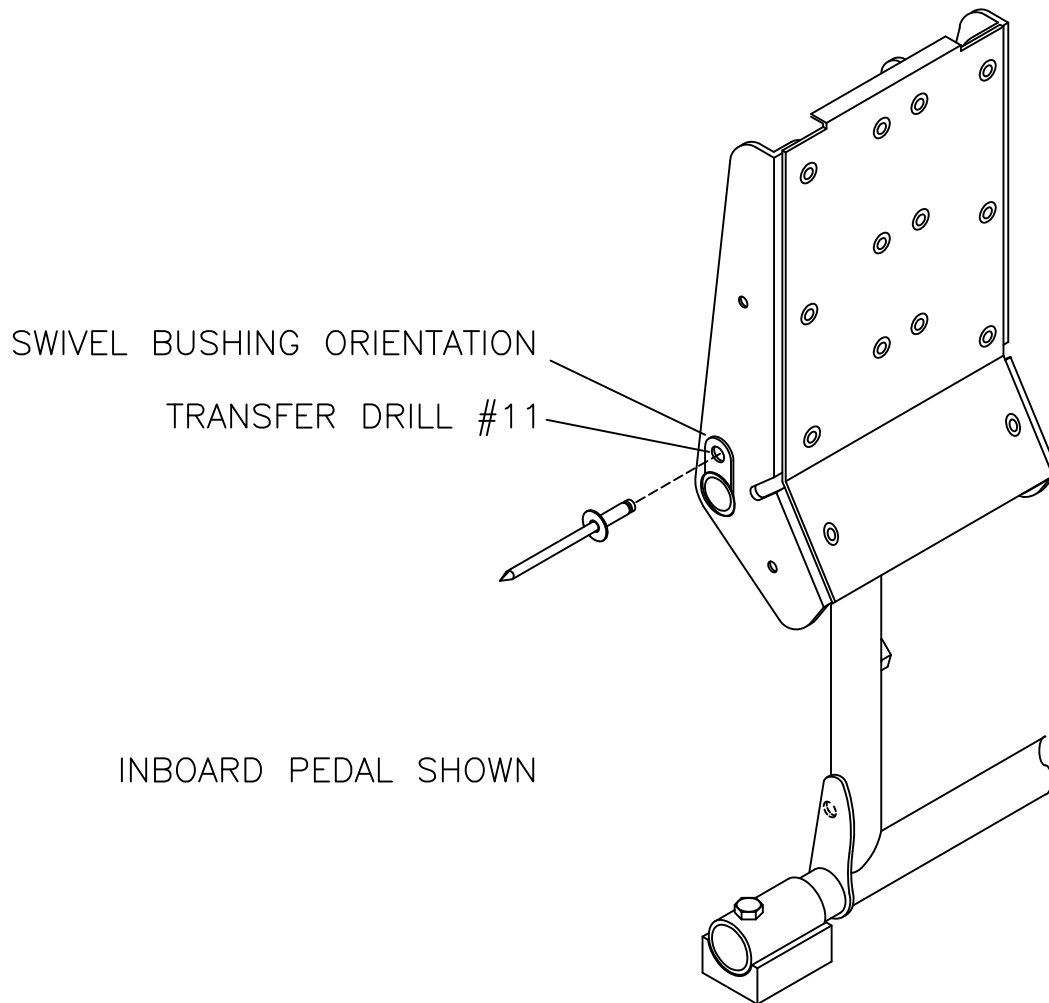


OUTBOARD PEDAL SHOWN

RANS S-20 RAVEN
RUDDER PEDAL INSTALLATION
FIGURE 01F-02

MD2266

09/01/2013

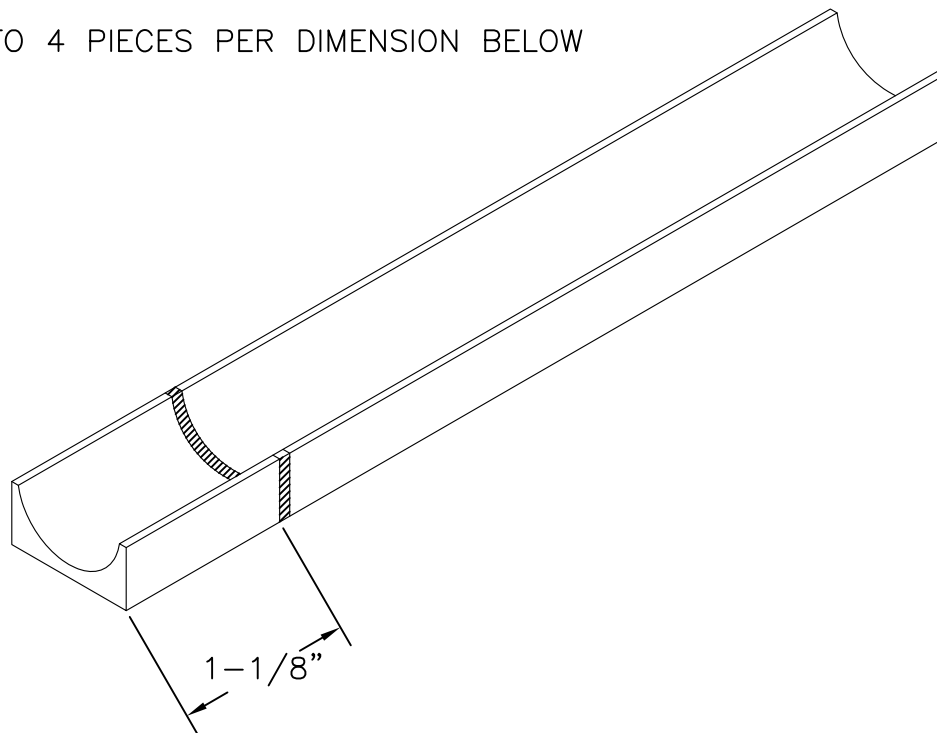


RANS S-20 RAVEN
RUDDER PEDAL INSTALLATION
FIGURE 01F-03

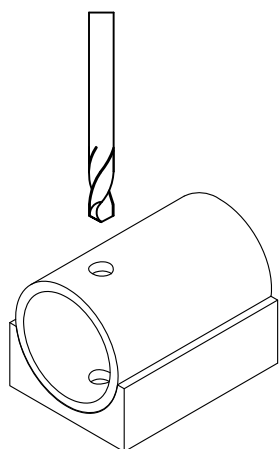
MD2267

09/01/2013

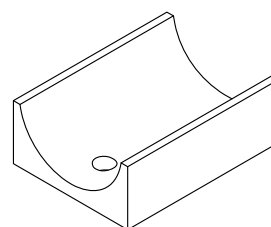
CUT PART INTO 4 PIECES PER DIMENSION BELOW



ALIGN END OF CUT BRAKE SADDLE WITH END OF RUDDER PEDAL BUSHING. USING A DRILL PRESS, DRILL #11 THROUGH BUSHING



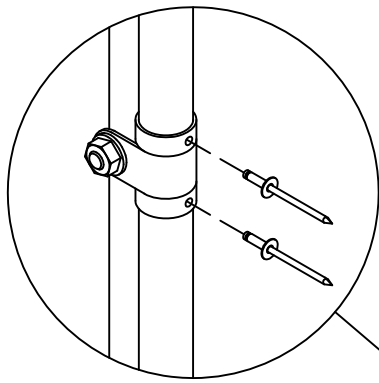
FINISHED PART



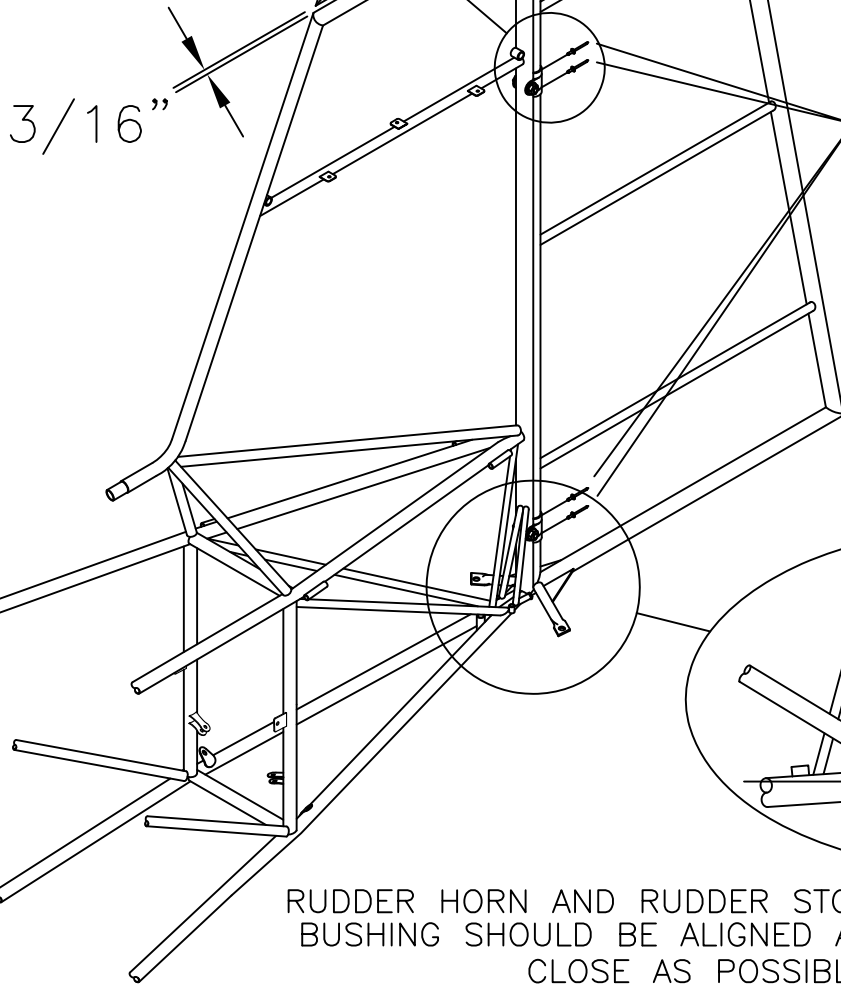
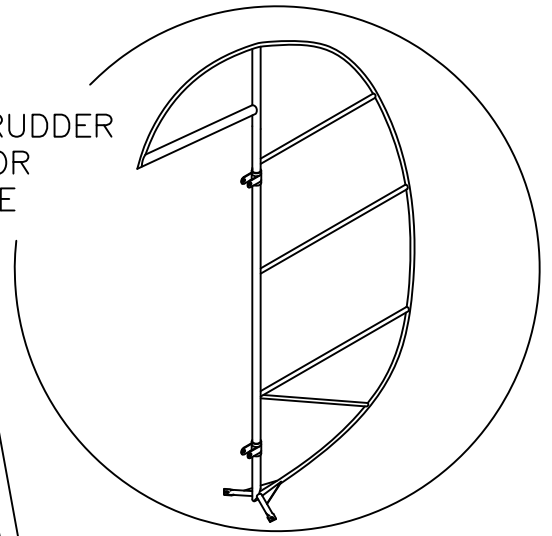
RANS S-20 RAVEN
BRAKE SADDLE MODIFICATION
FIGURE 01F-05

MD2267

09/01/2013



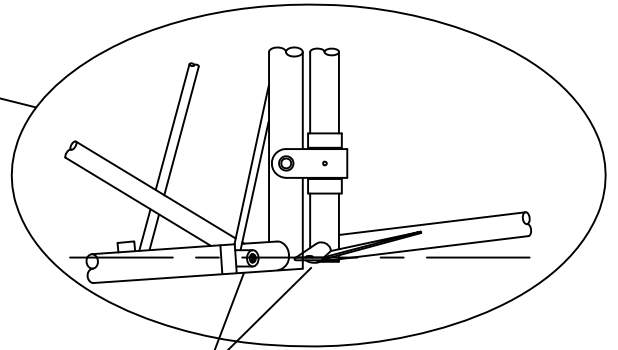
CLASSIC RUDDER
SHOWN FOR
REFERENCE



3/16"

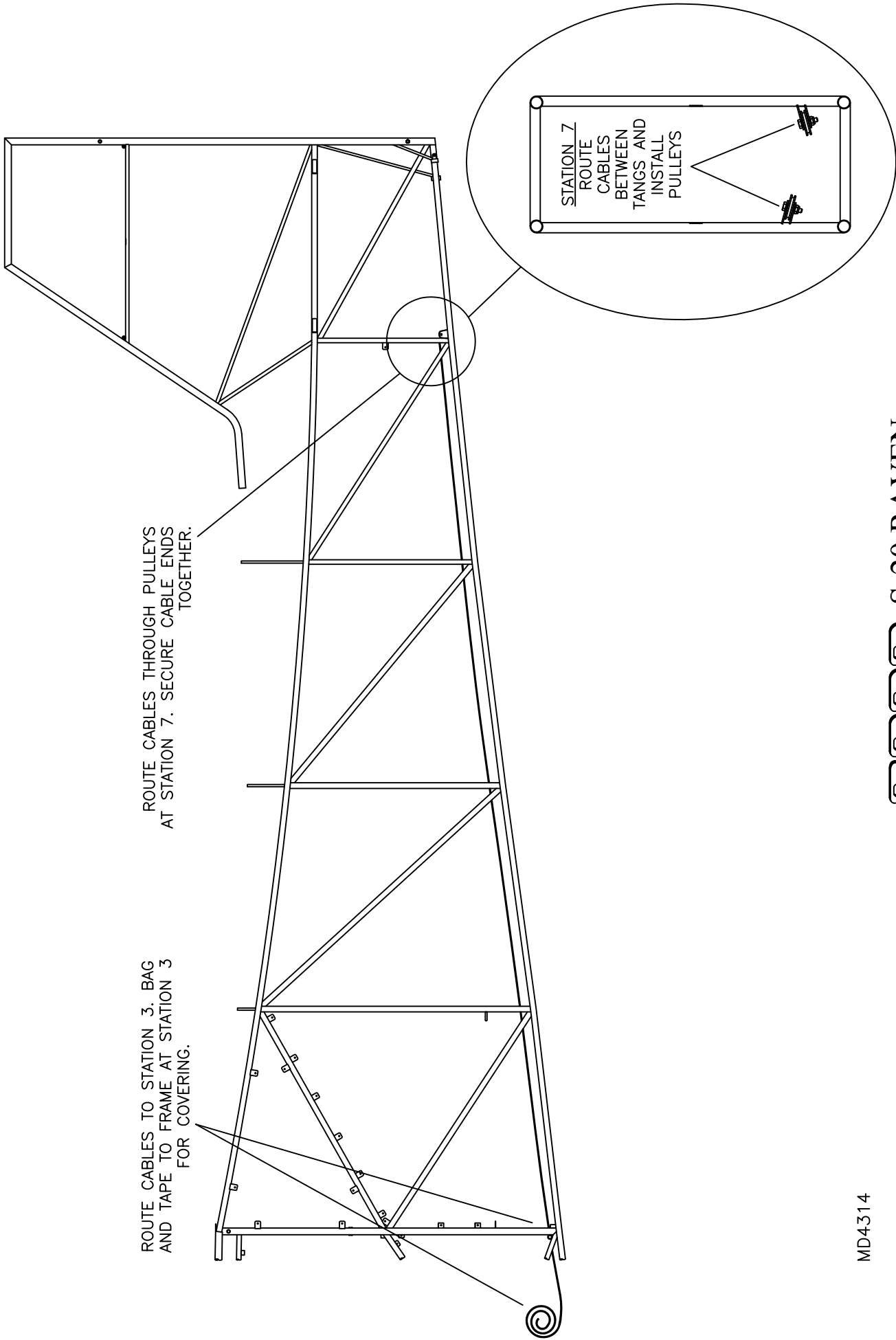
INSTALL RIVETS INTO
RETAINING COLLARS
ON INTERIOR SIDE
OF RUDDER.

RUDDER HORN AND RUDDER STOP
BUSHING SHOULD BE ALIGNED AS
CLOSE AS POSSIBLE



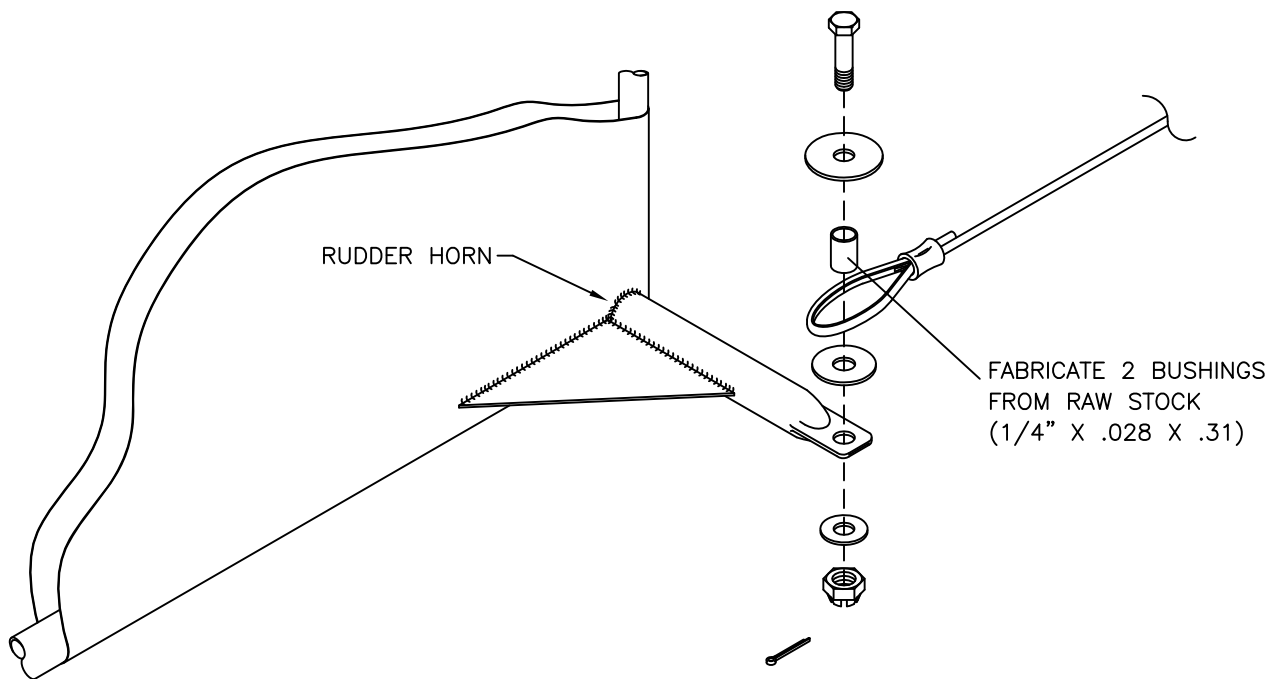
MD4294

RANS S-20 RAVEN
RUDDER HINGE ALIGNMENT
FIGURE 01G-01



MD4314

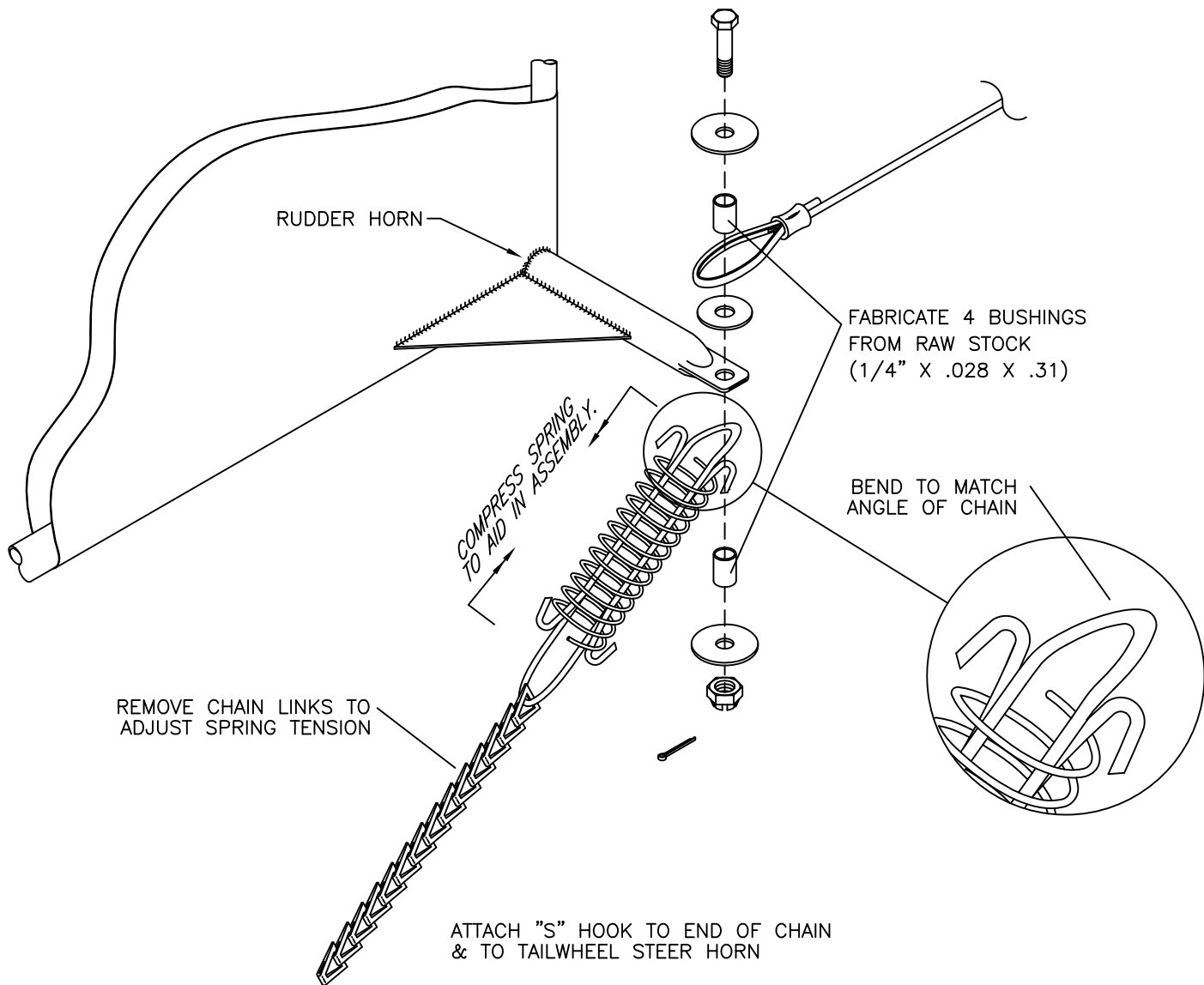
RAMS S-20 RAVEN
INSTALL RUDDER CABLES FOR COVERING
FIGURE 01G-05



MD4287

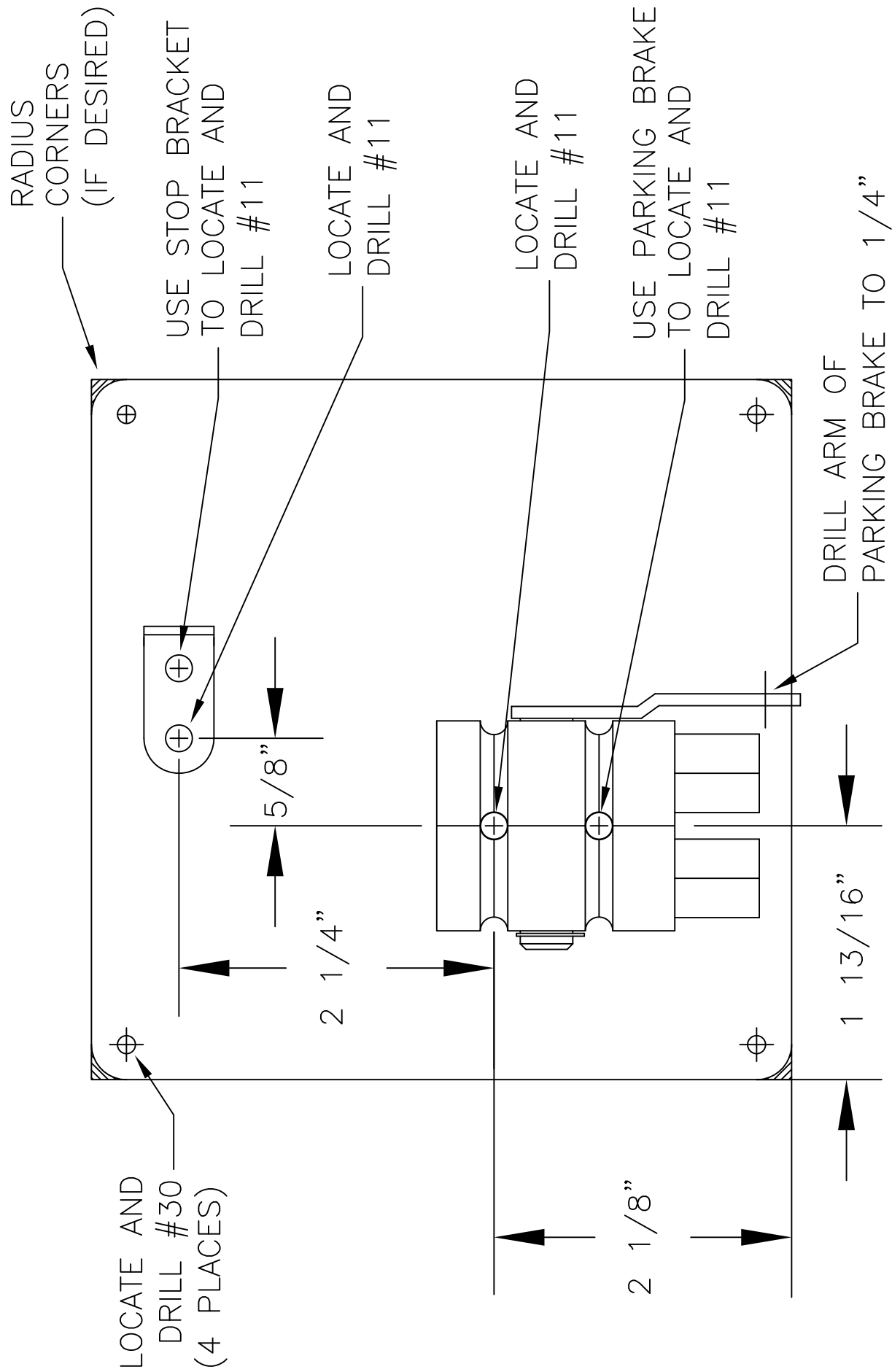
RANS S-20 RAVEN
TRIKE - RUDDER CABLE TO RUDDER ATTACH
FIGURE 01G-11

09/01/2013



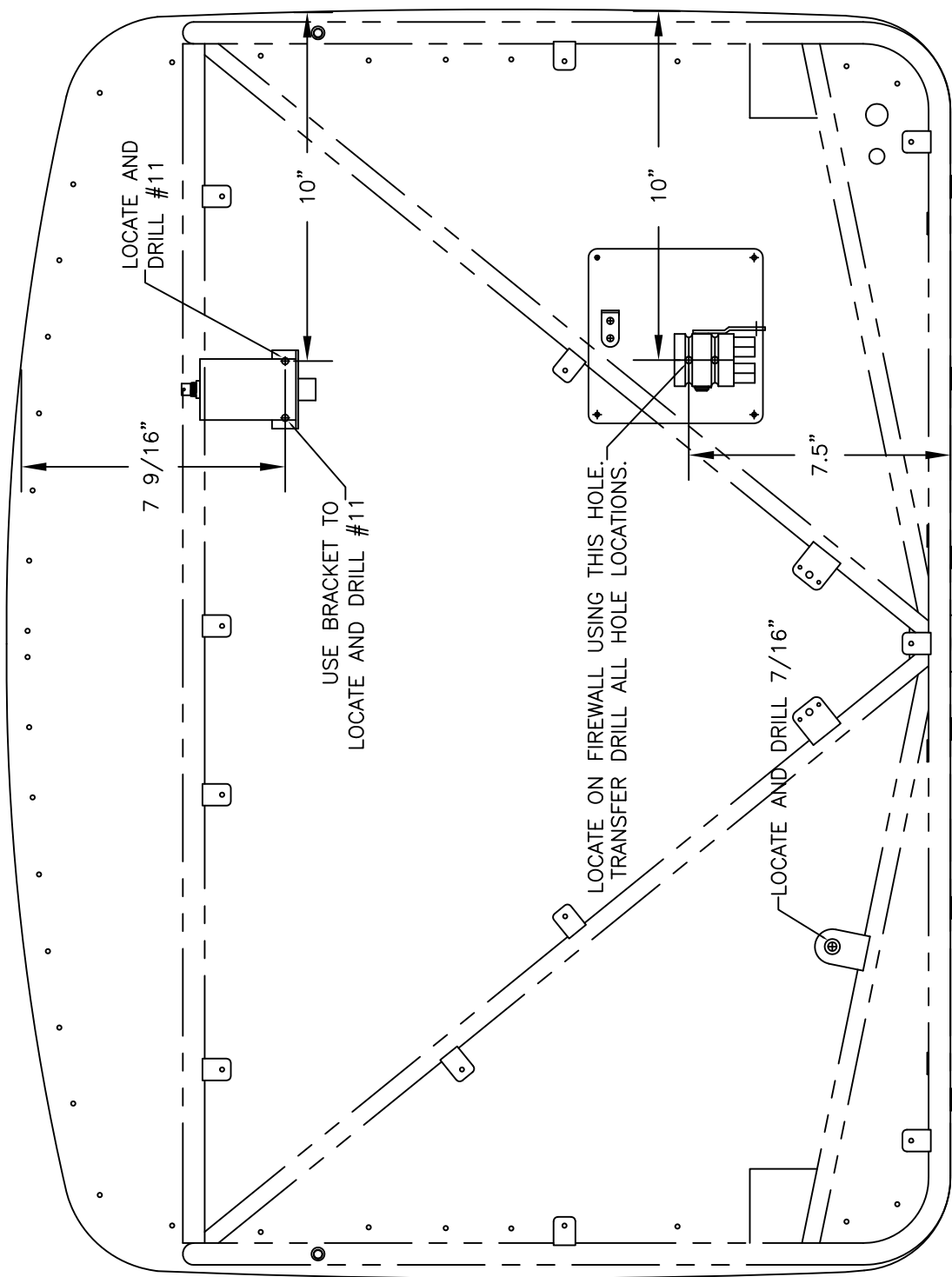
MD4287

RANS S-20 RAVEN
TAILDRAGGER - RUDDER CABLE TO RUDDER ATTACH
FIGURE 01G-12



RAVEN S-20 RAVEN
PARK BRAKE BACKING PLATE MODIFICATION
FIGURE 01H-02

MD5575
 REV. - ORIG

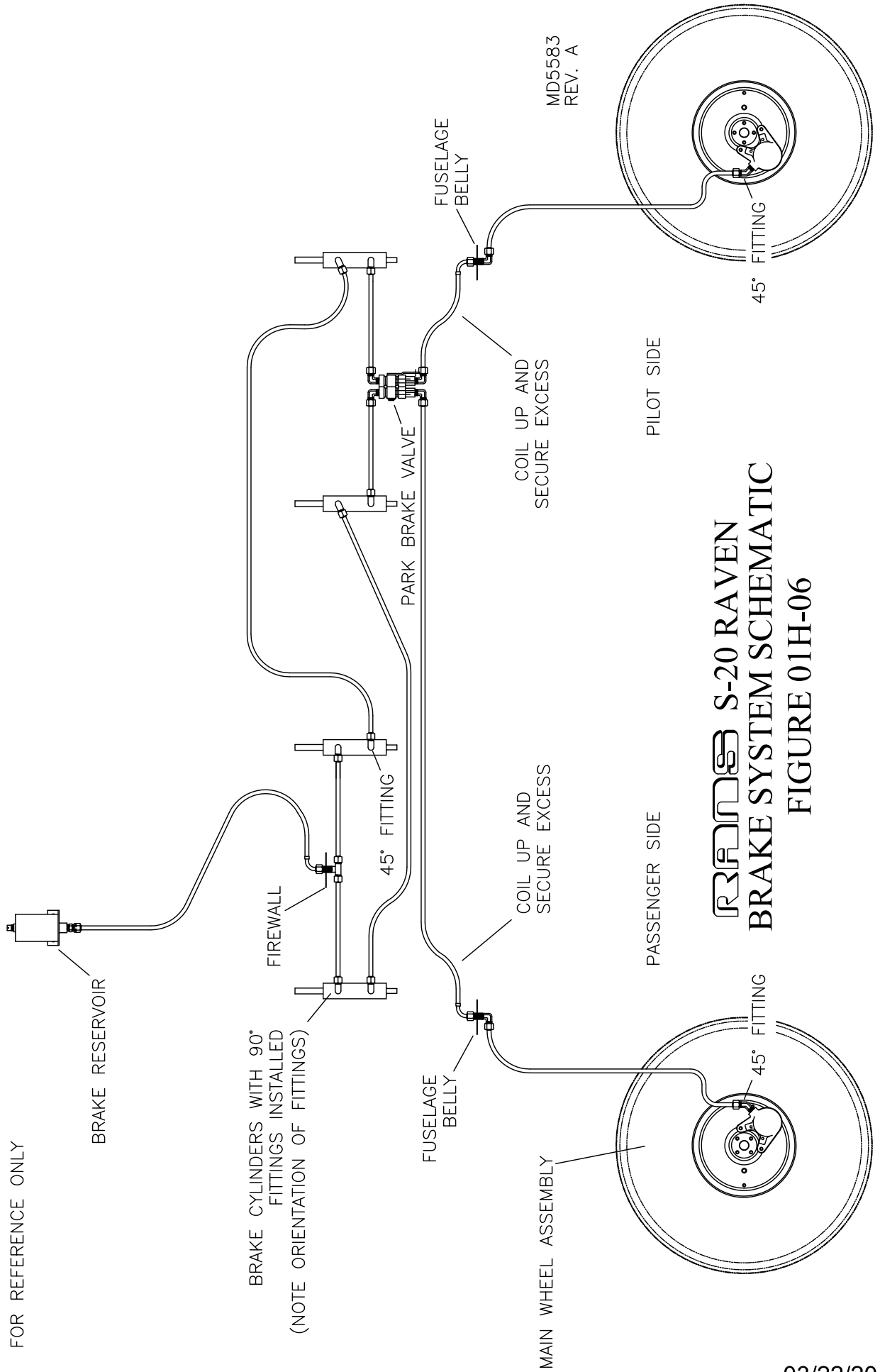


VIEWED FROM FRONT

MD5575
REV. -- ORIG

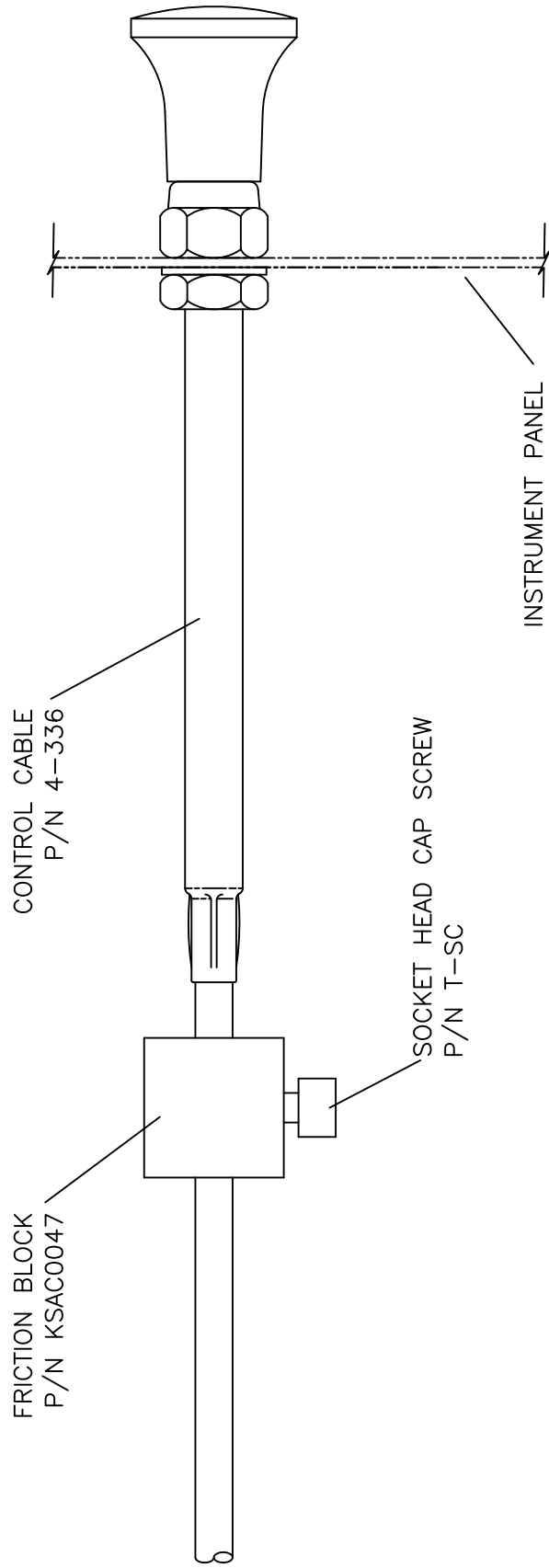
RAVEN S-20 RAVEN
FIREWALL MODIFICATION FOR HYDRAULIC BRAKE INSTALL
FIGURE 01H-03

NOT TO SCALE
FOR REFERENCE ONLY



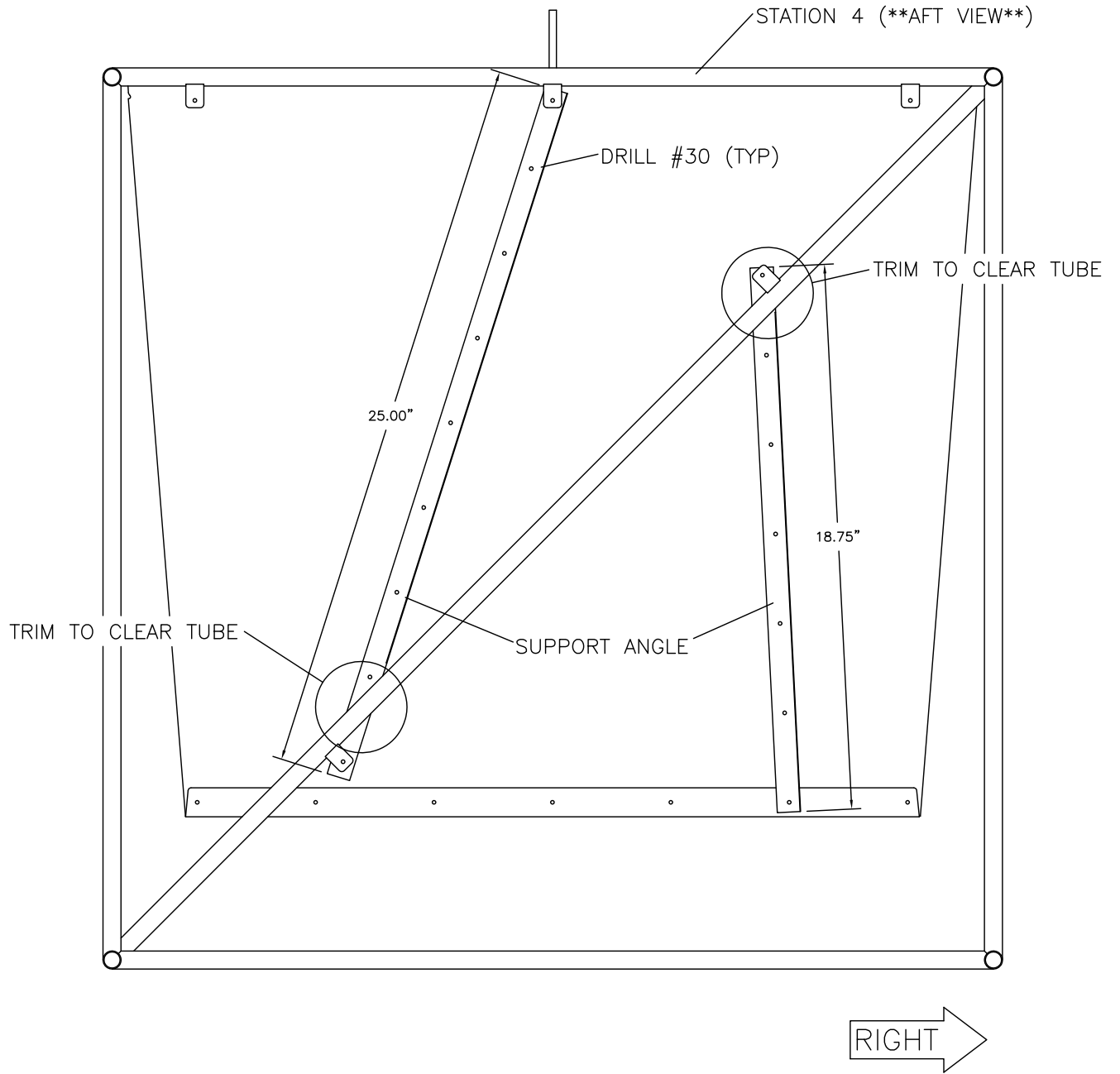
MD5583
REV. A

RAVEN S-20 RAVEN
BRAKE SYSTEM SCHEMATIC
FIGURE 01H-06



MD4423
REV. - ORIG

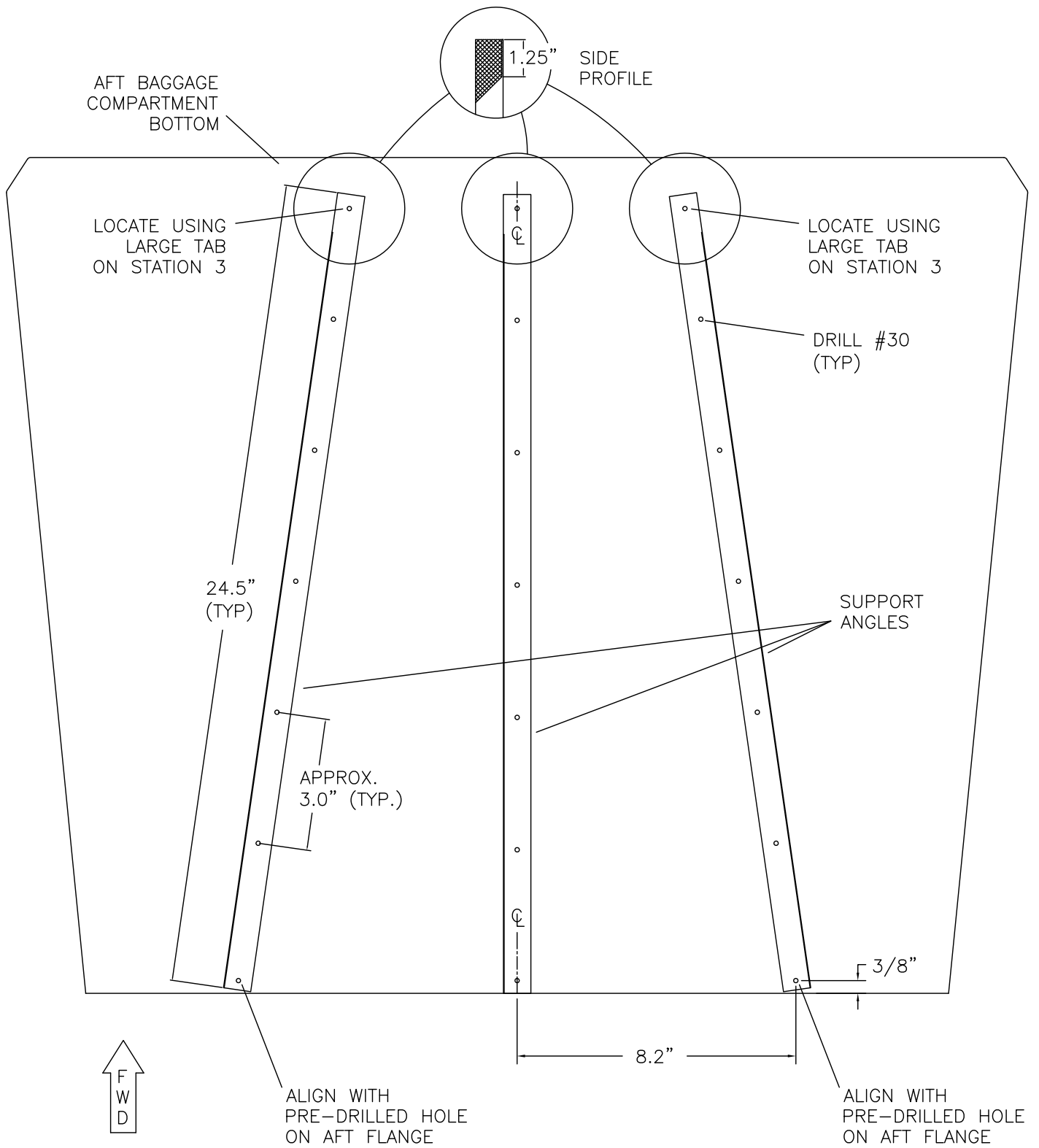
RAMS S-20 RAVEN
CONTROL CABLE INSTALLATION
FIGURE 01H-14



MD5612
REV. B

RANS S-20 RAVEN
AFT BAGGAGE COMPARTMENT - STATION 4
FIGURE 01I-07

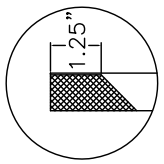
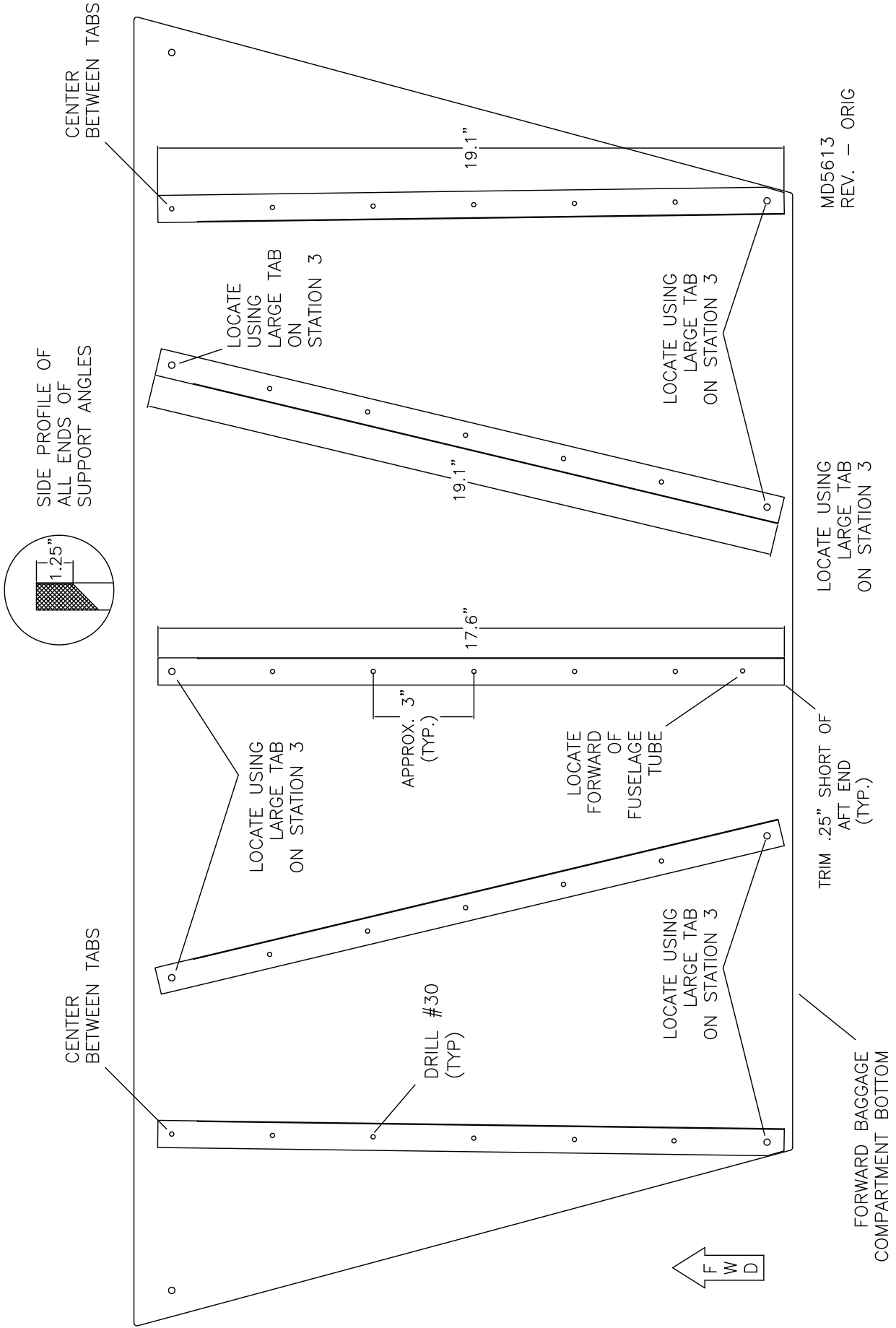
09/01/2013



MD5613
REV. B

RANS S-20 RAVEN
AFT BAGGAGE COMPARTMENT - BOTTOM
FIGURE 01I-07A

09/01/2013



SIDE PROFILE OF ALL ENDS OF SUPPORT ANGLES

CENTER BETWEEN TABS

CENTER BETWEEN TABS

LOCATE USING LARGE TAB ON STATION 3

LOCATE USING LARGE TAB ON STATION 3

LOCATE USING LARGE TAB ON STATION 3

APPROX. 3" (TYP.)

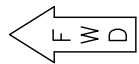
LOCATE FORWARD OF FUSELAGE TUBE

LOCATE USING LARGE TAB ON STATION 3

LOCATE USING LARGE TAB ON STATION 3

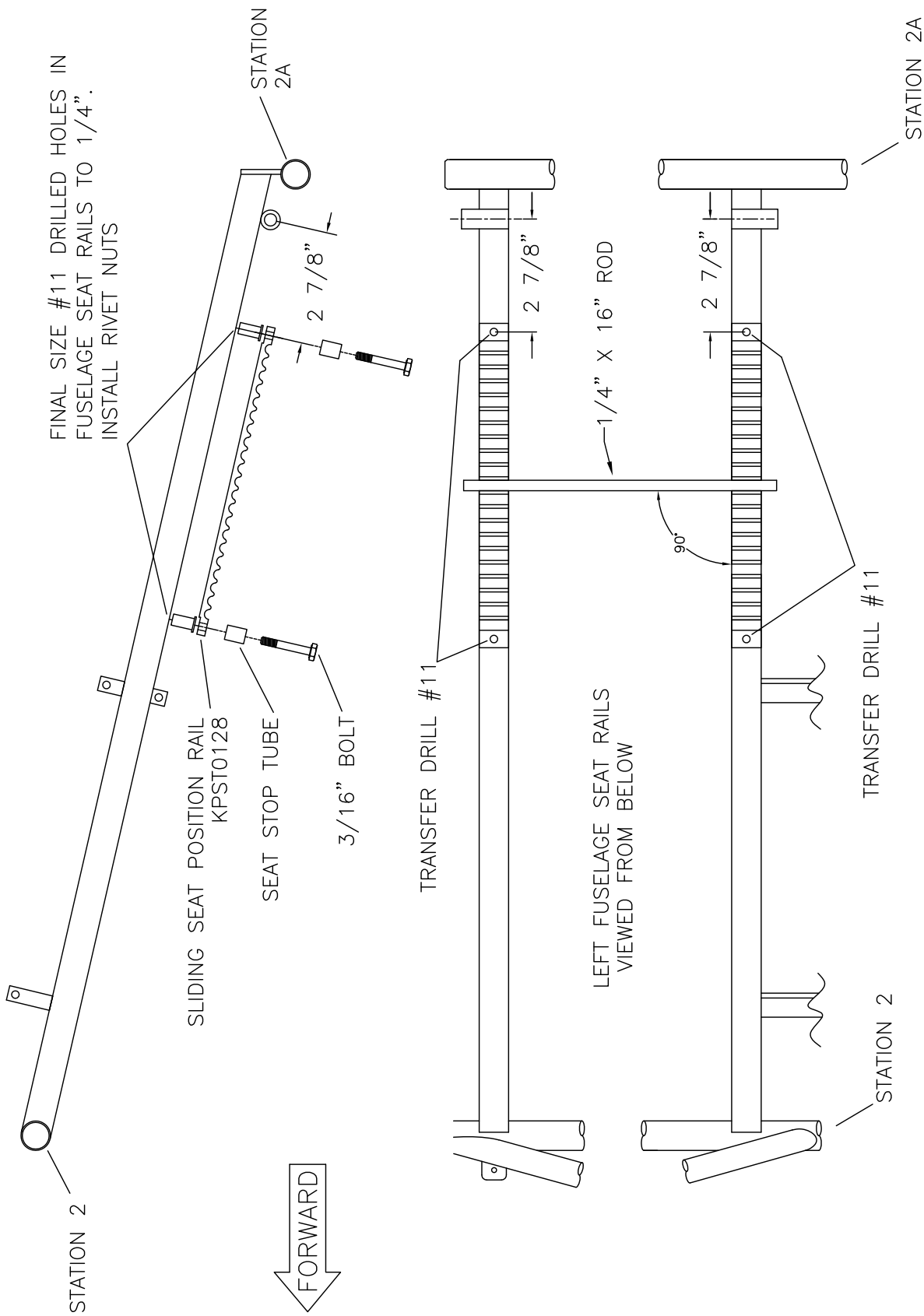
TRIM .25" SHORT OF AFT END (TYP.)

FORWARD BAGGAGE COMPARTMENT BOTTOM



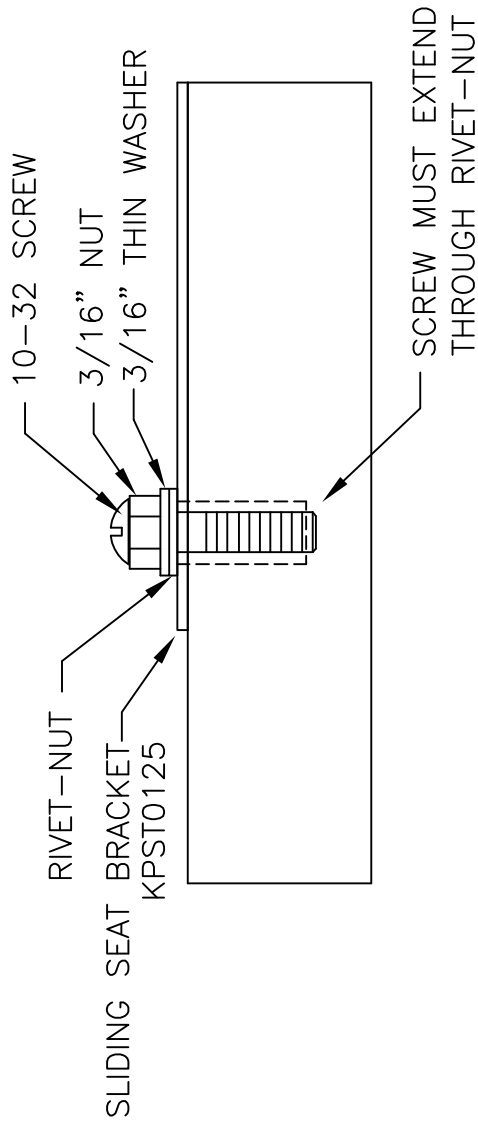
MD5613
REV. - ORIG

RAVEN S-20 RAVEN
FORWARD BAGGAGE COMPARTMENT - BOTTOM
FIGURE 01I-12



MD5615
REV. A

RAVEN S-20 RAVEN
SLIDING SEAT POSITION RAIL LOCATION
FIGURE 01J-01

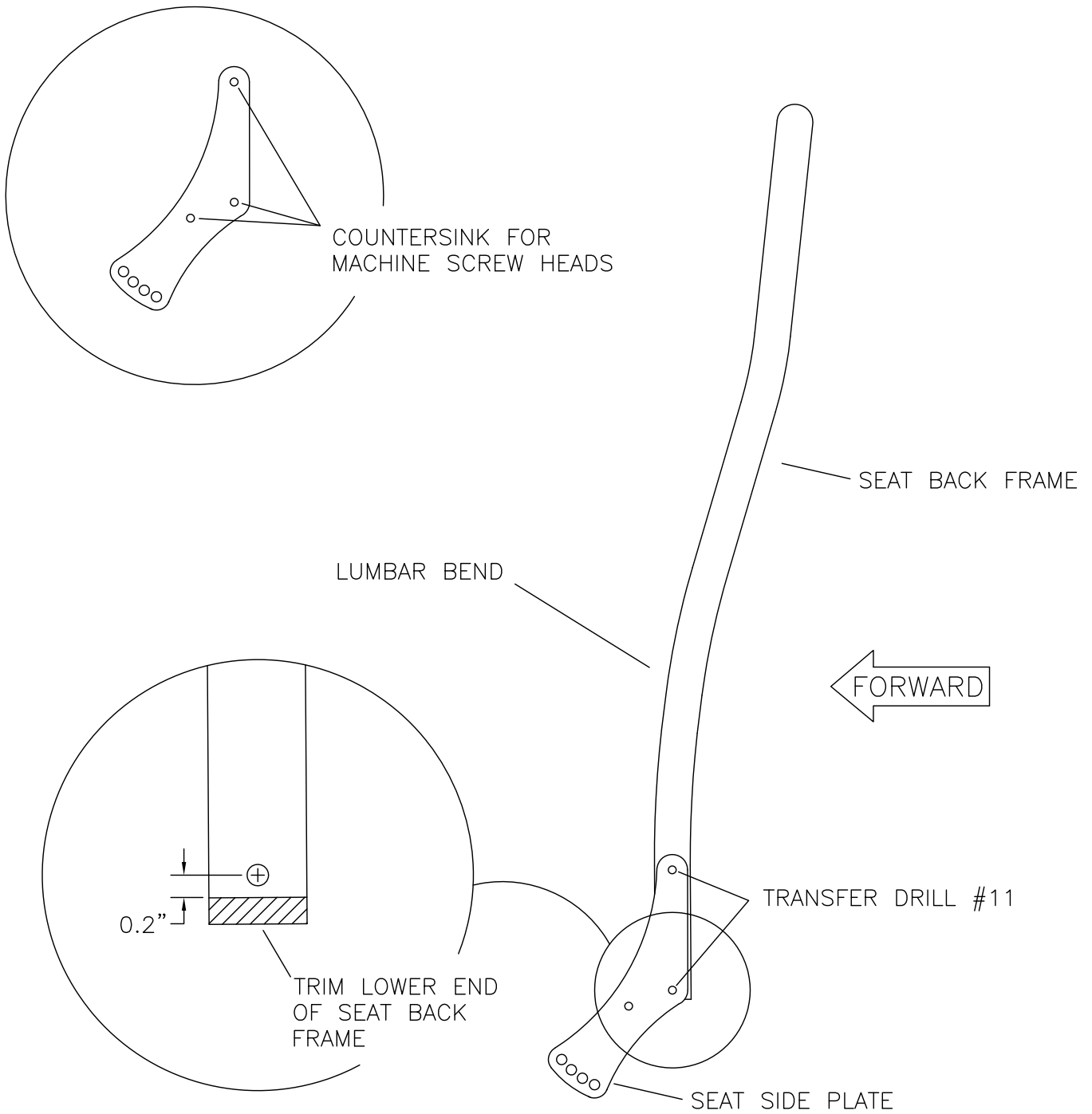


PROCEDURE BELOW MAY BE USED WHEN A RIVET-NUT PULLER IS NOT AVAILABLE.

1. FINGER TIGHTEN NUT AND RIVET-NUT ONTO SCREW.
2. INSERT RIVET-NUT INTO 1/4" HOLE.
3. TURN NUT 3 COMPLETE TURNS CLOCKWISE WHILE HOLDING SCREW STATIONARY.
4. BACK NUT OFF 1/2 TURN AND REMOVE SCREW.

RRR S-20 RAVEN
 RIVET-NUT INSTALLATION
 FIGURE 01J-02

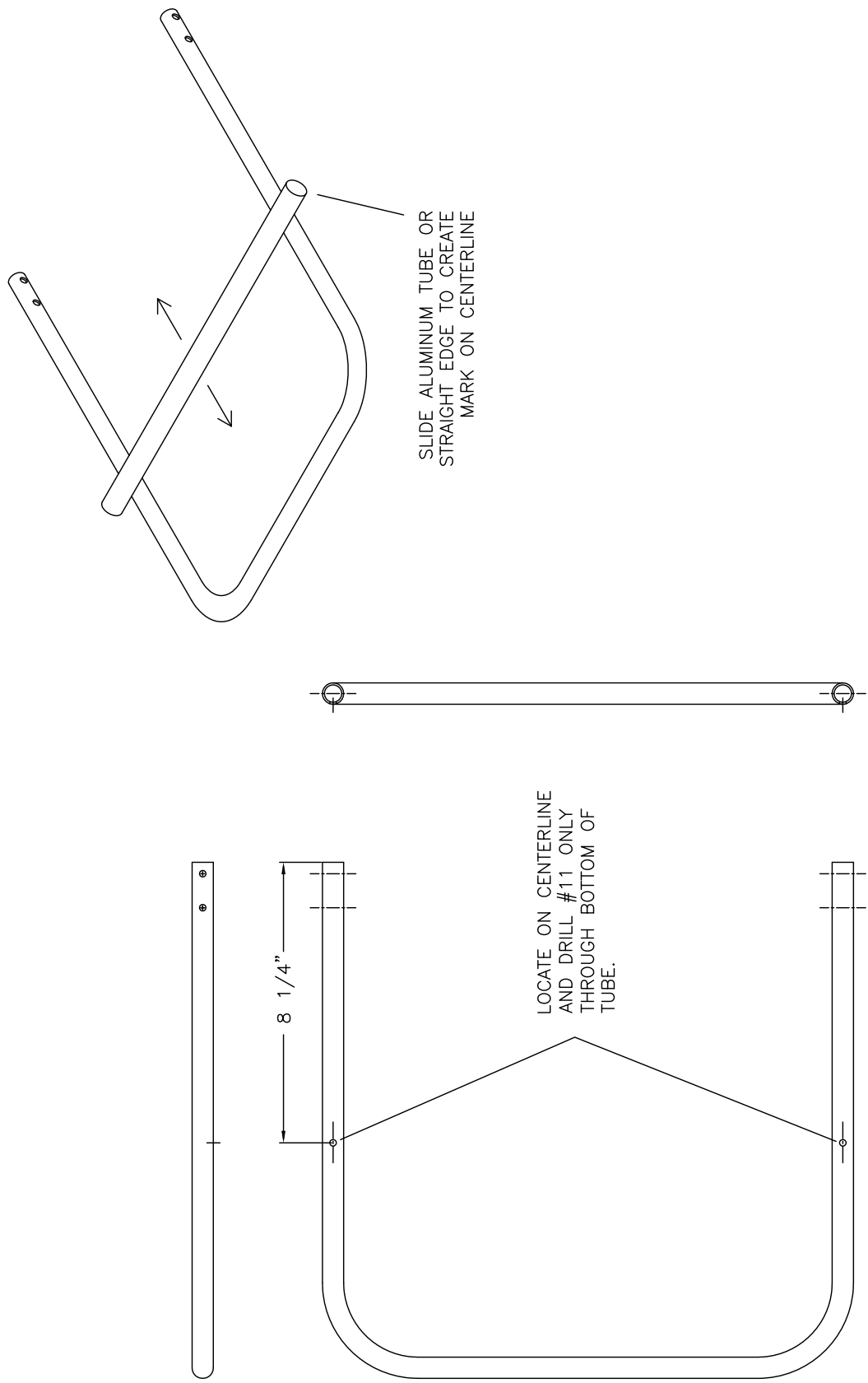
MD343



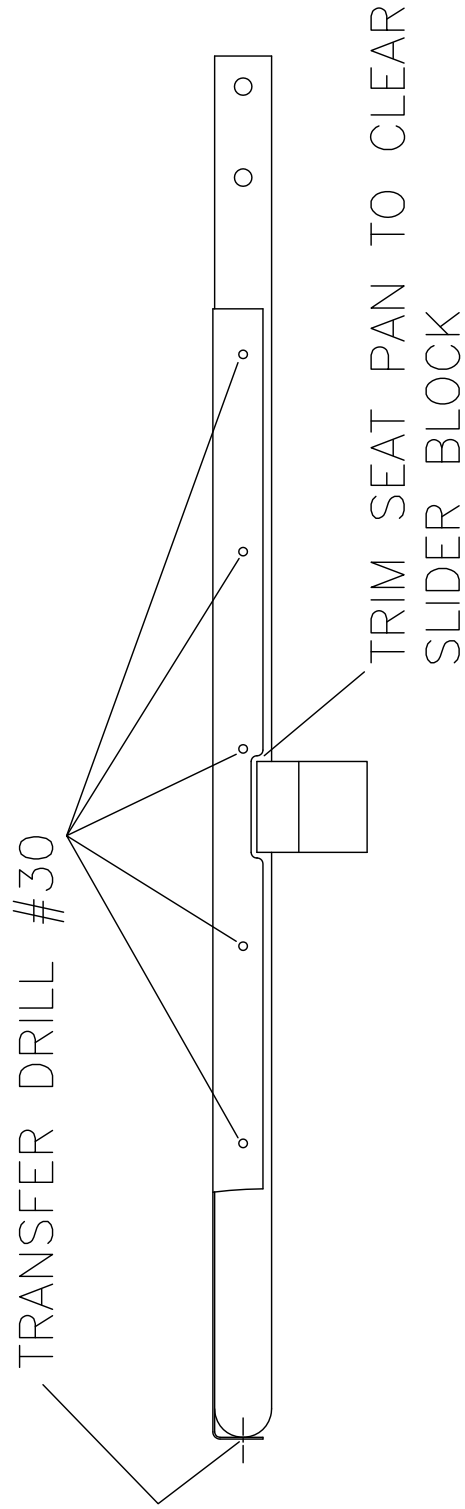
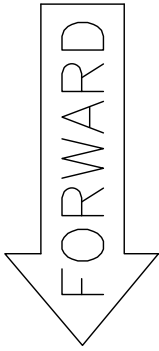
RANS S-20 RAVEN
SEAT BACK ORIENTATION
FIGURE 01J-04

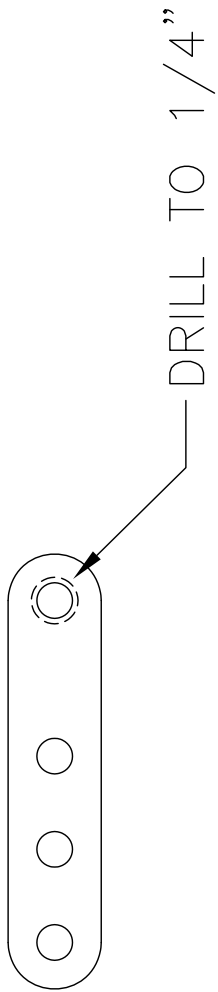
MD5534
 REV. A

04/01/2015



RAVEN S-20 RAVEN
SLIDING SEAT BOTTOM FRAME MODIFICATION
FIGURE 01J-05

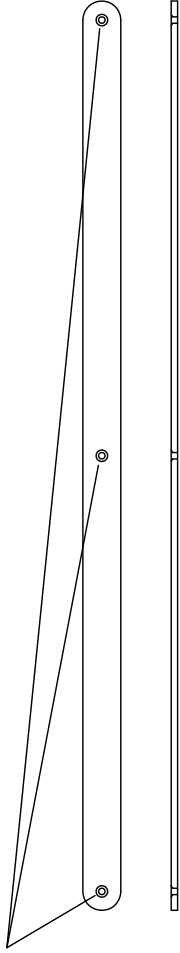




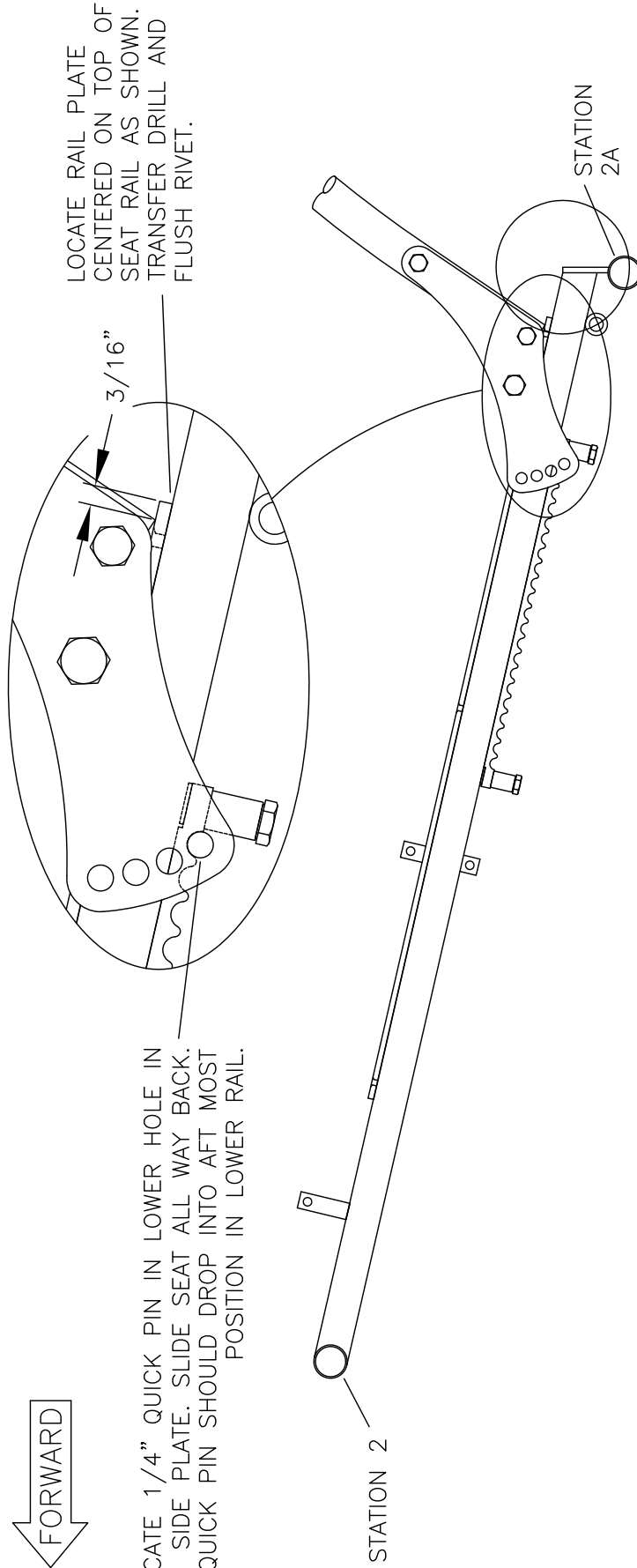
MD5614
REV. - ORIG

RAVEN S-20 RAVEN
MULTI-HOLE TANG MODIFICATION
FIGURE 01J-08

COUNTER SINK (120°) TO ALLOW
FLUSH STAINLESS STEEL RIVETS TO
SET FLUSH WITH TOP SURFACE

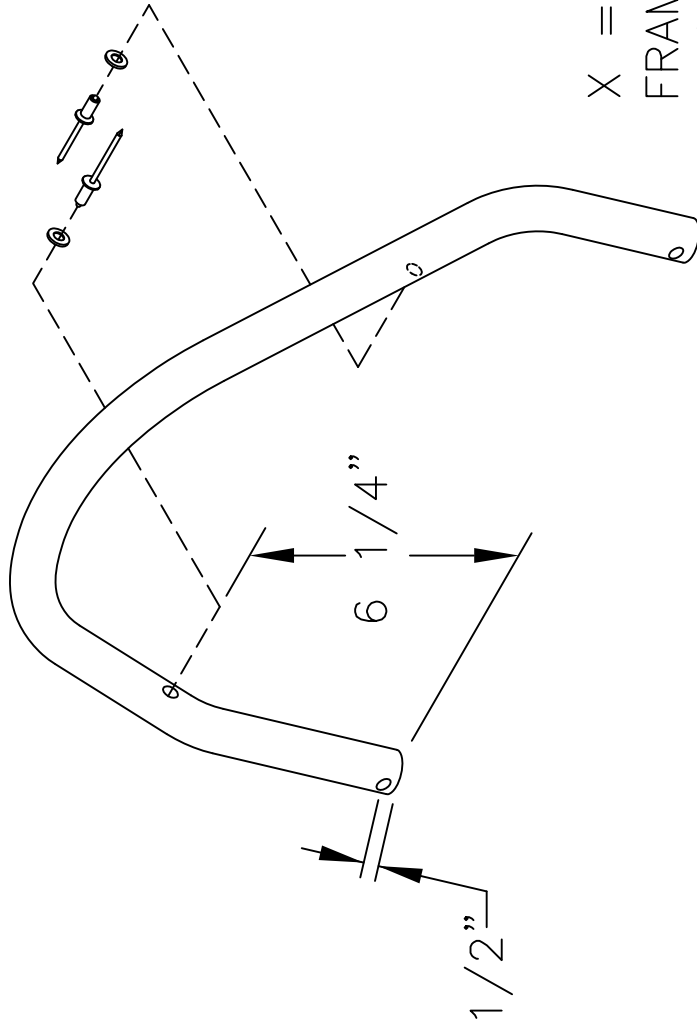


LOCATE 1/4" QUICK PIN IN LOWER HOLE IN
SIDE PLATE. SLIDE SEAT ALL WAY BACK.
QUICK PIN SHOULD DROP INTO AFT MOST
POSITION IN LOWER RAIL.



MD5615

RAMS S-20 RAVEN
SLIDING SEAT RAIL PLATE LOCATION
FIGURE 01J-12



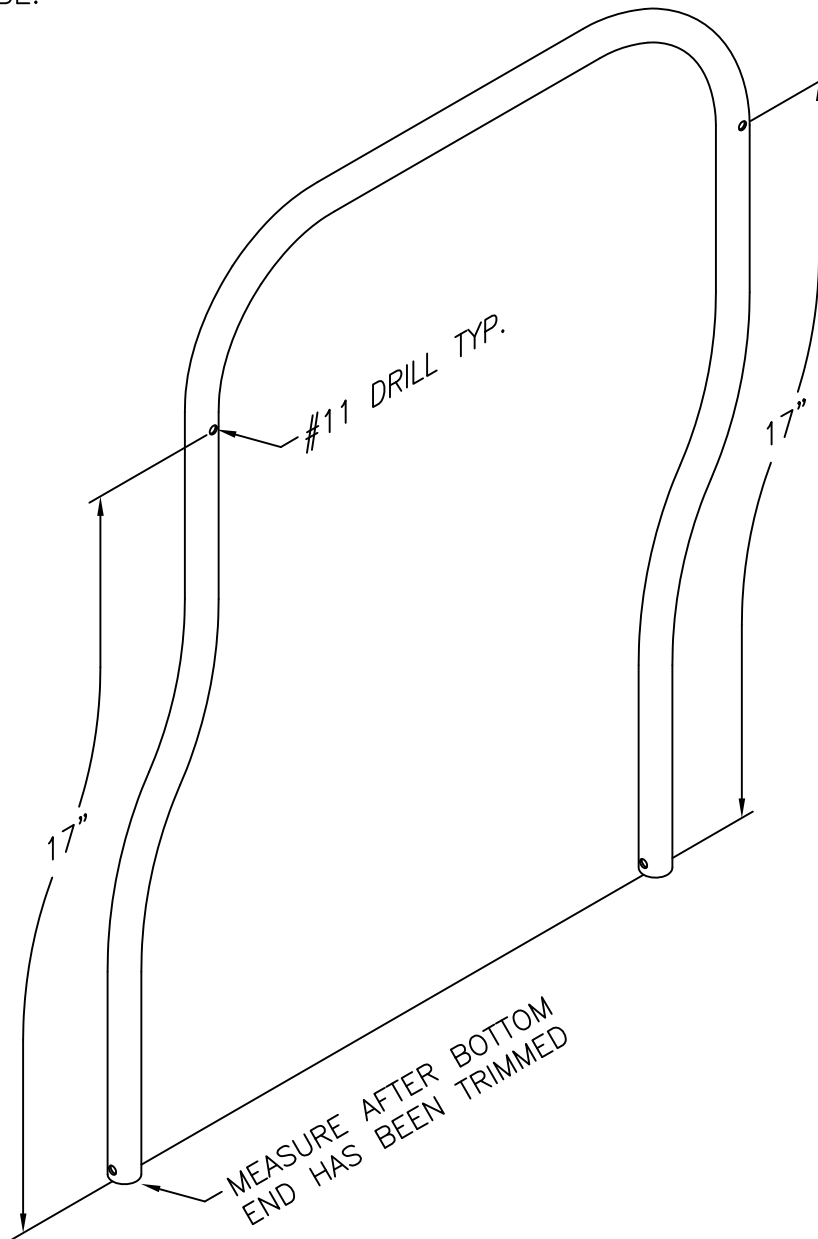
X = WIDTH OF HEADREST
 FRAME AT RIVET (BUTTON)
 LOCATION AFTER
 INSTALLATION ON SEAT BACK.

MD5109

RAMS S-20 RAVEN
 OPTIONAL HEADREST - DRILLING
 FIGURE 01J-24



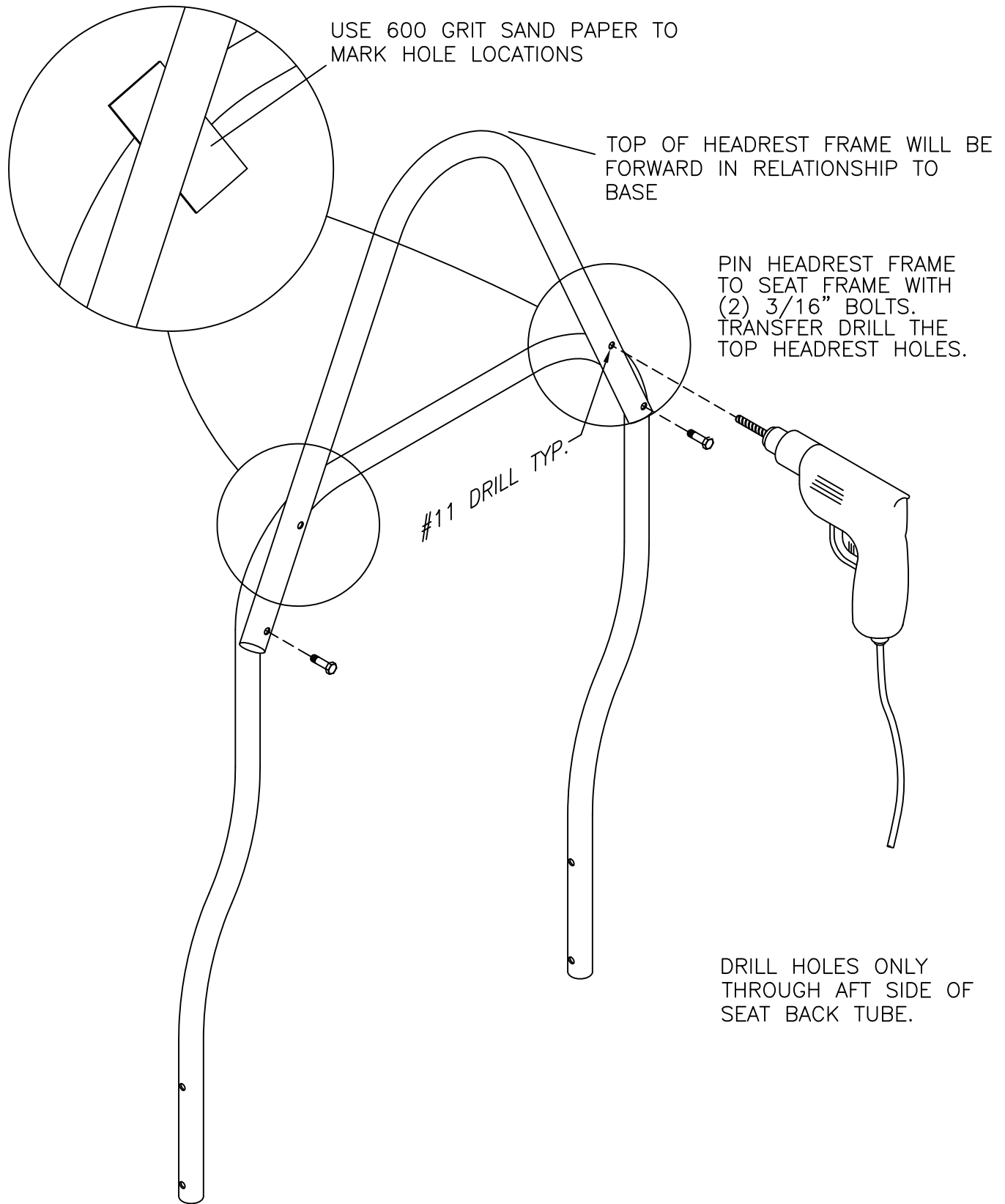
DRILL HOLES ONLY
THROUGH AFT SIDE OF
TUBE.



RANS S-20 RAVEN
SEAT BACK FRAME DRILLING
FIGURE 01J-25

MD5109

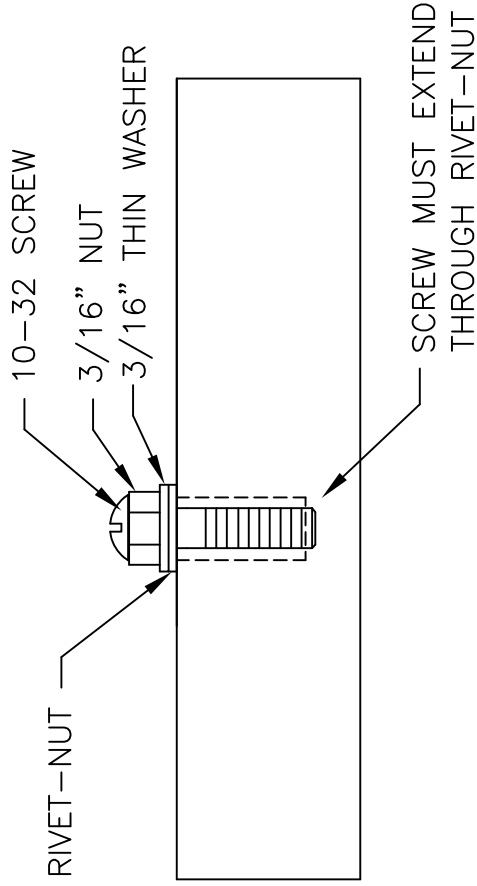
04/01/2015



MD5109

RANS S-20 RAVEN
SEAT HEADREST TO SEAT BACK FRAME DRILLING
FIGURE 01J-26

04/01/2015

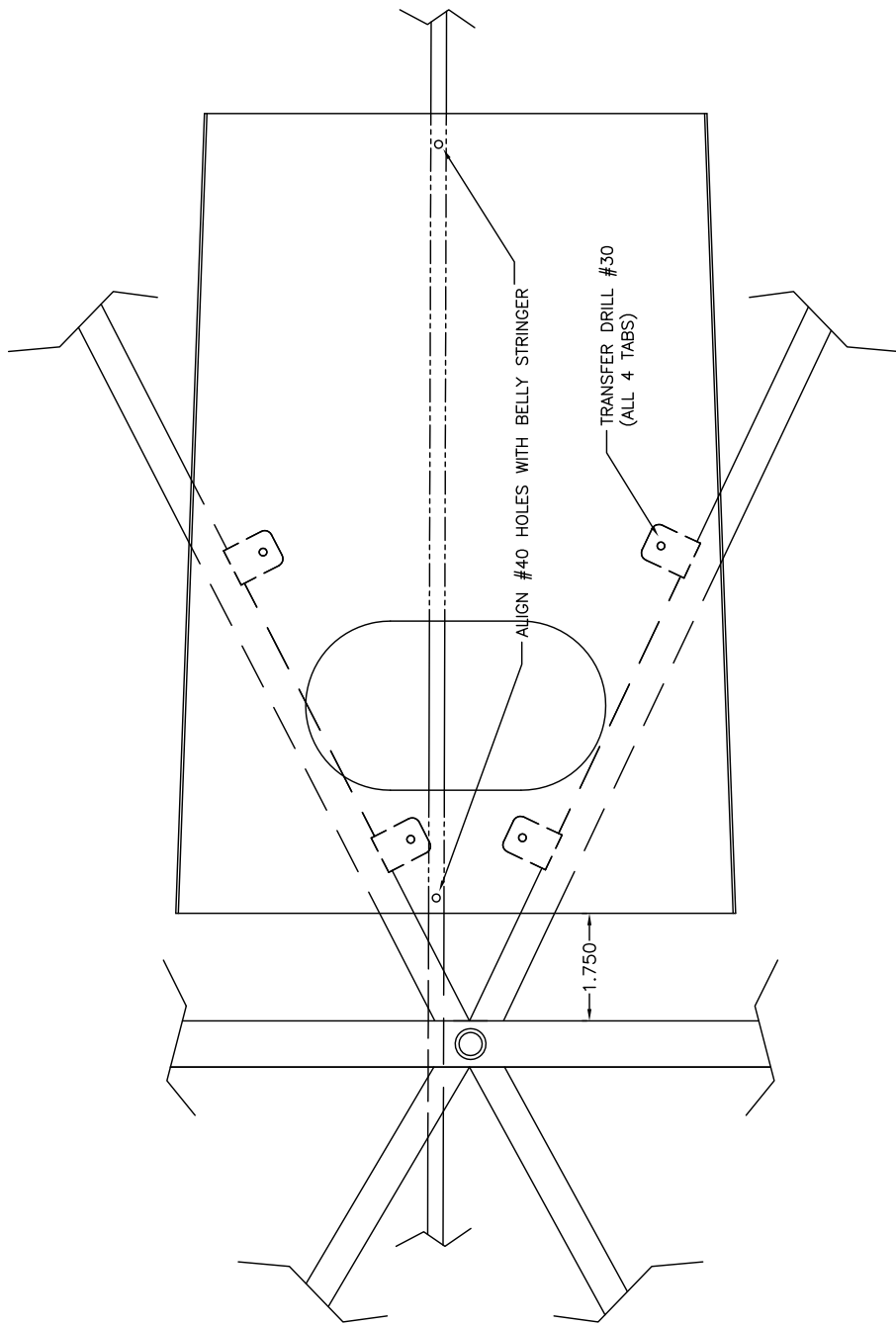


PROCEDURE BELOW MAY BE USED WHEN A RIVET-NUT PULLER IS NOT AVAILABLE.

1. FINGER TIGHTEN NUT AND RIVET-NUT ONTO SCREW.
2. INSERT RIVET-NUT INTO 1/4" HOLE.
3. TURN NUT 3 COMPLETE TURNS CLOCKWISE WHILE HOLDING SCREW STATIONARY.
4. BACK NUT OFF 1/2 TURN AND REMOVE SCREW.

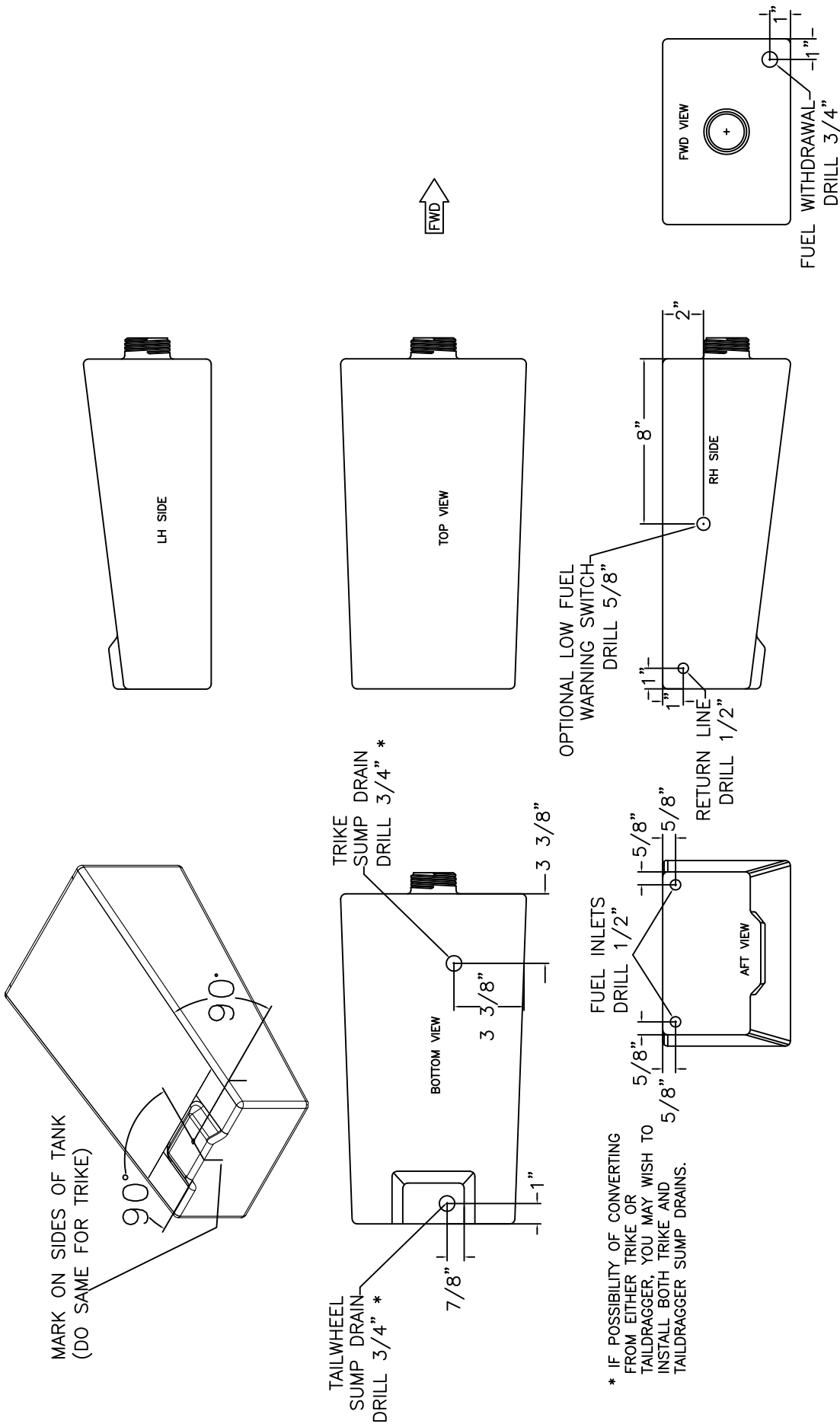
RRMO S-20 RAVEN
RIVET-NUT INSTALLATION
FIGURE 01J-27

MD343



MD5616
 REV. A

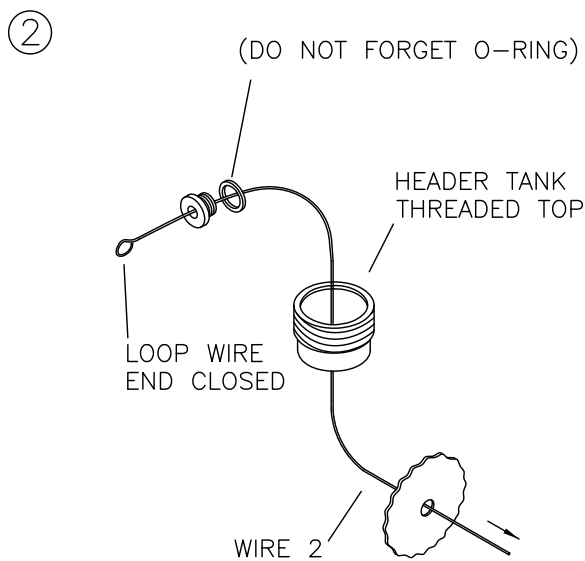
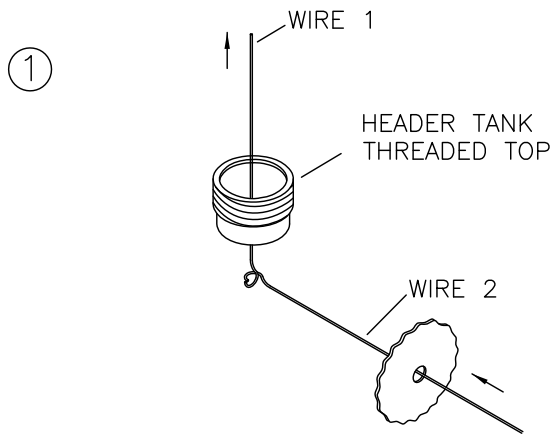
**RAVEN S-20 RAVEN
 HEADER TANK MOUNT
 FIGURE 01K-01**



* IF POSSIBILITY OF CONVERTING FROM EITHER TRIKE OR TAILDRAGGER, YOU MAY WISH TO INSTALL BOTH TRIKE AND TAILDRAGGER SUMP DRAINS.

MD2861
REV. B

RAVEN S-20 RAVEN
2.75 GALLON HEADER TANK MODIFICATION
FIGURE 01K-02

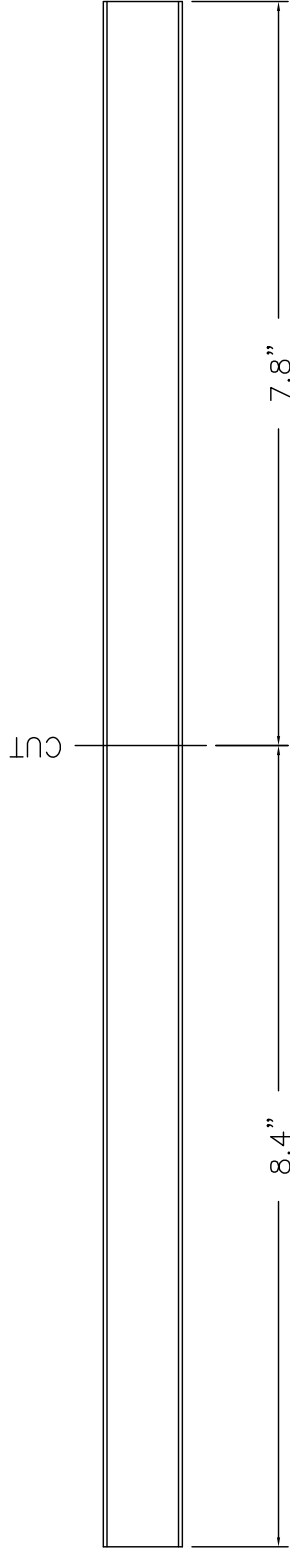
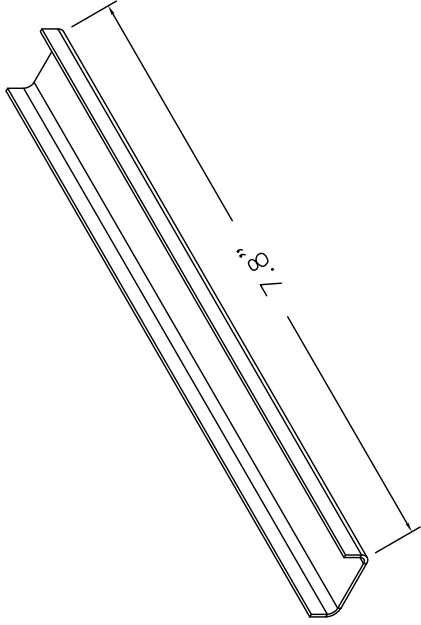
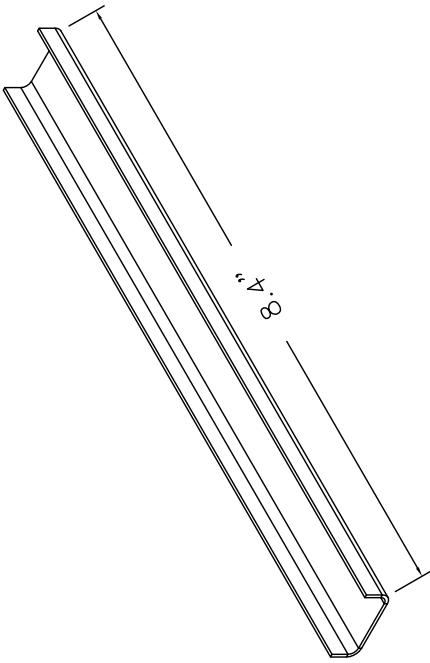


③ INSTALL RUBBER WASHER, STEEL WASHER, LOCTITE, AND NUT.

④ REMOVE WIRE.

RANS S-20 RAVEN
HEADER TANK FITTING INSTALLATION
FIGURE 01K-03

MD4832



CUT TO INDICATED LENGTHS

MD5616

RAMPS S-20 RAVEN
HEADER TANK MOUNT CHANNEL MODIFICATION
FIGURE 01K-08

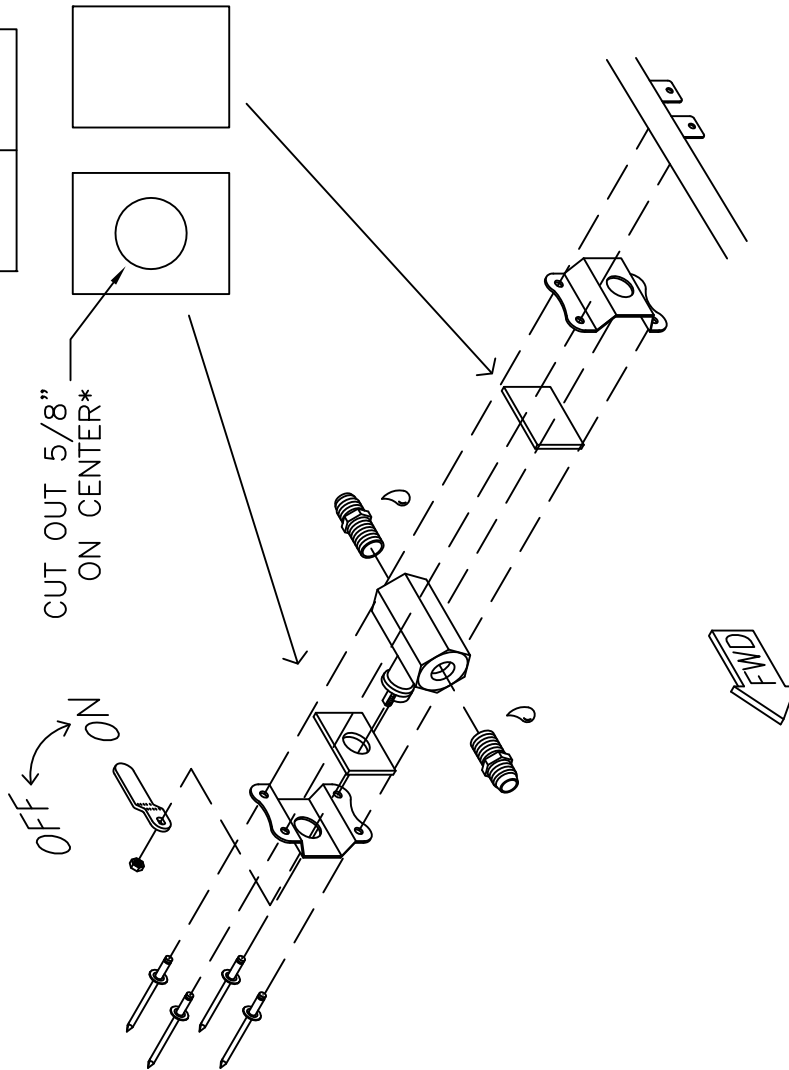
FUEL VALVE
SILICONE PAD
(KPFS0106)

CUT INTO 2 PIECES
ON CENTERLINE

OFF ←
ON →

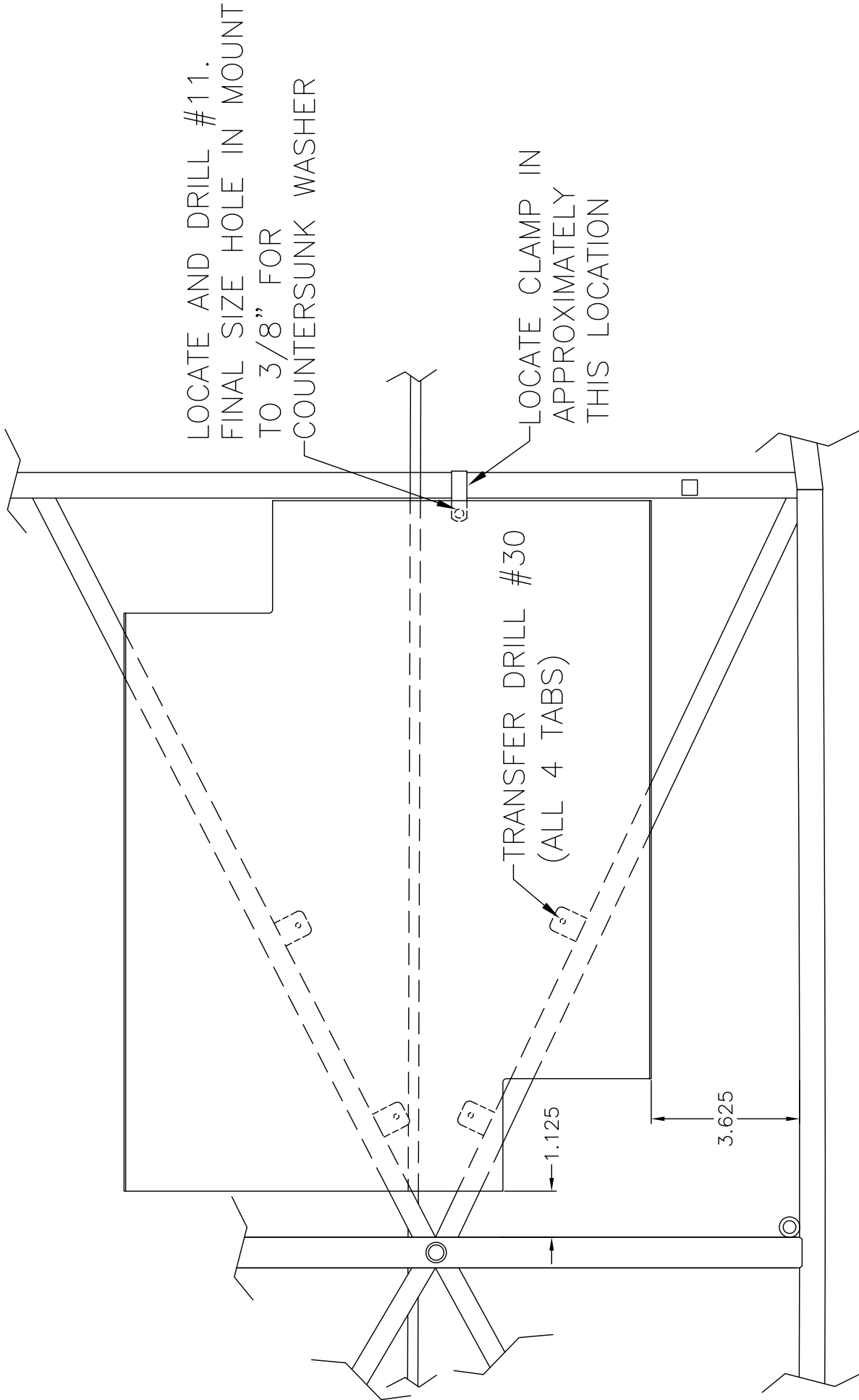
CUT OUT 5/8"
ON CENTER*

* HINT: USE A 5/8" TUBE
SHARPENED ON INSIDE AS
A PUNCH TO CUT HOLE.



MD4388
REV. A

RAVEN S-20 RAVEN
FUEL VALVE MOUNTING
FIGURE 01K-09

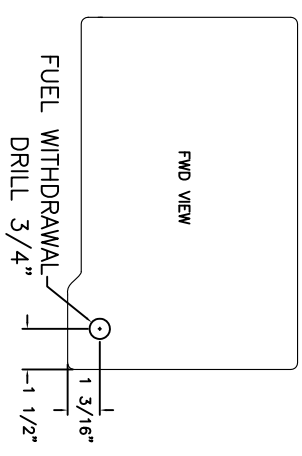
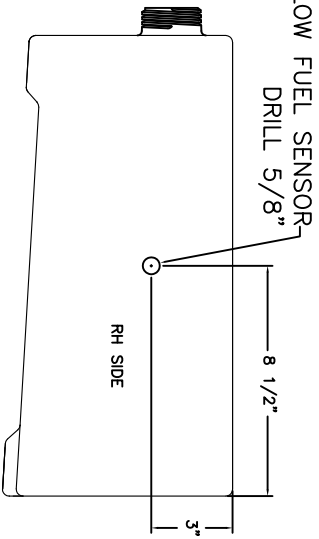
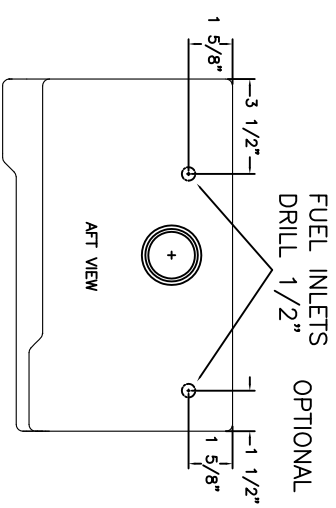
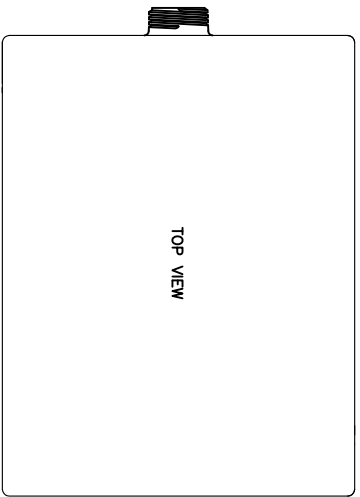
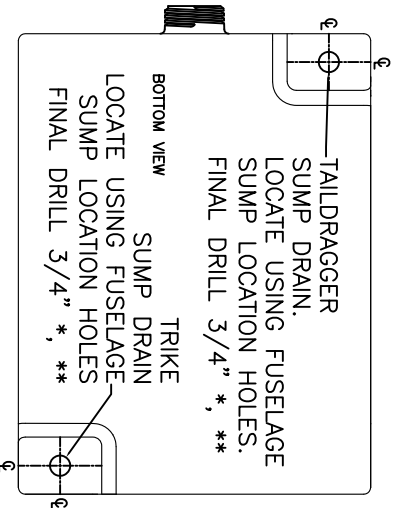
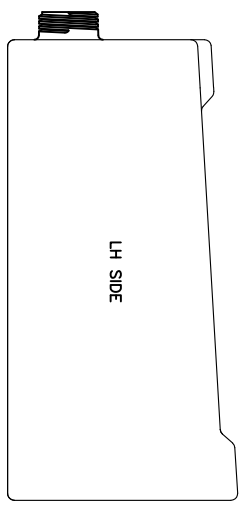


MD5616

RAVEN S-20 RAVEN
OPTIONAL 6.9 GALLON HEADER TANK MOUNT
FIGURE 01K-22

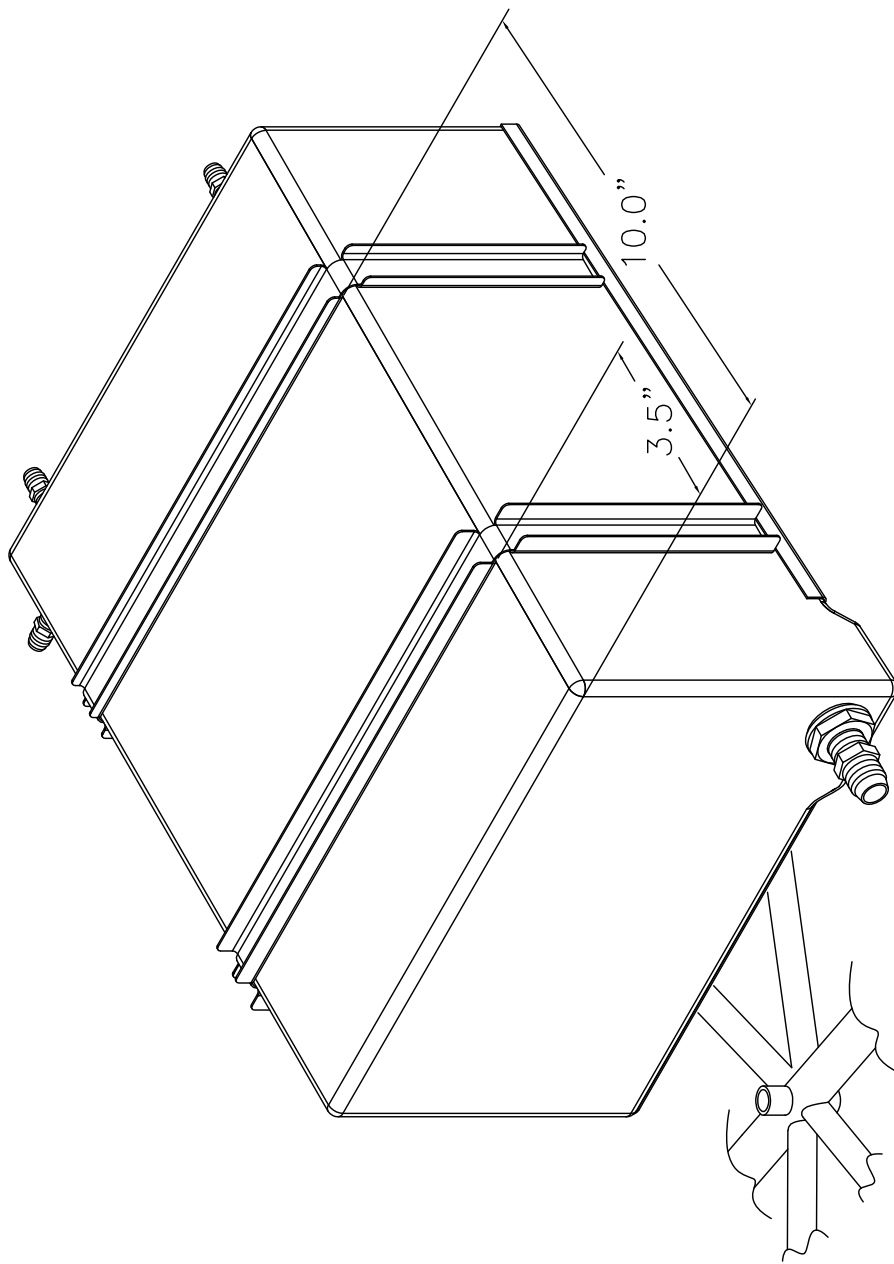
* IF POSSIBILITY OF CONVERTING FROM EITHER TRIKE OR TAILDRAGGER, YOU MAY WISH TO INSTALL BOTH TRIKE AND TAILDRAGGER SUMP DRAINS.

** SUMP DRAIN SHOULD BE LOCATED IN APPROXIMATELY THIS AREA WHEN FINAL DRILLED AND INSTALLED.

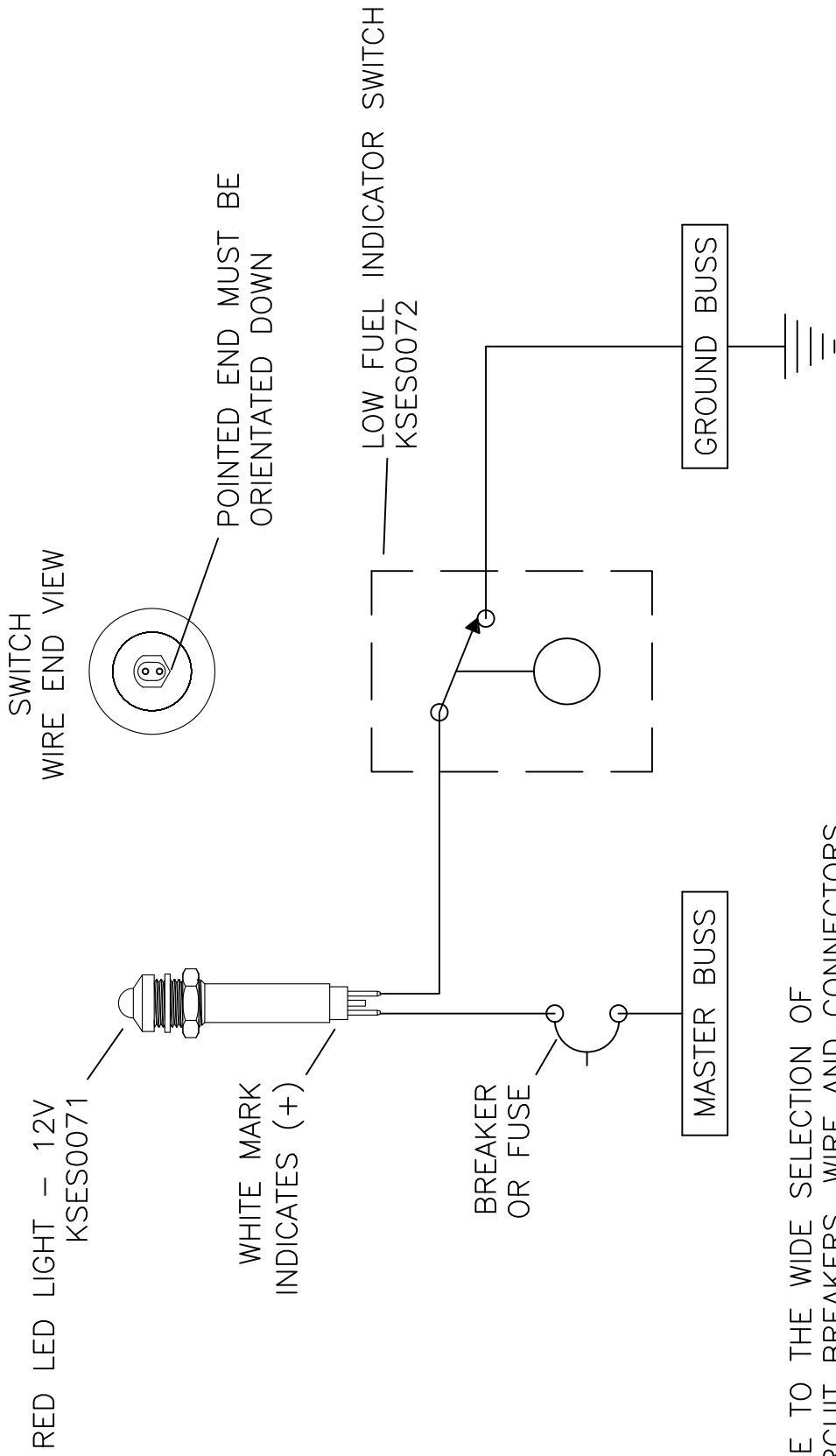


MD2861
REV. B

REDUNDANT S-20 RAVEN
OPTIONAL 6.9 GALLON HEADER TANK MODIFICATION
FIGURE 01K-23

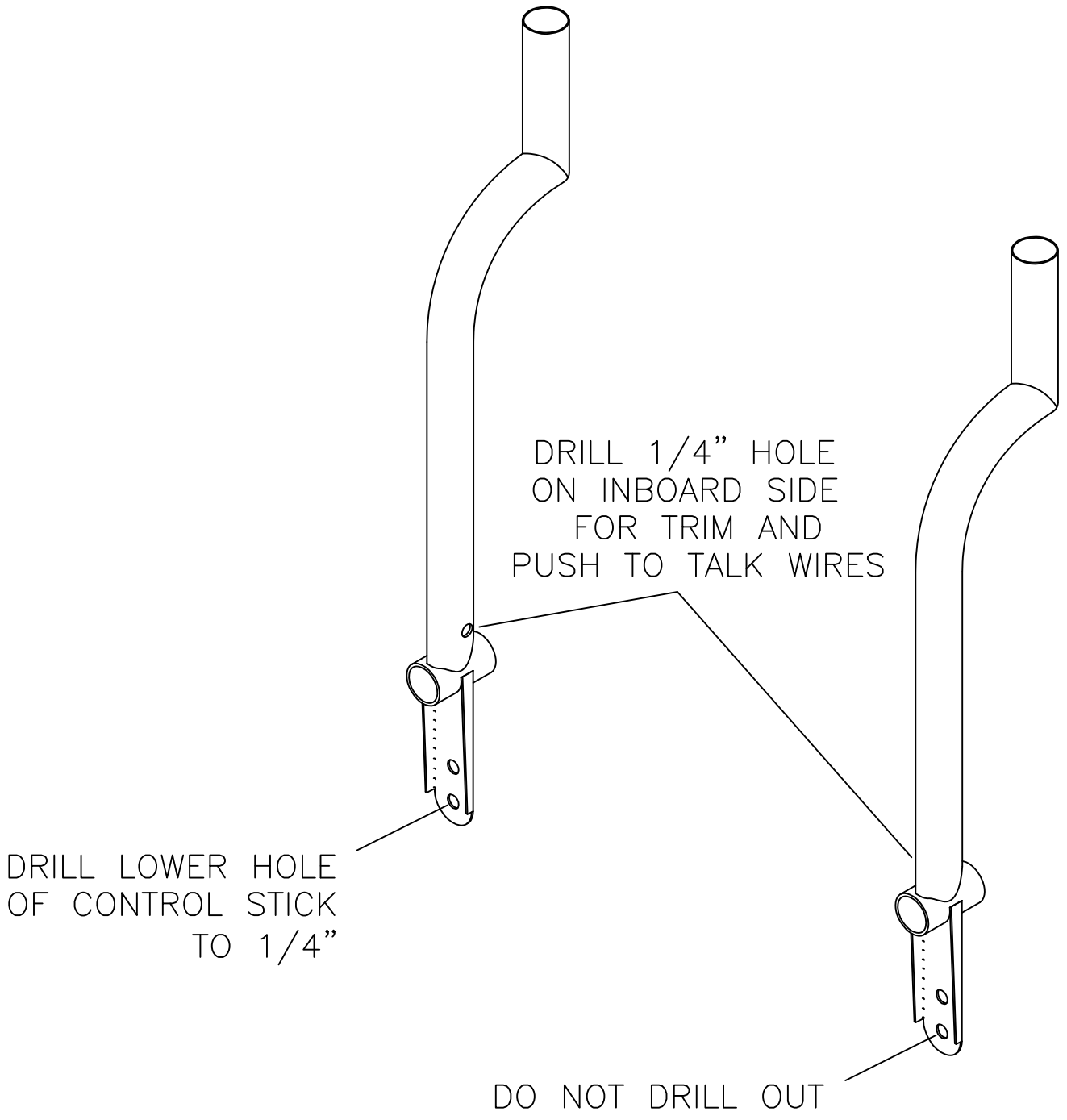


RAMS S-20 RAVEN
OPTIONAL 6.9 GALLON HEADER TANK
MOUNT CHANNEL LOCATION
FIGURE 01K-29



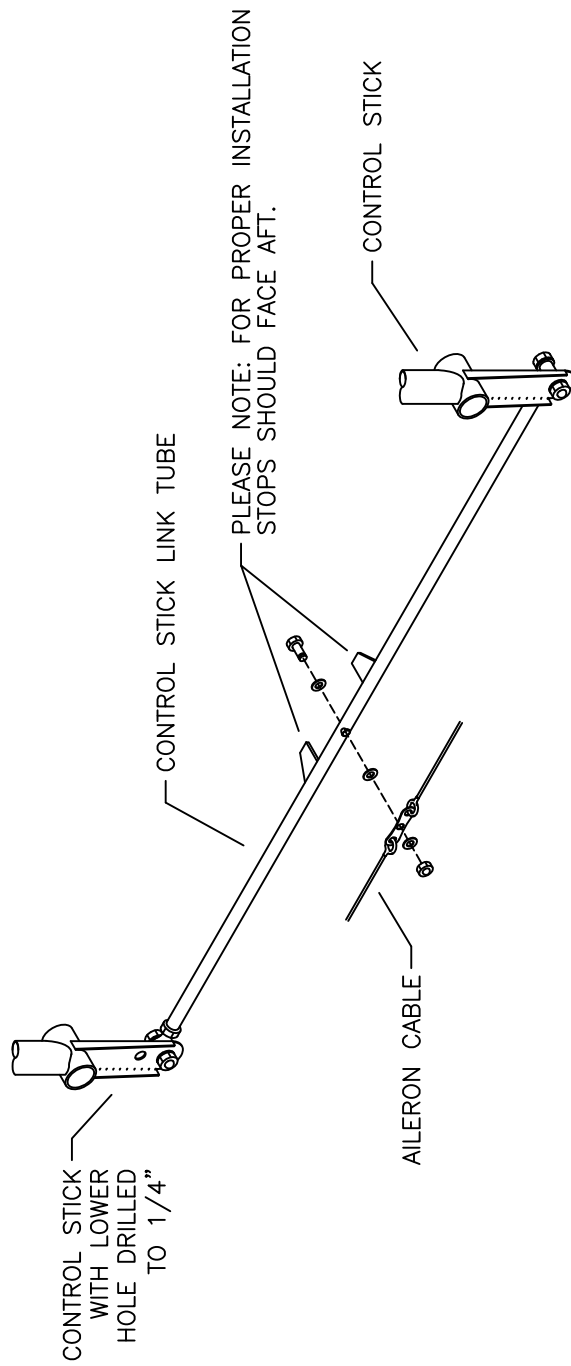
DUE TO THE WIDE SELECTION OF
CIRCUIT BREAKERS, WIRE AND CONNECTORS
WHICH MAY BE USED TO CUSTOMIZE YOUR
AIRCRAFT. THESE ITEMS ARE "BUILDER SUPPLIED"

RAVEN S-20 RAVEN
LOW FUEL WARNING SYSTEM WIRING
FIGURE 01K-34



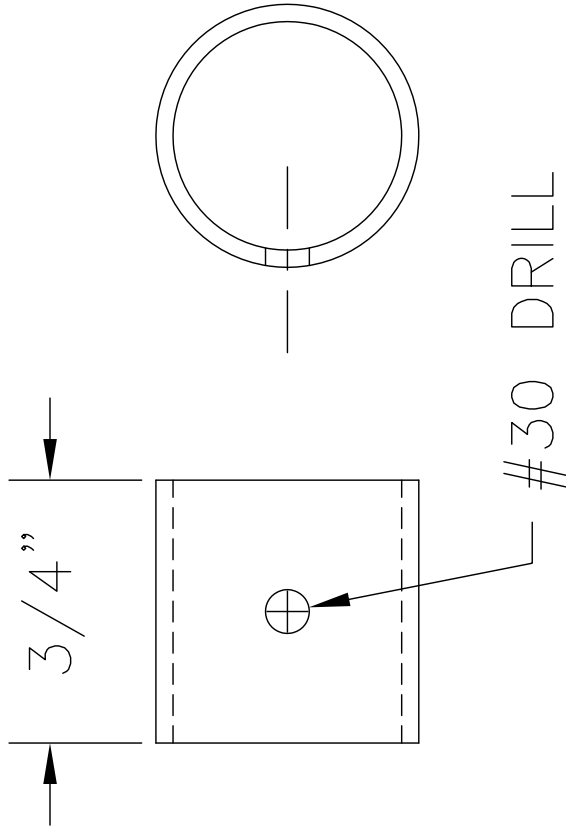
MD510
REV. - ORIG

RANS S-20 RAVEN
CONTROL STICK MODIFICATION
FIGURE 02-02



MD510
REV. - ORIG

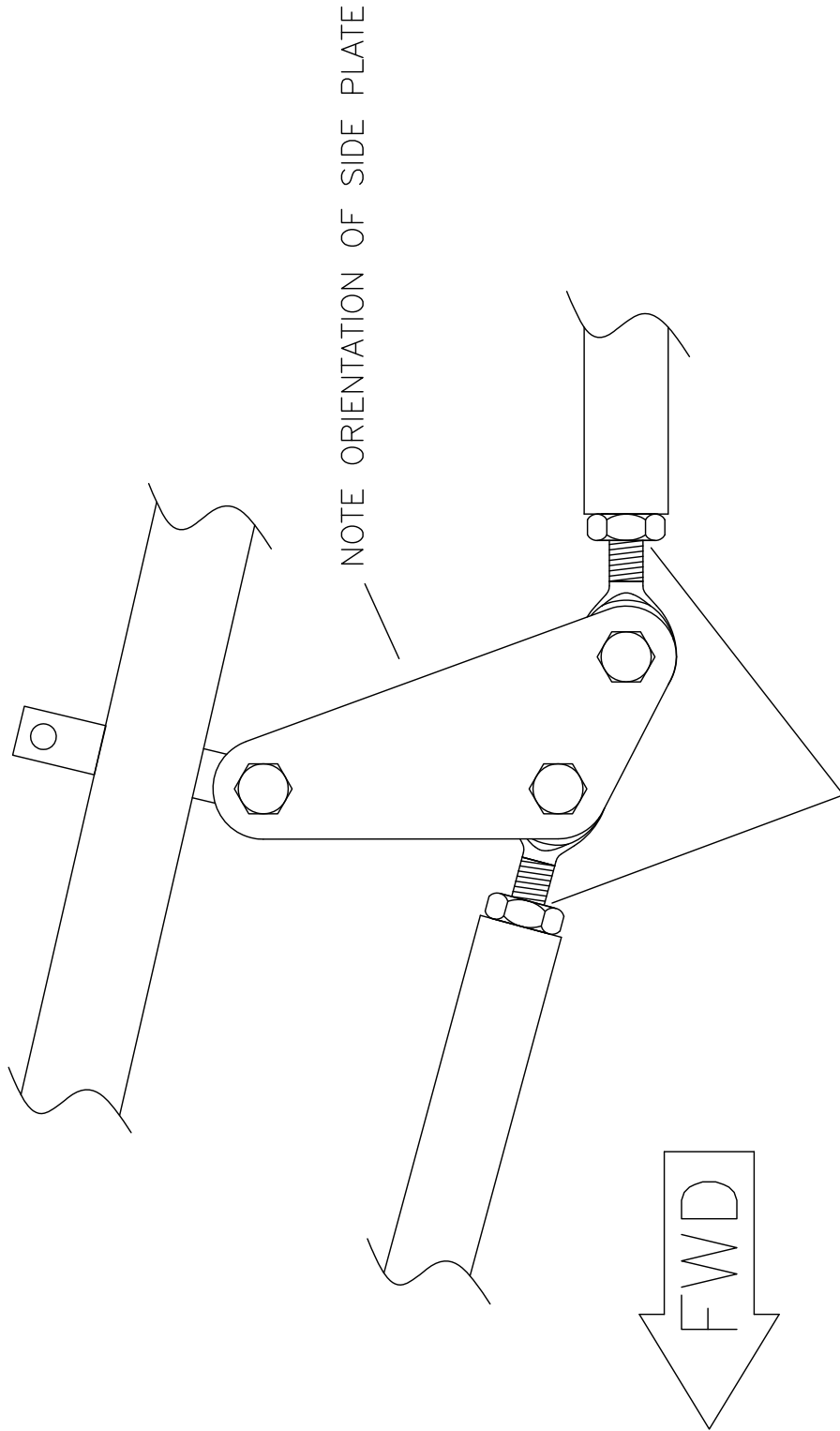
RAVEN S-20 RAVEN
CONTROL STICK LINK TUBE
FIGURE 02-05



FABRICATE 2

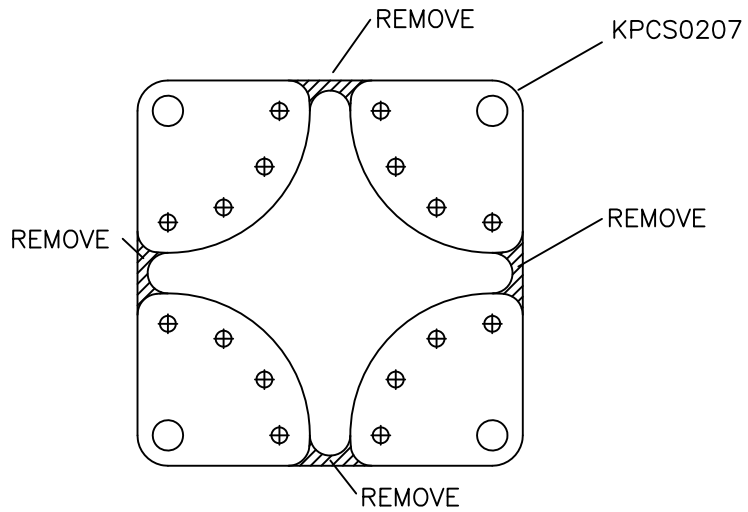
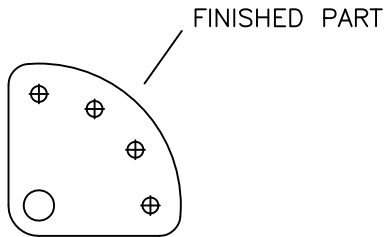
MD3650
REV. - ORIG

RAVEN S-20 RAVEN
ALUMINUM STOP SLEEVE FABRICATION
FIGURE 02A-02



MD3650
REV. - ORIG

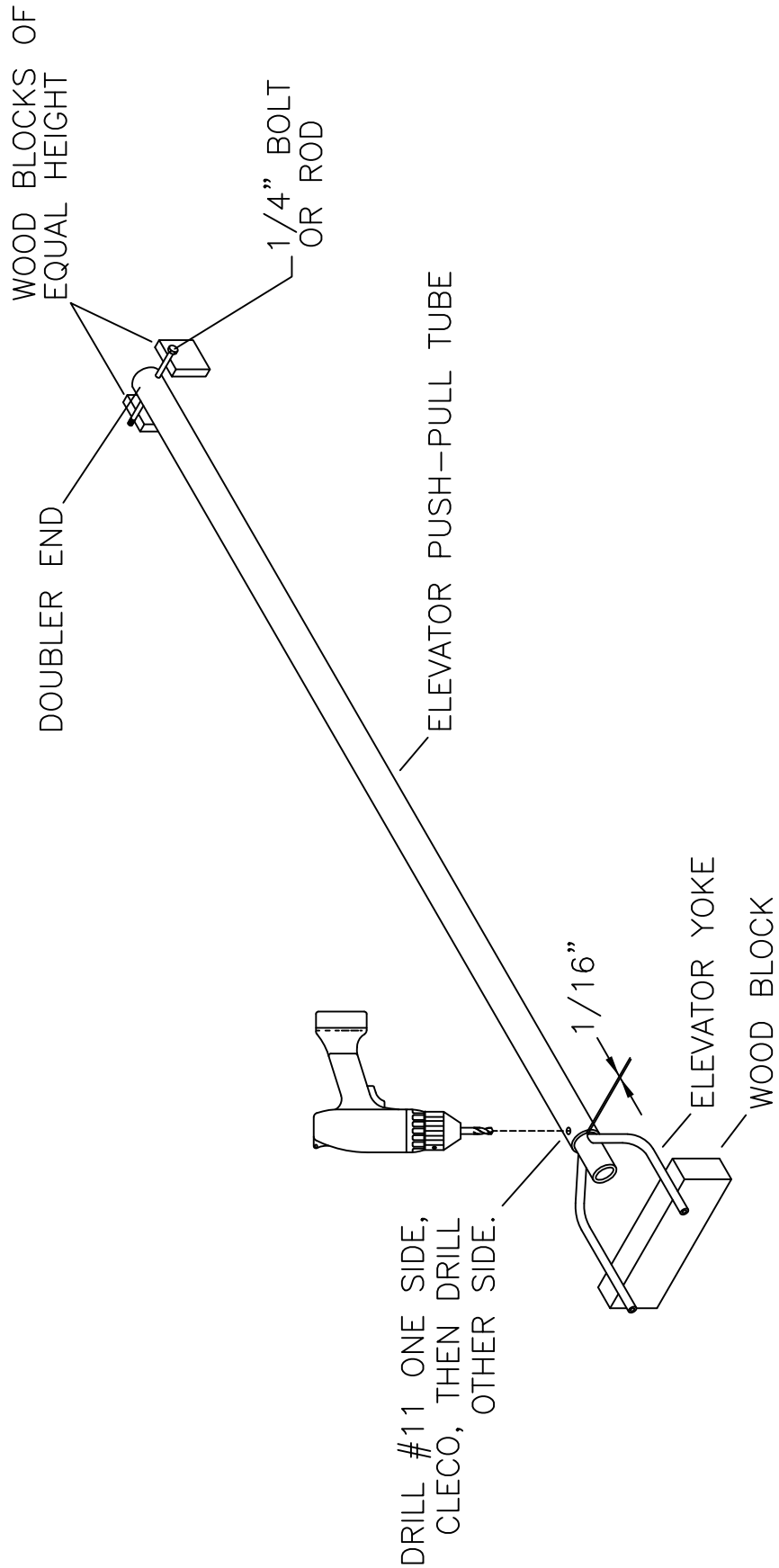
RAMMS S-20 RAVEN
SIDE PLATE INSTALLATION
FIGURE 02A-03



REMOVE SHADED AREA, MAKES 4 PARTS

MD4390

RANS S-20 RAVEN
CABLE KEEPER MODIFICATION
FIGURE 02A-05

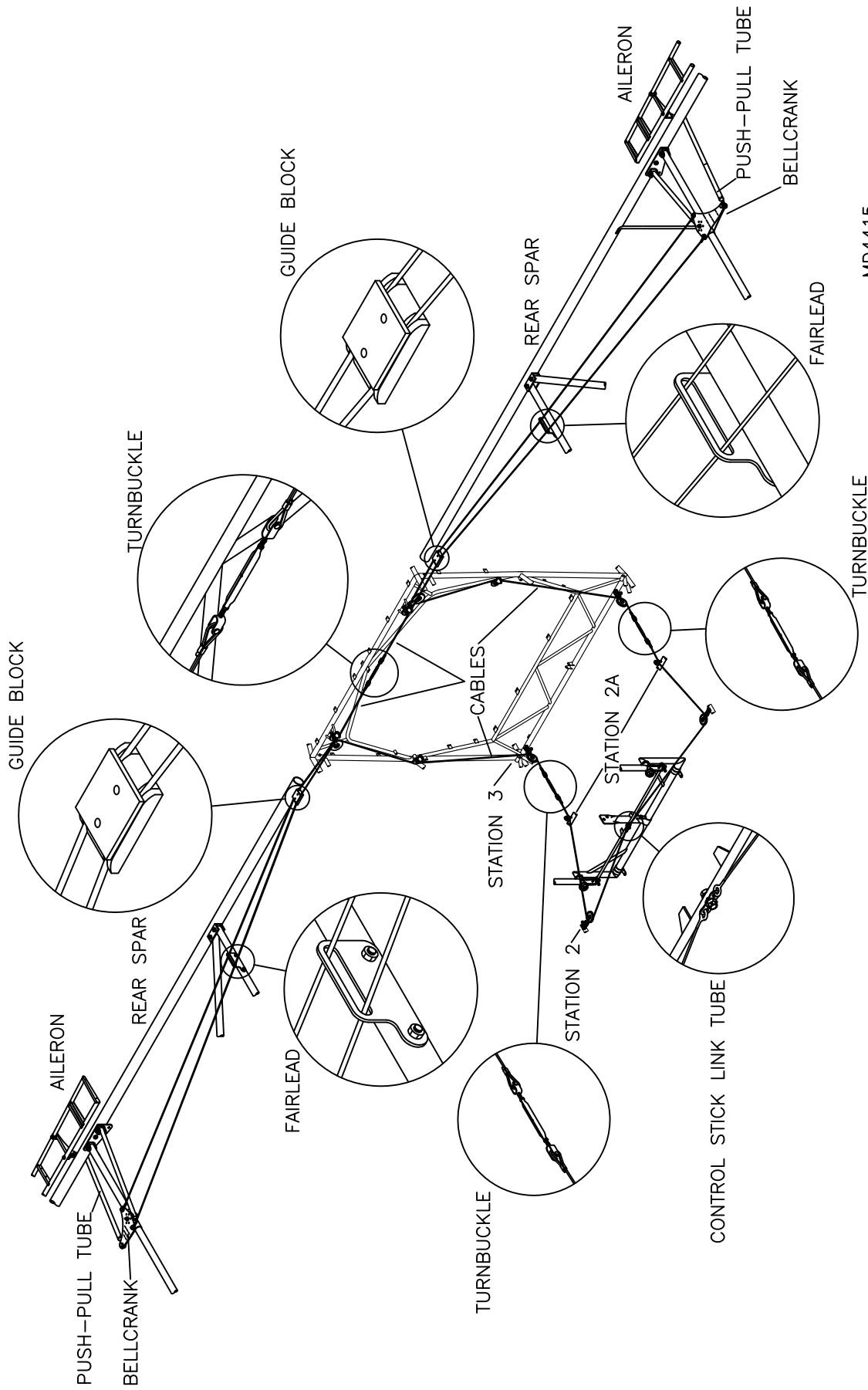


DRILL #11 ONE SIDE,
CLECO, THEN DRILL
OTHER SIDE.

1/16"

MD565
REV. - ORIG

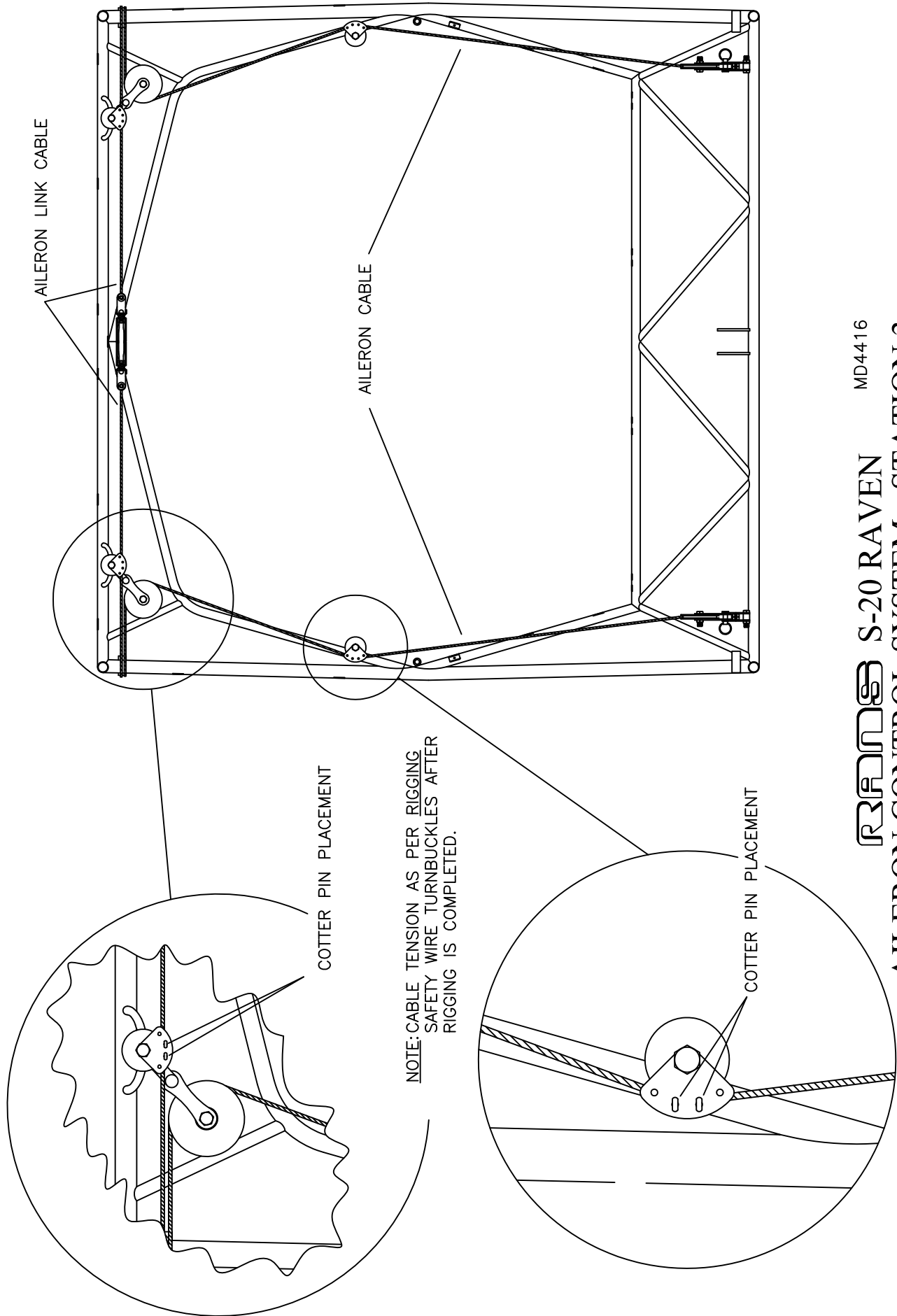
RAVEN S-20 RAVEN
ELEVATOR YOKE ORIENTATION
FIGURE 02B-05



MD4415

TURNBUCKLE

RAVEN S-20 RAVEN
AILERON CONTROL SYSTEM OVERVIEW
FIGURE 02C-06

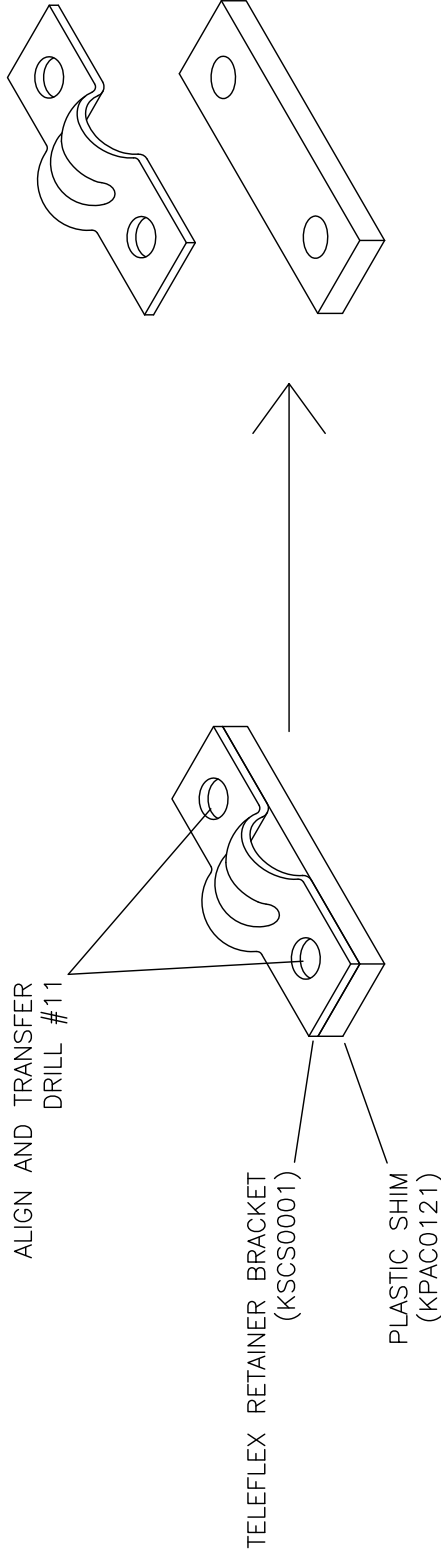


MD4416

RAMROD S-20 RAVEN

AILERON CONTROL SYSTEM - STATION 3

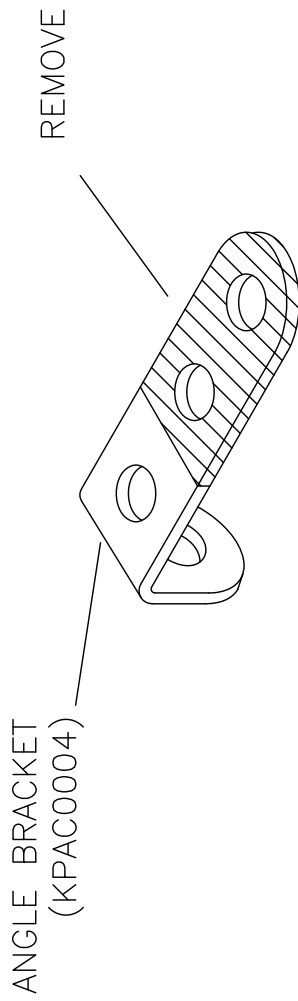
FIGURE 02C-07



MODIFY 2 PLASTIC SHIMS

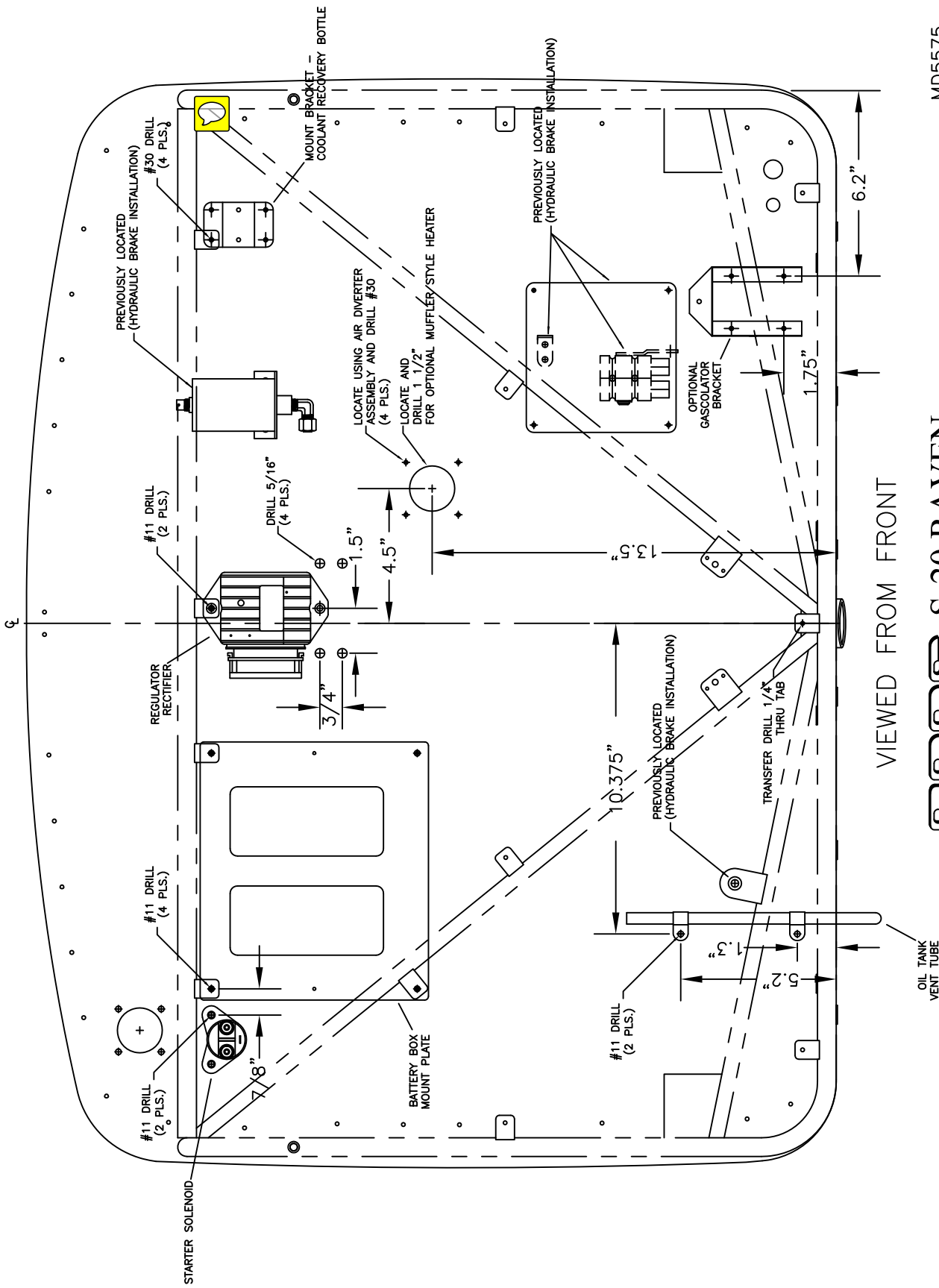
MD5617
REV. - ORIG

RRR S-20 RAVEN
FLAP LEVER PLASTIC SHIM MODIFICATION
FIGURE 02D-08



MD5617
REV. - ORIG

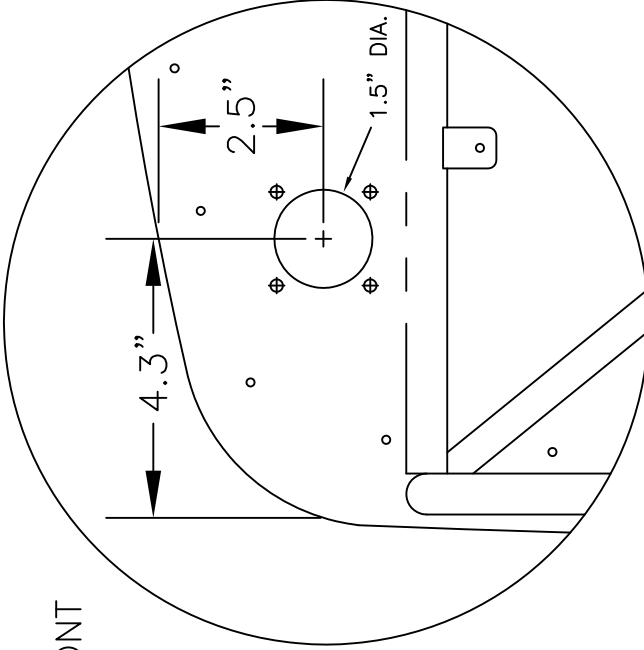
RRR S-20 RAVEN
ANGLE BRACKET MODIFICATION
FIGURE 02D-09



MD5575
REV. - ORIG

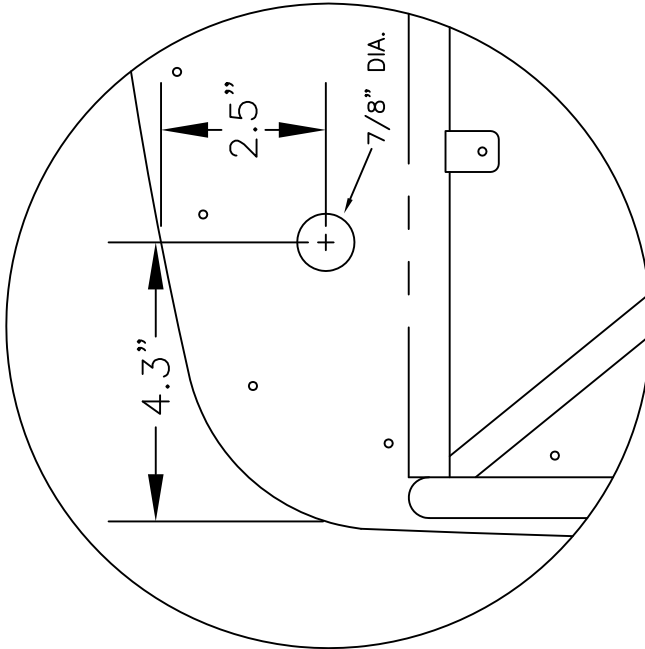
RAMBLER S-20 RAVEN
ROTAX 912ULS
FIREWALL MODIFICATION
FIGURE 03A-02

VIEWED FROM FRONT



AMP CPC 24-PIN
TYPE CONNECTOR

OR



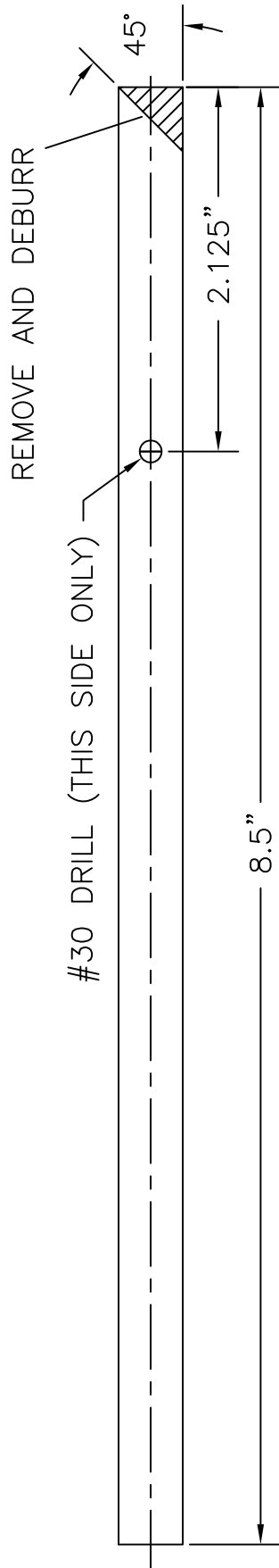
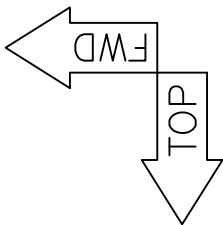
7/8" GROMMET
(MS35489-17)

DESCRIPTION	CONTACT ARRANGEMENT	AMP P/N
STANDARD SEX - SQUARE FLANGE RECEPTACLE	23-24	206838-1
STANDARD SEX - PLUG	23-24	206837-1
DESCRIPTION	SHELL SIZE	AMP P/N
CONNECTOR CABLE CLAMP	23	206138-1
DESCRIPTION	WIRE SIZE RANGE	AMP P/N
PIN	26-24 AWG	1-68107
SOCKET	26-24 AWG	1-68109
PIN	24-20 AWG	1-68103
SOCKET	24-20 AWG	1-68105
PIN	18-16 AWG	1-66099
SOCKET	18-16 AWG	1-68101
PIN	14 AWG	1-66361-1
SOCKET	14 AWG	1-66360-1
PIN	SOLDER TAB	202236-3
SOCKET	SOLDER TAB	202237-3

RRR S-20 RAVEN
ROTAX 912ULS

FIREWALL ELECTRICAL WIRE PASS-THRU
FIGURE 03A-03

MD5575
REV. - ORIG

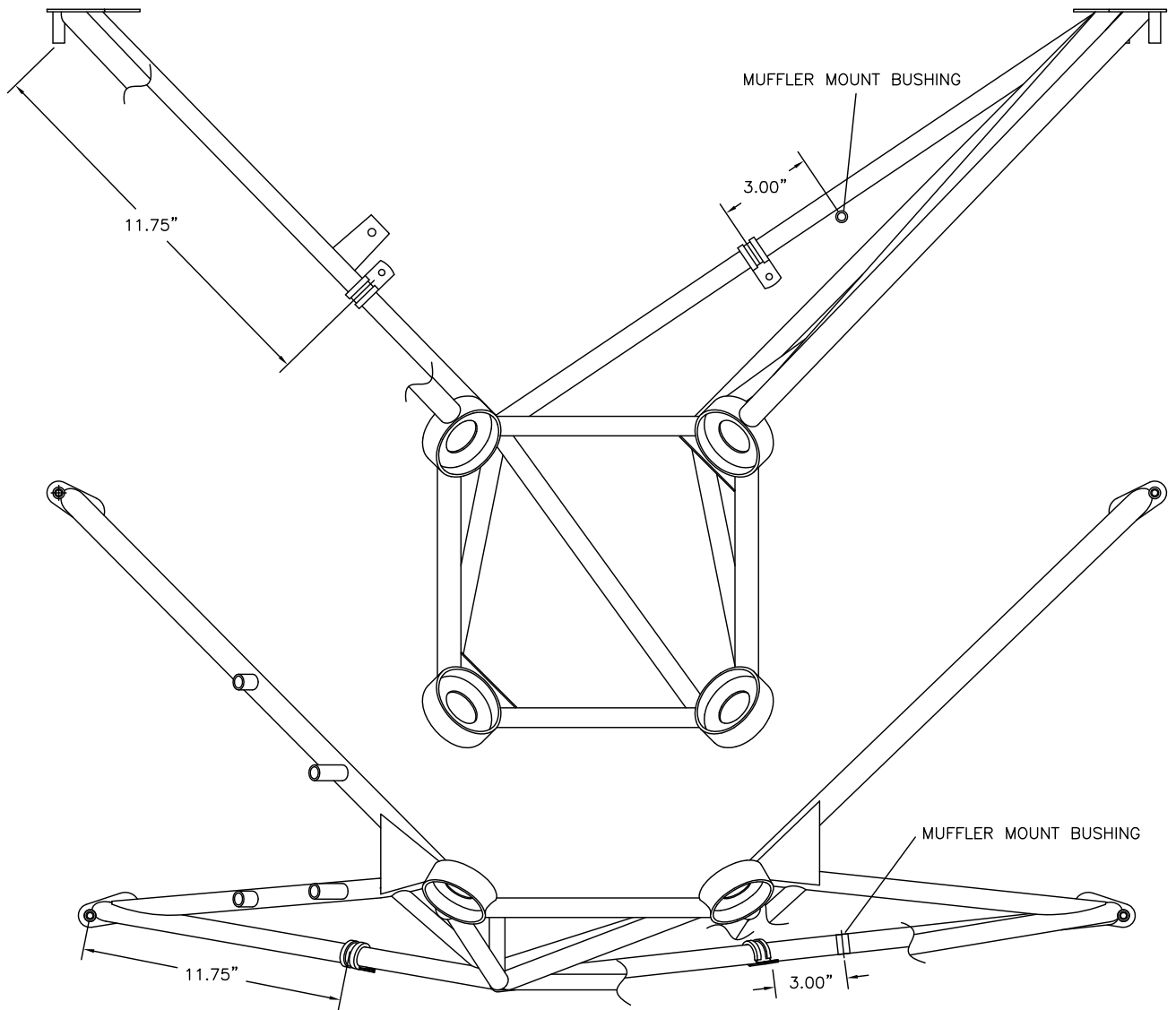


OIL TANK VENT TUBE (.375" X .058" TUBING) - MAKE 1

FABRICATE FROM RAW STOCK

RRR S-20 RAVEN
ROTAX 912ULS
OIL TANK BREATHER TUBE
FIGURE 03A-05

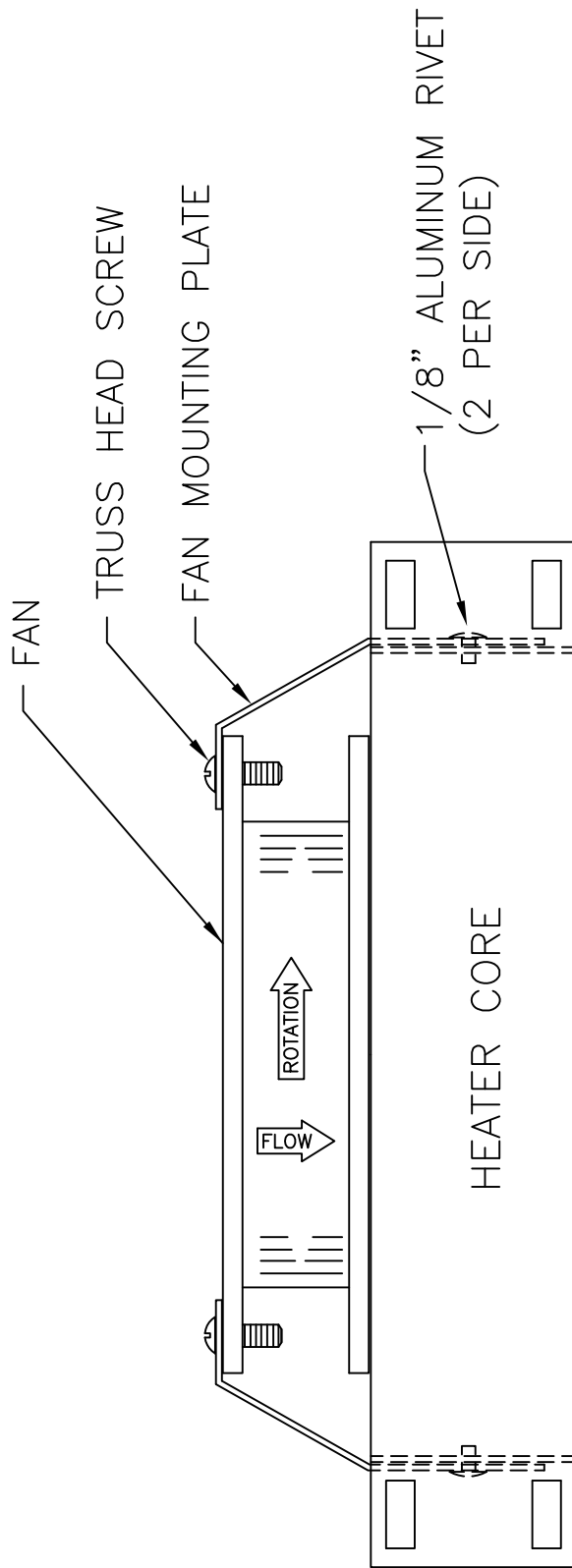
MD4421



MD5623
REV. - ORIG

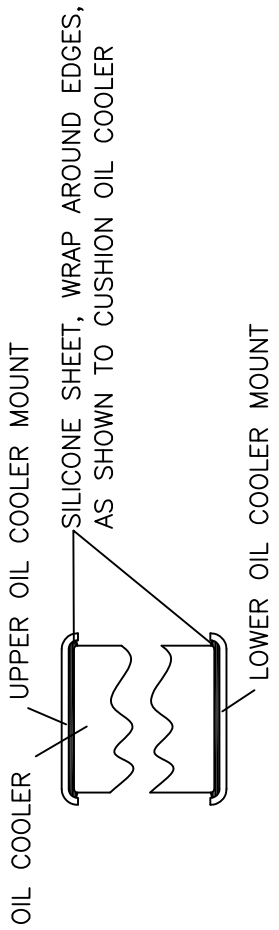
RANS S-20 RAVEN
ROTAX 912ULS
RADIATOR CUSHION CLAMP MOUNTING
FIGURE 03C-05

09/01/2013

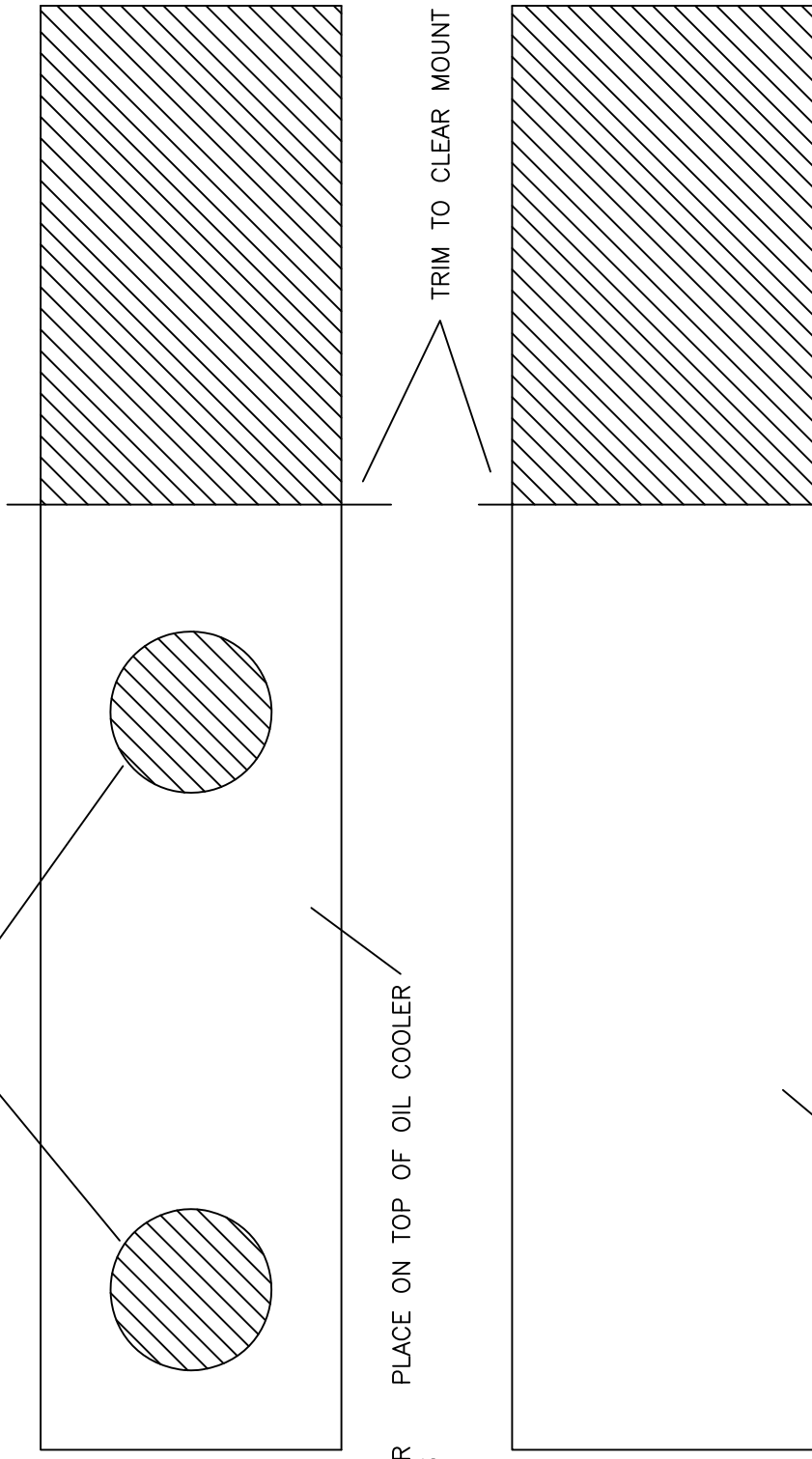


MD434
REV. - ORIG

RRR S-20 RAVEN
 ROTAX 912ULS
 HEATER CORE ASSEMBLY
 FIGURE 03C-19

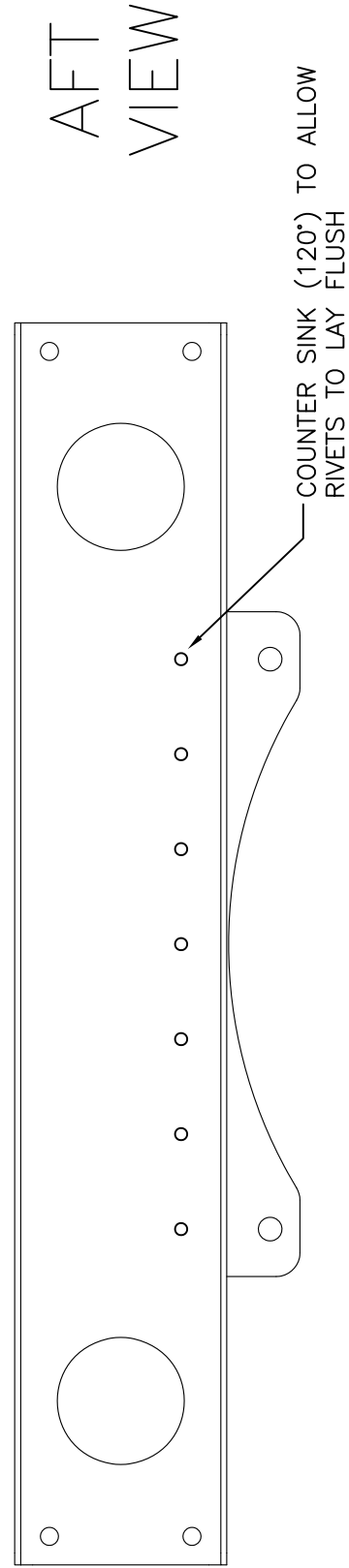
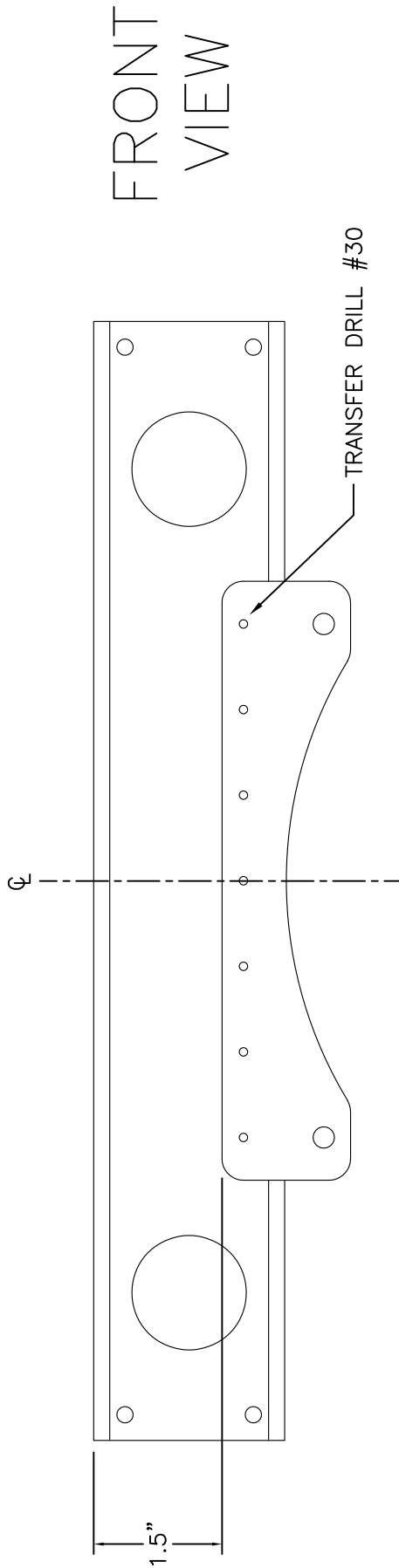


CUT HOLES TO ALLOW FOR FITTINGS. USE UPPER OIL COOLER MOUNT AS A TEMPLATE



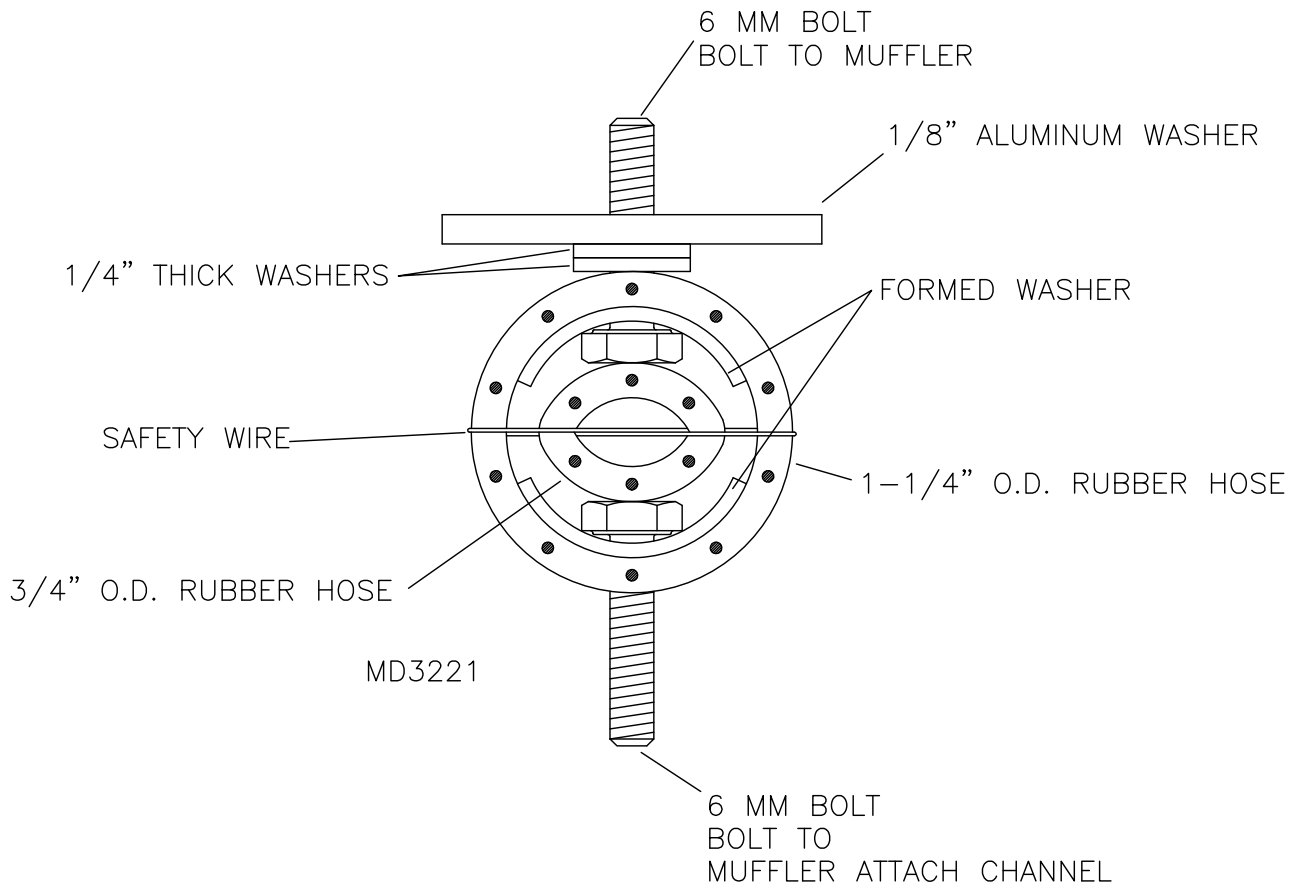
RAMROB S-20 RAVEN
ROTAX 912ULS
OIL COOLER INSTALLATION
FIGURE 03D-06

MD4449



RRR S-20 RAVEN
 ROTAX 912ULS
 UPPER OIL COOLER MOUNT
 FIGURE 03D-07

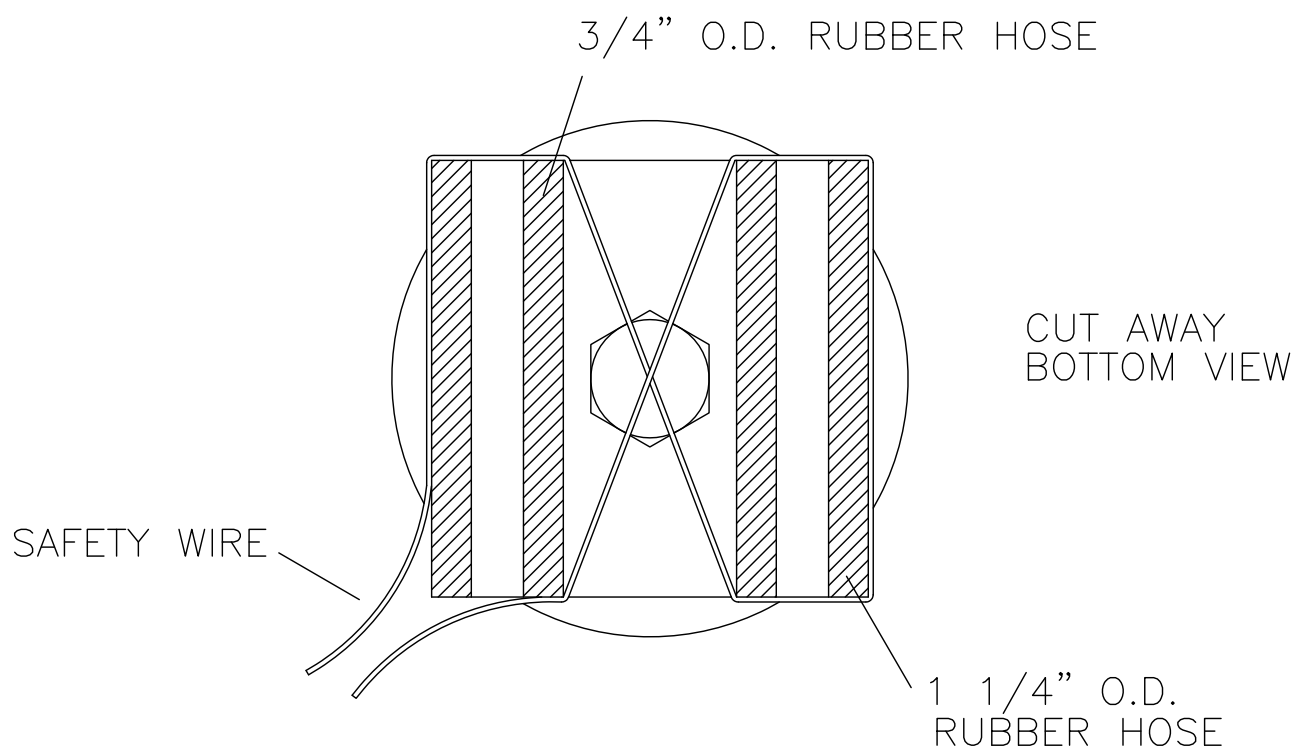
MD5459
 REV. - ORIG



MD3221
REV. - ORIG

**RANS S-20 RAVEN
ROTAX 912ULS
MUFFLER ISOLATOR
FIGURE 03E-02**

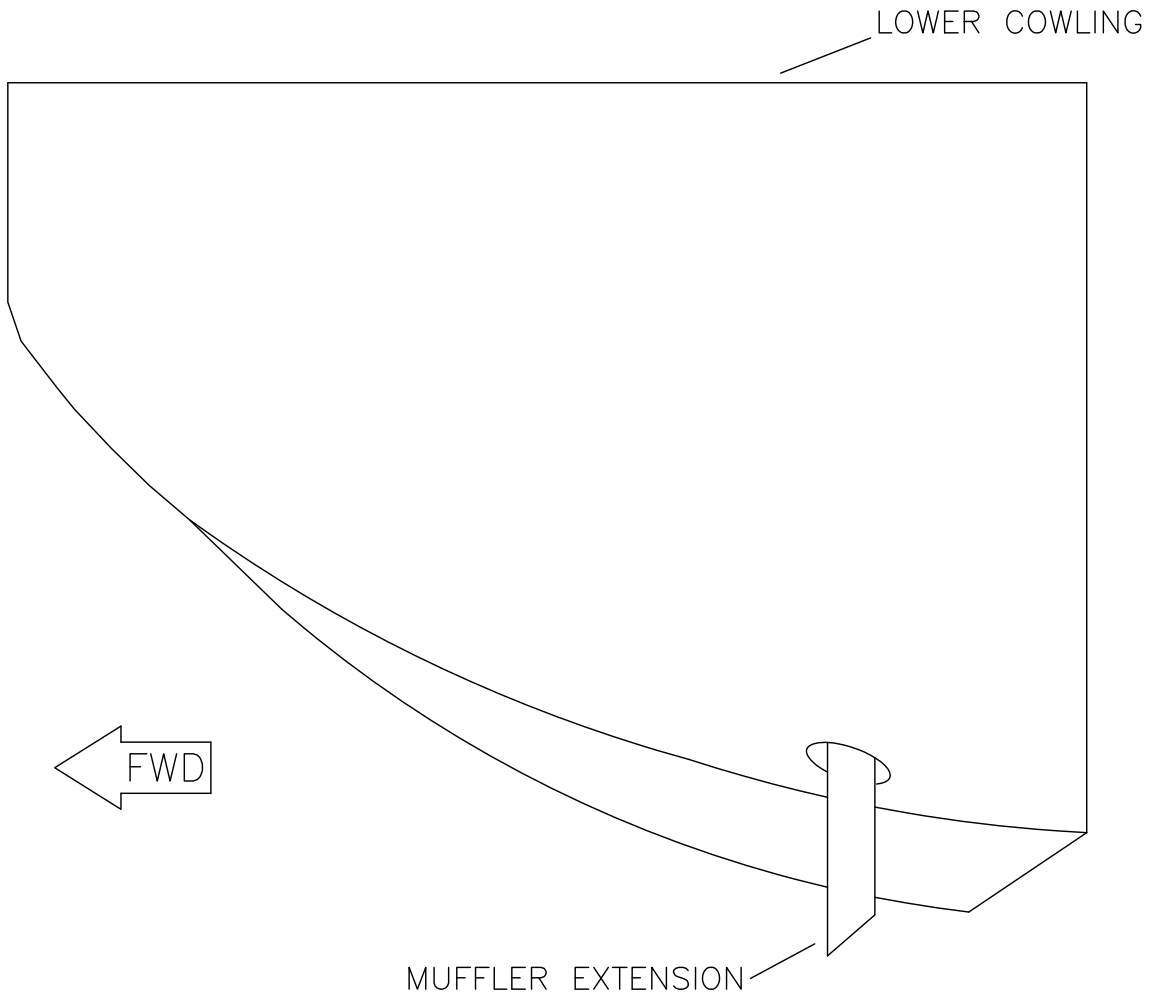
09/01/2013



MD3222
REV. - ORIG

RANS S-20 RAVEN
ROTAX 912ULS
MUFFLER ISOLATOR SAFETY WIRE
FIGURE 03E-03

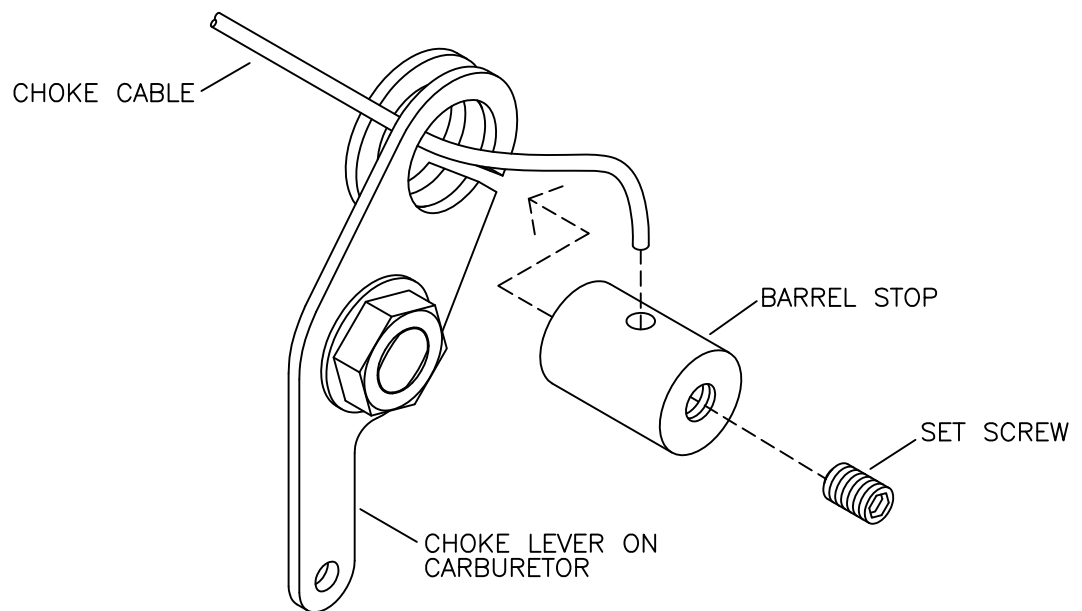
09/01/2013



RAMS S-20 RAVEN
ROTAX 912ULS
MUFFLER EXTENSION
FIGURE 03E-09

MD2837
REV. - ORIG

09/01/2013

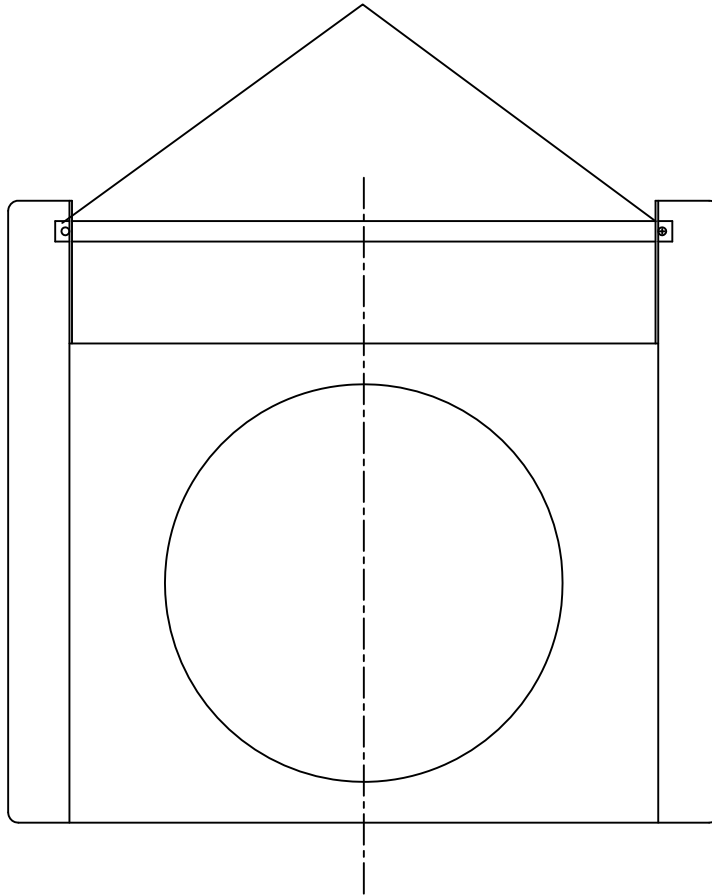


MD4440

RANS S-20 RAVEN
ROTAX 912ULS
CHOKE CABLE INSTALLATION
FIGURE 03H-07

09/01/2013

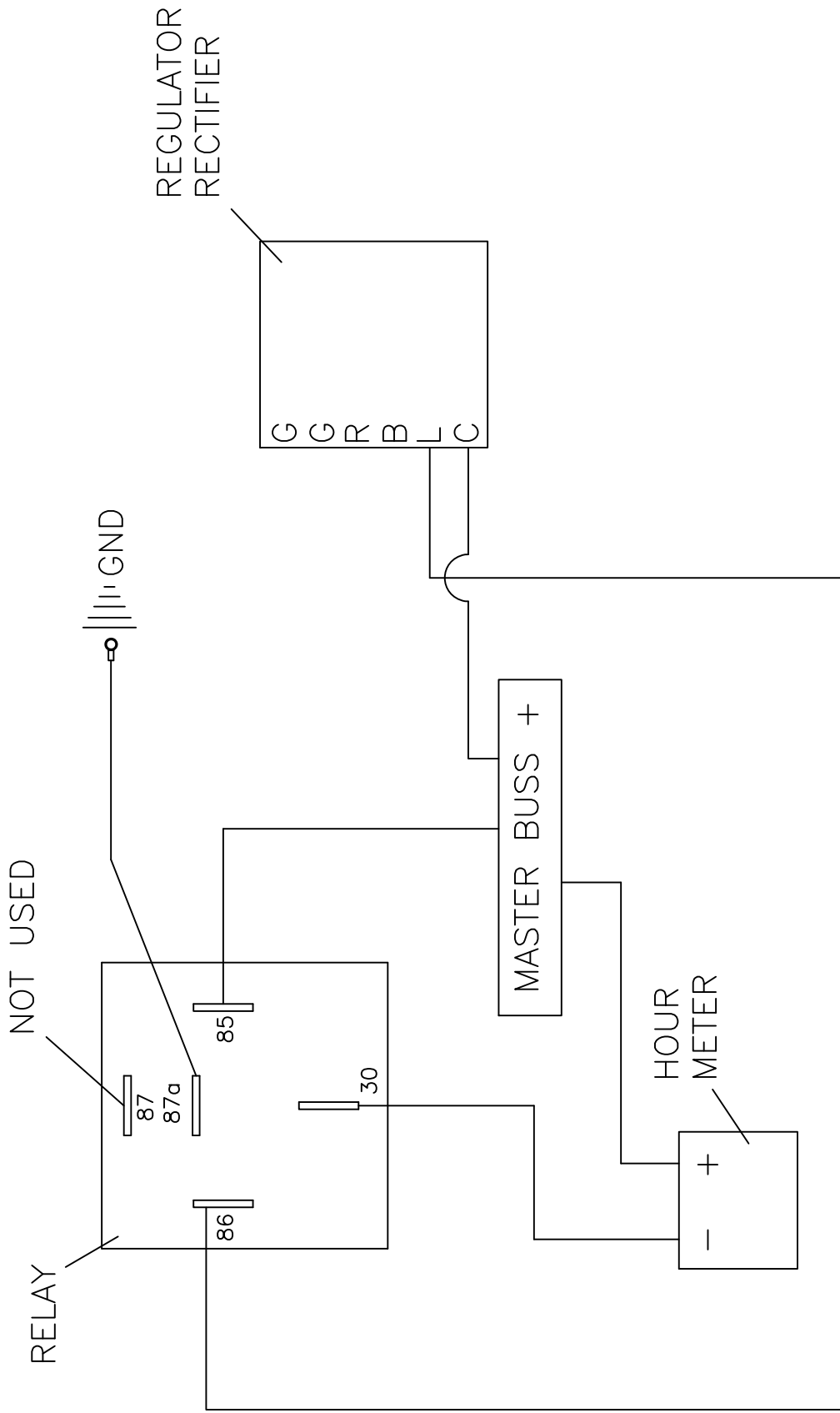
CENTER BATTERY BAR AND DRILL #40
AS NECESSARY



RANS S-20 RAVEN
ROTAX 912ULS
BATTERY BAR MODIFICATION
FIGURE 03I-07

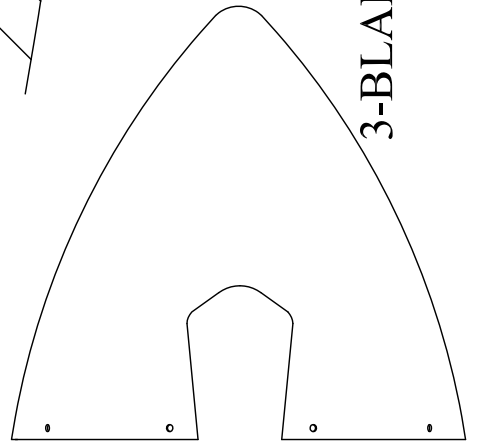
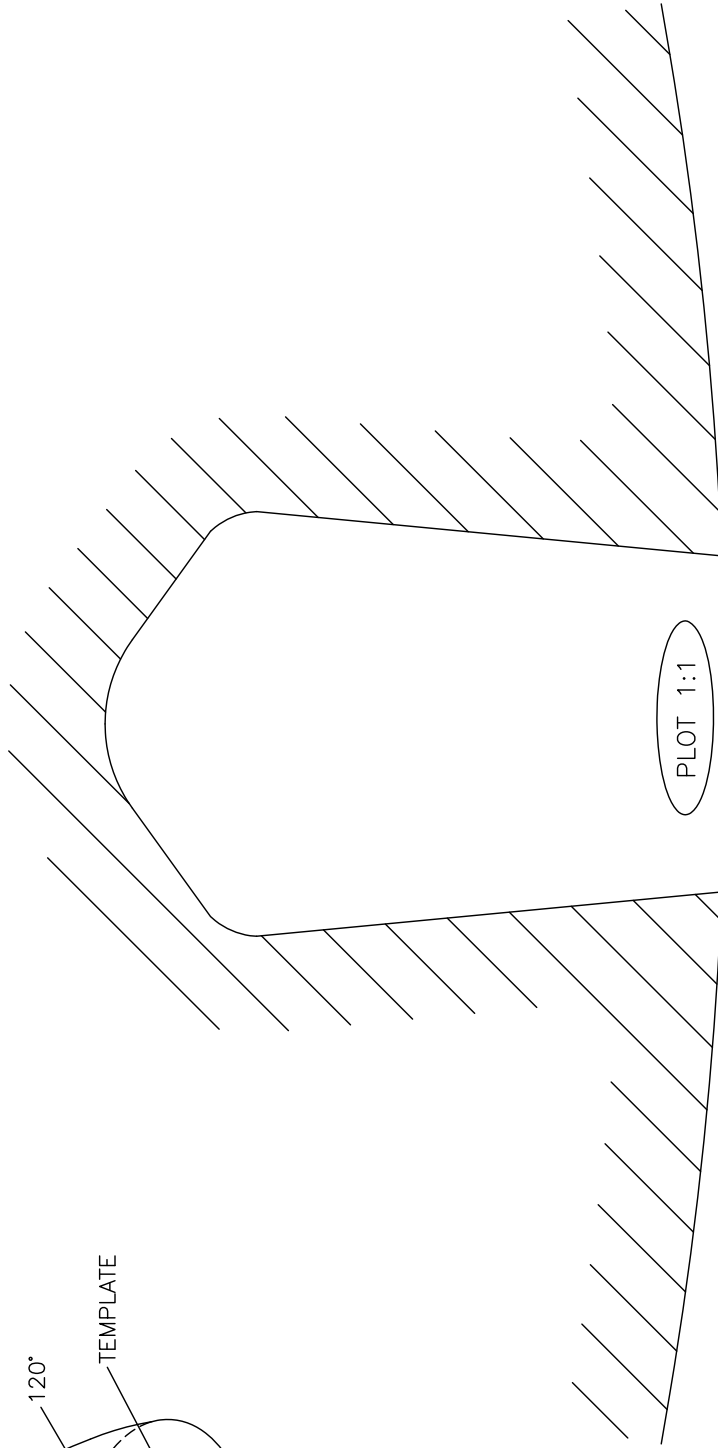
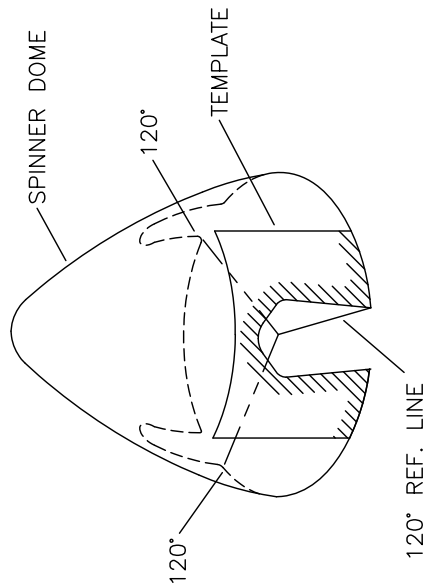
MD5468

09/01/2013



MD5485
REV. A

RAVEN S-20 RAVEN
ROTAX 912ULS
OPTIONAL HOUR METER RELAY
FIGURE 03J-05



RRR S-20 RAVEN

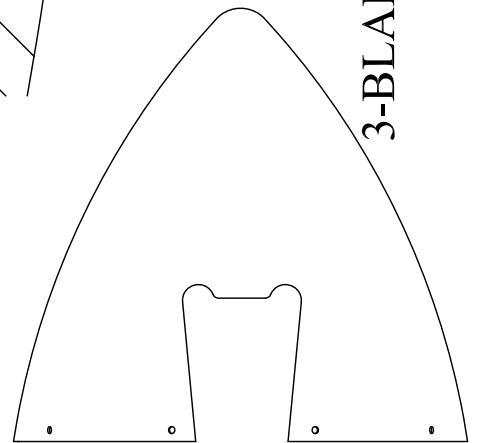
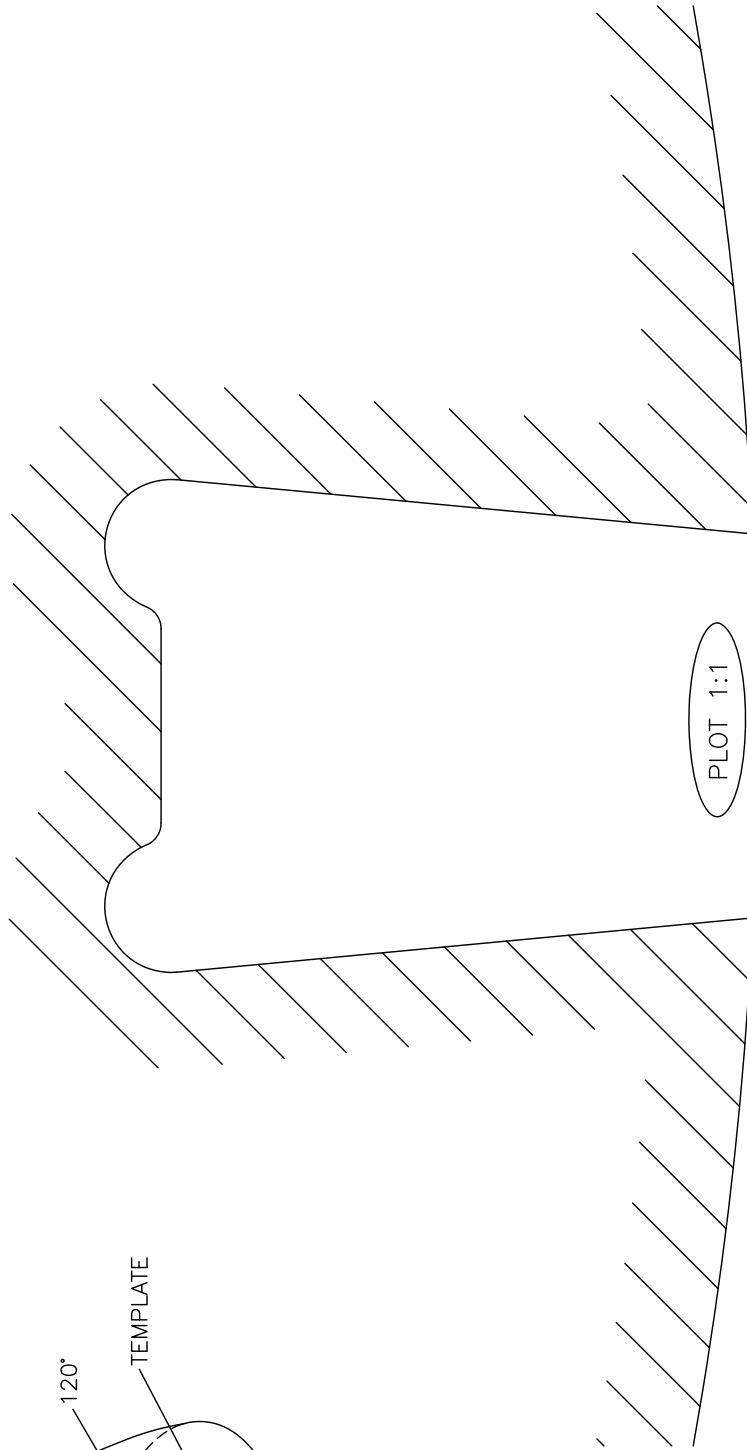
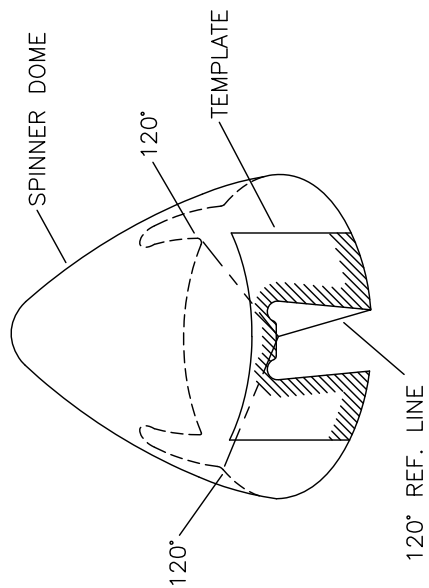
ROTAX 912ULS

3-BLADE WHIRL WIND PROP - 12" SPINNER TEMPLATE

FIGURE 03K-04

MD5228

09/01/2013



RRFANES S-20 RAVEN

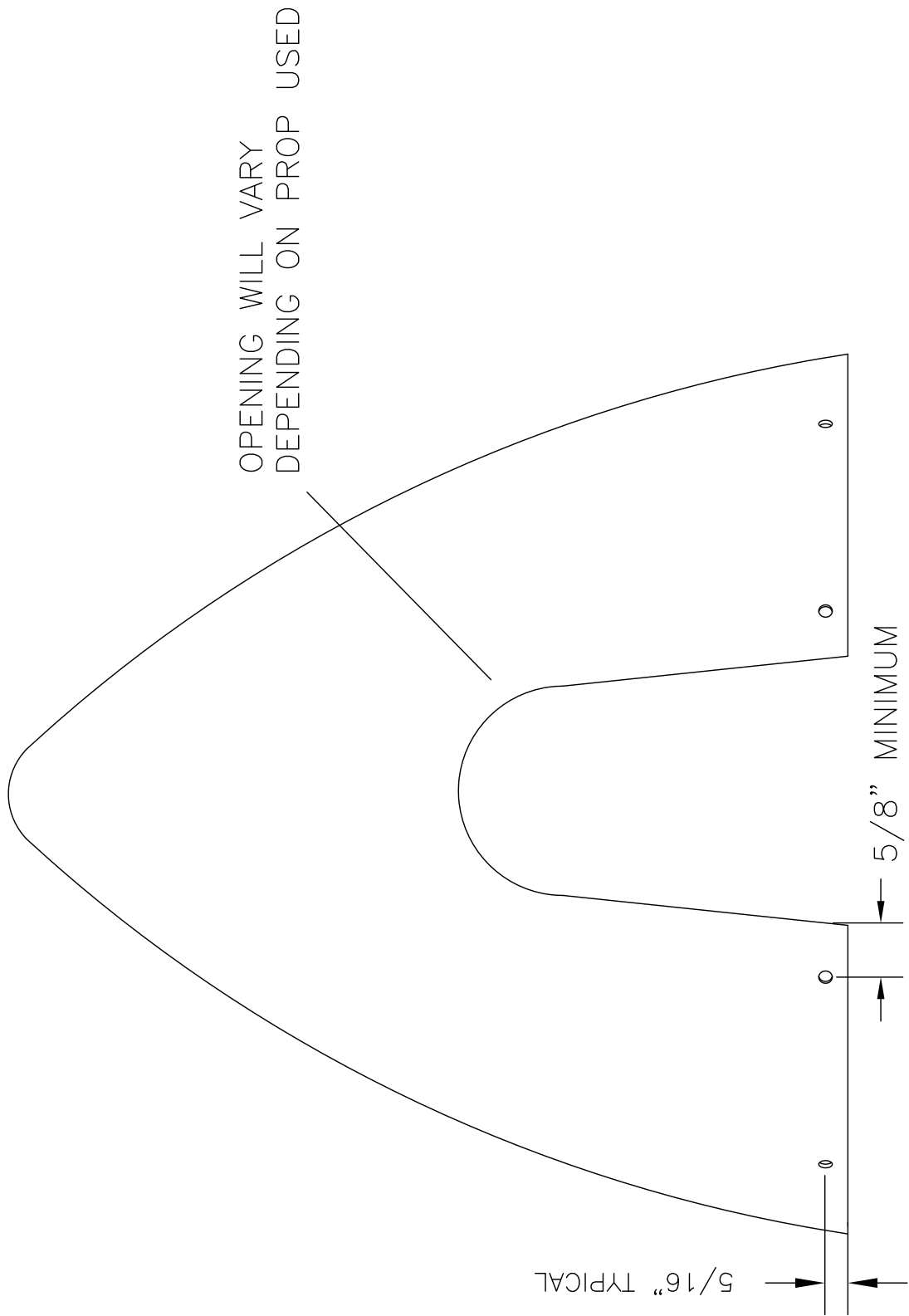
ROTAX 912ULS

3-BLADE WARP DRIVE PROP - 12" SPINNER TEMPLATE

FIGURE 03K-04A

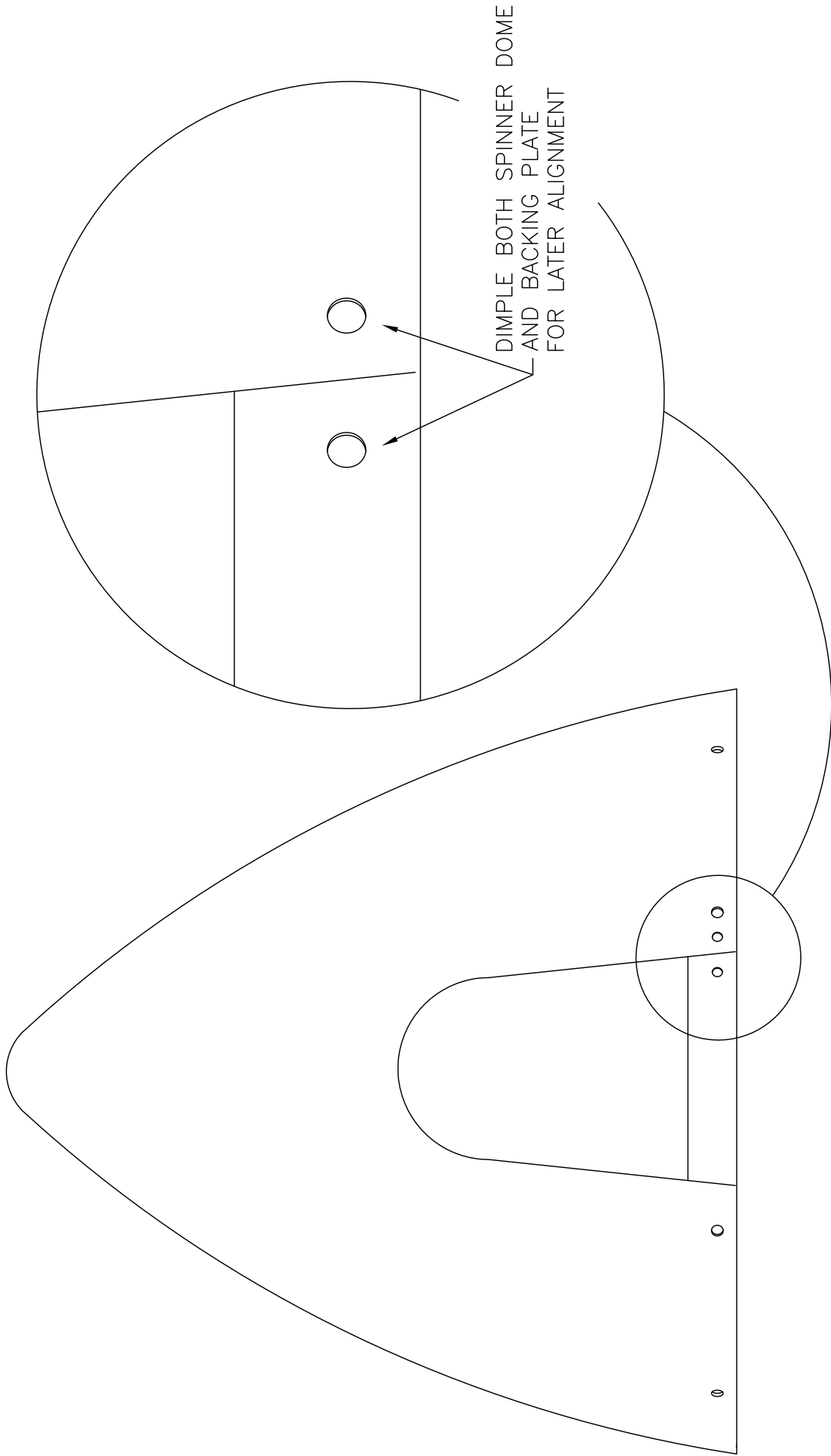
MD5228

09/01/2013



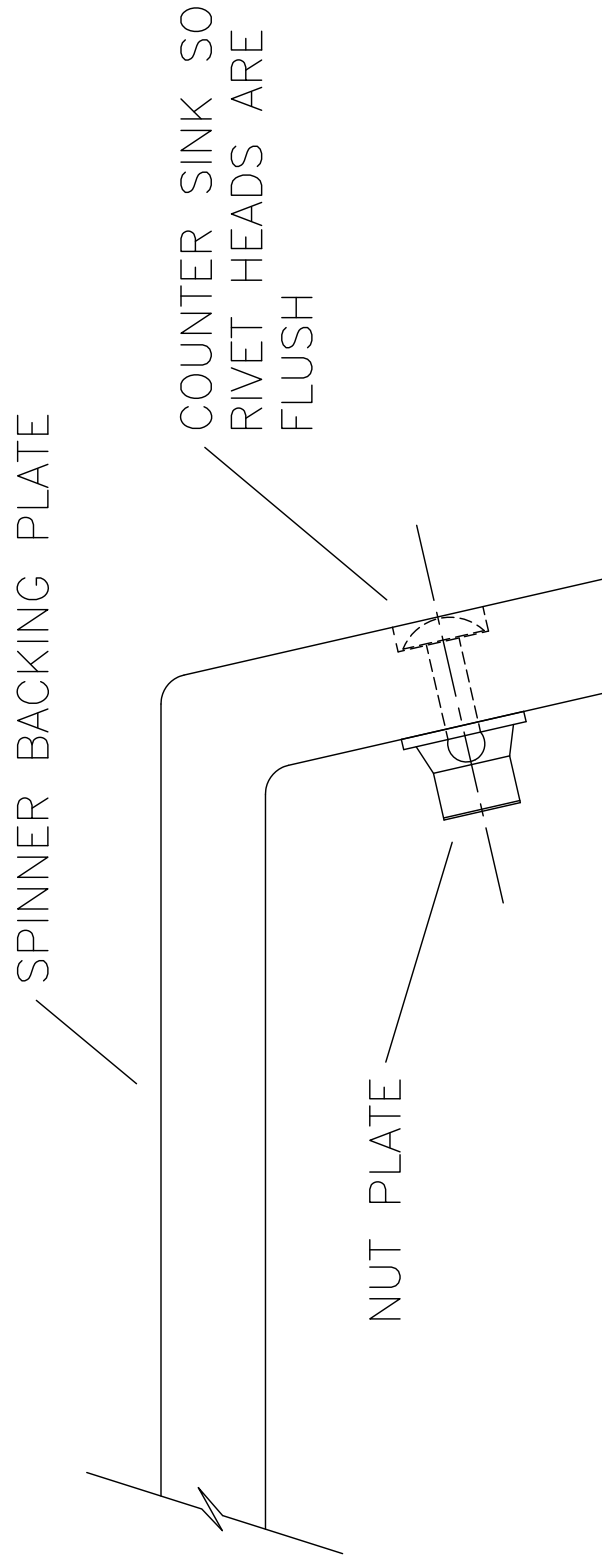
RAVEN S-20 RAVEN
ROTAX 912ULS
SPINNER DRILLING
FIGURE 03K-07

MD5228



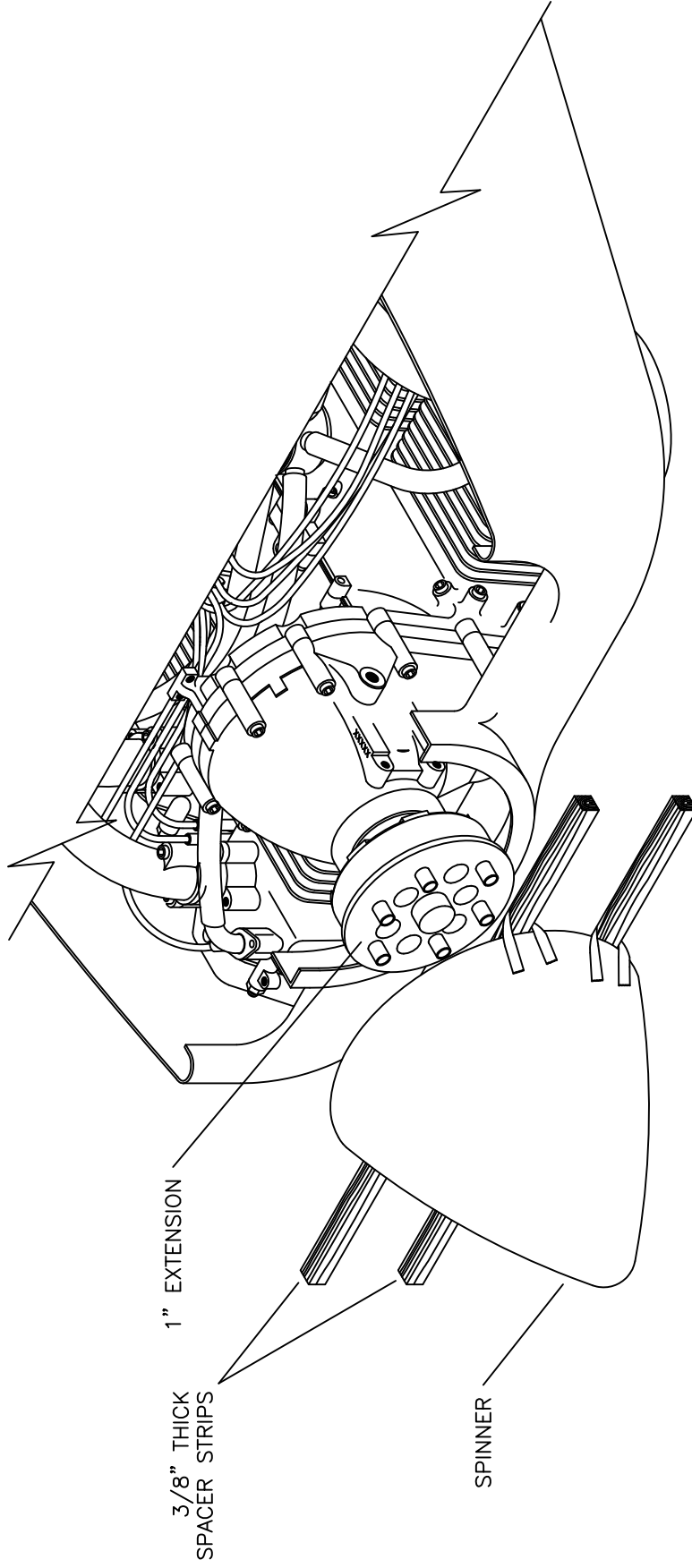

S-20 RAVEN
ROTAX 912ULS
SPINNER ALIGNMENT MARKS
FIGURE 03K-10

MD5228



RAVEN S-20 RAVEN
ROTAX 912ULS
SPINNER NUT PLATE INSTALLATION
FIGURE 03K-11

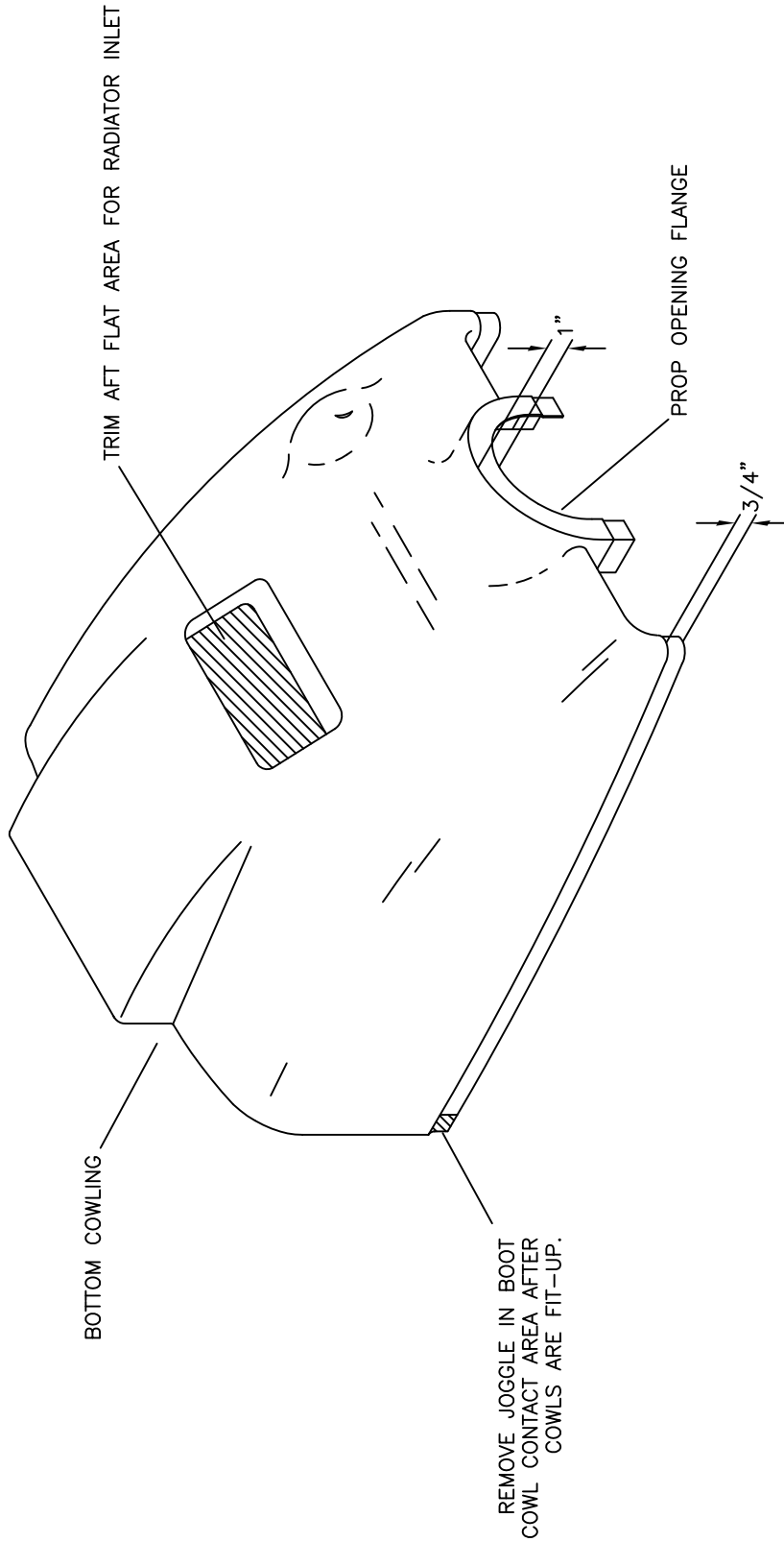
MD5228



IMPORTANT: INSTALLATION OF COWLING REQUIRES ENGINE, PROP EXTENSION AND SPINNER BACKING PLATE TO BE INSTALLED.

MD4402
REV. - ORIG

RAVEN S-20 RAVEN
 ROTAX 912ULS
 COWLING TO SPINNER SPACING
 FIGURE 03L-02

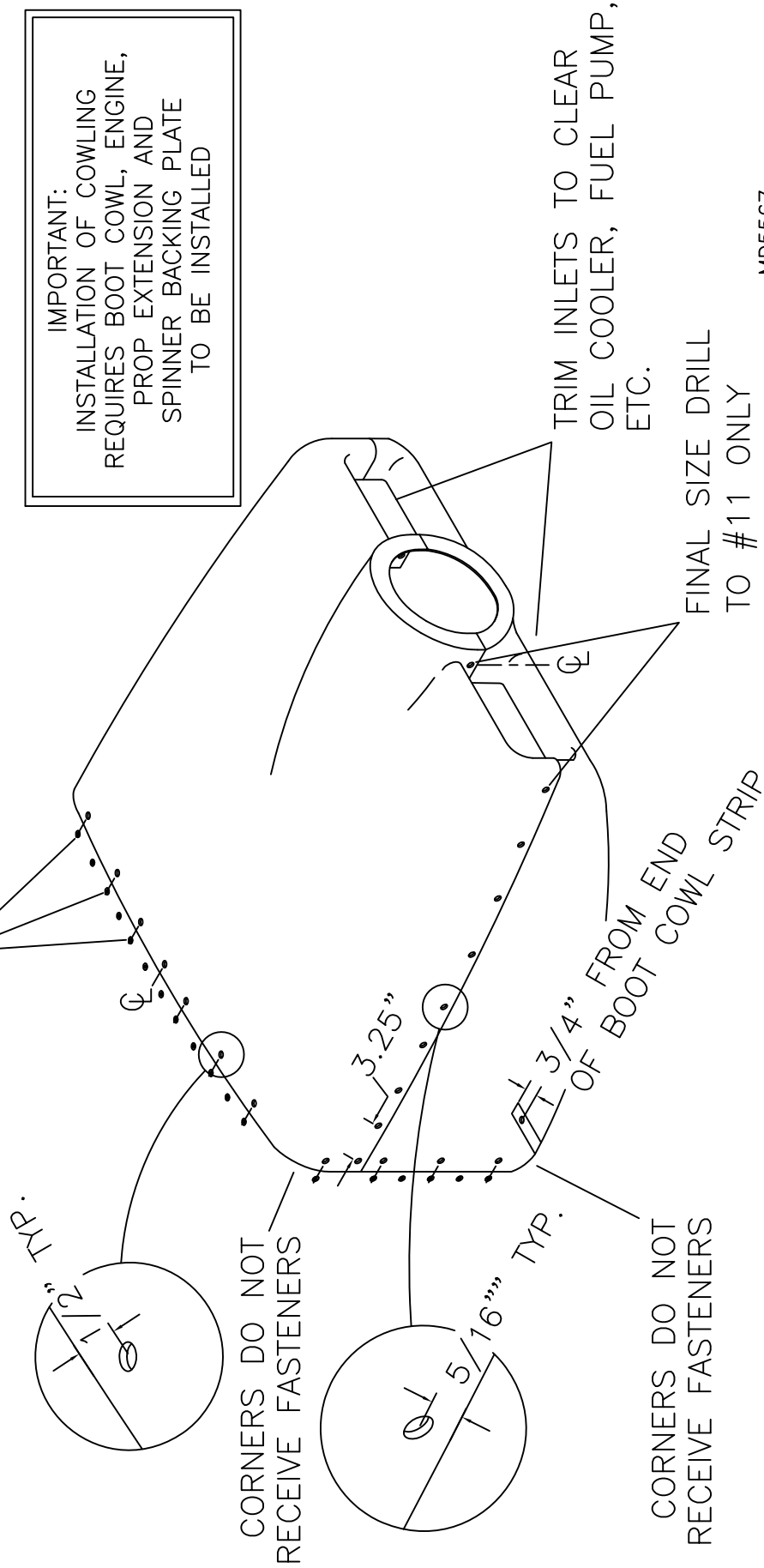


MD2833
REV. - ORIG

RAMBO S-20 RAVEN
ROTAX 912ULS
BOTTOM COWLING MODIFICATION
FIGURE 03L-03

ALIGN WITH RIVETS ON BOOT COWL.
 SKIP EVERY OTHER RIVET.
 (TYPICAL FOR AFT EDGE)

DRILL ALL LOCATIONS #40 FOR FIT-UP.
 THEN, TRANSFER DRILL #111 FOR
 RECEPTACLE RIVET LOCATING.



IMPORTANT:
 INSTALLATION OF COWLING
 REQUIRES BOOT COWL, ENGINE,
 PROP EXTENSION AND
 SPINNER BACKING PLATE
 TO BE INSTALLED

CORNERS DO NOT
 RECEIVE FASTENERS

CORNERS DO NOT
 RECEIVE FASTENERS

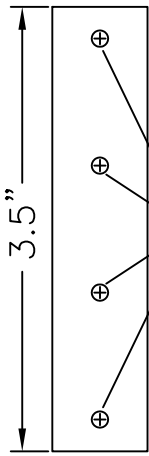
TRIM INLETS TO CLEAR
 OIL COOLER, FUEL PUMP,
 ETC.

FINAL SIZE DRILL
 TO #111 ONLY

MD5567
 REV. - ORIG

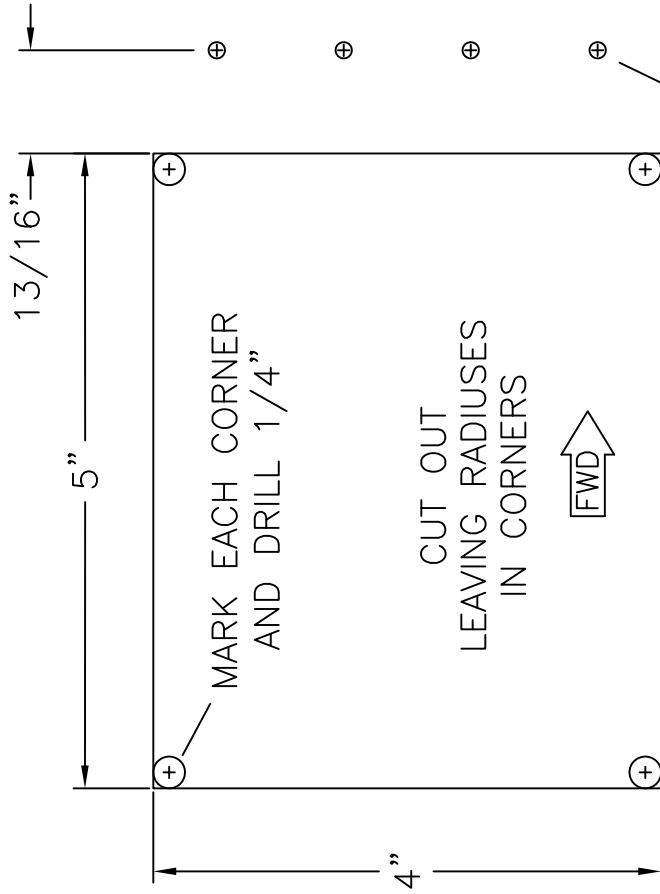
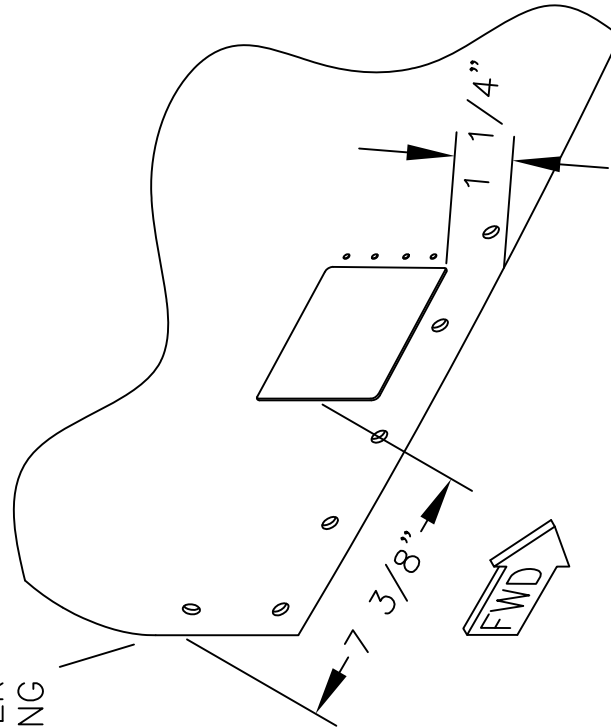
RRR S-20 RAVEN
 ROTAX 912ULS
 COWLING FASTENER LOCATION
 FIGURE 03L-12

ALUMINUM STRIP
(FABRICATE 2 FROM RAW STOCK)



LOCATE AND
DRILL #30

AFT EDGE
LOWER
COWLING



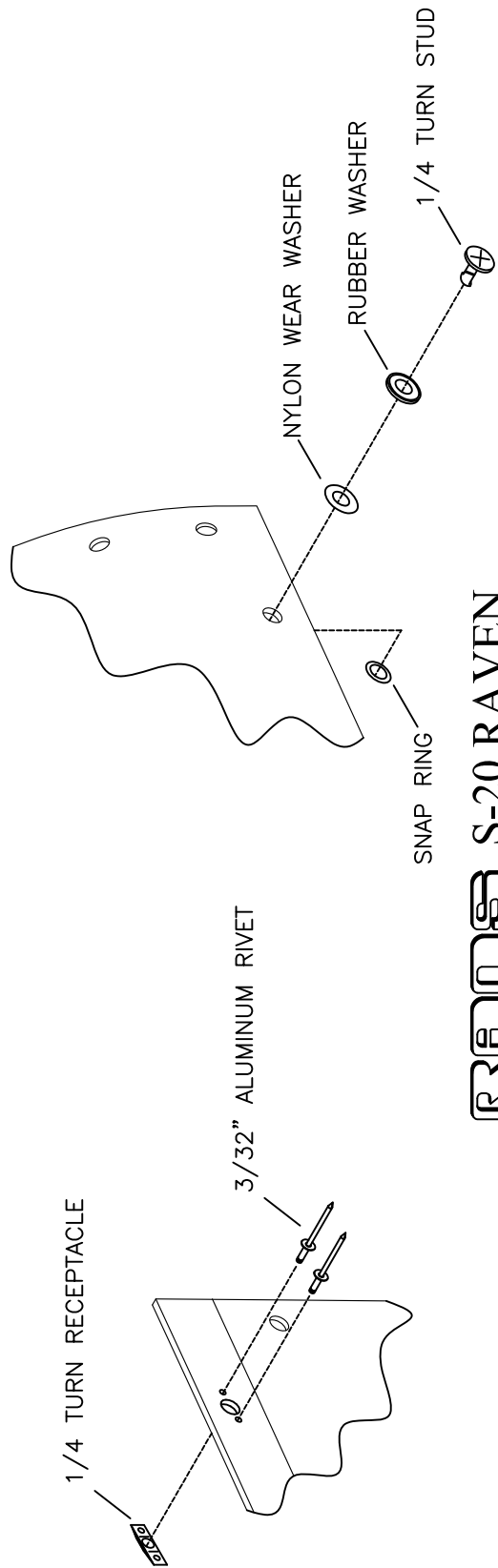
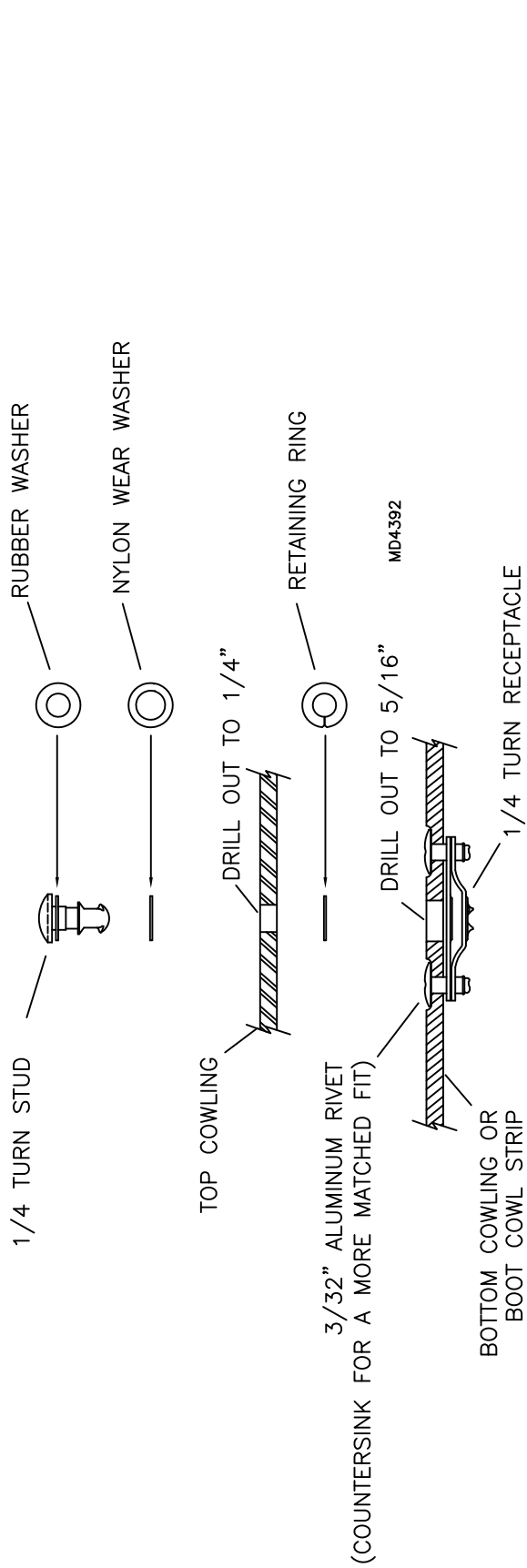
CUT OUT
LEAVING RADIUSSES
IN CORNERS



LOCATE AND DRILL #30 (4 PLS)
USING FABRICATED ALUMINUM STRIP
AS A GUIDE

MD5567
REV. - ORIG

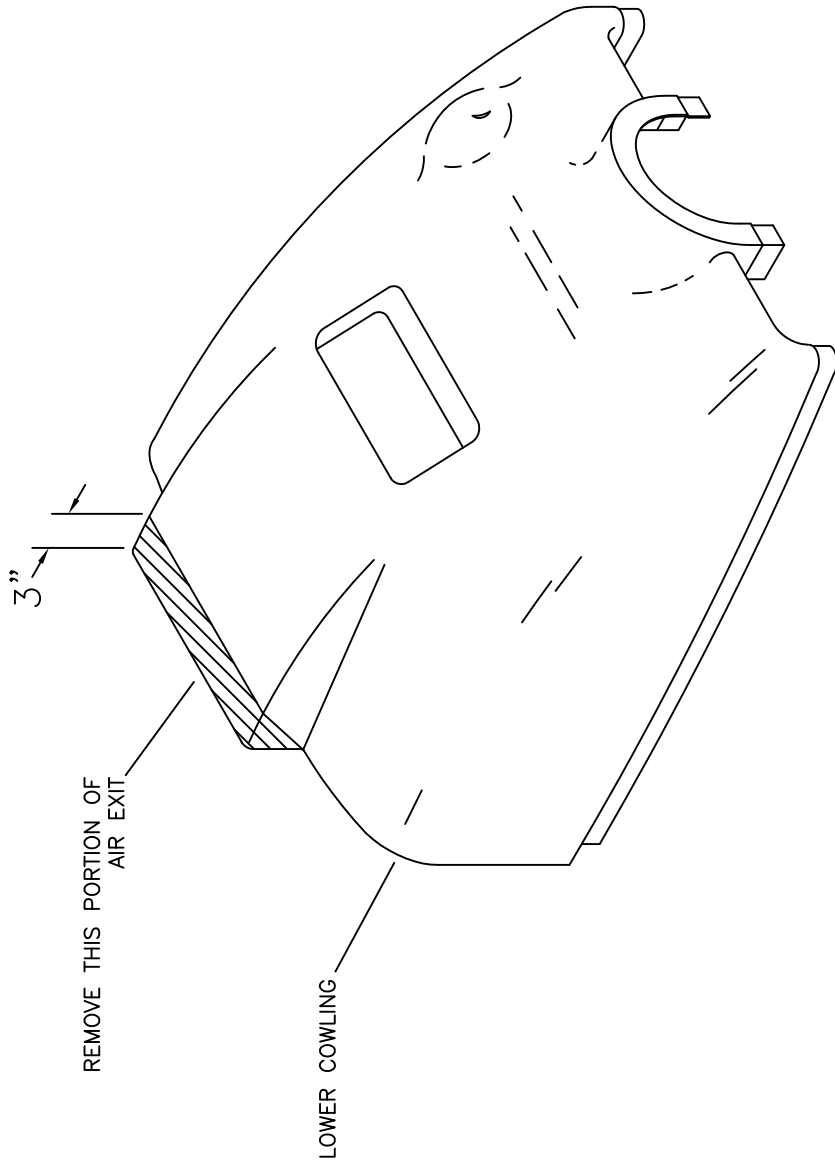
RRR S-20 RAVEN
ROTAX 912ULS
OIL TANK ACCESS OPENING
FIGURE 03L-20



RAMROB S-20 RAVEN
ROTAX 912ULS
1/4 TURN FASTENER INSTALLATION

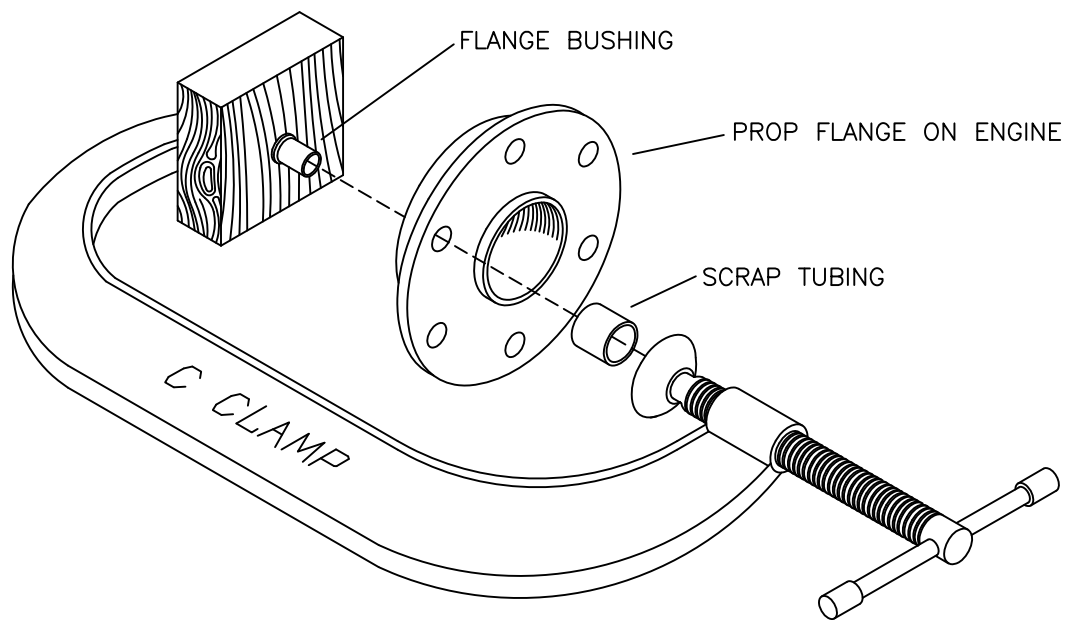
FIGURE 03L-28

MD5143
 REV. - ORIG



MD2833
REV. - ORIG

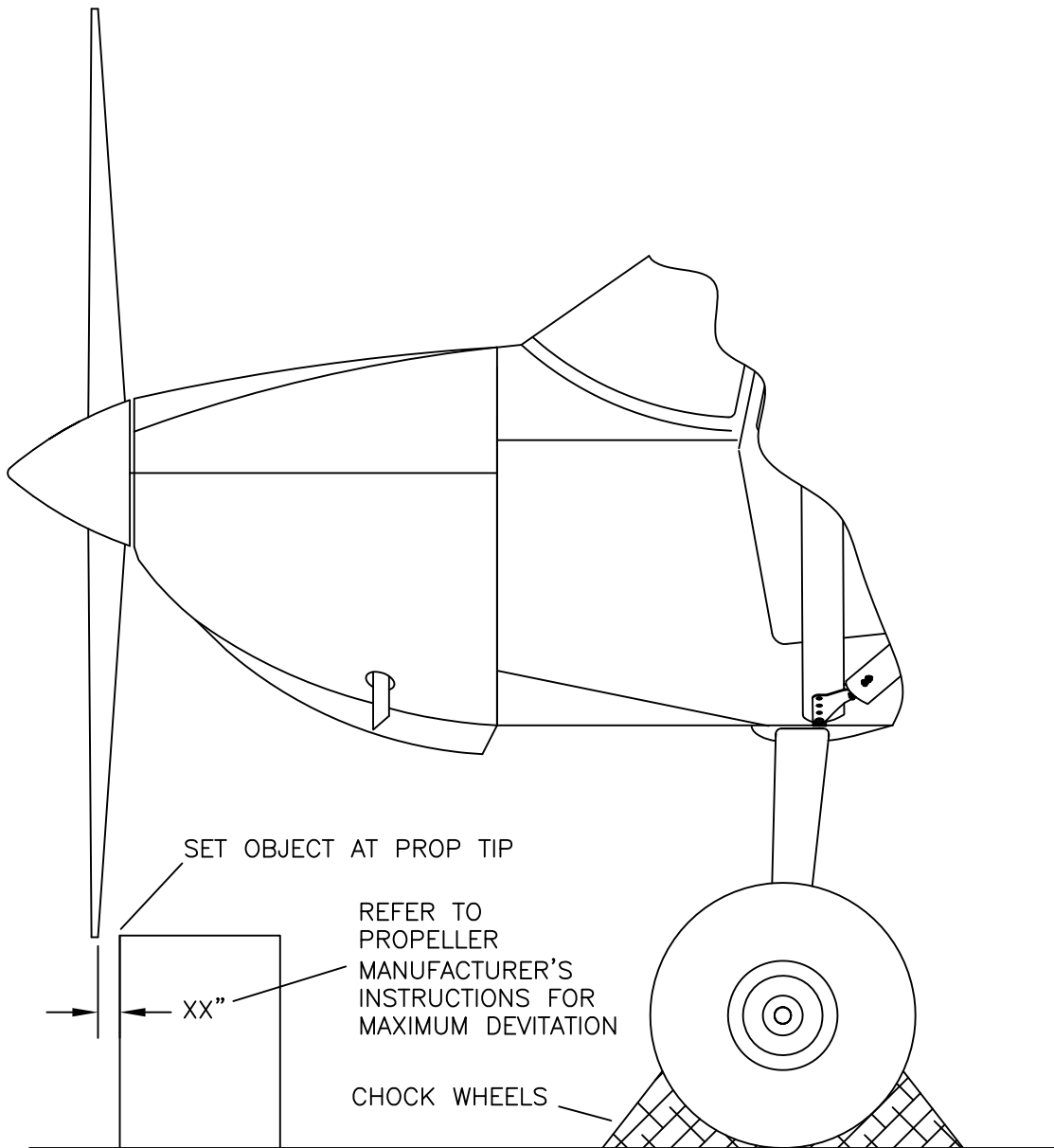
ROTAX S-20 RAVEN
ROTAX 912ULS
AIR EXIT MODIFICATION
FIGURE 03L-31



RANS S-20 RAVEN
ROTAX 912ULS
FLANGE BUSHING INSTALLATION
FIGURE 03M-02

MD4401
REV. - ORIG

09/01/2013



IMPORTANT!

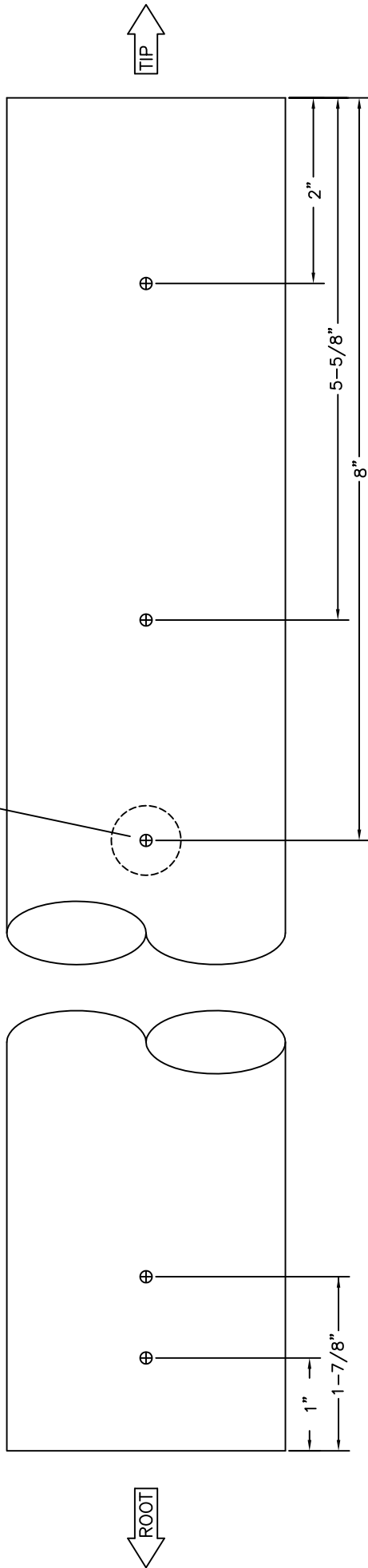
RE-CHECK PROPELLER TORQUE PER MANUFACTURE'S RECOMMENDED INSPECTION INTERVAL. FAILURE TO MAINTAIN PROP TORQUE MAY RESULT IN SEPARATION OF THE PROPELLER FROM THE AIRCRAFT AND MAY CAUSE INJURY OR DEATH. REFER TO PROPELLER MANUFACTURER'S INSTRUCTIONS FOR ANY SPECIAL MAINTENANCE REQUIREMENTS.

RANS S-20 RAVEN
ROTAX 912ULS
PROPELLER TRACKING
FIGURE 03M-06

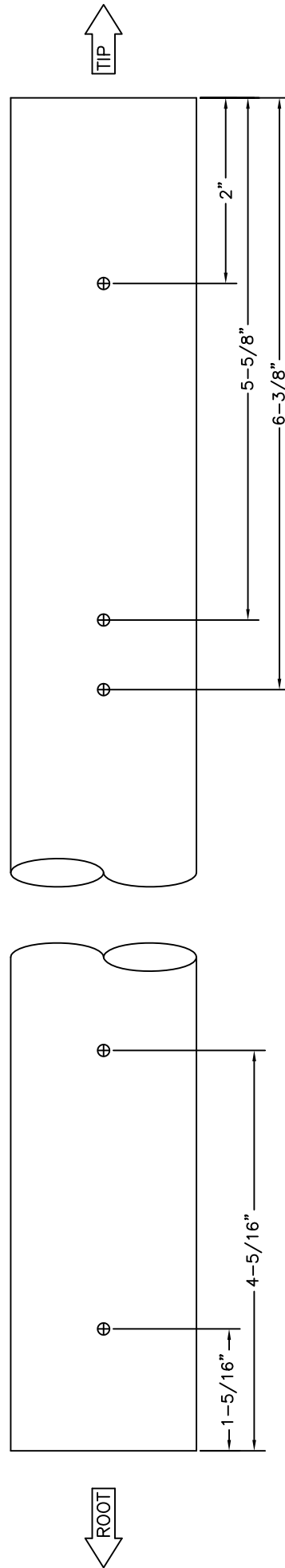
MD4380
REV. - ORIG

09/01/2013

LH SPAR ONLY (STEP DRILL TO 3/4" ON BOTH SIDES; THIS HOLE ONLY)
FOR PITOT/STATIC TUBE INSTALLATION



LEADING EDGE SPAR (FWD SIDE SHOWN)



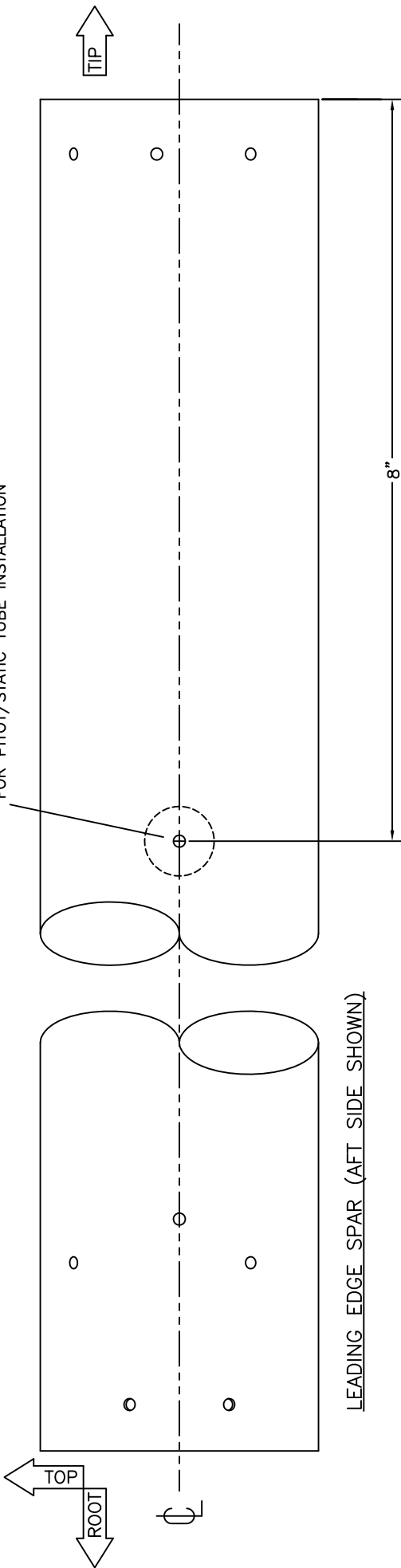
TRAILING EDGE SPAR (AFT SIDE SHOWN)

MD4351
REV. A

RAMS S-20 RAVEN
WING SPAR ORIENTATION

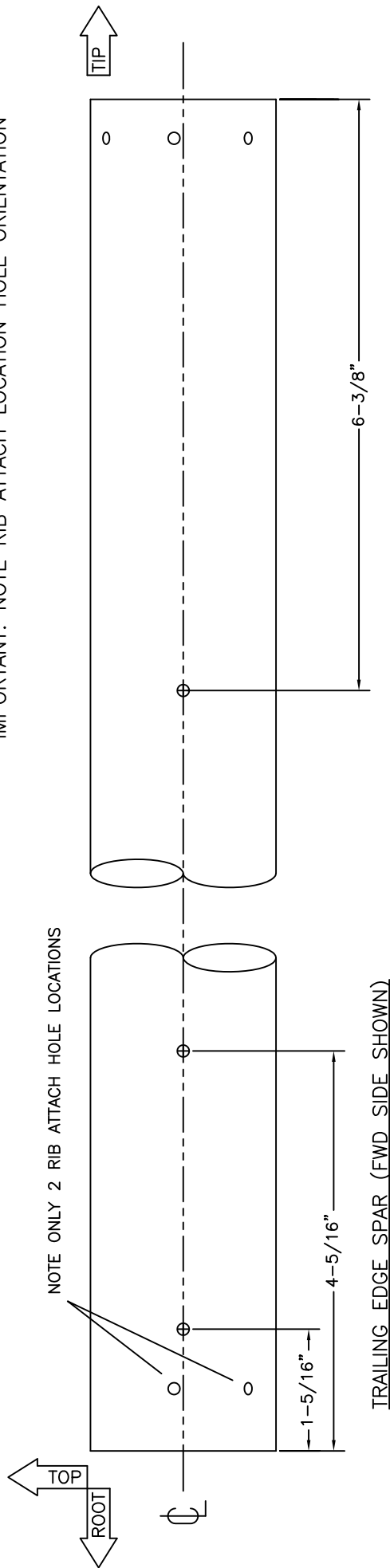
FIGURE 05-02

LH SPAR ONLY (STEP DRILL TO 3/4" ON BOTH SIDES; THIS HOLE ONLY)
FOR PITOT/STATIC TUBE INSTALLATION



LEADING EDGE SPAR (AFT SIDE SHOWN)

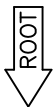
IMPORTANT: NOTE RIB ATTACH LOCATION HOLE ORIENTATION



TRAILING EDGE SPAR (FWD SIDE SHOWN)

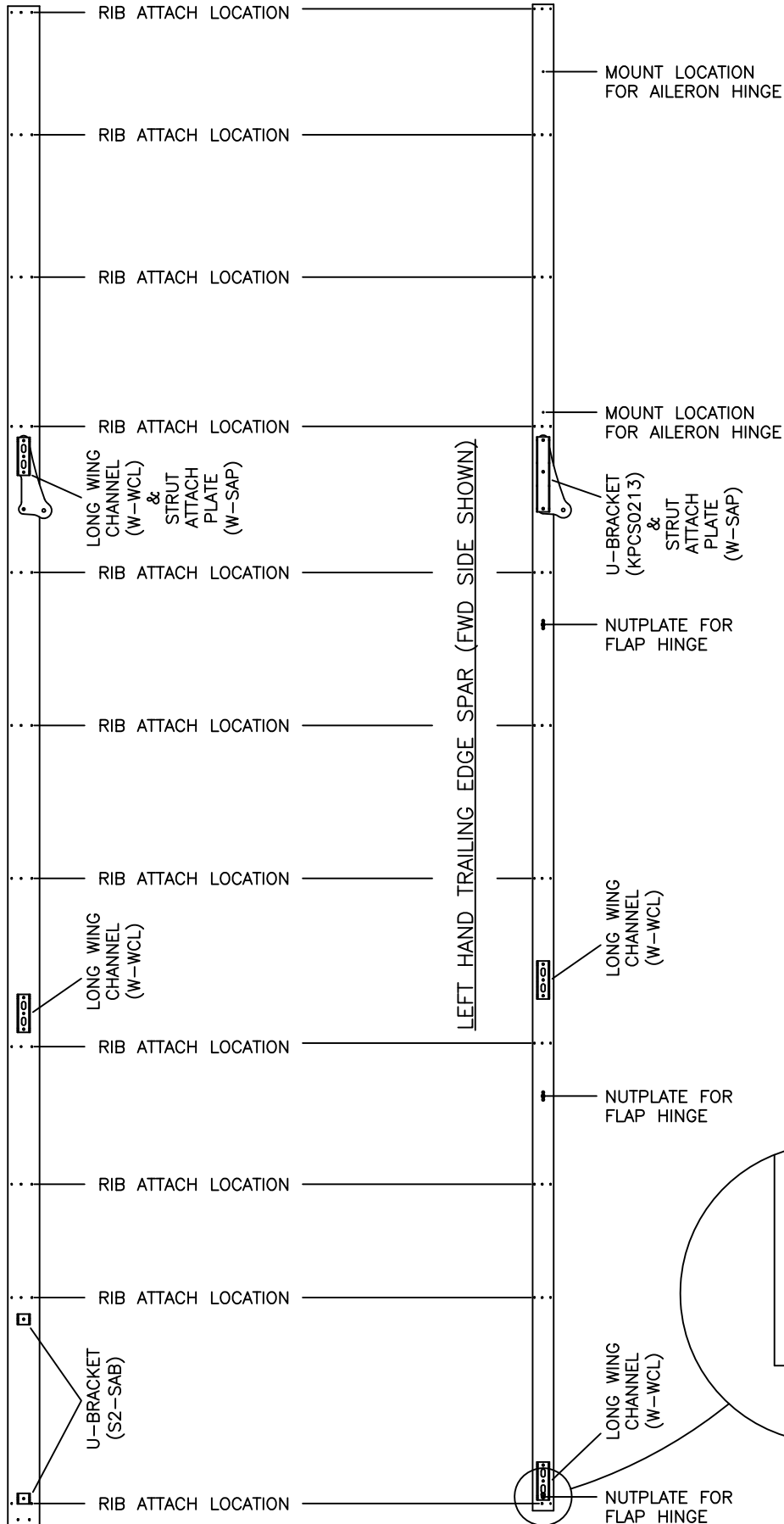
MD4351
REV. A

RRF S-20 RAVEN
WING SPAR ORIENTATION
FIGURE 05-02A



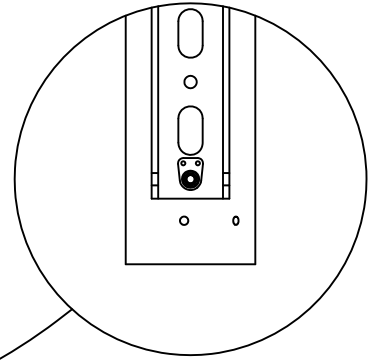
RIGHT HAND LEADING EDGE SPAR (AFT SIDE SHOWN)

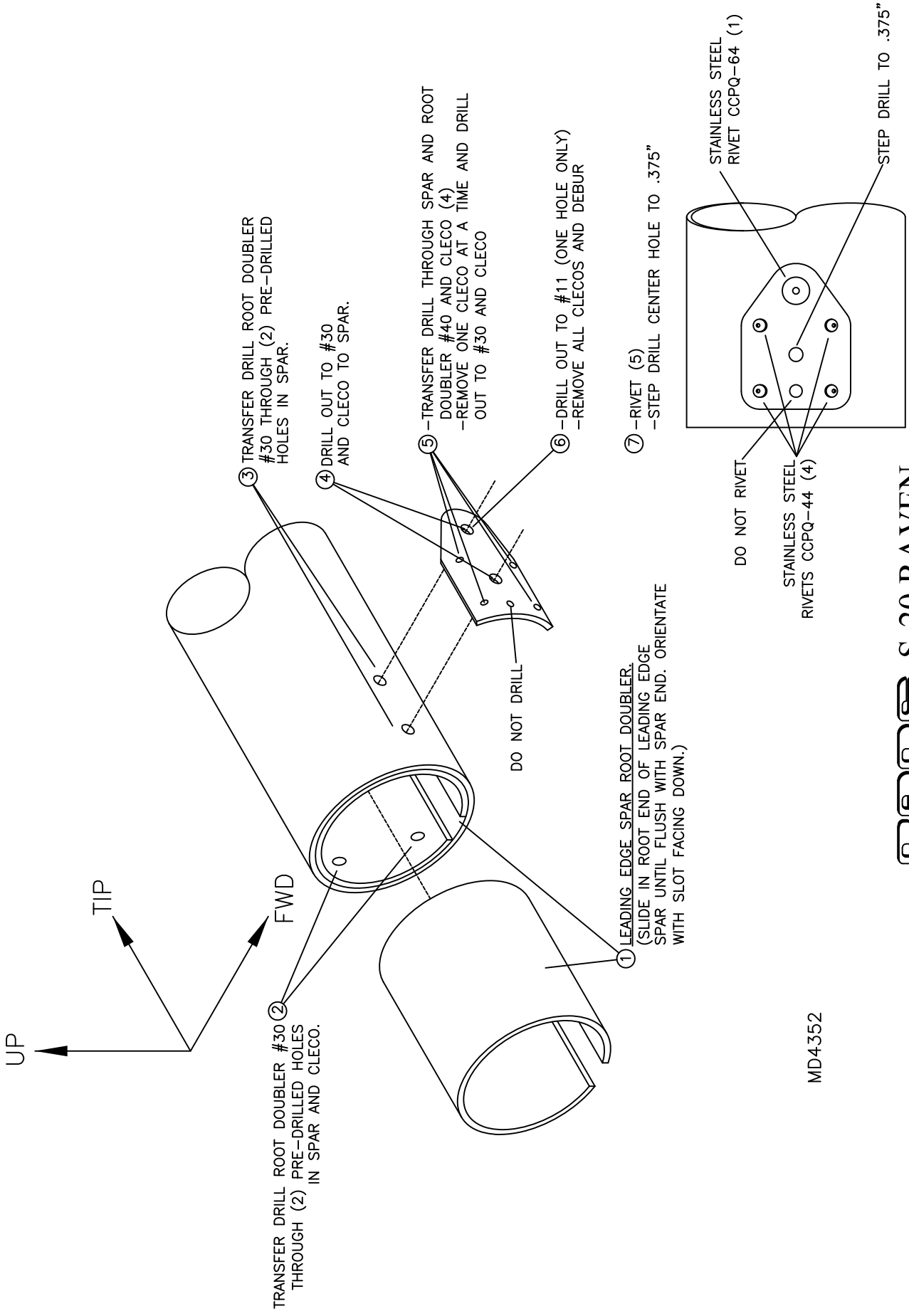
LEFT HAND TRAILING EDGE SPAR (FWD SIDE SHOWN)



MD4351
REV. B

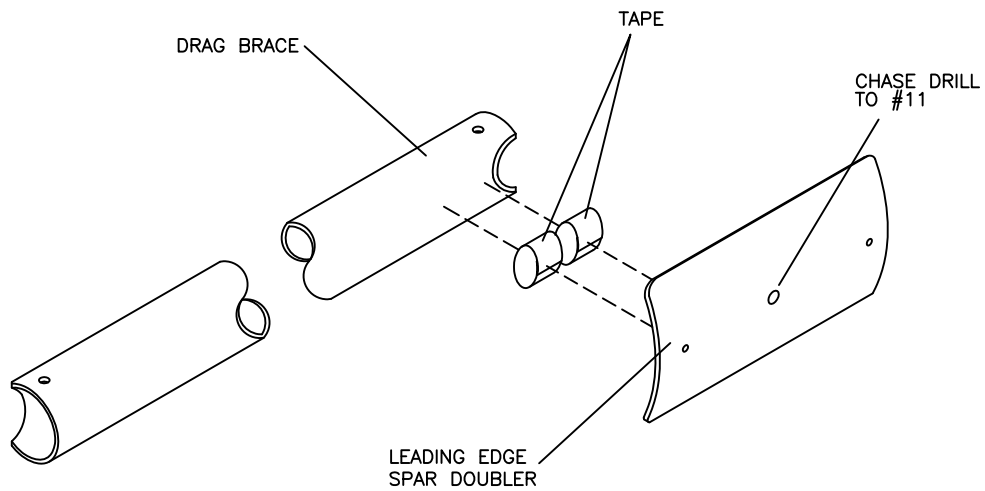
RAVEN S-20 RAVEN
WING SPAR ORIENTATION
FIGURE 05-03



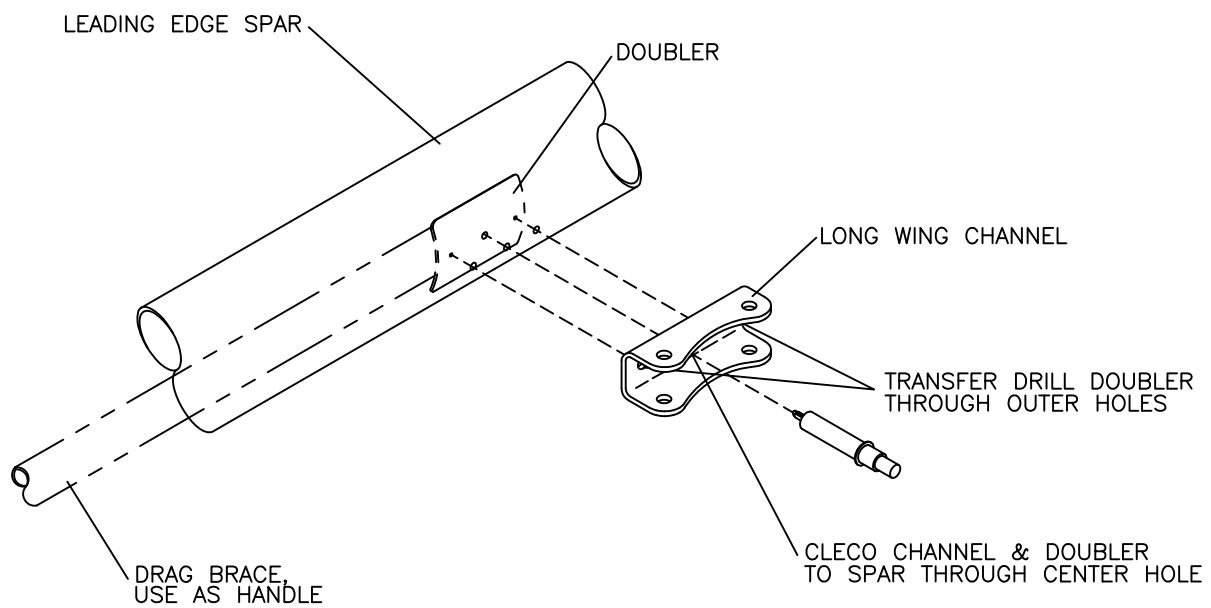


MD4-352

RAMS S-20 RAVEN
LEADING EDGE SPAR ROOT DOUBLER &
LEADING EDGE SPAR PATCH INSTALLATION
FIGURE 05-05



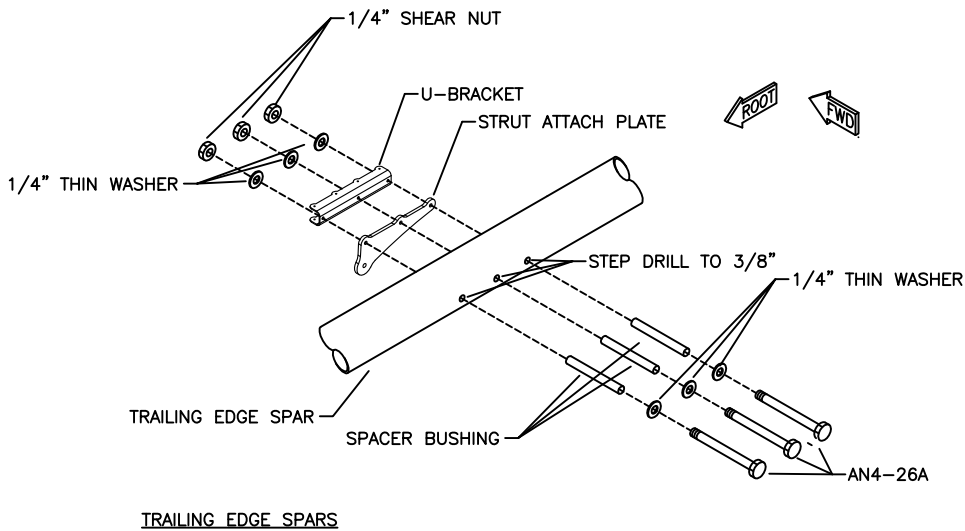
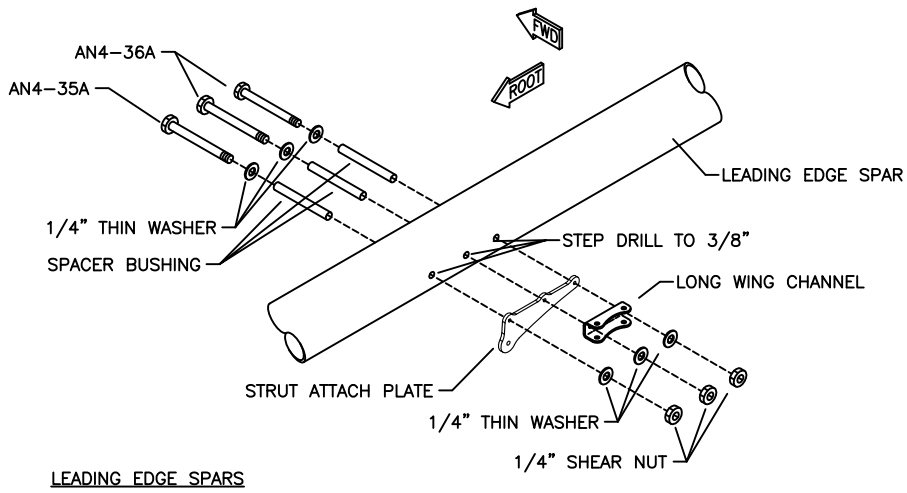
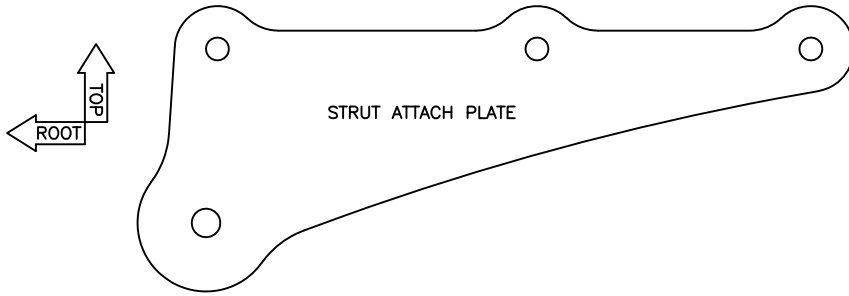
NOTE: USE DRAG BRACE TO POSITION DOUBLER INSIDE THE LEADING EDGE SPAR.



MD4353

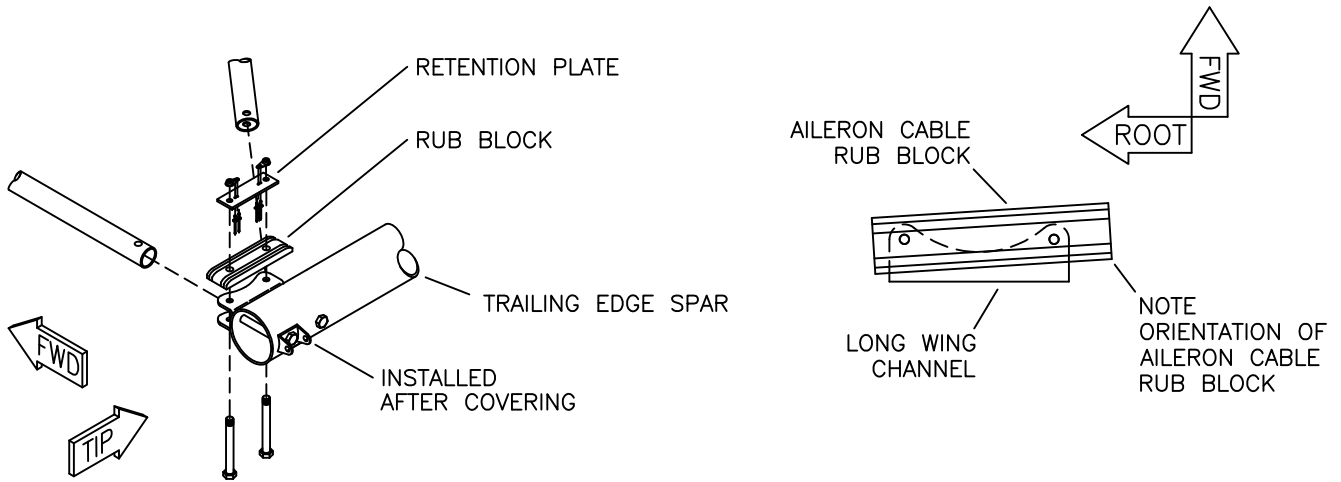
RAVENS S-20 RAVEN
LEADING EDGE SPAR
DOUBLER INSTALLATION
FIGURE 05-14

09/01/2013

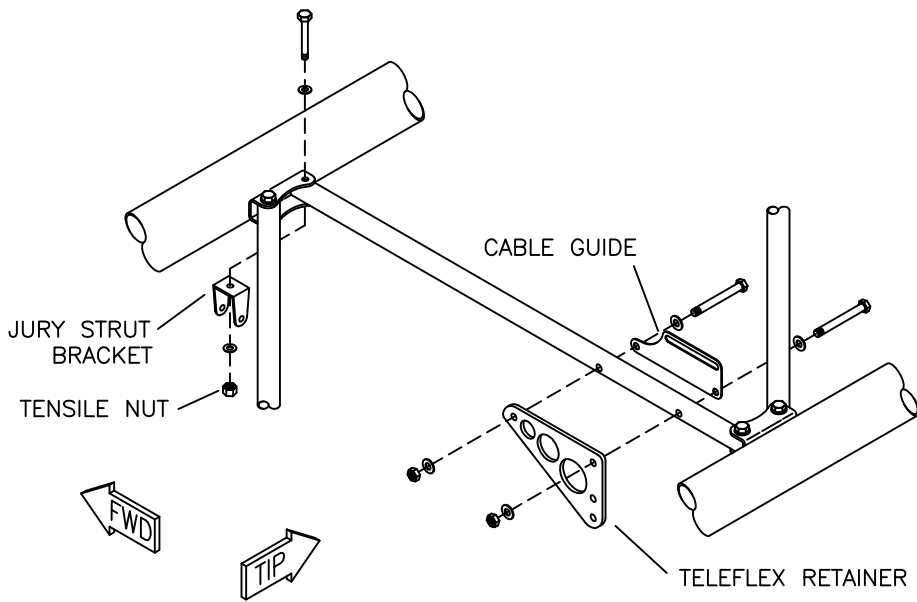


MD4354
REV. A

RANS S-20 RAVEN
STRUT ATTACH PLATE INSTALLATION
LEADING AND TRAILING EDGE SPARS
FIGURE 05-18



AILERON CABLE RUB BLOCK



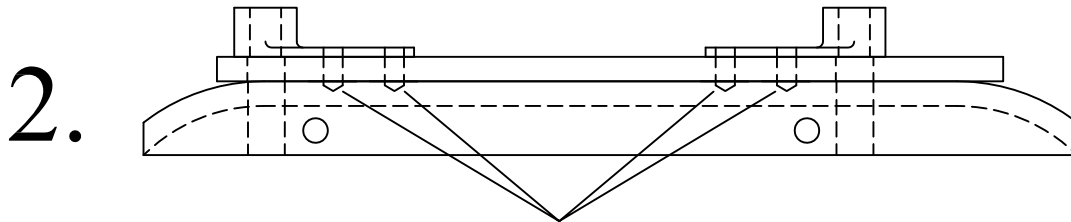
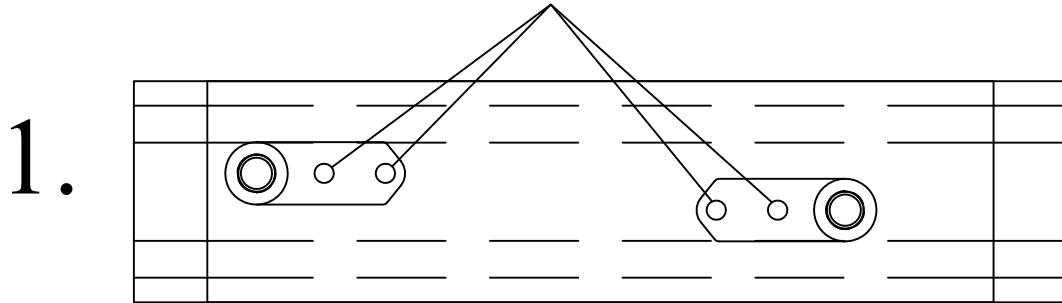
JURY STRUT BRACKET, CABLE GUIDE AND TELEFLEX RETAINER

MD4355
REV. A

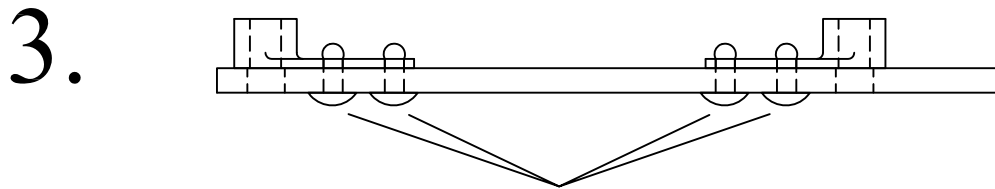
RANS S-20 RAVEN
WING FRAME ASSEMBLY DETAILS
FIGURE 05-26

INSERT 3/16" BOLTS THROUGH RUB BLOCK & RETENTION PLATE TO ALIGN NUT PLATES.
ORIENTATE NUT PLATES PARALLEL TO RUB BLOCK.

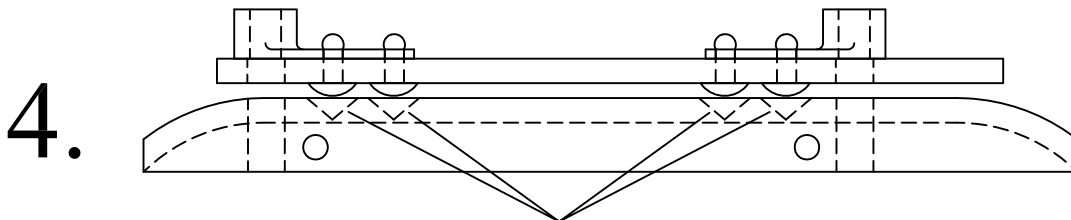
TRANSFER DRILL #40 THROUGH PLATE.



TRANSFER DRILL #40 INTO RUB BLOCK JUST
DEEP ENOUGH TO MARK RIVET HOLE LOCATIONS.

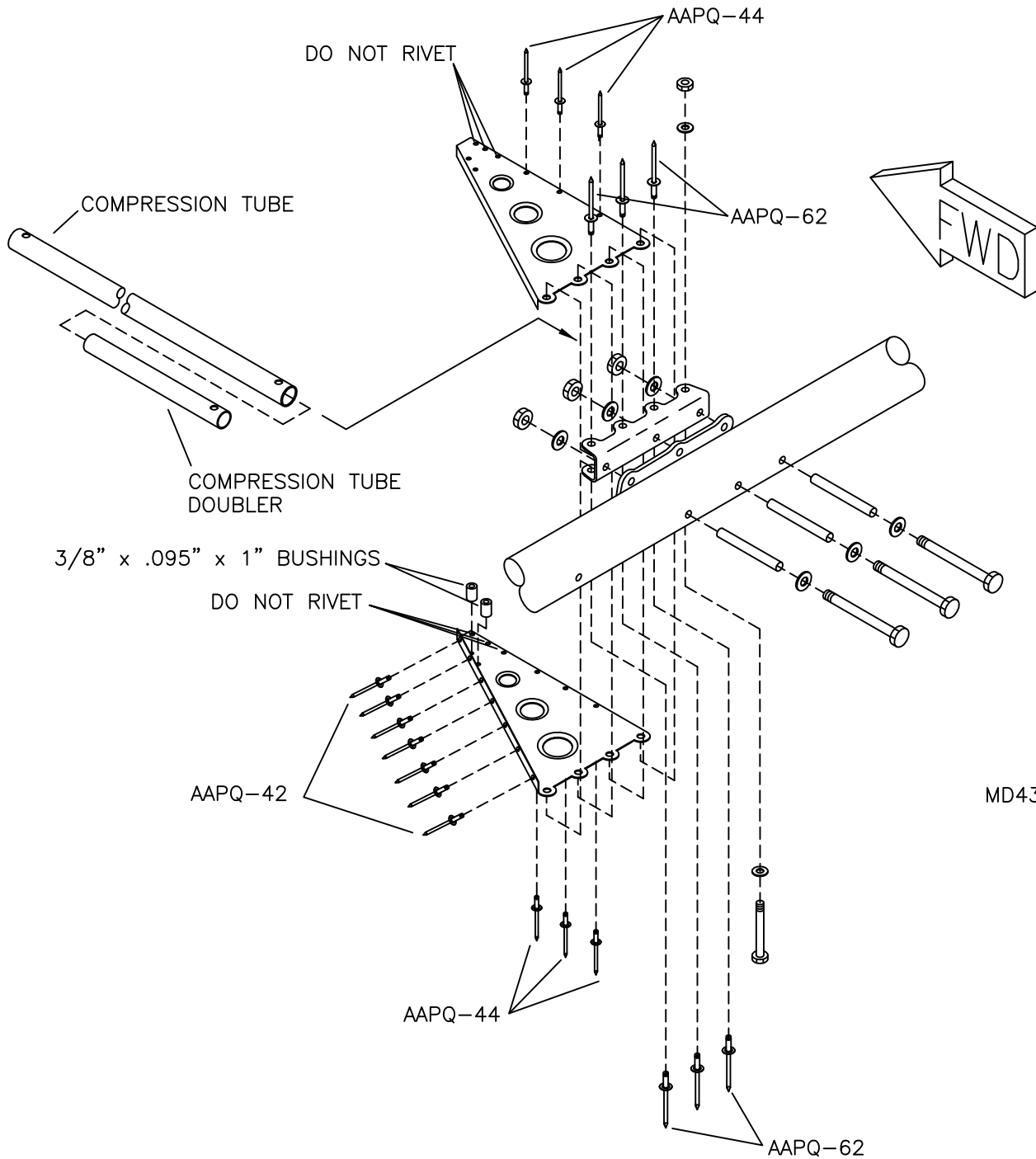


RIVET THROUGH BOTTOM OF RETENTION PLATE.



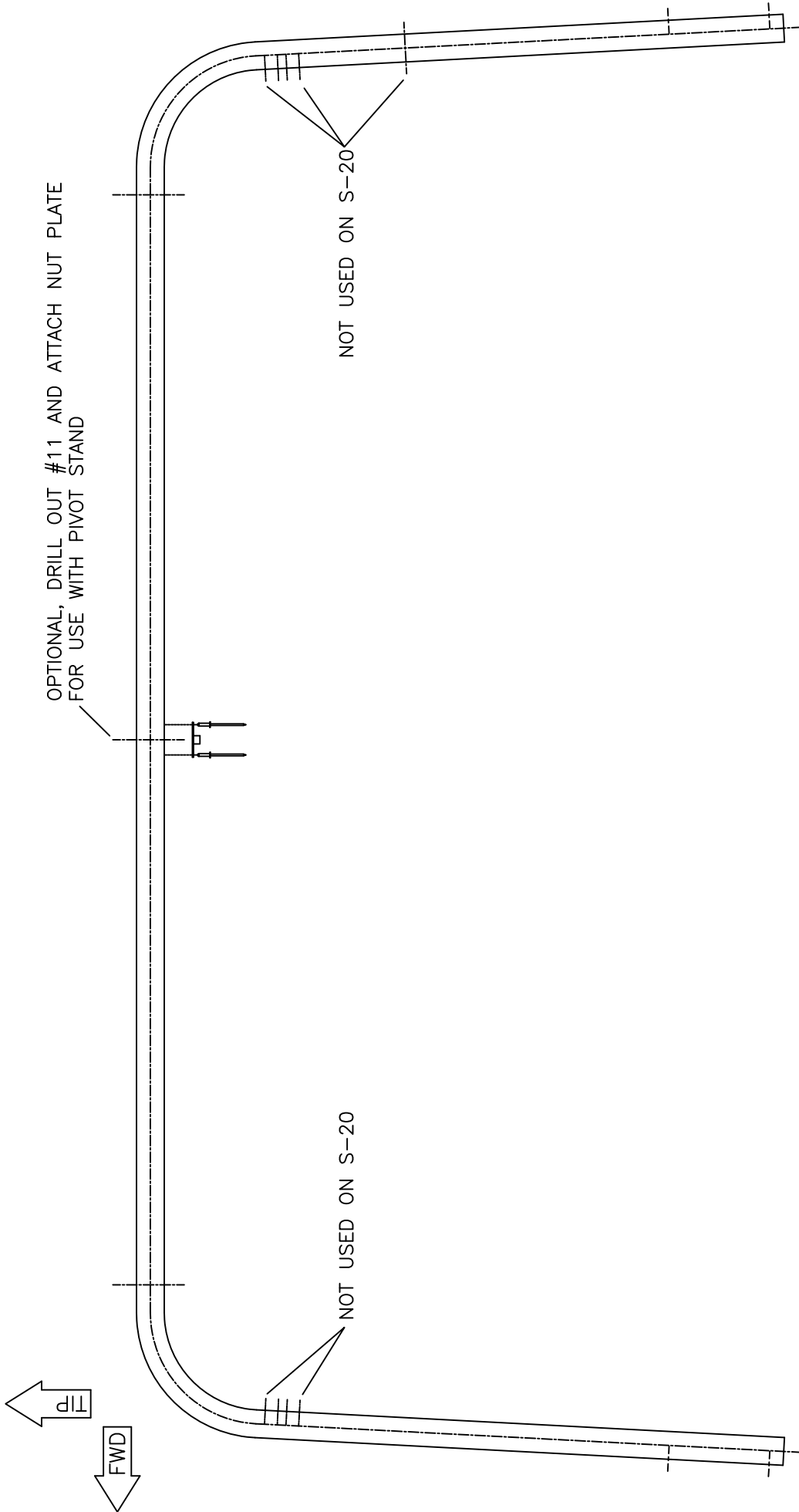
COUNTER-SINK MARKED LOCATIONS IN RUB
BLOCK TO ALLOW CLEARANCE FOR RIVET HEADS

RANS S-20 RAVEN
RUB BLOCK & RETENTION PLATE
FIGURE 05-26A



MD4357

RANS S-20 RAVEN
BELLCRANK BRACE INSTALLATION
FIGURE 05-27



OPTIONAL, DRILL OUT #11 AND ATTACH NUT PLATE FOR USE WITH PIVOT STAND

NOT USED ON S-20

NOT USED ON S-20

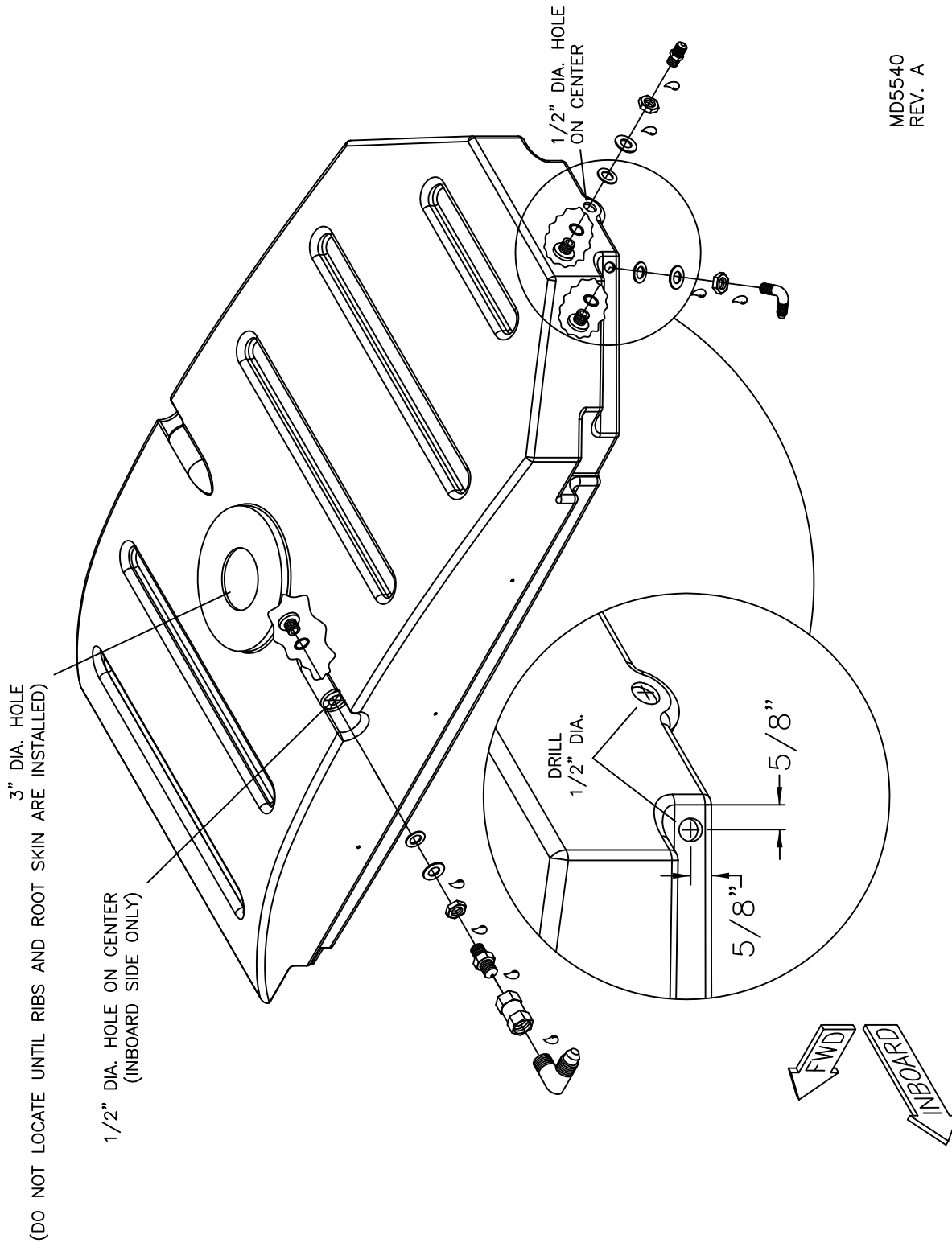
FWD

REV

MD5552

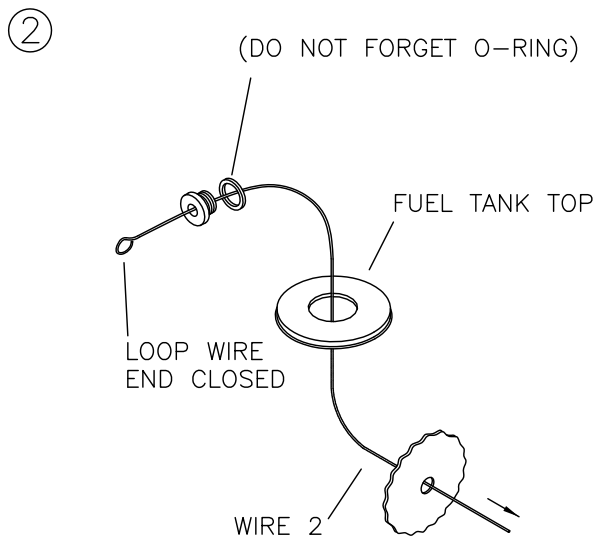
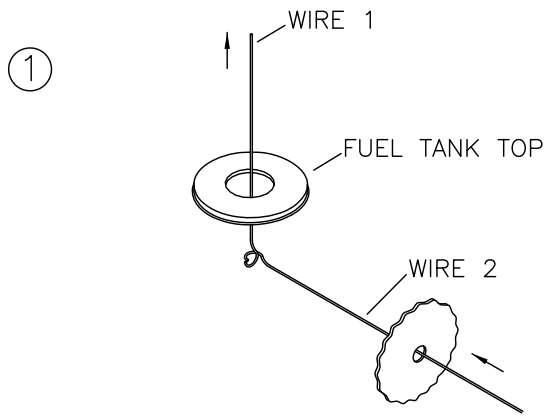
RRR S-20 RAVEN
TIP BOW ORIENTATION

FIGURE 05-34



MD5540
REV. A

RRAN S-20 RAVEN
WING FUEL TANK ASSEMBLY
FIGURE 05A-02

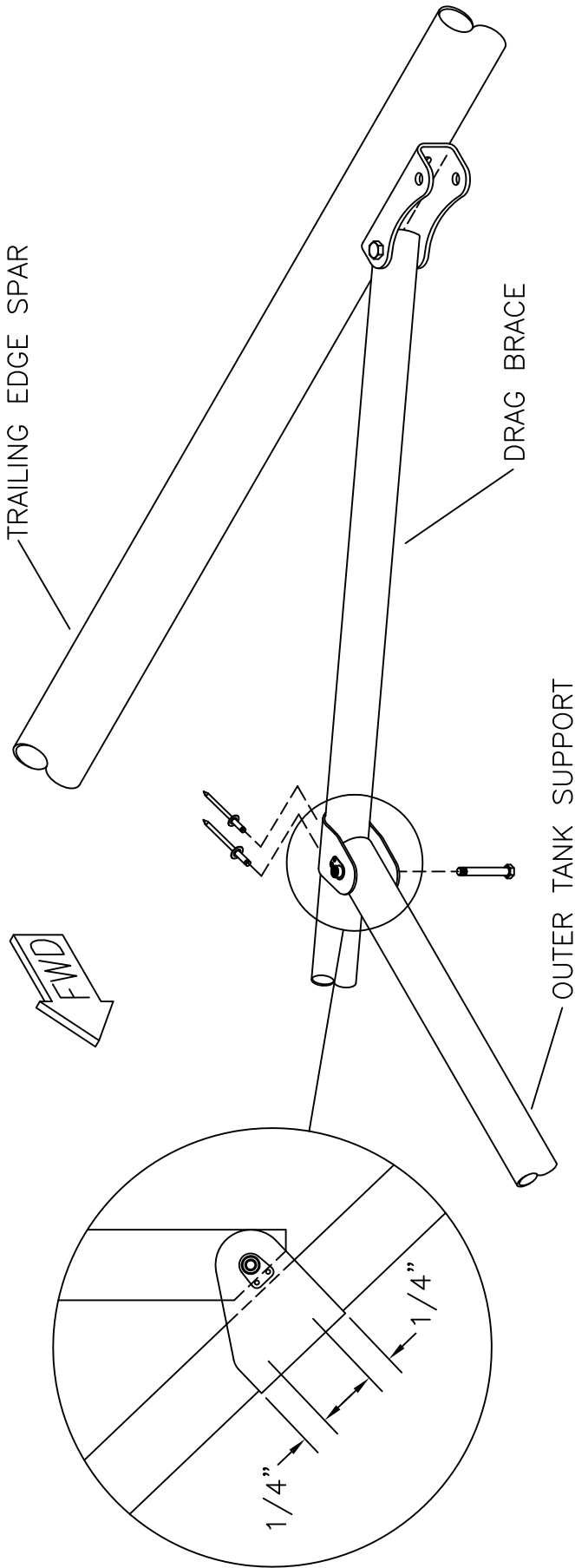


③ INSTALL RUBBER WASHER, STEEL WASHER, LOCTITE, AND NUT.

④ REMOVE FISHING LINE AND/OR WIRE.

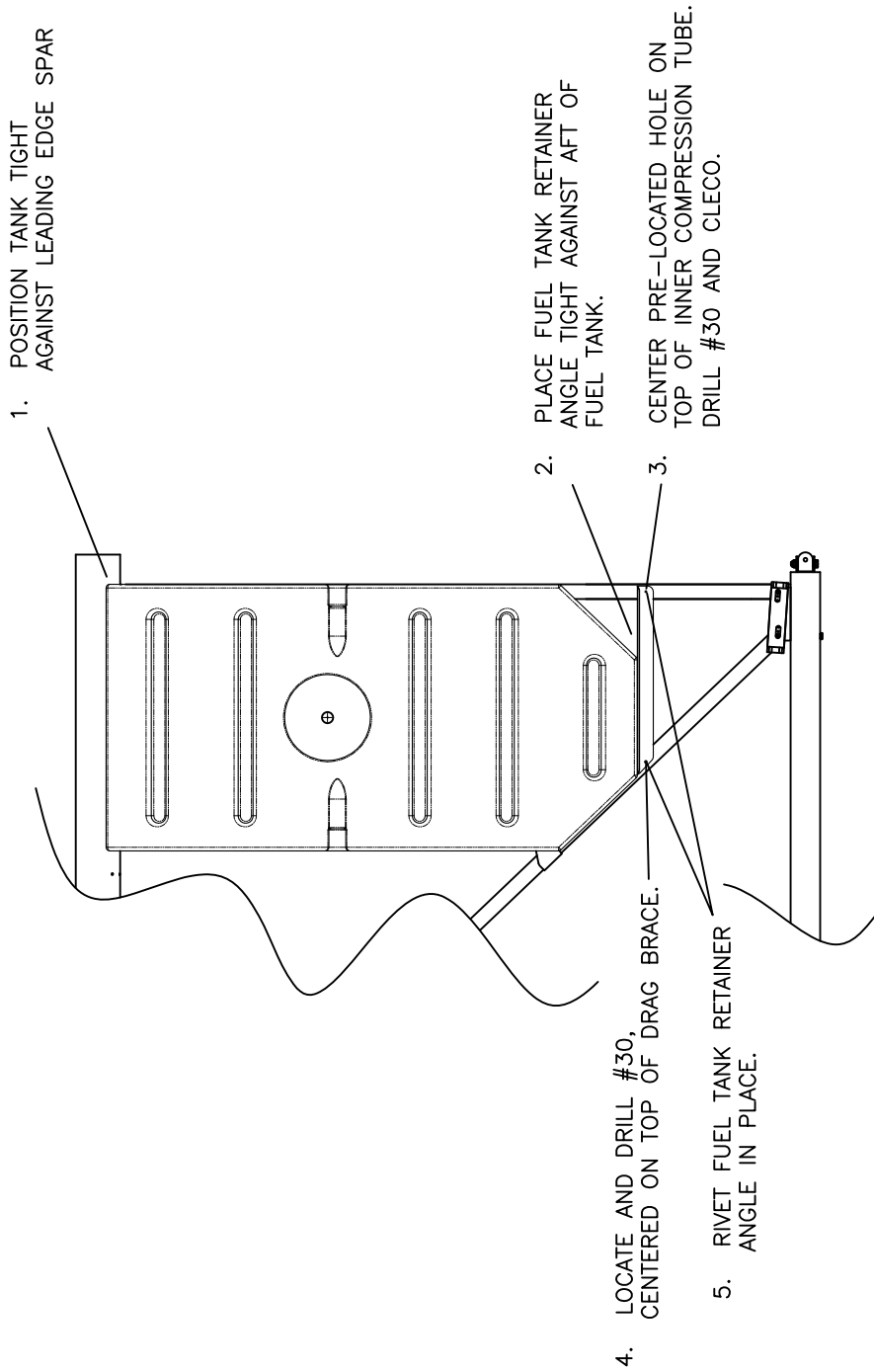
RANS S-20 RAVEN
FUEL TANK FITTING INSTALLATION
FIGURE 05A-03

MD4832



MD4359

RAVEN S-20 RAVEN
WING TANK SUPPORT TUBE INSTALLATION
FIGURE 05A-07



1. POSITION TANK TIGHT AGAINST LEADING EDGE SPAR

2. PLACE FUEL TANK RETAINER ANGLE TIGHT AGAINST AFT OF FUEL TANK.

3. CENTER PRE-LOCATED HOLE ON TOP OF INNER COMPRESSION TUBE. DRILL #30 AND CLECO.

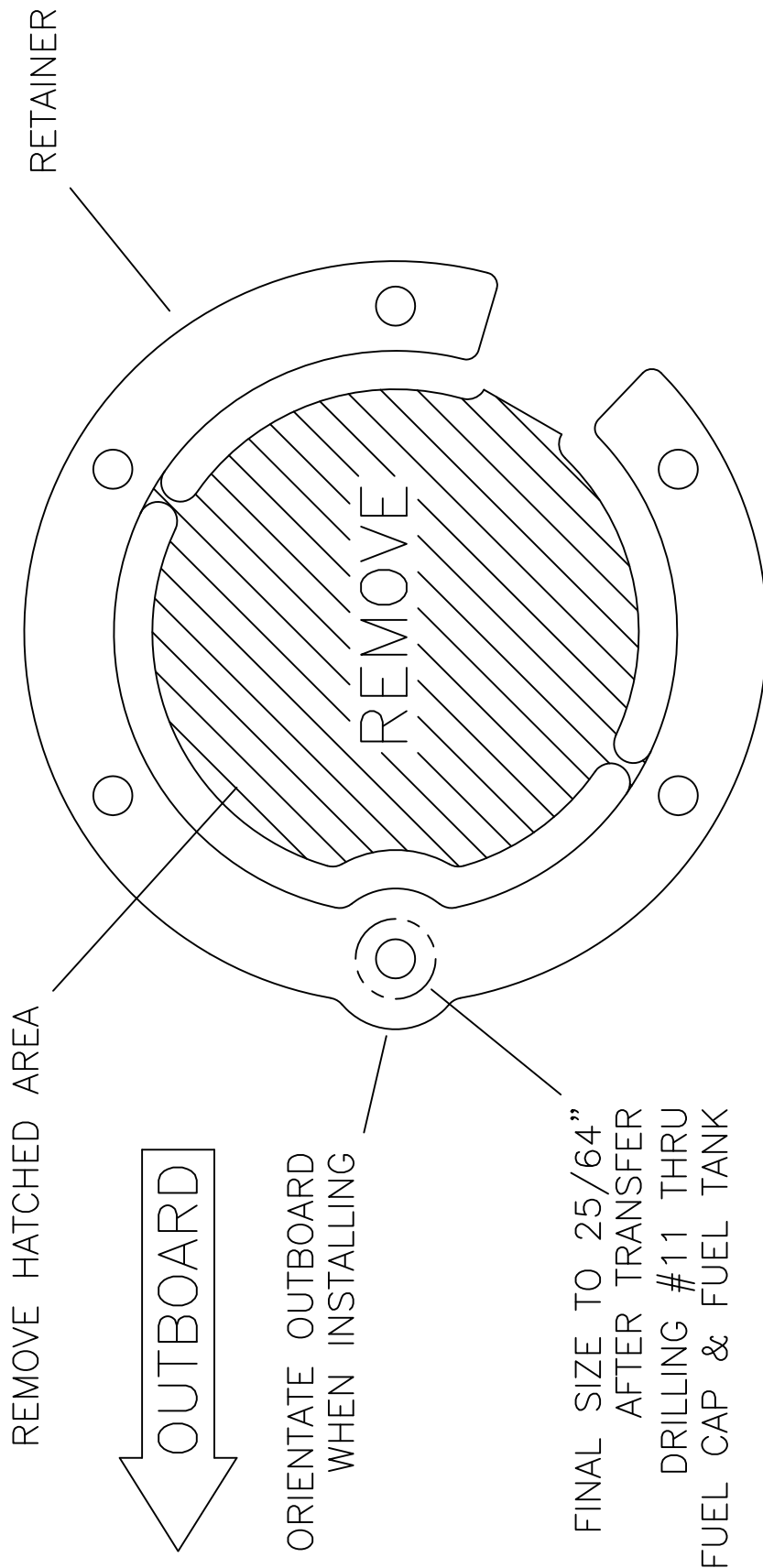
4. LOCATE AND DRILL #30, CENTERED ON TOP OF DRAG BRACE.

5. RIVET FUEL TANK RETAINER ANGLE IN PLACE.

TIP
LH WING SHOWN

RAVEN S-20 RAVEN
FUEL TANK RETAINER ANGLE INSTALLATION
FIGURE 05A-10

MD4365



MD5549

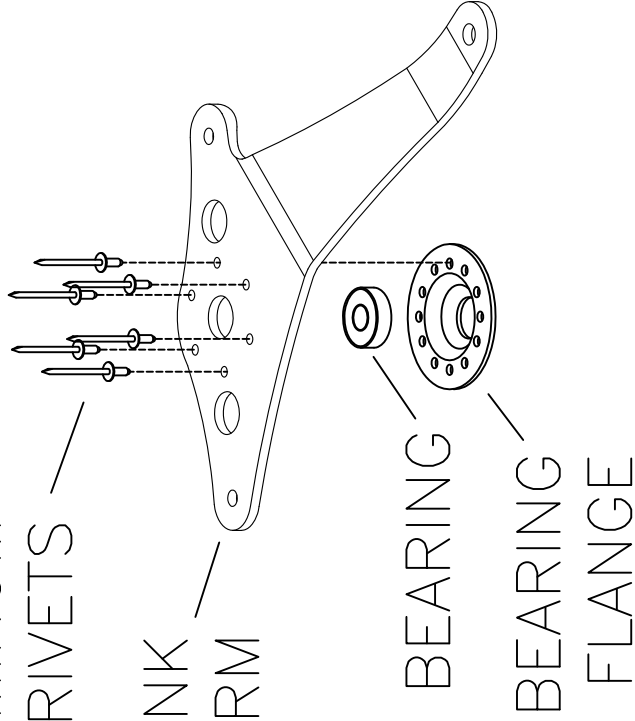
RRANOS S-20 RAVEN
RETAINER MODIFICATION
FIGURE 05A-14

1/8" ALUMINUM

RIVETS

BELL CRANK

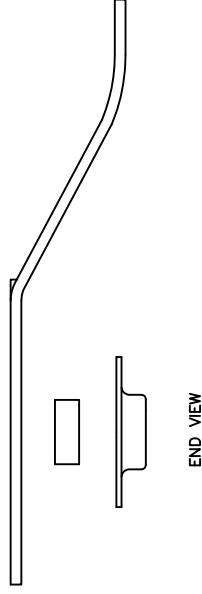
UPPER ARM



BEARING

BEARING

FLANGE

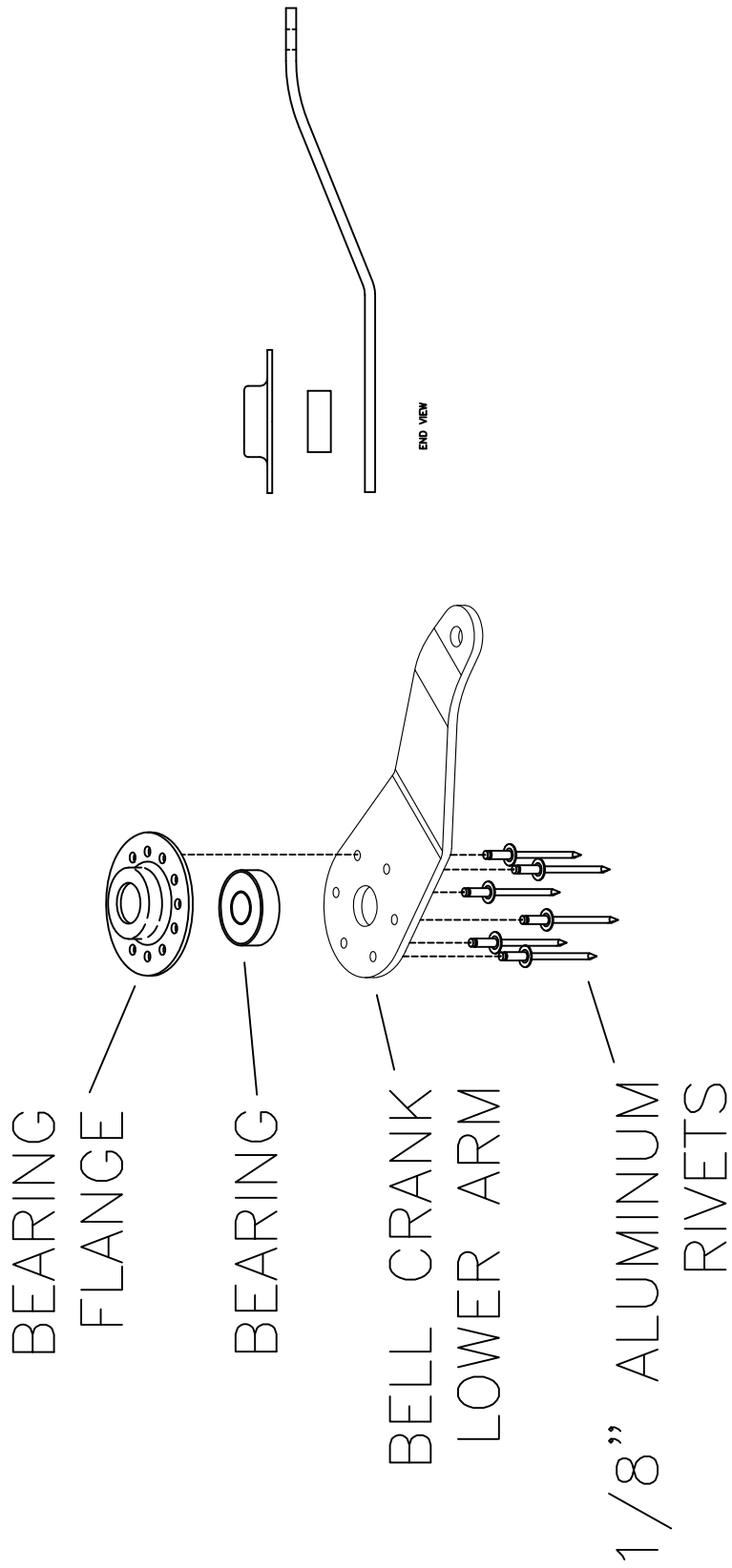


END VIEW

MAKE LEFT AND RIGHT ASSEMBLIES

MD5639
REV. - ORIG

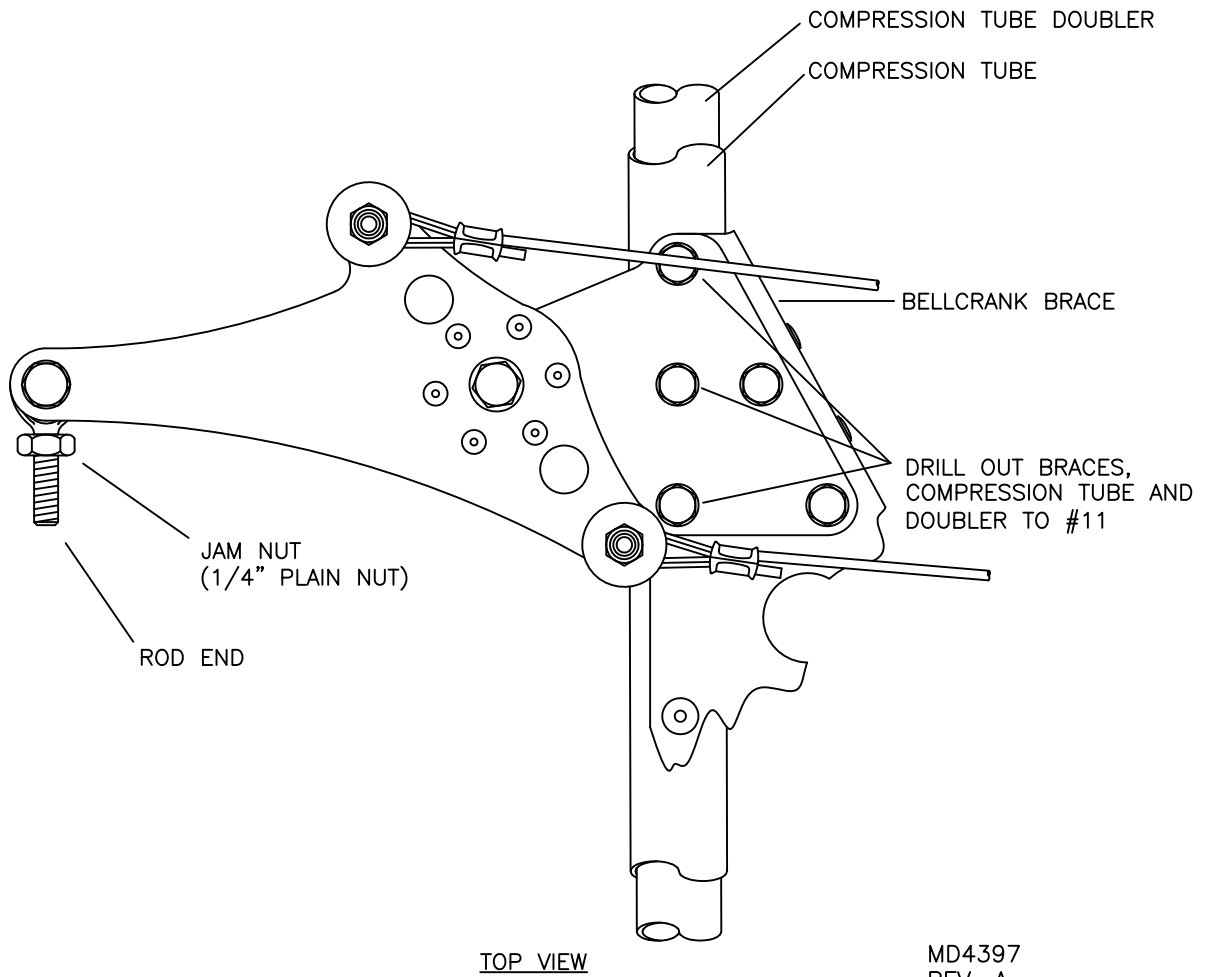
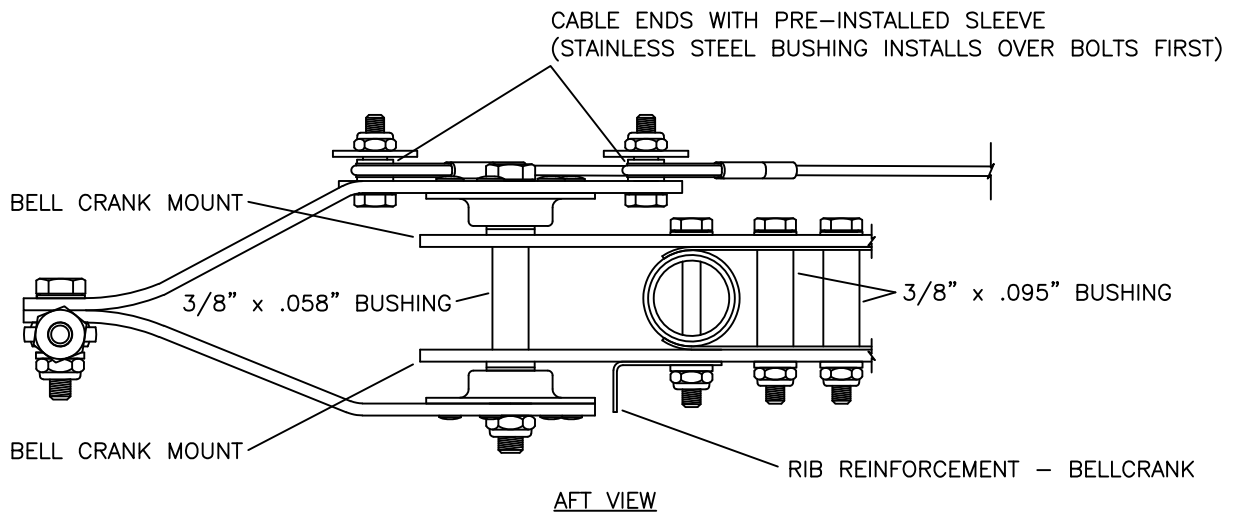
RRR S-20 RAVEN
BELL CRANK - UPPER ARM ASSEMBLY
FIGURE 05B-02



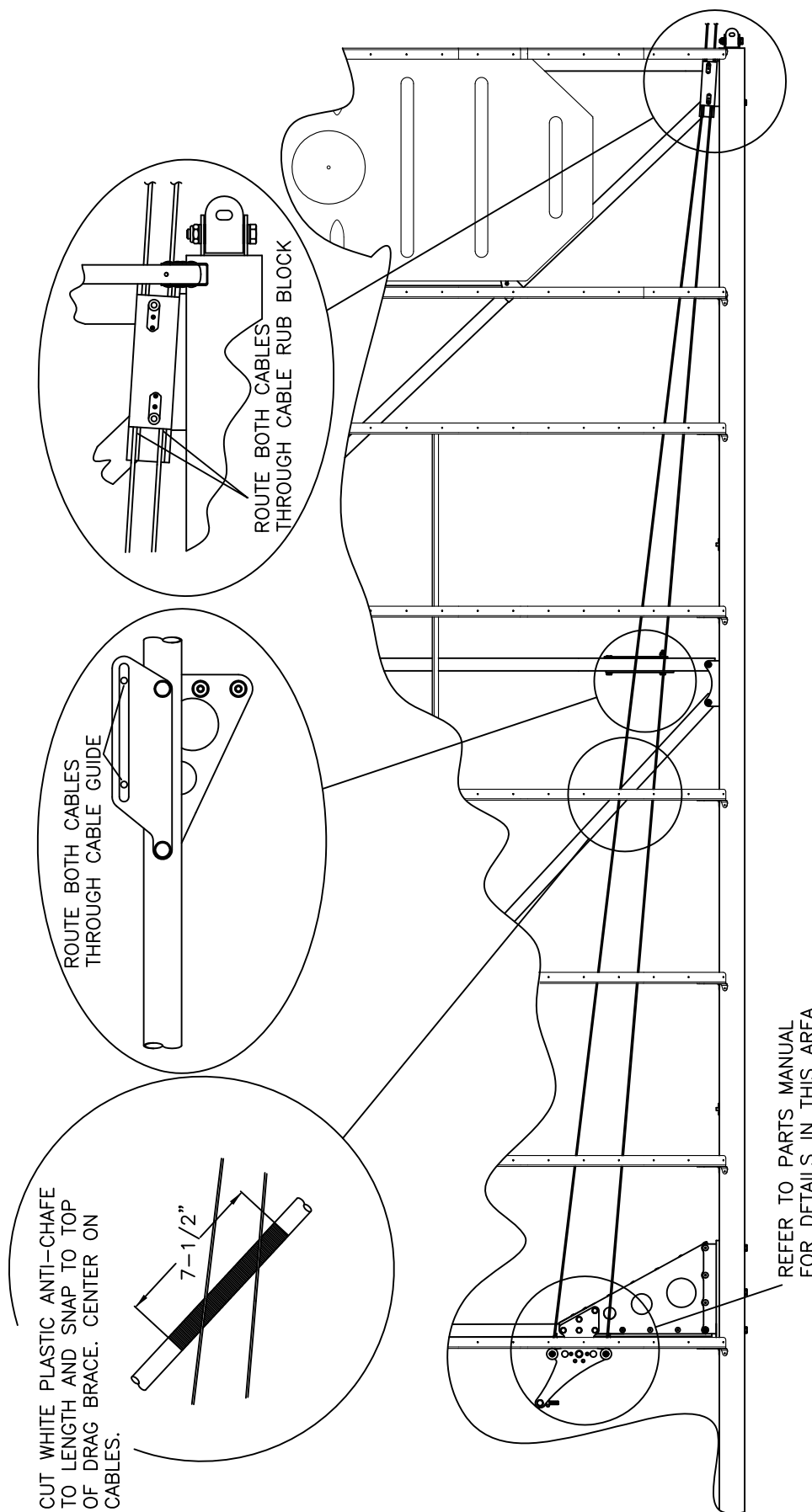
MAKE 2 ASSEMBLIES

MD5639
REV. - ORIG

RRR S-20 RAVEN
BELL CRANK - LOWER ARM ASSEMBLY
FIGURE 05B-02A



RANS S-20 RAVEN
WING BELL CRANK ASSEMBLY AND INSTALLATION
FIGURE 05B-04



CUT WHITE PLASTIC ANTI-CHAFE TO LENGTH AND SNAP TO TOP OF DRAG BRACE. CENTER ON CABLES.

7-1/2"

ROUTE BOTH CABLES THROUGH CABLE RUB BLOCK

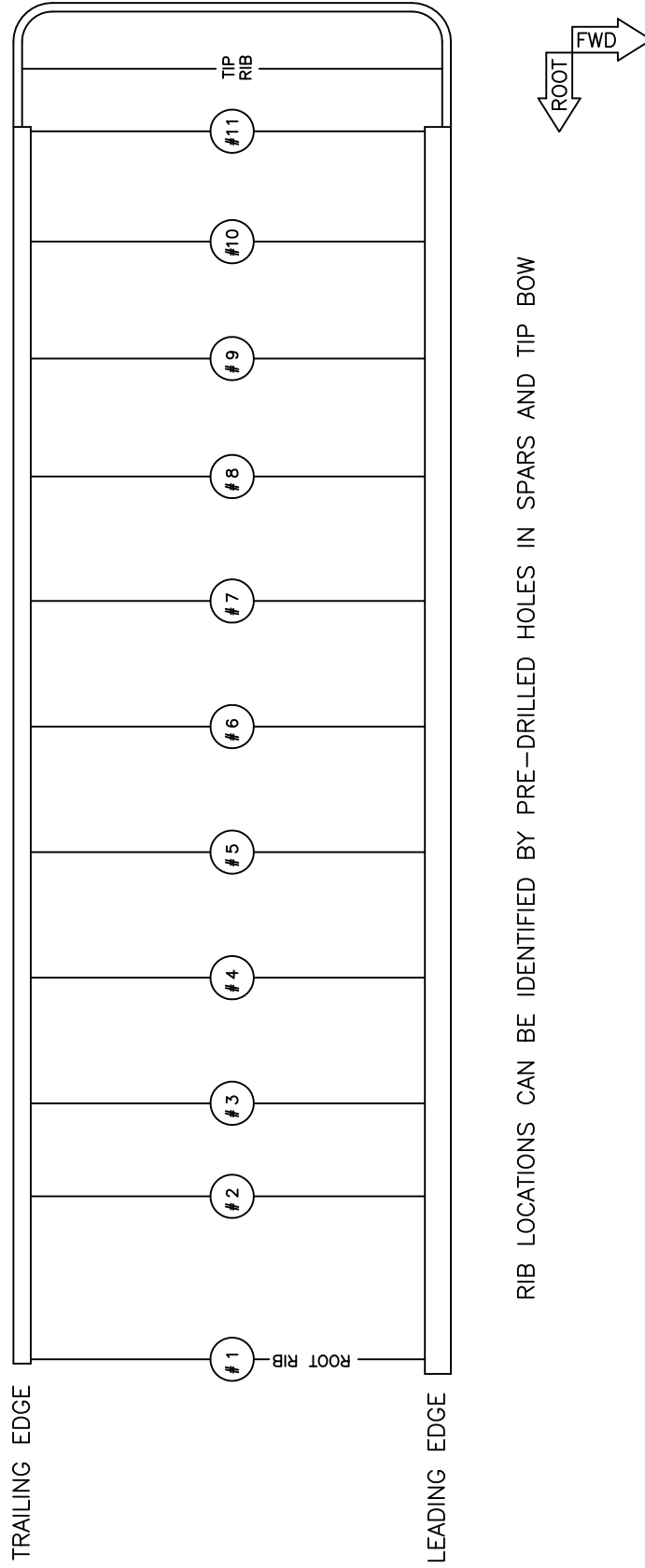
ROUTE BOTH CABLES THROUGH CABLE GUIDE

REFER TO PARTS MANUAL FOR DETAILS IN THIS AREA

TIP
LH WING SHOWN

RAVEN S-20 RAVEN
AILERON CABLE INSTALLATION - WING
FIGURE 05B-09

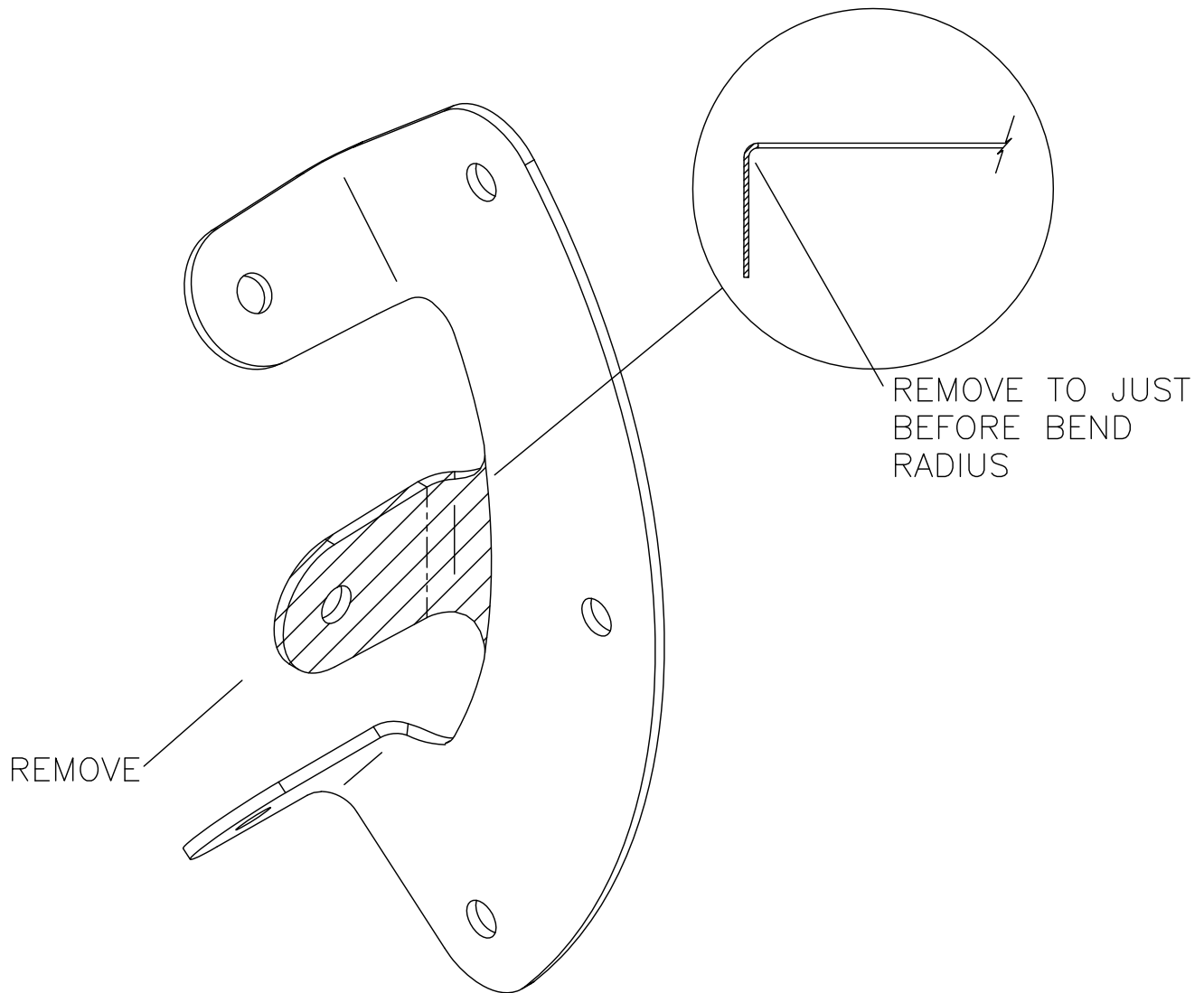
MD4365



RIB LOCATIONS CAN BE IDENTIFIED BY PRE-DRILLED HOLES IN SPARS AND TIP BOW

RRP S-20 RAVEN
 RIB LOCATIONS
 FIGURE 05C-01

MD4348

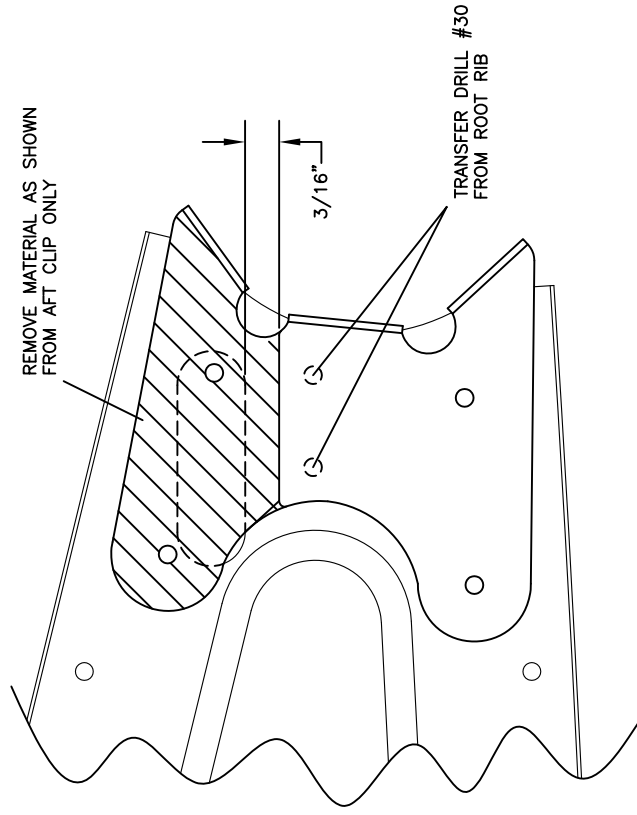
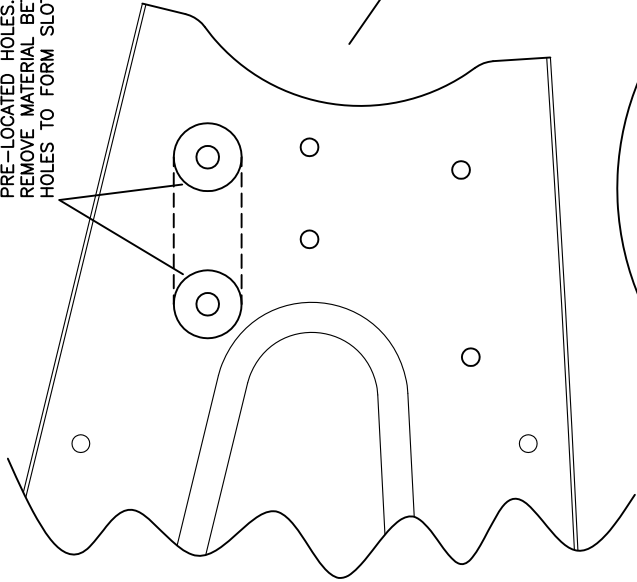


MD5558

RANS S-20 RAVEN
ROOT RIB - FWD RIB ATTACH CLIP MODIFICATION
FIGURE 05C-06

09/01/2013

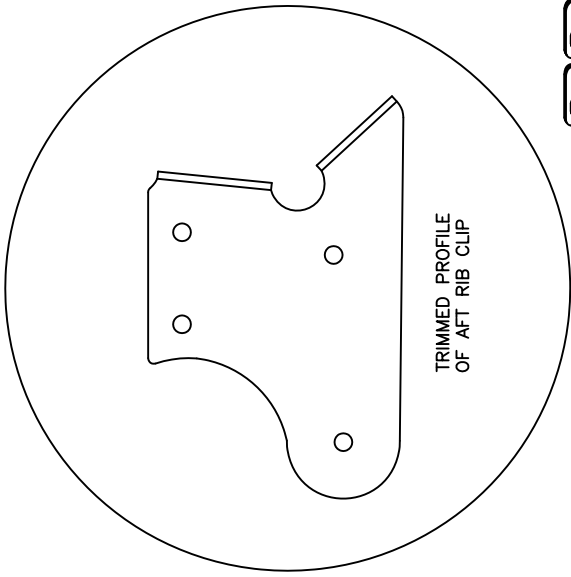
DRILL 3/8" CENTERED ON
PRE-LOCATED HOLES.
REMOVE MATERIAL BETWEEN
HOLES TO FORM SLOT.



REMOVE MATERIAL AS SHOWN
FROM AFT CLIP ONLY

3/16"

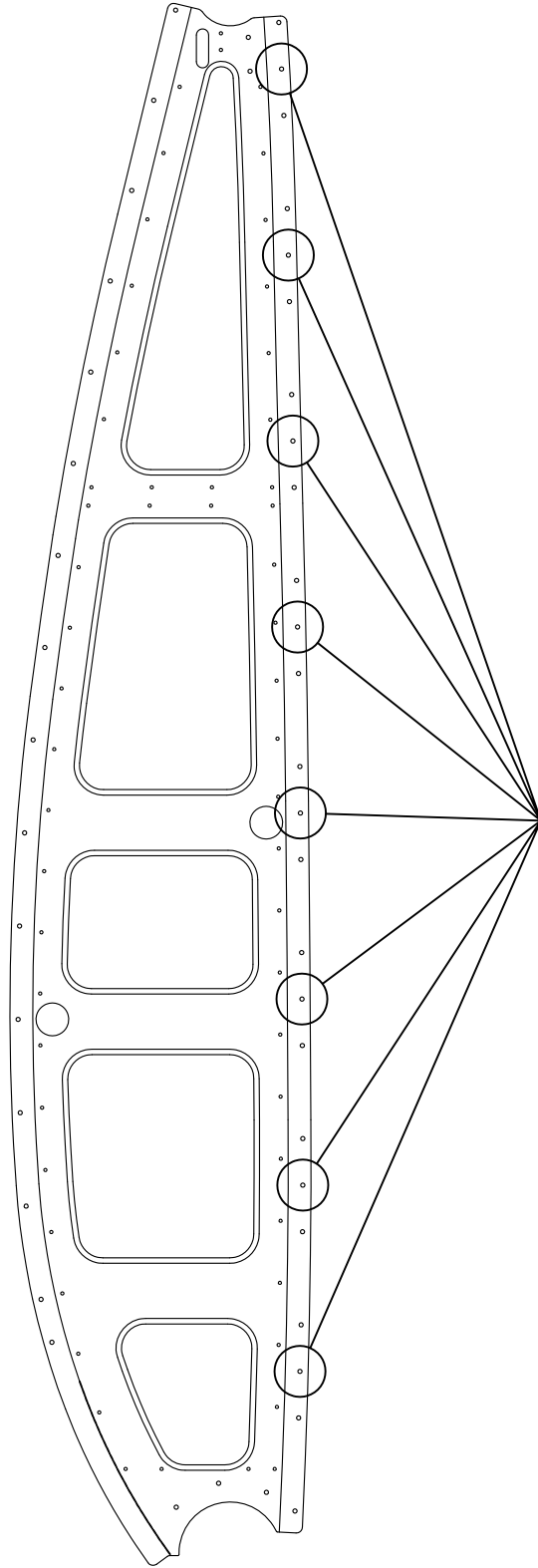
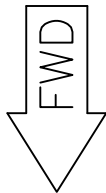
TRANSFER DRILL #30
FROM ROOT RIB



TRIMMED PROFILE
OF AFT RIB CLIP

MD5542
REV. A

RAMRO S-20 RAVEN
ROOT RIB - AFT RIB ATTACH CLIP MODIFICATION
FIGURE 05C-07

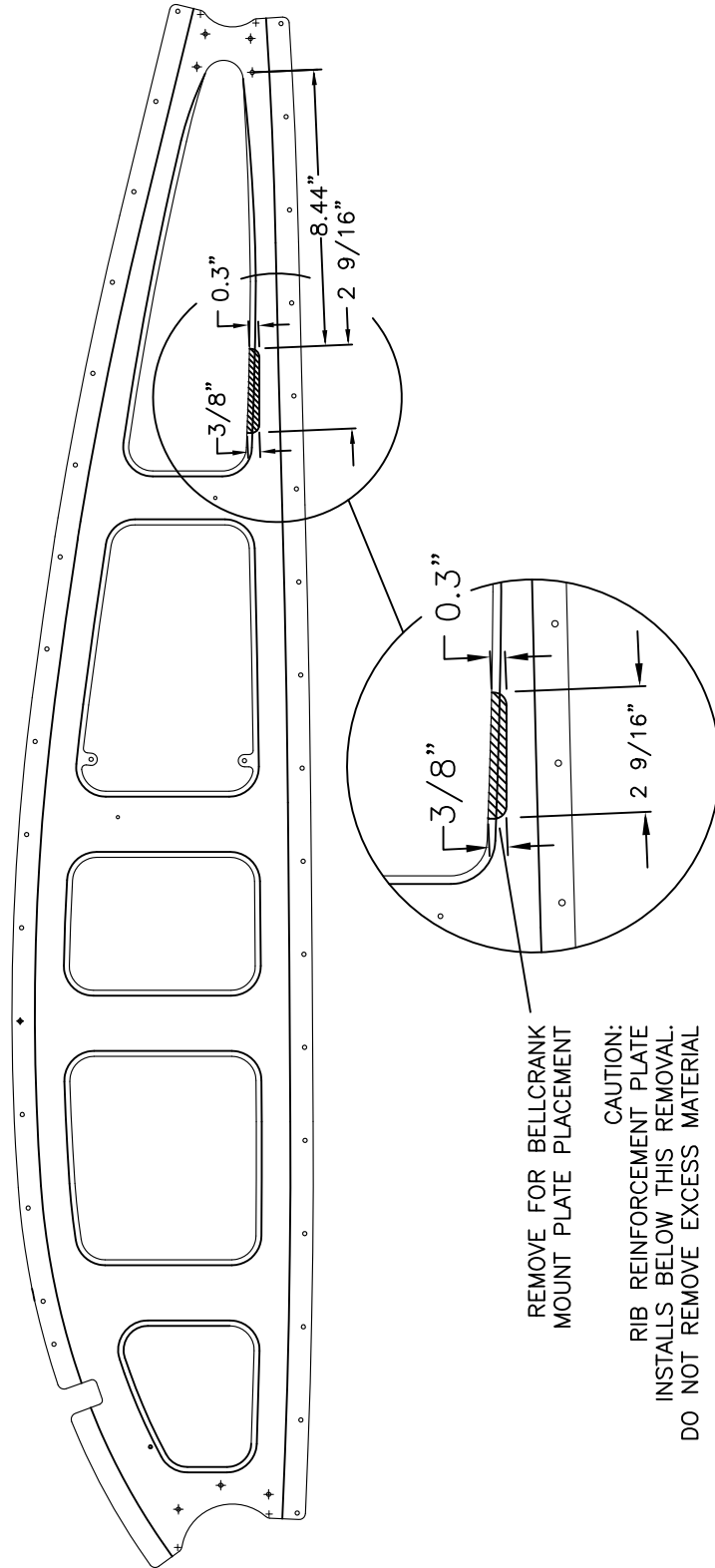
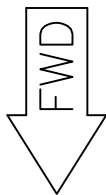


DRILL TO #11 FOR TINNEMAN CLIPS
DO NOT DIMPLE!!

DIMPLE ALL RIVET HOLES ON UPPER AND LOWER FLANGES EXCEPT
THOSE THAT ARE CIRCLED

MD5557
REV. A

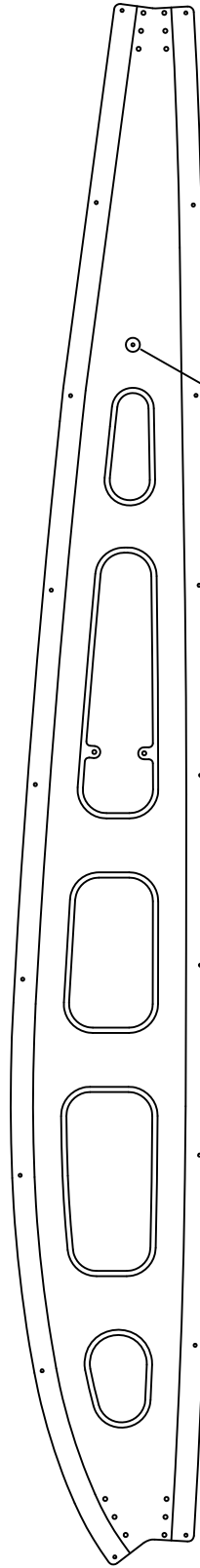
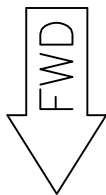
RAVEN S-20 RAVEN
ROOT RIB MODIFICATION
FIGURE 05C-09



MD5557
REV. A

RAVEN S-20 RAVEN
RIB #8 MODIFICATION
FIGURE 05C-09A

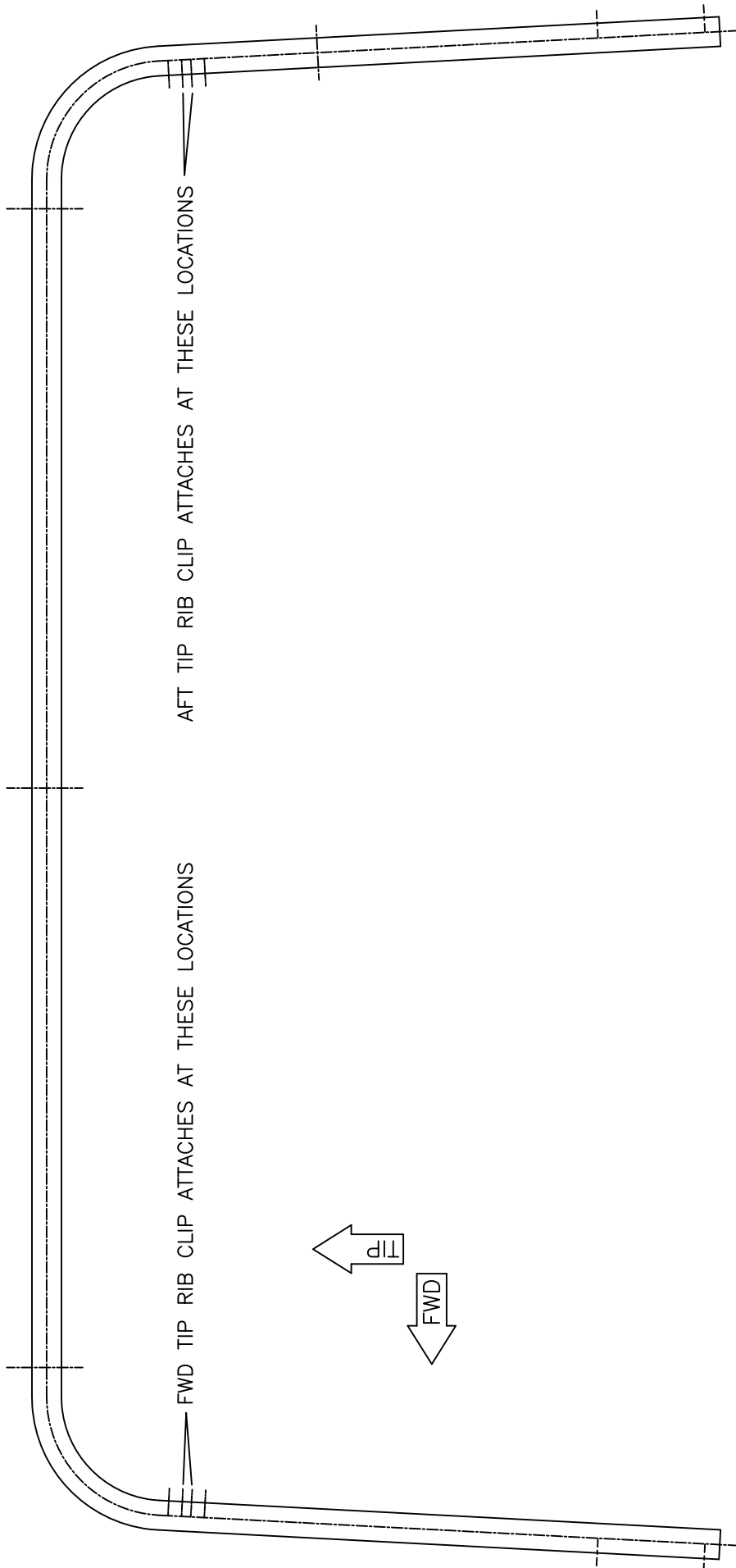
04/16/2015



DRILL 7/16" DIAMETER
FOR WING TIP LIGHTING GROMMET

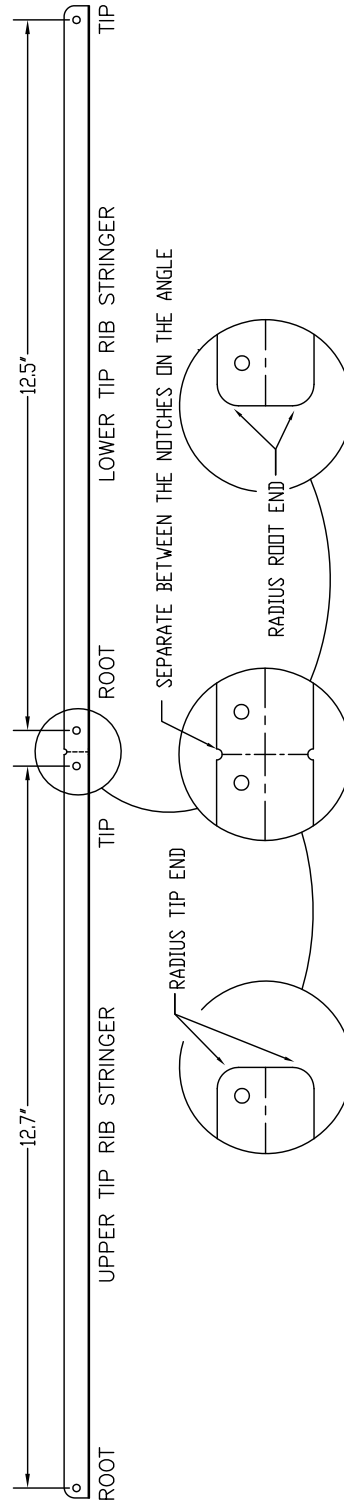
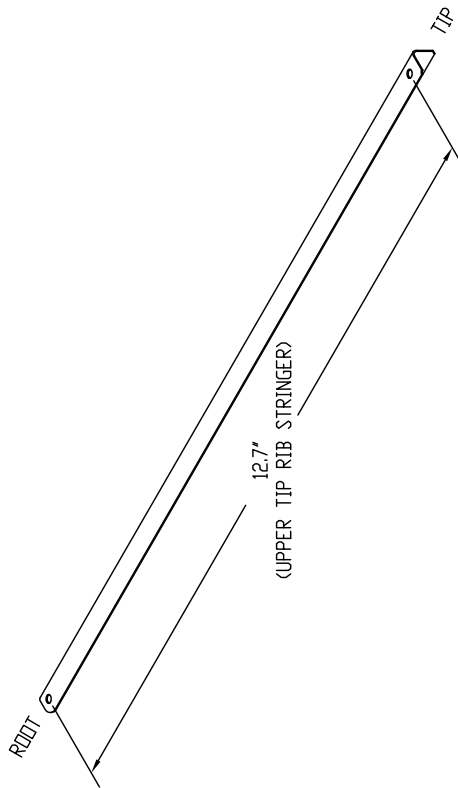
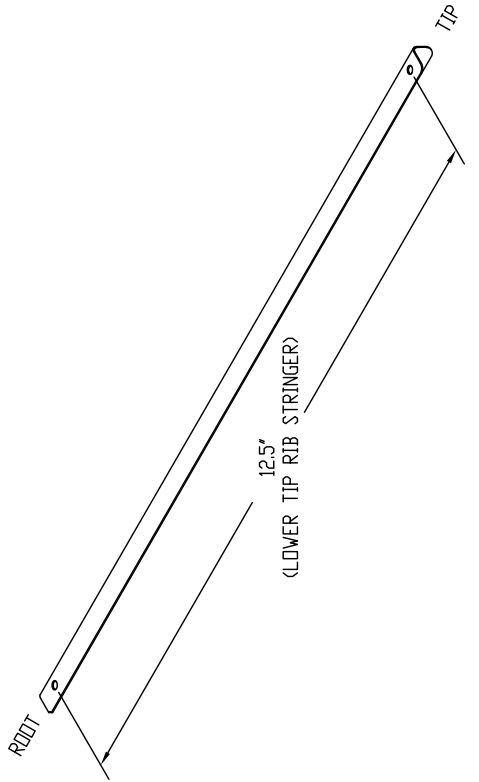
MD5557
REV. A

RRF S-20 RAVEN
TIP RIB MODIFICATION
FIGURE 05C-09B



MD5552

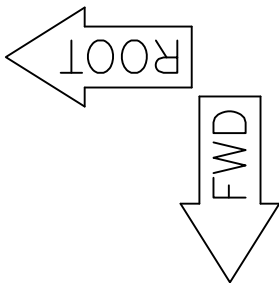
RRR S-20 RAVEN
 TIP RIB CLIP LOCATION
 FIGURE 05C-11



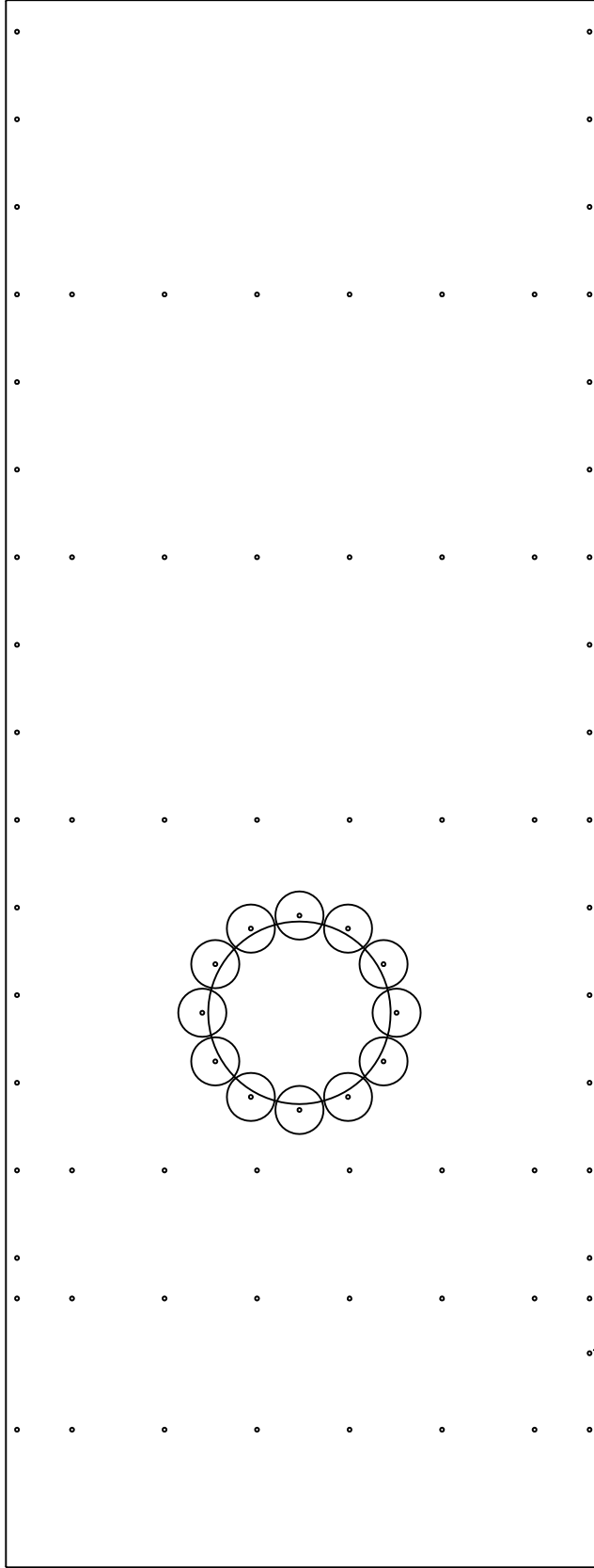
NOTE: STRINGER SHOWN UN-BENT FOR CLARITY

MD5635
REV. — ORIG

RAVEN S-20 RAVEN
TIP RIB STRINGER MODIFICATION
FIGURE 05C-18



DIMPLE ALL RIVET HOLES EXCEPT THOSE THAT ARE CIRCLED

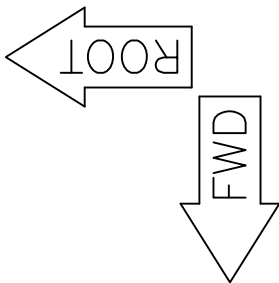


LEFT TOP ROOT SKIN SHOWN

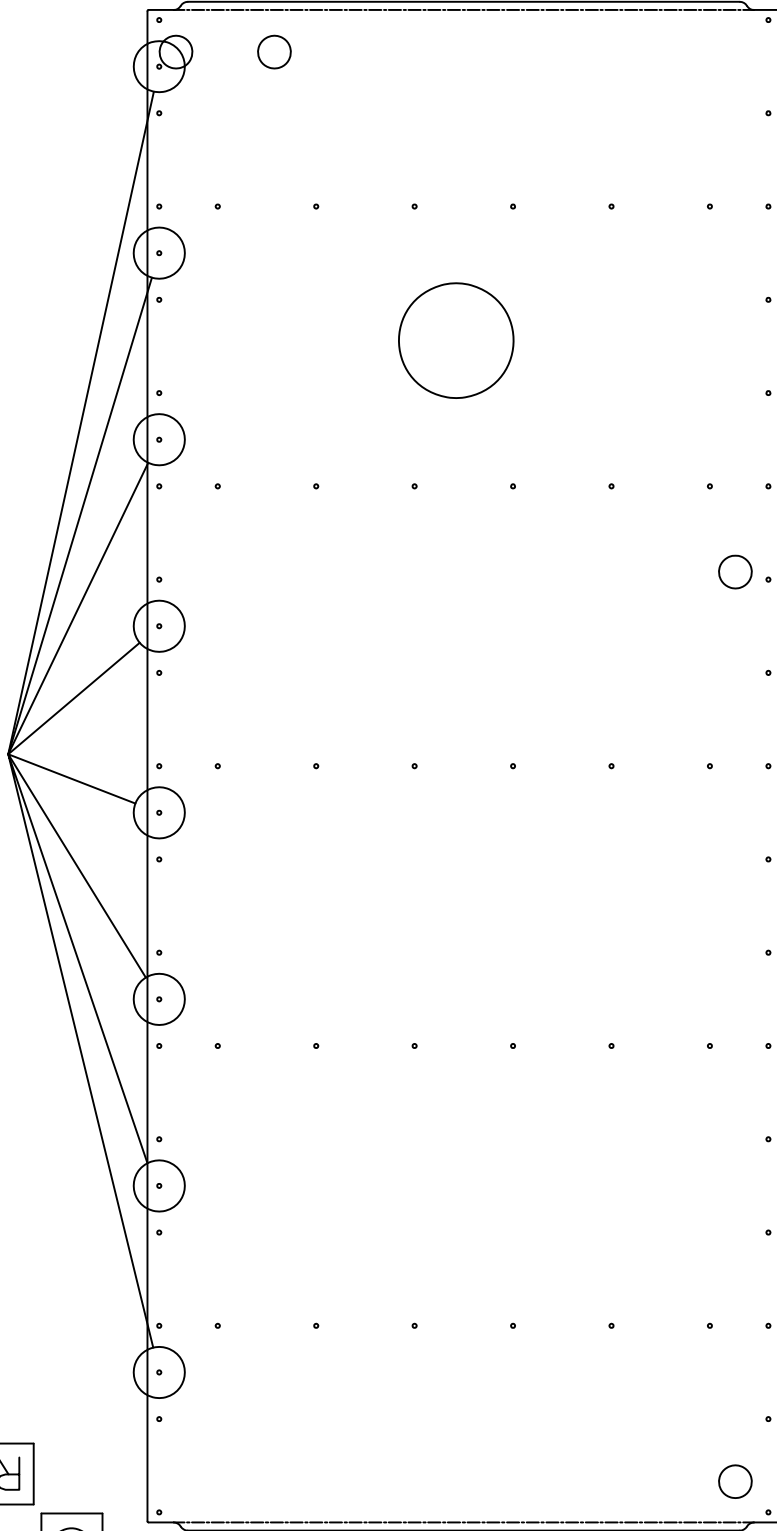
THIS HOLE IDENTIFIES
FWD OUTBOARD SIDE

MD5556

RAVEN S-20 RAVEN
UPPER ROOT SKIN MODIFICATION
FIGURE 05C-22



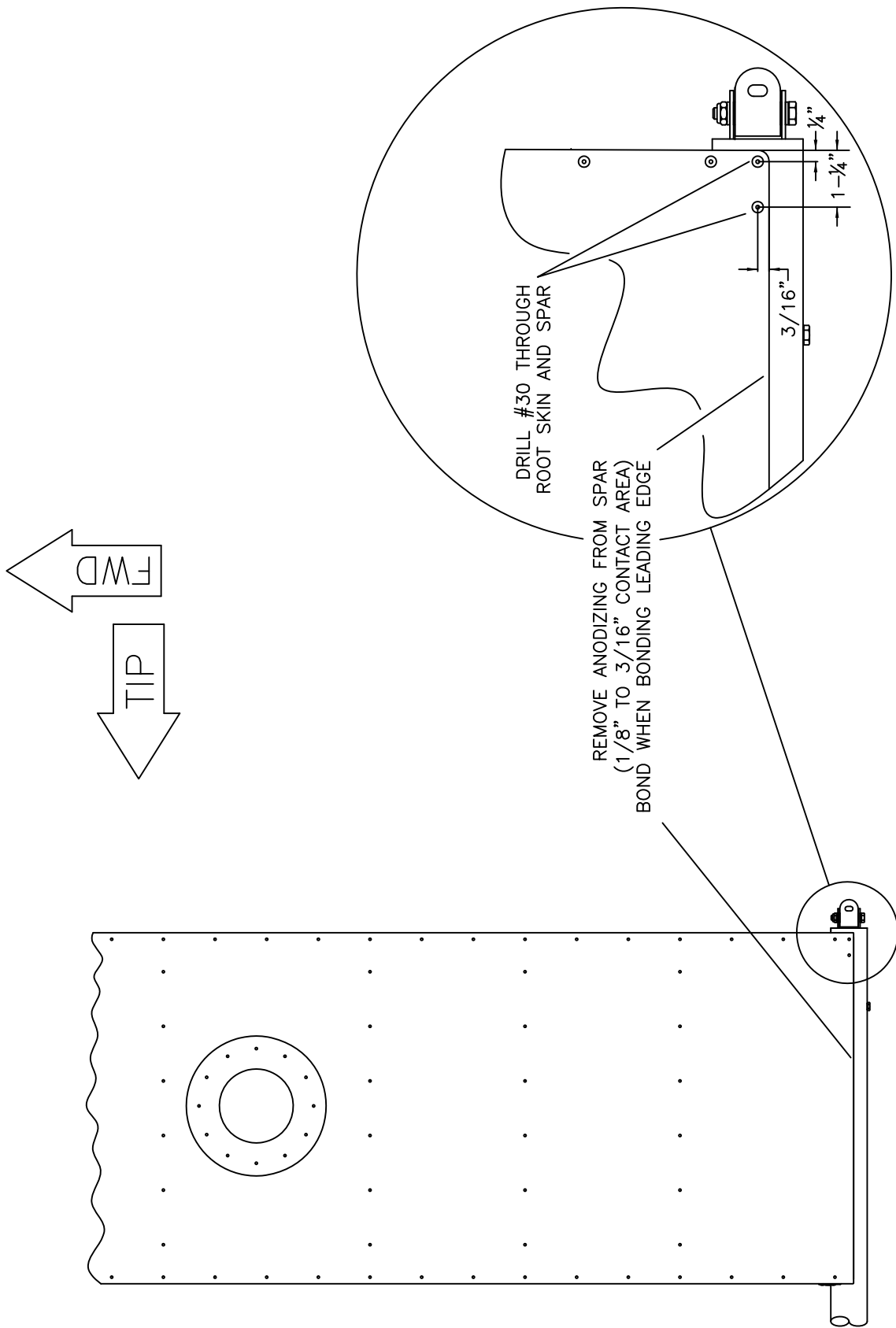
LOCATION OF HOLES WHERE PAN HEAD SCREWS
WILL PICK UP TINNERMAN CLIPS ON ROOT RIB.
PRE-DRILLED #40 TO DISTINGUISH FROM RIVET HOLES.



DIMPLE ALL RIVET HOLES EXCEPT THOSE THAT ARE CIRCLED
LEFT BOTTOM ROOT SKIN SHOWN

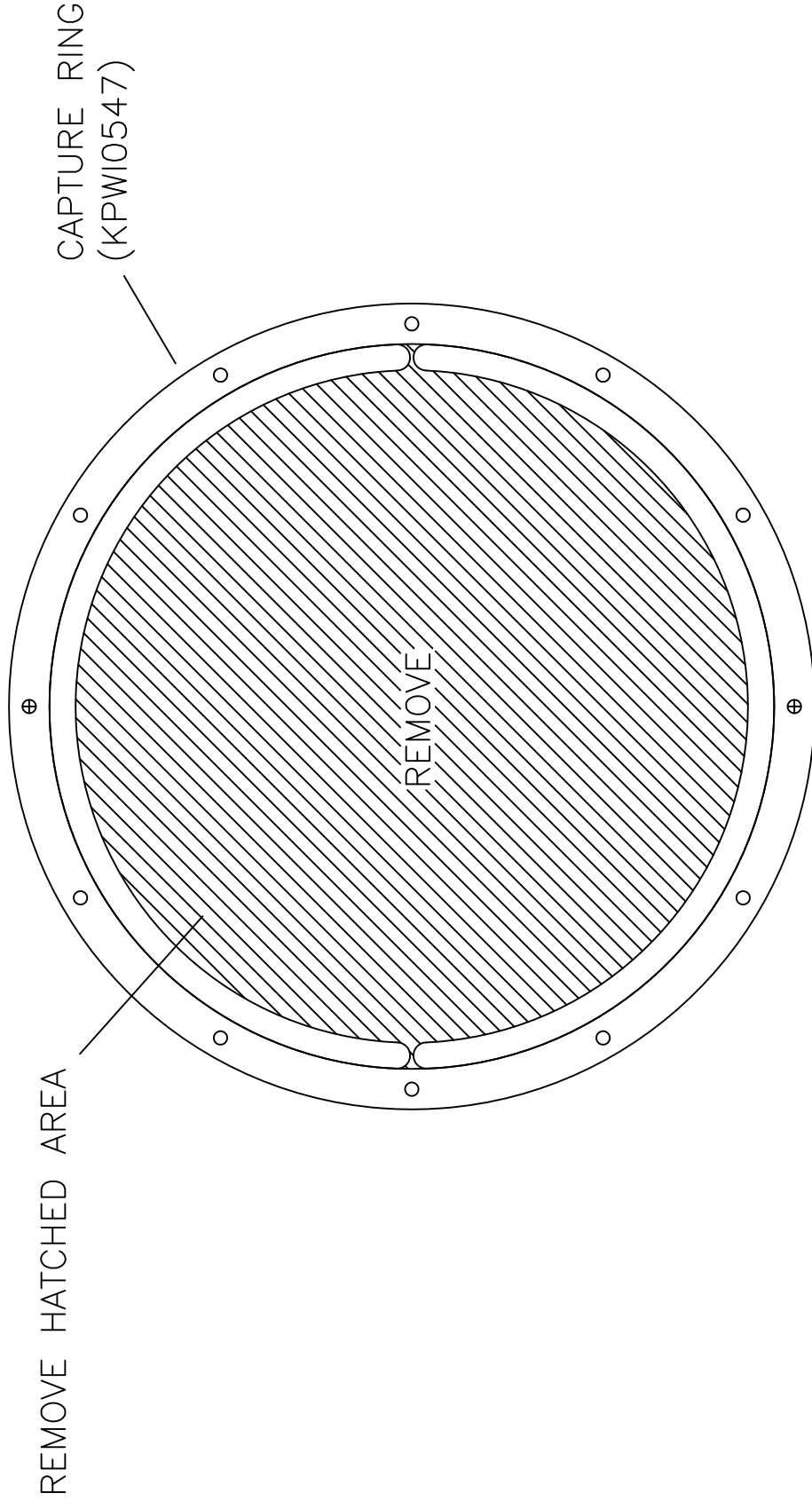
MD5555

RAVEN S-20 RAVEN
LOWER ROOT SKIN MODIFICATION
FIGURE 05C-23



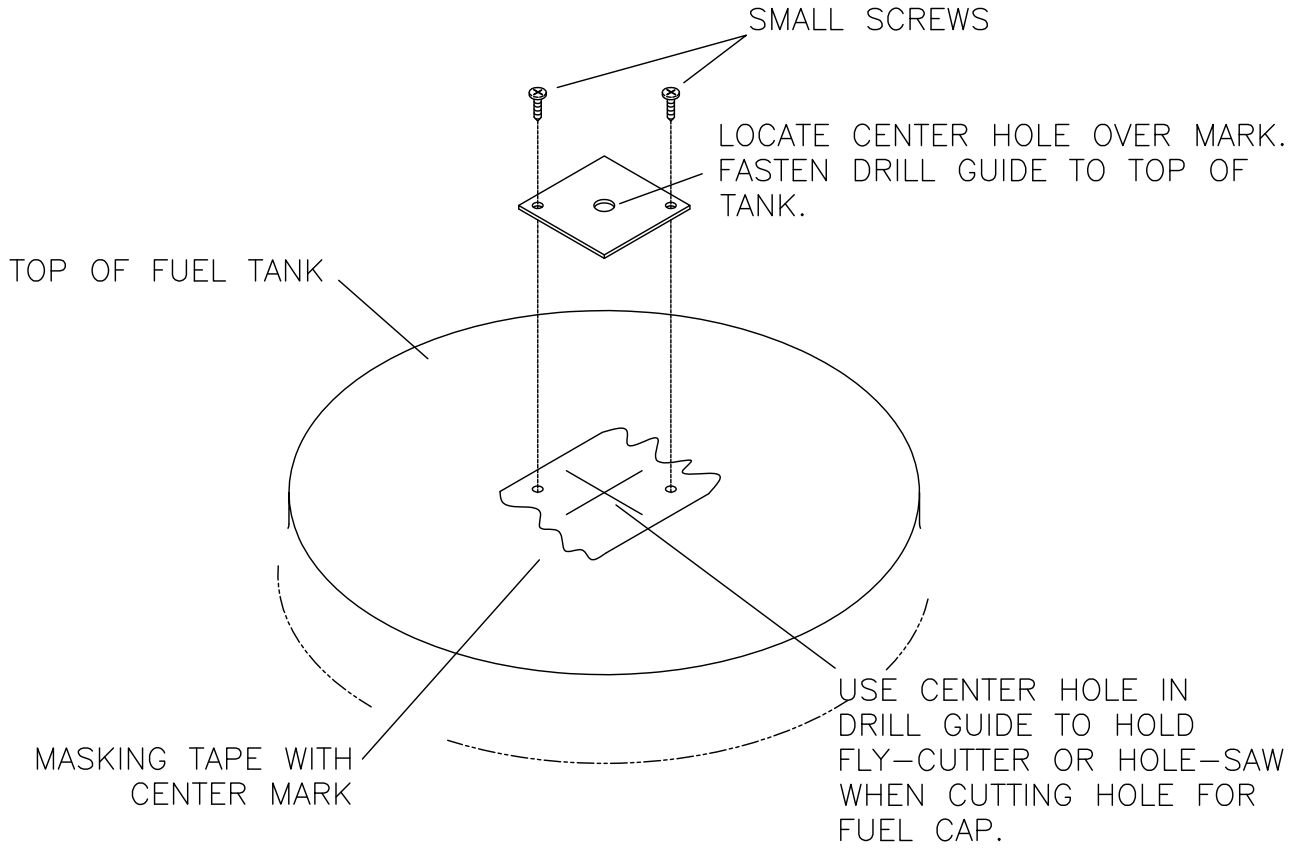
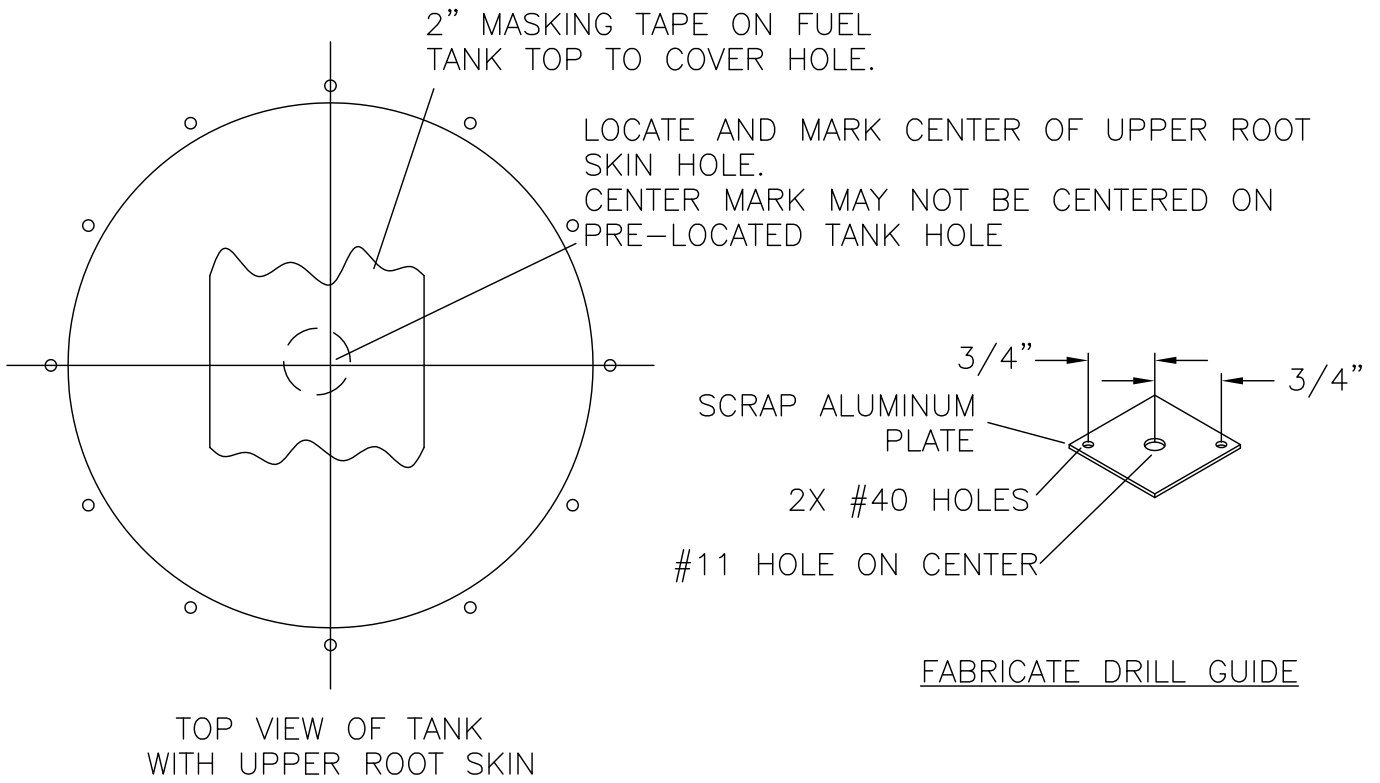
MD4366

RANDES S-20 RAVEN
TOP ROOT SKIN INSTALLATION
FIGURE 05C-30



MD5549

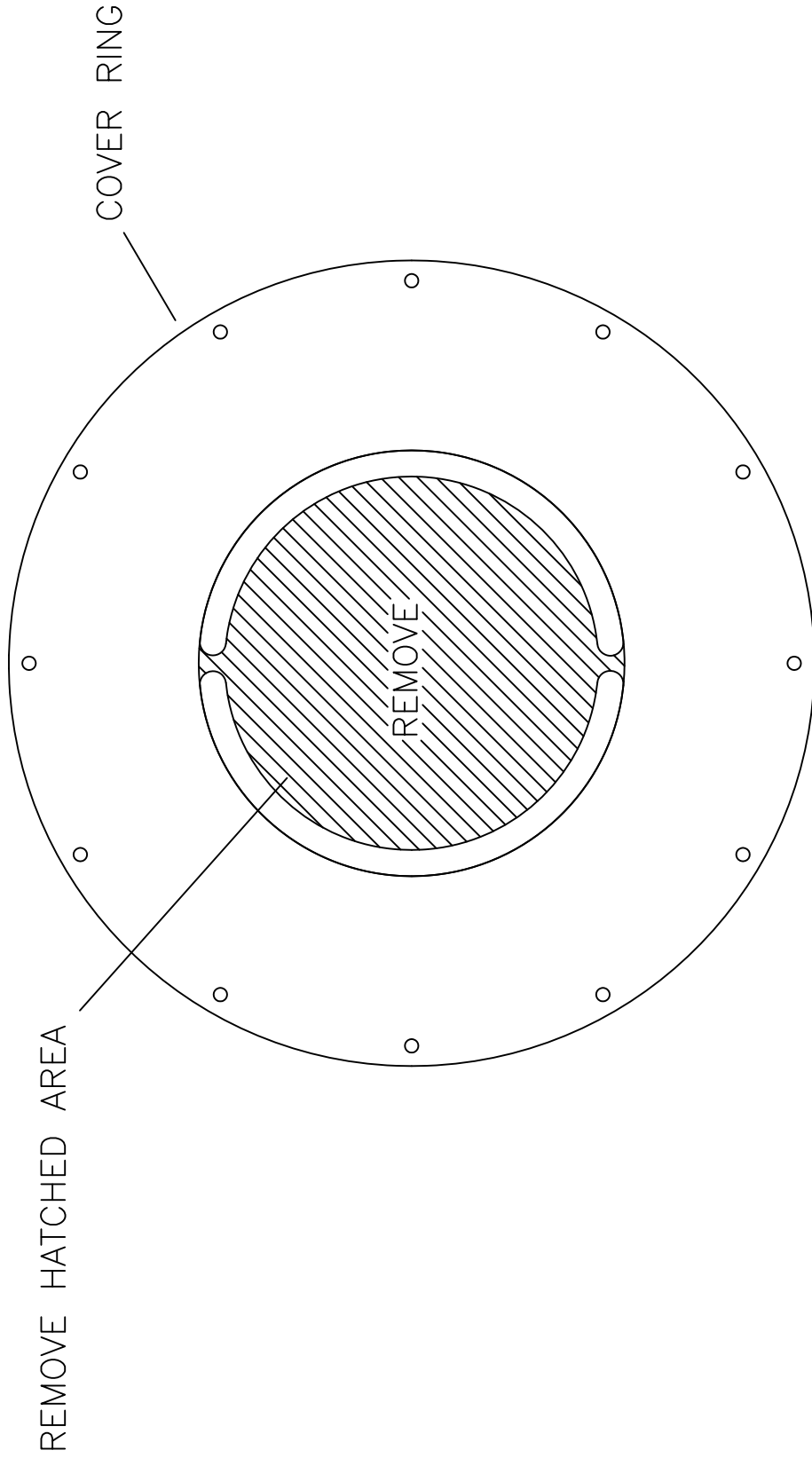
RRANOS S-20 RAVEN
CAPTURE RING MODIFICATION
FIGURE 05C-36



RANS S-20 RAVEN
FUEL CAP HOLE PLACEMENT
FIGURE 05C-37

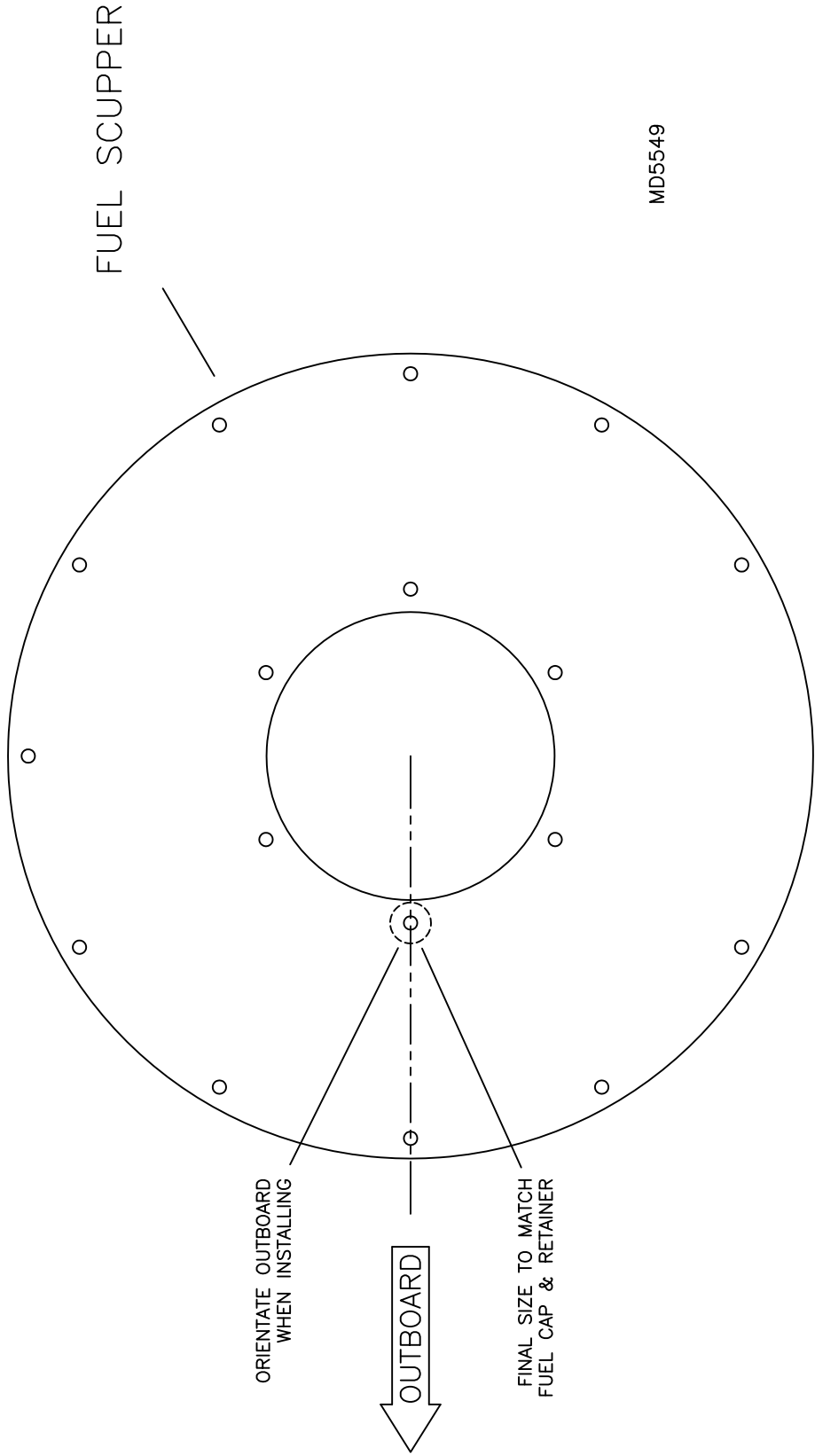
MD5560

09/01/2013



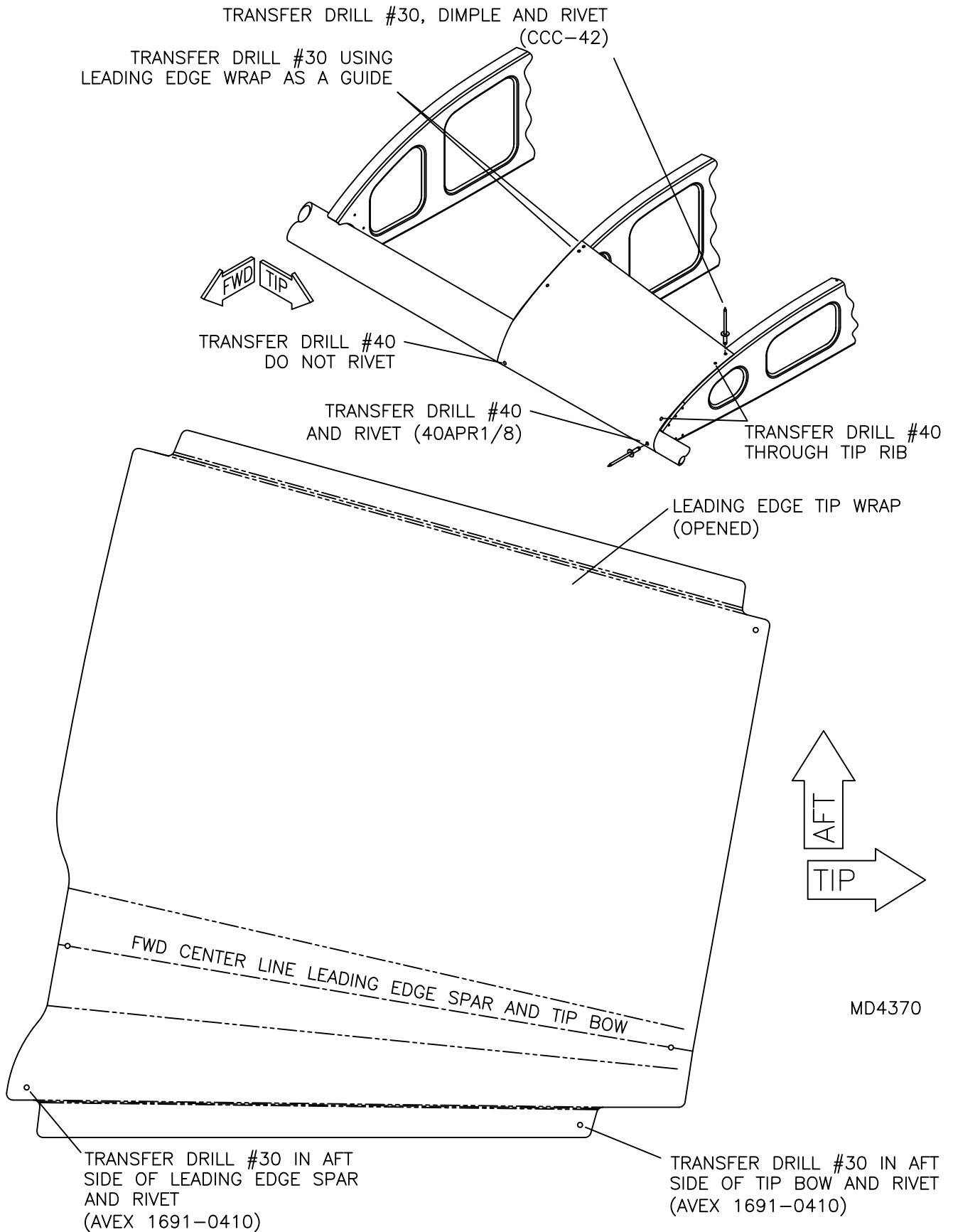
MD5549

RRR S-20 RAVEN
COVER RING MODIFICATION
FIGURE 05C-41

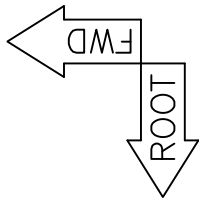


MD5549

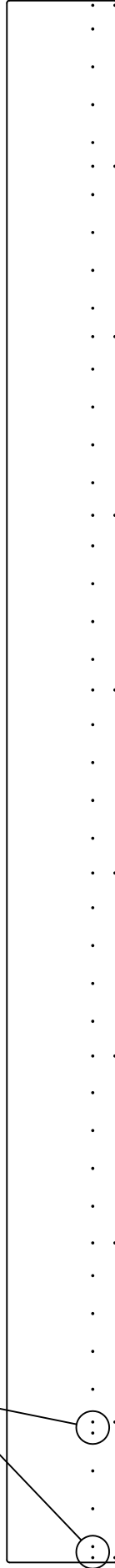
RAMRO S-20 RAVEN
FUEL SCUPPER ORIENTATION
FIGURE 05C-41A



RANS S-20 RAVEN
LEADING EDGE TIP WRAP INSTALLATION
FIGURE 05C-47



KEY TO POSITIONING

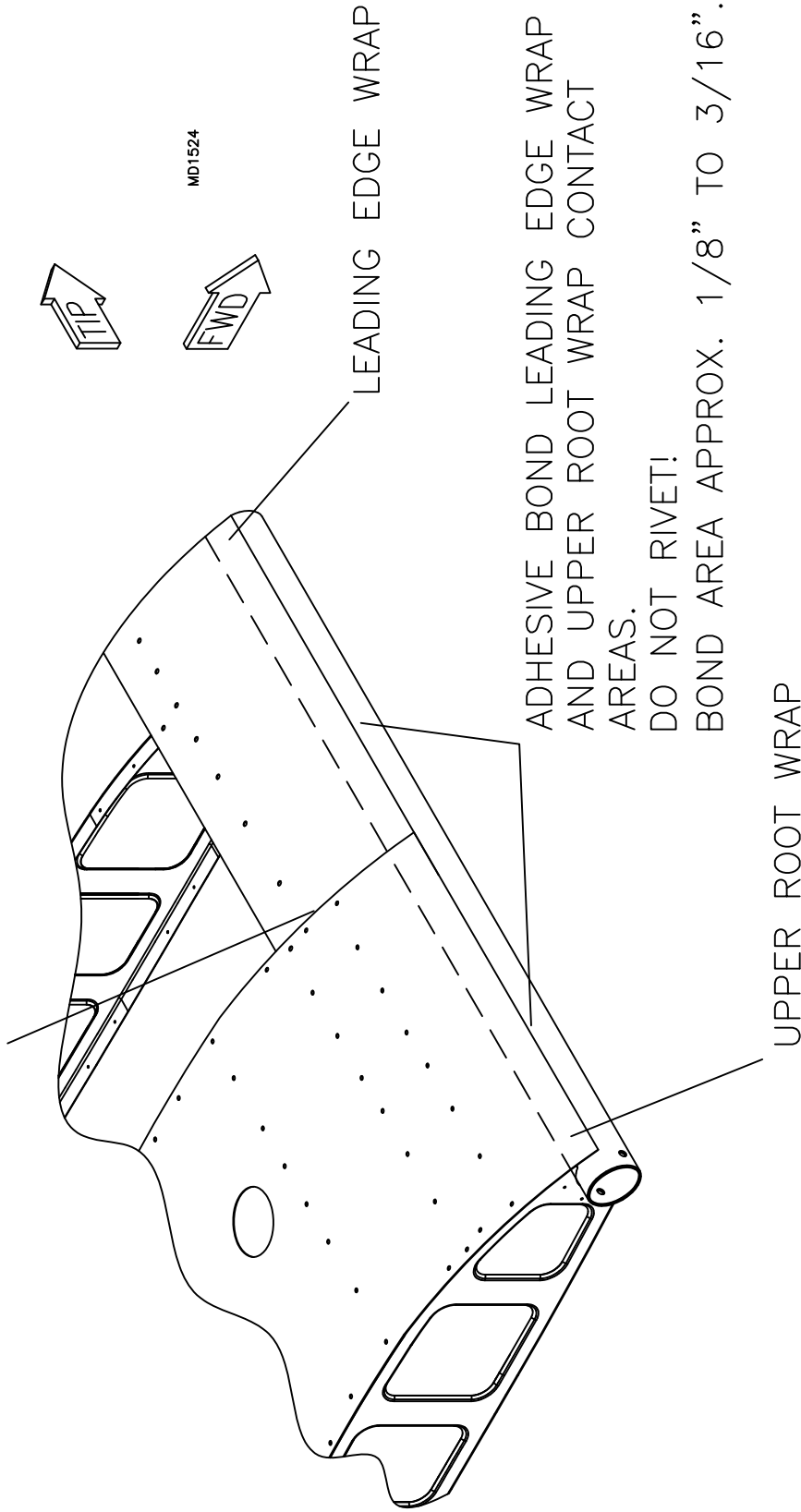


RH WING SHOWN
DIMPLE ALL HOLES

MD5554

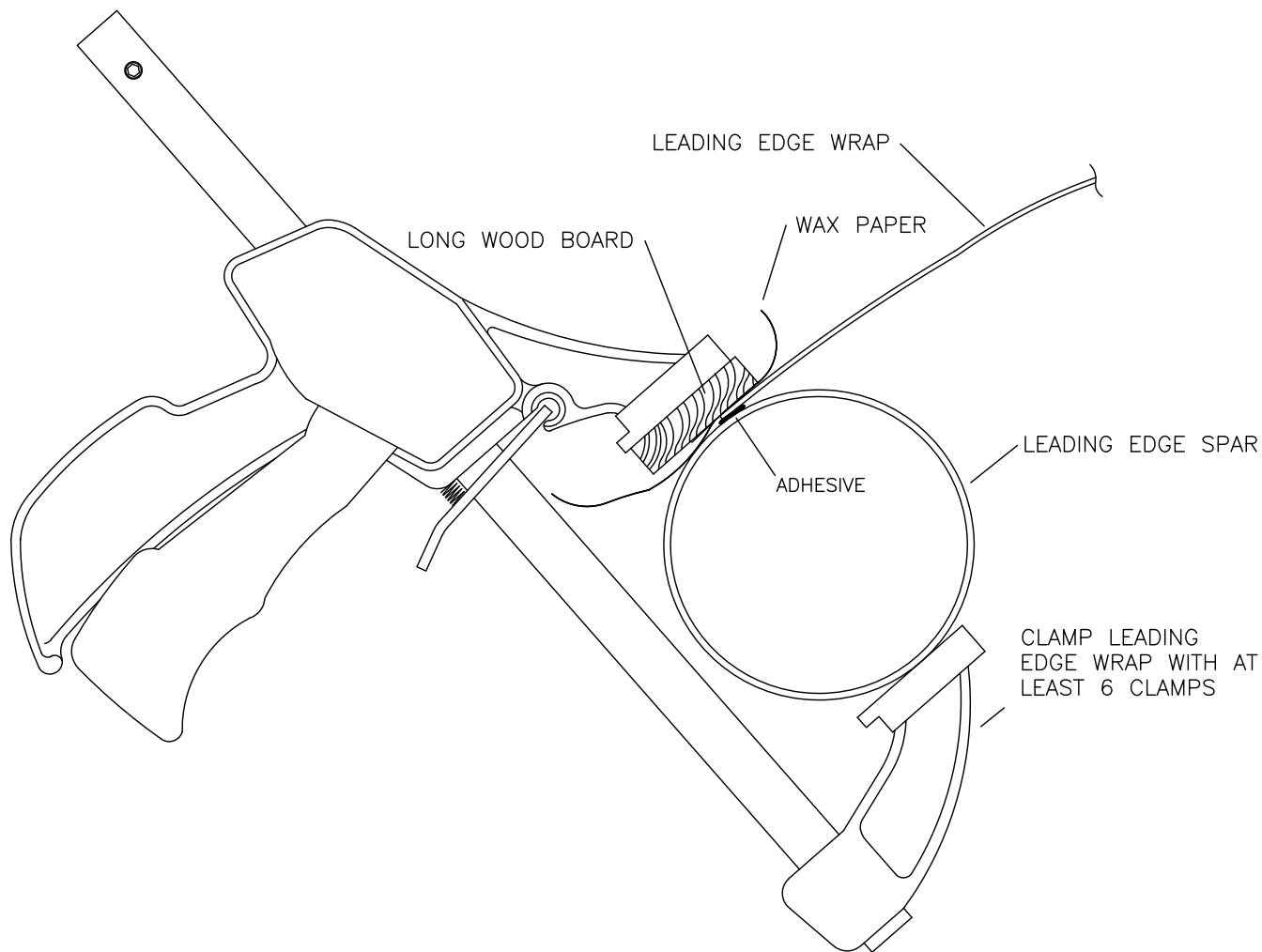
RRR S-20 RAVEN
LEADING EDGE WRAP MODIFICATION
FIGURE 05C-53

LEADING EDGE WRAP INSERTS
UNDER UPPER ROOT WRAP



MD4371
REV. A

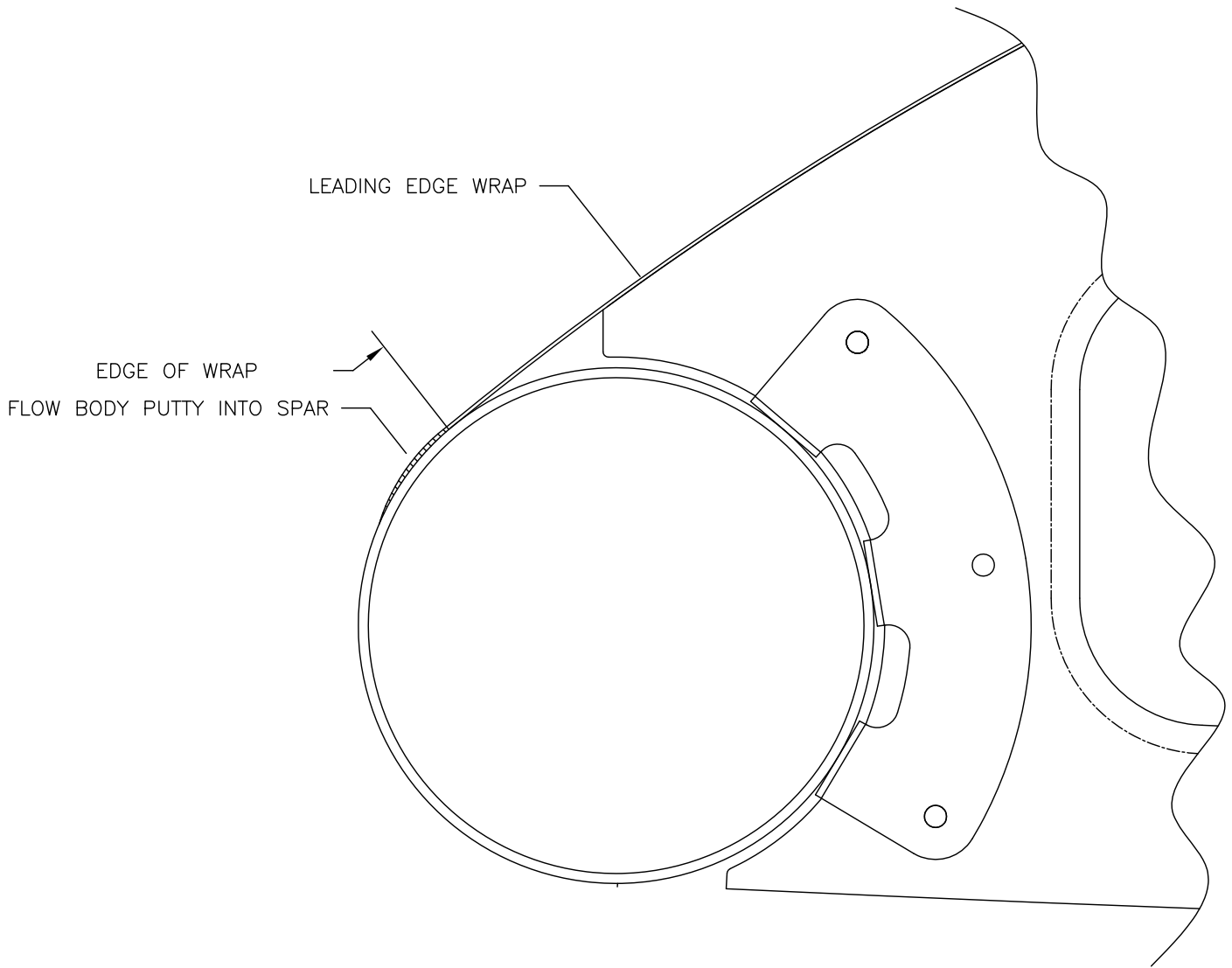
RAVEN S-20 RAVEN
LEADING EDGE & UPPER ROOT WRAP BOND AREA
FIGURE 05C-55



MD1525
REV. A

RANS S-20 RAVEN
LEADING EDGE WRAP CLAMPING
FIGURE 05C-56

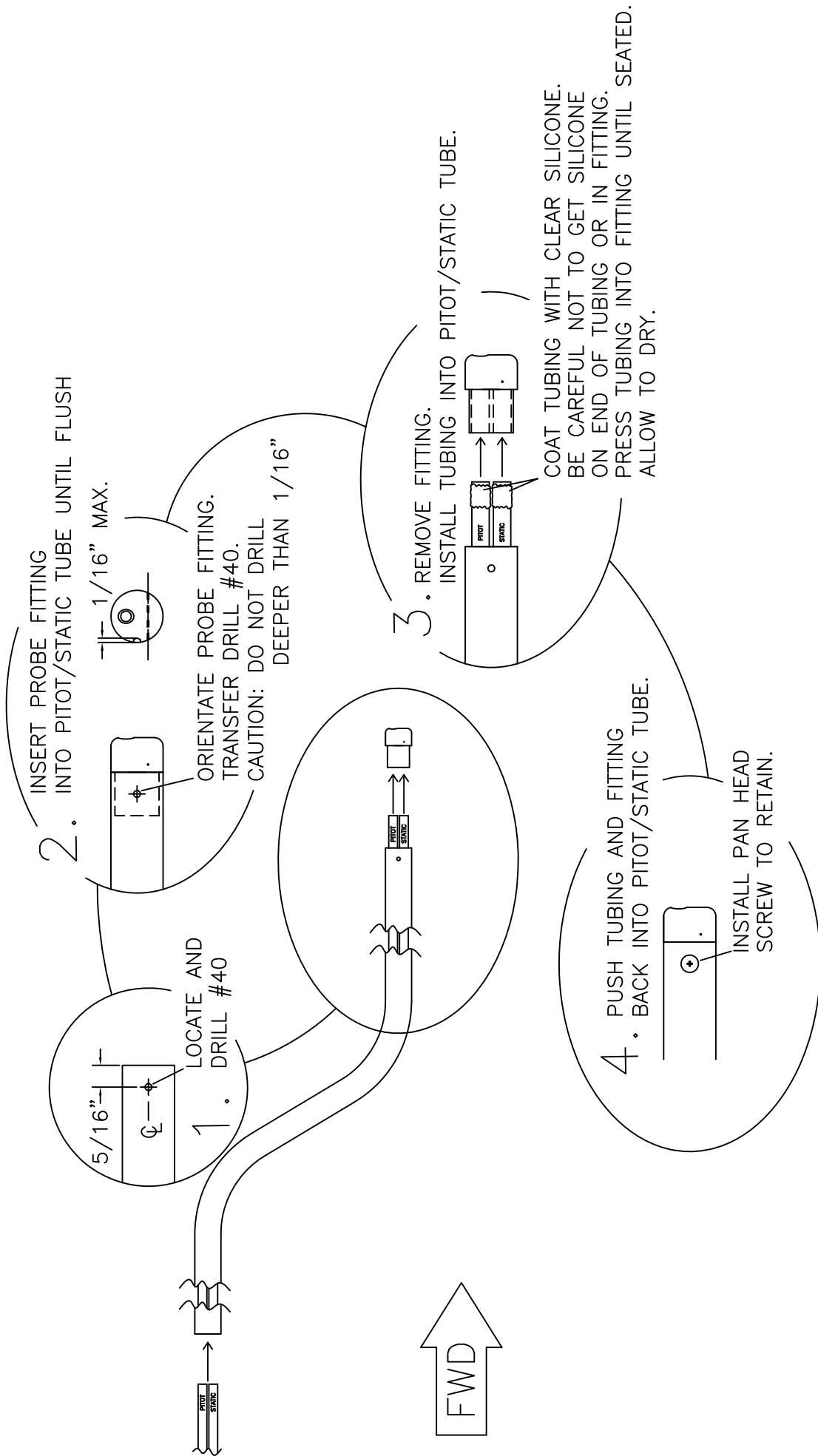
05/01/2017



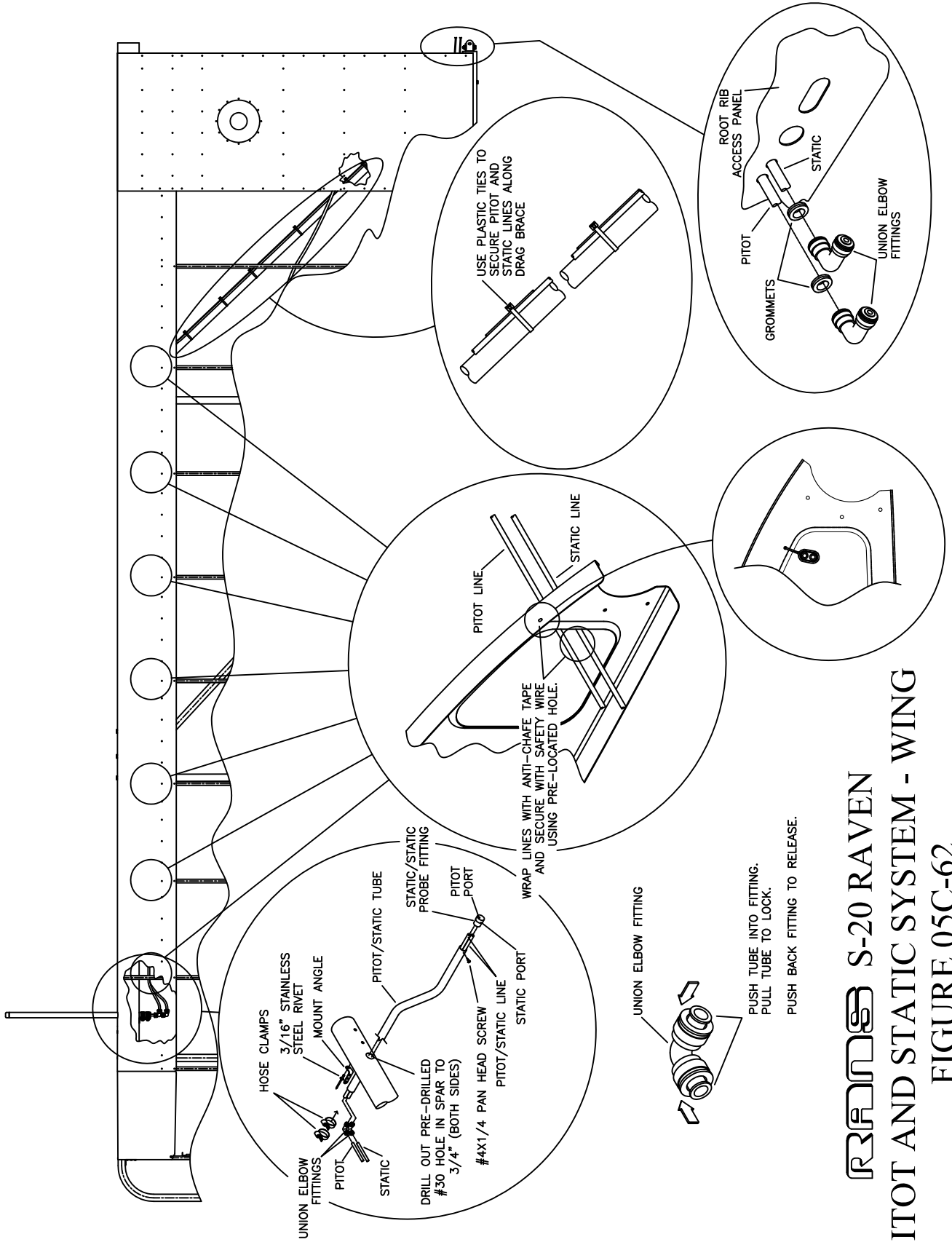
MD1525

RANS S-20 RAVEN
LEADING EDGE WRAP FILLET
FIGURE 05C-58

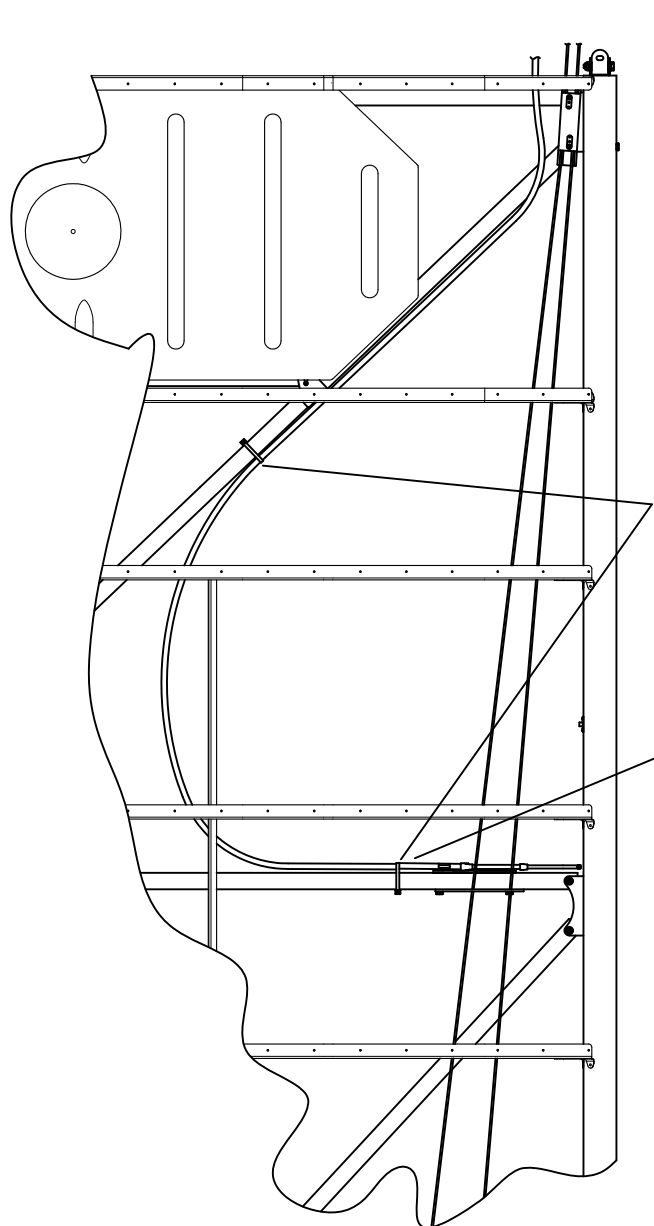
09/01/2013



RRAD S-20 RAVEN
 PITOT/STATIC PROBE ASSEMBLY
 FIGURE 05C-60



RRANOR S-20 RAVEN
PITOT AND STATIC SYSTEM - WING
FIGURE 05C-62



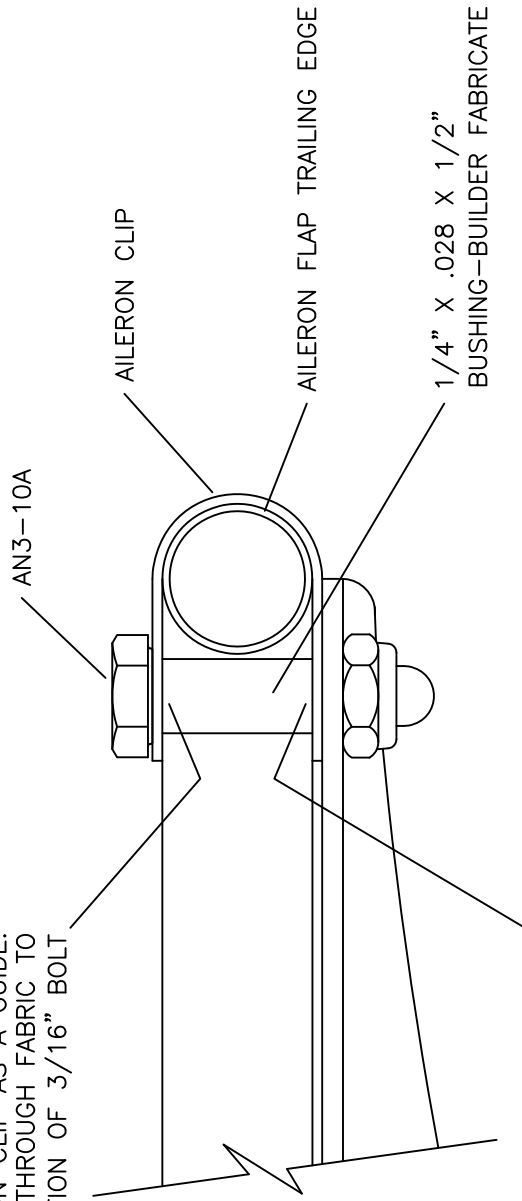
SECURE FLAP TELEFLEX CABLE TO FRAME
TUBES USING PLASTIC TIES.

TIGHTEN THIS PLASTIC TIE SO THAT MOVEMENT
OF CABLE IS POSSIBLE AND PUSH FLAP
TELEFLEX CABLE INSIDE WING STRUCTURE FOR
COVERING. RETRIEVE AFTER COVERING.

TIP
LH WING SHOWN

RAMROB S-20 RAVEN
FLAP TELEFLEX CABLE INSTALLATION - WING
FIGURE 05C-68

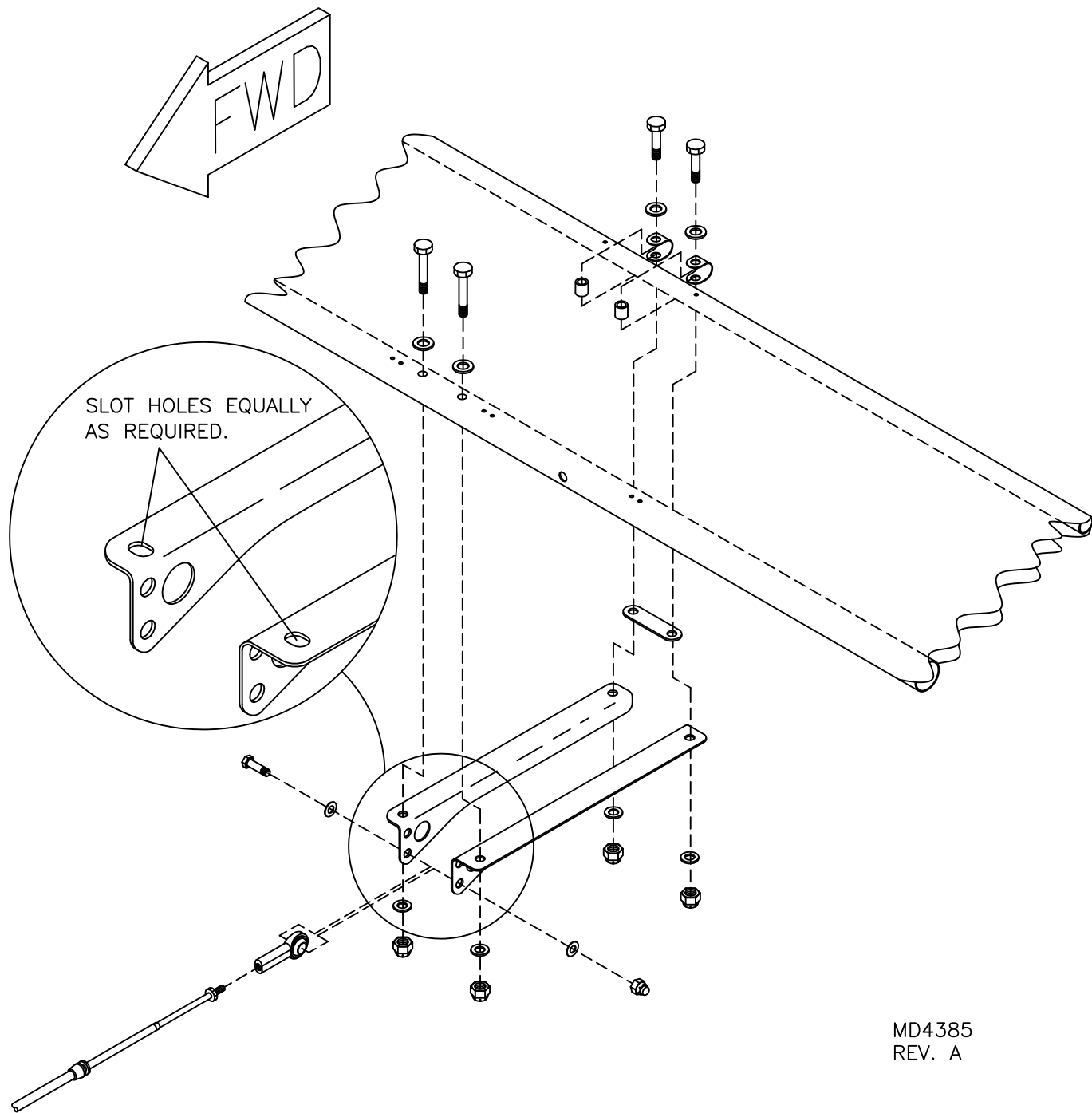
USE AILERON CLIP AS A GUIDE.
MARK AND BURN THROUGH FABRIC TO
ALLOW INSERTION OF 3/16" BOLT



USE AILERON CLIP AS A GUIDE.
MARK AND BURN THROUGH FABRIC TO
ALLOW INSERTION OF 1/4" SPACER

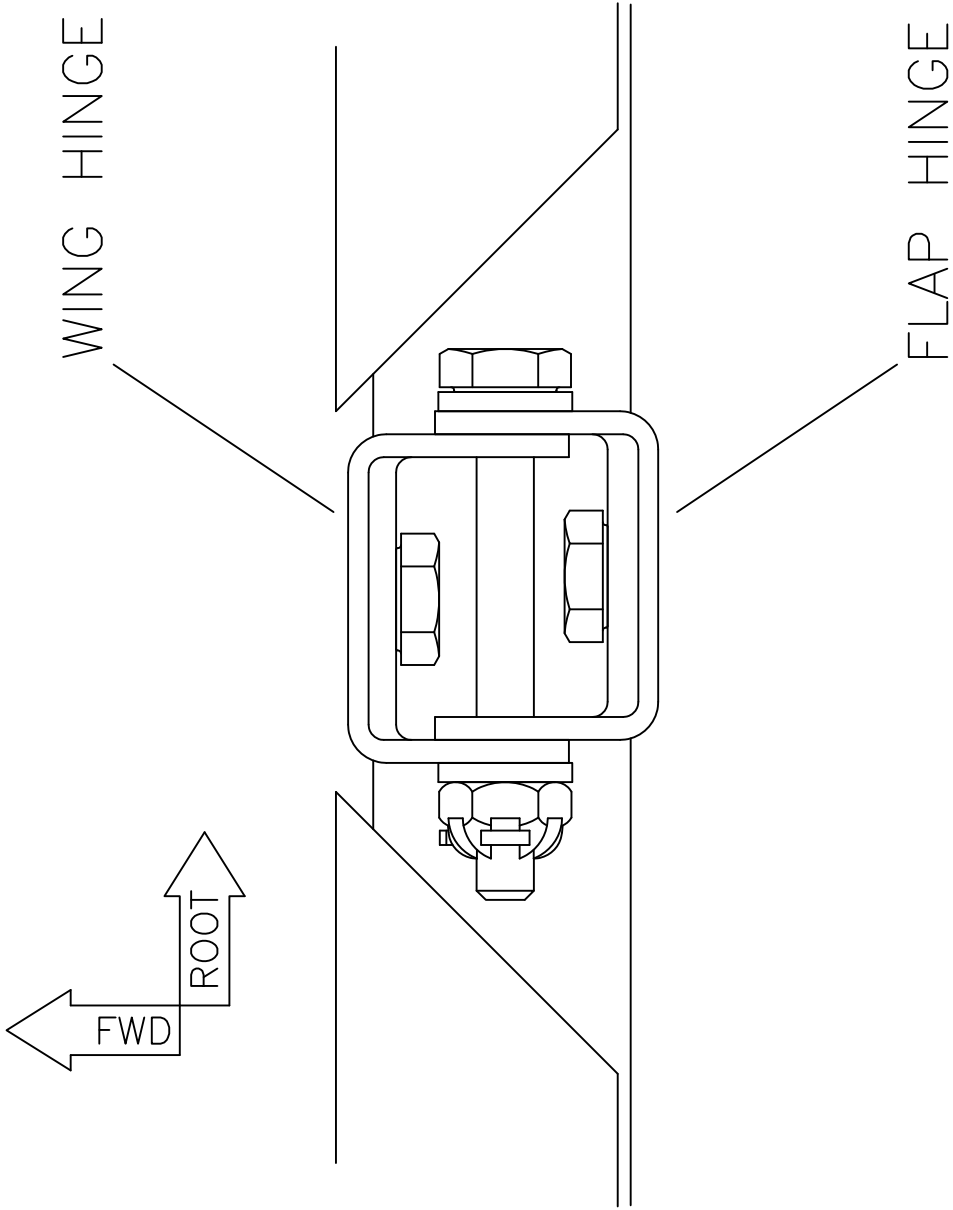
MD4349

RAVEN S-20 RAVEN
AILERON AND FLAP ATTACH ANGLE
(TRAILING EDGE)
FIGURE 05D-05



MD4385
REV. A

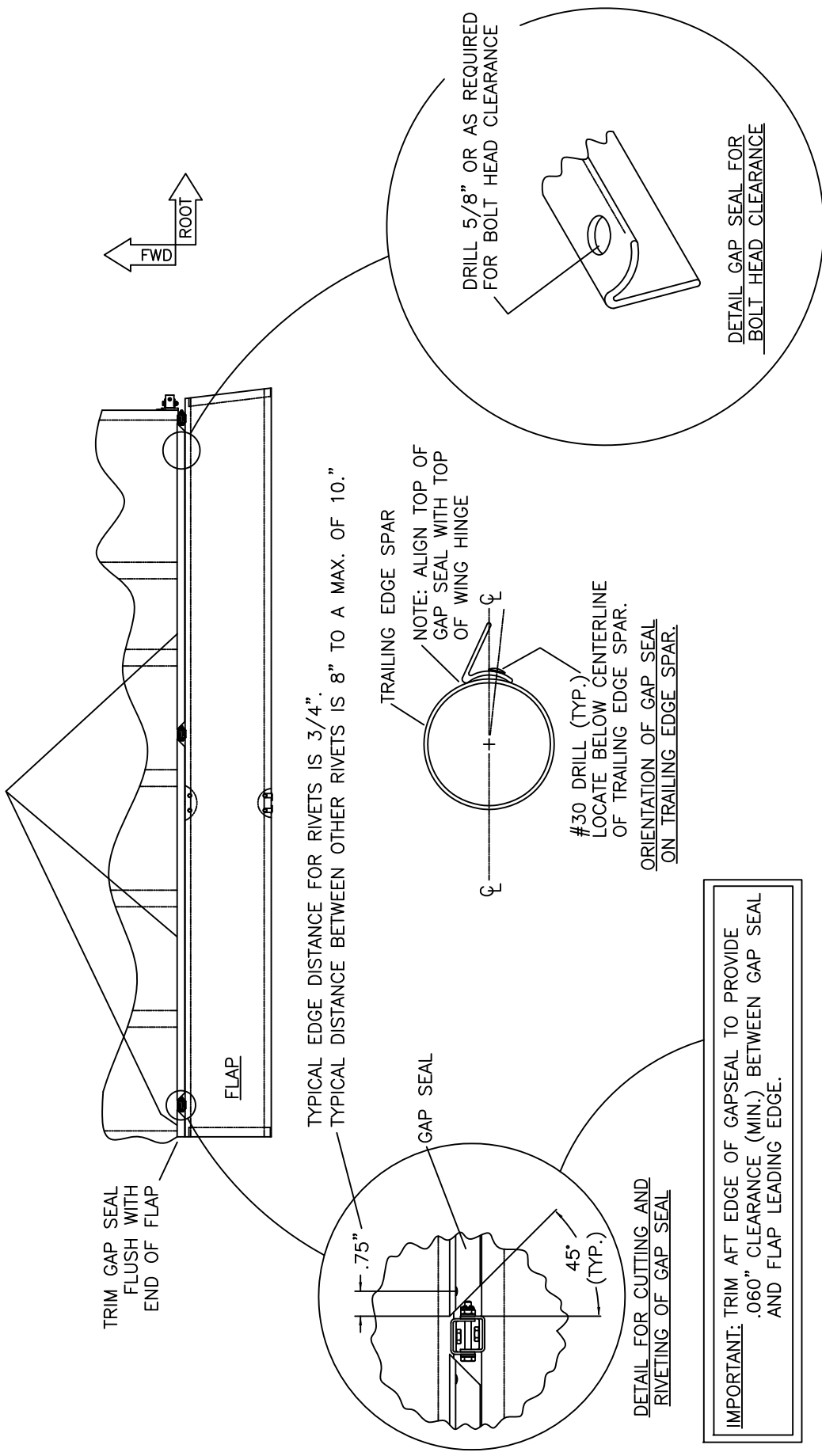
RANS S-20 RAVEN
FLAP HORN ATTACH ANGLE INSTALLATION
FIGURE 05D-08



RAVEN S-20 RAVEN
FLAP HINGE ORIENTATION
FIGURE 05D-09

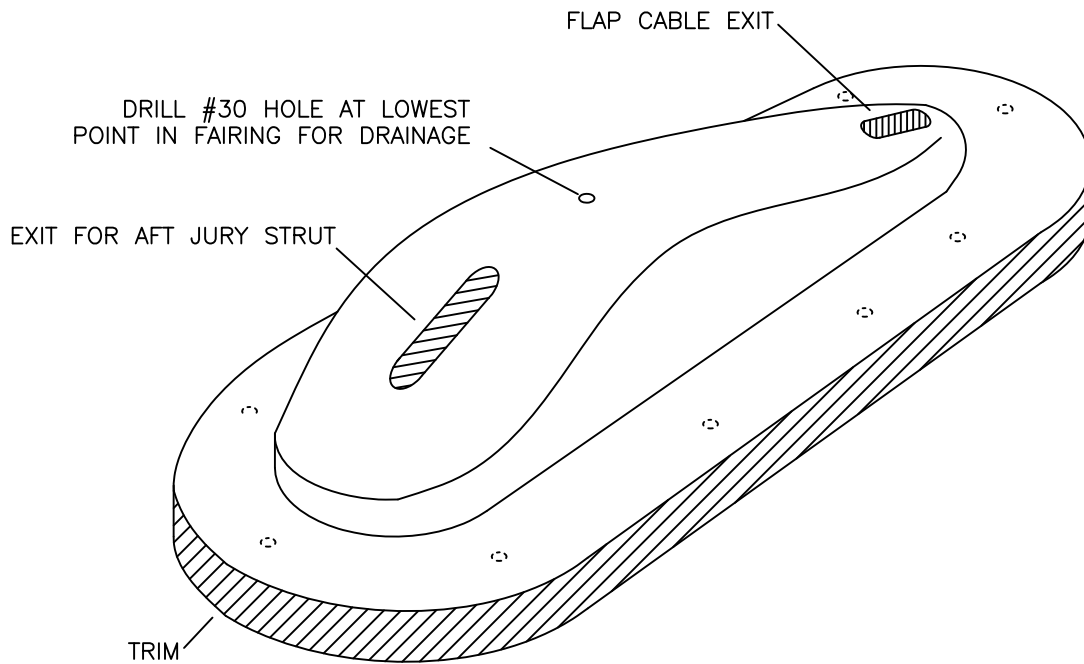
MD4384

CONTROL SURFACE GAP SEAL (3 PIECES PER WING)

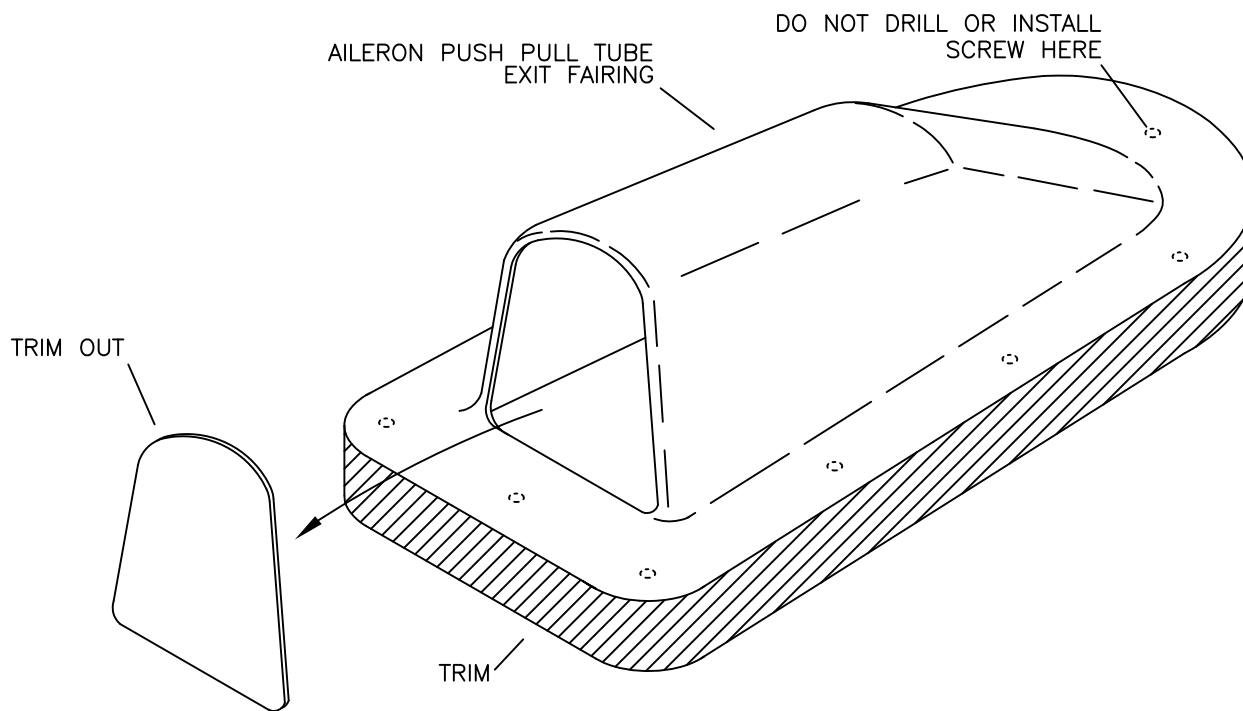


RAMS S-20 RAVEN
 GAP SEAL INSTALLATION
 FIGURE 05D-13

MD4-382



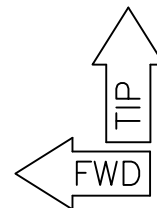
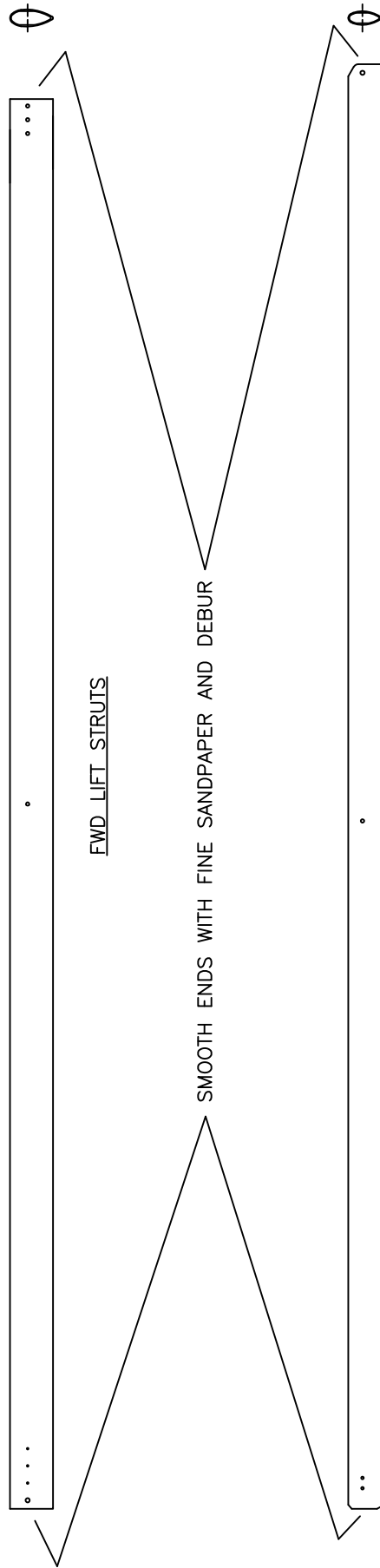
FLAP CABLE EXIT



AILERON PUSH-PULL TUBE EXIT

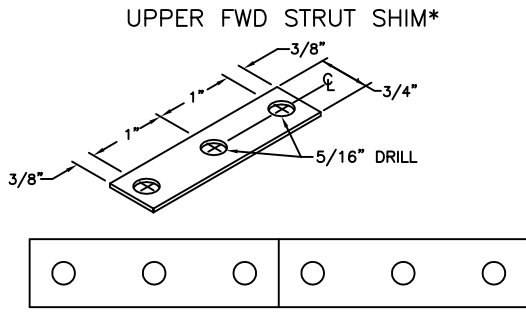
MD4418

RANS S-20 RAVEN
EXIT FAIRING MODIFICATION
FIGURE 05D-19

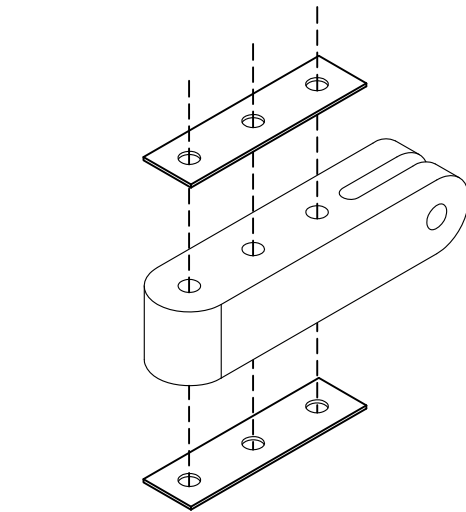
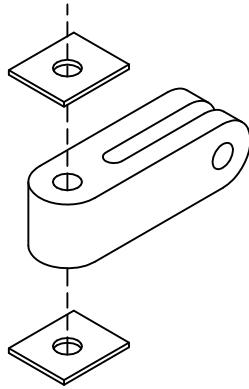


RRR S-20 RAVEN
 LIFT STRUT ORIENTATION
 FIGURE 05E-01

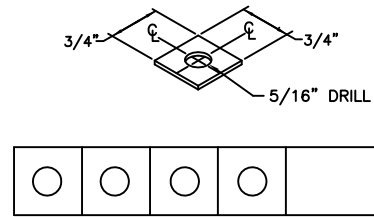
MD4383
 REV. A



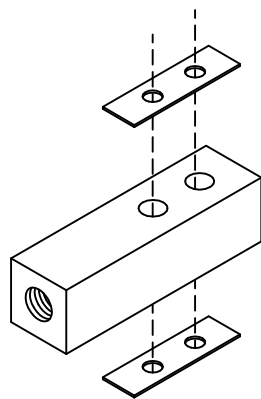
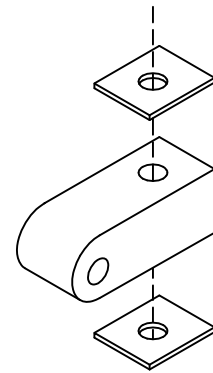
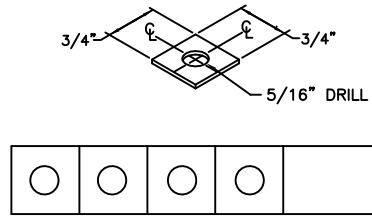
HINT: DRILL HOLES IN SHIM, THEN CUT TO LENGTH. MAKE AS REQUIRED*.



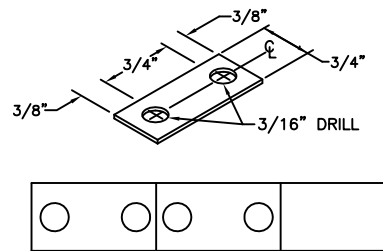
UPPER AFT STRUT SHIM*



LOWER FWD STRUT SHIM*



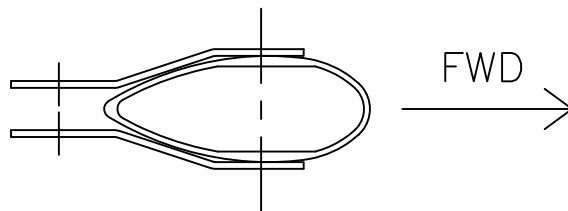
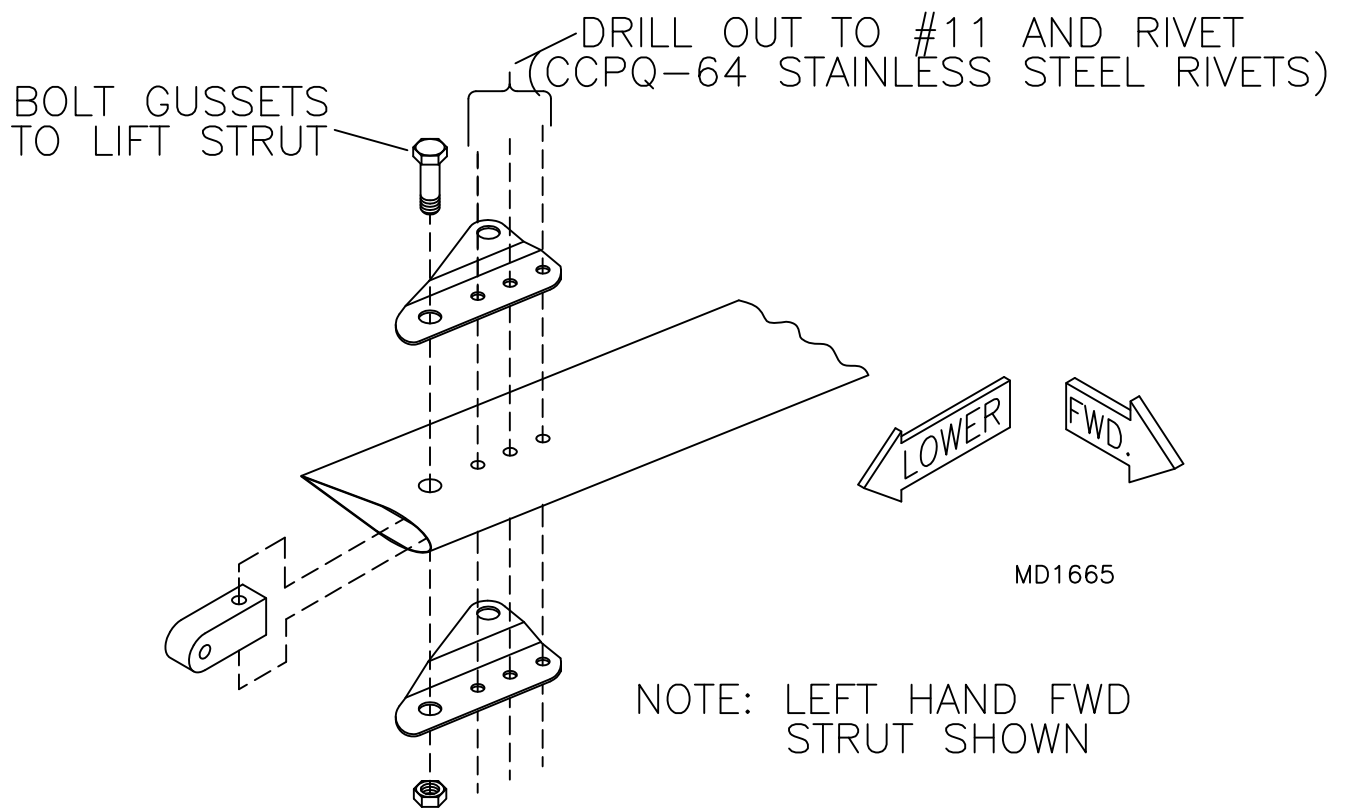
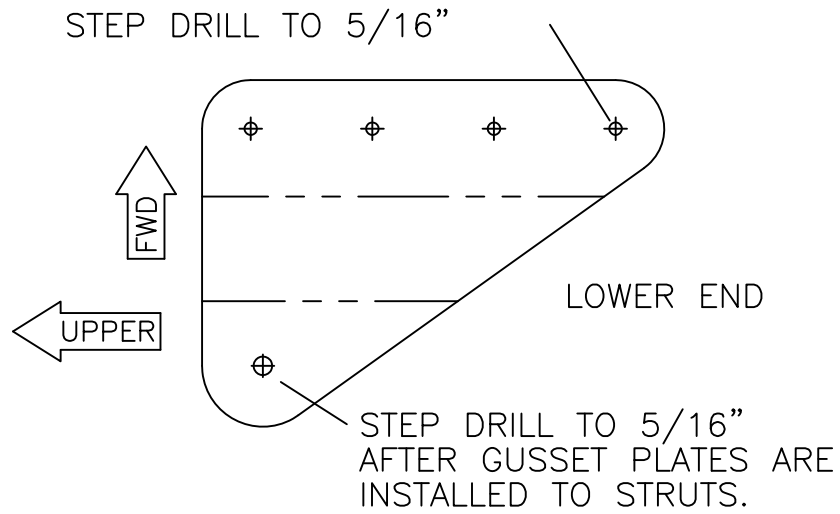
ADJUSTABLE STRUT SHIM*



RANS S-20 RAVEN
LIFT STRUT SHIMS
FIGURE 05E-03

MD4375
 REV. A

*CUT & USE ONLY AS NEEDED

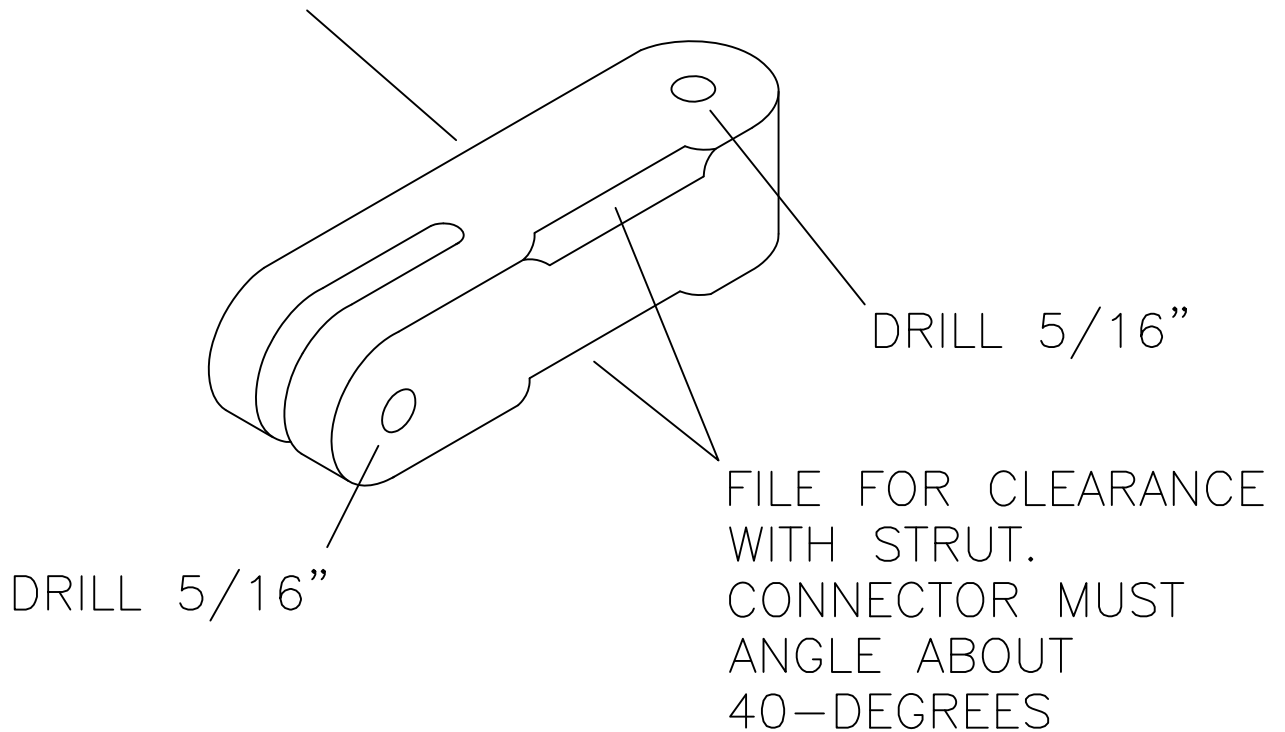


RANS S-20 RAVEN
LIFT STRUT GUSSET PLATES
FIGURE 05E-04

MD4376

09/01/2013

AFT CONNECTOR — LIFT STRUT
(LS-ACU-2)

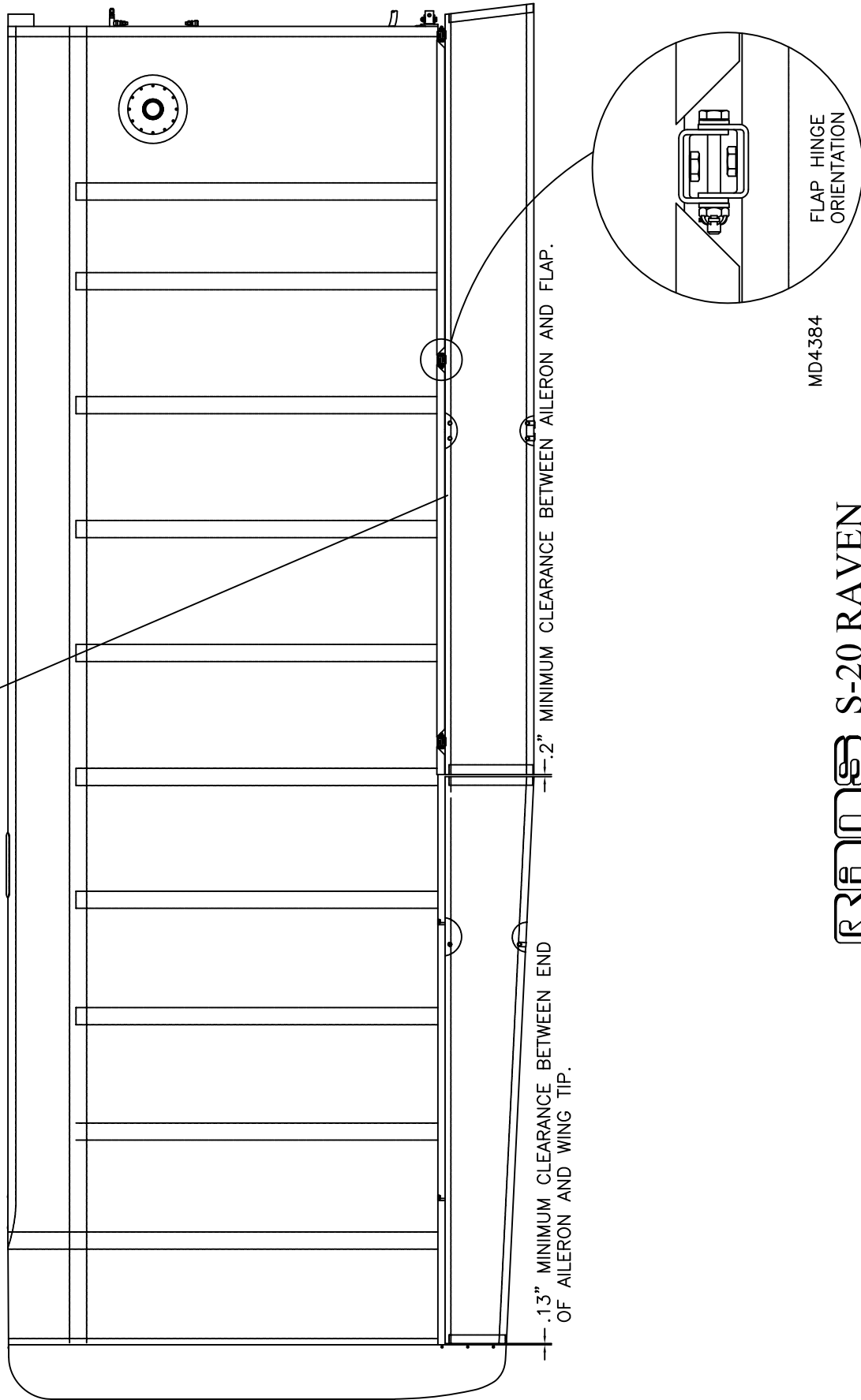


RANS S-20 RAVEN
UPPER AFT LIFT STRUT CONNECTOR MODIFICATION
FIGURE 05E-13

MD1416

09/01/2013

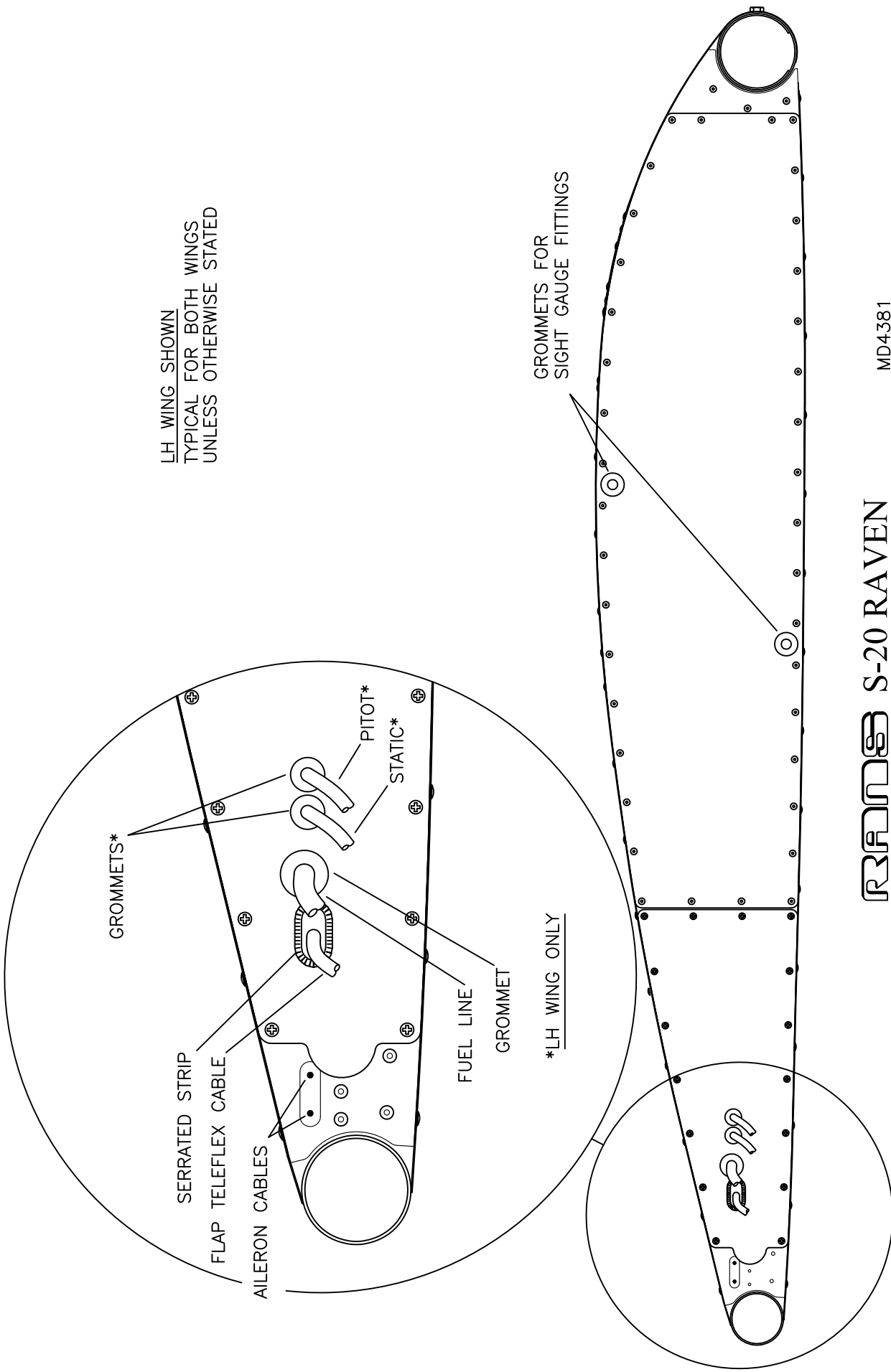
MINIMUM CLEARANCE BETWEEN FLAP AND GAP SEAL - .060" (ENTIRE LENGTH)



MD4384

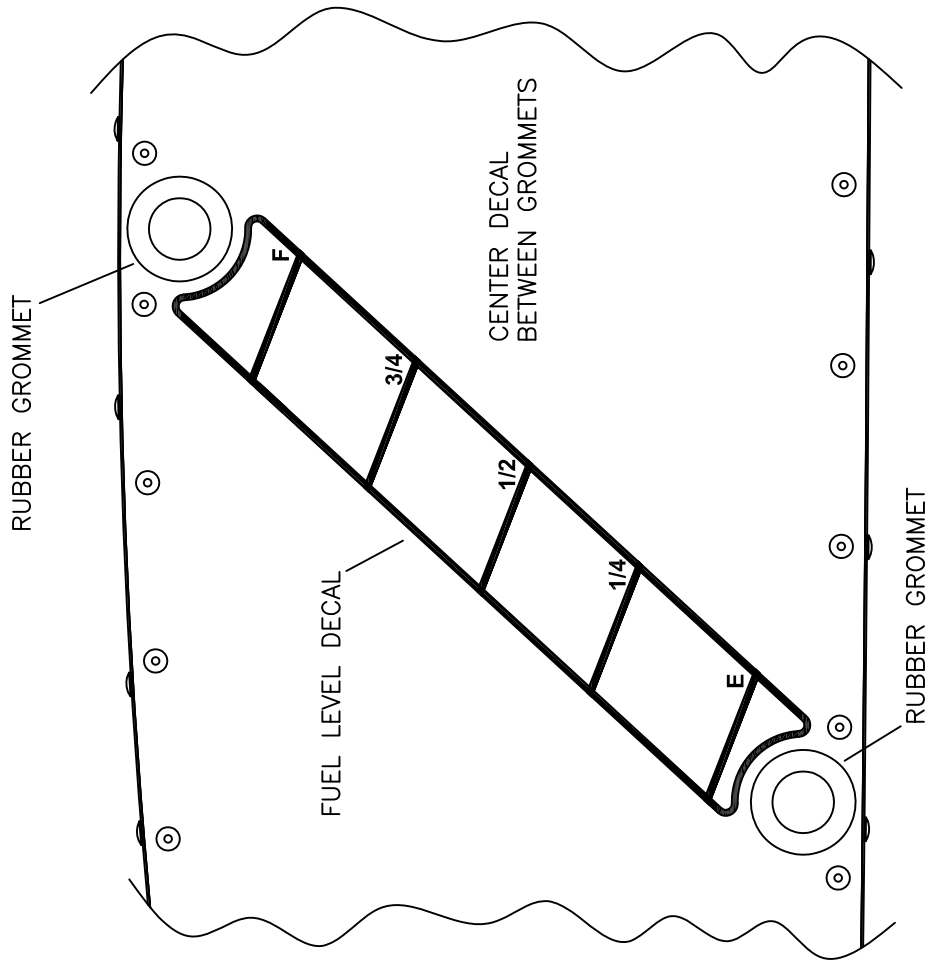
RAMB S-20 RAVEN
CONTROL SURFACE CLEARANCE - WING
FIGURE 05F-04

LH WING SHOWN
 TYPICAL FOR BOTH WINGS
 UNLESS OTHERWISE STATED

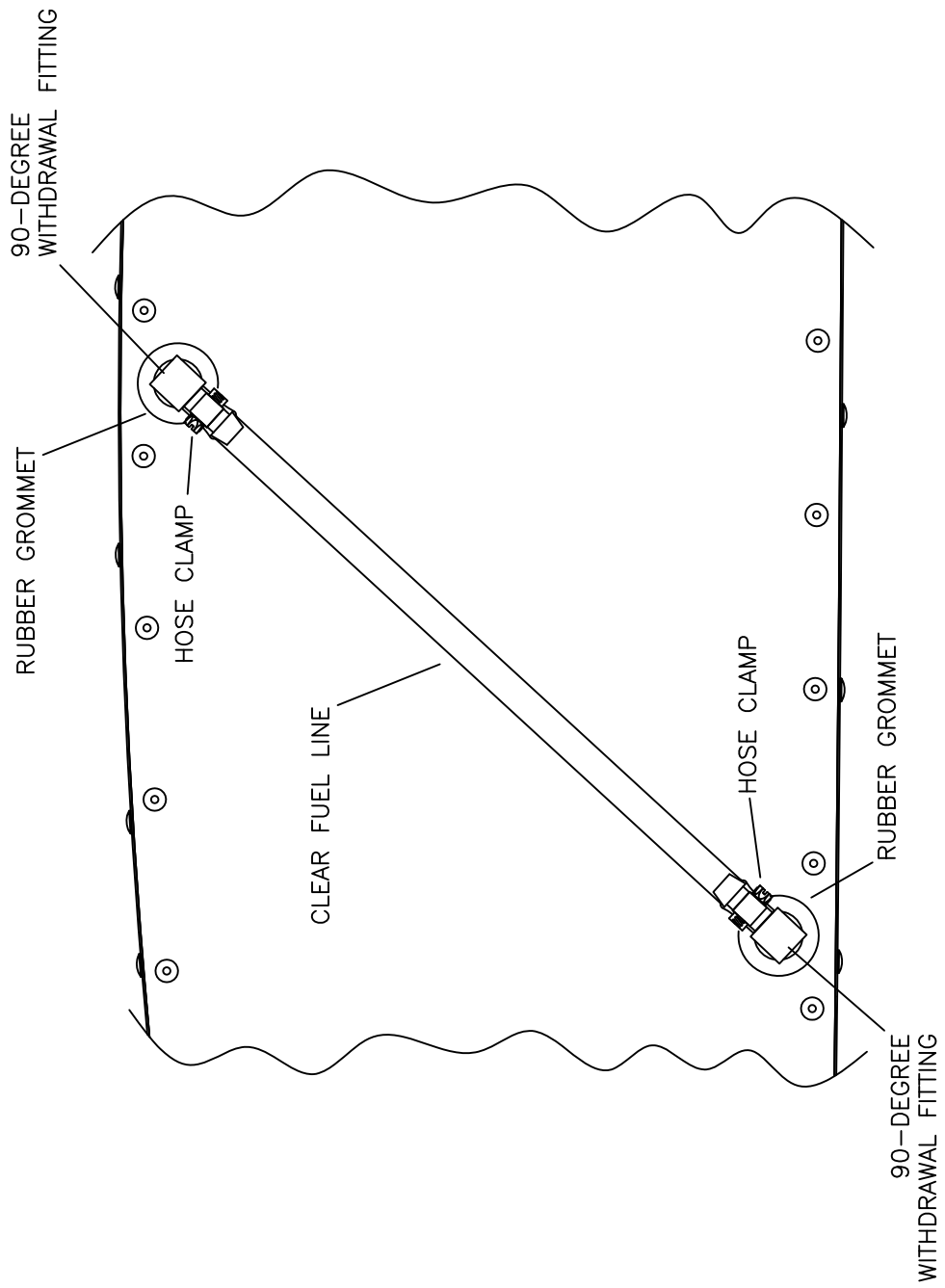


RRR S-20 RAVEN
 ROOT CLOSEOUT DETAIL
 FIGURE 05G-03

MD4381

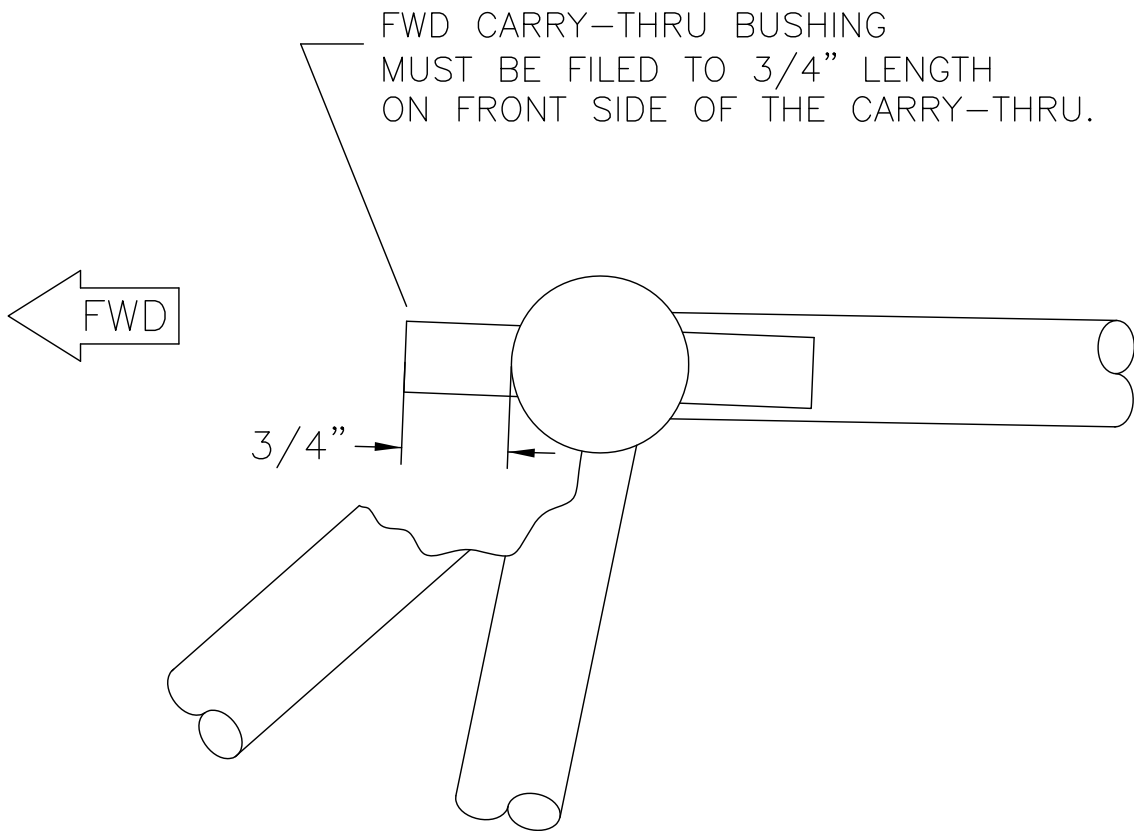


RAMROD S-20 RAVEN MD4414
 FUEL SIGHT GAUGE DECAL INSTALLATION
 FIGURE 05G-04



RAMS S-20 RAVEN
FUEL SIGHT GAUGE INSTALLATION
FIGURE 05G-05

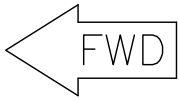
MD4414
 REV. A



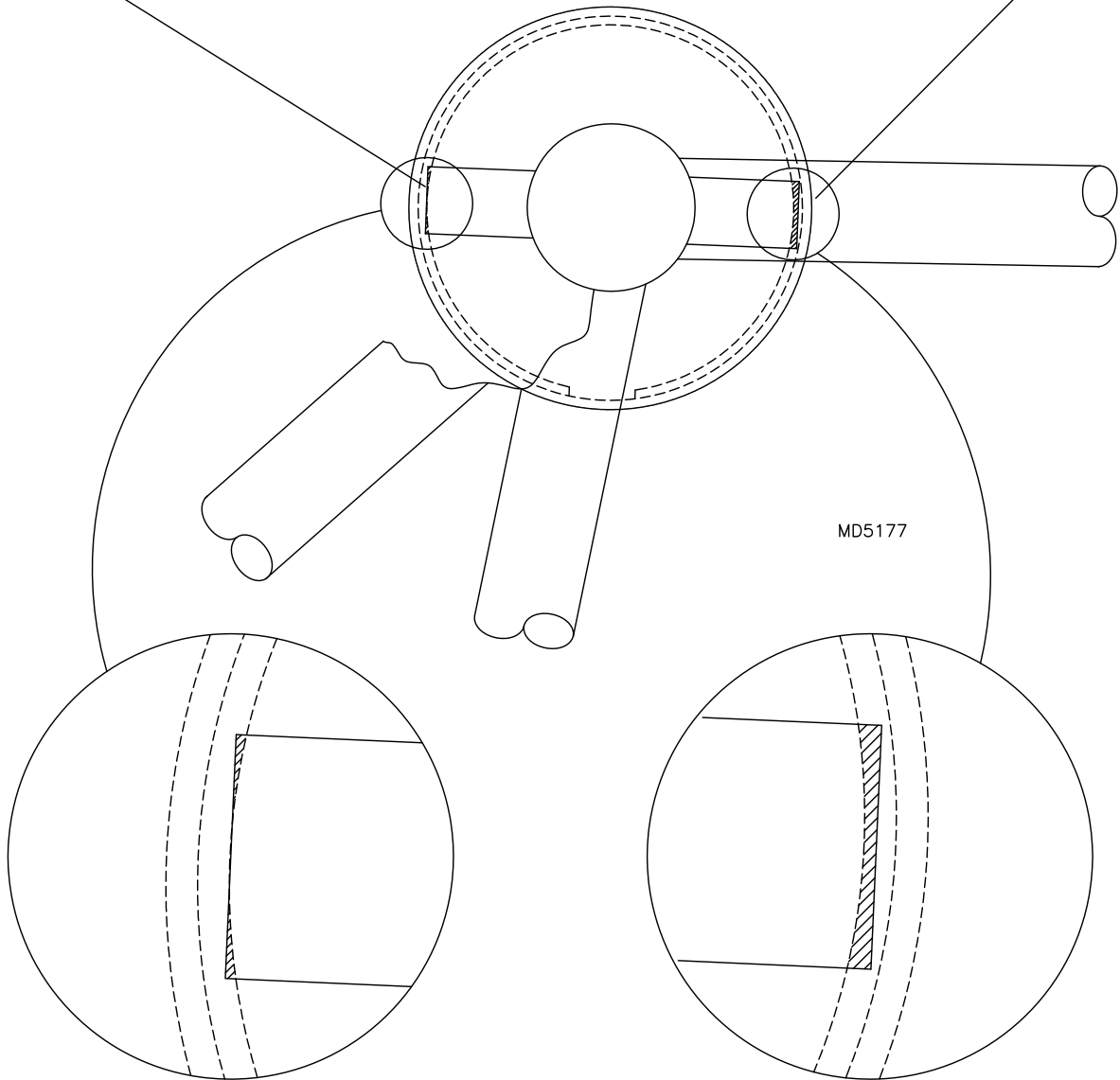
MD5177

RANS S-20 RAVEN
WING ATTACHMENT (T-BONE) MODIFICATION
FIGURE 05H-07

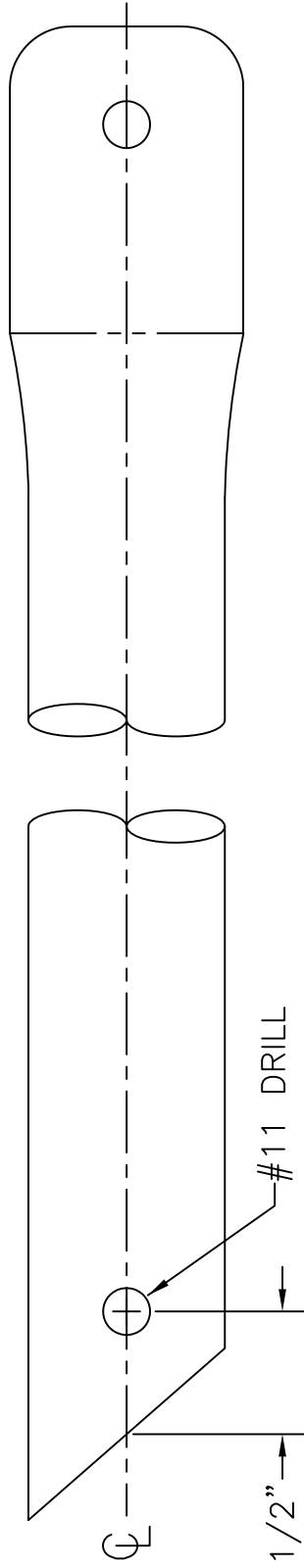
09/01/2013



CONTOUR FWD AND AFT PORTION OF THE BUSHING (T-BONE)
UNTIL LEADING EDGE SPAR (WITH DOUBLER INSTALLED) SLIPS OVER
THE CARRY-THRU BUSHING.



RAAS S-20 RAVEN
WING ATTACHMENT (T-BONE) MODIFICATION
FIGURE 05H-08

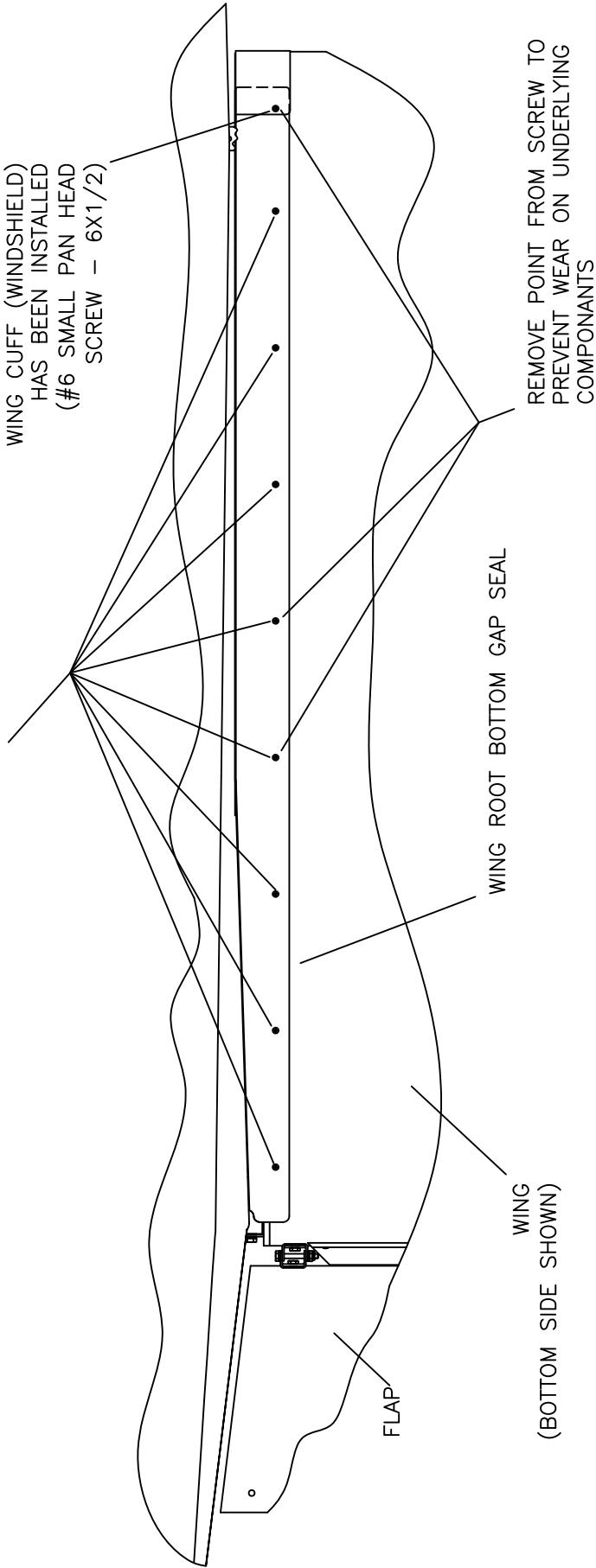


MD4510
REV. - ORIG

RAVEN S-20 RAVEN
AFT JURY STRUT MODIFICATION
FIGURE 05H-18

LOCATE CENTER OF TINNERMANS INSTALLED ON ROOT RIB.
DRILL #30 AND INSTALL #8 PAN HEAD SCREW - 8X1/2

LOCATE ON WING AFTER
WING CUFF (WINDSHIELD)
HAS BEEN INSTALLED
(#6 SMALL PAN HEAD
SCREW - 6X1/2)



WING
(BOTTOM SIDE SHOWN)

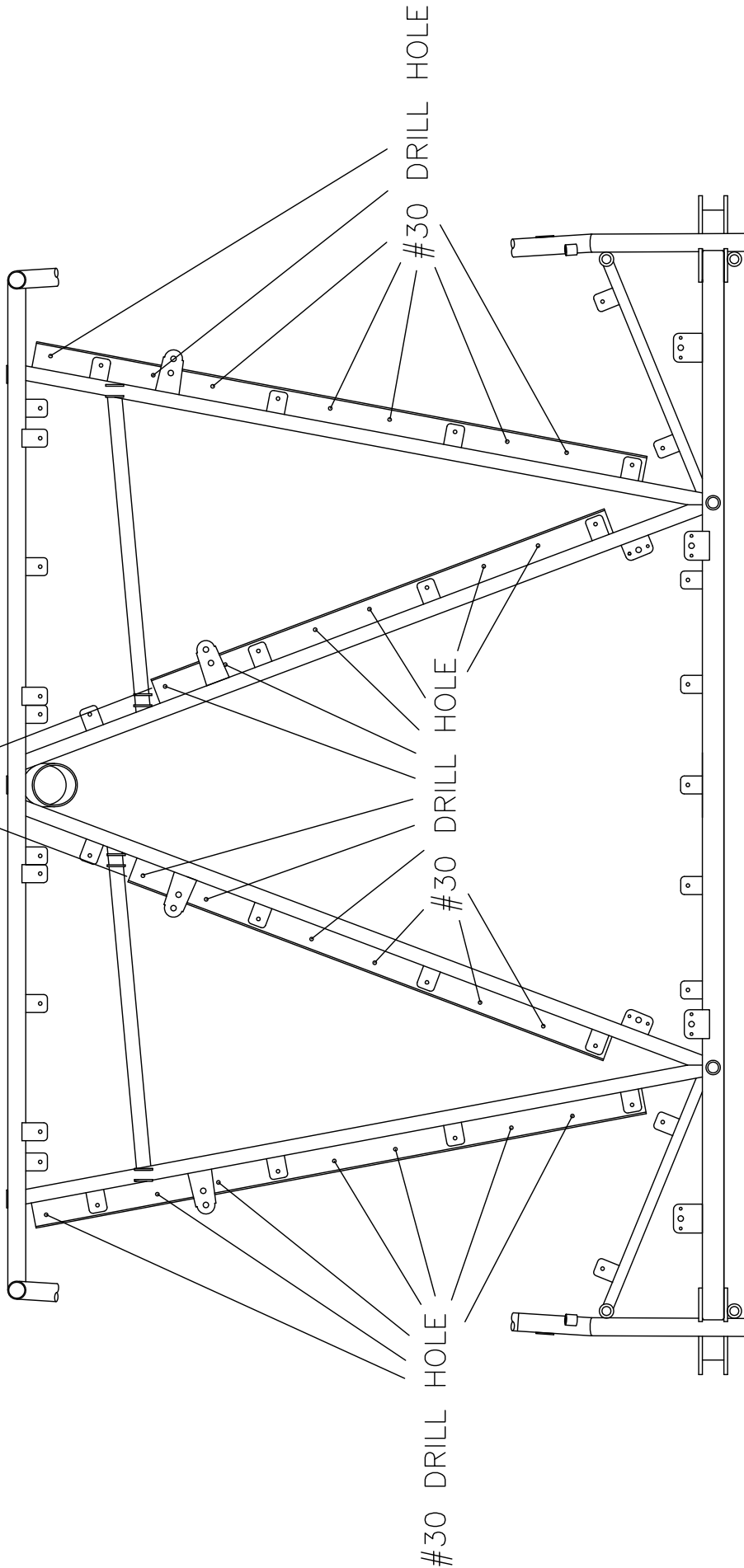
WING ROOT BOTTOM GAP SEAL

REMOVE POINT FROM SCREW TO
PREVENT WEAR ON UNDERLYING
COMPONENTS

RAMS S-20 RAVEN
WING ROOT BOTTOM GAP SEAL ATTACH
FIGURE 05H-30

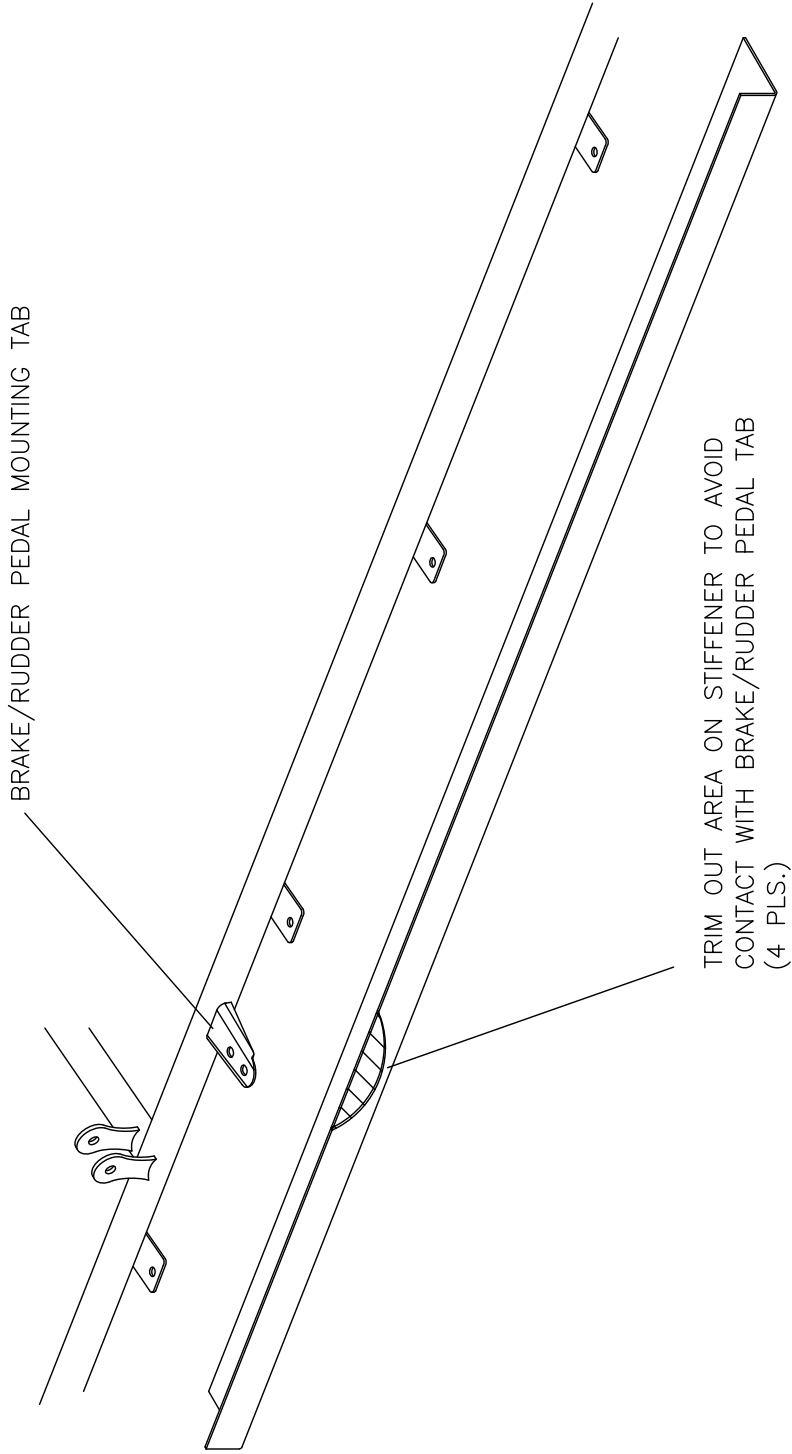
MD4407

TRIM STIFFENER LENGTH TO
CLEAR FUSELAGE TUBES



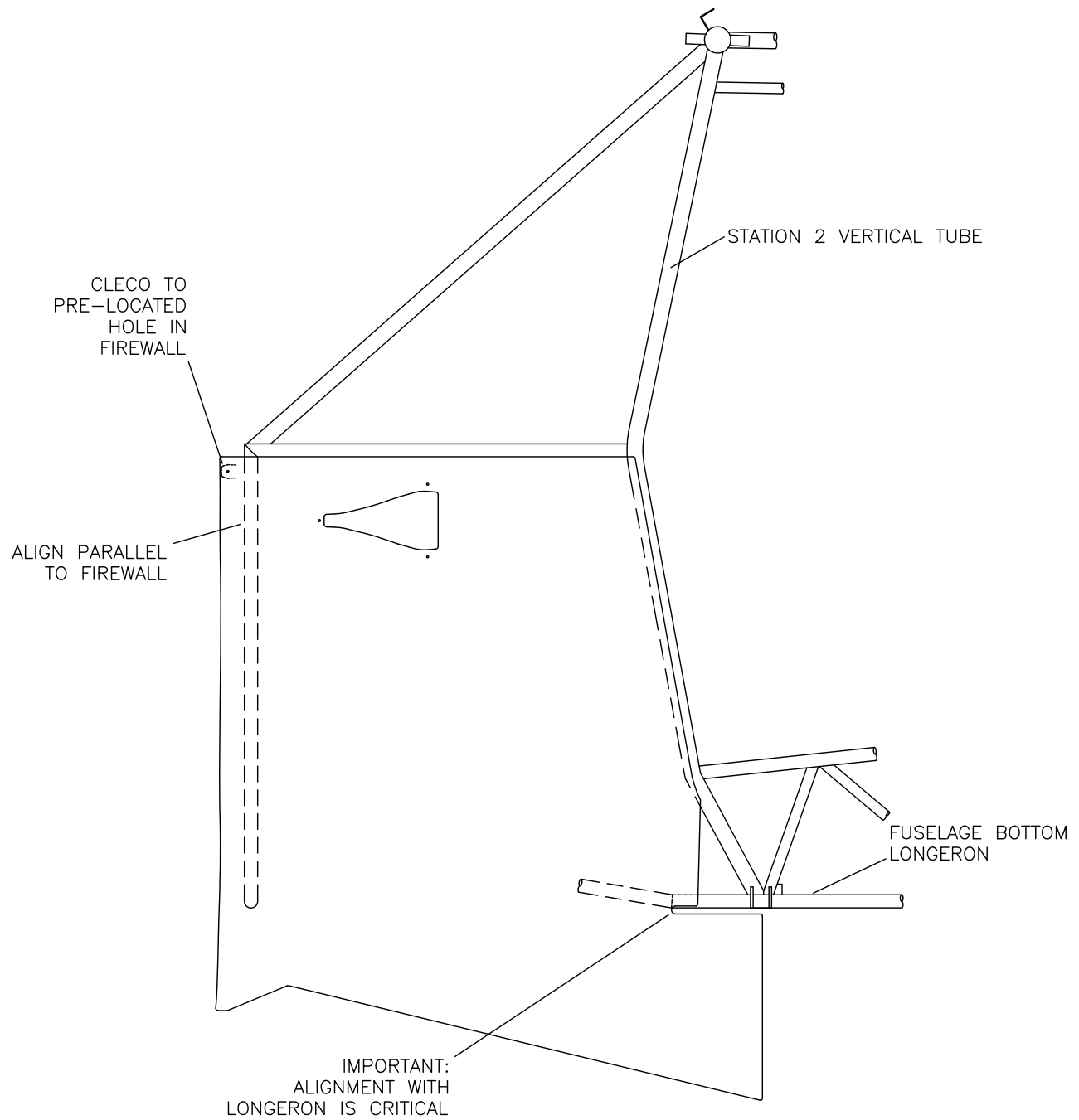
MD5606
REV. - ORIG

RAMS S-20 RAVEN
BOOT COWL STIFFENER LOCATION
FIGURE 06-07



MD5605
REV. - ORIG

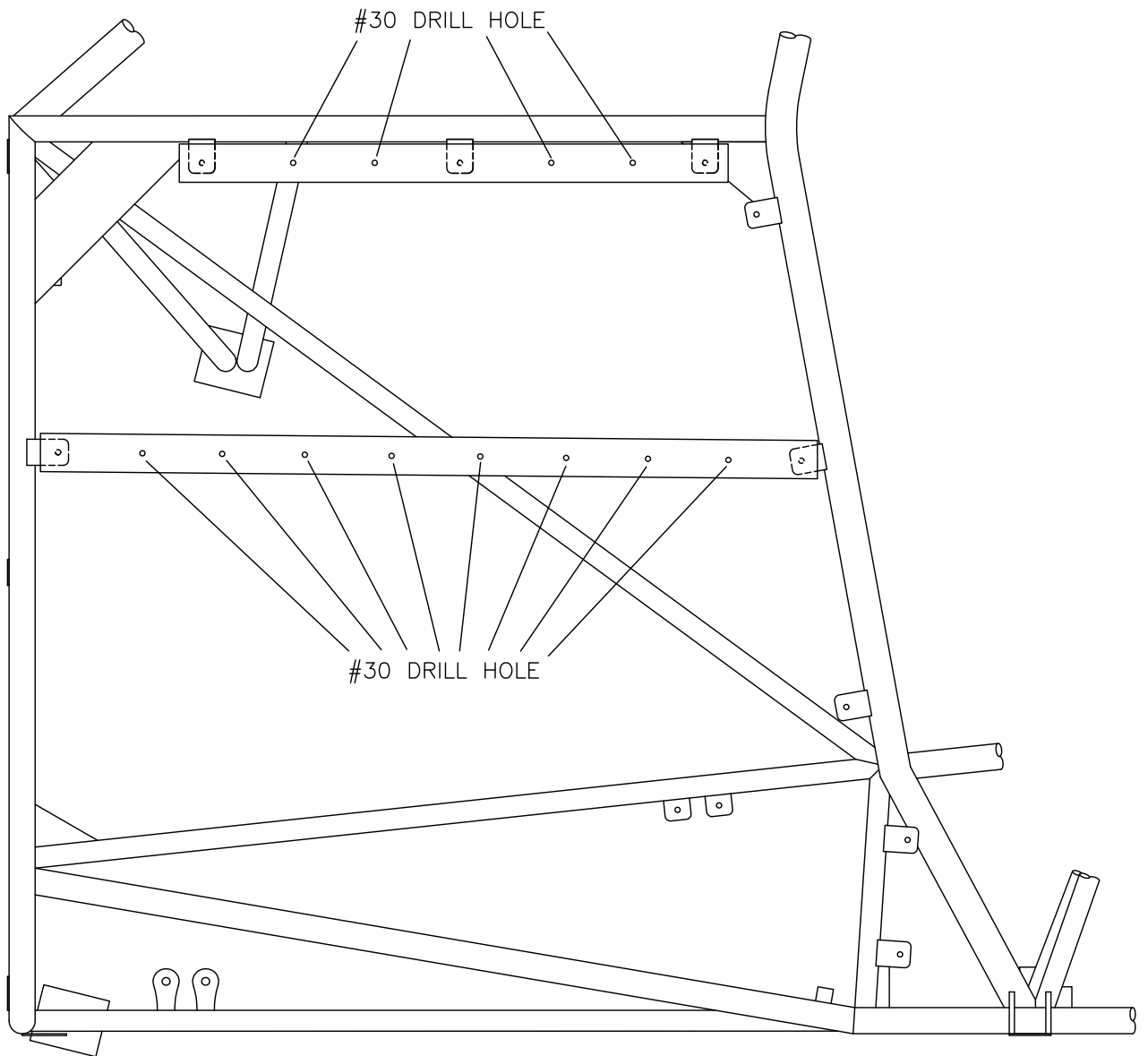
RAMS S-20 RAVEN
BOOT COWL STIFFENER TRIMMING
FIGURE 06-08



MD5607
REV. A

RANS S-20 RAVEN
SIDE BOOT COWL INSTALLATION
FIGURE 06-11

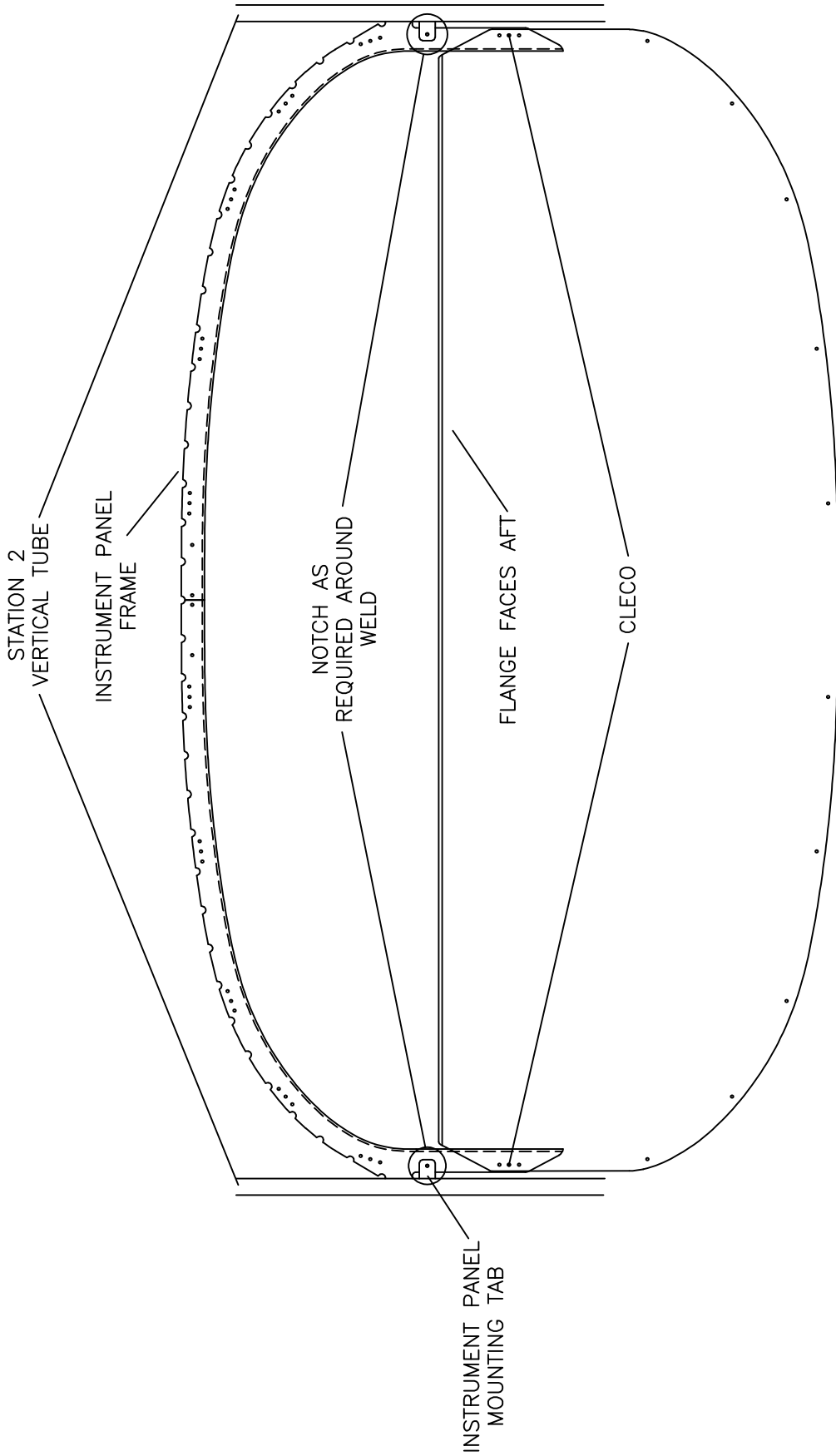
09/01/2013



MD5608
REV. A

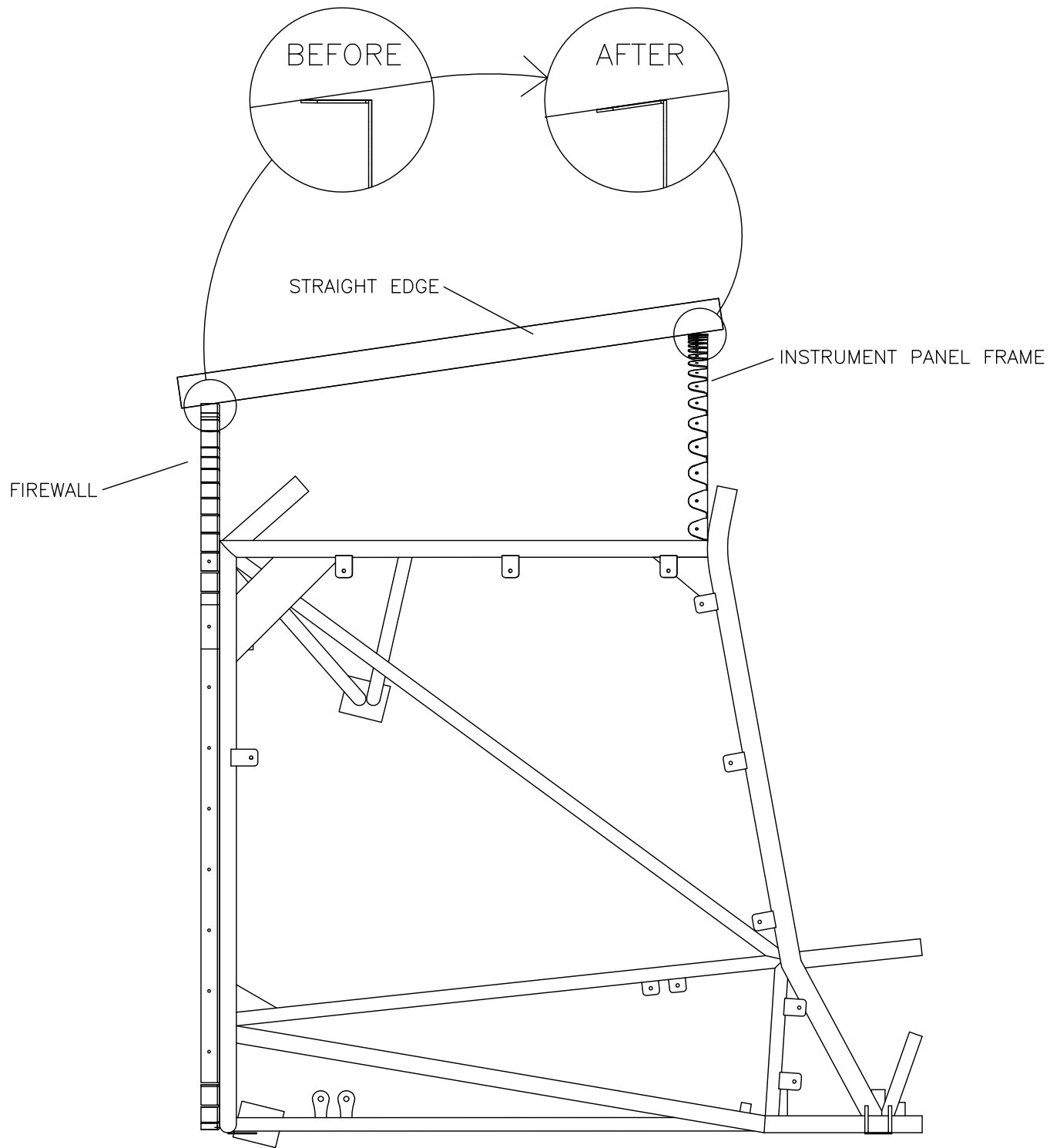
RANS S-20 RAVEN
SIDE BOOT COWL STIFFENER LOCATION
FIGURE 06-13

09/01/2013



MD5609
REV. - A

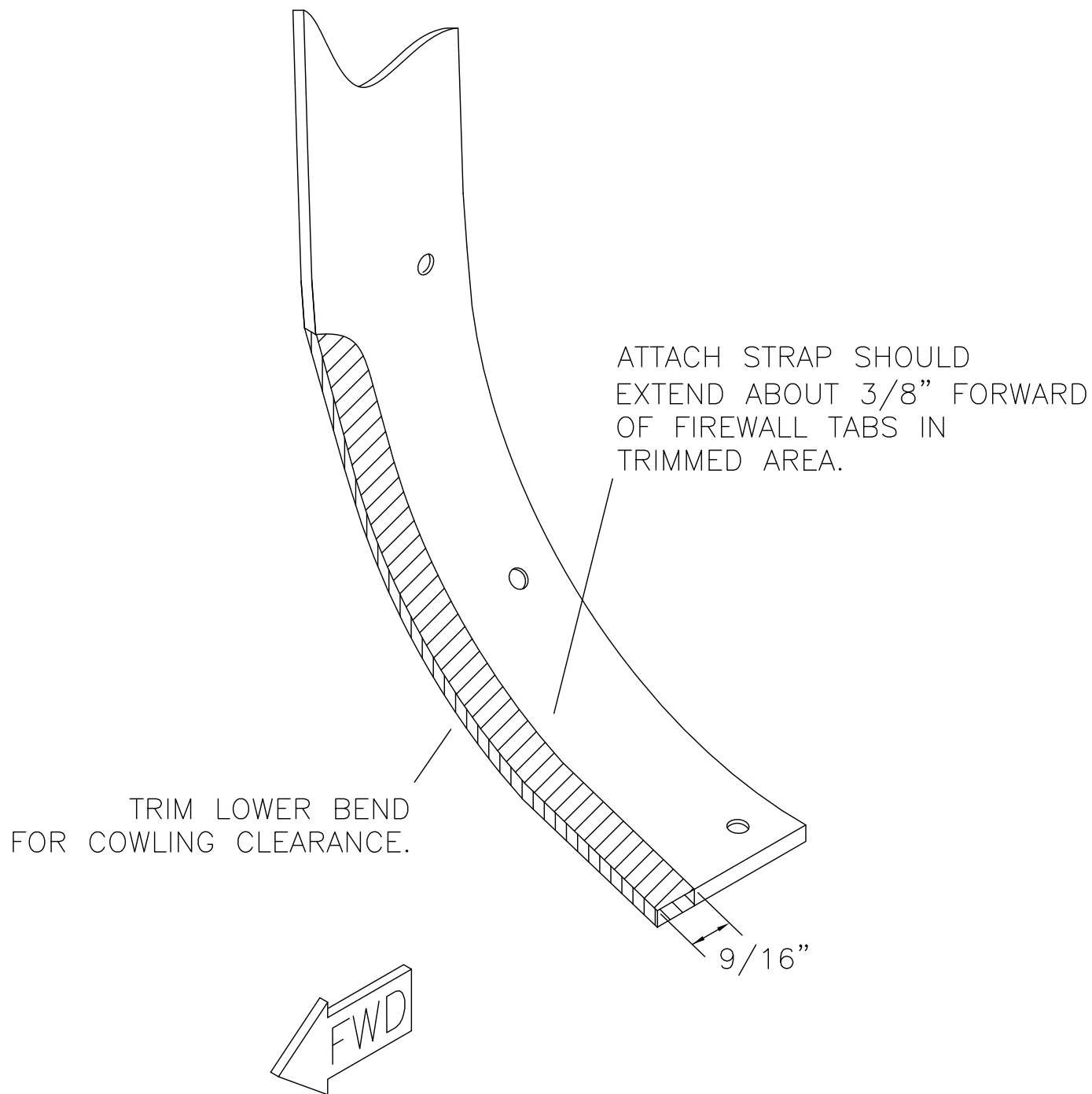
RRR S-20 RAVEN
INSTRUMENT PANEL INSTALLATION - BOOT COWL
FIGURE 06-18



MD5610
REV. A

RANS S-20 RAVEN
TAB ALIGNMENT
FIGURE 06-19

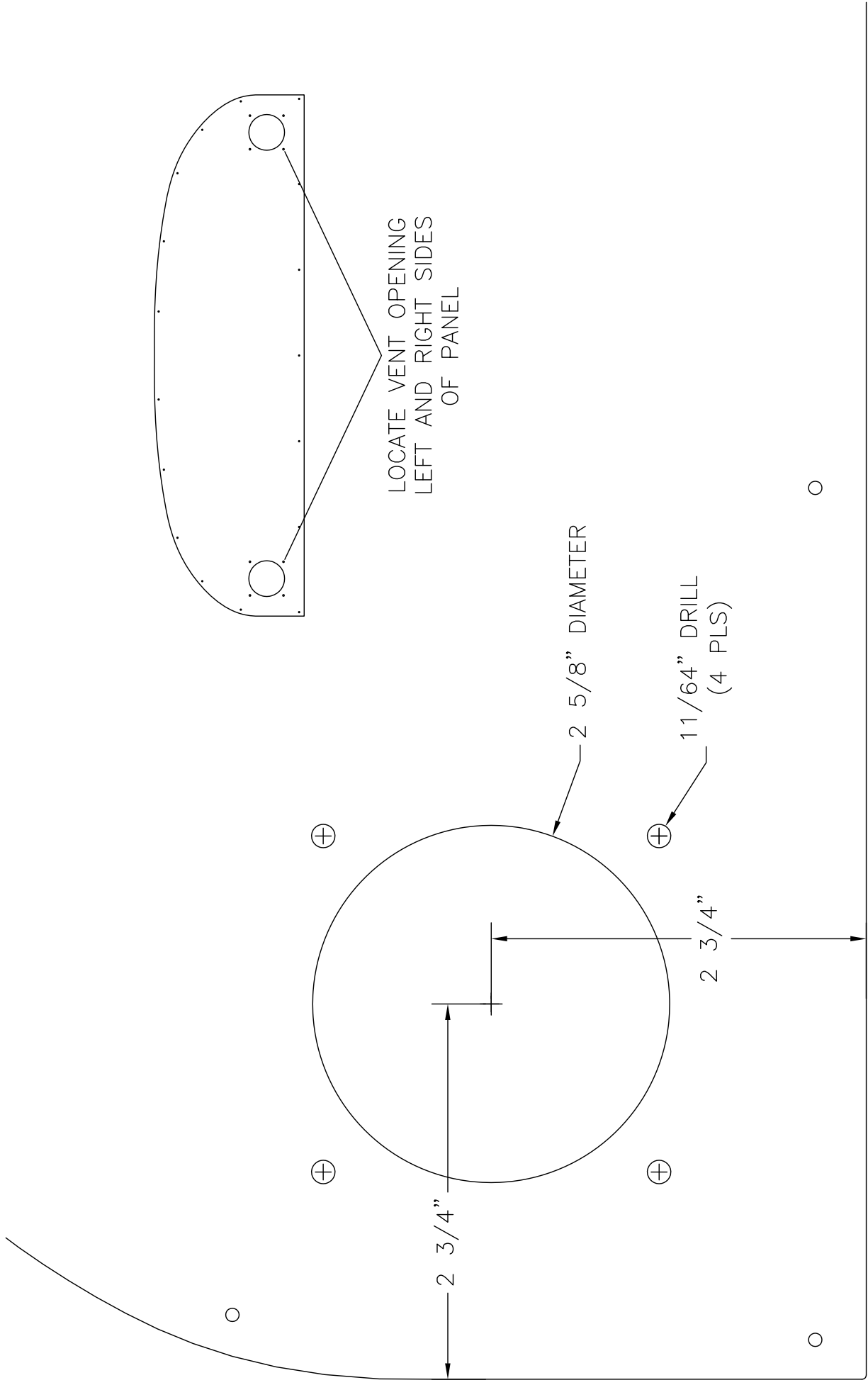
09/01/2013



MD5611
REV. - ORIG

RANS S-20 RAVEN
COWLING ATTACH STRAP TRIMMING
FIGURE 06-29

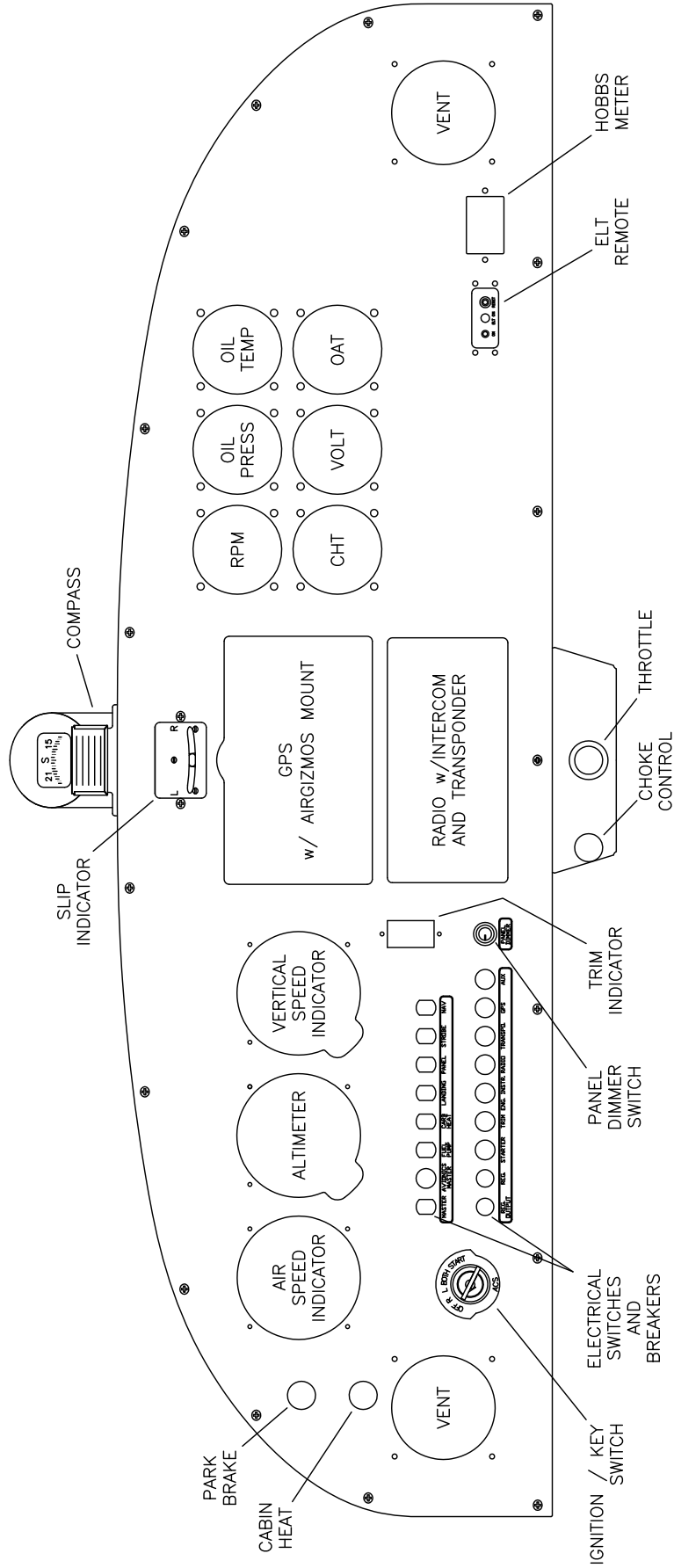
09/01/2013



PLOT 1:1

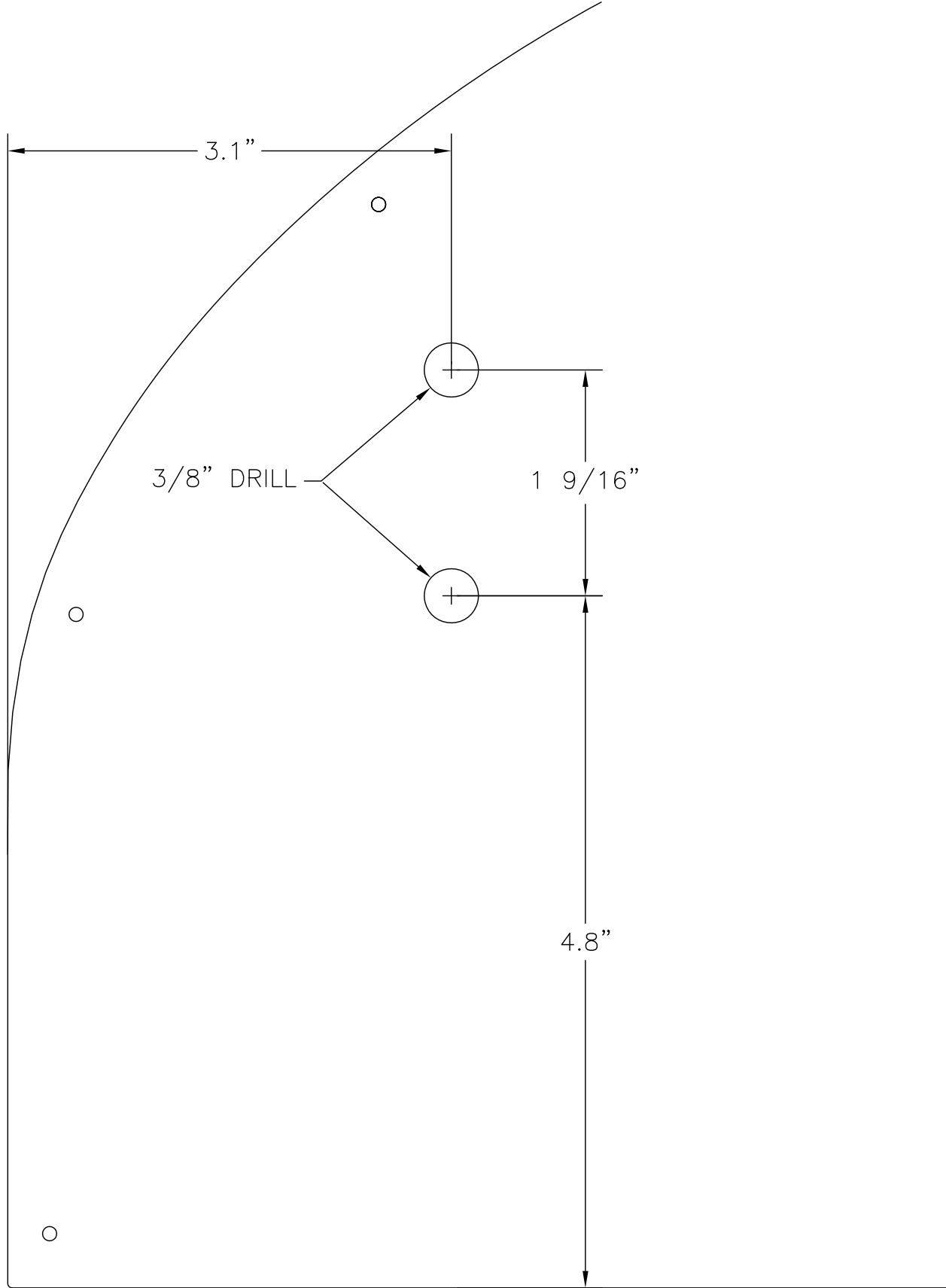
MD5618
REV. - ORIG

RRMO S-20 RAVEN
VENT SYSTEM - INSTRUMENT PANEL MODIFICATION
FIGURE 06-38



MD5618
REV. - ORIG

RAVEN S-20 RAVEN
SAMPLE INSTRUMENT PANEL LAYOUT
FIGURE 06A-01

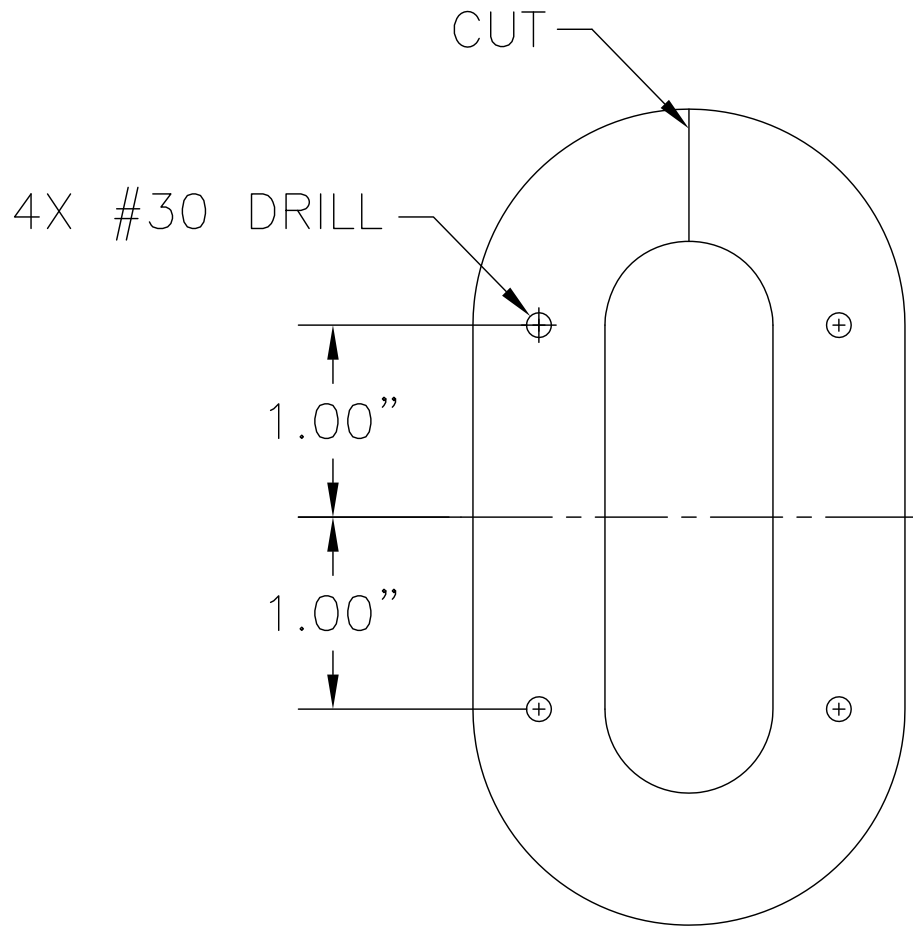


PLOT 1:1

MD5618
REV. - ORIG

RANS S-20 RAVEN
CONTROL CABLE - INSTRUMENT PANEL
FIGURE 06A-02

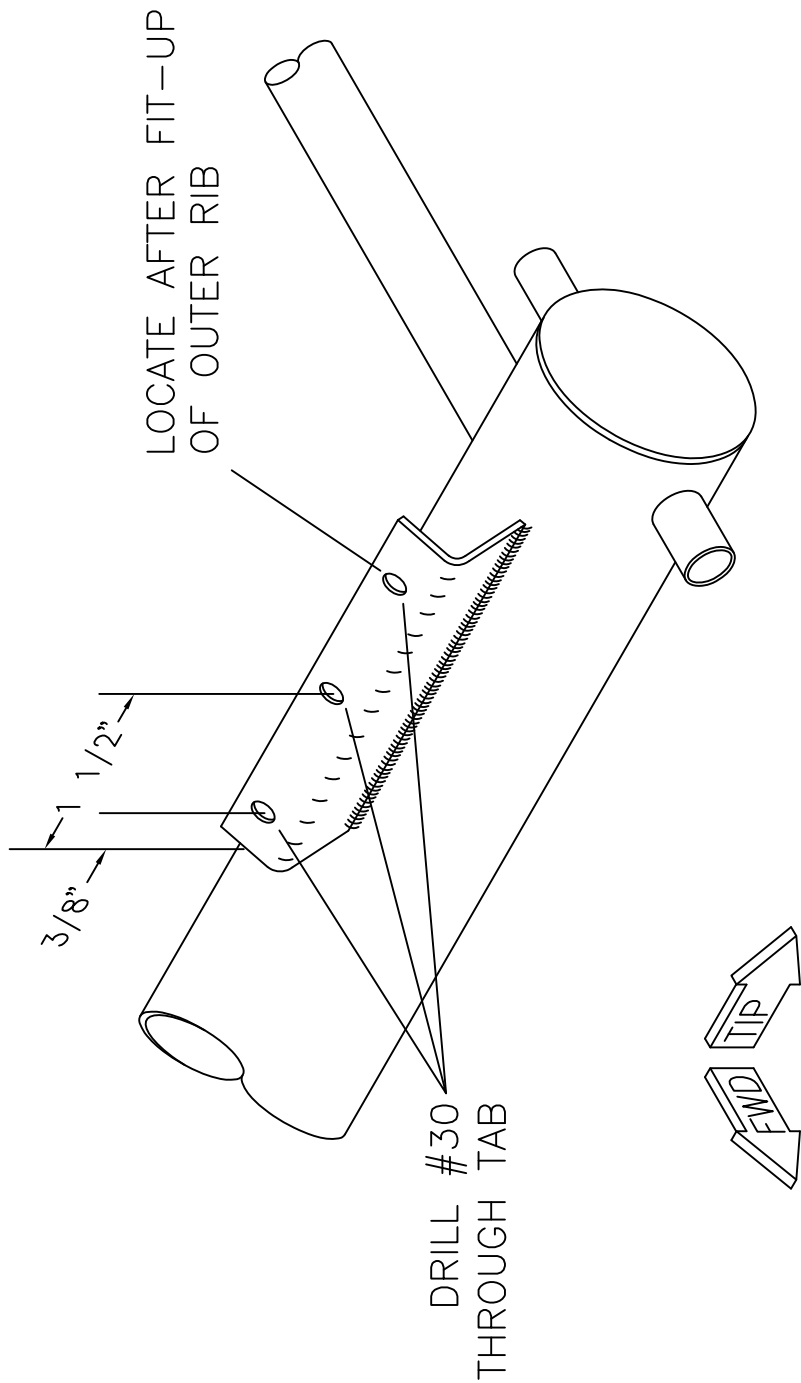
09/01/2013



MD5118
REV. A

RANS S-20 RAVEN
OVAL GLARE SHIELD RING MODIFICATION
FIGURE 06A-08

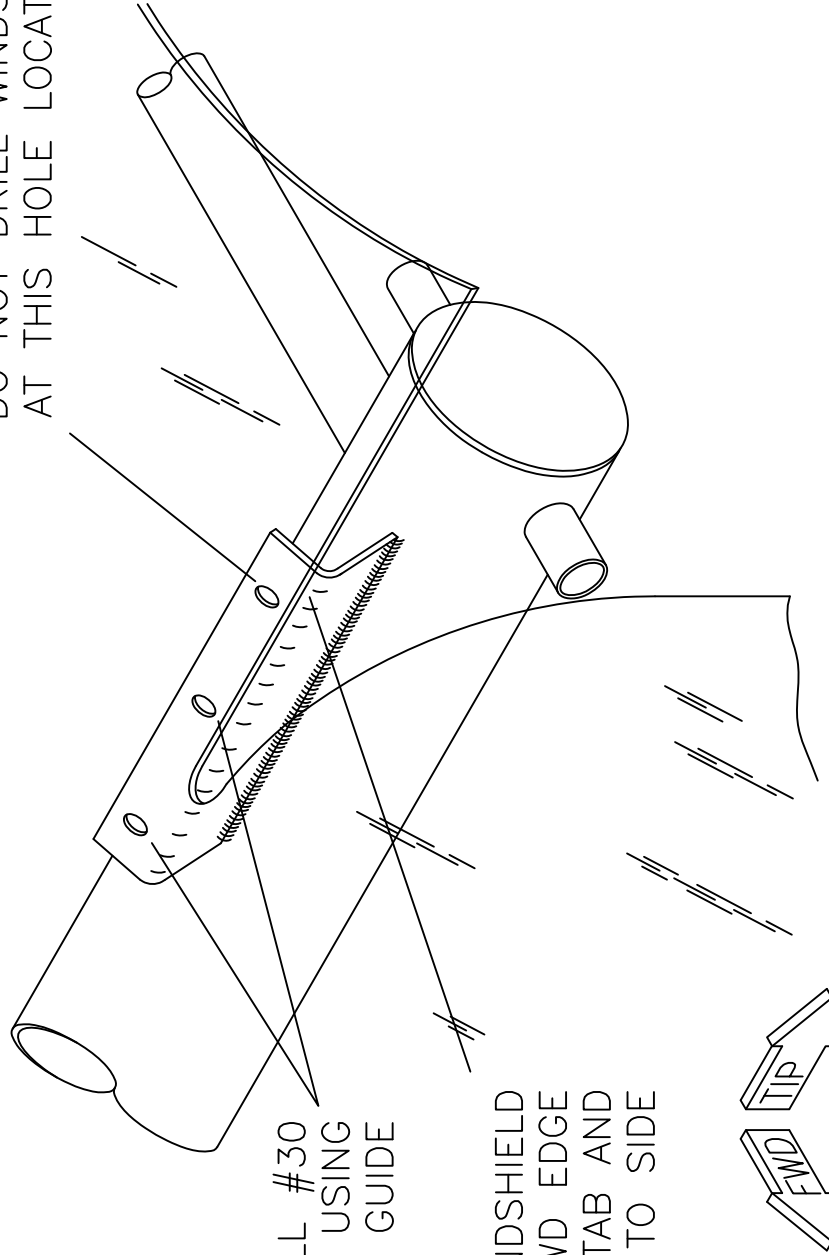
12/29/2016



MD4408
REV. - ORIG

RAM S-20 RAVEN
WINDSHIELD MOUNTING TAB MODIFICATION
FIGURE 07-02

DO NOT DRILL WINDSHIELD
AT THIS HOLE LOCATION

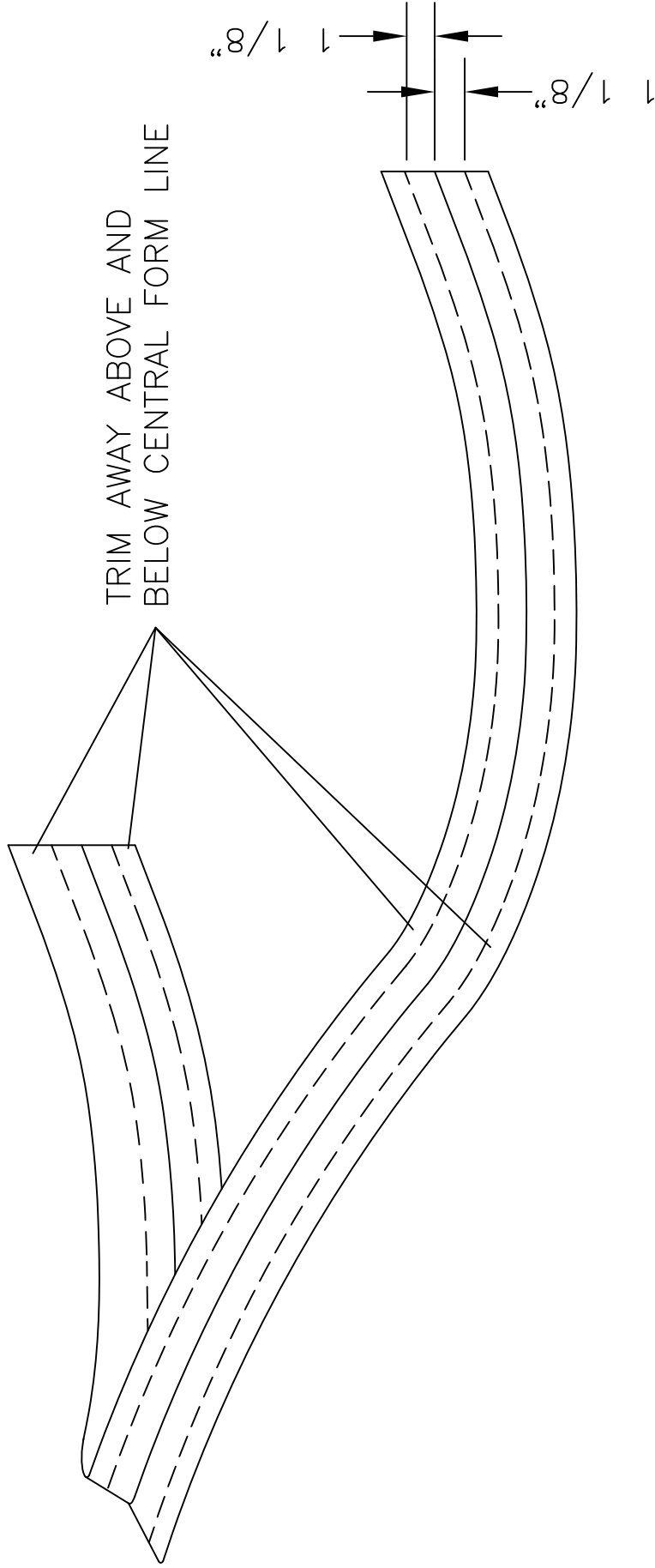


DRILL #30
THROUGH WINDSHIELD USING
TAB HOLES AS GUIDE

FWD. EDGE OF WINDSHIELD
FLUSH WITH FWD EDGE
OF TAB AND
CENTERED SIDE TO SIDE

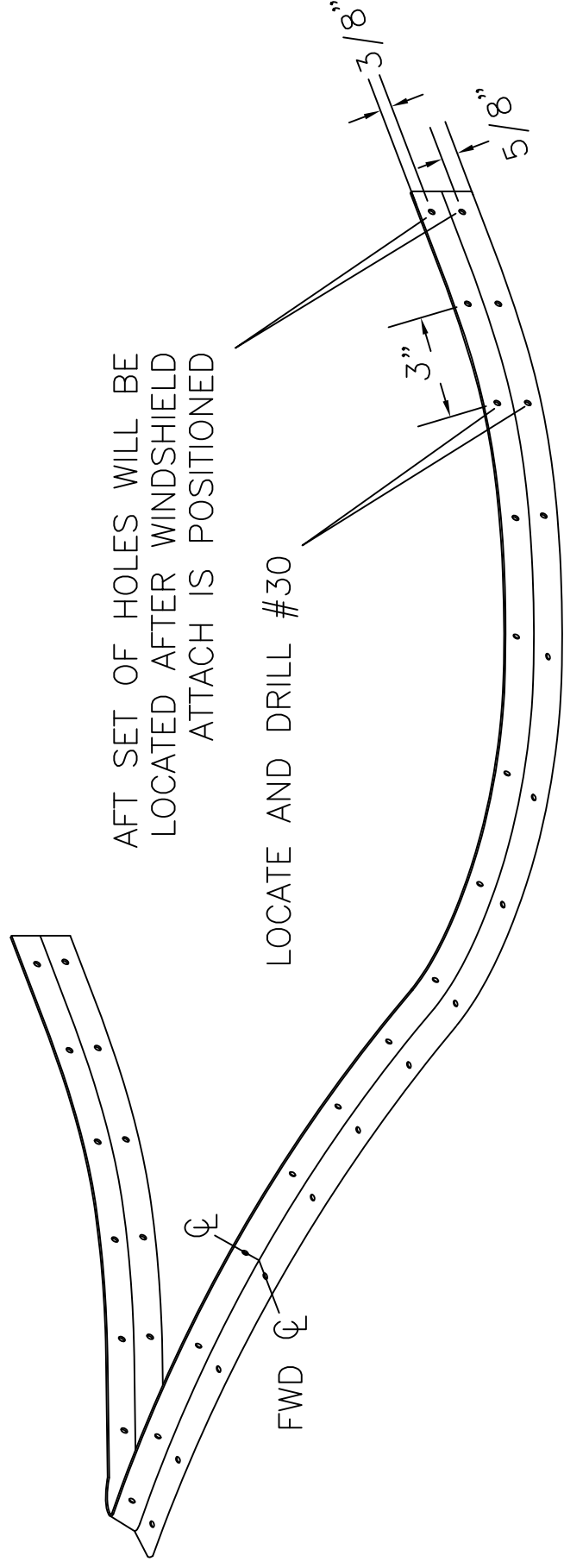
MD4408
REV. - ORIG

RAVEN S-20 RAVEN
WINDSHIELD LOCATION
FIGURE 07-03



MD4408
REV. - ORIG

RAMS S-20 RAVEN
WINDSHIELD HOLD DOWN STRIP MODIFICATION
FIGURE 07-05



AFT SET OF HOLES WILL BE
 LOCATED AFTER WINDSHIELD
 ATTACH IS POSITIONED

LOCATE AND DRILL #30

FWD

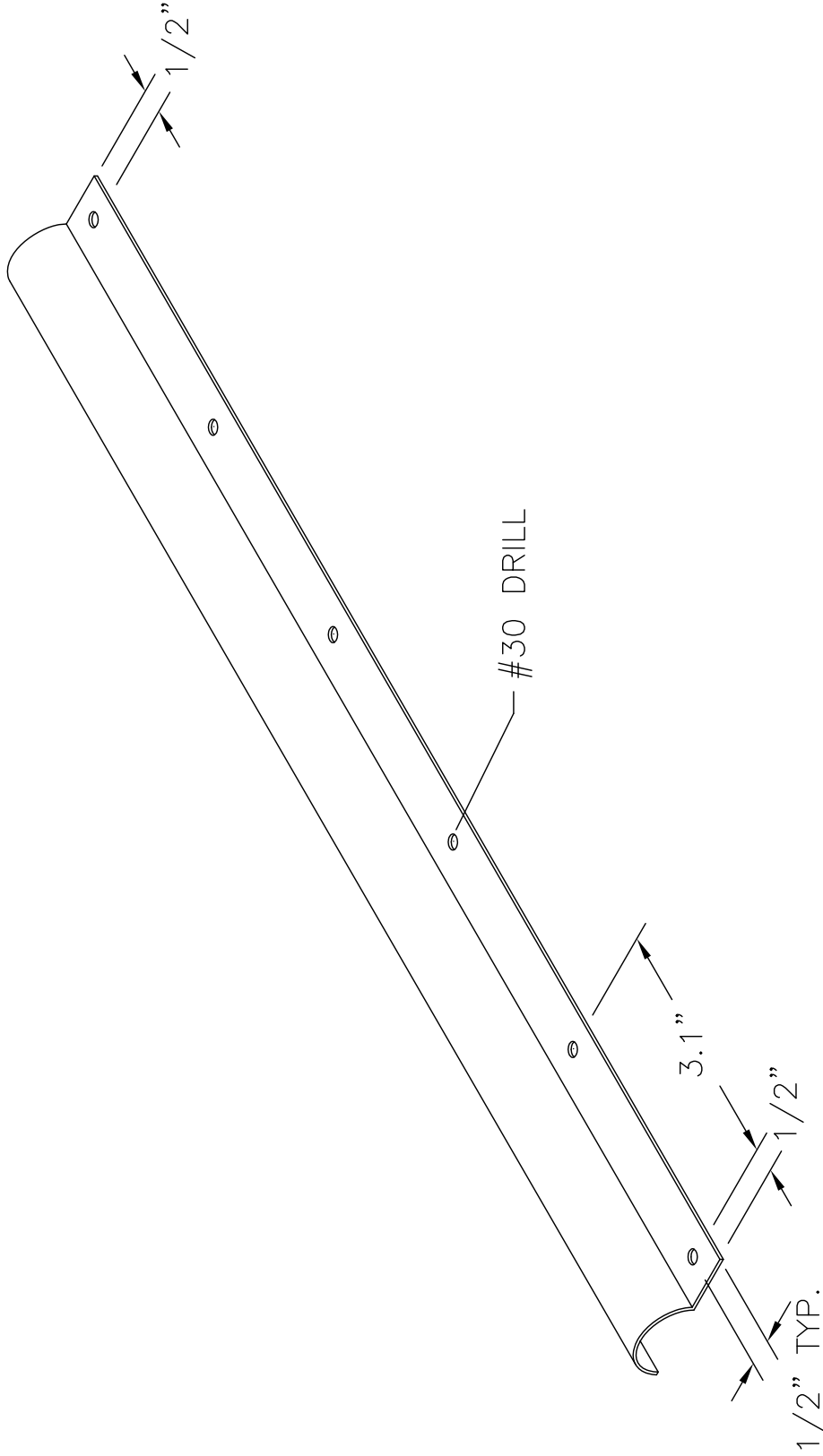
3/8"

3"

5/8"

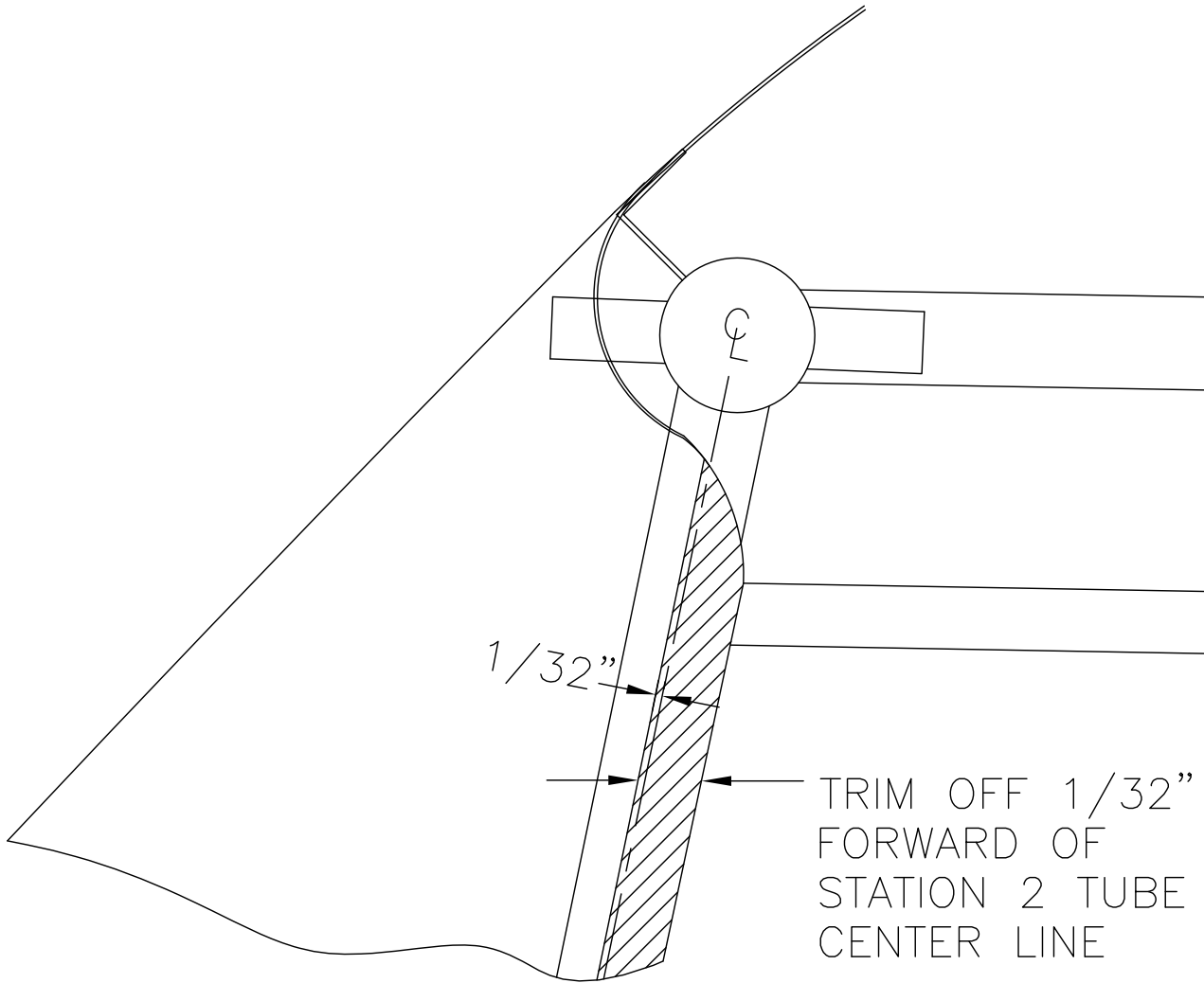
MD4408
 REV. - ORIG

RAVEN S-20 RAVEN
 WINDSHIELD HOLD DOWN STRIP DRILLING
 FIGURE 07-06



MD1428
REV. - ORIG

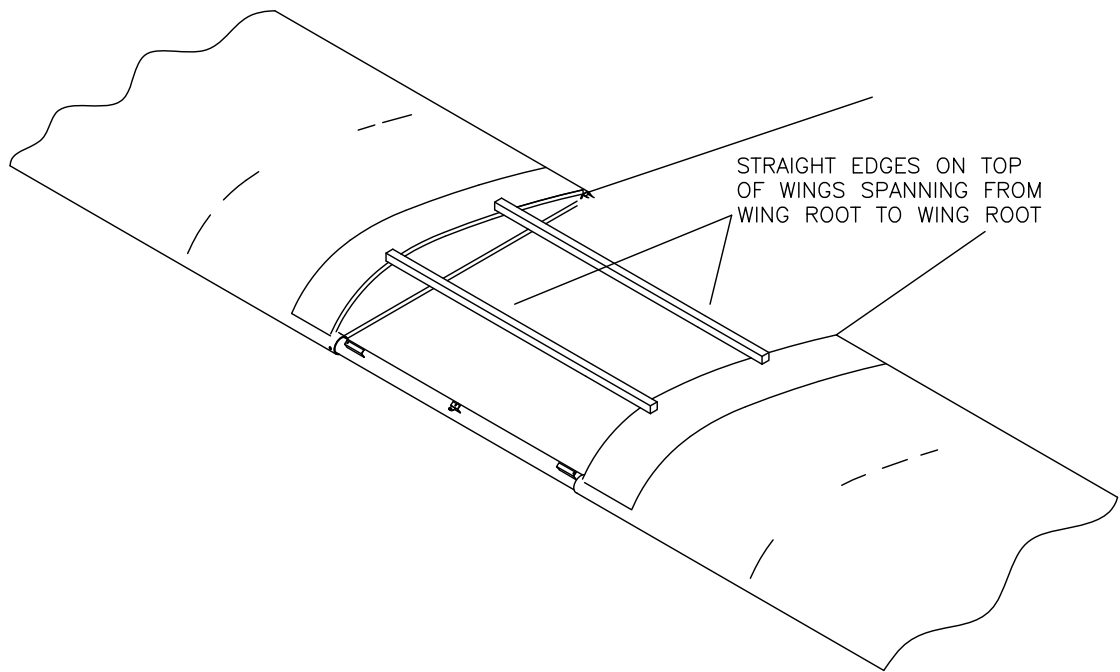
RAVEN S-20 RAVEN
WINDSHIELD ATTACH MODIFICATION
FIGURE 07-07



MD1428
REV. - ORIG

RANS S-20 RAVEN
WINDSHIELD TRIMMING
FIGURE 07-08

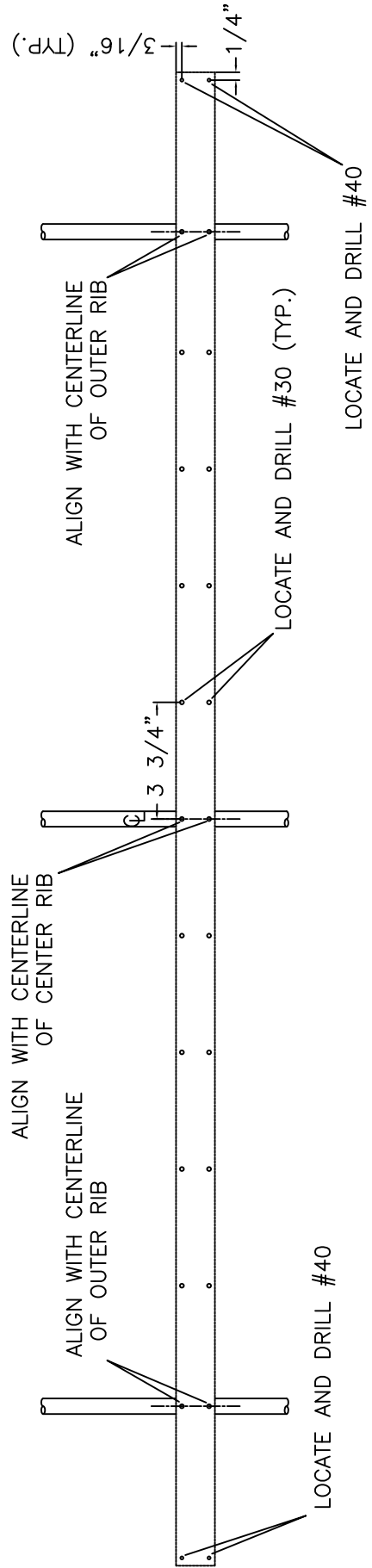
09/01/2013



MD3354
REV. - ORIG

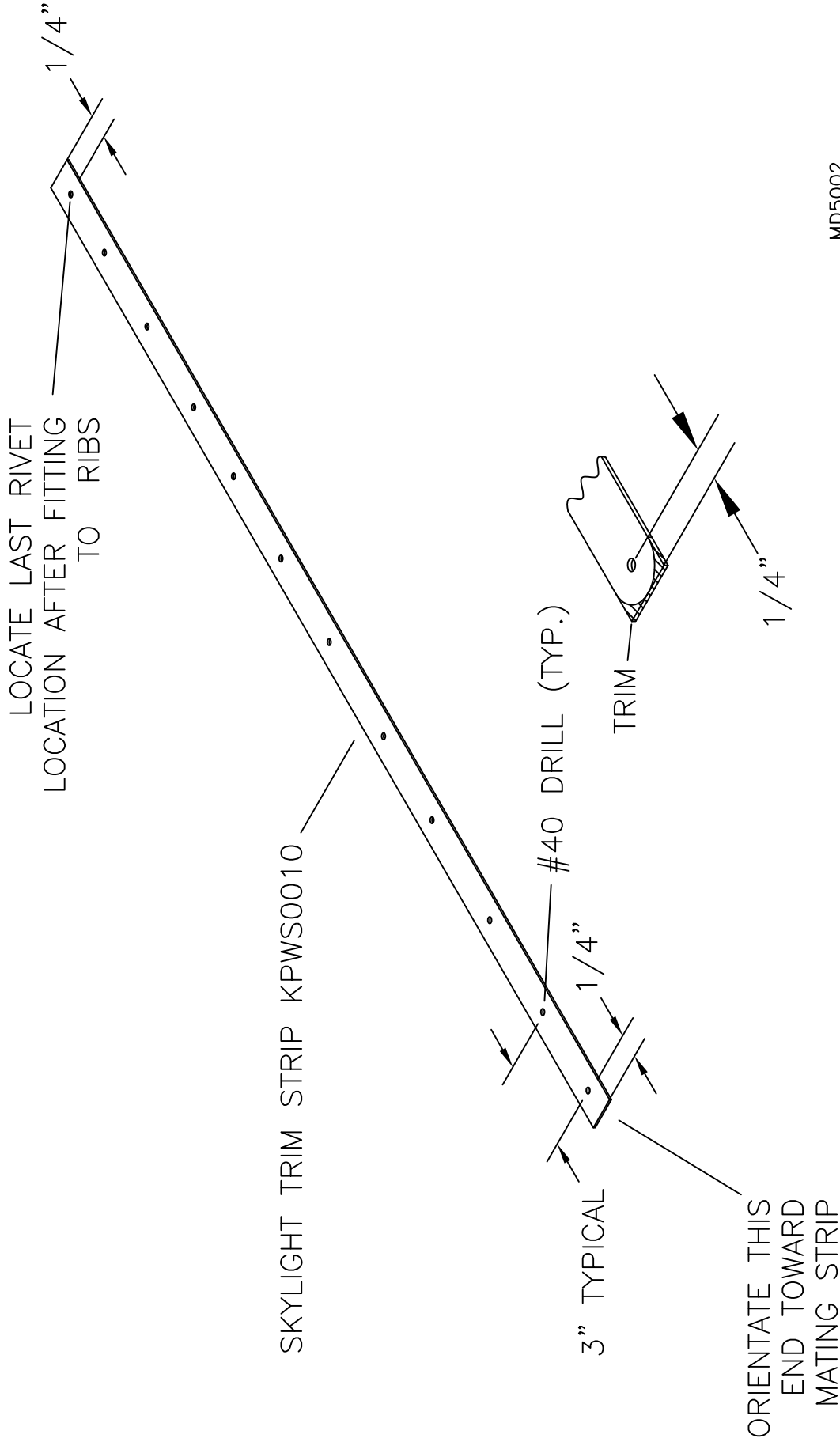
RANS S-20 RAVEN
RIB HEIGHT ADJUSTMENT - FUSELAGE
FIGURE 07-11

09/01/2013



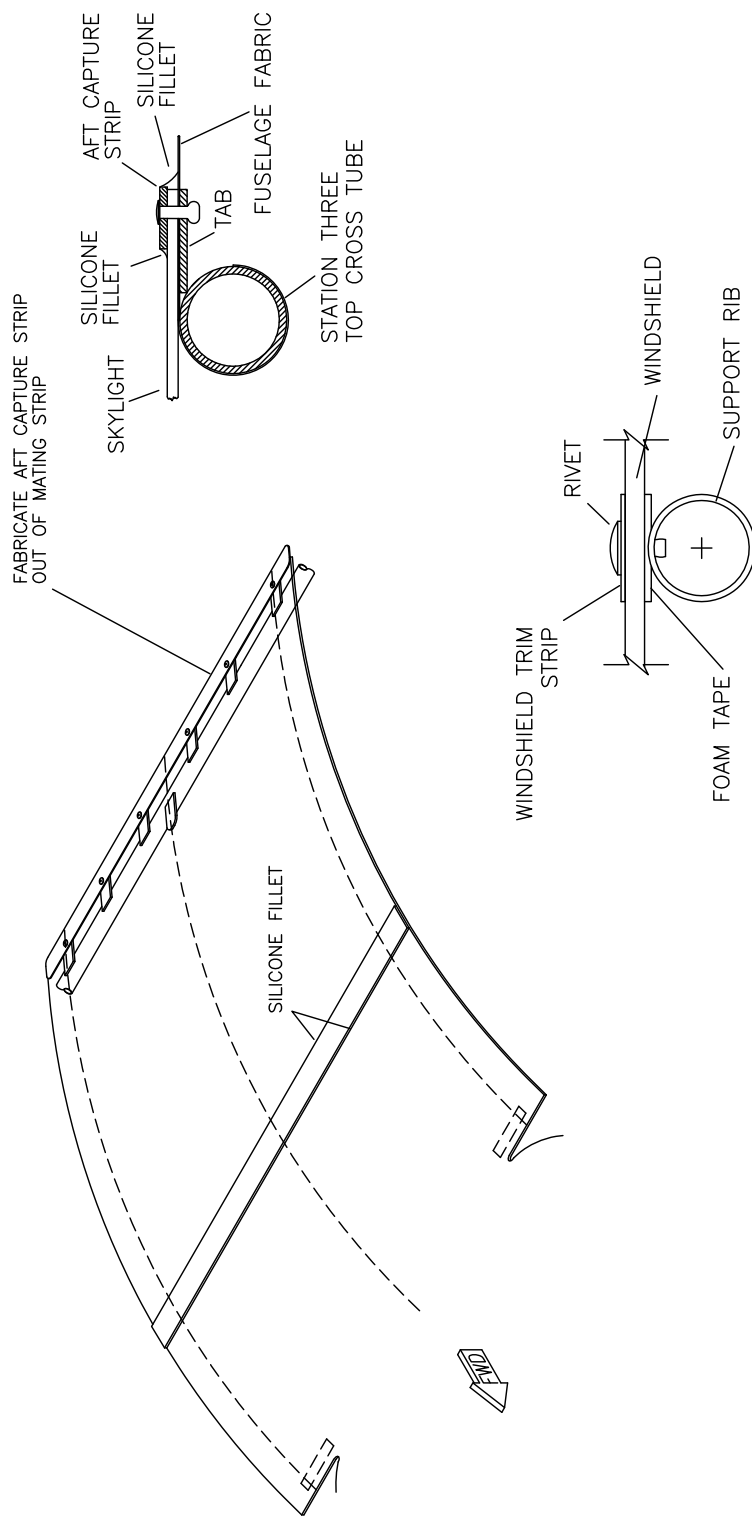
MD5576
REV. - ORIG

RRMS S-20 RAVEN
MATING STRIP MODIFICATION
FIGURE 07-20



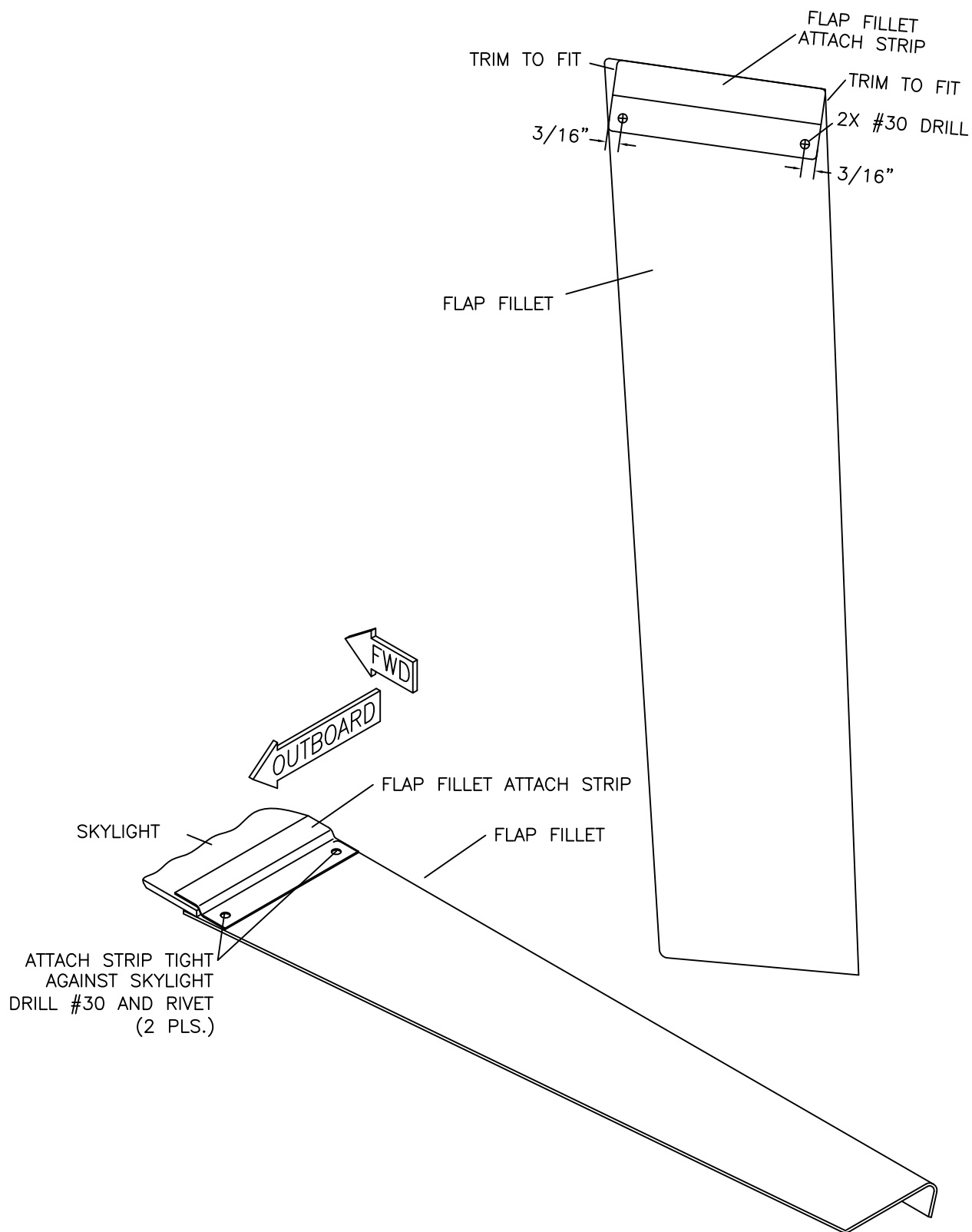
MD5002
REV. - ORIG

RAVEN S-20 RAVEN
SKYLIGHT TRIM STRIP MODIFICATION
FIGURE 07-25



MD2580
REV. - ORIG

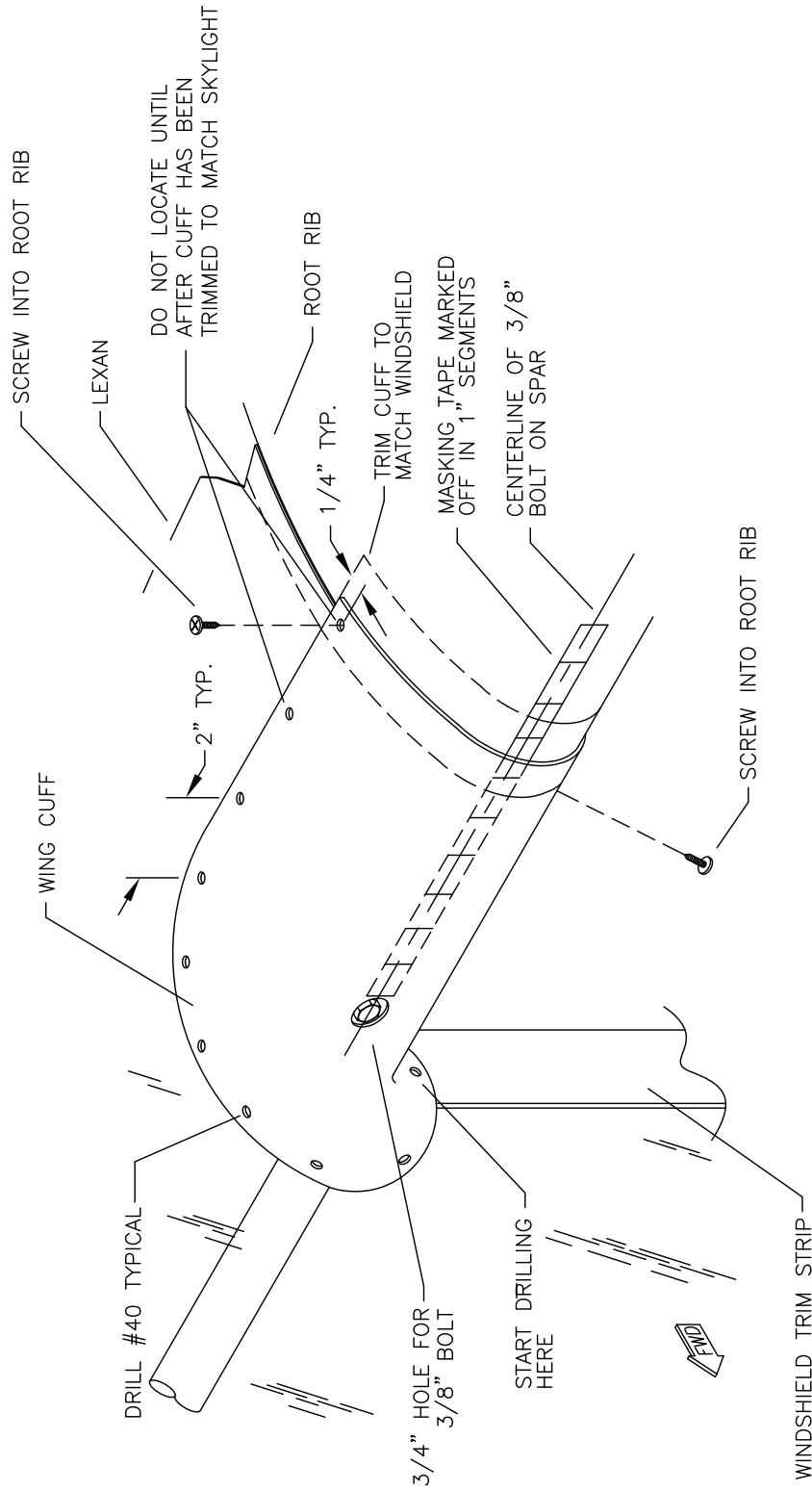
RAVEN S-20 RAVEN
WINDSHIELD - TOP DETAIL
FIGURE 07-32



MD5083
REV. - ORIG

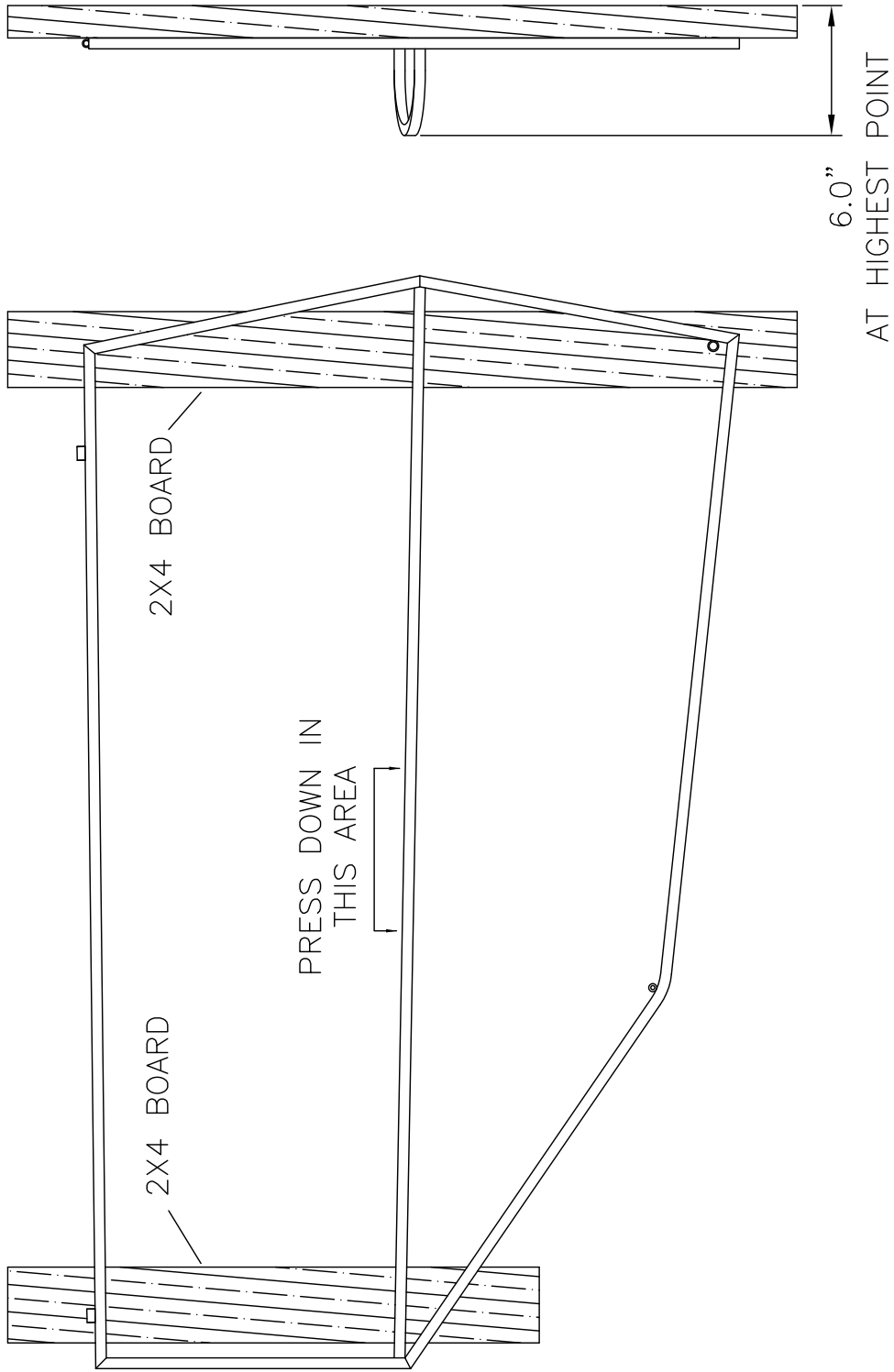
RANS S-20 RAVEN
FLAP FILLET MODIFICATION
FIGURE 07-33

09/01/2013



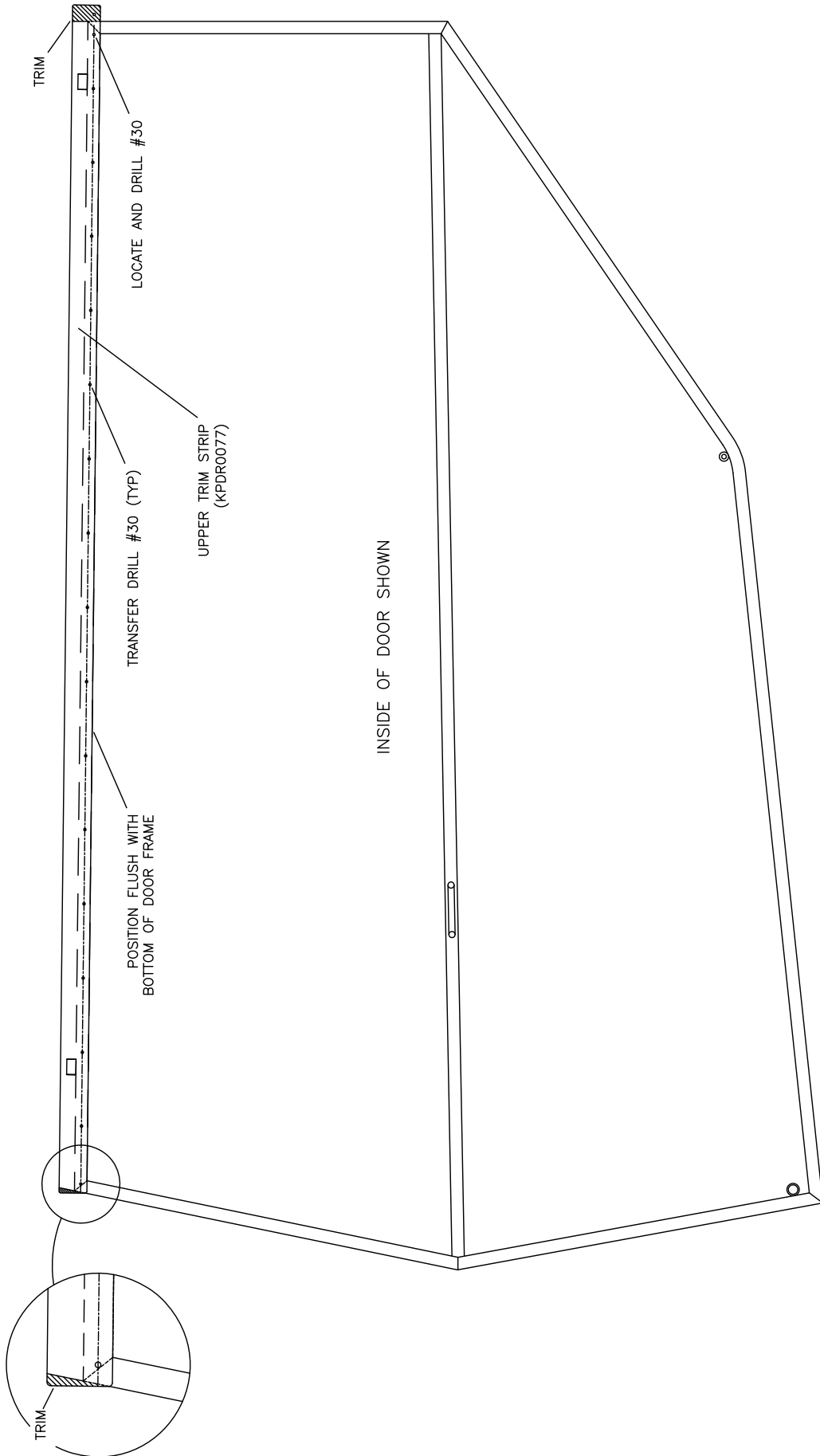
MD571
REV. - ORIG

RAVEN S-20 RAVEN
WING CUFF INSTALLATION
FIGURE 07-39



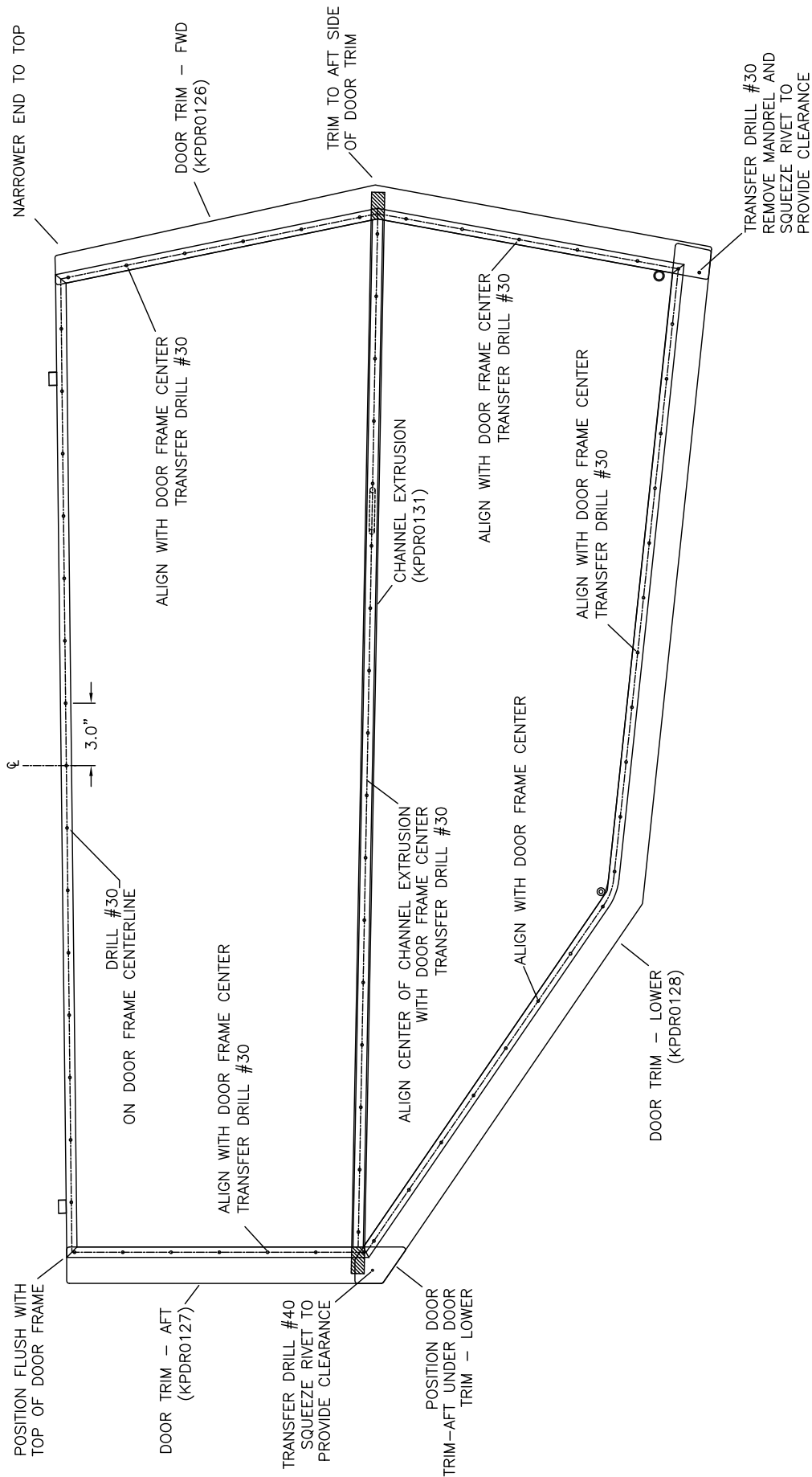
MD5621
REV. A

RAVEN S-20 RAVEN
DOOR FRAME CHECK
FIGURE 07A-01



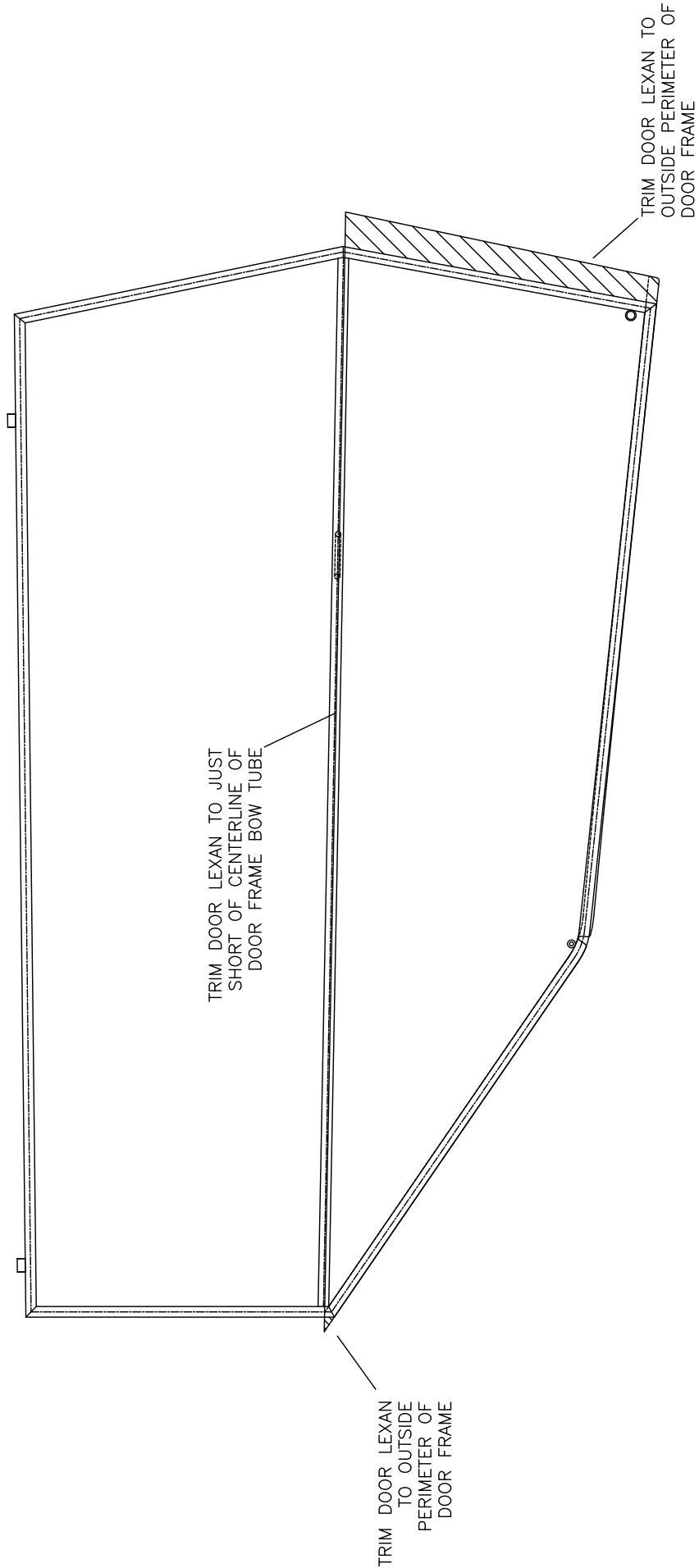
MD5621
REV. A

RAMS S-20 RAVEN
UPPER TRIM STRIP MODIFICATION
FIGURE 07A-03



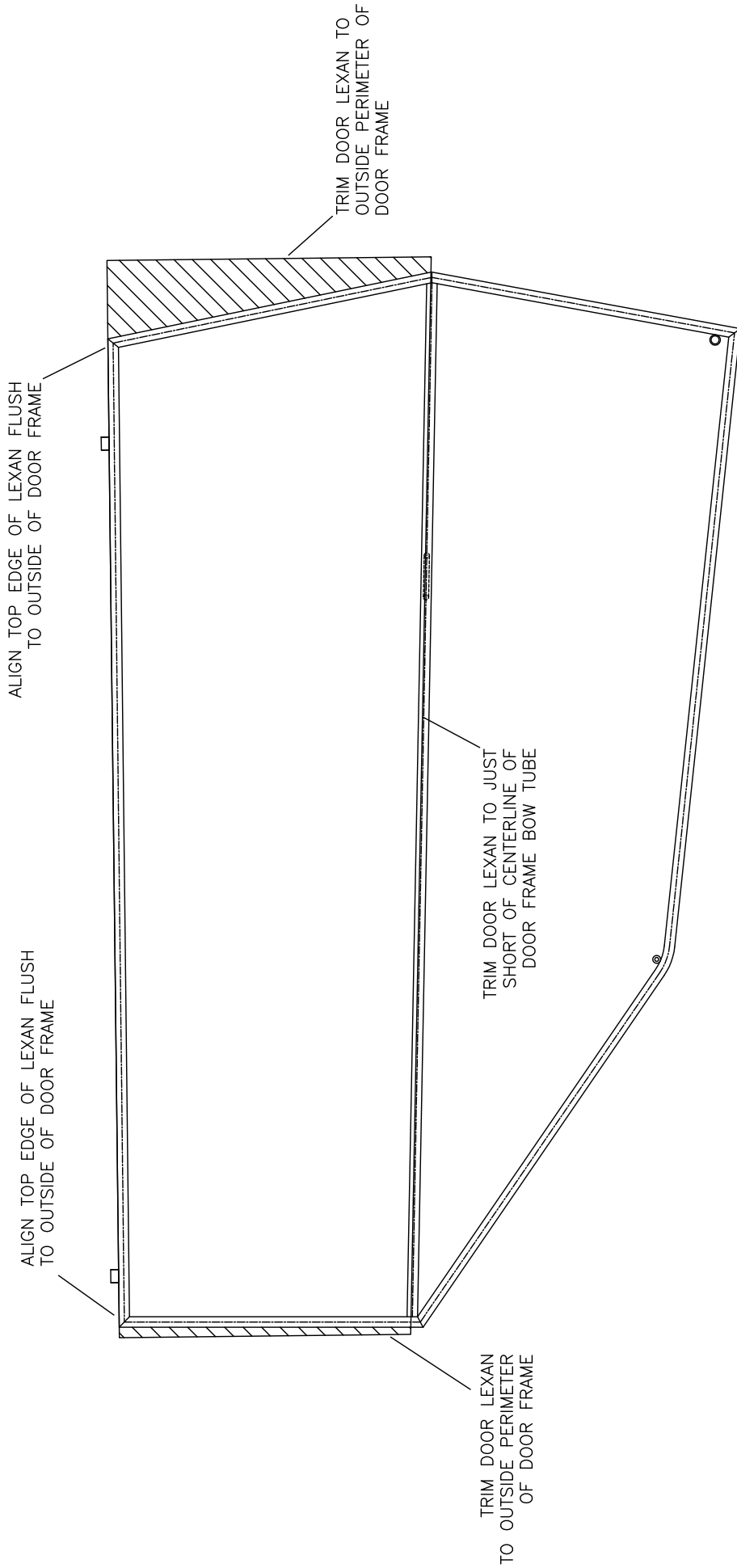
MD5621
REV. A

RAVEN S-20 RAVEN
DOOR TRIM ASSEMBLY
FIGURE 07A-04



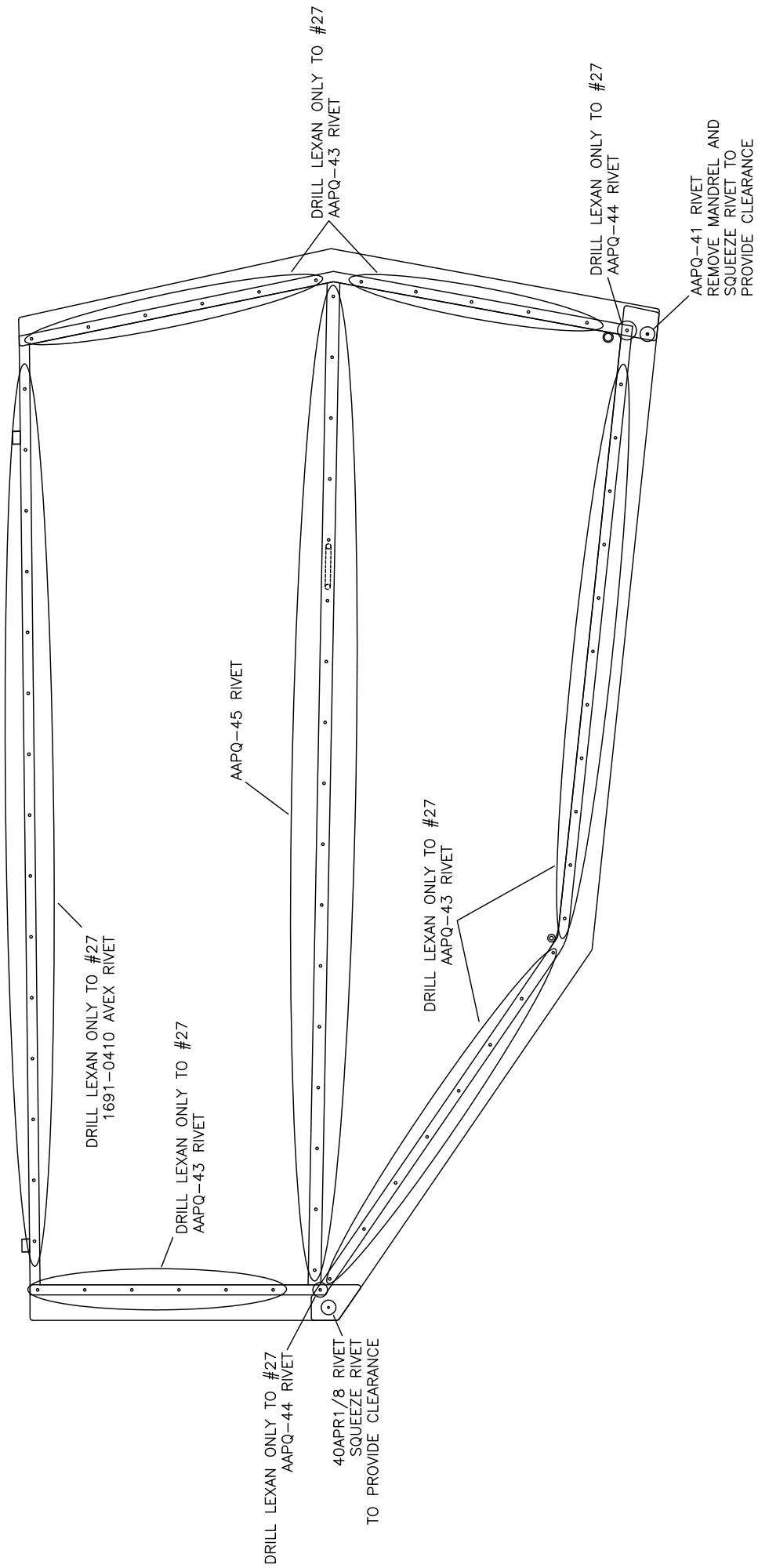
MD5621
REV. A

RAVEN S-20 RAVEN
LOWER DOOR LEXAN TRIMMING
FIGURE 07A-13



MD5621
REV. A

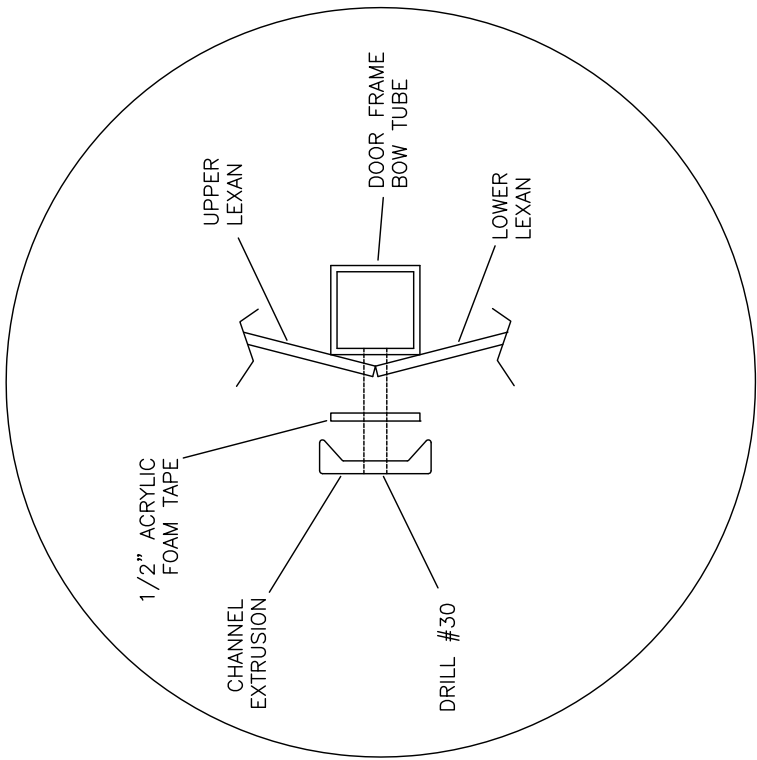
RAVEN S-20 RAVEN
UPPER DOOR LEXAN TRIMMING
FIGURE 07A-14



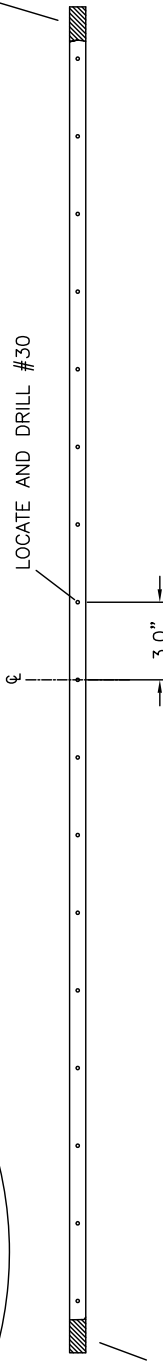
MD5621
REV. A

RAMS S-20 RAVEN
DOOR RIVETING
FIGURE 07A-17

09/01/2013



TRIM FWD EDGE TO MATCH
AFT EDGE OF DOOR TRIM

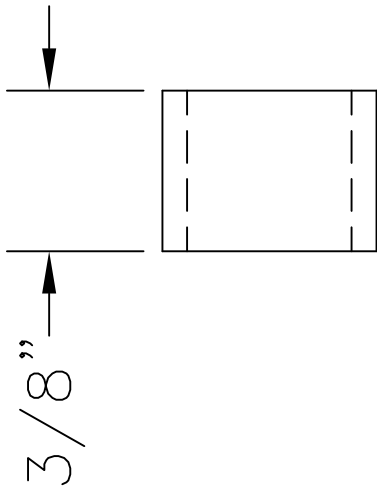


TRIM AFT EDGE TO MATCH
FWD EDGE OF DOOR TRIM

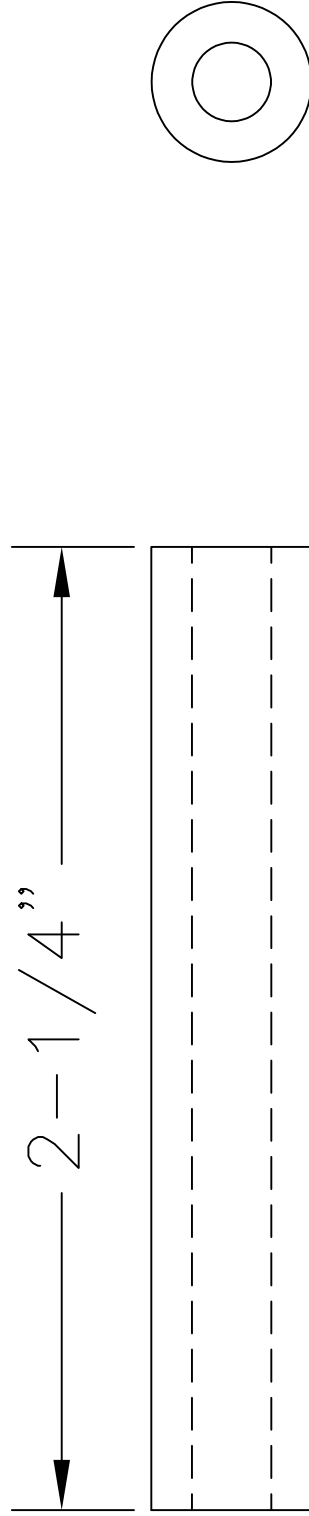


MD5621
REV. B

RAVEN S-20 RAVEN
CHANNEL EXTRUSION MODIFICATION
FIGURE 07A-18



DOOR SPACER BUSHING
 (FABRICATE 2 FROM KPAC0278)

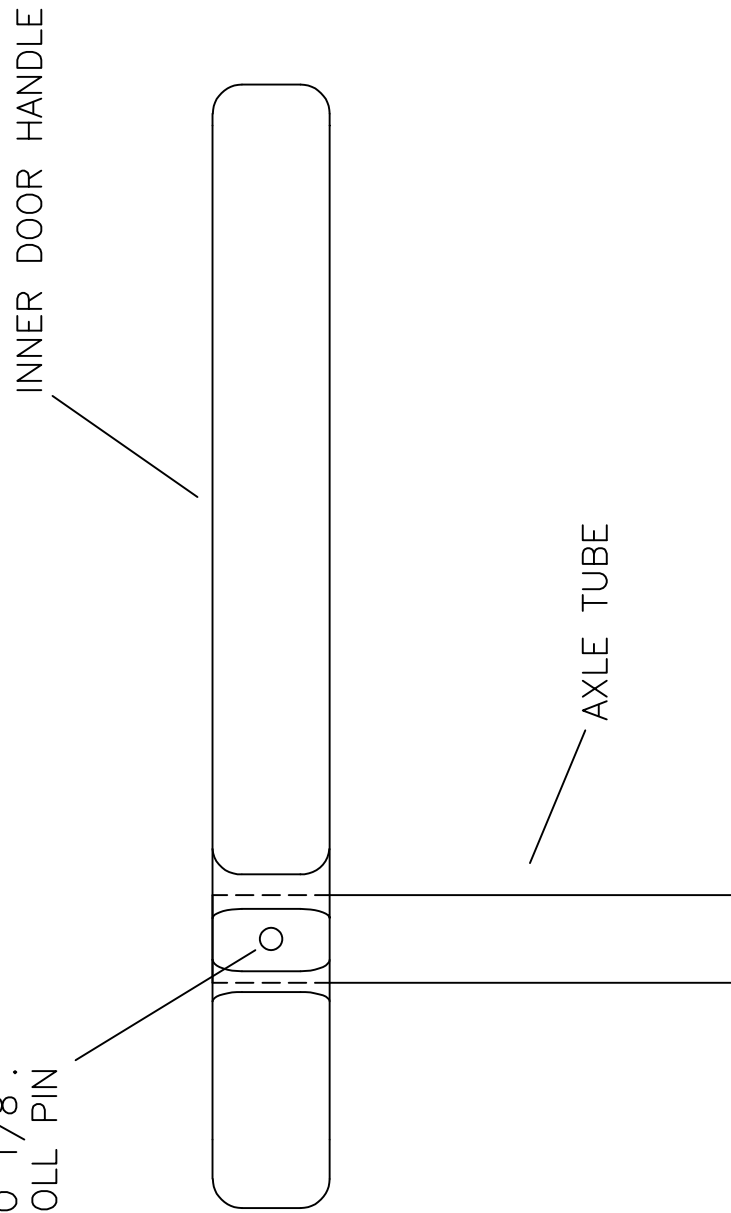


AXLE TUBE
 (FABRICATE 2 FROM KPST0132)

MD4404
 REV. ORIG

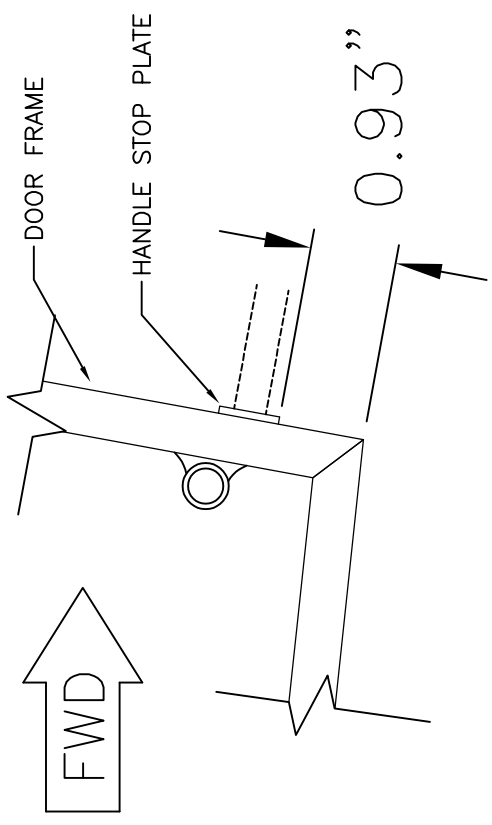
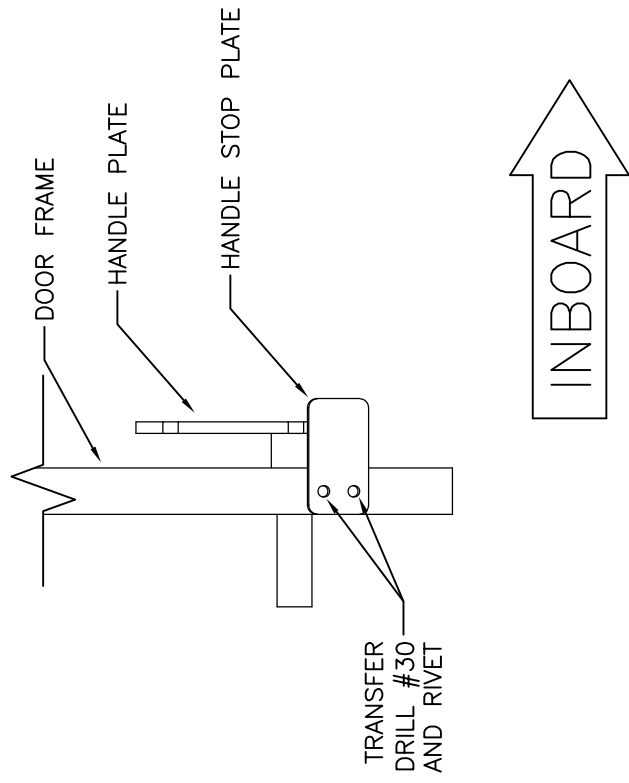
RAMBER S-20 RAVEN
 DOOR SPACER BUSHING & AXLE TUBE FABRICATION
 FIGURE 07A-25

INSERT AXLE TUBE INTO INNER
DOOR HANDLE UNTIL FLUSH.
TRANSFER DRILL HANDLE #40 FROM
BOTH SIDES.
FINAL SIZE DRILL TO 1/8".
INSTALL ROLL PIN



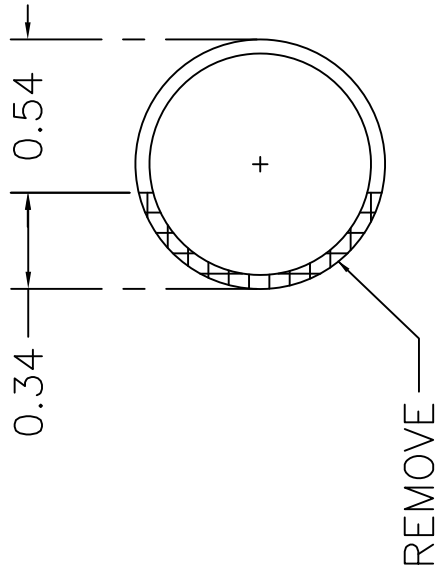
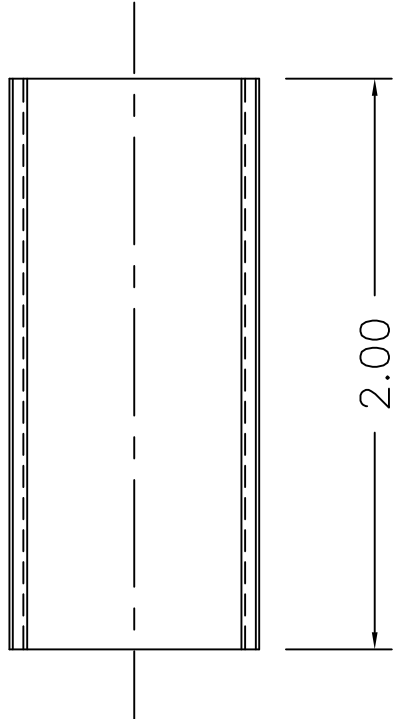
MD4404
REV. - ORIG

RAMBO S-20 RAVEN
INNER DOOR HANDLE DETAIL
FIGURE 07A-26



MD4404
REV. ORIG

RRR S-20 RAVEN
DOOR STOP PLATE LOCATION
FIGURE 07A-27



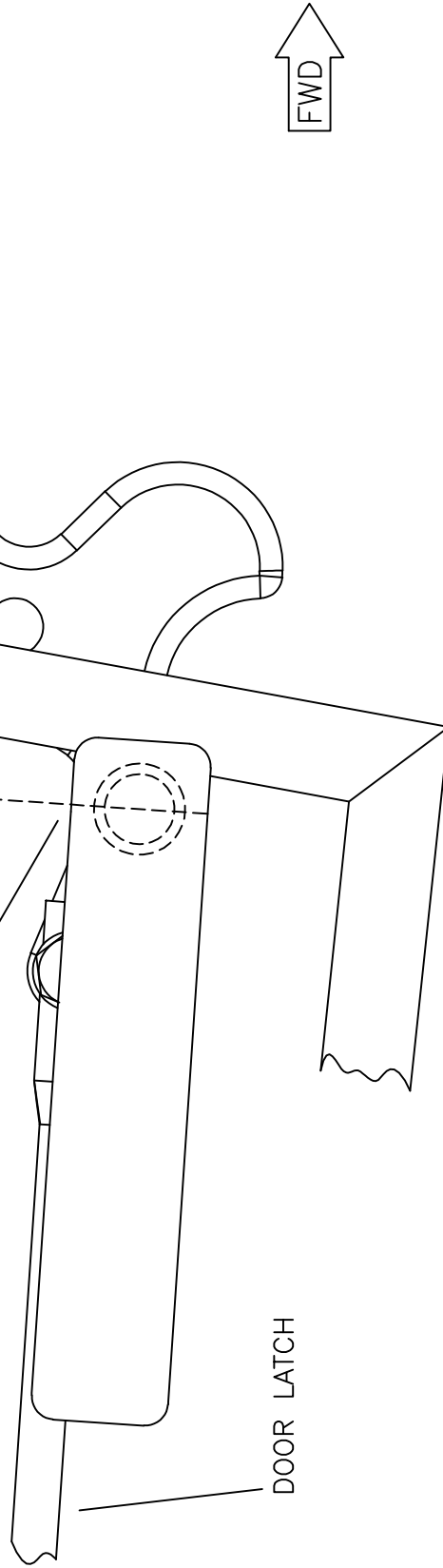
MD4404
REV. ORIG

RAMMS S-20 RAVEN
DOOR LATCH STRIKER PLATE MODIFICATION
FIGURE 07A-28

WITH INNER DOOR HANDLE IN
"CLOSED" POSITION, ALIGN OUTER
DOOR HANDLE WITH DOOR LATCH.
MAKE SURE DOOR IS TIGHT AGAINST
FRAME AND INNER HANDLE IS TIGHT
AGAINST STRIKER PLATE.

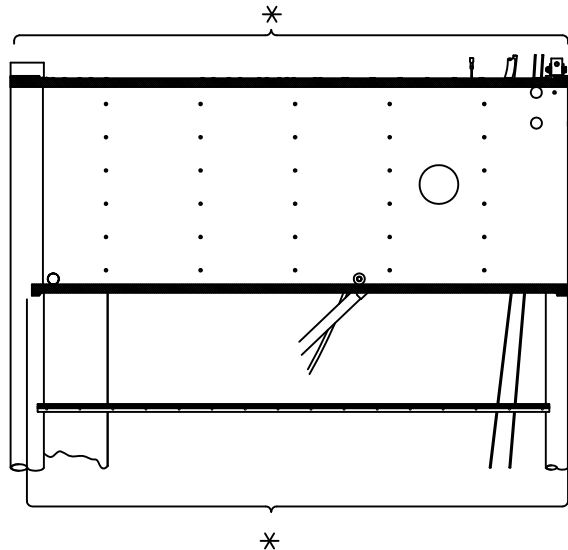
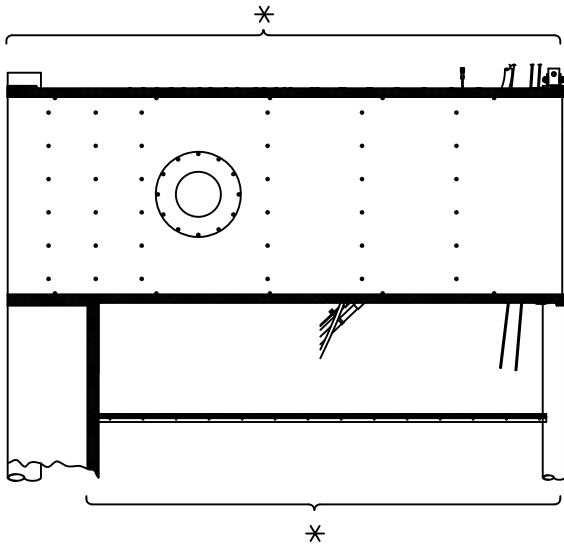
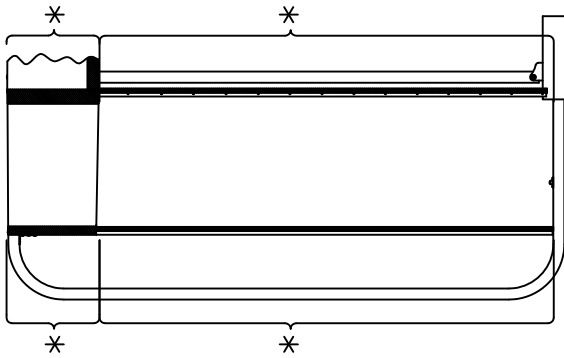
DRILL #40 THROUGH PRE-DRILLED
TOP AND BOTTOM HOLES IN OUTER
DOOR HANDLE.

FINAL SIZE DRILL TO 1/8".
INSTALL ROLL PIN.



MD4404
REV. A

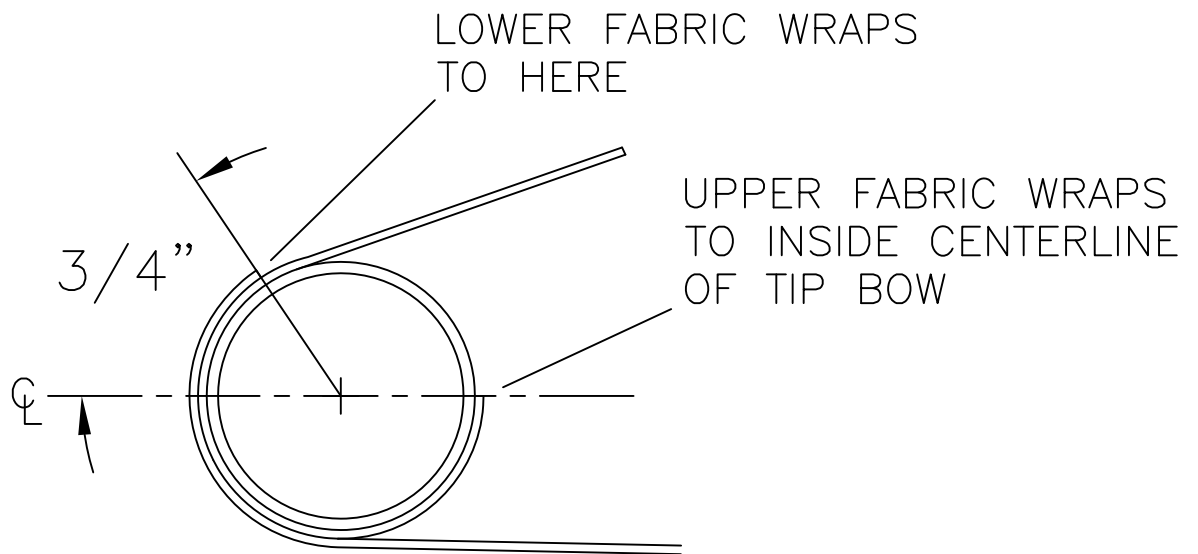
RAMS S-20 RAVEN
OUTER DOOR HANDLE DETAIL
FIGURE 07A-29



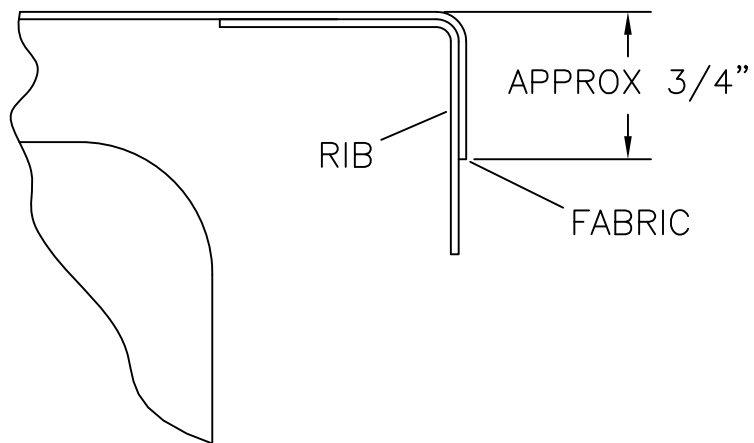
* APPLY ANTI-CHAFE TAPE
(3/4" MASKING TAPE) BEFORE COVERING
ALL SHARP METAL EDGES MUST RECEIVE
ANTI-CHAFE TAPE

RRR S-20 RAVEN
WING COVERING - ANTI-CHAFE TAPE
FIGURE 08A-04

MD4-362



WING TIP BOW DETAIL

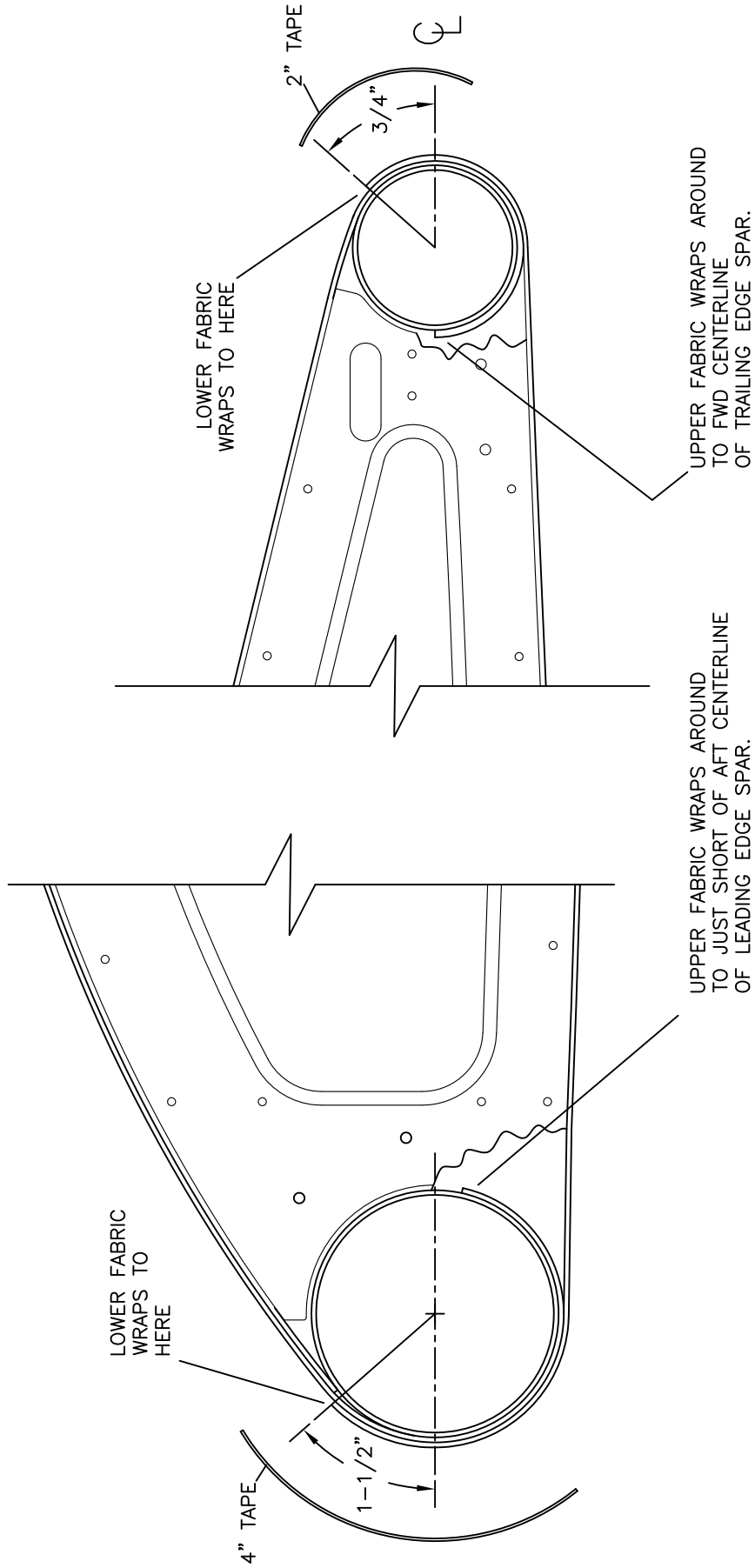


ROOT RIB DETAIL

MD4340

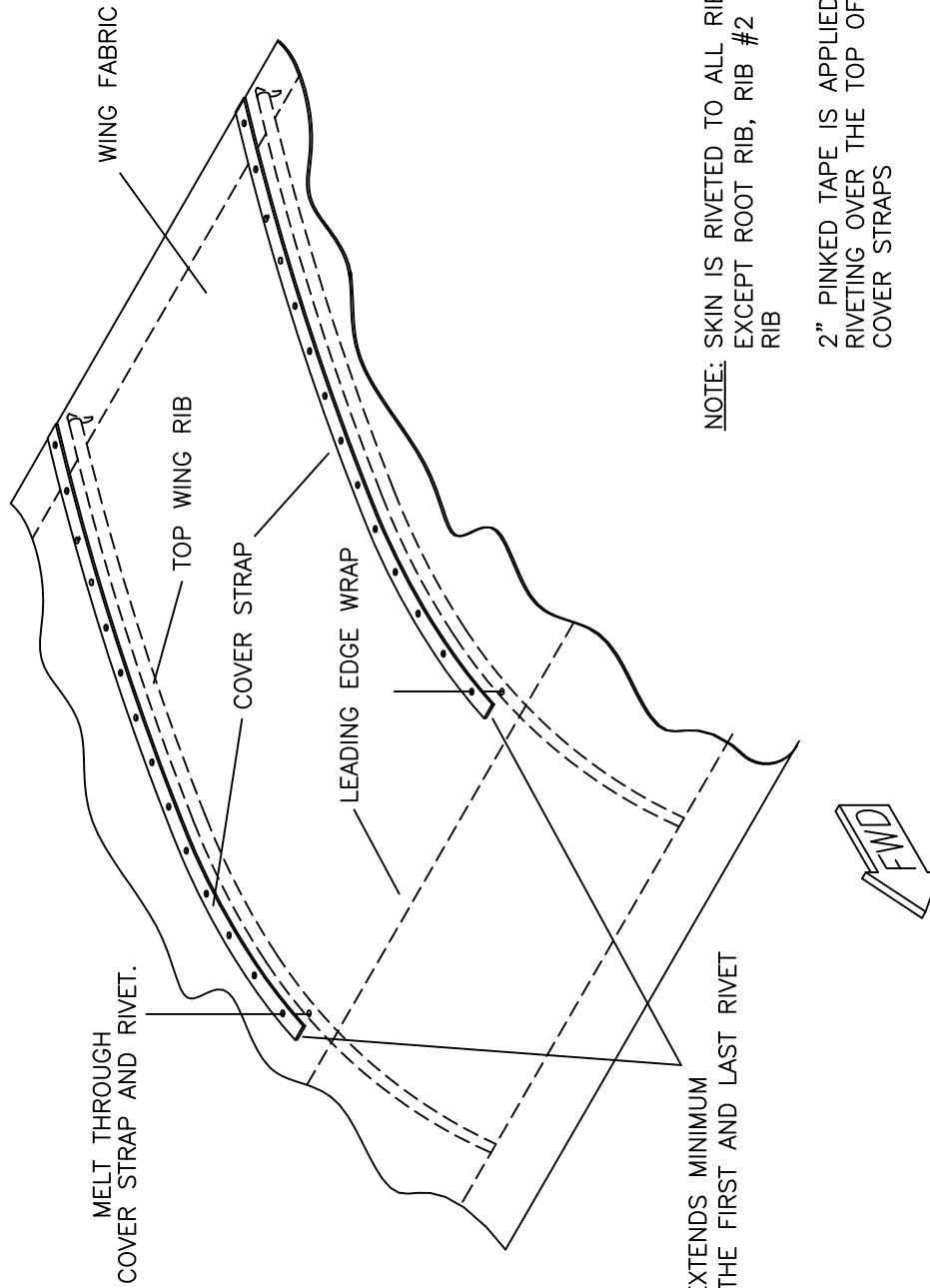
**RAMS S-20 RAVEN
WING COVERING - FABRIC
OVERLAP ON TIP AND ROOT
FIGURE 08A-17**

09/01/2013



MD4341

RRAN S-20 RAVEN
WING COVERING - FABRIC OVERLAP ON LEADING EDGE AND TRAILING EDGE SPAR
FIGURE 08A-17A



NOTE: SKIN IS RIVETED TO ALL RIBS EXCEPT ROOT RIB, RIB #2 AND TIP RIB

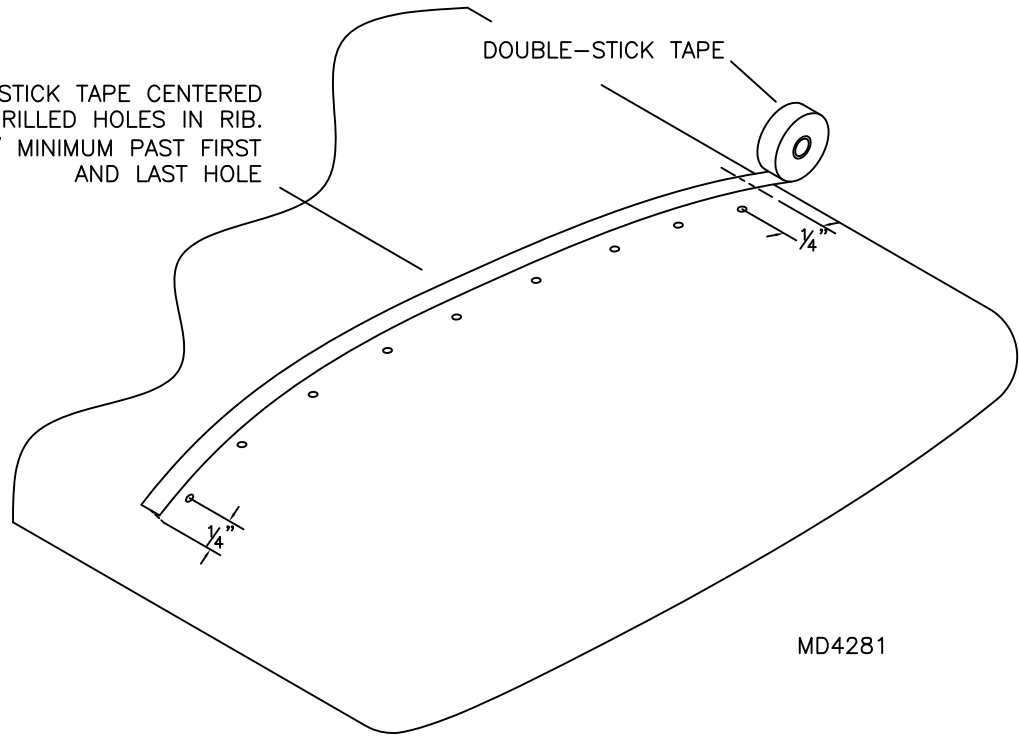
2" PINKED TAPE IS APPLIED AFTER RIVETING OVER THE TOP OF ALL COVER STRAPS

RAVEN S-20 RAVEN
WING COVERING RIVETING
FIGURE 08A-26

MD4337

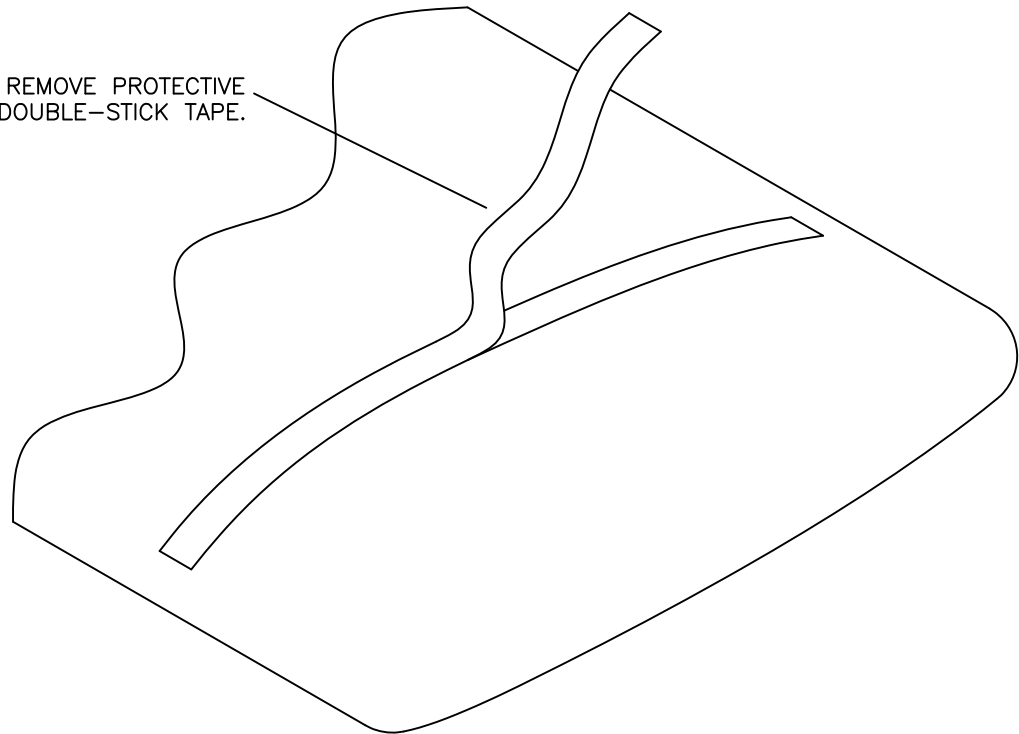
STEP 1:

APPLY DOUBLE-STICK TAPE CENTERED
ON PRE-DRILLED HOLES IN RIB.
EXTEND 1/4" MINIMUM PAST
FIRST AND LAST HOLE



STEP 2:

REMOVE PROTECTIVE
PAPER FROM DOUBLE-STICK TAPE.



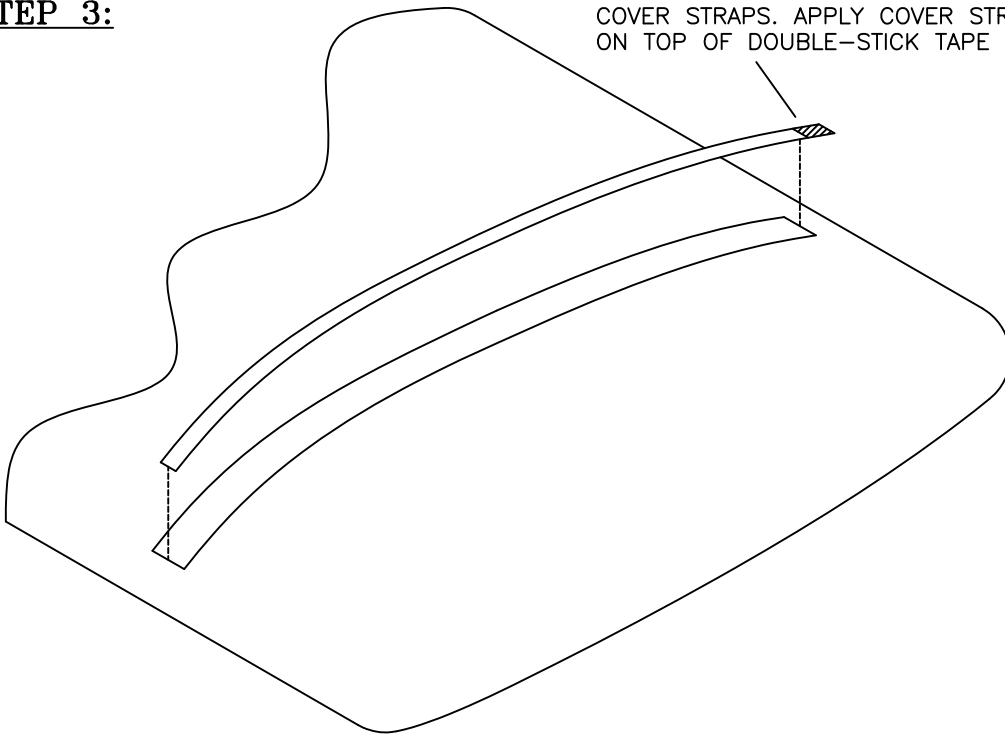
MD4281

**RAMS S-20 RAVEN
FABRIC RIVETING
FIGURE 08A-26A**

09/01/2013

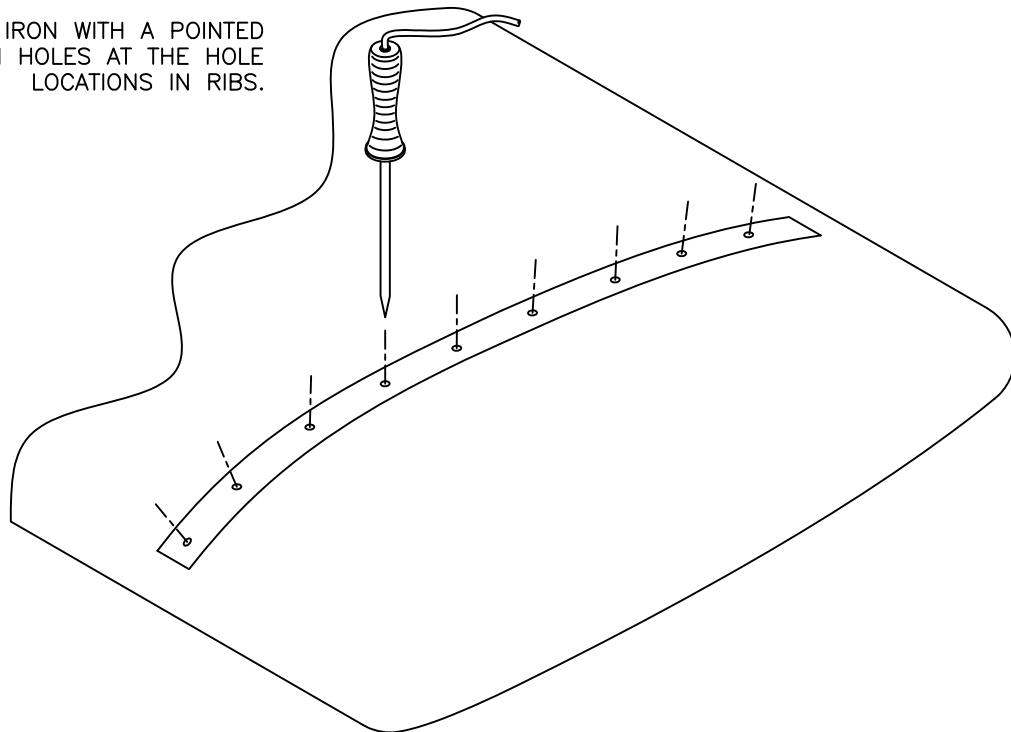
STEP 3:

REMOVE PROTECTIVE PLASTIC FROM BOTH SIDES OF COVER STRAPS. APPLY COVER STRAP CENTERED ON TOP OF DOUBLE-STICK TAPE AND CUT OFF EXCESS.



STEP 4:

USE A HOT IRON WITH A POINTED TIP TO BURN HOLES AT THE HOLE LOCATIONS IN RIBS.



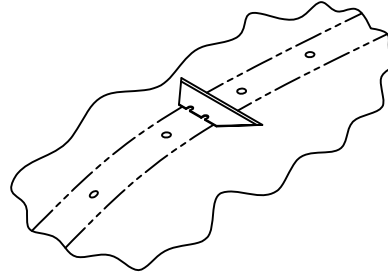
MD4281

**RAMS S-20 RAVEN
FABRIC RIVETING
FIGURE 08A-26B**

09/01/2013

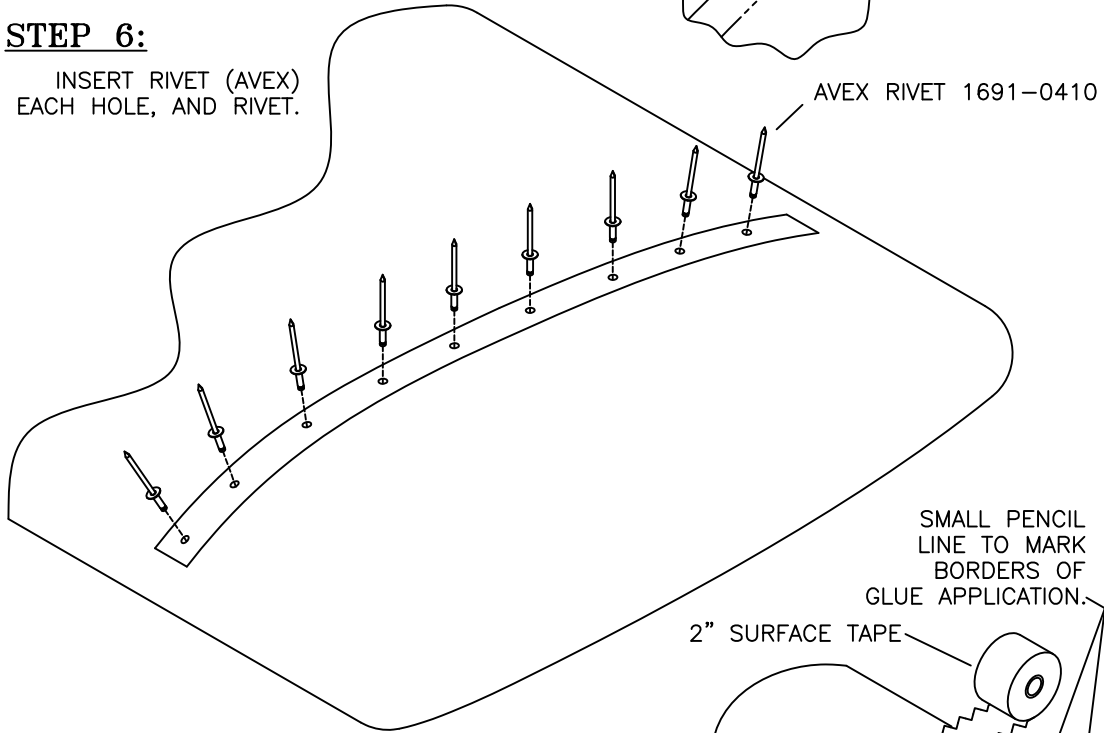
STEP 5:

USE A SHARP BLADE TO CUT OFF MELTED BUILD UP ON TOP OF COVER STRAP.



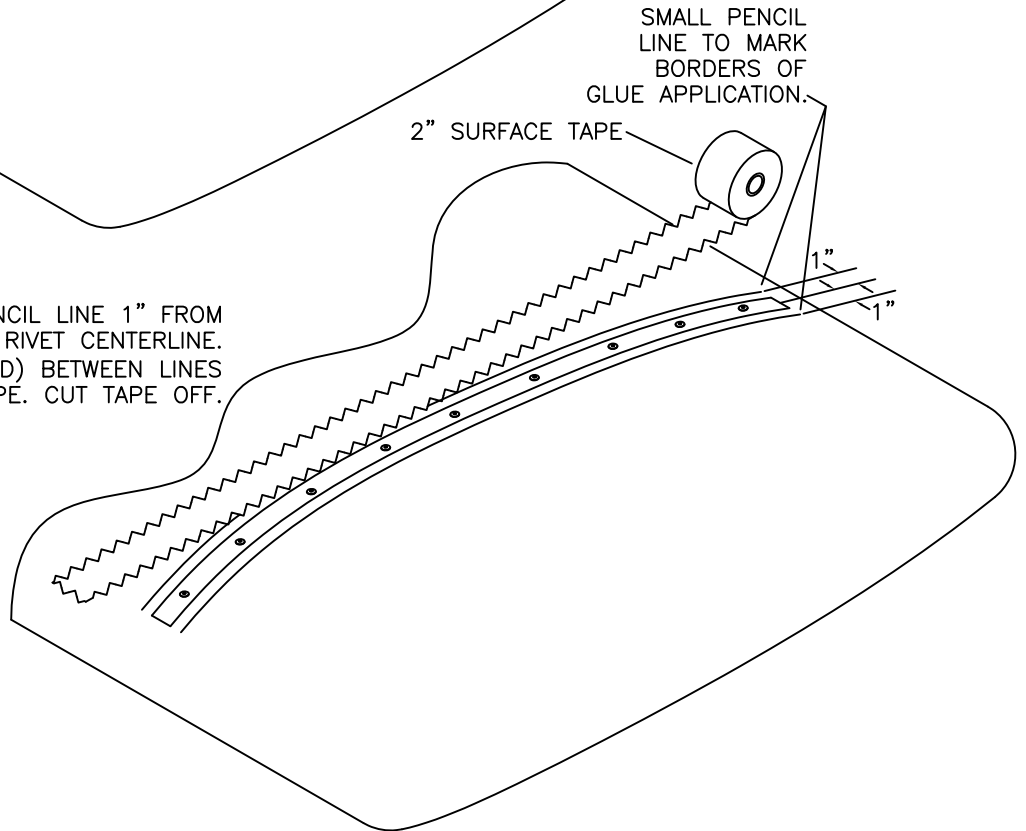
STEP 6:

INSERT RIVET (AVEX) IN EACH HOLE, AND RIVET.



STEP 7:

DRAW SMALL PENCIL LINE 1" FROM EACH SIDE OF THE RIVET CENTERLINE. APPLY GLUE (THINNED) BETWEEN LINES AND APPLY TAPE. CUT TAPE OFF.

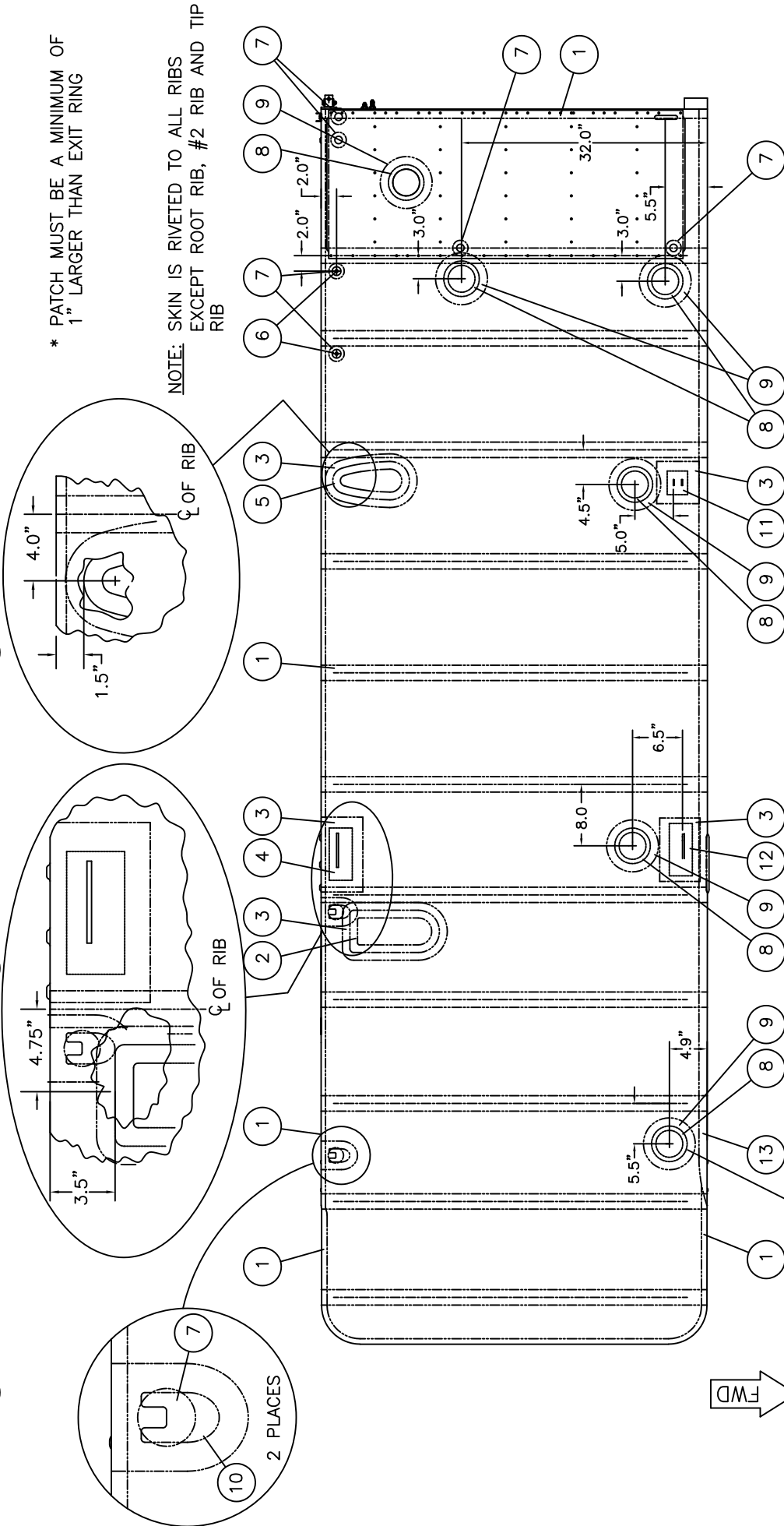


MD4281

**RAMS S-20 RAVEN
FABRIC RIVETING
FIGURE 08A-26C**

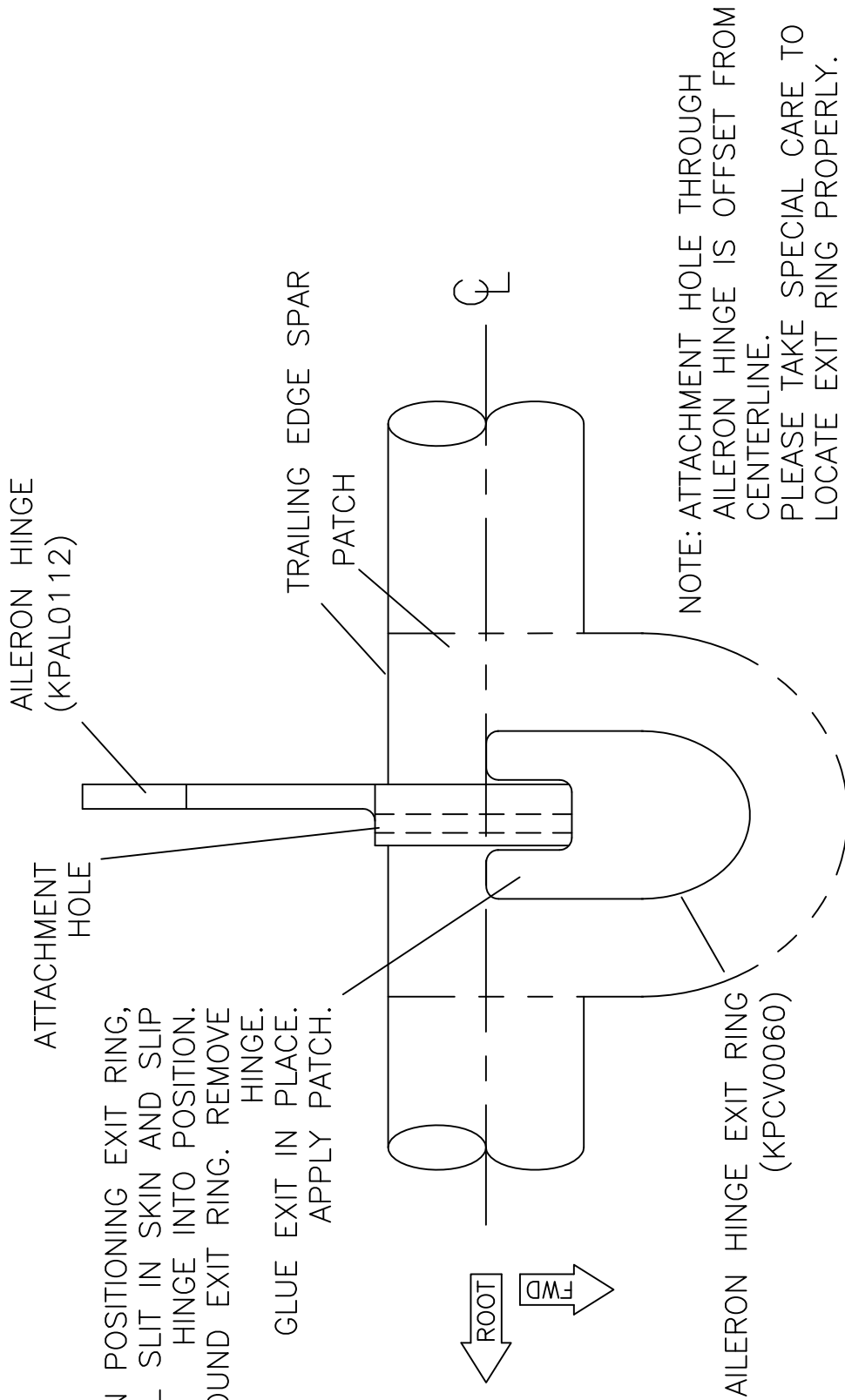
09/01/2013

- 1 2" PINKED TAPE
- 2 AILERON PUSH/PULL TUBE EXIT RING
- 3 PATCH*
- 4 TE STRUT ATTACH PLATE EXIT
- 5 FLAP TELEFLEX EXIT RING
- 6 DRAIN GROMMET
- 7 2" DIA. ROUND PATCH
- 8 INSPECTION RING
- 9 6.5" DIA. ROUND PATCH
- 10 AILERON HINGE EXIT RING
- 11 JURY STRUT BRACKET EXIT
- 12 LE STRUT ATTACH PLATE EXIT
- 13 4" PINKED TAPE



RAVEN S-20 RAVEN
WING BOTTOM COVERING
FIGURE 08A-33

MD4-339
 REV. A

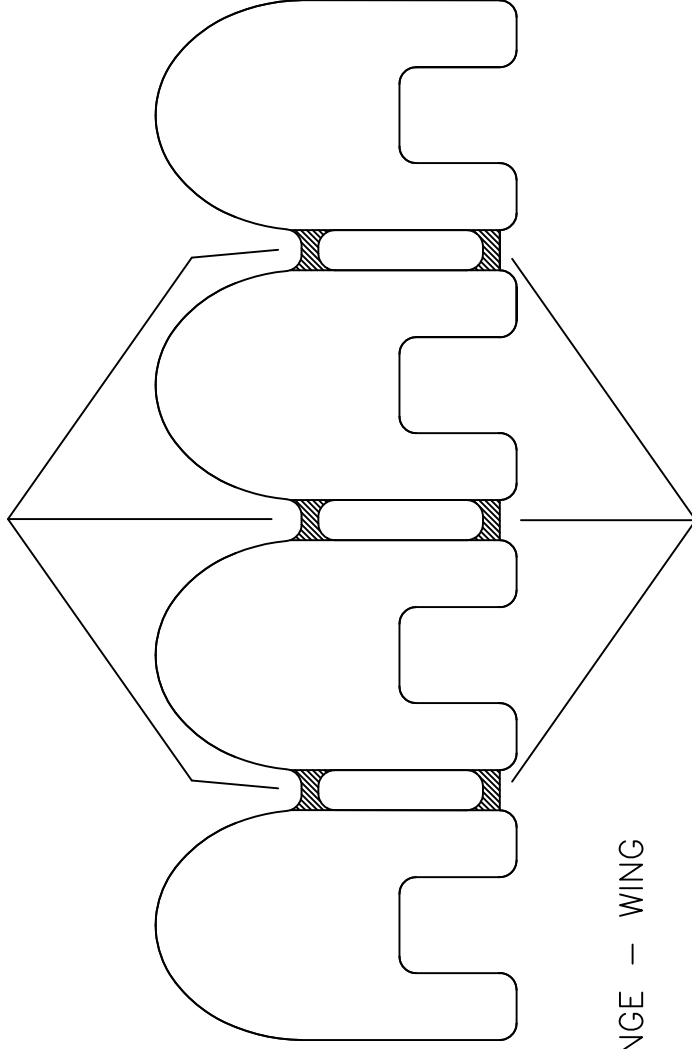


VIEWED FROM BOTTOM SIDE

RAMS S-20 RAVEN
AILERON HINGE EXIT RING PLACEMENT
FIGURE 08A-33A

MD5561

REMOVE HATCHED AREAS

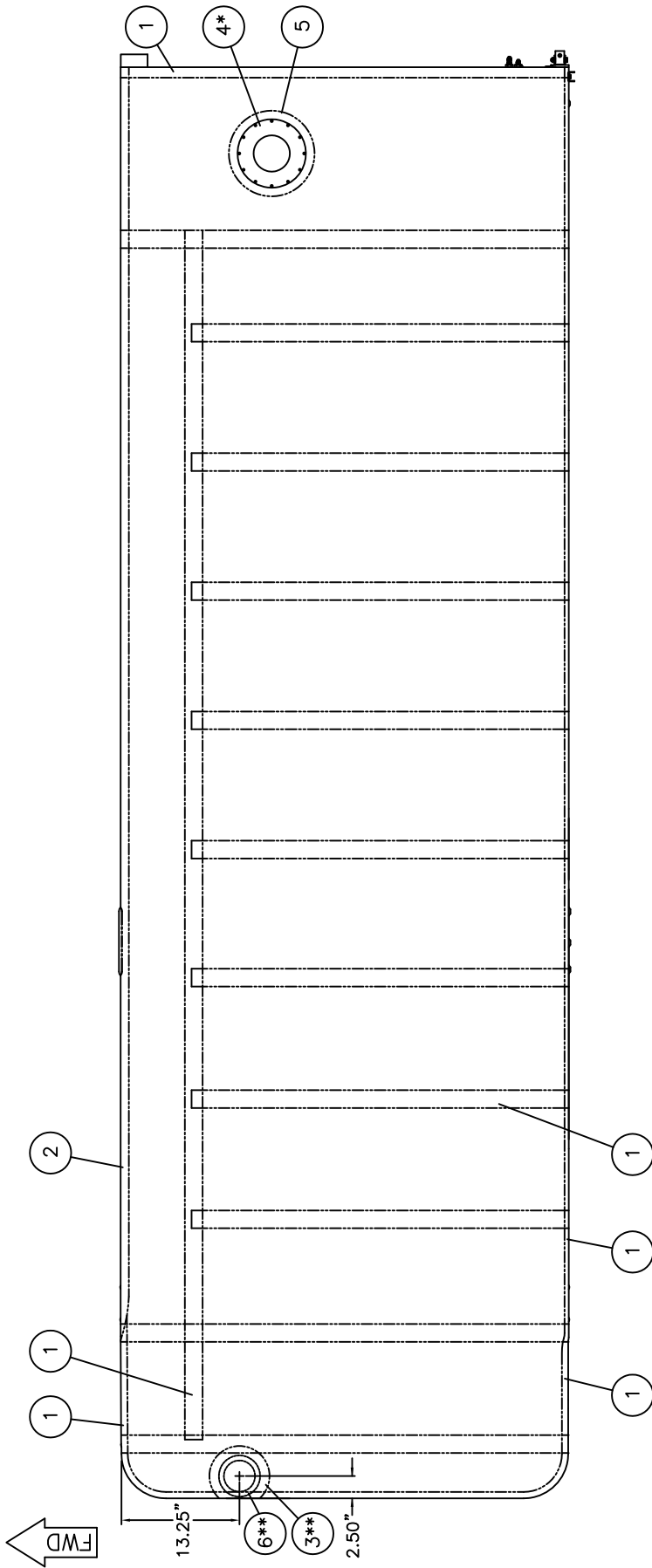


EXIT RING
AILERON HINGE -- WING
(KPCV0060)

REMOVE HATCHED AREAS

MD5549

RAVEN S-20 RAVEN
AILERON HINGE EXIT RING MODIFICATION
FIGURE 08A-33B



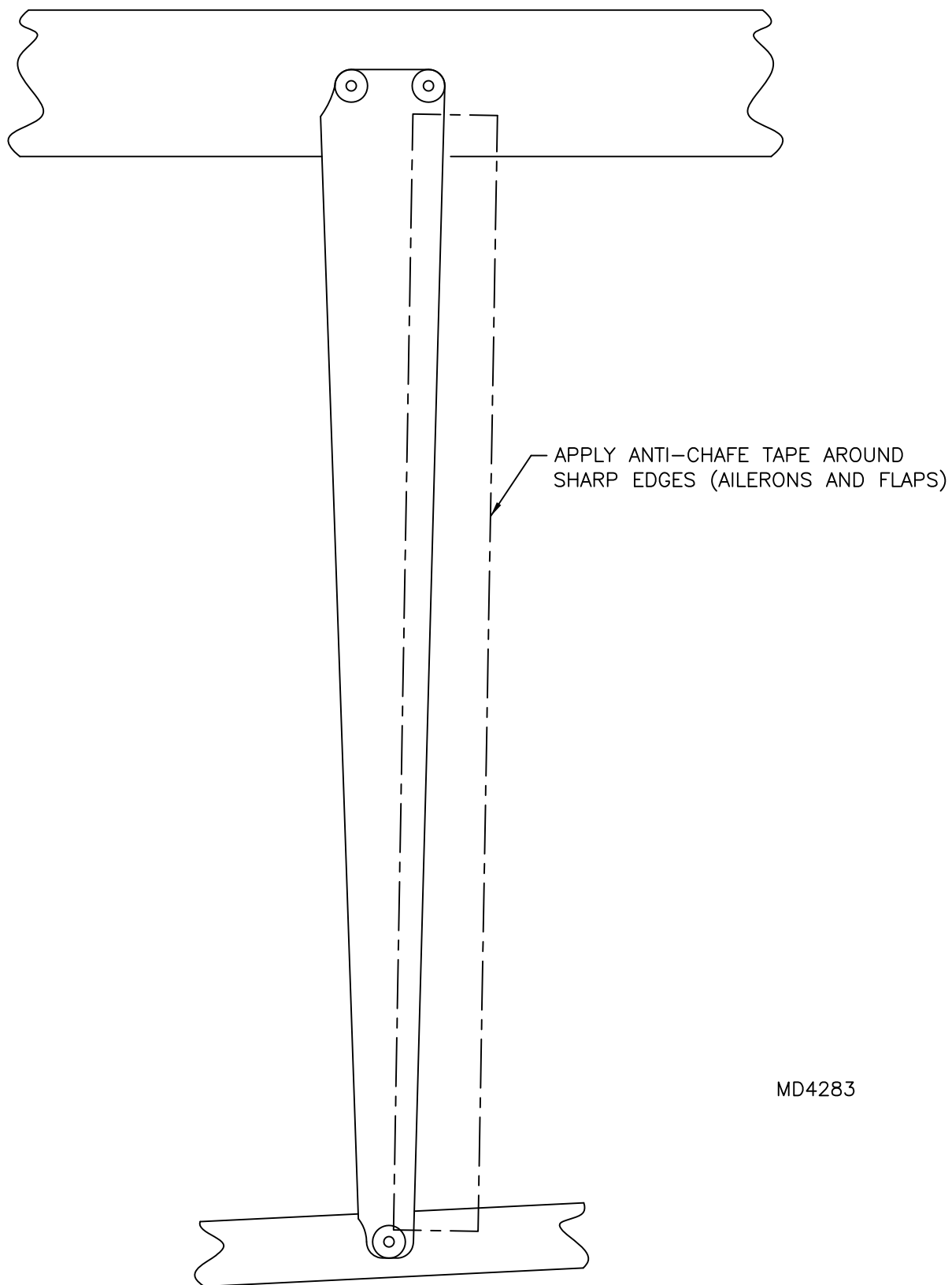
- ① 2" PINKED TAPE
- ② 4" PINKED TAPE
- ③ 6.5" DIA. ROUND PATCH**
- ④ COVER RING*
- ⑤ 9 5/8" DIA. ROUND PATCH
- ⑥ INSPECTION RING**

* INSTALL COVER RING AFTER COVERING AND PRIOR TO PRIMING

** INSTALL FOR OPTIONAL STROBES

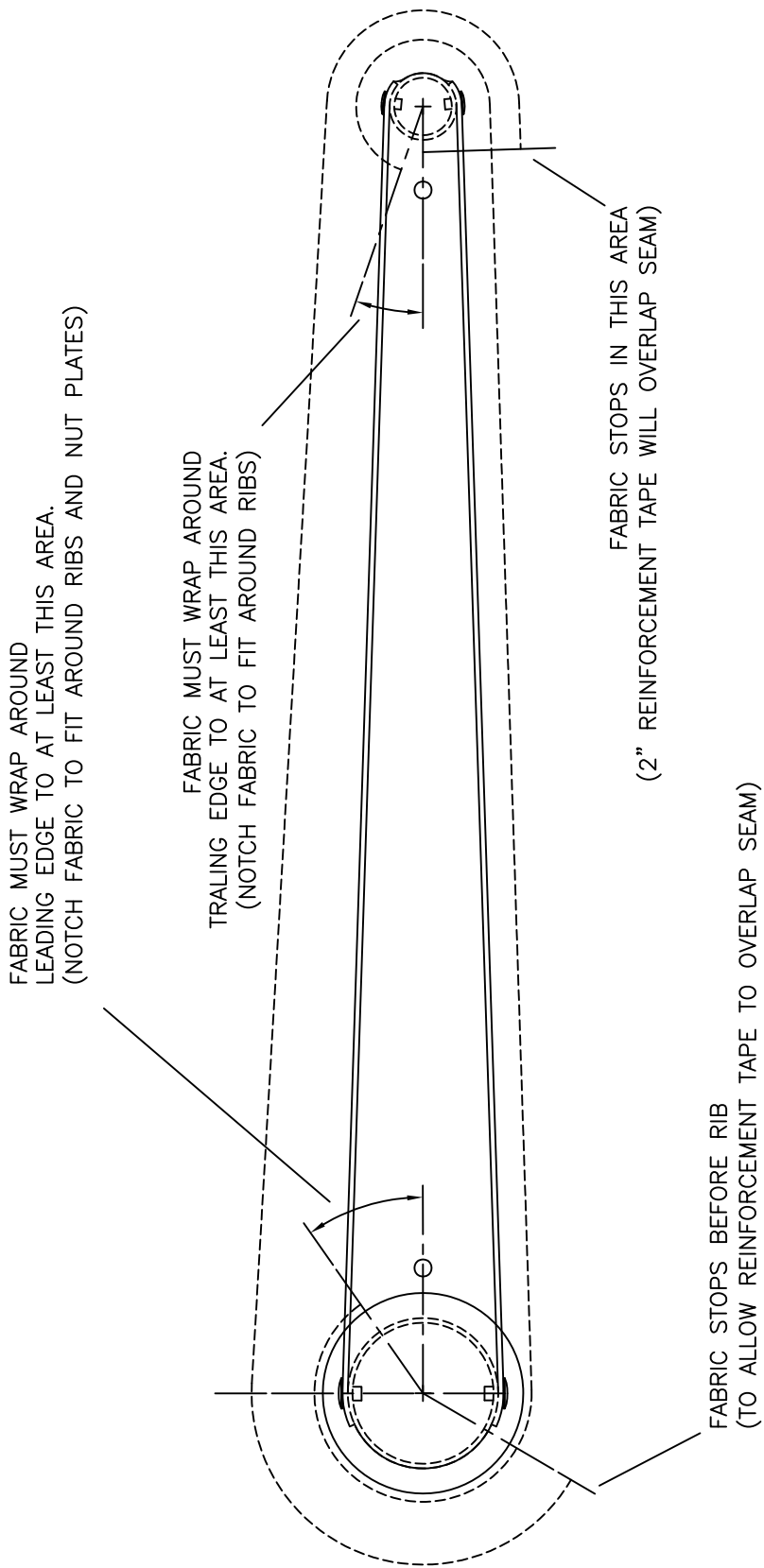
MD4338

RAMSES S-20 RAVEN
WING TOP COVERING
FIGURE 08A-37



MD4283

RAMS S-20 RAVEN
ANTI-CHAFE TAPE APPLICATION FOR AILERONS AND FLAPS
FIGURE 08B-03



FABRIC MUST WRAP AROUND LEADING EDGE TO AT LEAST THIS AREA. (NOTCH FABRIC TO FIT AROUND RIBS AND NUT PLATES)

FABRIC MUST WRAP AROUND TRAILING EDGE TO AT LEAST THIS AREA. (NOTCH FABRIC TO FIT AROUND RIBS)

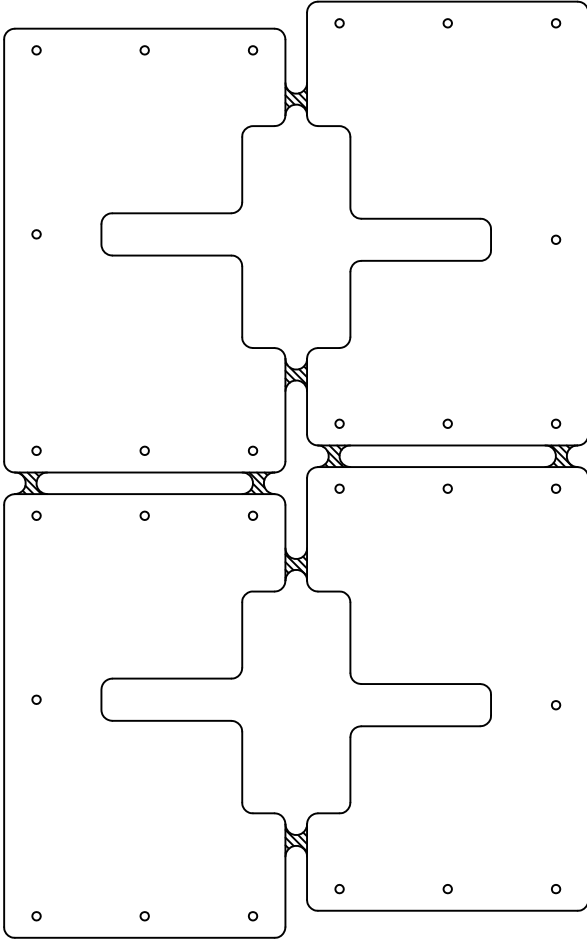
FABRIC STOPS IN THIS AREA (2" REINFORCEMENT TAPE WILL OVERLAP SEAM)

FABRIC STOPS BEFORE RIB (TO ALLOW REINFORCEMENT TAPE TO OVERLAP SEAM)

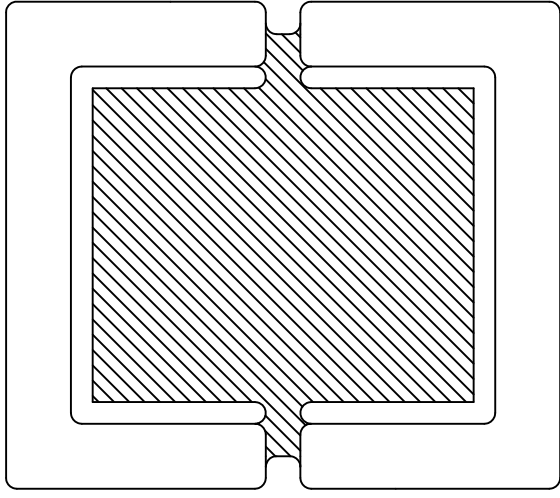
NOTE: CUT FABRIC SLIGHTLY LONG TO ALLOW FABRIC TO EXTEND PAST THE FRAME ENDS BY APPROXIMATELY 2"

MD4284

RAVEN S-20 RAVEN
AILERON AND FLAP COVERING
FIGURE 08B-05



EXIT COVER
AILERON HINGE – AILERON
(KPCV0059)

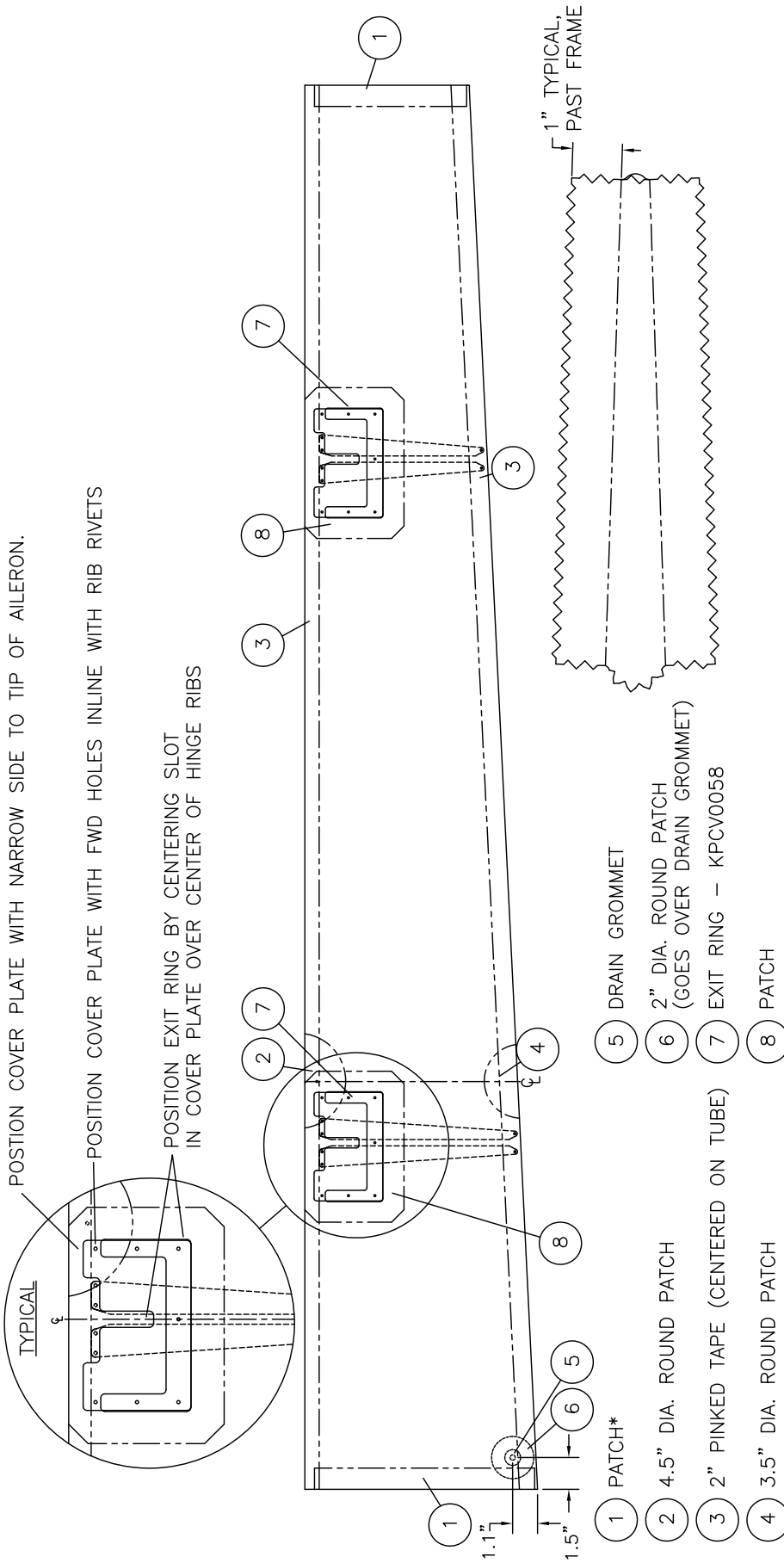


EXIT RING
AILERON HINGE – AILERON
(KPCV0058)

REMOVE HATCHED AREAS

MD5549

RAVEN S-20 RAVEN
AILERON HINGE COVER AND RING MODIFICATION
FIGURE 08B-12



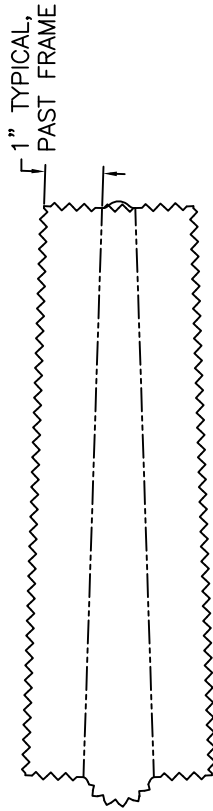
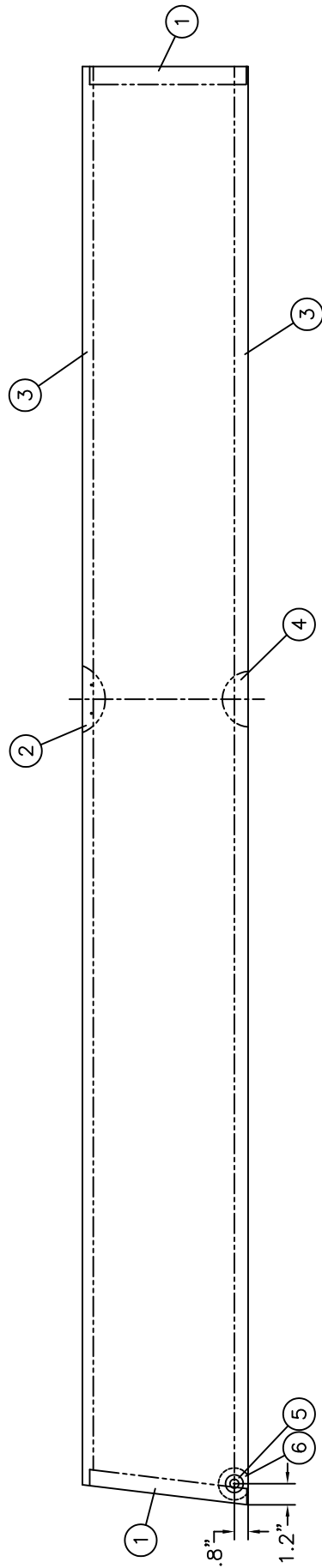
* TYPICAL END PATCH FOR AILERONS.
 MAKE 1" LARGER THAN END RIB. CUT WITH PINKED
 SCISSORS.

MD5538

RAVEN S-20 RAVEN
AILERON COVERING
FIGURE 08B-13

LOWER SIDE OF LEFT HAND
 AILERON SHOWN

NOTE: DRAIN GROMMETS LOCATED AT THE LOWER
 INBOARD SIDE OF THE FLAPS
 MAKE LEFT AND RIGHT

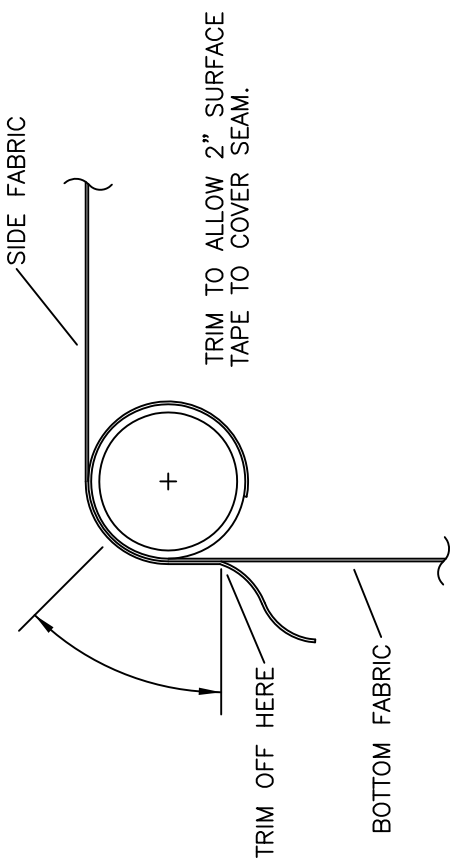


* TYPICAL END PATCH FOR FLAPS,
 MAKE 1" LARGER THAN END RIB. CUT WITH PINKED
 SCISSORS.

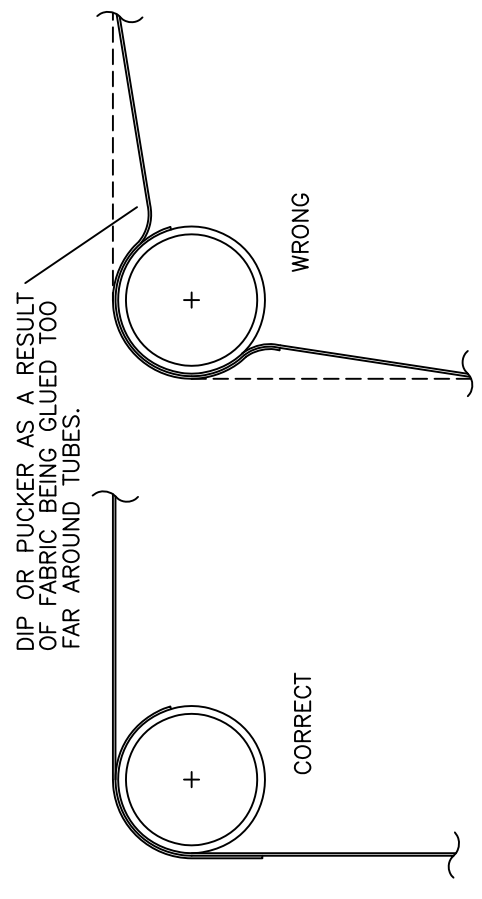
- ① PATCH*
- ② 4.5" DIA. ROUND PATCH
- ③ 2" PINKED TAPE (CENTERED ON TUBE)
- ④ 3.5" DIA. ROUND PATCH
- ⑤ DRAIN GROMMET
- ⑥ 2" DIA. ROUND PATCH

MD4279

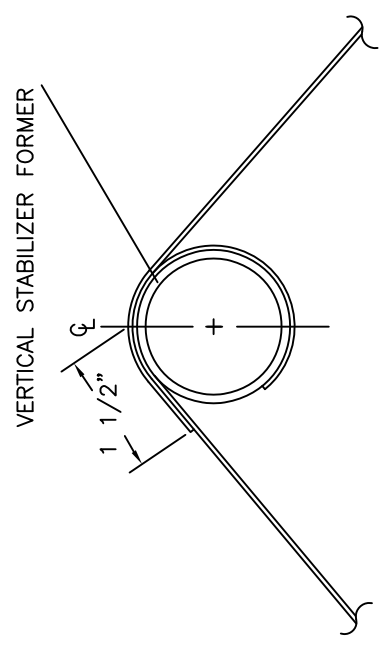
RRAD S-20 RAVEN
FLAP COVERING
 FIGURE 08B-14



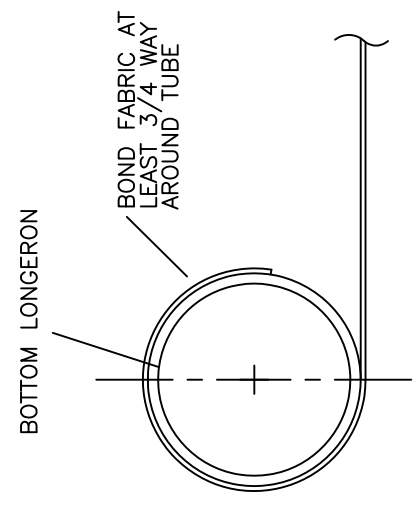
FABRIC OVERLAP (SIDE AND BOTTOM FABRIC)



GENERAL INFORMATION



FABRIC OVERLAP (TOP OF FUSELAGE)



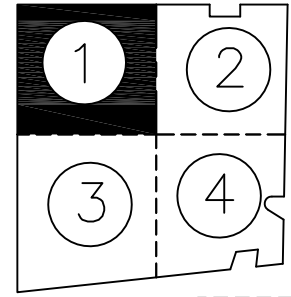
FABRIC ATTACH TO BOTTOM LONGERONS

RAMS S-20 RAVEN
FUSELAGE COVERING DETAILS
FIGURE 08C-07

MD4334

RANS S-20 RAVEN AFT EXIT TEMPLATE #1 FIGURE 08C-30

MD5578

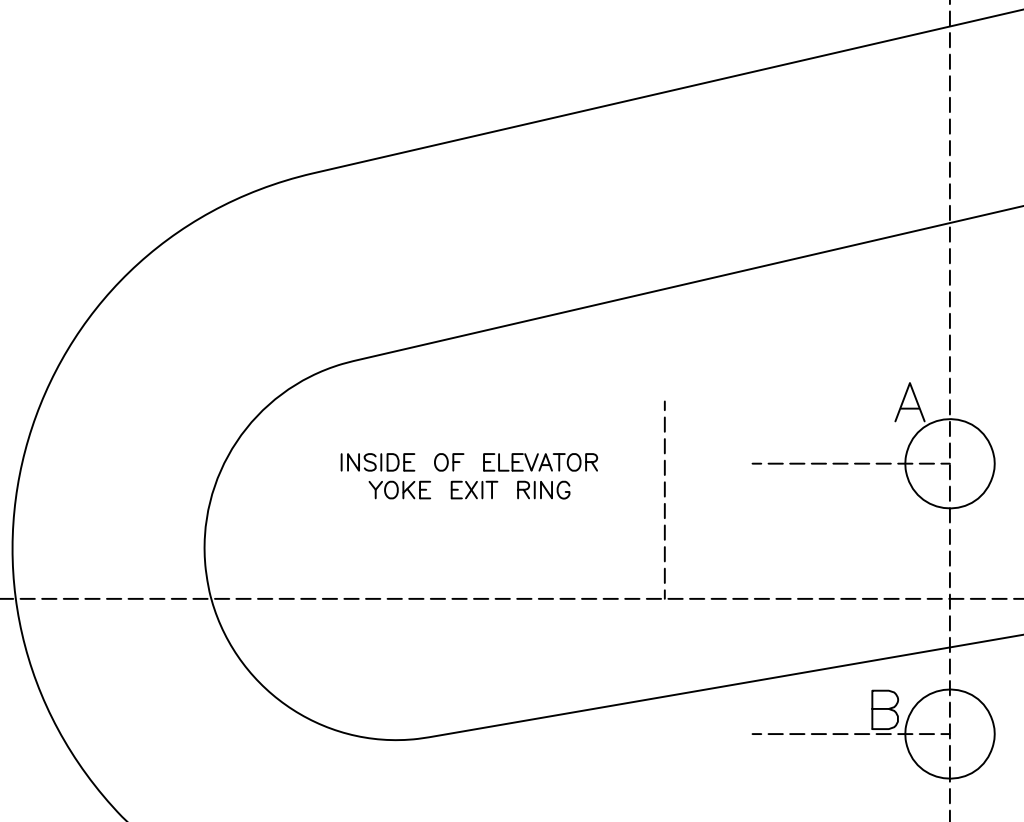
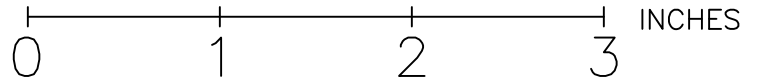


PLOT 1:1

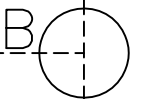
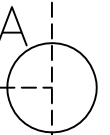
ELEVATOR YOKE EXIT TEMPLATE,
FWD TOP

(NO SCALING)

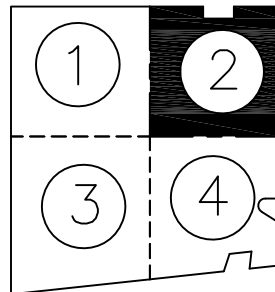
INCHES



INSIDE OF ELEVATOR
YOKE EXIT RING



RANS S-20 RAVEN AFT EXIT TEMPLATE #2 FIGURE 08C-30A



MD5578

SLIDE OVER REAR HORIZONTAL
STABILIZER ATTACH BUSHING

ELEVATOR YOKE EXIT TEMPLATE,
AFT TOP

PLOT 1:1 (NO SCALING)

0 1 2 3 INCHES

INCHES
0 1 2 3

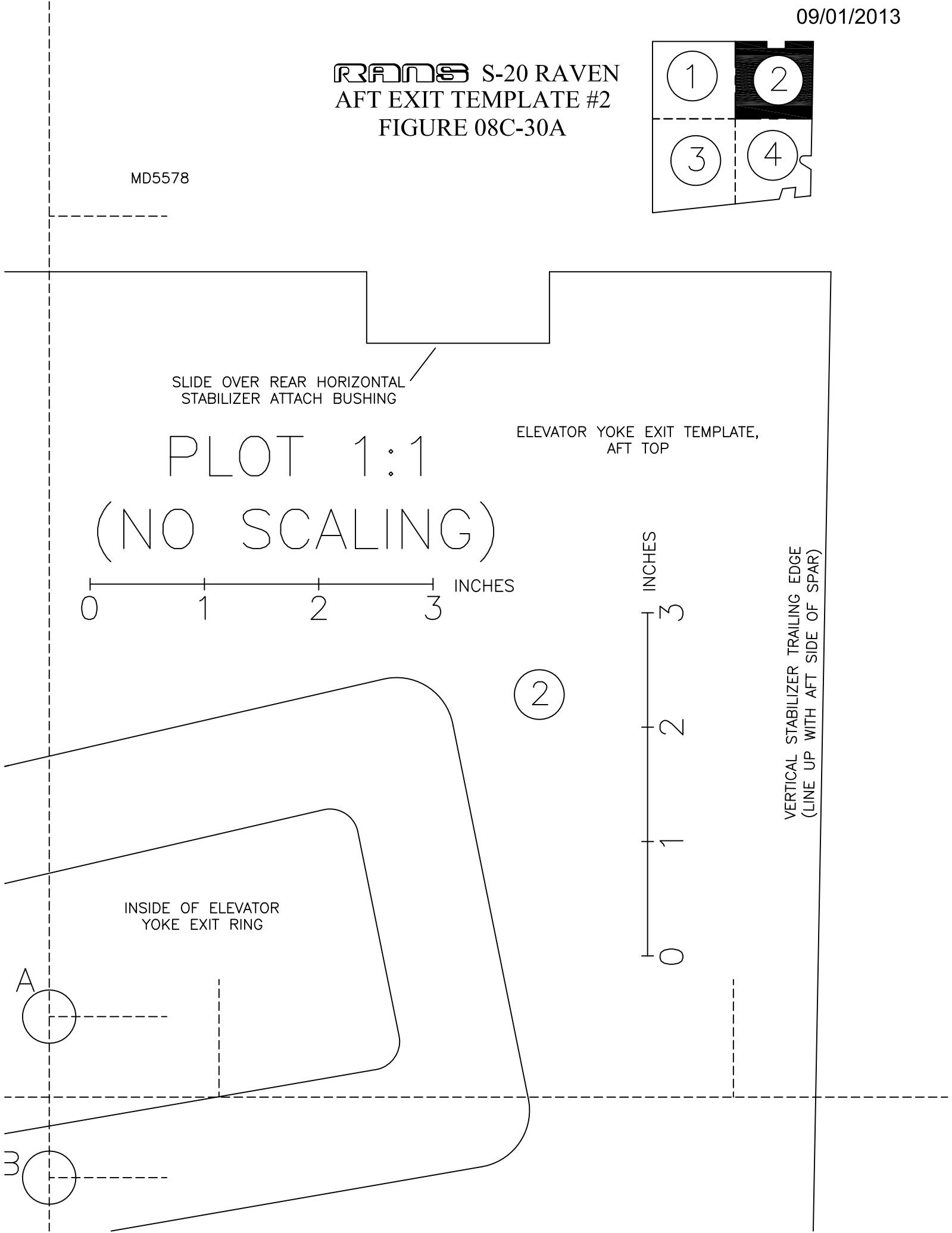
VERTICAL STABILIZER TRAILING EDGE
(LINE UP WITH AFT SIDE OF SPAR)

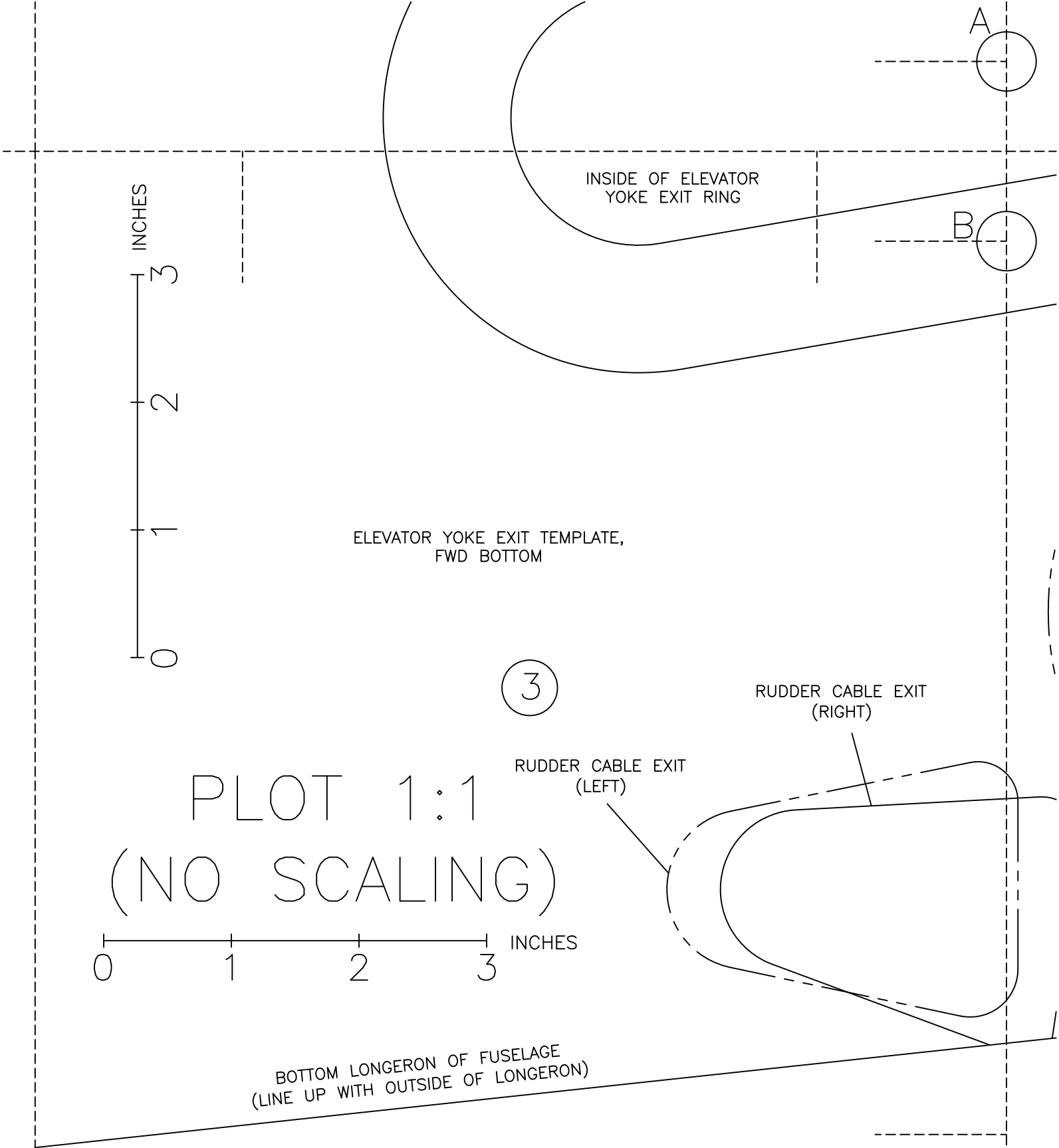
INSIDE OF ELEVATOR
YOKE EXIT RING

2

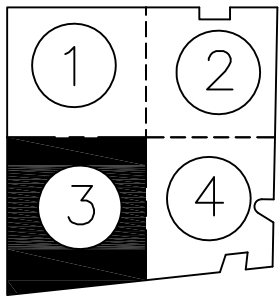
A

B





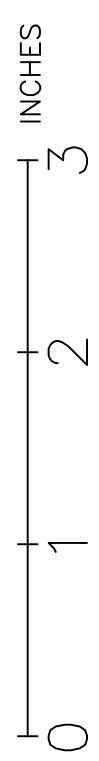
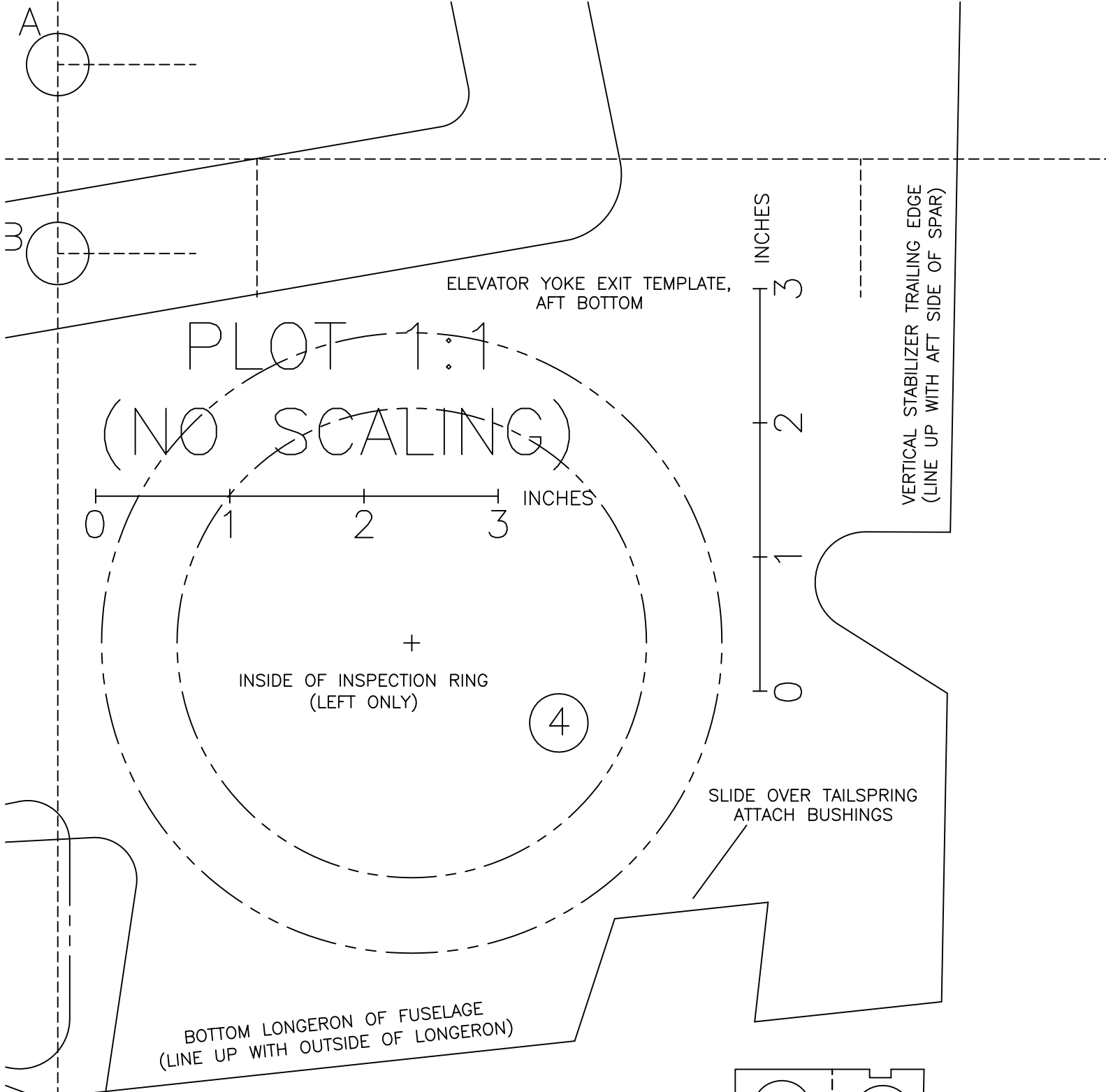
PLOT 1:1
(NO SCALING)



RANS S-20 RAVEN
AFT EXIT TEMPLATE #3
FIGURE 08C-30B

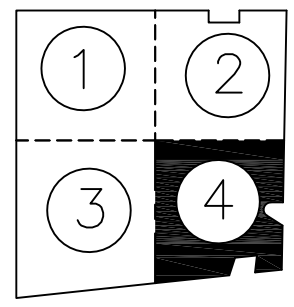
MD5578

09/01/2013



VERTICAL STABILIZER TRAILING EDGE
(LINE UP WITH AFT SIDE OF SPAR)

SLIDE OVER TAILSPRING
ATTACH BUSHINGS

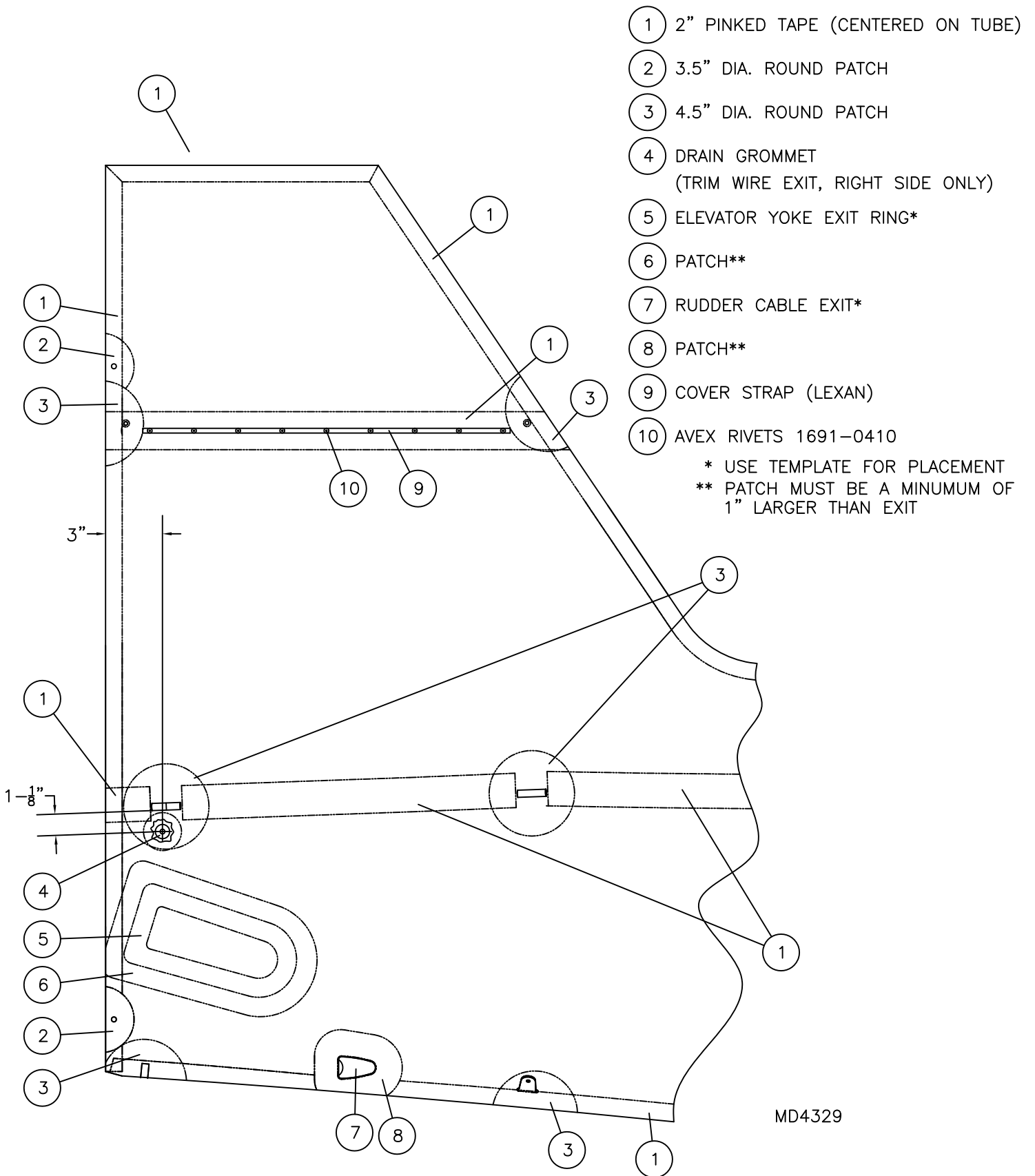


BOTTOM LONGERON OF FUSELAGE
(LINE UP WITH OUTSIDE OF LONGERON)

RANS S-20 RAVEN
AFT EXIT TEMPLATE #4
FIGURE 08C-30C

MD5578

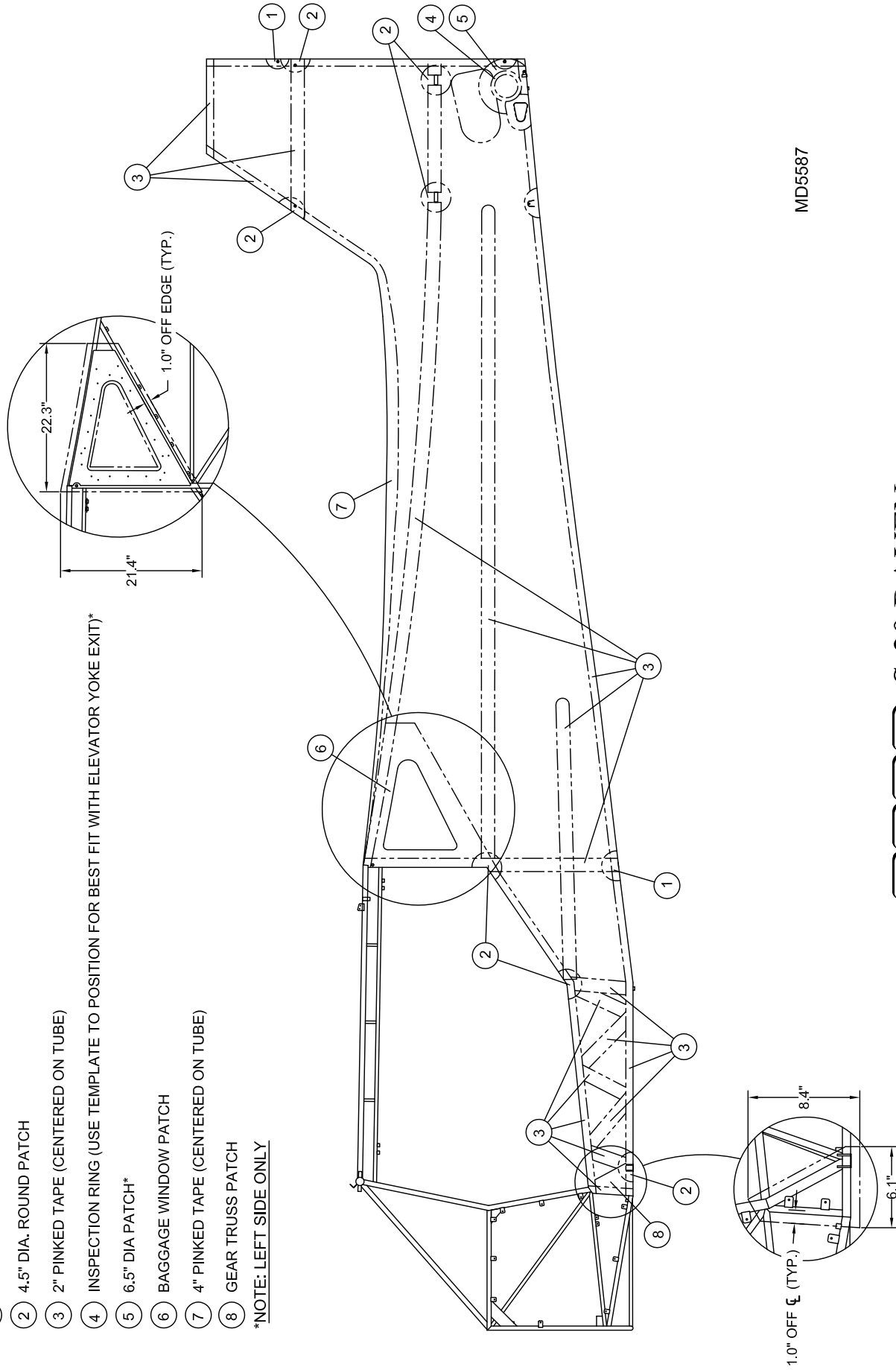
09/01/2013



**RANS S-20 RAVEN
 VERTICAL STABILIZER AND REAR
 FUSELAGE COVERING
 FIGURE 08C-33**

- ① 3.5" DIA. ROUND PATCH (CENTERED OVER TABS)
- ② 4.5" DIA. ROUND PATCH
- ③ 2" PINKED TAPE (CENTERED ON TUBE)
- ④ INSPECTION RING (USE TEMPLATE TO POSITION FOR BEST FIT WITH ELEVATOR YOKE EXIT)*
- ⑤ 6.5" DIA PATCH*
- ⑥ BAGGAGE WINDOW PATCH
- ⑦ 4" PINKED TAPE (CENTERED ON TUBE)
- ⑧ GEAR TRUSS PATCH

*NOTE: LEFT SIDE ONLY

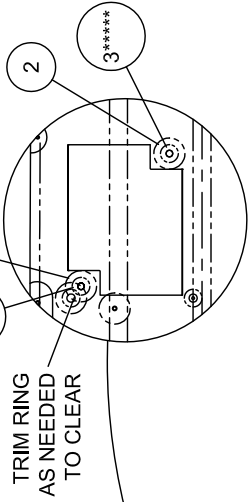


MD5587

RAVEN S-20 RAVEN
FUSELAGE SIDE COVERING
FIGURE 08C-33A

- ① 2" PINKED TAPE (CENTERED ON TUBE)
- ② 3.5" DIA. ROUND PATCH
- ③ 2" DIA. RING LEXAN
- ④ 1/2 OVAL PATCH
- ⑤ INSPECTION RING
- ⑥ 6.5" DIA. ROUND PATCH

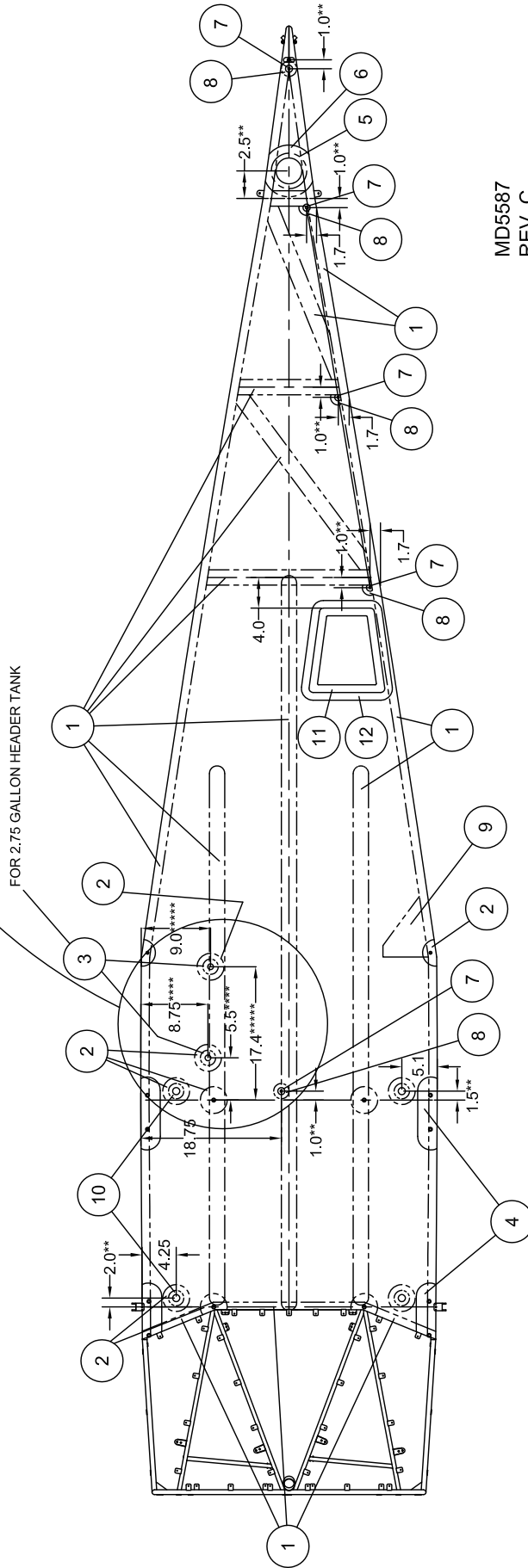
- ⑦ DRAIN GROMMET*
- ⑧ 2" DIA. ROUND PATCH
- ⑨ PATCH (CENTERED ON COMM ANTENNA MOUNT PLATE)**
- ⑩ BRAKE LINE EXIT RING
- ⑪ BATTERY ACCESS RING (TITAN 340 ONLY)
- ⑫ PATCH (CENTERED ON BATTERY ACCESS RING)**



TRIM RING
AS NEEDED
TO CLEAR

FOR 6.9 GALLON HEADER TANK
LOCATE SUMP DRAIN RINGS
CENTERED ON MOUNT CUTOUTS

* BURN 1/8" DRAIN HOLE AFTER PAINTING
** FROM CENTERLINE OF TUBE.
*** PATCH MUST BE A MINIMUM OF 1" LARGER ALL AROUND
**** TRIKE SUMP DRAIN ONLY (MAY INSTALL HEADER TANK TO LOCATE RING)
***** TAILDRAGGER SUMP DRAIN ONLY (MAY INSTALL HEADER TANK TO LOCATE RING)

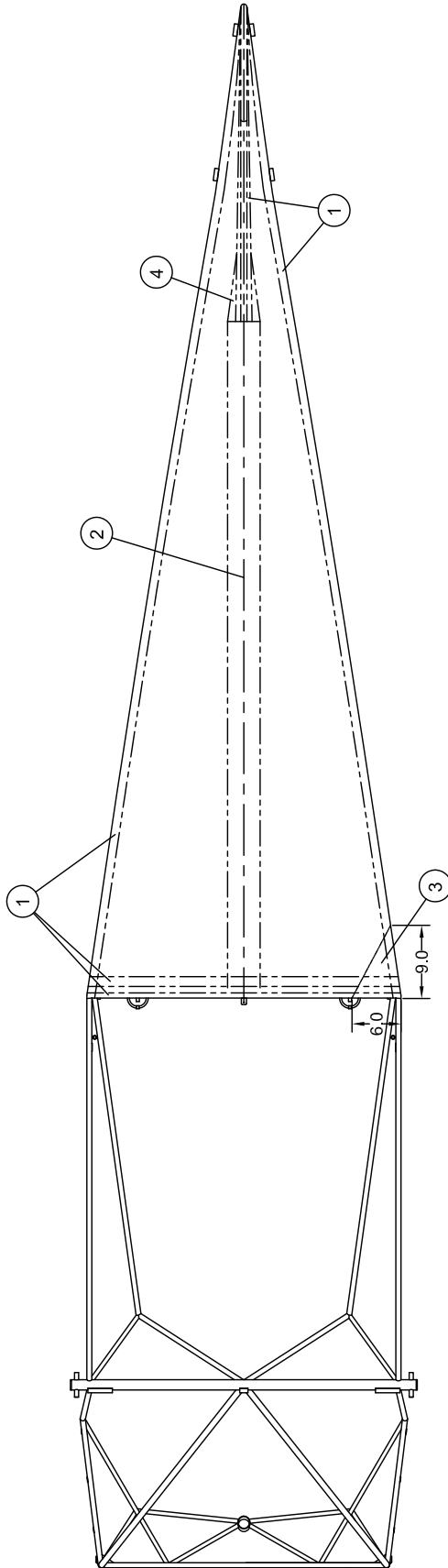


ALL DIMENSIONS IN INCHES

RAVEN S-20 RAVEN FUSELAGE BOTTOM COVERING FIGURE 08C-33B

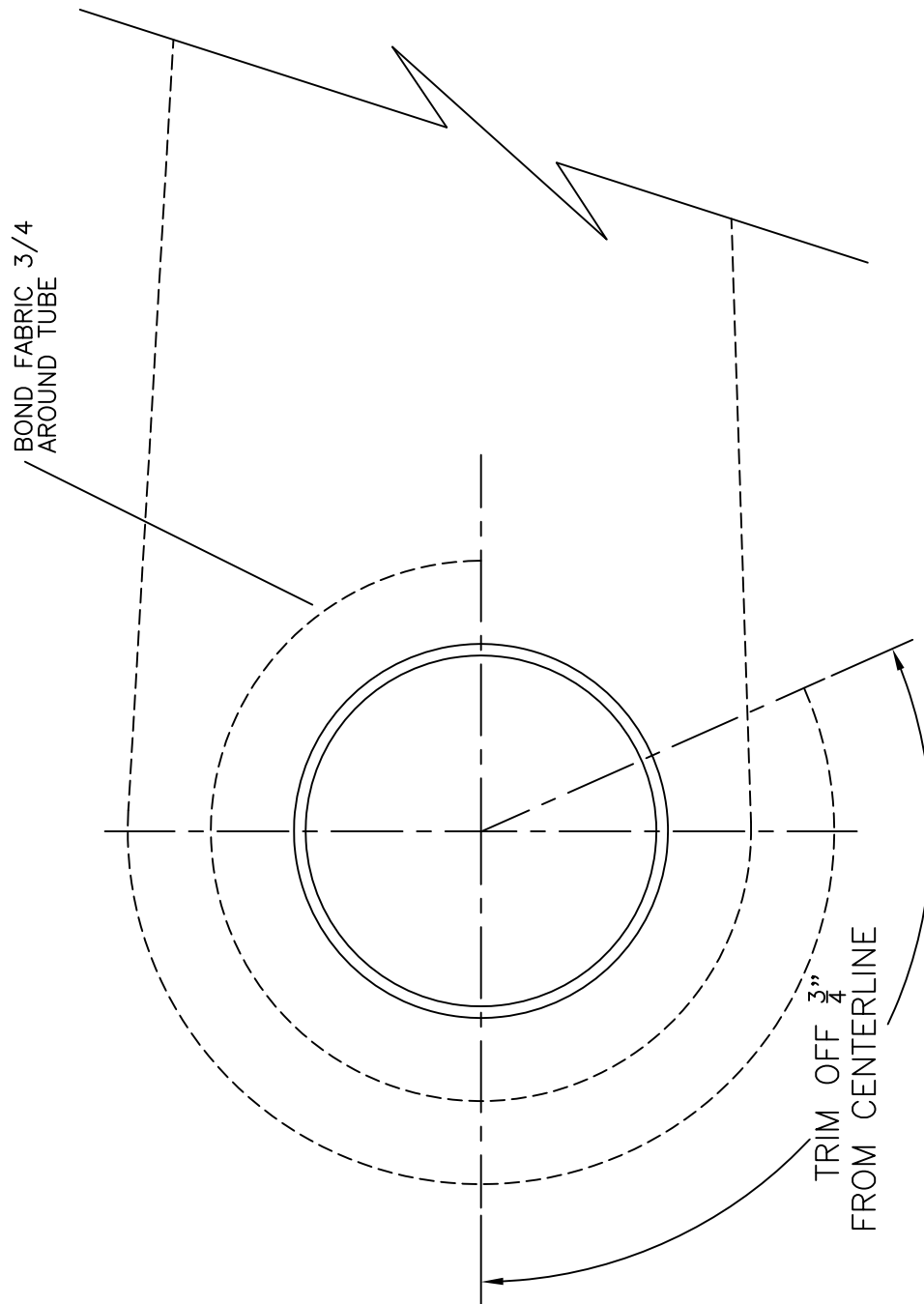
MD5587
REV. C

- ① 2" PINKED TAPE (CENTERED ON TUBE)
- ② 4" PINKED TAPE (CENTERED ON TUBE)
- ③ PATCH (CENTERED OVER ANTENNA PLATE)
- ④ PATCH (TRANSITION FROM 4" TAPE TO 2" TAPE)



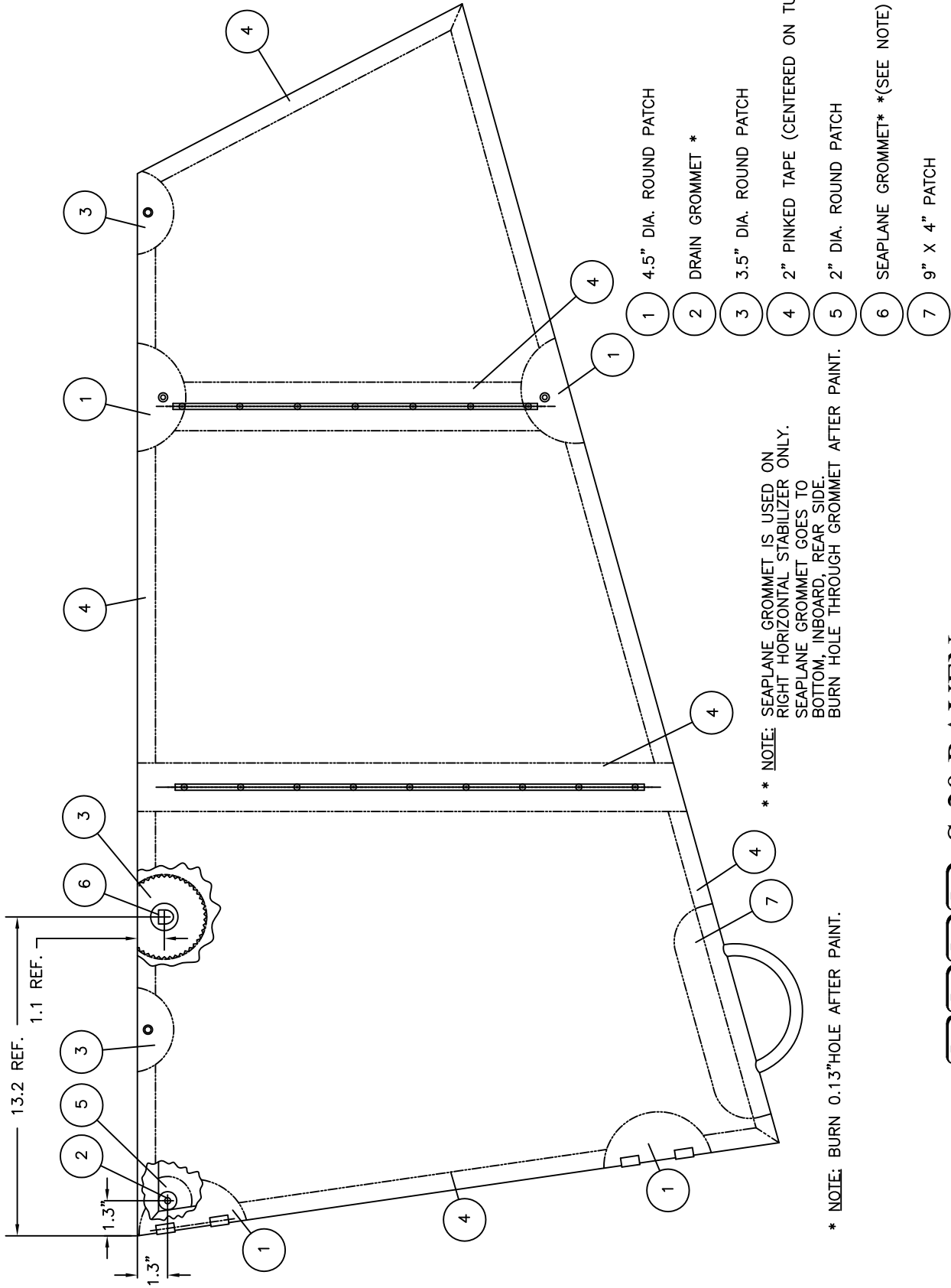
MD5587

RAVEN S-20 RAVEN
FUSELAGE TOP COVERING
FIGURE 08C-34



MD4326

RAMS S-20 RAVEN
 FABRIC OVERLAP TYPICAL FOR TAIL SURFACES
 FIGURE 08D-06

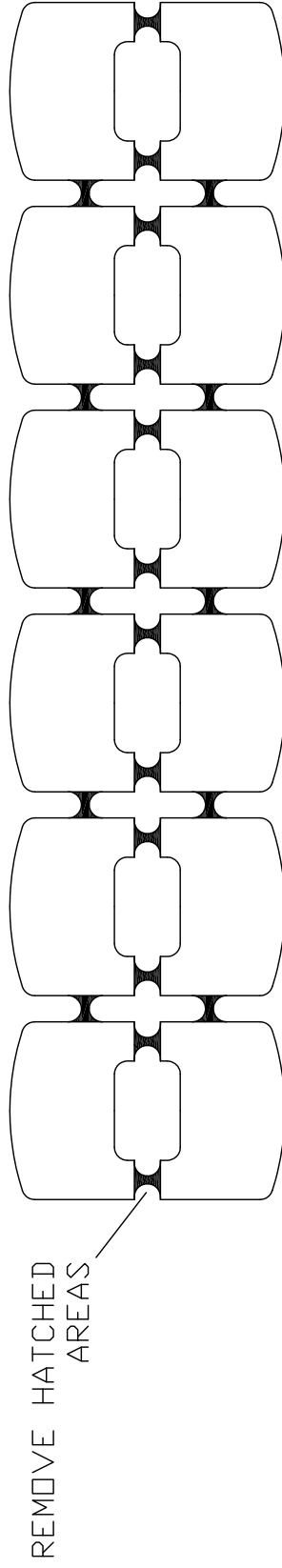
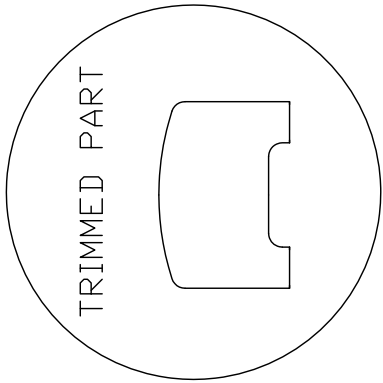


** NOTE: SEAPLANE GROMMET IS USED ON
 RIGHT HORIZONTAL STABILIZER ONLY.
 SEAPLANE GROMMET GOES TO
 BOTTOM, INBOARD, REAR SIDE.
 BURN HOLE THROUGH GROMMET AFTER PAINT.

* NOTE: BURN 0.13\"HOLE AFTER PAINT.

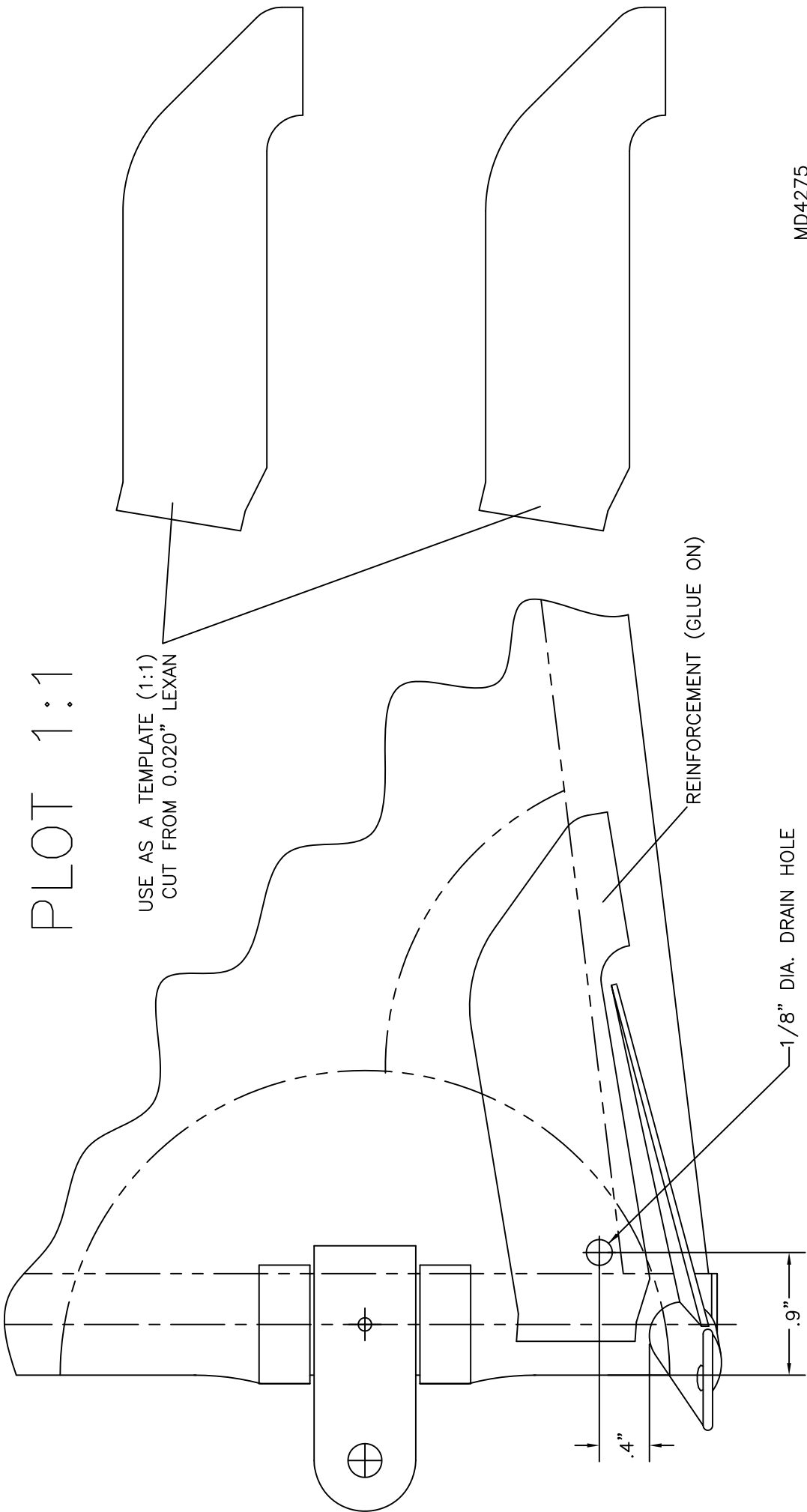
- 1 4.5" DIA. ROUND PATCH
- 2 DRAIN GROMMET *
- 3 3.5" DIA. ROUND PATCH
- 4 2" PINKED TAPE (CENTERED ON TUBE)
- 5 2" DIA. ROUND PATCH
- 6 SEAPLANE GROMMET* *(SEE NOTE)
- 7 9" X 4" PATCH

RAMS S-20 RAVEN
HORIZONTAL STABILIZER COVERING
FIGURE 08D-17



MD5647

RAVEN S-20 RAVEN
RUDDER / ELEVATOR HINGE REINFORCEMENT MODIFICATION
FIGURE 08E-10



PLOT 1:1

USE AS A TEMPLATE (1:1)
CUT FROM 0.020" LEXAN

REINFORCEMENT (GLUE ON)

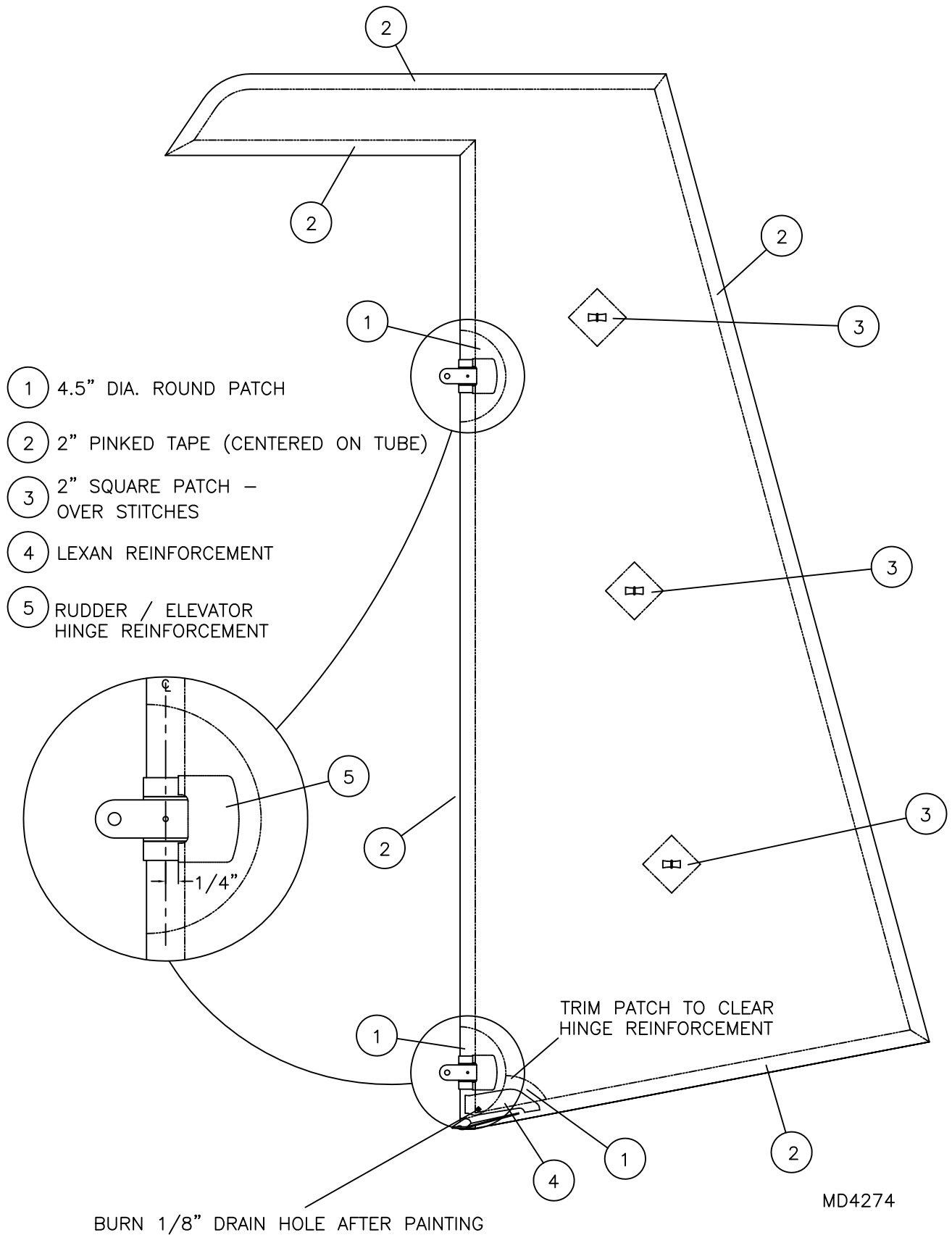
1/8" DIA. DRAIN HOLE

.4"

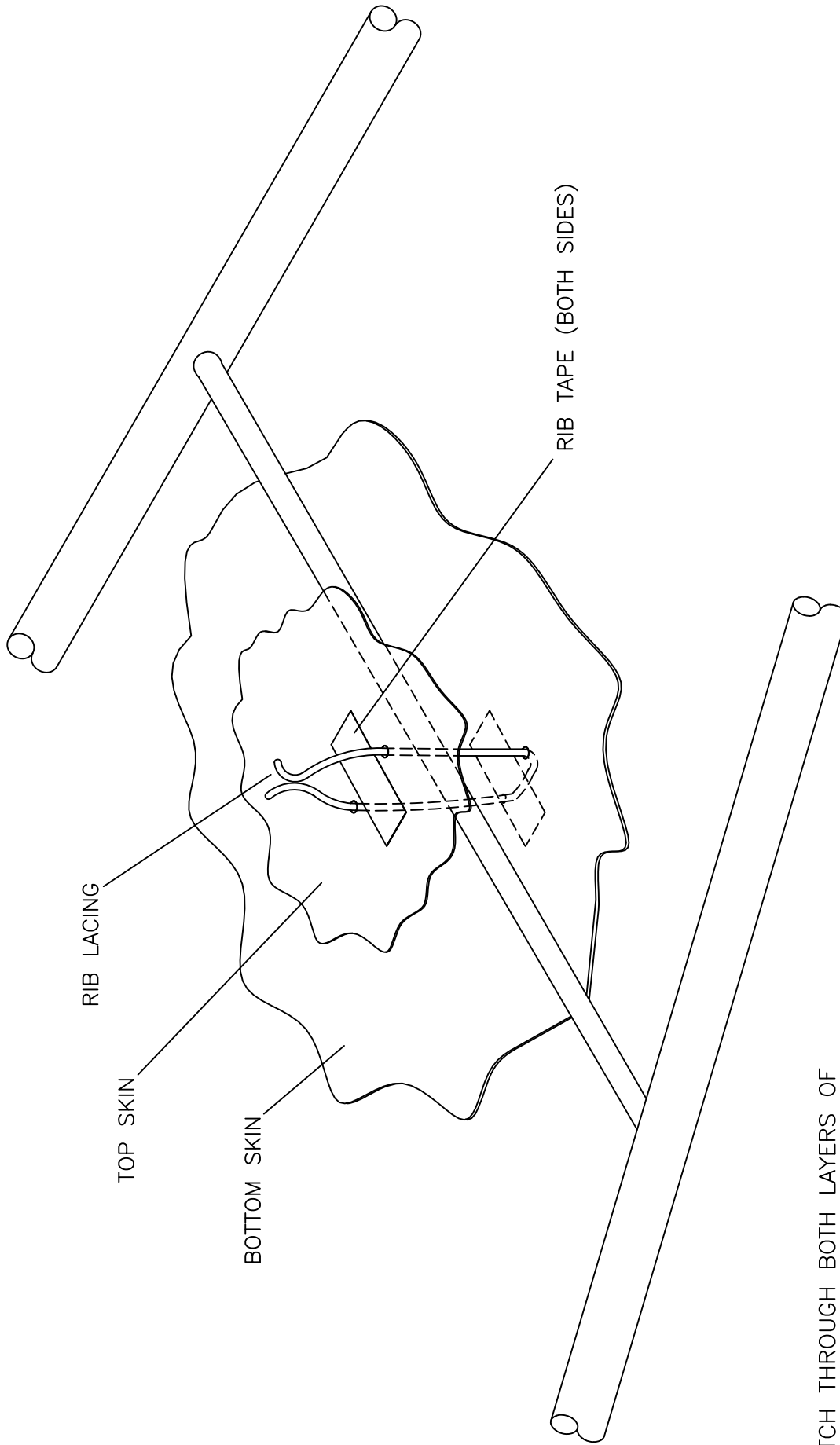
.9"

MD4275

RAVEN S-20 RAVEN
RUDDER - FABRIC REINFORCEMENT
FIGURE 08E-11



RANS S-20 RAVEN
RUDDER COVERING - RANS RUDDER
FIGURE 08E-12

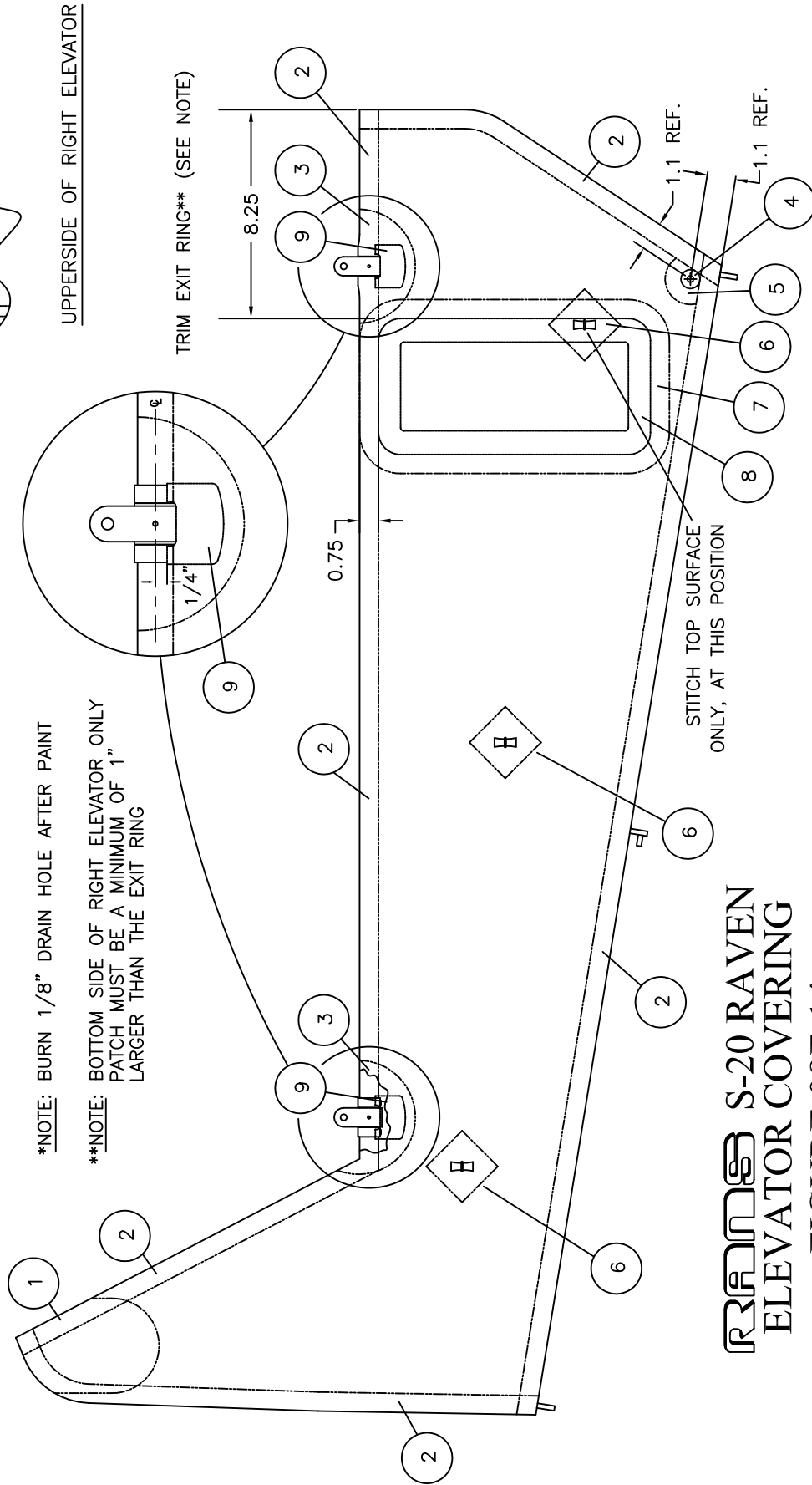
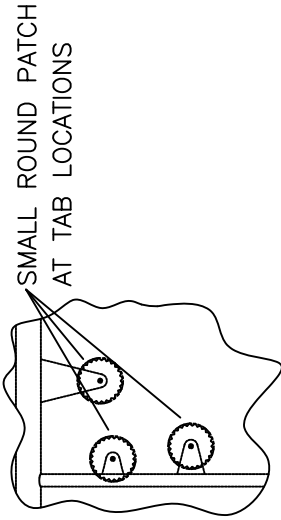


STITCH THROUGH BOTH LAYERS OF FABRIC COMPLETELY AROUND TUBE. TIE A KNOT AND ROTATE THE KNOT TO INTERIOR SIDE. PLACE A DIAMOND PATCH OVER STITCH ON EACH SIDE.

RAFAMES S-20 RAVEN
RUDDER AND ELEVATOR STITCHING
FIGURE 08E-12A

MD4273

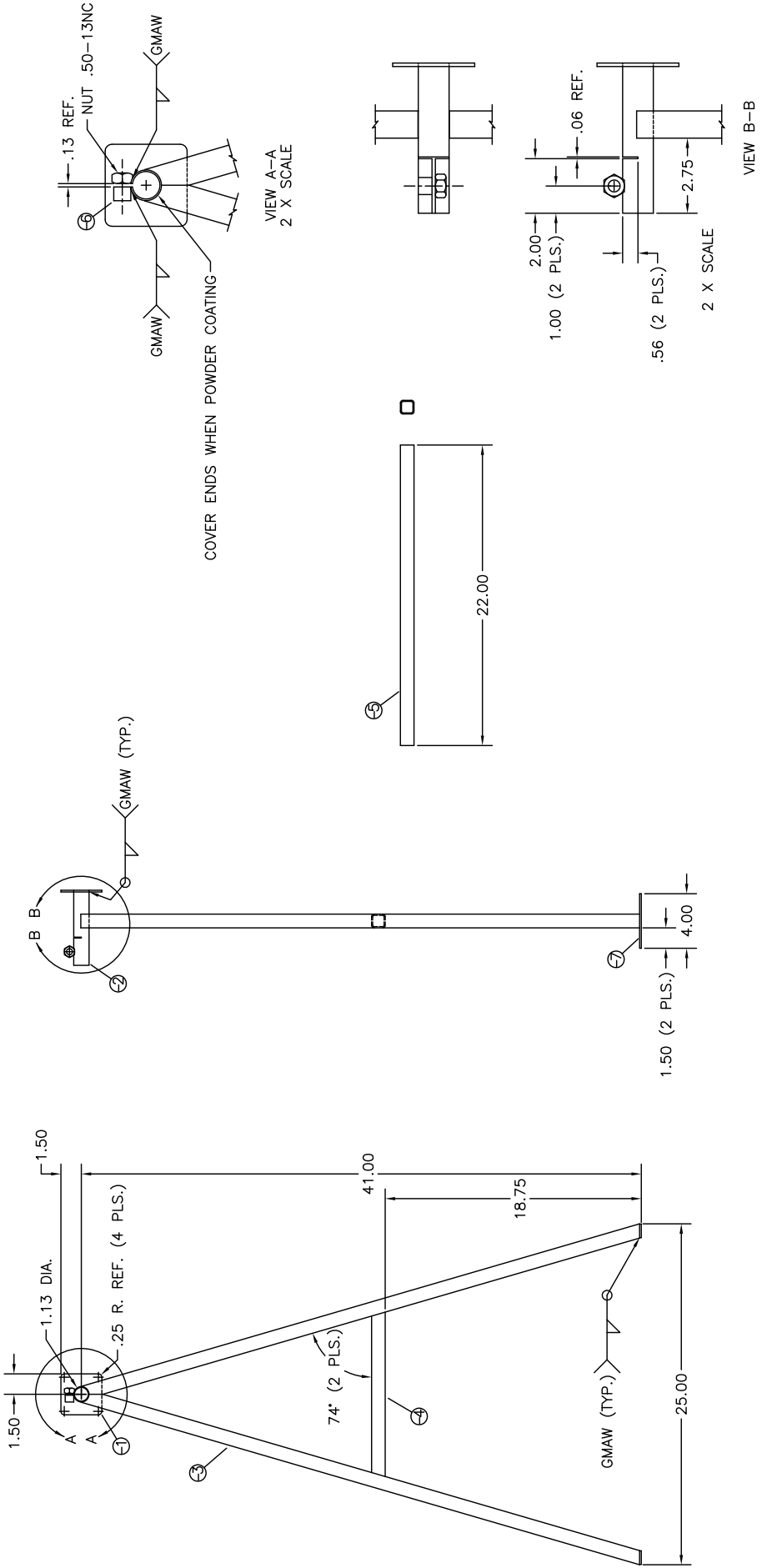
- 1 PATCH TO COVER BALANCE WEIGHT MOUNT PLATE (BOTTOM OF EACH ELEVATOR)
- 2 2" PINKED TAPE (CENTERED ON TUBE)
- 3 4.5" DIA. ROUND PATCH
- 4 DRAIN GROMMET* (BOTTOM SIDE/ SEE NOTE)
- 5 2" DIA. ROUND PATCH
- 6 SQUARE PATCH
- 7 PATCH** (SEE NOTE)
- 8 TRIM EXIT RING** (SEE NOTE)
- 9 RUDDER / ELEVATOR HINGE REINFORCEMENT



**RAVEN S-20 RAVEN
ELEVATOR COVERING**

FIGURE 08F-14

MD4277

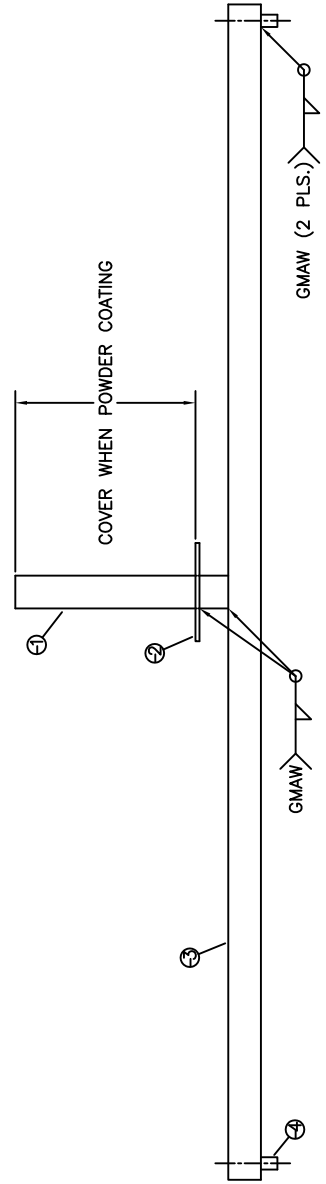
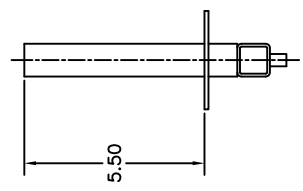
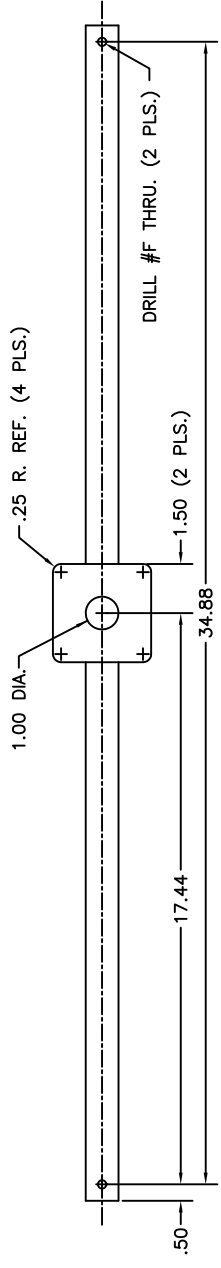


- UNLESS OTHERWISE SPECIFIED:
- ALL CORNER FILLETS AND SHARP EDGES .005/.015 R.
 - ① .125 SHT. X 3.00 X 3.00
 - ② 1.125 DIA. X .058 X 5.50 TUBING
 - ③ 1.000 SQ. X 14 GA. X 42.75 TUBING (2 REQ'D.)
 - ④ 1.000 SQ. X 14 GA. X 12.00 TUBING
 - ⑤ 1.000 SQ. X 14 GA. X 22.00 TUBING (2 REQ'D.)
 - ⑥ .625 DIA. X .058 X .50 TUBING
 - ⑦ 1.000 X .125 FLAT BAR (2 REQ'D.)

MATERIAL: MILD STEEL AS NOTED		FINISH: POWDER COAT PAINT PER R-101	
PROD. TIME	RAW MATL. AS NOTED	DATE	TITLE
PRECISION	FINISH	R. HOFFNER 11.22.93	4400 Highway 133 Memphis, Tenn. 38117 USA / Phone (901) 632-6346
DECIMALS	ANGLES	SIZE	A-FRAME STAND
XX	± 1°	D	FORMED DATE NO.
XXX	± 1°		REF. DATE NO.
XXX	± 1°		N/A
XXX	± 1°		SCALE 1 = 4
XXX	± 1°		WEIGHT X
XXX	± 1°		SHEET 1 OF 1
XXX	± 1°		N/A

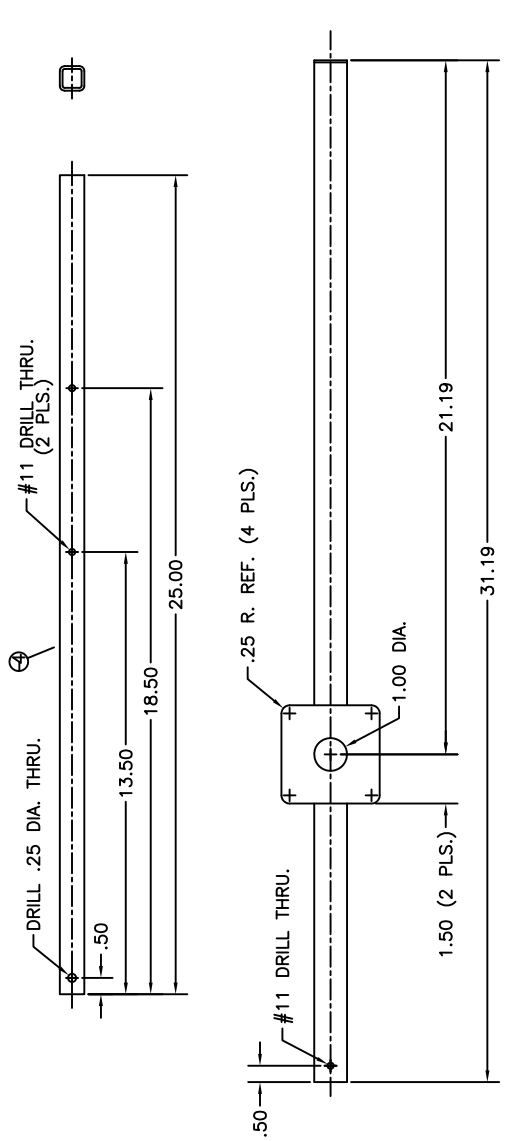
APPLICATION	
NEXT ASSY. USED ON	QTY.
	2
APPROVED:	
DRAWN:	
CHECKED:	
DATE:	
BY:	
R. HOFFNER 11.22.93	
FORMED DATE NO.	
REF. DATE NO.	
N/A	
SCALE 1 = 4	
WEIGHT X	
SHEET 1 OF 1	
N/A	

REVISIONS		DATE
LTR.	DESCRIPTION	

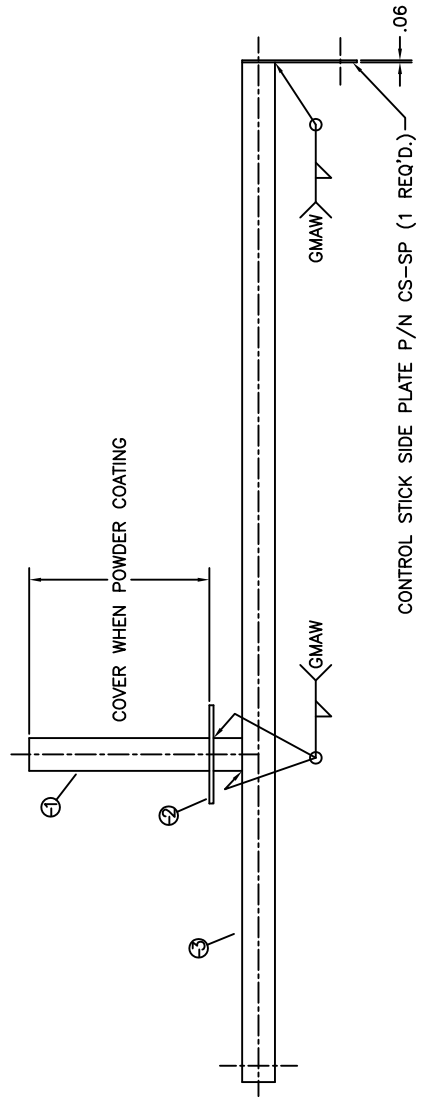
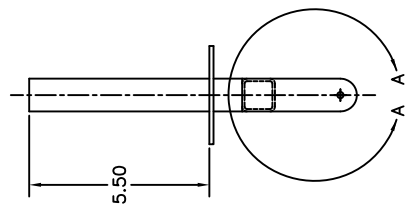


- UNLESS OTHERWISE SPECIFIED:
- ALL CORNER FILLETS AND SHARP EDGES .005/ .015 R.
 - ① 1.000 DIA. X 6.50 BAR
 - ② .125 SHT. X 3.00 X 3.00
 - ③ 1.000 SQ. X 14 GA. X 35.88 TUBING
 - ④ .375 DIA. X .035 X .50 TUBING (2 REQ'D.)

MATERIAL: MILD STEEL AS NOTED		FINISH: POWDER COAT PAINT	
PROD. TIME	PART MTL.	DATE	TITLE
X	AS NOTED	R. HOFFNER 11.22.03	4800 IMPROV. 133 7/8" DIA. NIPPL. ASS. (REV. 1.0) / (REV. 7/03) 025-0348
DESIGNER	DESIGNED	FORMED DRWG. NO.	FWD. FUSELAGE ATTACH
CHECKED	AS NOTED	SIZE	D
APPROVED	AS NOTED	PT. DRWG. NO.	N/A
ALL S-6'S	1	SCALE	1 = 2
NEXT ASSY. USED ON	QTY.	WEIGHT	X
APPLICATION		SHEET	1 OF 1
			N/A



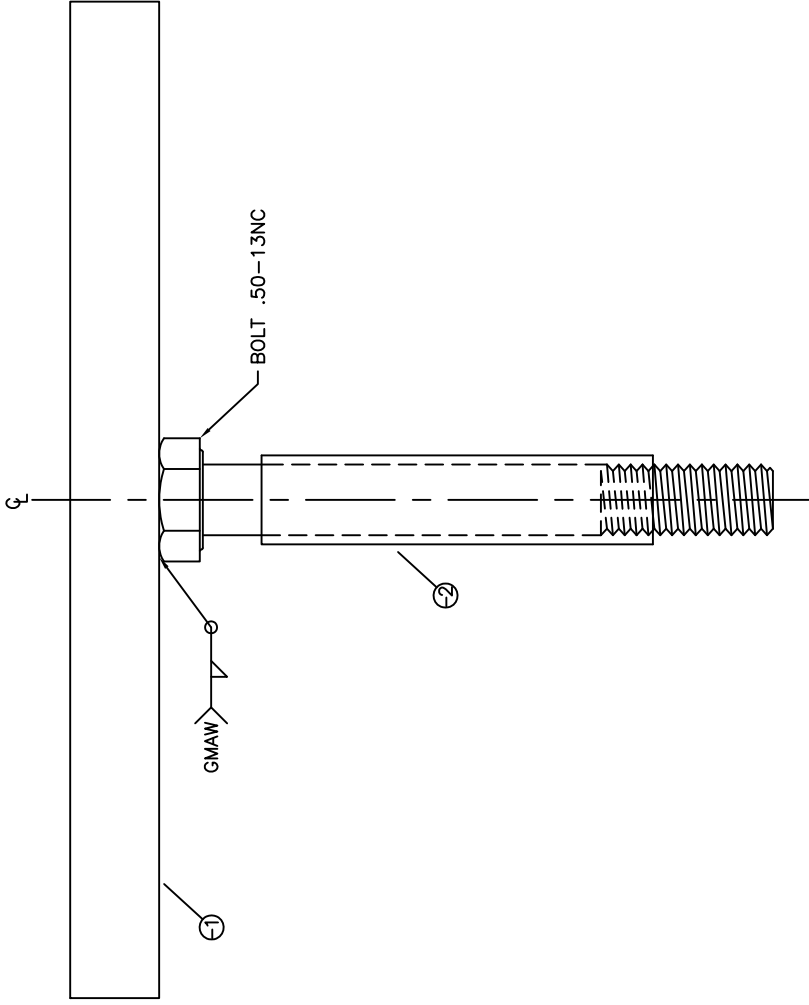
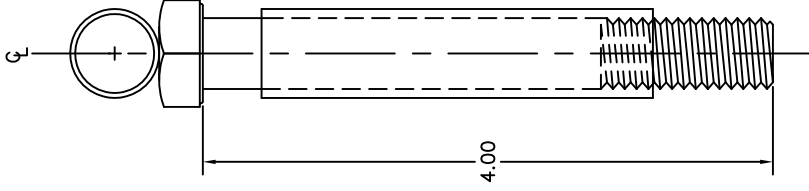
DETAIL A-A
2 X SCALE



- UNLESS OTHERWISE SPECIFIED:
- ALL CORNER FILLETS AND SHARP EDGES .005/.015 R.
 - ① 1.000 DIA. X 6.50 BAR
 - ② .125 SHT. X 3.00 X 3.00
 - ③ 1.000 SQ. X 14 GA. X 31.13 TUBING
 - ④ .750 SQ. X 14 GA. X 25.00 TUBING

MATERIAL: MILD STEEL AS NOTED		FINISH: POWDER COAT PAINT PER R-101	
PROD. TIME	PART MTL.	DATE	FILE
X	AS NOTED	R. HOFFNER (11.22.03)	4800 Highway 133 Memphis, Tenn. 38117 USA / Phone (781) 632-4346
X	DESIGNER	DESIGNED	PERFORMED DRG. NO.
X	DESIGNED	DESIGNED	WING ROOT ATTACH
X	DESIGNED	DESIGNED	SIZE
X	DESIGNED	DESIGNED	D
X	DESIGNED	DESIGNED	PT. DRG. NO.
X	DESIGNED	DESIGNED	N/A
X	DESIGNED	DESIGNED	SCALE
X	DESIGNED	DESIGNED	1 = 2
X	DESIGNED	DESIGNED	WEIGHT
X	DESIGNED	DESIGNED	X
X	DESIGNED	DESIGNED	SHEET
X	DESIGNED	DESIGNED	1 OF 1
X	DESIGNED	DESIGNED	R/D
X	DESIGNED	DESIGNED	N/A

REVISIONS	
LTR.	DATE
DESCRIPTION	



UNLESS OTHERWISE SPECIFIED:
 - ALL CORNER FILLETS AND SHARP EDGES .005/.015 R.
 ① .625 DIA. X .035 X 7.00 TUBING
 ② .625 DIA. X .058 X 2.75 TUBING

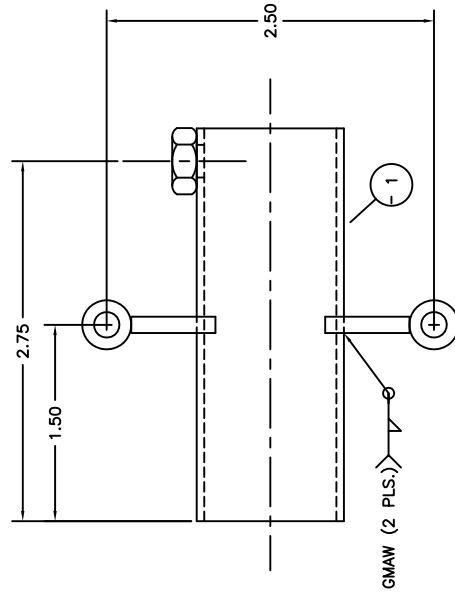
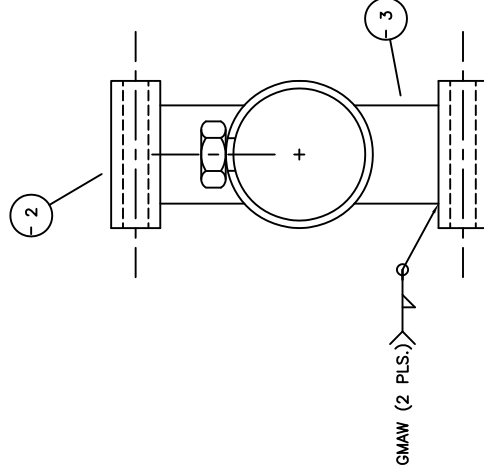
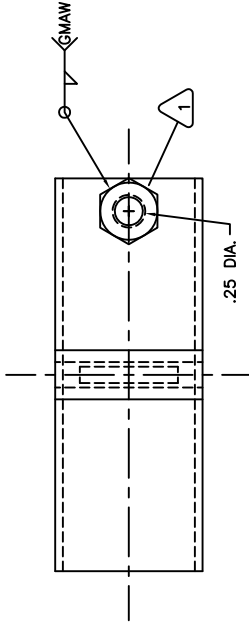
MATERIAL: MILD STEEL AS NOTED		FINISH: POWDER COAT PAINT PER R-101		RRRANS	
PROD. TIME: X	RAW MATL.: AS NOTED	DRAWN: R. HAFFNER	DATE 11.20.93	4600 Highway 183 Alternate, Hays, KS. 67601 USA / Phone (785) 625-6346	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES		CHECKED:	CERTIFIED DWG. NO.	TITLE "T" LOCK HANDLE	
DECIMALS X ± .1	ANGULAR ± 1°	CHECKED:	SIZE B	KIT DWG. NO. N/A	
.XX ± .05		APPROVED:	SCALE 1 = 1	WEIGHT X	SHEET 1 OF 1
.XXX ± .010					REV. N/A
DO NOT SCALE	DRAWING				
NEXT ASSY.	USED ON	QTY.	APPLICATION		

REVISIONS

DESCRIPTION

L.T.R.

DATE



ITEM NO.	DESCRIPTION	CUT LENGTH	MATERIAL	MISC. NOTES
1	NUT AN345-416	-	-	-
-3	.125 X .750 FLAT BAR	.66 IN	4130 STEEL	PER MIL-S-6758
-2	.375 DIA. X .090 TUBING	1.13 IN	4130 STEEL	PER MIL-T-6736
-1	1.125 DIA. X .056 TUBING	3.00 IN	4130 STEEL	PER MIL-T-6736

FINISH:

S/N:

SUPERSEDES: N/A

SUPERSEDED BY: N/A

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES

TOLERANCES

DECIMALS ± .05

ANGULAR ± 1°

NEXT ASSY: USED ON QTY. APPLICATION

DRAWN: J. BILES DATE: 4.10.96

CHECKED: R. HAFFNER

CHECKED: R.I.

APPROVED: R. IDBEIS

DATE: 4.10.96

DATE: 4.11.96

DATE: 4.12.96

SIZE B

DWG. NO. KP-108

SCALE 1 = 1

WEIGHT X

SHEET 1 OF 1

REV. N/A



PAINT STAND

4600 Highway 183 Alternate, Hays, KS. 67601 USA / Phone (913) 625-6346

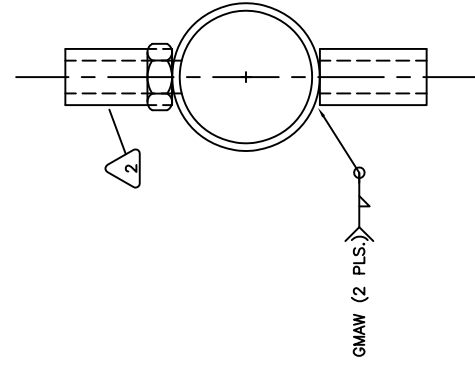
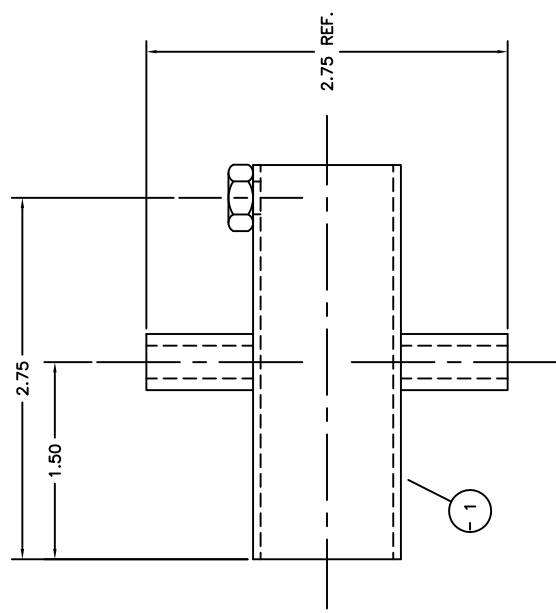
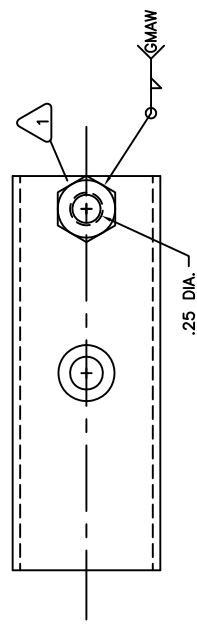
- ALL CORNER FILLETS AND SHARP EDGES .005/.015 R. UNLESS OTHERWISE SPECIFIED:

REVISIONS

DESCRIPTION

LTR.

DATE

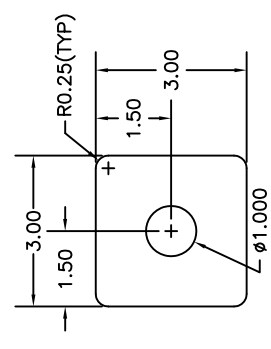
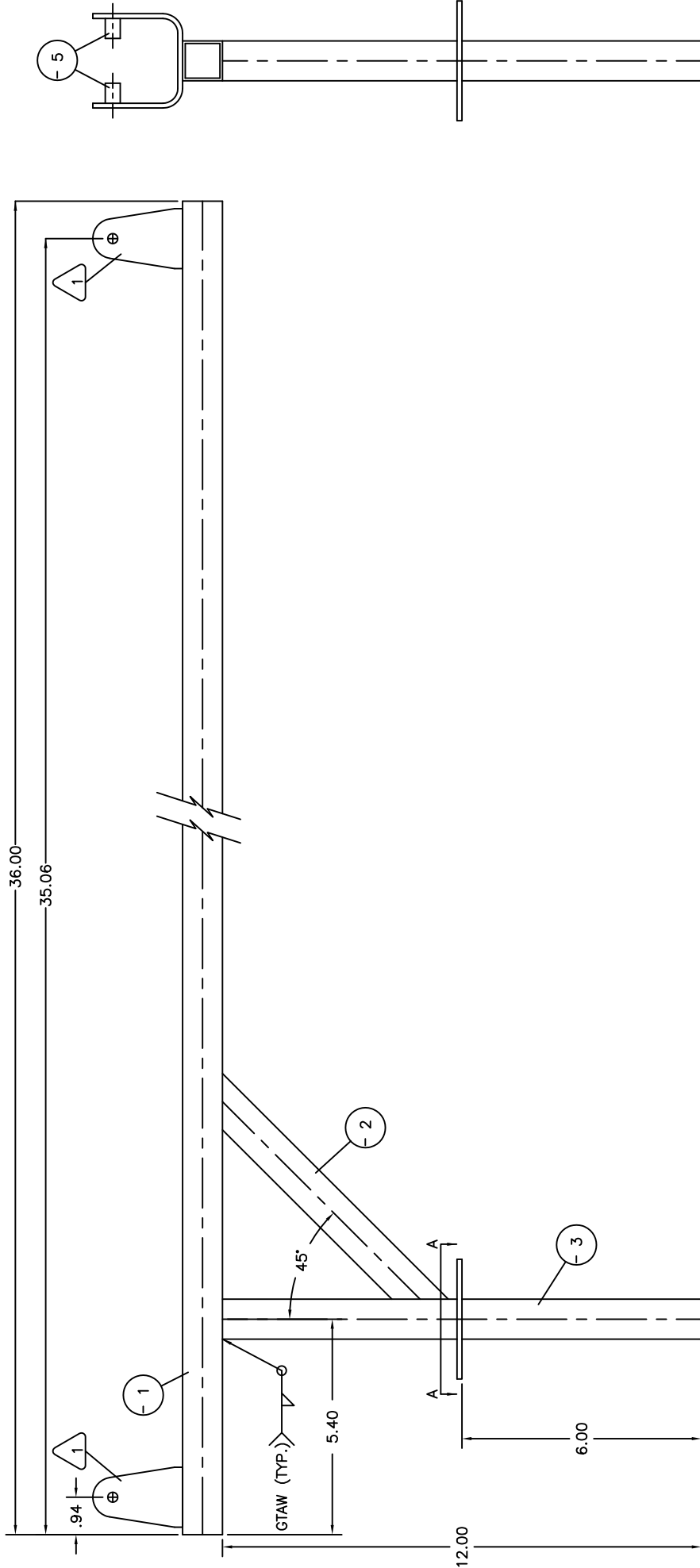


GMAW (2 PLS.)

2	2	INSERT NUT KPAC0012	-	-	-	-	-
1	1	NUT AN345-416	-	-	-	-	-
-1	1	1.125 DIA. X .058 TUBING	3.00 IN	4130 STEEL	PER MIL-T-6736	-	-
ITEM NO.	REQ'D	DESCRIPTION	CUT LENGTH	TYPE	MATERIAL SPEC.	MISC. NOTES	
S/N:		FINISH:					
SUPERSEDES: N/A		DRAWN: J. BILES	DATE: 4.10.96	TITLE: PAINT STAND			
SUPERSEDED BY: N/A		CHECKED: R. HAFFNER	4.10.96	4600 Highway 183 Alternate, Hoys, KS. 67601 USA / Phone (913) 625-6346			
DO NOT SCALE DRAWING		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES					
		DECIMALS: .XX ± .05 ANGULAR ± 1°					
		NEXT ASSY. USED ON QTY. APPLICATION					
		R. IDBEIS 4.12.96					
		SCALE 1 = 1					
		DWG. NO. KP-109					
		SIZE B					
		SHEET 1 OF 1					
		WEIGHT X					
		REV. N/A					

RRR

- ALL CORNER FILLETS AND SHARP EDGES .005/.015 R. UNLESS OTHERWISE SPECIFIED:



VIEW A-A
 1 X SCALE

ALL CUT LENGTHS ARE REFERENCE ONLY
 REMOVE ALL BURRS AND SHARP EDGES
 UNLESS OTHERWISE SPECIFIED:

ITEM NO.	DESCRIPTION	CUT LENGTH	MATERIAL	TYPE	QUANTITY	MISC. NOTES
1	2" U-BRACKET - SU-218	-	-	-	-	-
2	.375 DIA. X .058 TUBING	.50 IN.	4130 STEEL	AMS-T-6736A	-	-
3	.125 SHT.	9.00 IN ²	4130 STEEL	MIL-S-18729C	-	-
4	1.000 DIA. X .095 TUBING	12.00 IN.	4130 STEEL	AMS-T-6736A	-	-
5	1.000 SQ. X .065 TUBING	36.00 IN	4130 STEEL	AMS-T-6736A	-	-

FINISH:
 X X X
 X X X

DRAWN:
 T. BUTLER

CHECKED:
 R.C.H.

DATE
 XX.XX.XX

DATE
 XX.XX.XX

SUPERSEDES: N/A

SUPERSEDED BY: N/A

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 DECIMALS ANGULAR
 .X ± .1
 .XX ± .05
 .XXX ± .010

APPROVED:
 X

RRRams
 4600 Highway 183 Alternate, Hoyt, KS. 67601 USA / Phone (785) 625-6346

TITLE
 PAINT STAND
 AFT ATTACH FUSELAGE

SIZE
 C

DWG. NO.
 KP-112

SCALE
 1 = 2

WEIGHT
 X

SHEET
 1

OF
 1

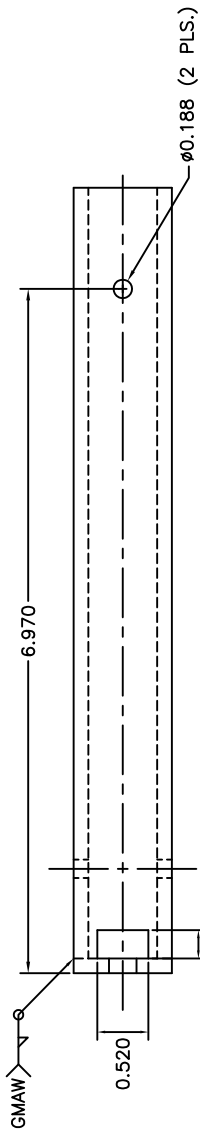
REV.
 N/A

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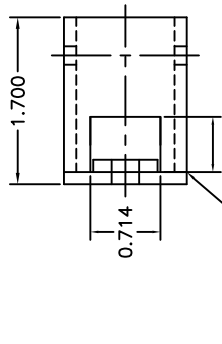
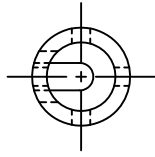
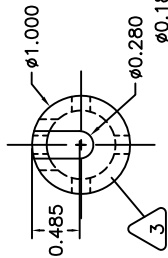
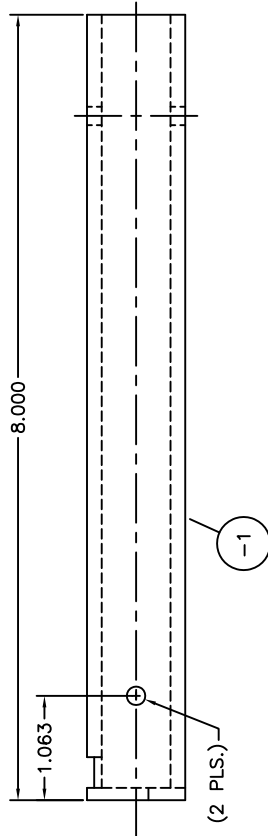
MANUFACTURER:
 CONTRACTED BY: N/A

NOTES:
 S-17 USED ON QTY.
 APPLICATION

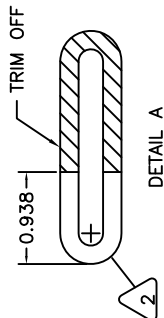
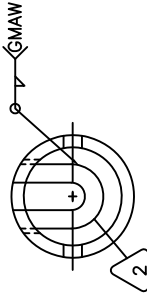
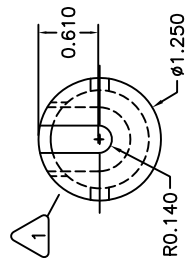
LTR.	REVISIONS
	DESCRIPTION
	DATE



0.288



0.188 (2 PLS.)



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MANUFACTURER:
CONTRACTED BY: N/A

NOTES:

NEXT ASSY.	USED ON	QTY.
	APPLICATION	

3	1	.125 PLT.	.78 IN. ²	-	-	-
2	1	MOD. KPAC0122	-	-	-	SEE DETAIL A
1	1	.125 PLT.	1.25 IN. ²	-	-	-
-2	1	1.25 DIA. X .120 TUBE	1.45 IN.	-	-	-
-1	1	1.00 DIA. X .15 TUBE	8.00 IN.	-	-	-
ITEM	NO.	DESCRIPTION	CUT LENGTH	TYPE	MATERIAL	MISC. NOTES

S/N:

FINISH:

SUPERSEDED BY: N/A	DRAWN: A.MCELWAIN	DATE: 7.14.14
DO NOT SCALE DRAWING	CHECKED:	
UNLESS OTHERWISE SPECIFIED:	CHECKED:	
DIMENSIONS IN INCHES	APPROVED:	
DECIMALS ± .05		
.XX ± .05		
.XXX ± .010		

RRRAMS
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TITLE		WING TIP PIVOT
SIZE	DWG. NO.	KP-117
SCALE	1 = 1	WEIGHT .XX lb. SHEET 1 OF 1
REV.	N/A	

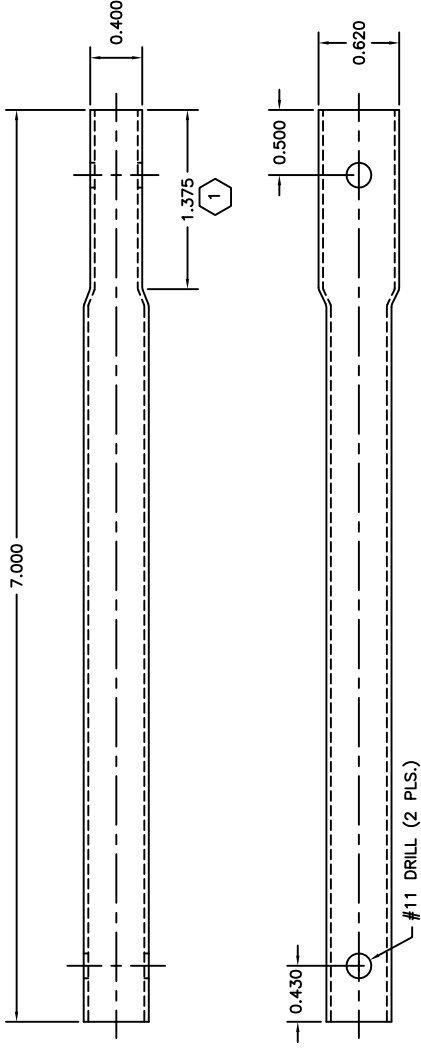
- REMOVE ALL BURRS AND SHARP EDGES
UNLESS OTHERWISE SPECIFIED:

REVISIONS

LTR.

DESCRIPTION

DATE



- 1 SMASH END FROM DIMENSION
- ALL CORNER FILLETS AND SHARP EDGES .005/.015 R.
- UNLESS OTHERWISE SPECIFIED:

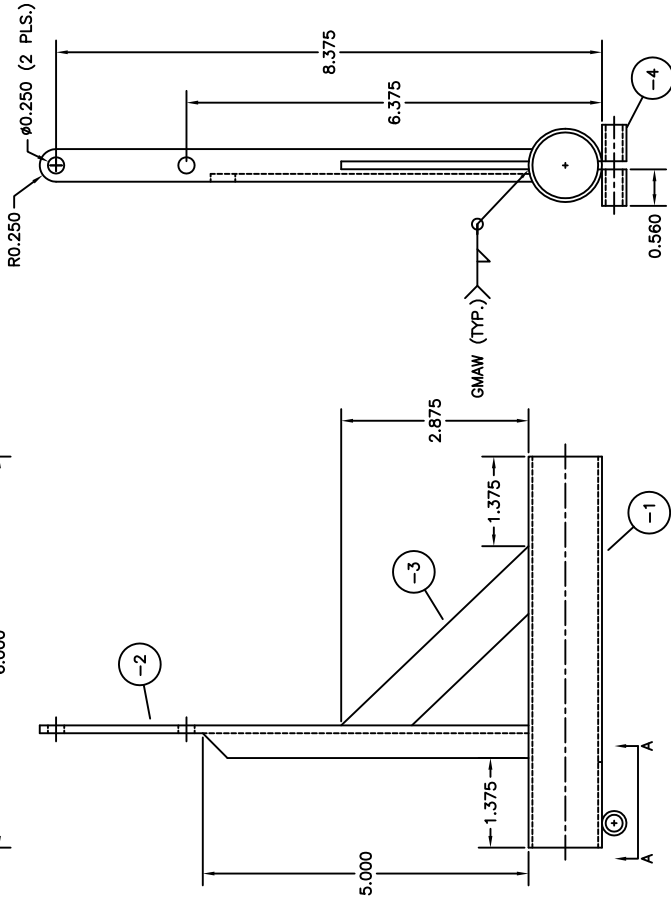
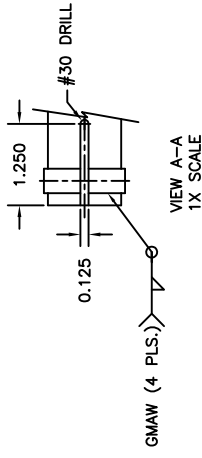
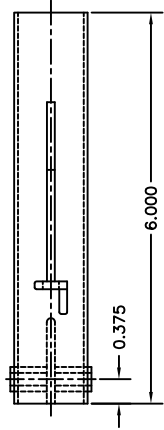
-1	1	.50 DIA. X .035 TUBING	7.00 IN	4130 STEEL	AMS-T-6736A	-
ITEM NO.	REQ'D.	DESCRIPTION	CUT LENGTH	TYPE	SPEC.	MISC. NOTES
S/N:						
SUPERSEDES: N/A		FINISH:	RRANBS			
SUPERSEDED BY: N/A		DATE	4600 Highway 183 Alternate, Hoye, KS. 67601 USA / Phone (913) 625-6346			
DRAWN: A. MCELWAIN		DATE	TITLE			
CHECKED:		7.29.14	PAINT STAND - AILERON ATTACH			
CHECKED:			SIZE			
APPROVED:			B			
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES		DWG. NO. KP-118				
TOLERANCES		SCALE 1 = 1				
DECIMALS ± .05		WEIGHT X				
ANGULAR ± 1°		SHEET 1 OF 1				
.XXX ± .005		REV. N/A				
APPLICATION						

REVISIONS

DESCRIPTION

LTR.

DATE



ITEM NO.	NO. RECD.	DESCRIPTION	CUT LENGTH	TYPE	MATERIAL	MISC. NOTES
-4	2	1.125 DIA X .058 TUBE	.56 IN.	4130 STEEL	AMS-T-6736A	-
-3	1	.125 X .75 REC. BAR	4.0 IN.	MILD STEEL	-	-
-2	1	.50 X .50 X .120 ANGLE	7.5 IN.	4130 STEEL	MIL-S-6758	-
-1	1	1.125 DIA X .058 TUBE	6.0 IN.	4130 STEEL	AMS-T-6736A	-

S/N:	FINISH:	DATE
		7.30.14
SUPERSEDES: N/A	DRAWN: A.MICELWAIN	
SUPERSEDED BY: N/A	CHECKED:	

DO NOT SCALE DRAWING	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES	
DECIMALS	ANGULAR
.XX ± .01	± 1
.XXX ± .010	
NEXT ASSY. USED ON	QTY.
APPLICATION	

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MANUFACTURER: N/A

CONTRACTED BY: N/A

NOTES:

REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED:

RRR

4600 Highway 183 Alternate, Hays, KS. 67601 USA / Phone (785) 625-6346

TITLE: ELEVATOR ROOT ATTACH

SIZE: B

DWG. NO. KP-119

SCALE: 1 = 2

WEIGHT: .XX lb

SHEET: 1 OF 1

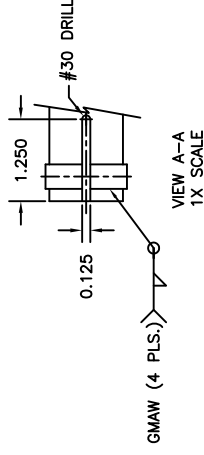
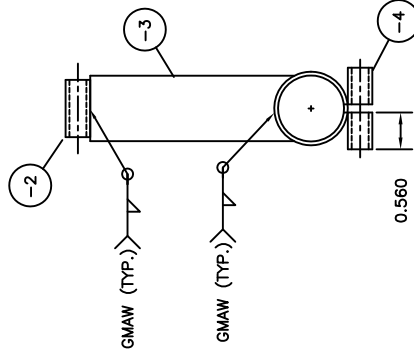
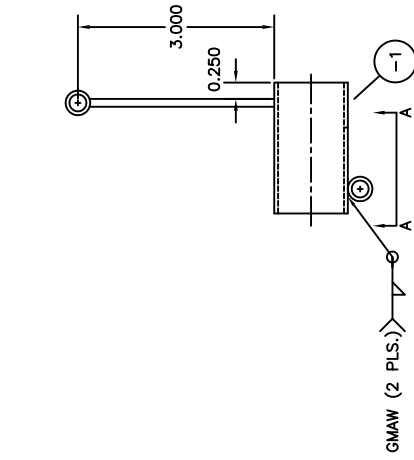
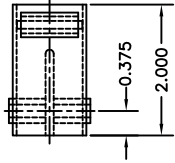
REV. N/A

REVISIONS

DESCRIPTION

LTR.

DATE



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MANUFACTURER:
CONTRACTED BY: N/A

NOTES:

- REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED:

NEXT ASSY. USED ON QTY.
APPLICATION

-4	2	1.125 DIA. X .058 TUBE	.56 IN.	4130 STEEL	AMS-T-6736A	-
-3	1	.125 X 1.0 REC. BAR.	3.12 IN.	MILD STEEL	-	-
-2	1	.375 DIA. X .058 TUBE	.88 IN.	4130 STEEL	MIL-S-6758	-
-1	1	1.125 DIA. X .058 TUBE	2.0 IN.	4130 STEEL	AMS-T-6736A	-
ITEM NO.	QTY.	DESCRIPTION	CUT LENGTH	MATERIAL	MISC. NOTES	
S/N:		FINISH:				

RRAINS
4600 Highway 183 Alternate, Hays, KS. 67601 USA / Phone (785) 625-6346

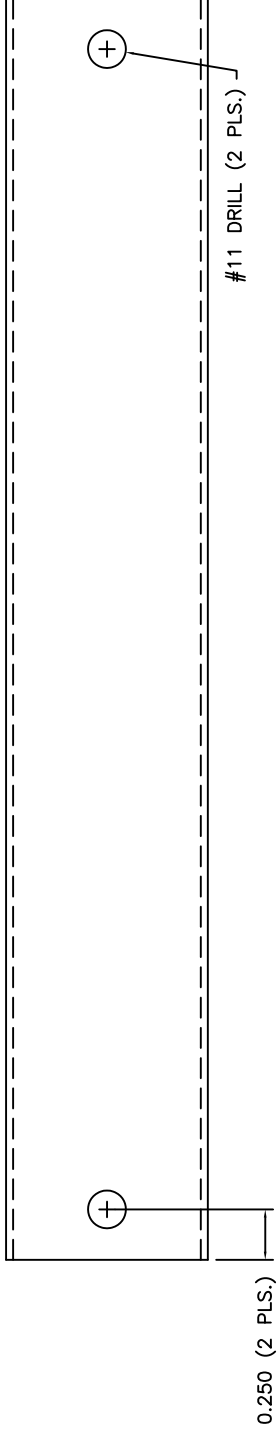
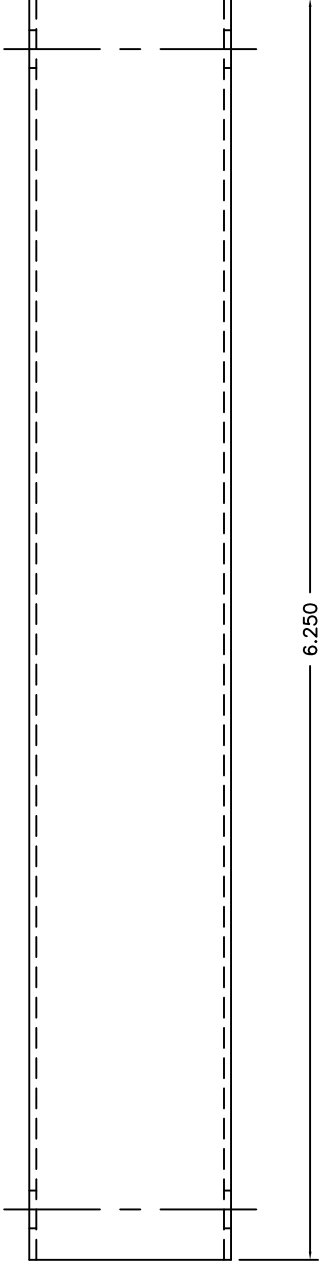
TITLE
ELEVATOR OUTER ATTACH

SIZE **B**
DWG. NO. **KP-120**
SCALE **1 = 2** WEIGHT **.XX lb** SHEET **1 OF 1** REV. **N/A**

DATE **7.30.14**
DRAWN: **A.MCELWAIN**
CHECKED:

DO NOT SCALE DRAWING
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES
DECIMALS ± .05
XX ± .05
XXX ± .10
ANGULAR ± 1°
APPROVED: **X**

REVISIONS	
LTR.	DATE



- REMOVE ALL BURRS AND SHARP EDGES
UNLESS OTHERWISE SPECIFIED:

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MANUFACTURER:

CONTRACTED BY: N/A

NOTES:

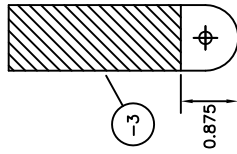
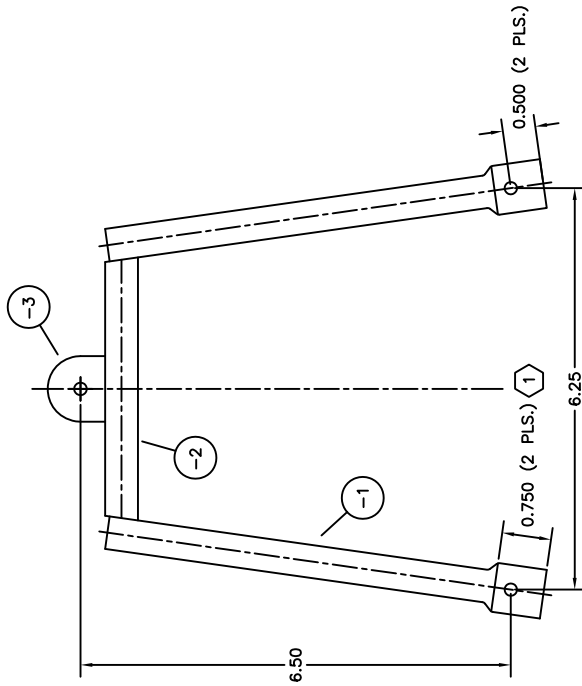
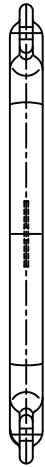
-1	1	1.0 X 1.0 X .035 SQ. TUBE	6.25 IN.	4130 STEEL	AMS-T-6736A	-
ITEM NO.	REQ'D	DESCRIPTION	CUT LENGTH	TYPE	MATERIAL	MISC. NOTES
S/N:						
SUPERSEDES: N/A		FINISH:	DATE	TITLE		
SUPERSEDED BY: N/A		A.MCELLWAIN	8.04.14	RRRANNS		
DO NOT SCALE DRAWING		CHECKED:		4600 Highway 183 Alternate. Hays, KS. 67601 USA / Phone (913) 625-6346		
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES		CHECKED:		UPPER RUDDER SUPPORT TUBE		
TOLERANCES		APPROVED:		SIZE DWG. NO. KP-121		
DECIMALS ± .1				SCALE 1 = 1		
.X ± .1				WEIGHT .XX lb.		
.XXX ± .010				SHEET 1 OF 1		
NEXT ASSY.		USED ON	QTY.	REV. N/A		
APPLICATION						

REVISIONS

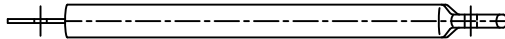
DESCRIPTION

LTR.

DATE



DETAIL A
1X SCALE



-3	1	MOD. CS-SP	-	-	SEE DETAIL A
-2	1	.50 DIA. X .035 TUBE	4.00 IN.	4130 STEEL	AMS-T-6736A
-1	2	.50 DIA. X .035 TUBE	6.70 IN.	4130 STEEL	AMS-T-6736A
ITEM NO.		DESCRIPTION	CUT LENGTH	MATERIAL	SPEC.
REQ'D.					
S/N:		FINISH:			MISC. NOTES

RRRANS
4600 Highway 183 Alternate, Hays, KS. 67601 USA / Phone (785) 625-6346

TITLE: LOWER RUDDER SUPPORT

SIZE: B DWG. NO.: KP-122

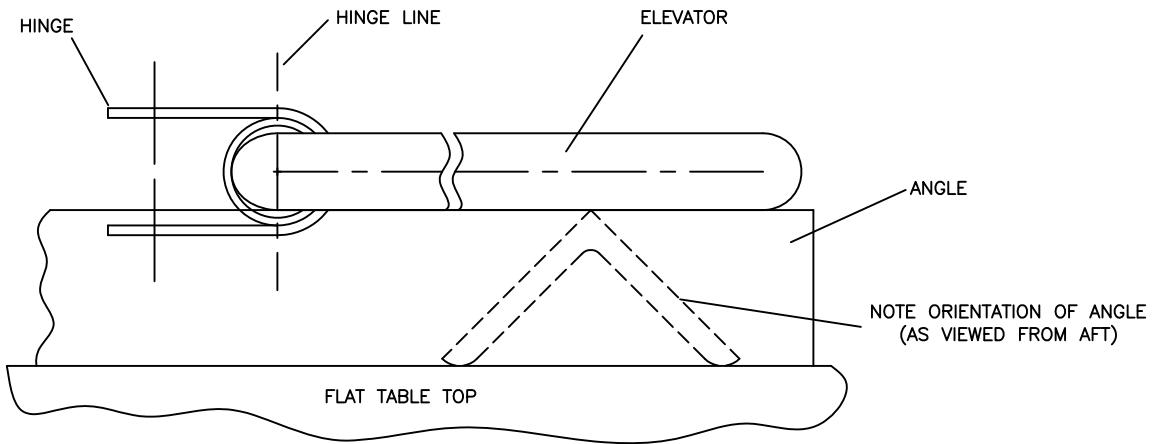
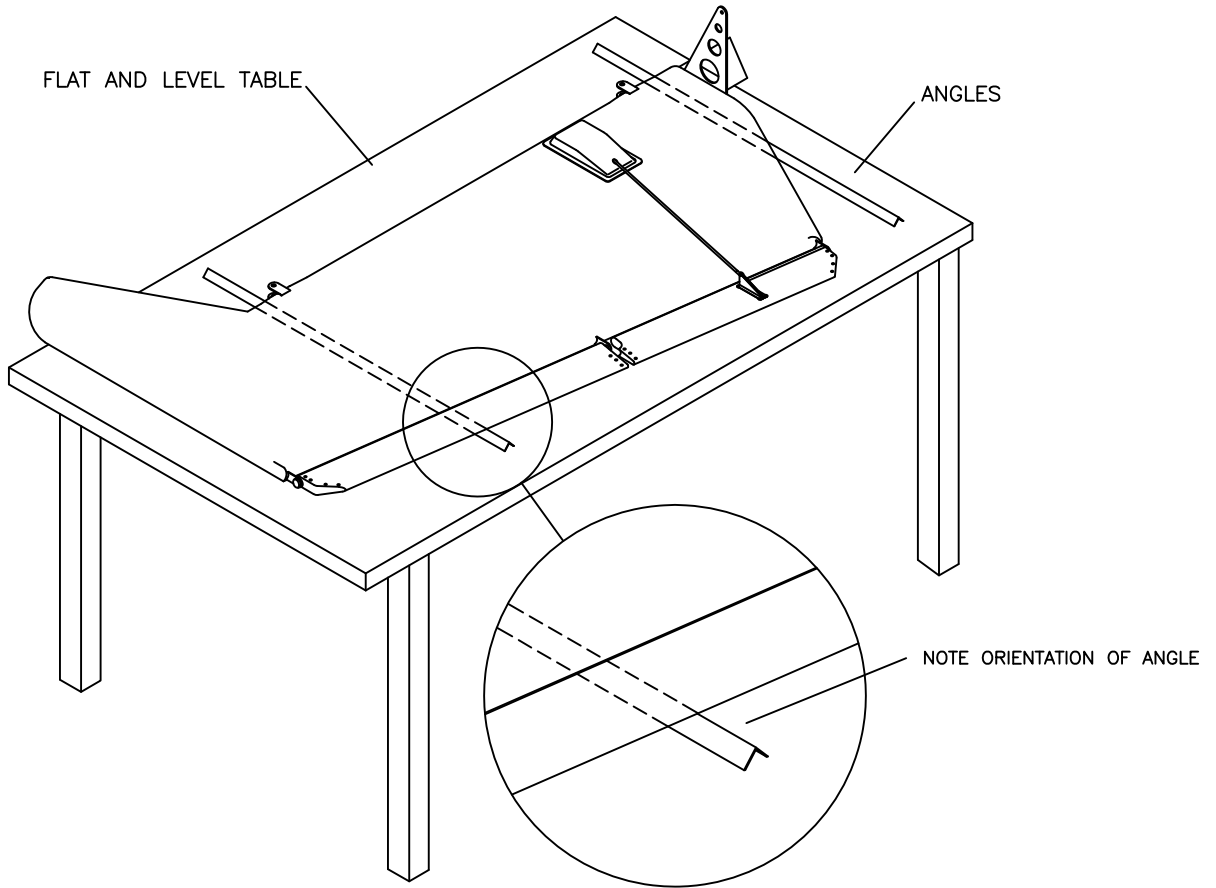
SCALE: 1 = 2 WEIGHT .XX lb SHEET 1 OF 1 REV. N/A

SUPERSEDES: N/A	DATE: 8.05.14
SUPERSEDED BY: N/A	DRAWN: A. MCELWAIN
DO NOT SCALE DRAWING	CHECKED:
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES	CHECKED:
DECIMALS: ± .01	APPROVED:
FRACTIONS: ± 1/16	
ANGULAR: ± 1°	
XXX ± .05	
.XXX ± .010	

MANUFACTURER:
CONTRACTED BY: N/A

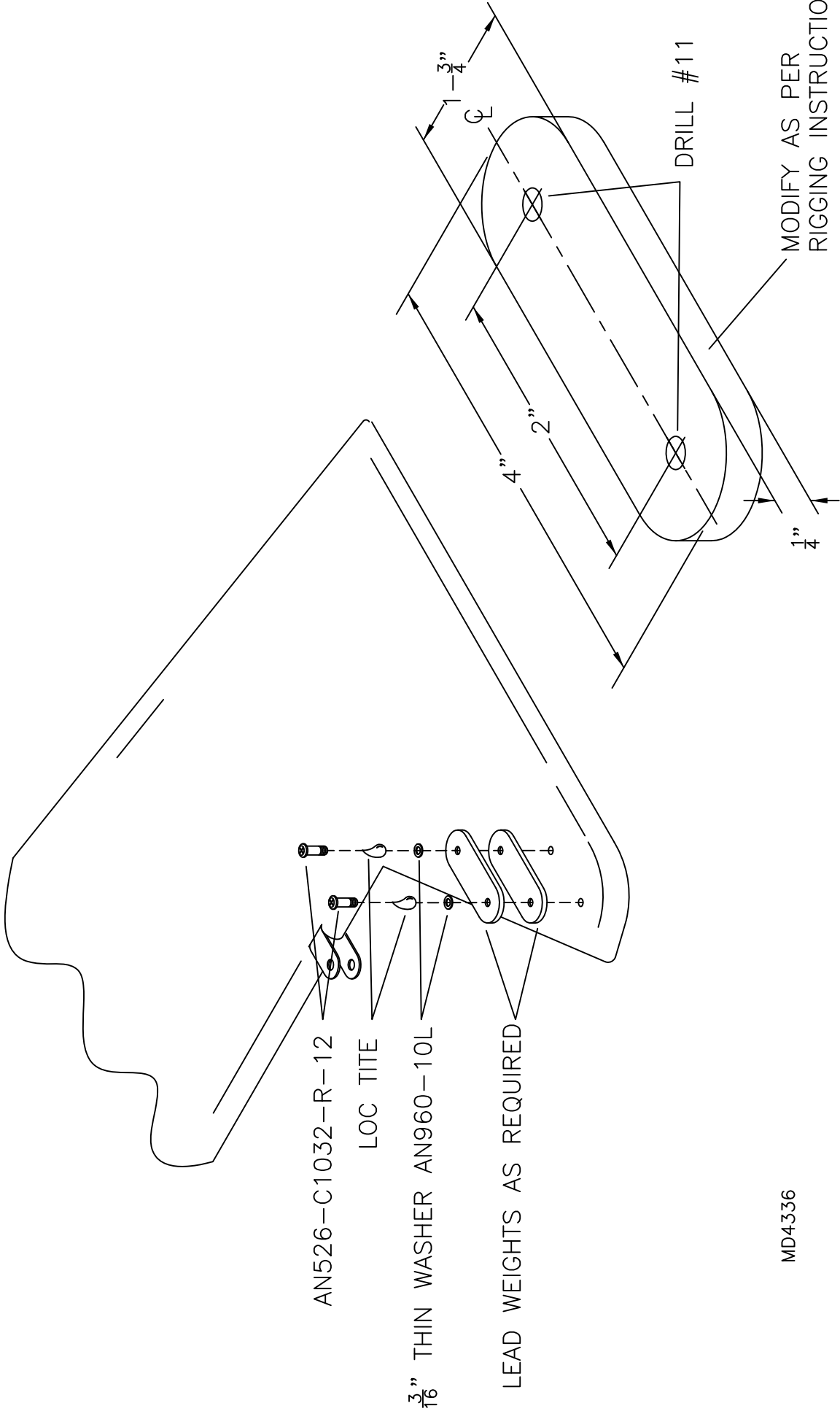
NOTES:
1 SMASH END
- REMOVE ALL BURRS AND SHARP EDGES
UNLESS OTHERWISE SPECIFIED:

NEXT ASSY. USED ON QTY. APPLICATION



MD4328

RAMS S-20 RAVEN
ELEVATOR MASS BALANCE
FIGURE 11-03



AN526-C1032-R-12

LOC TITE

$\frac{3}{16}$ " THIN WASHER AN960-10L

LEAD WEIGHTS AS REQUIRED

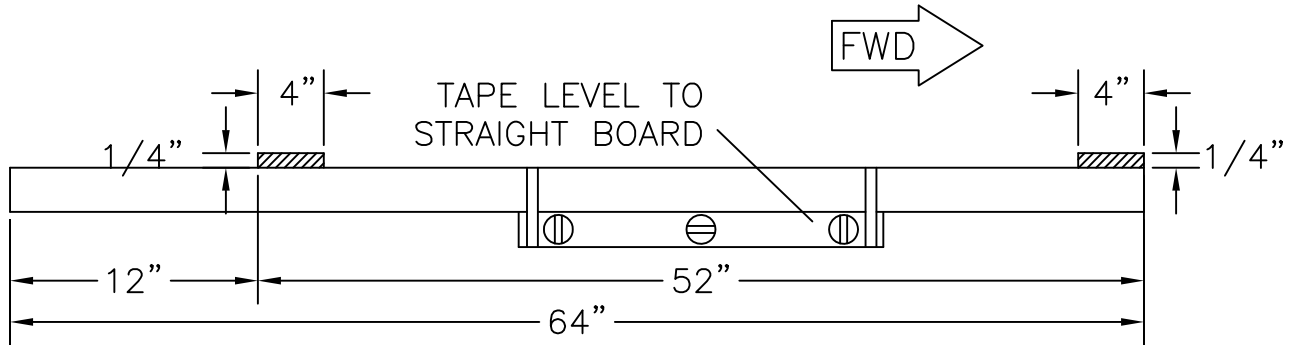
DRILL #11

MD4336

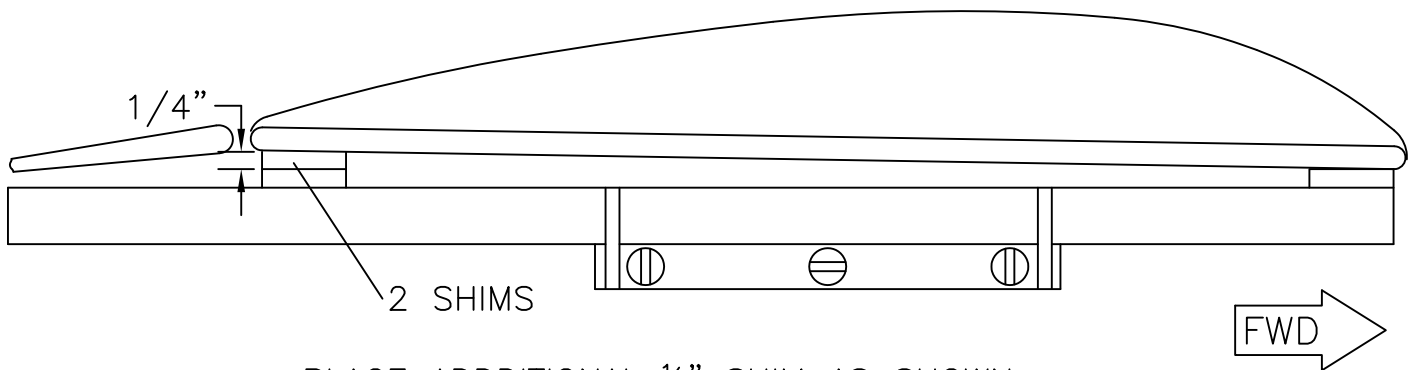
MODIFY AS PER RIGGING INSTRUCTIONS

NOTE: RH ELEVATOR REQUIRES MORE WEIGHT THAN LH ELEVATOR

RAMB S-20 RAVEN
 ELEVATOR MASS BALANCE
 WEIGHT AND ATTACH
 FIGURE 11-04



FIRST, FABRICATE RIGGING LEVEL AS SHOWN AND USE TO LEVEL WING ROOT.



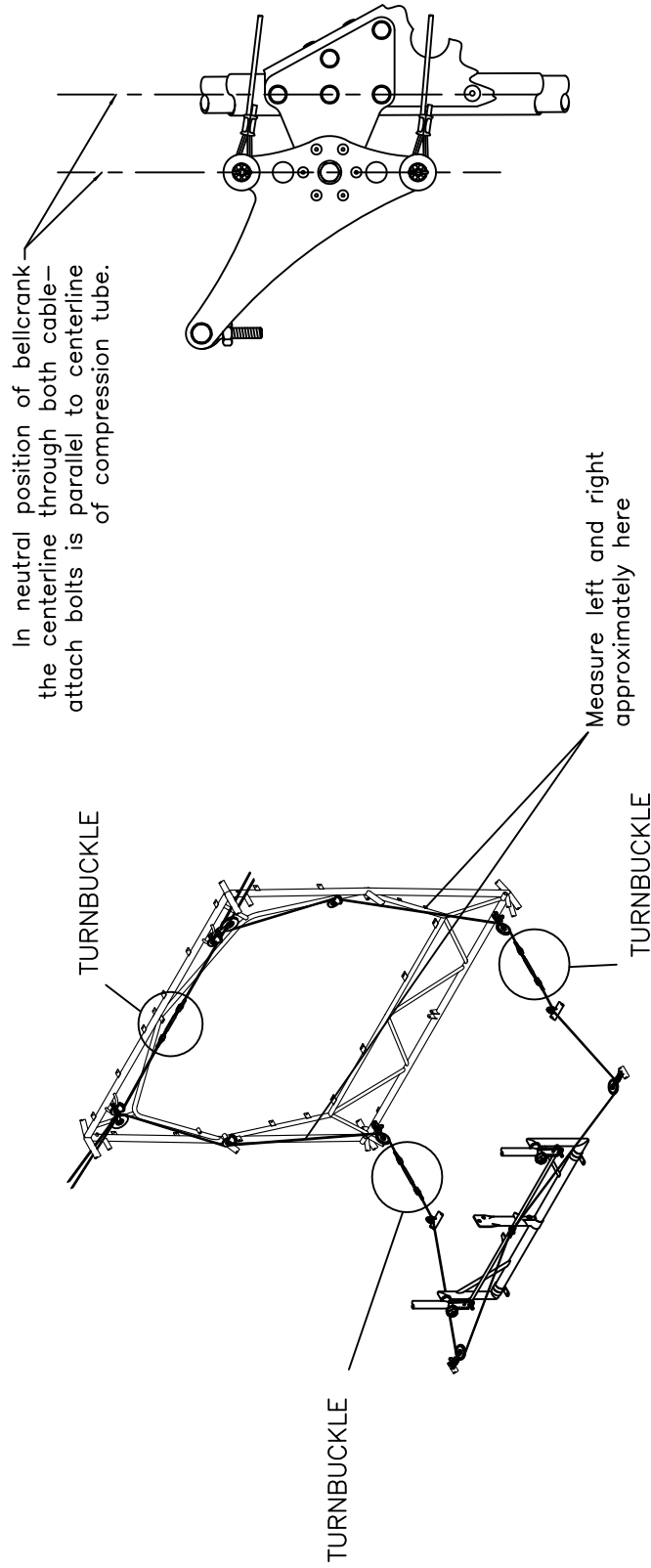
PLACE ADDITIONAL $\frac{1}{4}$ " SHIM AS SHOWN. WITH LEVEL JUST OUTBOARD OF STRUT ATTACH POINTS, ADJUST REAR STRUT FOR LEVEL READING.

MD4426

RANS S-20 RAVEN
WING WASH OUT RIGGING LEVEL
FIGURE 11A-01

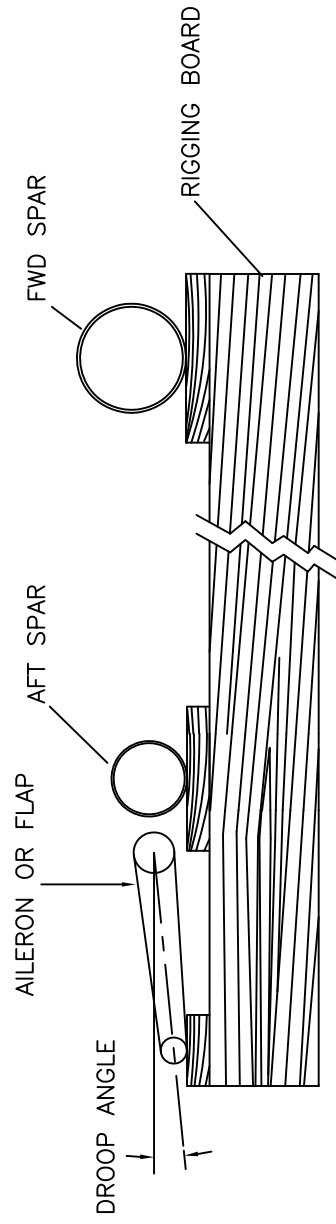
09/01/2013

CENTER FORWARD CONTROL STICK (AILERON NEUTRAL) AND FIX IN THIS POSITION.
 ADJUST AILERON CABLE LENGTH AND CABLE TENSION AND CHECK THAT BOTH AILERON
 BELL CRANKS ARE IN NEUTRAL POSITION (VISUAL INSPECTION) WITH STICK CENTERED.
 ADJUST CABLE TENSION TO 20-25 LB. - 0.0 + 5 LBS (2 PLS)



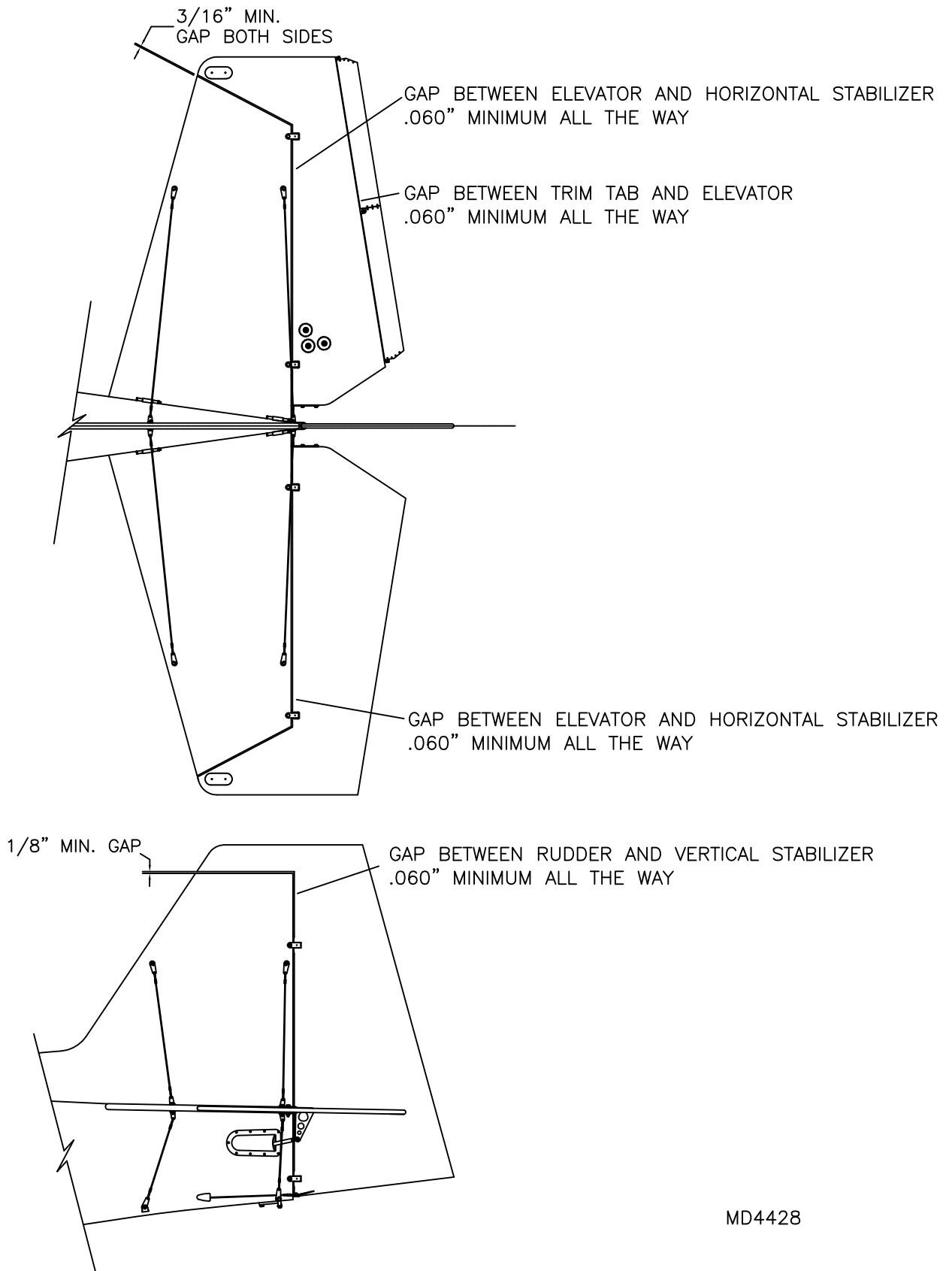
MD4427
 REV. - ORIG

RAVEN S-20 RAVEN
AILERON RIGGING
FIGURE 11A-09



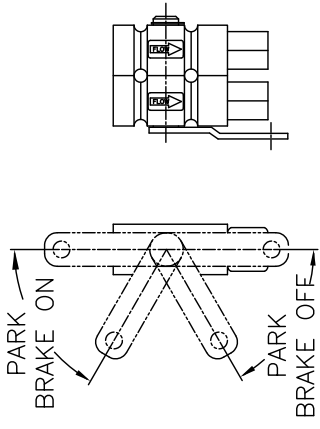
MD4427
REV. - ORIG

RAVEN S-20 RAVEN
AILERON RIGGING BOARD
FIGURE 11A-11



MD4428

RANS S-20 RAVEN
CONTROL SURFACE RIGGING
CLEARANCES - TAIL
FIGURE 11B-09



PARK BRAKE VALVE OPERATION

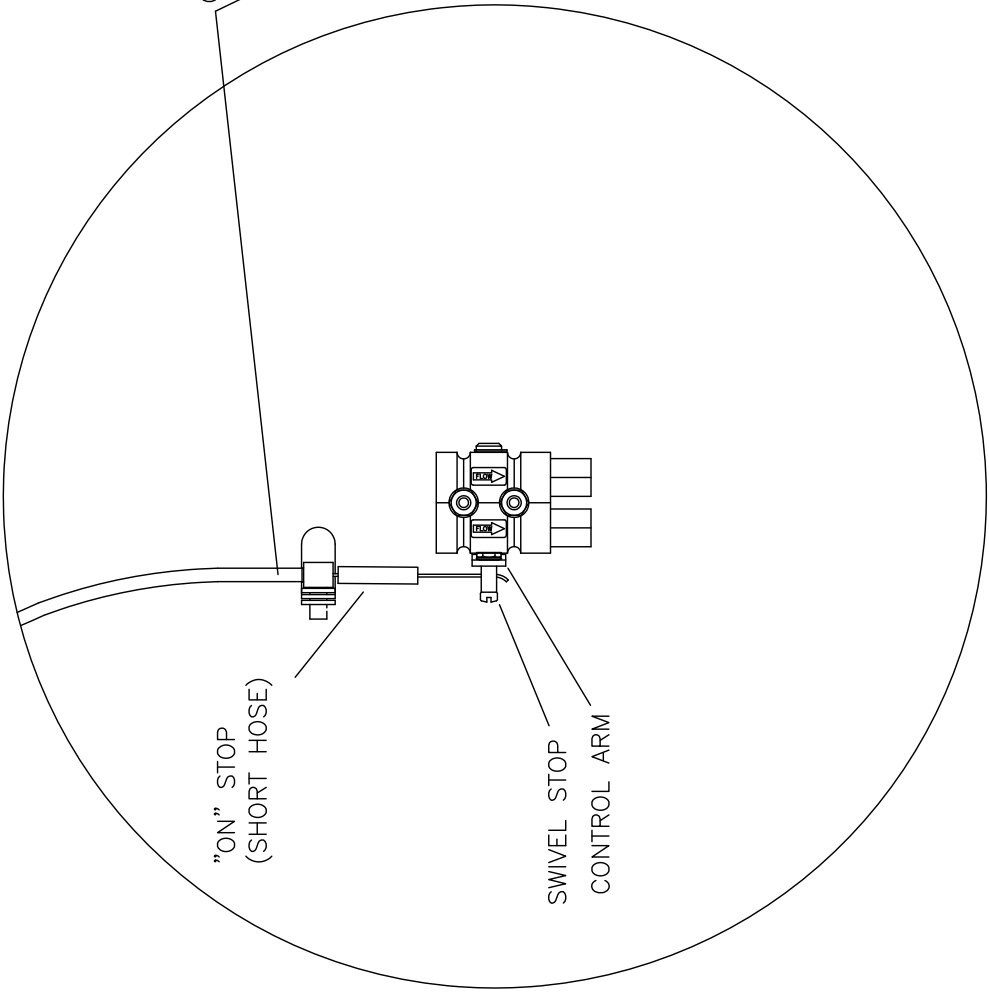
CABLE HOUSING

"ON" STOP (SHORT HOSE)

SWIVEL STOP CONTROL ARM

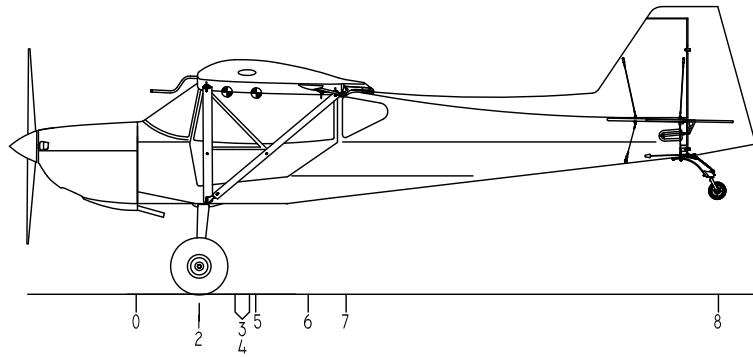
CONTROL KNOB

FRICTION ADJUSTMENT



RRP S-20 RAVEN
 PARK BRAKE RIGGING
 FIGURE 11C-04

MD4434



N _____	
DATE WEIGHED	
ENGINE TYPE	ROTAX 912ULS
C.G. CONDITION	
EMPTY WEIGHT	LBS.
GROSS WT.	1320 LBS.

RANS S-20 RAVEN (Taildragger) WEIGHT AND BALANCE

ACCEPTABLE C.G. 31.72" TO 41.92" FROM DATUM 0.
DATUM = FRONT OF FIREWALL; AIRCRAFT IN
LEVEL ATTITUDE. (LEVEL REFERENCE 90° TO
FUSELAGE AFT DOOR FRAME)

#	ITEM	WEIGHT	ARM	MOMENT
1	MAIN - RH	34.2	22.0"	752.4
2	MAIN - LH	33.7	22.0"	741.4
3	PILOT	80	37.0"	6660
4	PASSENGER	70	37.0"	6290
5	FUEL - WINGS	156	41.7"	6505.2
6	FUEL - HEADER TANK	16.5	60.0"	990
7	BAGGAGE *	29.5	73.25"	2160.88
9	TAILWHEEL	52	203.0"	10556
TOTAL =		1283	TOTAL =	48100.08

RANGE 34.5" TO 39.5"
RANGE 34.5" TO 39.5"
MAX. 26 GALLON
MAX 2.75 GALLON

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

$$\frac{48100.08}{1283} = 37.49$$

#	ITEM	WEIGHT	ARM	MOMENT
1	MAIN - RH			
2	MAIN - LH			
3	PILOT			
4	PASSENGER			
5	FUEL - WINGS			
6	FUEL - HEADER TANK			
7	BAGGAGE *			
9	TAILWHEEL			
TOTAL =			TOTAL =	

RANGE 34.5" TO 39.5"
RANGE 34.5" TO 39.5"
MAX. 26 GALLON
MAX 2.75 GALLON
MAX 80 POUNDS

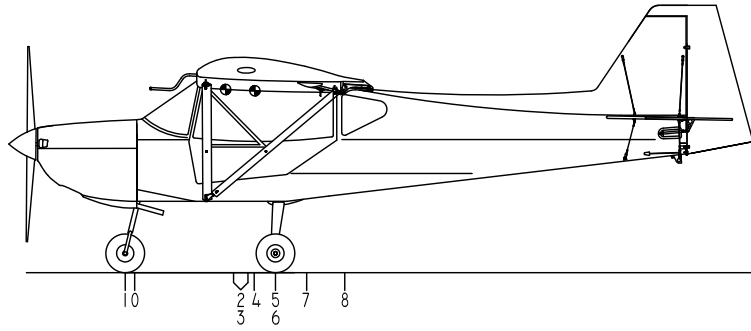
$$\frac{\text{TOTAL MOMENTS}}{\text{TOTAL WEIGHT}} = \text{C.G.}$$

$$\text{_____} =$$

MD5573
REV. B

* ARM CALCULATED AT CENTER OF BAGGAGE COMPARTMENT

RANS S-20 RAVEN WEIGHT & BALANCE STANDARD RANS TAILWHEEL FIGURE 12-01



N _____	
DATE WEIGHED	
ENGINE TYPE	ROTAX 912ULS
C.G. CONDITION	
EMPTY WEIGHT	LBS.
GROSS WT.	1320 LBS.

RAMS S-20 RAVEN (Trike)
WEIGHT AND BALANCE

ACCEPTABLE C.G. 31.72" TO 41.92" FROM DATUM O.
 DATUM = FRONT OF FIREWALL; AIRCRAFT IN
 LEVEL ATTITUDE. (LEVEL REFERENCE 90° TO
 FUSELAGE AFT DOOR FRAME)

#	ITEM	WEIGHT	ARM	MOMENT	
1	NOSE WHEEL	199	33.2"	-636.8	
2	PILOT	180	37"	6660	RANGE 34.5" TO 39.5"
3	PASSENGER	170	37"	6290	RANGE 34.5" TO 39.5"
4	FUEL - WINGS	36	41.7"	6505.2	MAX. 26 GALLON
5	MAIN - RH	268	49.1"	13158.8	
6	MAIN - LH	264	49.1"	12962.4	
7	FUEL - HEADER TANK	16.5	60.0"	990.0	MAX 2.75 GALLON
8	BAGGAGE *	29.5	73.25"	2160.88	
TOTAL =		1283	TOTAL =	48090.48	

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

$$\frac{48090.48}{1283} = 37.48"$$

#	ITEM	WEIGHT	ARM	MOMENT	
1	NOSE WHEEL				
2	PILOT				RANGE 34.5" TO 39.5"
3	PASSENGER				RANGE 34.5" TO 39.5"
4	FUEL - WINGS				MAX. 26 GALLON
5	MAIN - RH				
6	MAIN - LH				
7	FUEL - HEADER TANK				MAX 2.75 GALLON
8	BAGGAGE *				MAX 80 POUNDS
TOTAL =			TOTAL =		

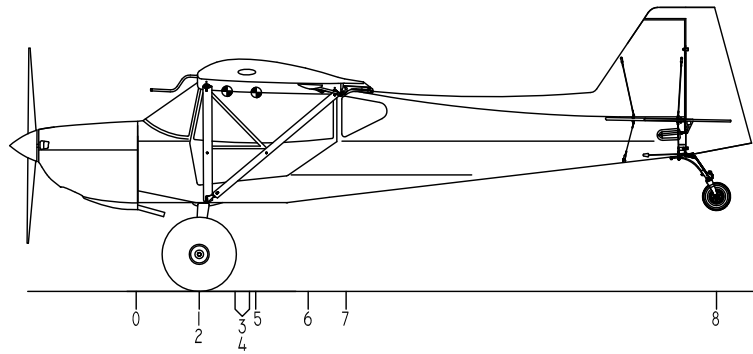
$$\frac{\text{TOTAL MOMENTS}}{\text{TOTAL WEIGHT}} = \text{C.G.}$$

$$\text{_____} = \text{_____}$$

MD5573
REV. B

* ARM CALCULATED AT CENTER OF BAGGAGE COMPARTMANT

RAMS S-20 RAVEN
WEIGHT & BALANCE
TRIKE
FIGURE 12-01A



N _____	
DATE WEIGHED	
ENGINE TYPE	ROTAX 912ULS
C.G. CONDITION	
EMPTY WEIGHT	LBS.
GROSS WT.	1320 LBS.

RANS S-20 RAVEN (Taildragger)
WEIGHT AND BALANCE

ACCEPTABLE C.G. 31.72" TO 41.92" FROM DATUM 0.
 DATUM = FRONT OF FIREWALL; AIRCRAFT IN
 LEVEL ATTITUDE. (LEVEL REFERENCE 90° TO
 FUSELAGE AFT DOOR FRAME)

#	ITEM	WEIGHT	ARM	MOMENT
1	MAIN - RH	350	22.0"	7700
2	MAIN - LH	358	22.0"	7876
3	PILOT	80	37.0"	6660
4	PASSENGER	70	37.0	6290
5	FUEL - WINGS	156	41.7"	6505.2
6	FUEL - HEADER TANK	16.5	60.0"	990
7	BAGGAGE *	29.5	73.25"	2160.88
9	TAILWHEEL	60	203.0"	12204
TOTAL =		1320	TOTAL =	50386.08

RANGE 34.5" TO 39.5"
 RANGE 34.5" TO 39.5"
 MAX. 26 GALLON
 MAX 2.75 GALLON

$\frac{\text{TOTAL MOMENTS}}{\text{TOTAL WEIGHT}} = \text{C.G.}$ $\frac{50386.08}{1320} = 38.17$

#	ITEM	WEIGHT	ARM	MOMENT
1	MAIN - RH			
2	MAIN - LH			
3	PILOT			
4	PASSENGER			
5	FUEL - WINGS			
6	FUEL - HEADER TANK			
7	BAGGAGE *			
9	TAILWHEEL			
TOTAL =			TOTAL =	

RANGE 34.5" TO 39.5"
 RANGE 34.5" TO 39.5"
 MAX. 26 GALLON
 MAX 2.75 GALLON
 MAX 80 POUNDS

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

MD5573
 REV. B

* ARM CALCULATED AT CENTER OF BAGGAGE COMPARTMANT

RANS S-20 RAVEN
WEIGHT & BALANCE
OPTIONAL 10" TAILWHEEL
FIGURE 12-01B

SAMPLE WEIGHT AND BALANCE RECORD

(CONTINUOUS HISTORY OF CHANGES IN STRUCTURE OR EQUIPMENT AFFECTING WEIGHT AND BALANCE)

SERIAL NUMBER:		PAGE NUMBER:									
DATE	DESCRIPTION OF ARTICLE OR MODIFICATION	WEIGHT CHANGE						RUNNING BASIC EMPTY WEIGHT			
		ADDED (+)			REMOVED (-)			WEIGHT	MOMENT		
		WEIGHT	ARM	MOMENT	WEIGHT	ARM	MOMENT				
	AS BUILT										

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REV. - ORIG

 S-20 RAVEN
WEIGHT & BALANCE RECORD
FIGURE 12-02