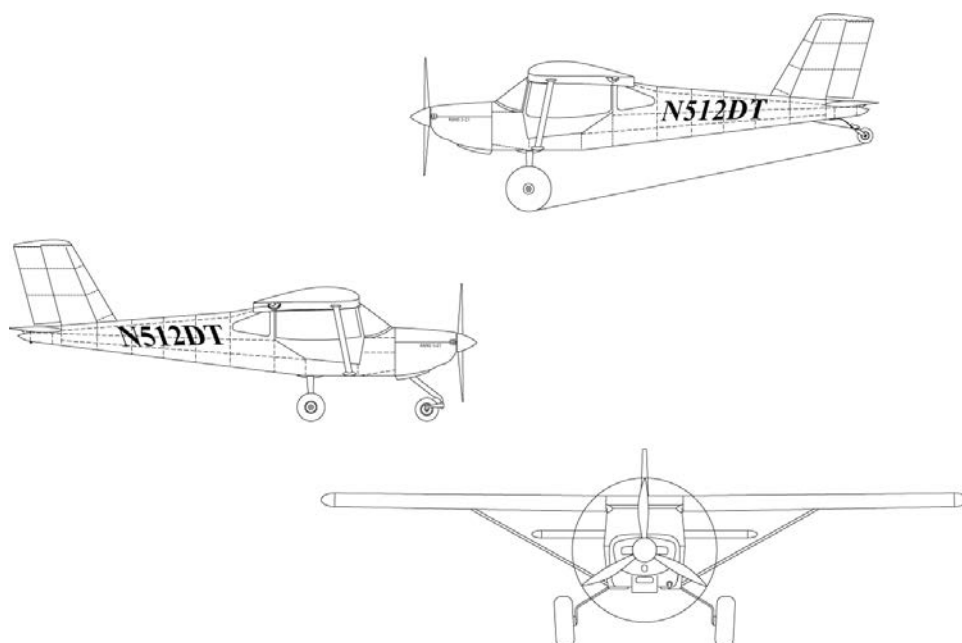




S-21 OUTBOUND

PARTS MANUAL



Serial Number: _____

Registration Number: _____

COPYRIGHT © 2017
RANS DESIGNS
4600 HWY 183 Alt
HAYS, KANSAS, USA 67601
785-625-6346
WWW.RANS.COM



U.S. Department
of Transportation

**Federal Aviation
Administration**

Aviation Safety

10101 Hillwood Parkway
Fort Worth, TX 76177

September 19, 2018

Mr. Randy Schlitter
RANS Designs Inc.
4600 Hwy 183 Alt.
Hays, KS 67601

Dear Mr. Schlitter:

The Federal Aviation Administration (FAA), National Kit Evaluation Team (NKET) completed an evaluation of the RANS S-21 Outbound, at your facility on September 11, 2018. The kit is defined by the RANS S-21 Outbound Aircraft Bill of Materials, dated September 11, 2018. The team determined that the kit may allow an amateur builder to meet the major portion requirement of Title 14, Code of Federal Regulations Part 21, Certification Procedures for Products and Articles, § 21.191(g).

We will advise the Aircraft Certification Service's Certification Procedures Branch to add the kit to the Revised Listing of Amateur-Built Aircraft Kits (Kit List) located on the FAA website. This evaluation does not mean that the RANS S-21 Outbound is FAA "*certified, certificated, or approved*," and it is inappropriate to represent either as such.

RANS Designs Inc., should notify this office in writing if ownership of the company changes, and or if there are changes made to the evaluated kit that may affect its potential to meet the major portion requirement. Failure to notify this office may result in removal of the kit from the Kit List.

If you have any questions, please contact the Southwest Manufacturing Inspection Office (MIO) Branch at (817) 222-5180.

Sincerely,

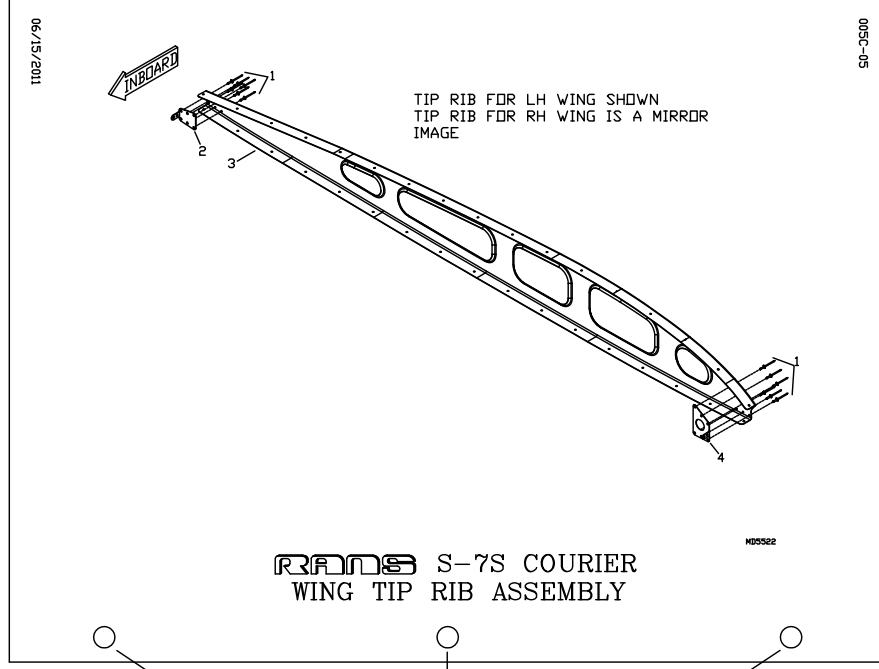
Bruce Cain
Aviation Safety
Manager, Southwest MIO Branch, AIR-880

Enclosure— One Amateur-Built Aircraft Fabrication and Assembly Checklist
for RANS S-21 OUTBOUND

STEP 1:

PARTS MANUAL AS SHIPPED or PRINTED.
PLACE IN 3-RING BINDER TO SECURE.

PARTS DRAWING PAGE



3-HOLE PUNCH

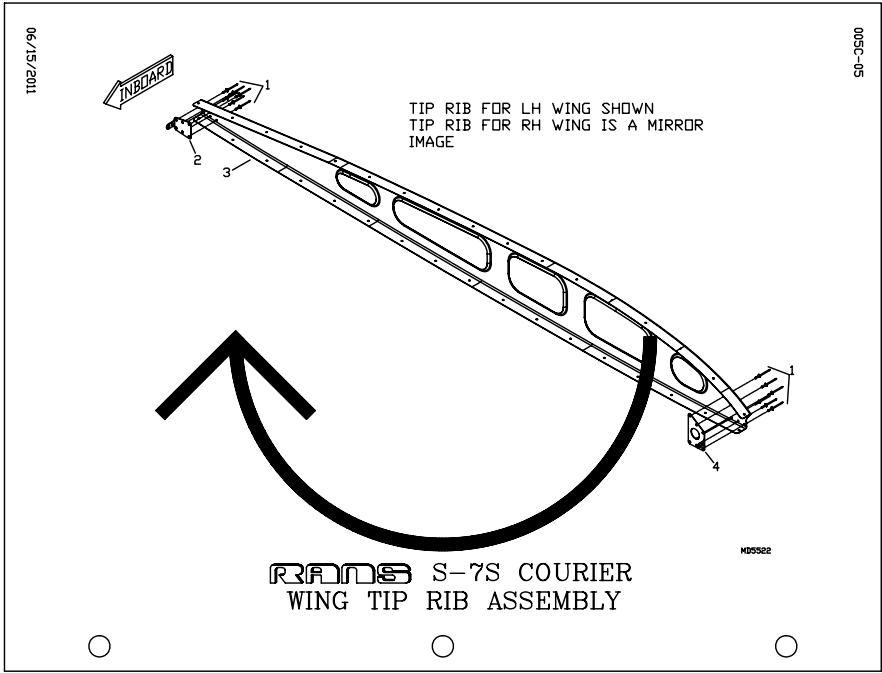
EXAMPLE ONLY.
MAY NOT REPRESENT ACTUAL PAGES
FROM YOUR MANUAL.

SEE NEXT PAGE

STEP 2:

OPEN 3-RING BINDER.
REMOVE PARTS DRAWING PAGE AND
ROTATE 180° TO FACE
CORRESPONDING
PARTS DESCRIPTION PAGE.
REPEAT FOR REMAINING PAGES

PARTS DRAWING PAGE



PARTS DESCRIPTION PAGE

S-7S COURIER - WING - TIP RIB ASSEMBLY				PAGE 005C-06
#	DESCRIPTION	PART NUMBER	QUANTITY	
1.	1/8" ALUMINUM RIVET	AAQ-41	24	
2.	RIB CLIP TRAILING EDGE - LH	KPW0372-L	4	
2.	RIB CLIP TRAILING EDGE - RH	KPW0372-R	1	
3.	WING TIP RIB - LH	KPW0544-L	1	
3.	WING TIP RIB - RH	KPW0544-R	1	
4.	RIB CLIP LEADING EDGE - LH	KPW0373-L	1	
4.	RIB CLIP LEADING EDGE - RH	KPW0373-R	1	

6/15/2011

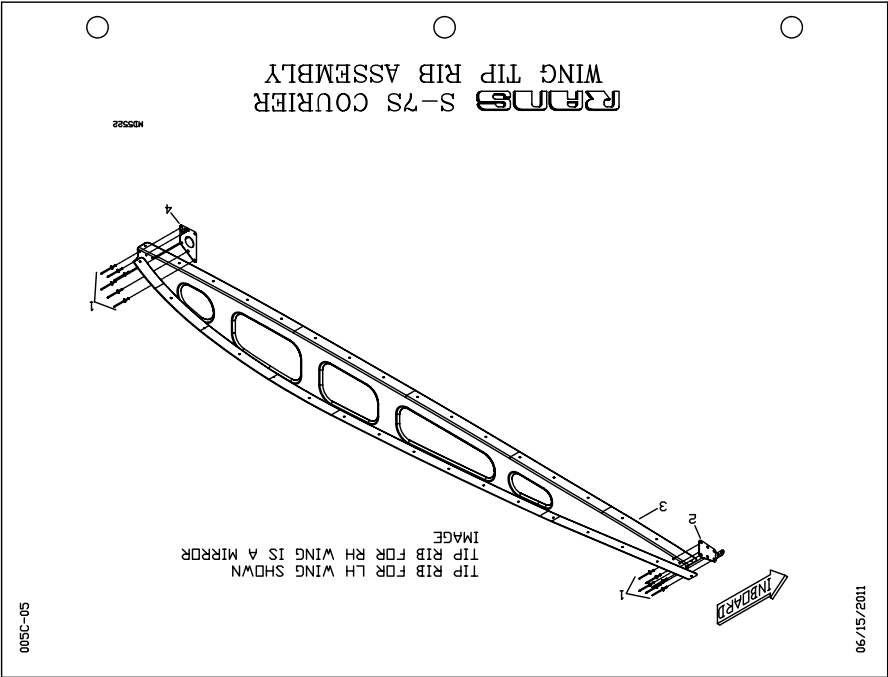
EXAMPLE ONLY.
MAY NOT REPRESENT ACTUAL PAGES
FROM YOUR MANUAL.

SEE NEXT PAGE

STEP 3:

PARTS DRAWING PAGE
FACES CORRESPONDING
PARTS DESCRIPTION PAGE
WHEN FINAL SECURED IN
BINDER

PARTS DRAWING PAGE



PARTS DESCRIPTION PAGE

PAGE 005C-06

S-7S COURIER - WING - TIP RIB ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	1/8" ALUMINUM RIVET	AAPO41	24
2.	RIB CLIP TRAILING EDGE - LH	KPW0372-L	4
2.	RIB CLIP TRAILING EDGE - RH	KPW0372-R	1
3.	WING TIP RIB - LH	KPW0544-L	1
3.	WING TIP RIB - RH	KPW0544-R	1
4.	RIB CLIP LEADING EDGE - LH	KPW0373-L	1
4.	RIB CLIP LEADING EDGE - RH	KPW0373-R	1

6/15/2011

EXAMPLE ONLY.
MAY NOT REPRESENT ACTUAL PAGES
FROM YOUR MANUAL.

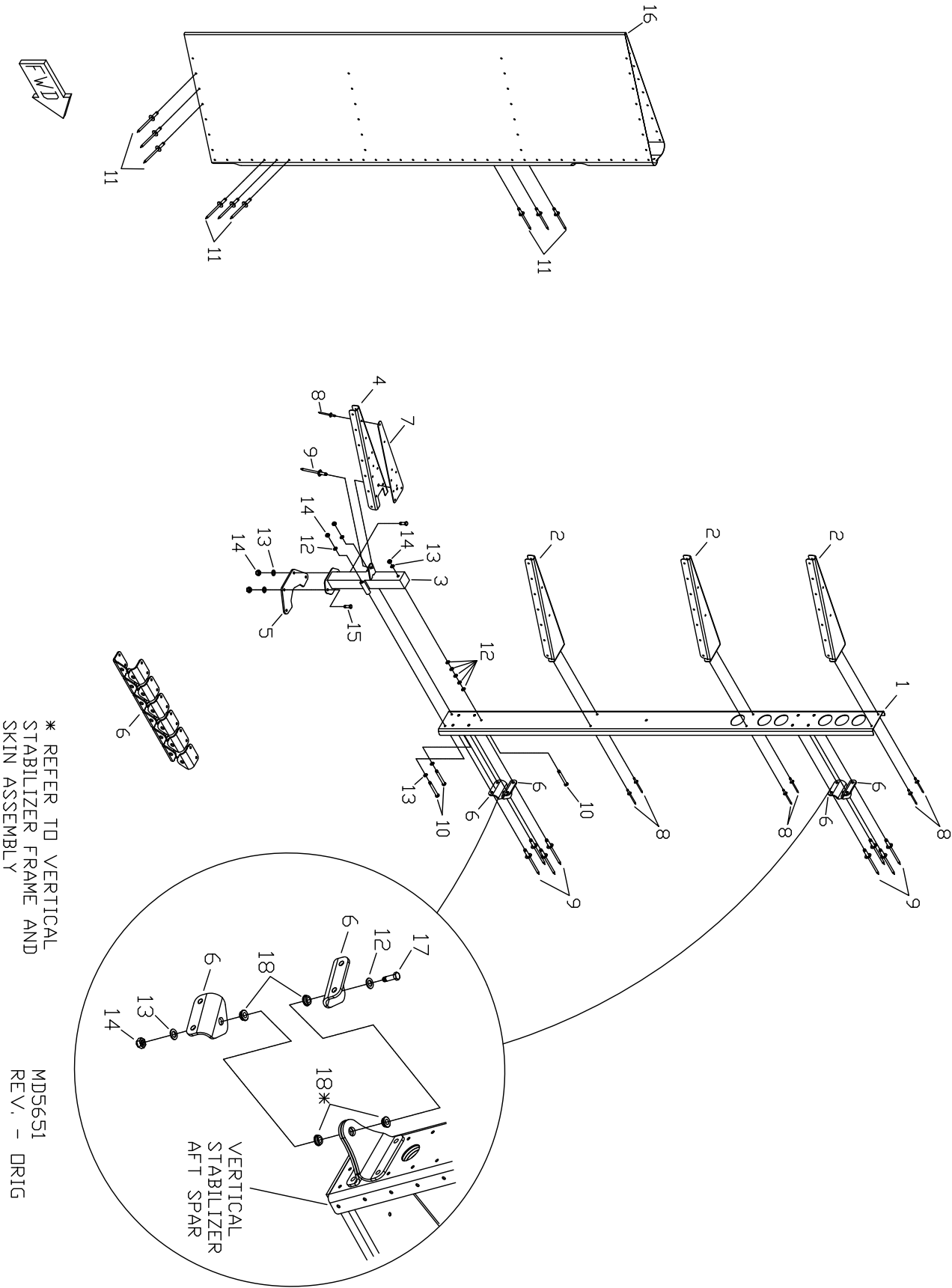
RANS S-21 OUTBOUND - PARTS MANUAL

TABLE OF CONTENTS

RUDDER FRAME & SKIN ASSEMBLY	002-01
VERTICAL STABILIZER FRAME & SKIN ASSEMBLY	003-01
VERTICAL STABILIZER INSTALLATION.....	003-03
OPTIONAL - TAILDRAGGER - PULL HANDLE ASSEMBLY	003-05
HORIZONTAL STABILIZER FRAME ASSEMBLY	004-01
HORIZONTAL STABILIZER SKIN INSTALLATION.....	004-03
HORIZONTAL STABILIZER INSTALLATION	004-05
ELEVATOR FRAME ASSEMBLY	005-01
ELEVATOR SKIN INSTALLATION.....	005-03
ELEVATOR AND ELEVATOR TRIM TAB INSTALLATION	005-05
ELEVATOR TRIM TAB ASSEMBLY	005-07
141 WING - SPAR ASSEMBLY	006-01
141 WING - BELLCRANK ASSEMBLIES	006A-01
141 WING - FRAME ASSEMBLY	006B-01
141 WING - BELLCRANK INSTALLATION	006B-03
141 WING - SKIN INSTALLATION.....	006C-01
141 WING - BOTTOM SKIN - INSPECTION PANEL INSTALLATION	006C-03
141 WING - OPTIONS - PITOT/STATIC SYSTEM	006C-05
141 WING - FUEL TANK ASSEMBLY	006D-01
141 WING - FLAP ASSEMBLY AND INSTALLATION	006E-01
141 WING - AILERON ASSEMBLY AND INSTALLATION.....	006F-01
141 WING - LIFT STRUT ASSEMBLY & INSTALLATION	006G-01
141 WING - OPTIONS - UPPER LIFT STRUT FAIRING	006G-03
141 WING - WING TIP ASSEMBLY AND INSTALLATION	006H-01
141 WING - OPTIONS - AVEO STROBE INSTALLATION	006H-03
141 WING - OPTIONS - LANDING LIGHTS INSTALLATION.....	006H-05
141 WING - ROOT SEAL INSTALLATION.....	006I-01
FUSELAGE - STATION 4 & 5 - BULKHEAD ASSEMBLY	007-01
FUSELAGE - STATION 6 & 8 - BULKHEAD ASSEMBLY	007-03
FUSELAGE - STATION 9 - BULKHEAD ASSEMBLY.....	007-05
FUSELAGE - STATION 10 - BULKHEAD ASSEMBLY	007-07
FUSELAGE - TAILCONE - BOTTOM SKIN ASSEMBLY	007A-01
FUSELAGE - OPTIONS - GARMIN GMU11 MAGNETOMETER MOUNT	007A-03
FUSELAGE - TAILCONE - SIDE & TOP SKIN ASSEMBLY	007B-01

FUSELAGE - TAILCONE - AFT CLOSEOUT INSTALLATION	007B-03
FUSELAGE - SKINS AND TAILCONE MATING INSTALLATION	007C-01
TAILDRAGGER - MAIN GEAR INSTALLATION	008-01
TAILDRAGGER - WHEEL & BRAKE INSTALLATION	008-03
TAILDRAGGER - 6" TIRES	008-05
TAILDRAGGER - 8" TAILWHEEL INSTALLATION.....	008-07
TAILDRAGGER - OPTIONS - 10" TAILWHEEL INSTALLATION	008-09
TRIKE - MAIN GEAR INSTALLATION	008A-01
TRIKE - STANDARD - WHEEL AND BRAKE INSTALLATION	008A-03
TRIKE - OPTIONS - TUNDRA - WHEEL AND BRAKE INSTALLATION	008A-04A
TRIKE - STANDARD - NOSE GEAR INSTALLATION	008A-05
TRIKE - OPTIONS - TUNDRA - NOSE FORK INSTALLATION	008A-06A
TRIKE - TAIL TIE-DOWN INSTALLATION	008A-07
TRIKE - OPTIONS - TOW BAR INSTALLATION	008A-09
TRIKE - OPTIONS - TUNDRA NOSE GEAR - TOW BAR INSTALLATION.....	008A-11
OPTIONS - BELLY FAIRINGS	008B-01
FUSELAGE - FLOORBOARD INSTALLATION	009-01
FUSELAGE - RUDDER PEDAL INSTALLATION	009A-01
FUSELAGE - RUDDER SYSTEM INSTALLATION	009B-01
FUSELAGE - HYDRAULIC BRAKE INSTALLATION	009C-01
FUSELAGE - SLIDING SEAT ASSEMBLY	009D-01
FUSELAGE - OPTIONS - SEAT HEADREST INSTALLATION	009D-03
FUSELAGE - SEAT BELT INSTALLATION.....	009D-05
FUSELAGE - CONTROL STICK INSTALLATION	010-01
FUSELAGE - OPTIONS - PASSENGER SEAT ELECTRIC ELEVATOR TRIM	010-03
FUSELAGE - CONTROL STICK PUSH-PULL TUBE INSTALLATION	010A-01
FUSELAGE - ELEVATOR PUSH-PULL TUBE INSTALLATION	010B-01
FUSELAGE - AILERON CABLE SYSTEM INSTALLATION	010C-01
FUSELAGE - FLAP LEVER INSTALLATION	010D-01
FUSELAGE - BOOT COWL ASSEMBLY	010E-01
FUSELAGE - VENT SYSTEM INSTALLATION	010E-03
FUSELAGE - INSTRUMENT PANEL INSTALLATION.....	010F-01
FUSELAGE - INSTRUMENT SUB-PANEL & RADIO MOUNT PLATES INSTALLATION	010F-03
FUSELAGE - OPTIONS - PITCH SERVO INSTALLATION.....	010F-05
FUSELAGE - OPTIONS - ROLL SERVO INSTALLATION.....	010F-07

FUSELAGE - FORMED WINDSHIELD & SKYLIGHT INSTALLATION	010G-01
DOOR ASSEMBLY, LEXAN AND TRIM	010H-01
DOOR LATCH AND DOOR INSTALLATION	010H-03
AFT BAGGAGE COMPARTMENT INSTALLATION	010I-01
SIDES - FORWARD BAGGAGE COMPARTMENT INSTALLATION	010I-03
FLOOR - FORWARD BAGGAGE COMPARTMENT INSTALLATION	010I-05
INTERIOR INSTALLATION - AFT.....	010I-07
INTERIOR INSTALLATION - FWD.....	010I-09
OPTIONS - CARGO NET INSTALLATION	010I-11
STATION 3 CLOSEOUT	010J-01
ROTAX 912ULS - ENGINE MOUNT INSTALLATION	011-01 / 912ULS
ROTAX 912ULS - FIREWALL ITEMS INSTALLATION	011A-01 / 912ULS
ROTAX 912ULS - ENGINE ELECTRICAL ACCESSORY INSTALLATION.....	011A-03 / 912ULS
ROTAX 912ULS - BATTERY BOX ASSEMBLY AND INSTALLATION	011A-05 / 912ULS
ROTAX 912ULS - FUEL SYSTEM - FIREWALL FORWARD	011B-01 / 912ULS
ROTAX 912ULS - FUEL SYSTEM - FUSELAGE	011B-03 / 912ULS
ROTAX 912ULS - FUEL SYSTEM - HEADER TANK	011B-05 / 912ULS
ROTAX 912ULS - FUEL SYSTEM - OPTIONAL ELECTRIC FUEL PUMP	011B-07 / 912ULS
ROTAX 912ULS - COOLING SYSTEM INSTALLATION	011C-01 / 912ULS
ROTAX 912ULS - OPTIONS - CABIN HEATER INSTALLATION	011C-03 / 912ULS
ROTAX 912ULS - LUBRICATION SYSTEM INSTALLATION	011D-01 / 912ULS
ROTAX 912ULS - MUFFLER ASSEMBLY	011E-01 / 912ULS
ROTAX 912ULS - OPTIONS - CABIN HEATER INSTALLATION	011E-03 / 912ULS
ROTAX 912ULS - THROTTLE CONTROL ASSEMBLY	011F-01 / 912ULS
ROTAX 912ULS - CHOKE CONTROL ASSEMBLY	011G-01 / 912ULS
ROTAX 912ULS - OPTIONS - CARB HEAT ASSEMBLY.....	011H-01 / 912ULS
ROTAX 912ULS - ENGINE ELECTRICAL	011I-01 / 912ULS
ROTAX 912ULS - ANALOG INSTRUMENTS / ELECTRICAL	011I-03 / 912ULS
ROTAX 912ULS - OPTIONS - REMOTE CHARGING POST INSTALLATION	011I-05 / 912ULS
ROTAX 912ULS - 11.3" SPINNER ASSEMBLY	011J-01 / 912ULS
ROTAX 912ULS - COWLING ASSEMBLY AND INSTALLATION	011K-01 / 912ULS
ROTAX 912ULS - OIL CHECK DOOR INSTALLATION	011K-03 / 912ULS
ROTAX 912ULS - OPTIONS - WHIRLWIND PROPELLER INSTALLATION	011L-01 / 912ULS



**S-21 OUTBOUND
RUDDER FRAME & SKIN ASSEMBLY**

RANS S-21 OUTBOUND
RUDDER FRAME & SKIN ASSEMBLY

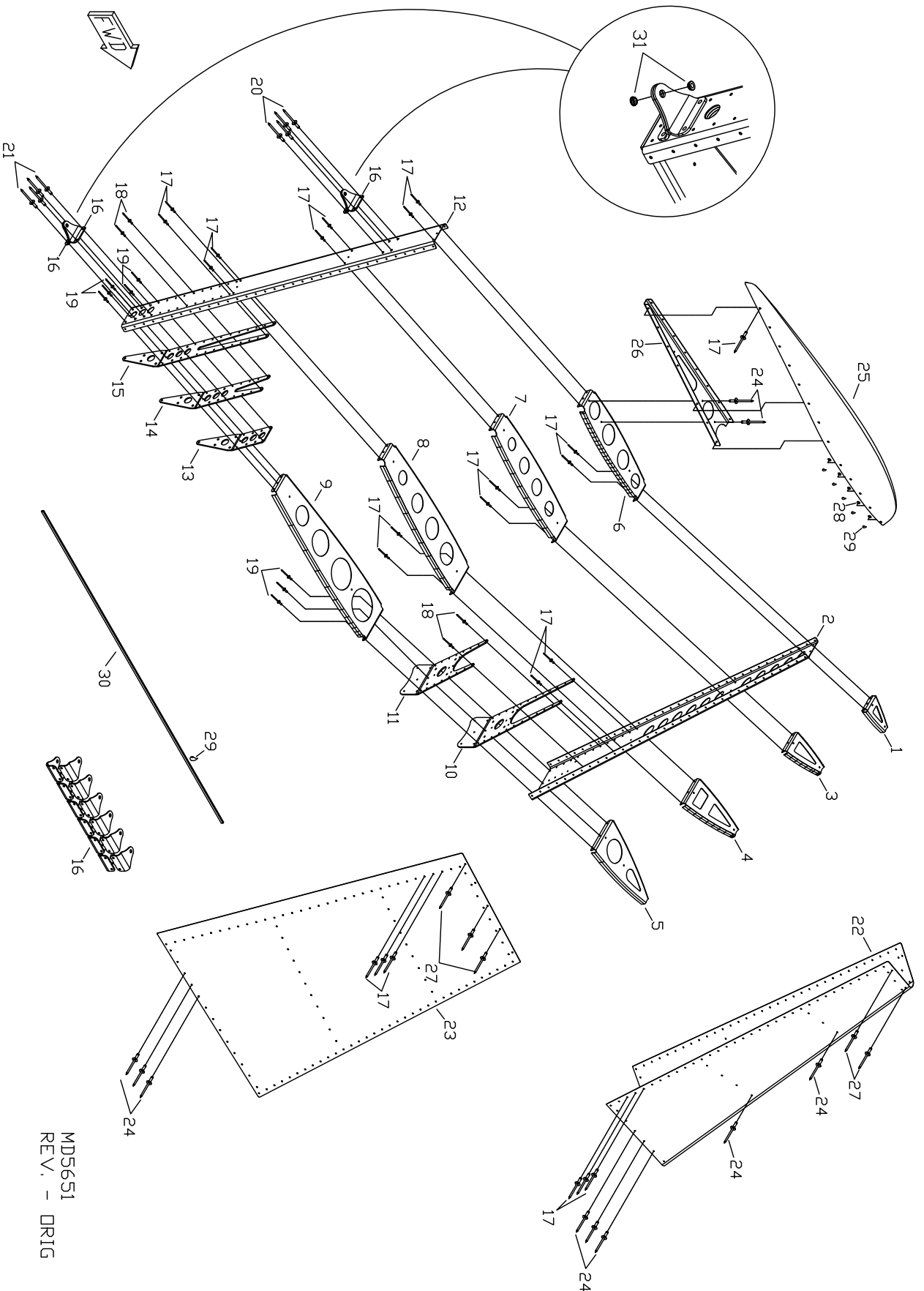
PAGE

002-02

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Rudder Spar	KPRD0106	1
2.	Rudder Rib - Upper	KPRD0109	3
3.	Rudder Horn Mount Tube	KPRD0103	1
4.	Rudder Rib - Lower	KPRD0107	1
5.	Rudder Horn	KPRD0104	1
6.	Elevator and Rudder Hinge - Short *	KPHS0087	1
7.	Rudder Horn Rib Doubler	KPRD0105	1
8.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	15
9.	3/16" Aluminum Rivet - Cherry Q	AAPQ-62	9
10.	3/16" Bolt	AN3-16A	3
11.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	148
12.	3/16" Thick Washer	AN960-10	9
13.	3/16" Thin Washer	AN960-10L	7
14.	3/16" Shear Nut	AN364-1032A	7
15.	3/16" Bolt	AN3-4A	2
16.	Rudder Skin	KPRD0110	1
17.	3/16" Bolt	AN3-10A	2
18.	Bronze Flange Bushing	KSAC0071	4

* Builder Modifies

9/11/2018
REV. - ORIG



REF ID: A12345 S-21 OUTBOUND VERTICAL STABILIZER FRAME & SKIN ASSEMBLY

MD5651
REV. - ORIG

VERTICAL STABILIZER FRAME & SKIN ASSEMBLY

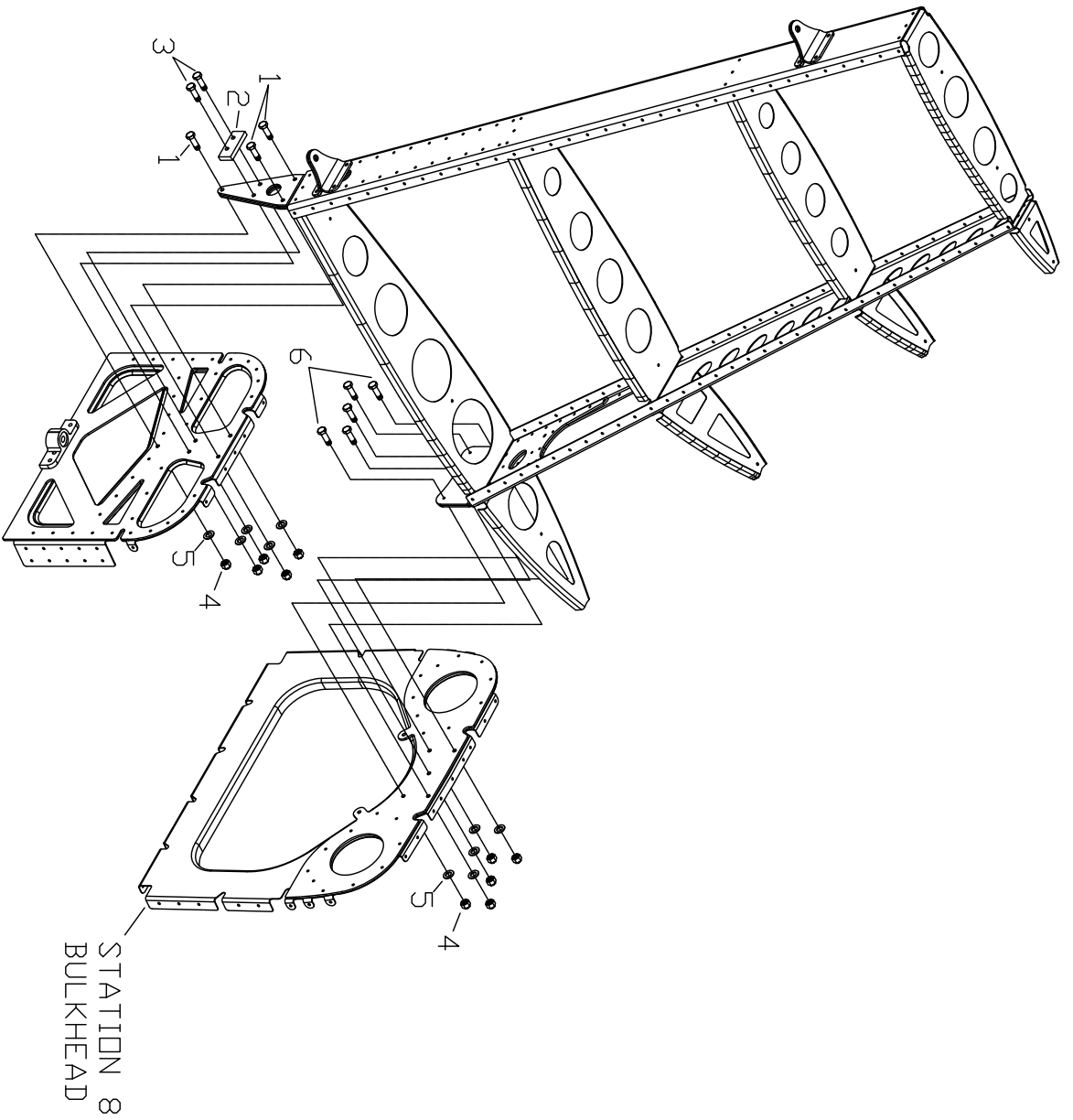
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Vertical Fin Top Nose Rib	KPVS0100	1
2.	Vertical Fin FWD Spar	KPVS0103	1
3.	Vertical Fin Nose Rib #3	KPVS0110	1
4.	Vertical Fin Nose Rib #2	KPVS0109	1
5.	Vertical Fin Bottom Nose Rib	KPVS0104	1
6.	Vertical Top Aft Rib	KPVS0102	1
7.	Vertical Aft Rib #3	KPVS0112	1
8.	Vertical AFT Rib #2	KPVS0111	1
9.	Vertical Bottom Aft Rib	KPVS0101	1
10.	FWD Vertical Spar Gusset - #1	KPVS0105	1
11.	FWD Vertical Spar Gusset - #2	KPVS0106	1
12.	Vertical Fin Aft Spar	KPVS0096	1
13.	Vertical Fin Gusset - AFT - #1	KPVS0097	1
14.	Vertical Fin Gusset - AFT - #2	KPVS0098	1
15.	Vertical Fin Gusset - AFT - #3	KPVS0099	1
16.	Elevator and Rudder Hinge - Long *	KPHS0086	1
17.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	182
18.	1/8" Aluminum Rivet - Cherry Q	AAPQ-44	27
19.	1/8" Aluminum Rivet - Cherry Q	AAPQ-46	8
20.	3/16" Stainless Steel Rivet - Cherry Q	CCPQ-62	4
21.	3/16" Stainless Steel Rivet - Cherry Q	CCPQ-68	4
22.	Vertical Stabilizer Leading Edge Skin	KPVS0108	1
23.	Vertical Stabilizer Side Skin	KPVS0107	2
24.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	116
25.	Vertical Stabilizer Tip	KPVS0113	1
26.	Vertical Stabilizer Tip Rib	KPVS0114	1
27.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	16
28.	1/8" Small Brass Washer	AN960-B4	10
29.	Adhesive - Superglue or Silicone Seal **	-----	0
30.	Rubber Trim	X1011	6 ft
31.	Bronze Flange Bushing	KSAC0071	4

* Builder Modifies

** Builder Supplied

9/11/2018

REV. - ORIG



REFINISH S-21 OUTBOUND VERTICAL STABILIZER INSTALLATION

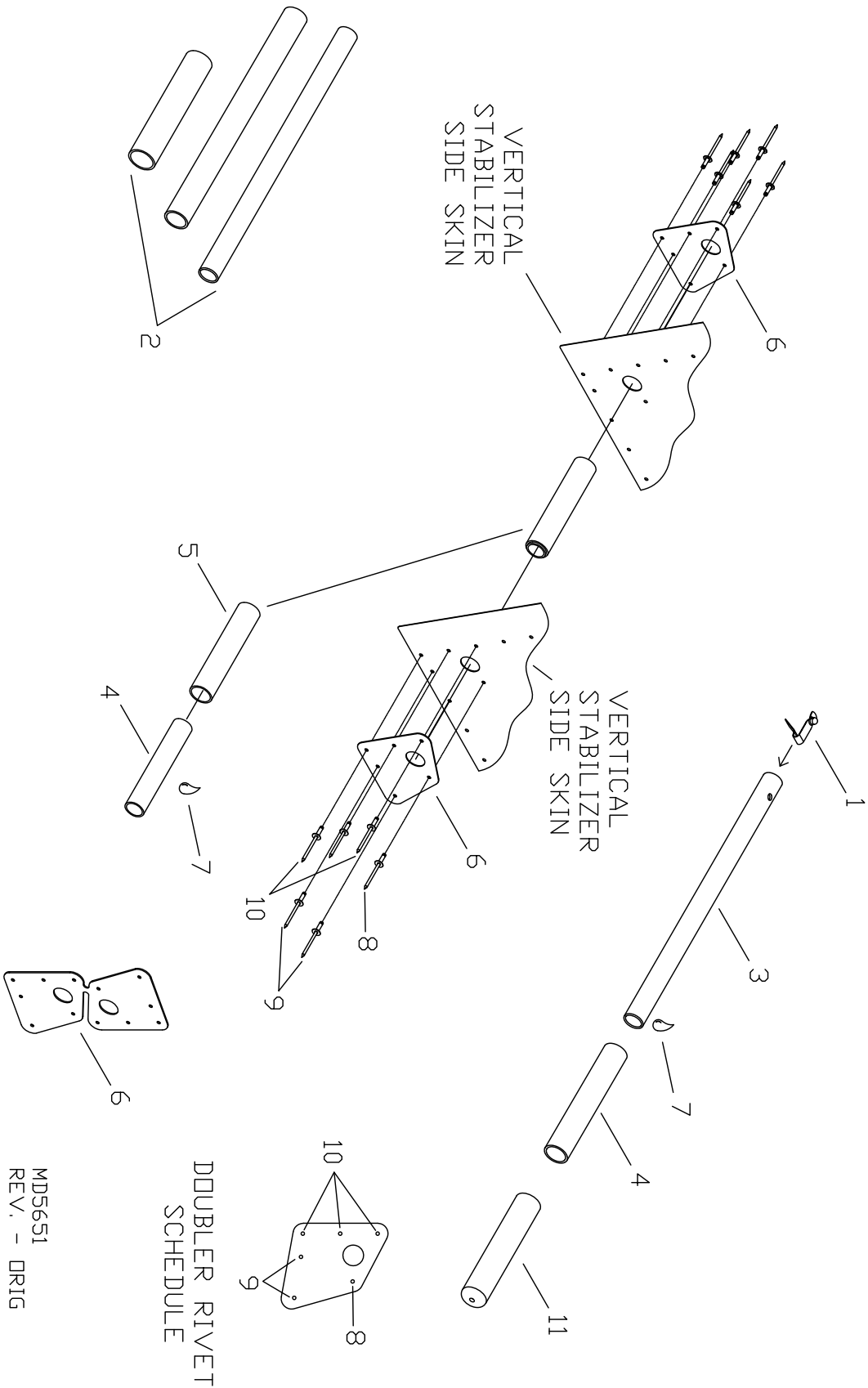
MD5651
REV. - ORIG

RANS S-21 OUTBOUND
VERTICAL STABILIZER INSTALLATION

PAGE

003-04

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/16" Bolt	AN3-6A	3
2.	Rudder Stop	KPRD0111	1
3.	3/16" Bolt	AN3-10A	2
4.	3/16" Shear Nut	AN364-1032A	10
5.	3/16" Thin Washer	AN960-10L	10
6.	3/16" Bolt	AN3-5A	5



REF ID: A12345 S-21 OUTBOUND
OPTIONAL - TAILDRAGGER - PULL HANDLE ASSEMBLY

MD5651
REV. - ORIG

RANS S-21 OUTBOUND

PAGE

003-06

OPTIONAL - TAILDRAGGER - PULL HANDLE ASSEMBLY

KAVS0006

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Quick-Release Button	KSHW0112	1
2.	Pull Handle Raw Stock Kit	KAAC0106	1
3.	5/8" X .058" Aluminum Tube *	KAAC0106-1	1
4.	3/4" X .058" Aluminum Tube *	KAAC0106-2	1
5.	7/8" X .058" Aluminum Tube *	KAAC0106-3	1
6.	Pull Handle Doubler **	KPVS0115	1
7.	JB Weld Adhesive ***	-----	0
8.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	2
9.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	4
10.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	6
11.	Handle Grip - 3/4"	KSAC0079	1

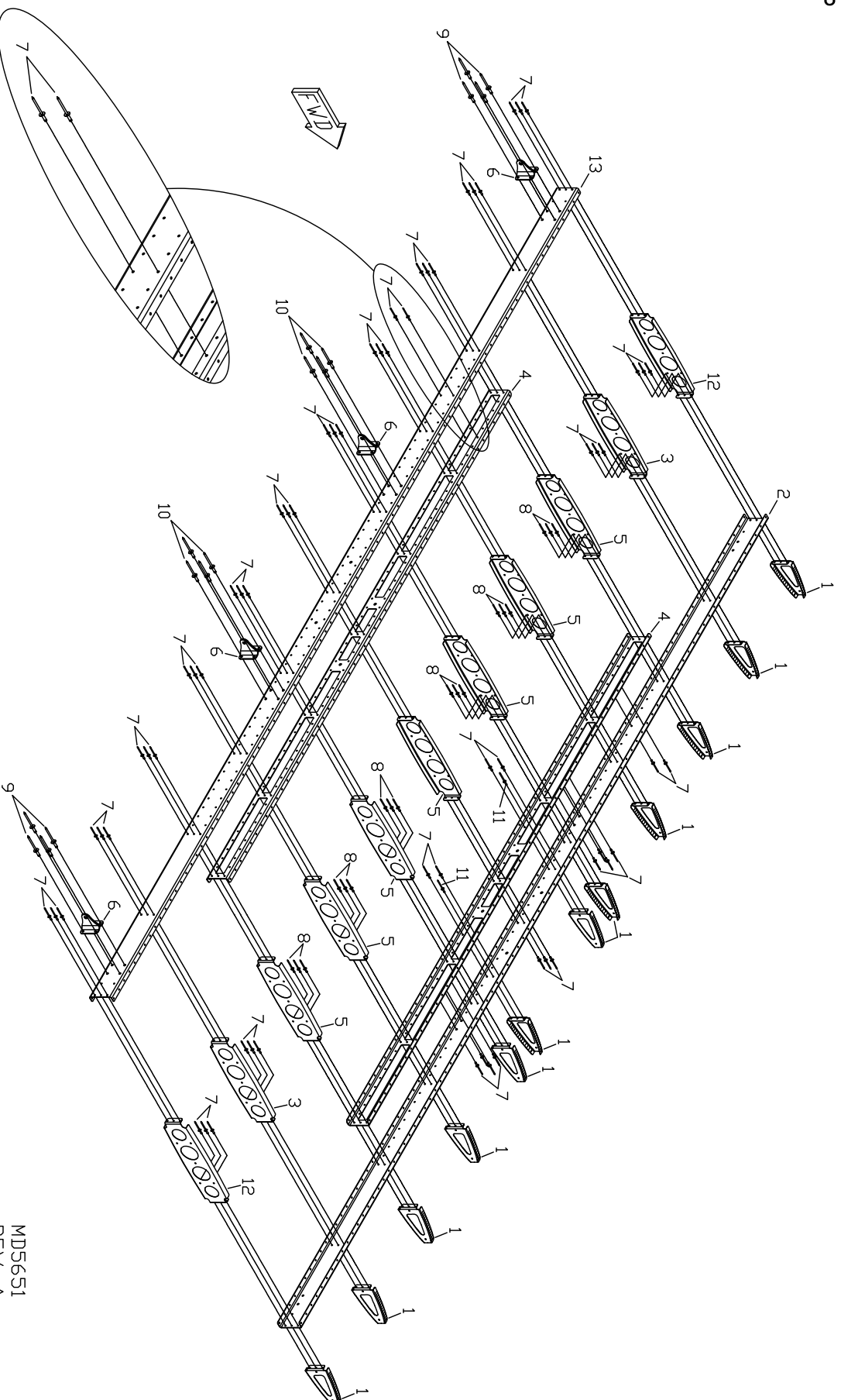
* Part of Raw Stock Kit

** Builder Modifies

*** Builder Supplied

9/11/2018

REV. - ORIG



TYPICAL SPAR
TO DOUBLER

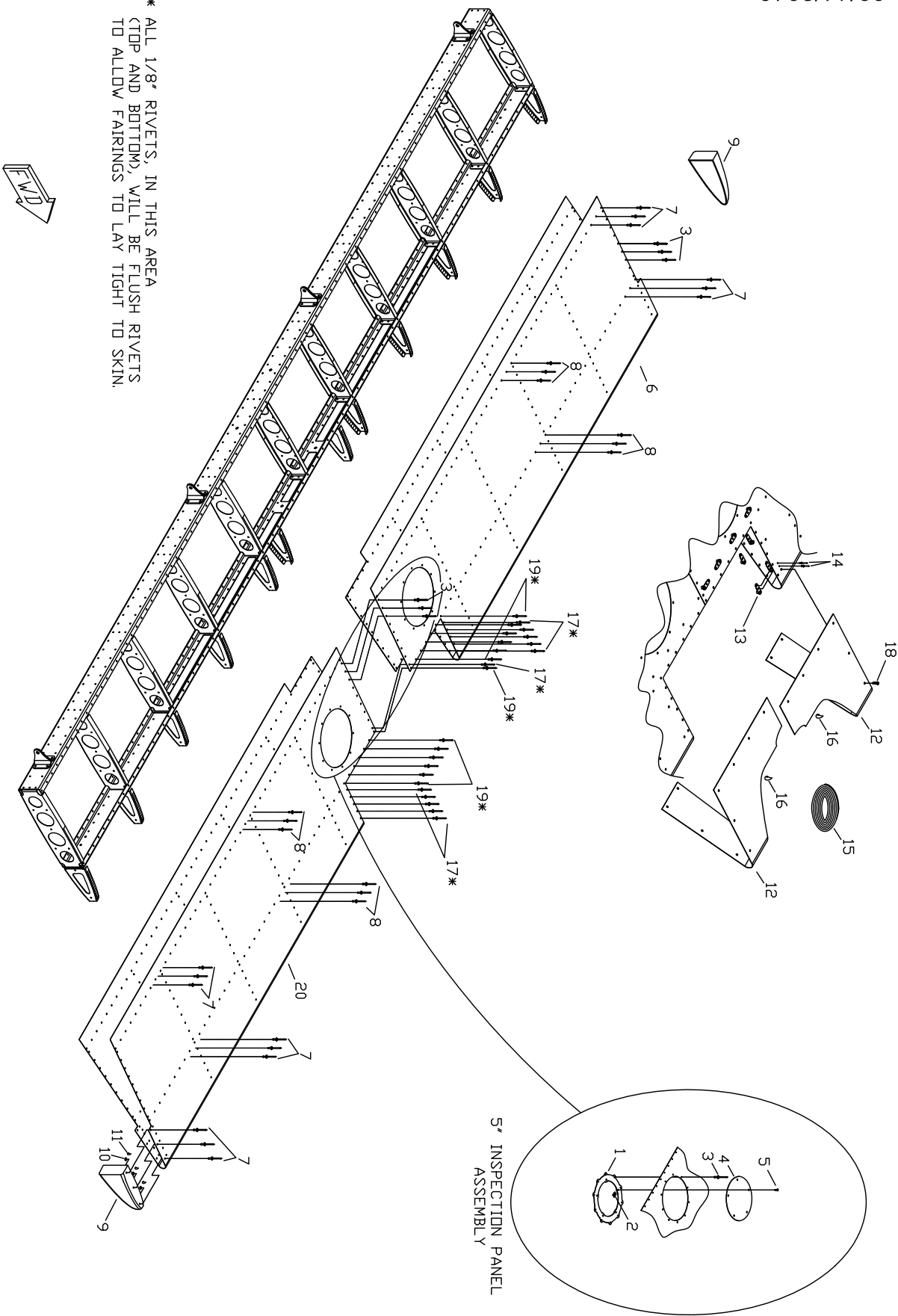
MD5651
REV. A

REF S-21 OUTBOUND HORIZONTAL STABILIZER FRAME ASSEMBLY

HORIZONTAL STABILIZER FRAME ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Horizontal Stabilizer Nose Rib	KPHS0085	12
2.	Horizontal Stabilizer Spar - FWD	KPHS0088	1
3.	Horizontal Outboard Rib	KPHS0082	2
4.	Horizontal Stabilizer Spar Doubler	KPHS0089	2
5.	Horizontal Middle Rib	KPHS0084	7
6.	Elevator and Rudder Hinge - Long *	KPHS0086	0
7.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	236
8.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	18
9.	3/16" Stainless Steel Rivet - Cherry Q	CCPQ-62	8
10.	3/16" Stainless Steel Rivet - Cherry Q	CCPQ-64	8
11.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	2
12.	Horizontal End Rib	KPHS0096	2
13.	Horizontal Stabilizer Spar - AFT	KPHS0095	1

* Refer to Vertical Stabilizer



MD5651
REV. - A

REFINISH S-21 OUTBOUND HORIZONTAL STABILIZER SKIN INSTALLATION

RANS S-21 OUTBOUND

HORIZONTAL STABILIZER SKIN INSTALLATION

PAGE

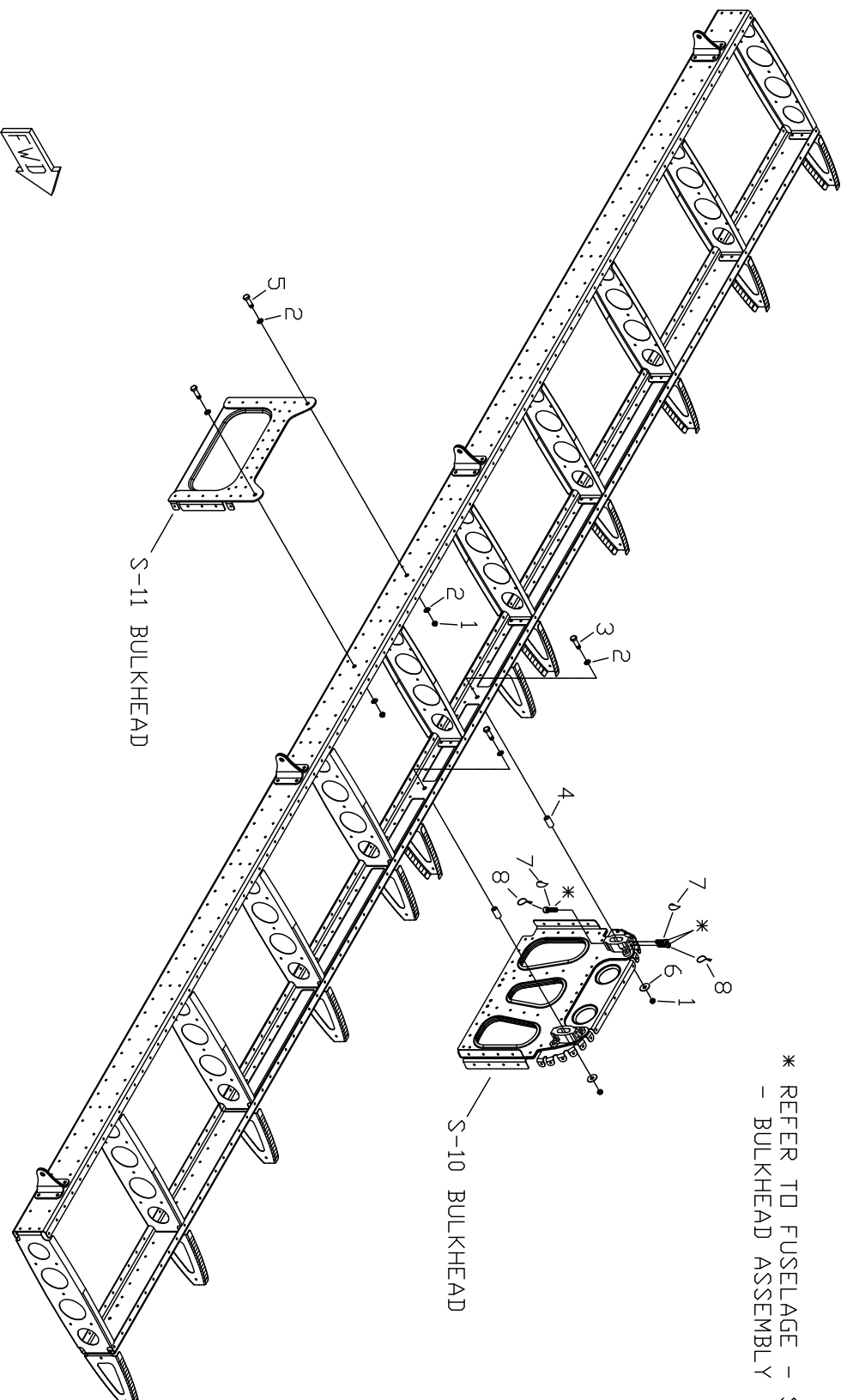
004-04

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	5" Inspection Cover Tab Ring	KPWI0656	2
2.	Tinnerman	A1789-8Z-1	10
3.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	338
4.	5" Inspection Cover	KPWI0659	2
5.	#8 Pan Head Screw	8X1/2 PHS	10
6.	Horizontal Stabilizer Skin - LH	KPHS0092-L	1
7.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	134
8.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	194
9.	Horizontal Tip	KPHS0093	2
10.	1/8" Small Brass Washer	AN960-B4	12
11.	Adhesive - Superglue or Silicone Seal *	-----	0
12.	Horizontal Stabilizer Fairing	KPHS0094	2
13.	6-32 Single Ear Nut Plate	K-2000-06	20
14.	3/32" Aluminum Rivet	40APR1/8	40
15.	Rubber Edging	8510K11	3 ft
16.	Adhesive - Superglue *	-----	0
17.	1/8" Aluminum Rivet - Flush	AACQ-42	22
18.	6-32 Machine Screw	AN526-632R6	20
19.	1/8" Aluminum Rivet - Flush	AACQ-43	26
20.	Horizontal Stabilizer Skin - RH	KPHS0092-R	1

* Builder Supplied

9/11/2018

REV. - A



* REFER TO FUSELAGE - STATION 10
- BULKHEAD ASSEMBLY

S-11 BULKHEAD

S-10 BULKHEAD

SKINS NOT SHOWN FOR CLARITY

REF S-21 OUTBOUND HORIZONTAL STABILIZER INSTALLATION

MD5651
REV. - ORIG

RANS S-21 OUTBOUND
HORIZONTAL STABILIZER INSTALLATION

PAGE

004-06

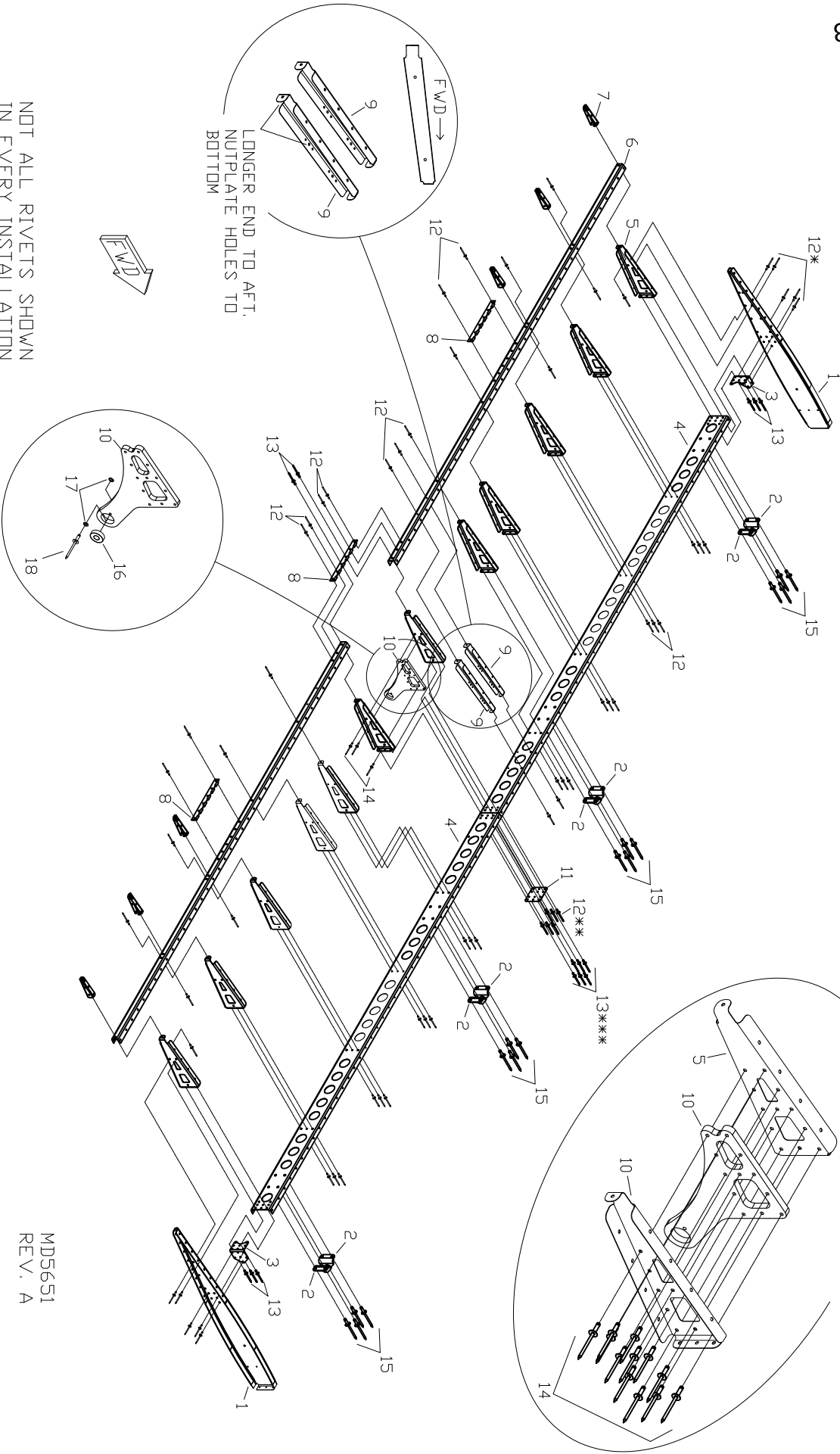
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	1/4" Shear Nut	AN364-428A	4
2.	1/4" Thick Washer	AN960-416	6
3.	1/4" Bolt	AN4-14A	2
4.	Aluminum Bushing - 3/8" x .095" x .935" *	KPAC0060	2
5.	1/4" Bolt	AN4-6A	2
6.	1/4" Large Washer	AN970-4	2
7.	Loctite Blue **	-----	0
8.	Safety Wire **	-----	0

* Builder Modifies
** Builder Supplied

9/11/2018
REV. - ORIG

* ALL RIVETS AAPQ-41, EXCEPT AS MARKED
** RIVETS THROUGH SPAR CONNECT GUSSET AND SPAR
*** RIVETS THROUGH SPAR CONNECT GUSSET, SPAR AND RIB

TRANSFER DRILL #30.
ALL RIVETS MUST BE
INSTALLED SECURELY THROUGH RIBS
AND HORN FOR SAFE OPERATION



RAJN S-21 OUTBOUND ELEVATOR FRAME ASSEMBLY

MD5651
REV. A

RANS S-21 OUTBOUND
ELEVATOR FRAME ASSEMBLY

PAGE

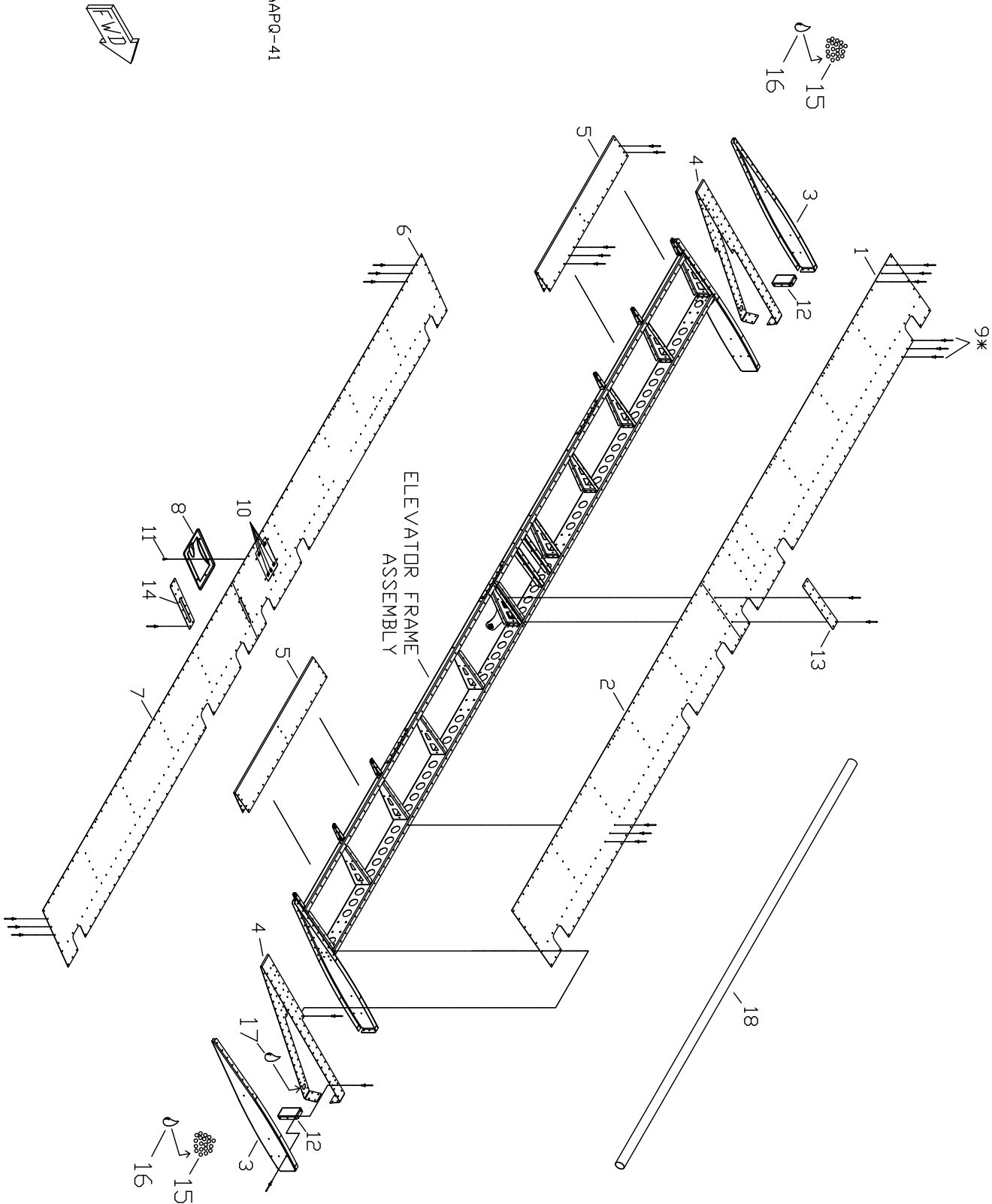
005-02

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Elevator Tip - Inner	KPEL0042	2
2.	Elevator and Rudder Hinge - Short *	KPHS0087	0
3.	Elevator Tip Attach Angle	KPEL0044	2
4.	Elevator FWD Spar	KPEL0040	2
5.	Elevator Rib	KPEL0038	12
6.	Elevator AFT Spar	KPEL0039	2
7.	Elevator Trailing Edge Rib	KPEL0037	6
8.	Elevator Trim Tab Hinge **	KPTR0067	1
9.	Elevator Trim Servo Rib	KPEL0045	2
10.	Elevator Horn	KPEL0048	1
11.	Elevator FWD Spar Connect Gusset	KPEL0041	1
12.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	106
13.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	20
14.	1/8" Aluminum Rivet - Cherry Q	AAPQ-46	12
15.	3/16" Stainless Steel Rivet - Cherry Q	CCPQ-62	16
16.	Bearing	SR4APP	1
17.	1/8" Small Brass Washer	AN960-B4	2
18.	1/8" Aluminum Rivet - Cherry Q	AAPQ-45	1

* Refer to Rudder

** Builder Modifies

9/11/2018
REV. - ORIG



**S-21 OUTBOUND
ELEVATOR SKIN INSTALLATION**

MD5651
REV. A

RANS S-21 OUTBOUND

ELEVATOR SKIN INSTALLATION

PAGE

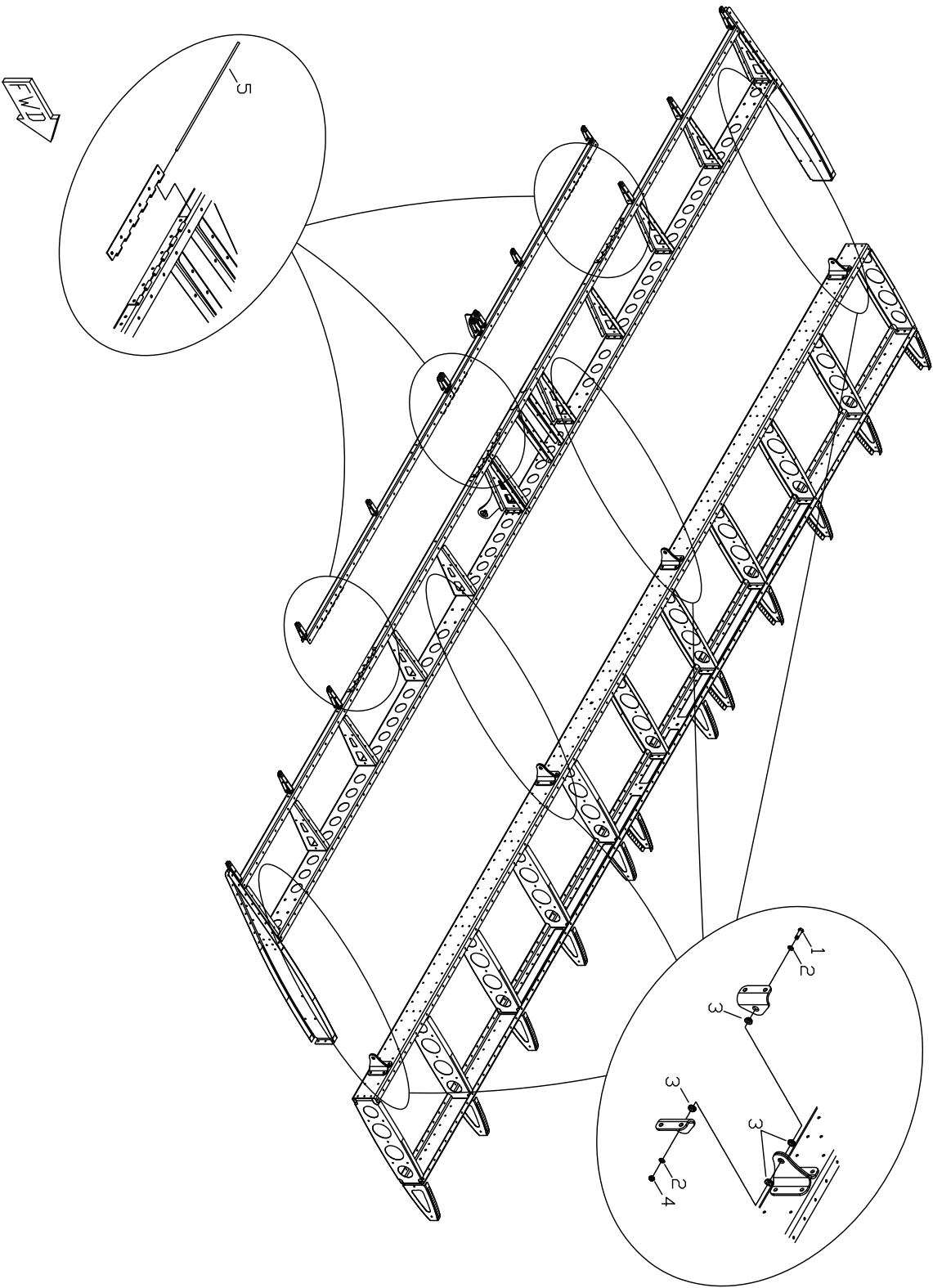
005-04

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Elevator Top Skin - LH	KPEL0035-L	1
2.	Elevator Top Skin - RH	KPEL0035-R	1
3.	Elevator Tip - Outer	KPEL0043	2
4.	Elevator Tip Skin	KPEL0047	2
5.	Elevator Trailing Edge Skin	KPEL0034	2
6.	Elevator Bottom Skin - LH	KPEL0036-L	1
7.	Elevator Bottom Skin - RH	KPEL0036-R	1
8.	Trim Servo Cover	KPEL0046	1
9.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	715
10.	Tinnerman	A1789-8Z-1	5
11.	#8 Pan Head Screw	8x1/2 PHS	5
12.	Elevator Balance Rib	KPEL0049	2
13.	Elevator Top Skin Splice	KPEL0050	1
14.	Elevator Bottom Skin Splice	KPEL0051	1
15.	Lead Shot or BB's *	----	0
16.	Epoxy *	----	0
17.	Bondo / Filler *	----	0
18.	1-1/4" Tube for forming *	----	0

* Builder Supplied

9/11/2018

REV. A



MD5651
REV. - ORIG

REF S-21 OUTBOUND
ELEVATOR AND ELEVATOR TRIM TAB INSTALLATION

ELEVATOR AND ELEVATOR TRIM TAB INSTALLATION

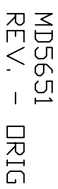
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/16" Bolt	AN3-10A	4
2.	3/16" Thin Washer	AN960-10L	8
3.	Bronze Flange Bushing	KSAC0071	16
4.	3/16" Shear Nut	AN364-1032A	4
5.	Pin - Elevator Trim Tab Hinge * **	KPTR0067	0

* Part of KPTR0067

** Refer to Elevator Frame Assembly and Elevator Trim Tab Assembly

9/11/2018

REV. - ORIG



REPAIR S-21 OUTBOUND
ELEVATOR TRIM TAB ASSEMBLY

ELEVATOR TRIM TAB ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Elevator Trim Tab Spar - LH	KPTR0064-L	1
2.	Elevator Trim Tab Spar - RH	KPTR0064-R	1
3.	Elevator Trim Tab Rib	KPTR0063	8
4.	Elevator Trim Tab Skin	KPTR0065	1
5.	Elevator Trim Tab Horn - LH	KPTR0066-L	1
6.	Elevator Trim Tab Horn - RH	KPTR0066-R	1
7.	Elevator Trim Tab Hinge * **	KPTR0067	0
8.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	126
9.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	6
10.	Trim Servo Kit	KSTR0001	1
11.	Trim Servo ***	----	0
12.	8-32 Nut Plate	MS21047-08	4
13.	3/32" Aluminum Rivet	40APR1/8	8
14.	8-32 Machine Screw	AN526-832R10	4
15.	Cotter Pin ***	----	0
16.	1/8" Small Brass Washer	AN960-B4	2
17.	Clevis Pin ***	----	0
18.	Clevis ***	----	0
19.	Jam Nut ***	----	0
20.	Push Rod ***	----	0
21.	Trim Position Indicator ***	----	0
22.	Control Stick Grip	KSCS0016	1
23.	5-Wire Bundle - 26 Gauge - White Wire	KSES0022	24 ft.
24.	20 Gauge - White Wire ****	----	0
25.	3/16" Rubber Grommet	KSAC0002	3

* Builder Modifies

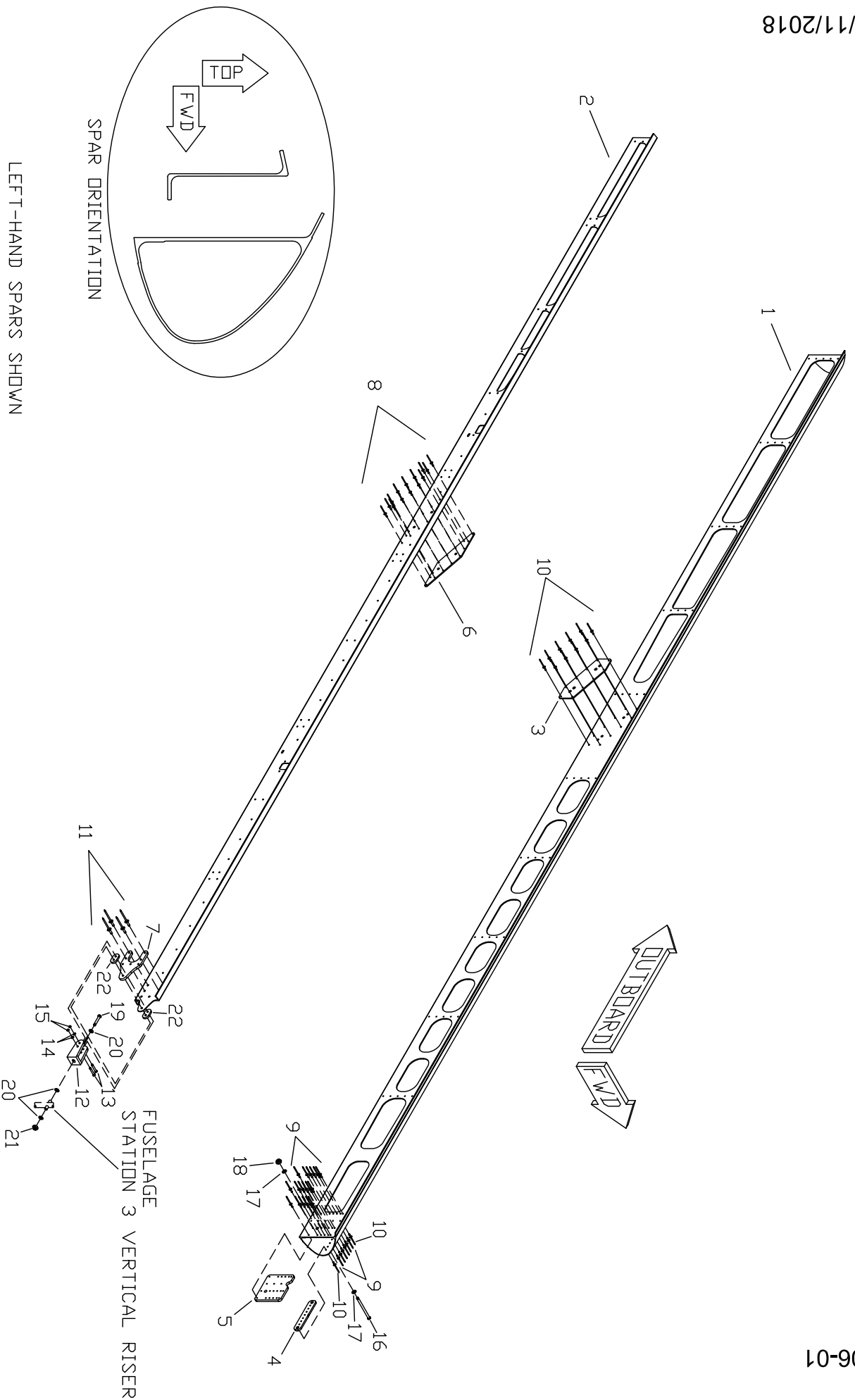
** Refer to Elevator Frame Assembly

*** Included in Trim Servo Kit

**** Builder Supplied

9/11/2018

REV. - ORIG

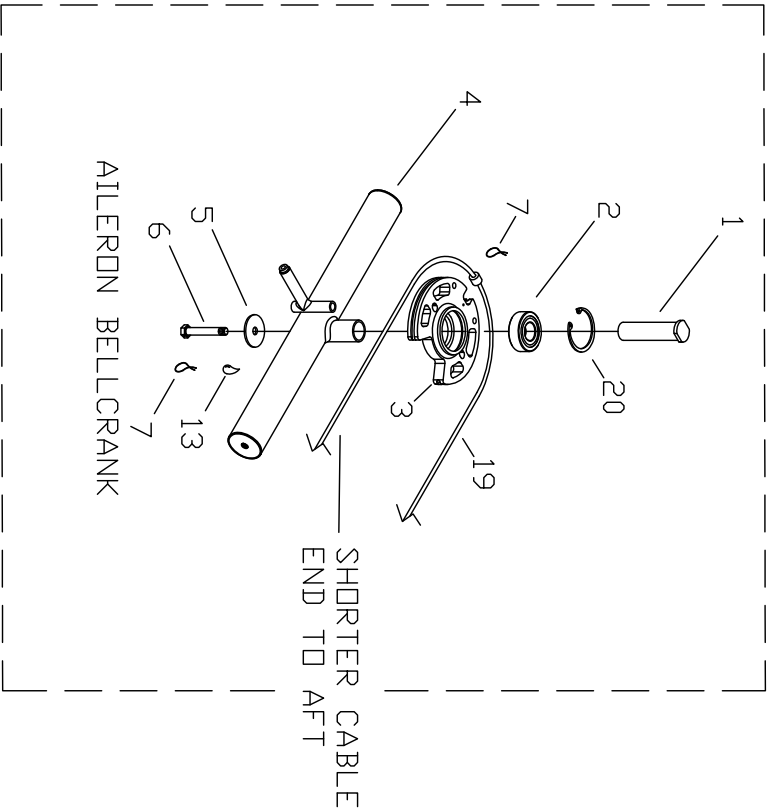


**S-21 OUTBOUND
141 WING - SPAR ASSEMBLY**

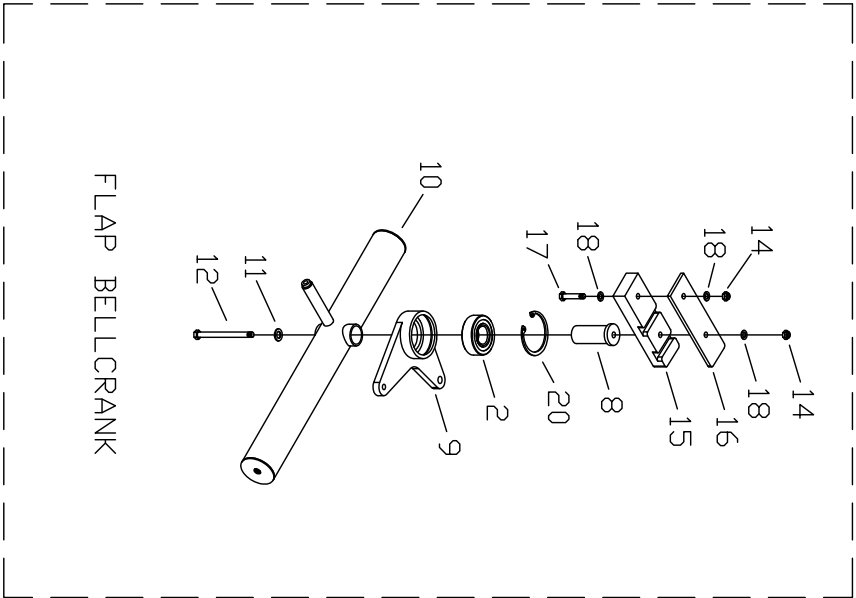
MD5649
REV. - ORIG

141 WING - SPAR ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Forward Wing Spar - RH	KPWI0650-R	1
1.	Forward Wing Spar - LH	KPWI0650-L	1
2.	Rear Wing Spar - RH	KPWI0649-R	1
2.	Rear Wing Spar - LH	KPWI0649-L	1
3.	FWD Spar Truss Doubler	KPWI0642	2
4.	FWD Spar FWD Attach Doubler	KPWI0667	2
5.	FWD Spar AFT Attach Doubler	KPWI0678	2
6.	AFT Spar Truss Doubler	KPWI0643	2
7.	AFT Spar Attach Doubler	KPWI0671	2
8.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-43	28
9.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-46	48
10.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-44	24
11.	3/16" Stainless Steel Rivet - Cherry Q	CCPQ-66	8
12.	AFT Spar Attach Fitting	KPWI0672	2
13.	3/16" Bolt	AN3-15A	4
14.	3/16" Thick Washer	AN960-10	4
15.	3/16" Shear Nut	AN364-1032A	4
16.	3/8" Bolt	AN6-35A	2
17.	3/8" Thick Washer	AN960-616	4
18.	3/8" Tensile Nut	AN365-624A	2
19.	5/16" Bolt	AN5-20A	2
20.	5/16" Thick Washer	AN960-516	6
21.	5/16" Tensile Nut	AN365-524A	2
22.	AFT Spar Attach Shim	KPWI0688	4



LEFT-HAND BELLCRANKS SHOWN



**REFINISH S-21 OUTBOUND
141 WING - BELLCRANK ASSEMBLIES**

RANS S-21 OUTBOUND

PAGE

006A-02

141 WING - BELLCRANK ASSEMBLIES

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Aileron Bellcrank Spindle	KPAL0138	2
2.	Bearing	KSCS0019	4
3.	Aileron Bellcrank Pulley	KPAL0137	2
4.	Aileron Bellcrank Mount	KPAL0139	2
5.	1/4" Large Washer	AN970-4	2
6.	1/4" Bolt - Drilled Head	AN4H-7A	2
7.	Safety Wire *	-----	0
8.	Flap Bellcrank Spindle	KPFL0169	2
9.	Flap Bellcrank - RH	KPFL0163-R	1
9.	Flap Bellcrank - LH	KPFL0163-L	1
10.	Flap Bellcrank Mount - RH	KPFL0164-R	1
10.	Flap Bellcrank Mount - LH	KPFL0164-L	1
11.	3/16" Thick Washer	AN960-10	2
12.	3/16" Bolt	AN3-31A	2
13.	Loctite Blue *	-----	0
14.	3/16" Shear Nut	AN364-1032A	4
15.	Aileron Cable Guide - LH	KPFL0170-L	1
15.	Aileron Cable Guide - RH	KPFL0170-R	1
16.	Aileron Cable Guide Top	KPFL0171	2
17.	3/16" Bolt	AN3-10A	2
18.	3/16" Thin Washer	AN960-10L	6
19.	Aileron Cable	KPCS0303	2
20.	1 3/8" Retaining Ring	KSHW0101	4

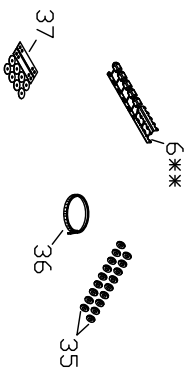
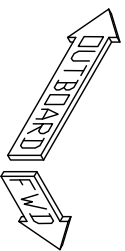
* Builder Supplied

FLANGE BUSHING WILL INSTALL TO
OUTBOARD SIDE OF OUTBOARD AILERON
HINGE ARM AND TO INBOARD SIDE OF
INBOARD AILERON HINGE ARM.

TYPICAL ALL AILERON &
FLAP HINGE ARMS
(EXCEPT ROOT)

* USE AS NECESSARY TO FILL GAP
** BUILDER MODIFIES

LEFT-HAND WING SHOWN

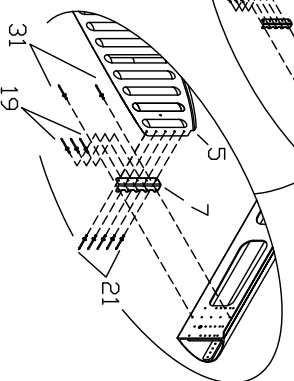
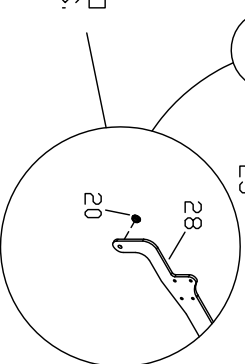


FLANGE BUSHINGS WILL INSTALL TO
OUTBOARD SIDE OF ALL FLAP HINGE ARMS.

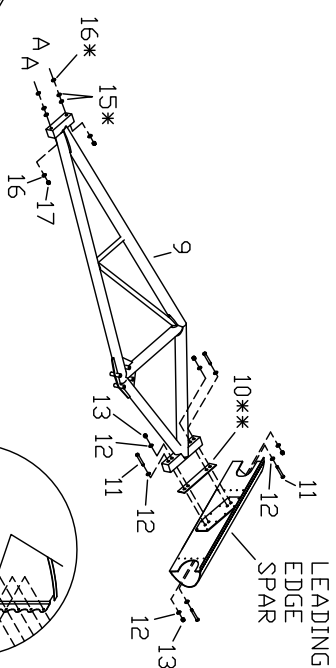
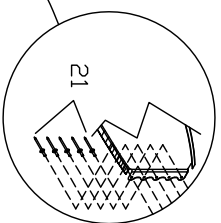
141 WING - FRAME ASSEMBLY

FLAP HINGE
ARM - ROOT

MD5649
REV. - ORIG



TYPICAL RIBS #2 THRU
#6 AND #8 THRU #11



141 WING - FRAME ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Wing Tip Rib - LH	KPWI0641-L	1
1.	Wing Tip Rib - RH	KPWI0641-R	1
2.	Inner Wing Rib - LH	KPWI0638-L	8
3.	Inner Wing Rib - RH	KPWI0638-R	8
4.	Outside Root Rib - LH	KPWI0640-L	1
4.	Outside Root Rib - RH	KPWI0640-R	1
5.	Inside Root Rib - LH	KPWI0639-L	1
5.	Inside Root Rib - RH	KPWI0639-R	1
6.	Attach Angle - Part Assembly *	KAWI0037	1
7.	Root Rib FWD Attach Angle **	KPWI0670	0
8.	Rib AFT Attach Angle **	KPWI0669	0
9.	Wing Truss	KPWI0664	2
10.	Lexan Shim Sheet - Truss ***	KPWI0645	0
11.	5/16" Bolt	AN5-16A	8
12.	5/16" Thick Washer	AN960-516	16
13.	5/16" Tensile Nut	AN365-524A	8
14.	1/4" Bolt	AN4-16A	4
15.	1/4" Thick Washer	AN960-416	8
16.	1/4" Thin Washer	AN960-416L	16
17.	1/4" Tensile Nut	AN365-428A	4
18.	Wing Tie Down Angle - LH	KPWI0677-L	1
18.	Wing Tie Down Angle - RH	KPWI0677-R	1
19.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-46	16
20.	Bronze Flange Bushing	KSAC0071	12
21.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	180
22.	Aileron Hinge Arm	KPWI0654	4
23.	Aileron Bellcrank Outer Rib Support	KPWI0653	2
24.	Flap Hinge Arm	KPWI0655	6
25.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	168
26.	1/8" Aluminum Rivet - Cherry Q	AAPQ-45	14
27.	1/8" Aluminum Rivet - Cherry Q	AAPQ-44	20
28.	Flap Hinge Arm - Root	KPWI0683	2
29.	3/16" Stainless Steel Rivet - Cherry Q	CCPQ-66	4
30.	Flap Teleflex and Bellcrank Mount	KPWI0652	2
31.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-43	4
32.	3/16" Bolt	AN3-5A	2
33.	3/16" Thin Washer	AN960-10L	2
34.	3/16" Shear Nut	AN364-1032A	2
35.	3/4" Rubber Grommet	MS35489-11	18
36.	Serrated Grommet Strip	KSAC0023	4 ft
37.	Lexan Wing Parts Sheet	KAWI0041	1
38.	Grommet	KSAC0076	2

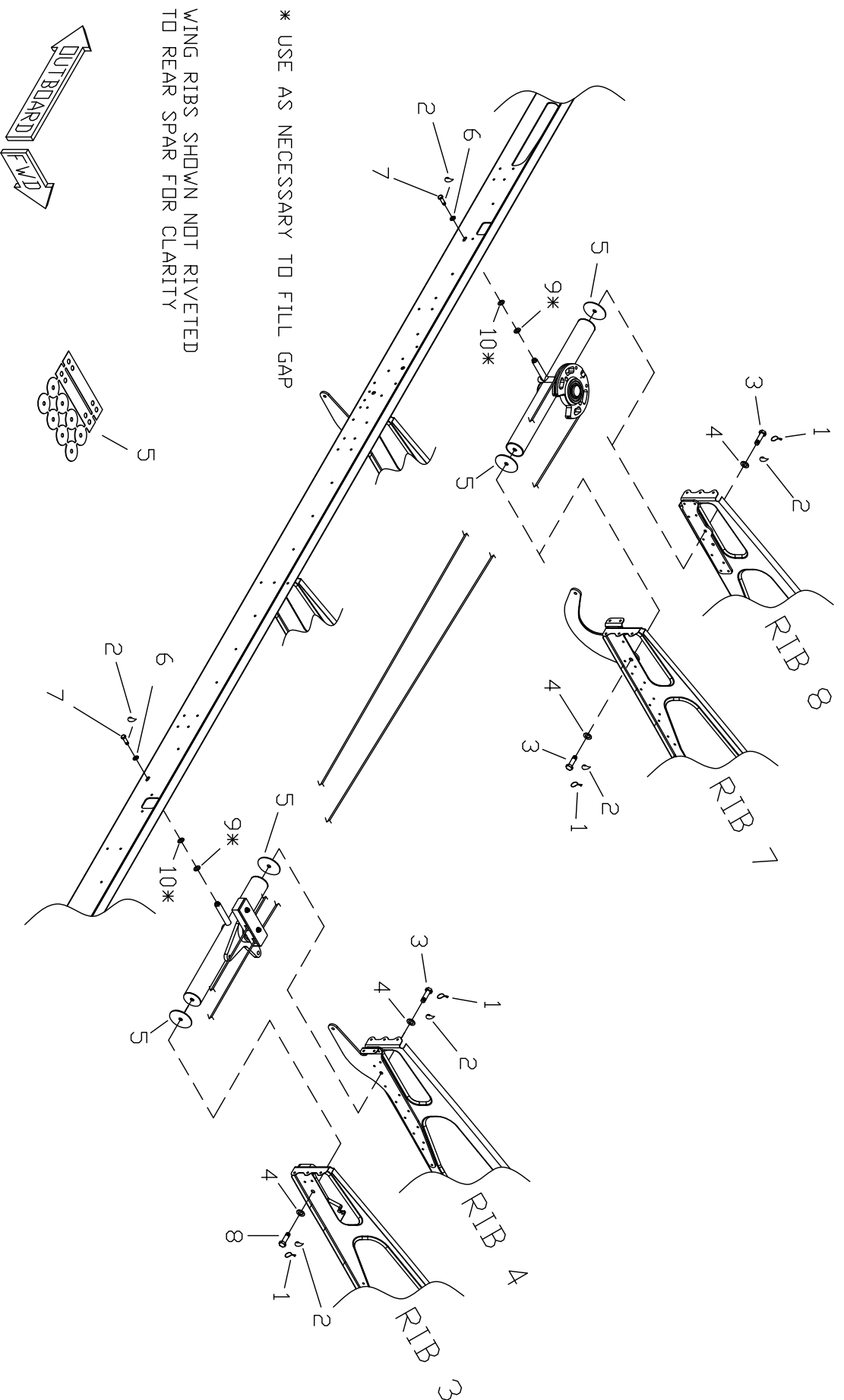
* Builder Modifies

** Part of KAWI0037

*** Part of KAWI0041

9/11/2018

REV. - ORIG



* USE AS NECESSARY TO FILL GAP

WING RIBS SHOWN NOT RIVETED TO REAR SPAR FOR CLARITY

LEFT-HAND WING SHOWN

REFINISH S-21 OUTBOUND 141 WING - BELLCRANK INSTALLATION

MD5649
REV. - ORIG

RANS S-21 OUTBOUND
141 WING - BELLCRANK INSTALLATION

PAGE

006B-04

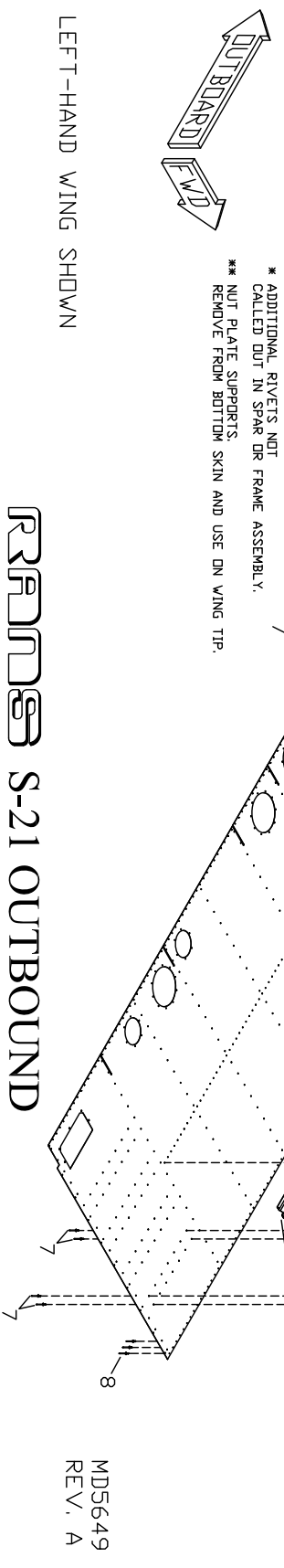
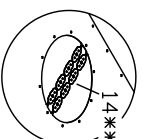
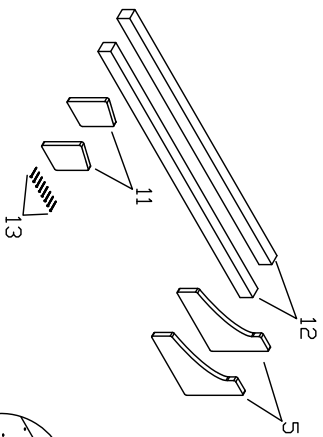
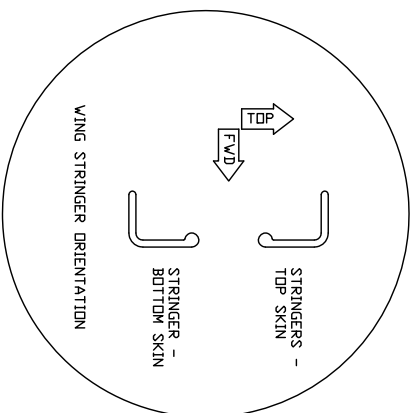
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Safety Wire *	-----	0
2.	Loctite Blue *	-----	0
3.	1/4" Bolt - Drilled Head	AN4H-5A	6
4.	1/4" Thick Washer	AN960-416	8
5.	Lexan Shim Sheet - Bellcrank Mount **	KPWI0684	0
6.	3/16" Star Lock Washer	MS35333-39	4
7.	3/16" Bolt	AN3-3A	4
8.	1/4" Bolt - Drilled Head	AN4H-6A	2
9.	3/16" Thick Washer	AN960-10	4
10.	3/16" Thin Washer	AN960-10L	4

* Builder Supplied

** Part of KAWI0041

9/11/2018

REV. - ORIG



- ✱ ADDITIONAL RIVETS NOT CALLED OUT IN SPAR OR FRAME ASSEMBLY.
- ✱✱ NUT PLATE SUPPORTS. REMOVE FROM BOTTOM SKIN AND USE ON WING TIP.

LEFT-HAND WING SHOWN

REFUGES S-21 OUTBOUND 141 WING - SKIN INSTALLATION

MD5649
REV. A

141 WING - SKIN INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Wing Skin - Top	KPWI0646	2
2.	Wing Skin - Bottom	KPWI0647	2
3.	Tank Support	KPWI0651	16
4.	Tailcone & Wing Stringer	KPFU0743	8
5.	Wing Jig - FWD	KPWI0687-A	2
6.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	884
7.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	1068
8.	1/8" Stainless Steel Rivet - Flush	CCC-42	412
9.	Wing Gap Seal - inboard - LH	KPWI0706-L	1
9.	Wing Gap Seal - Inboard - RH	KPWI0706-R	1
10.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	52
11.	Wing Jig - AFT	KPWI0687-B	2
12.	Wood - 2" x 2" *	-----	0
13.	Wood Screws *	-----	0
14.	Nut Plate Support **	KPWI0703	0
15.	Wing Gap Seal - Outboard - LH	KPWI0707-L	1
15.	Wing Gap Seal - Outboard - RH	KPWI0707-R	1

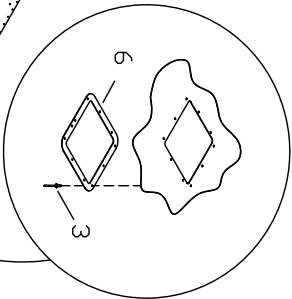
* Builder Supplied

** Part of KPWI0647. Used on Wing Tips

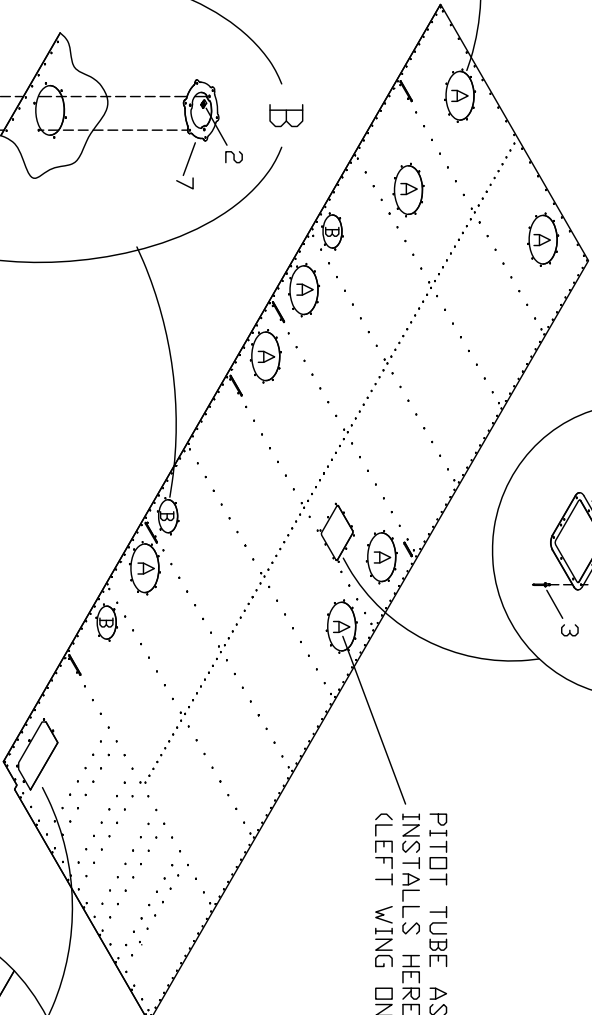
9/11/2018

REV. A

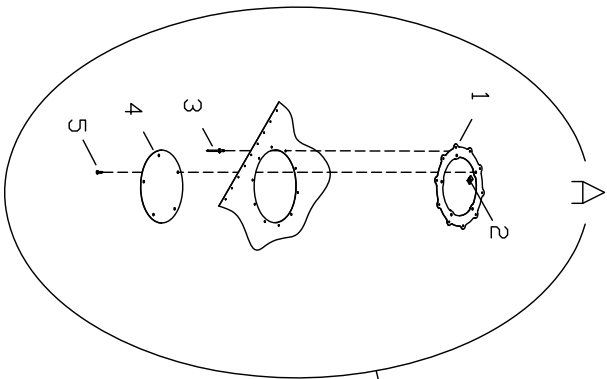
LIFT STRUT EXIT
DOUBLER INSTALLATION



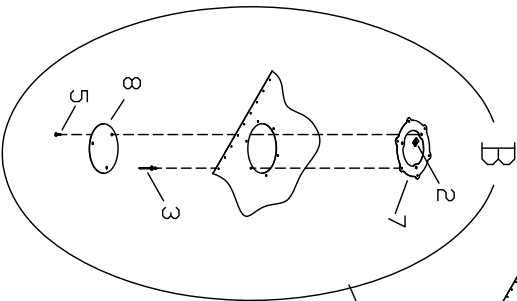
PITOT TUBE ASSEMBLY
INSTALLS HERE
(LEFT WING ONLY)



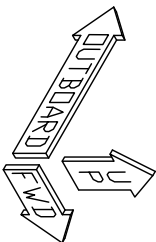
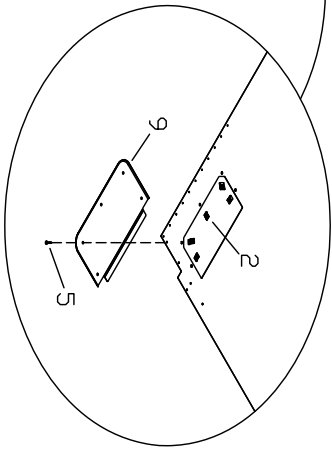
5" INSPECTION PANEL
ASSEMBLY



3" INSPECTION PANEL
ASSEMBLY



FUEL WITHDRAWAL
ACCESS PLATE
INSTALLATION



LEFT-HAND WING SHOWN

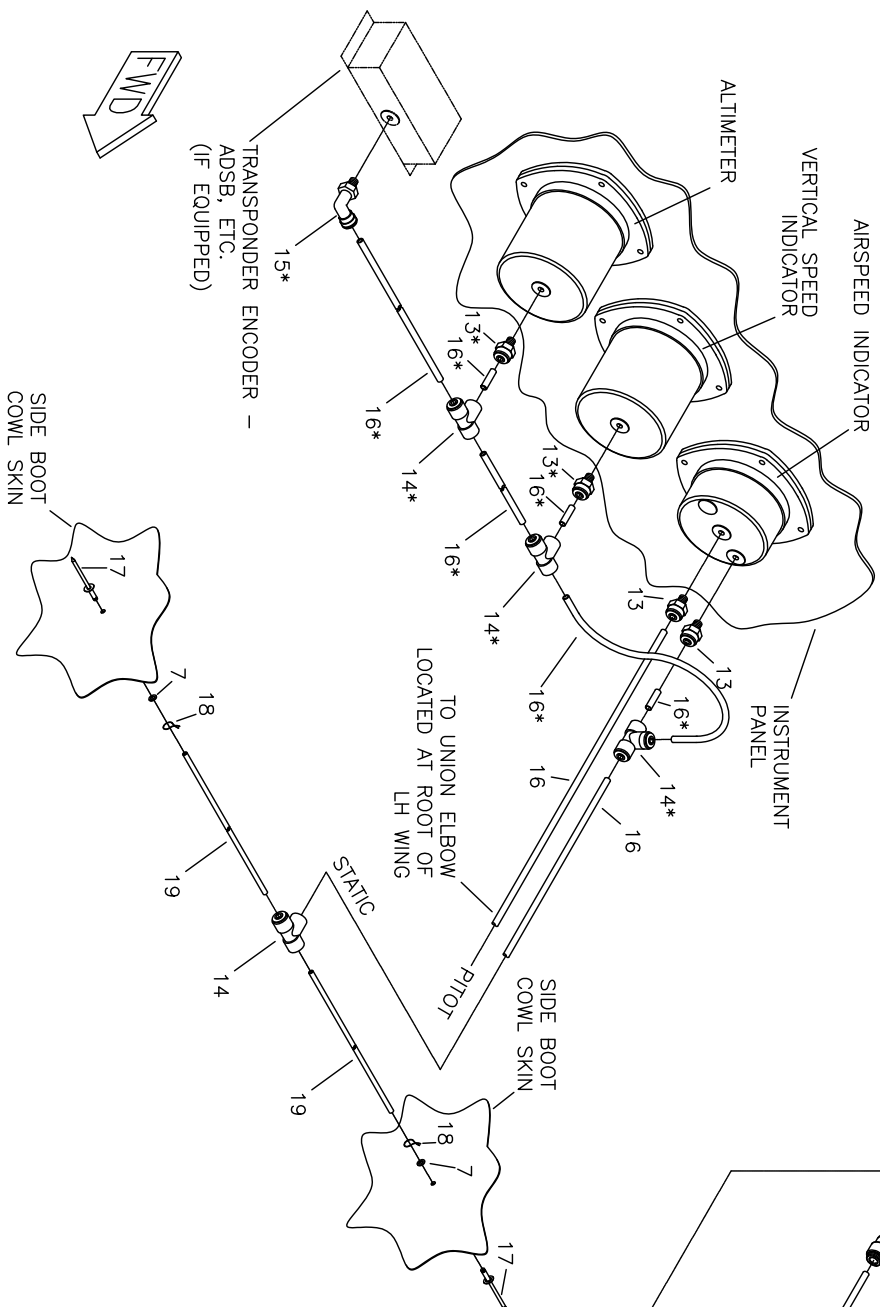
**REVISION S-21 OUTBOUND
141 WING - BOTTOM SKIN
INSPECTION PANEL INSTALLATION**

MD5649
REV. - ORIG

141 WING - BOTTOM SKIN - INSPECTION PANEL INSTALLATION

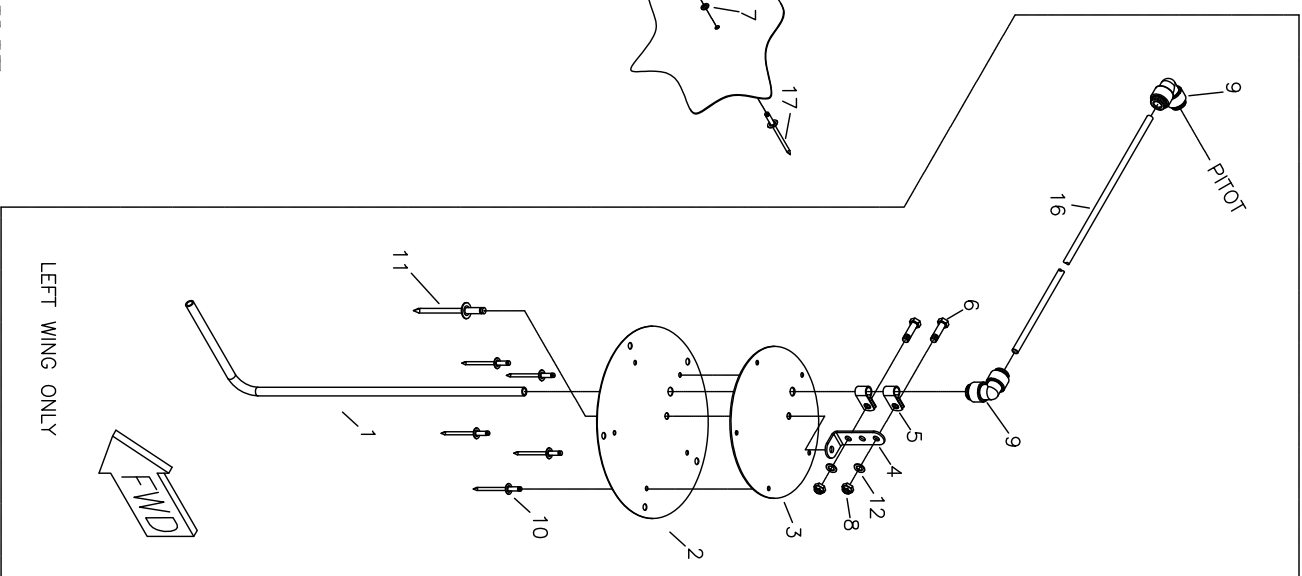
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	5" Inspection Cover Tab Ring	KPWI0656	16
2.	Tinnerman	A1789-8Z-1	108
3.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	216
4.	5" Inspection Cover	KPWI0659	16
5.	#8 Pan Head Screw	8X1/2 PHS	108
6.	Lift Strut Exit Doubler	KPWI0662	2
7.	3" Inspection Cover Tab Ring	KPWI0680	6
8.	3" Inspection Cover	KPWI0682	6
9.	Fuel Withdrawal Access Plate	KPWI0674	2

TYPICAL ANALOG INSTRUMENT INSTALLATION SHOWN



* THESE ITEMS BUILDER SUPPLIED, AS NEEDED FOR ADDITIONAL INSTRUMENTS.

REPLACES S-21 OUTBOUND 141 WING - OPTIONS - PITOT/STATIC SYSTEM



RANS S-21 OUTBOUND

PAGE

006C-06

141 WING - OPTIONS - PITOT/STATIC SYSTEM

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Pitot Tube	KPPT0014	1
2.	5" Inspection Cover * **	KPWI0659	0
3.	Pitot Doubler Plate	KPPT0015	1
4.	Angle Bracket	KPAC0004	1
5.	1/4" Conduit Clamp	S1-CC	2
6.	3/16" Bolt	AN3-4A	2
7.	1/8" Small Brass Washer	AN960-B4	2
8.	3/16" Shear Nut	AN364-1032A	2
9.	Union Elbow	KSPT0005	2
10.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	5
11.	3/16" Aluminum Rivet - Cherry Q	AAPQ-62	1
12.	3/16" Thin Washer	AN960-10L	2
13.	Male Connector ***	KSPT0002	2
14.	Union Tee ***	KSPT0003	1
15.	90 Degree Elbow ***	KSPT0006	2
16.	Pitot/Static Tubing ***	KSPT0004	22 ft
17.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-46	2
18.	Safety Wire ****	-----	0
19.	1/8" Primer Line	PRIMER LINE	4 ft

* Refer to 141 Wing - Bottom Skin Inspection Panel Installation

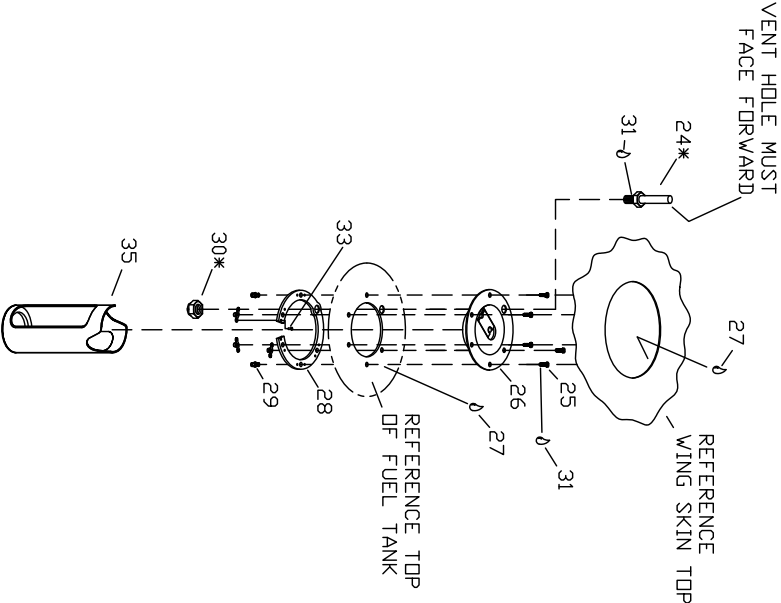
** Builder Modifies

*** May be purchased seperately, call RANS Parts Dept. for pricing

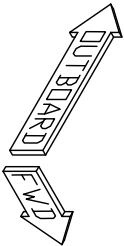
**** Builder Supplied

9/11/2018

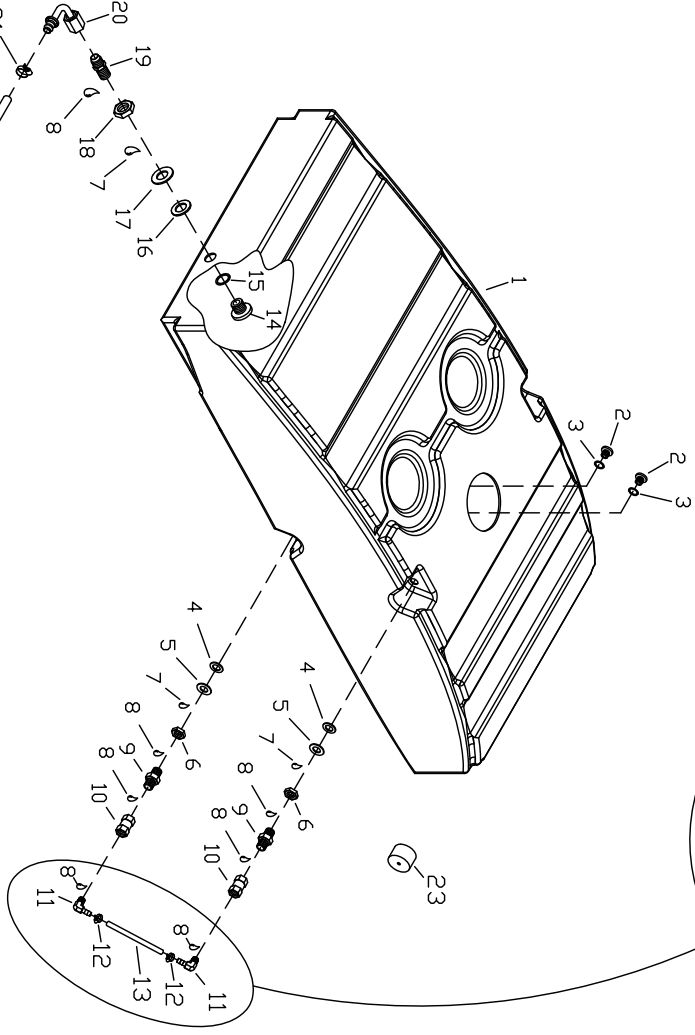
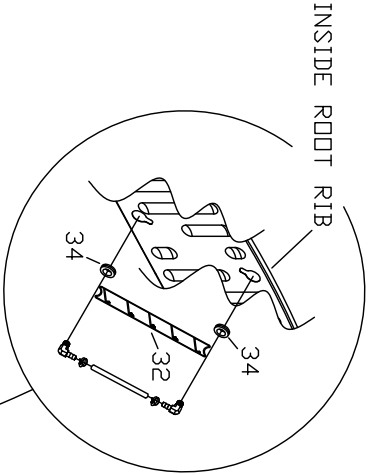
REV. - ORIG



* INSTALL AFTER TANK INSTALLATION



LEFT-HAND TANK SHOWN



RUBBER GROMMET INSTALLED
IN ROOT FLAP HINGE ARM

MD5649
REV. A

RRR S-21 OUTBOUND 141 WING - FUEL TANK ASSEMBLY

RANS S-21 OUTBOUND

PAGE

006D-02

141 WING - FUEL TANK ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Fuel Tank	KPFS0112	2
2.	Tank Withdrawal Fitting	KPFS0017	4
3.	O-Ring	KSFS0009	4
4.	Rubber Washer	KSFS0010	4
5.	1/2" Thick Washer	AN960-816	4
6.	Nut - Flared Tube Bulkhead	AN924-5D	4
7.	Loctite Blue *	-----	0
8.	Thread Sealant *	-----	0
9.	1/8" NPT Nipple	KSAC0032	4
10.	1/8" Coupler	AN910-1D	4
11.	90-Degree Withdrawal Fitting	8342	4
12.	Hose Clamp - 5/8"	5-6202	4
13.	Clear Fuel Line - 1/4"	KSFS0008	18 in
14.	3/4" Bulkhead Fitting	KSFS0037	2
15.	O-Ring - 3/4" Bulkhead	KSFS0039	2
16.	Rubber Washer	KSFS0016	2
17.	3/4" Thick Washer	AN960-1216	2
18.	Nut - 3/4" Bulkhead - Reverse Thread	KSFS0038	2
19.	Nipple - Flared Tube & Pipe Thread	AN816-6D	2
20.	90 Degree 3/8" Hose Fitting	33982-6-6	2
21.	Hose Clamp - 7/8"	5-6203	2
22.	Black Fuel Line - 3/8"	27004	13 ft
23.	1" Dia. Wood Dowel *	-----	0
24.	Fuel Vent	KPFS0101	2
25.	3/16" Countersunk Machine Screw	MS24694-S53	10
26.	Fuel Cap Assembly - Flush	KSFS0035	2
27.	Pro-Seal Sealant *	-----	0
28.	Retainer	KPWI0614	2
29.	3/16" Nut Plate	K-1000-3	10
30.	3/8" Shear Nut	AN364-624A	2
31.	PRC or DOW 730 Sealant *	-----	0
32.	Fuel Sight Gauge Decal - LH	KPPL0024-L	1
32.	Fuel Sight Gauge Decal - RH	KPPL0024-R	1
33.	3/32" Solid Rivet - Flush	AN426AD-3-5	20
34.	Rubber Grommet	MS35489-17	4
35.	Fuel Tank Support	KPFS0115	2

* Builder Supplied

9/11/2018

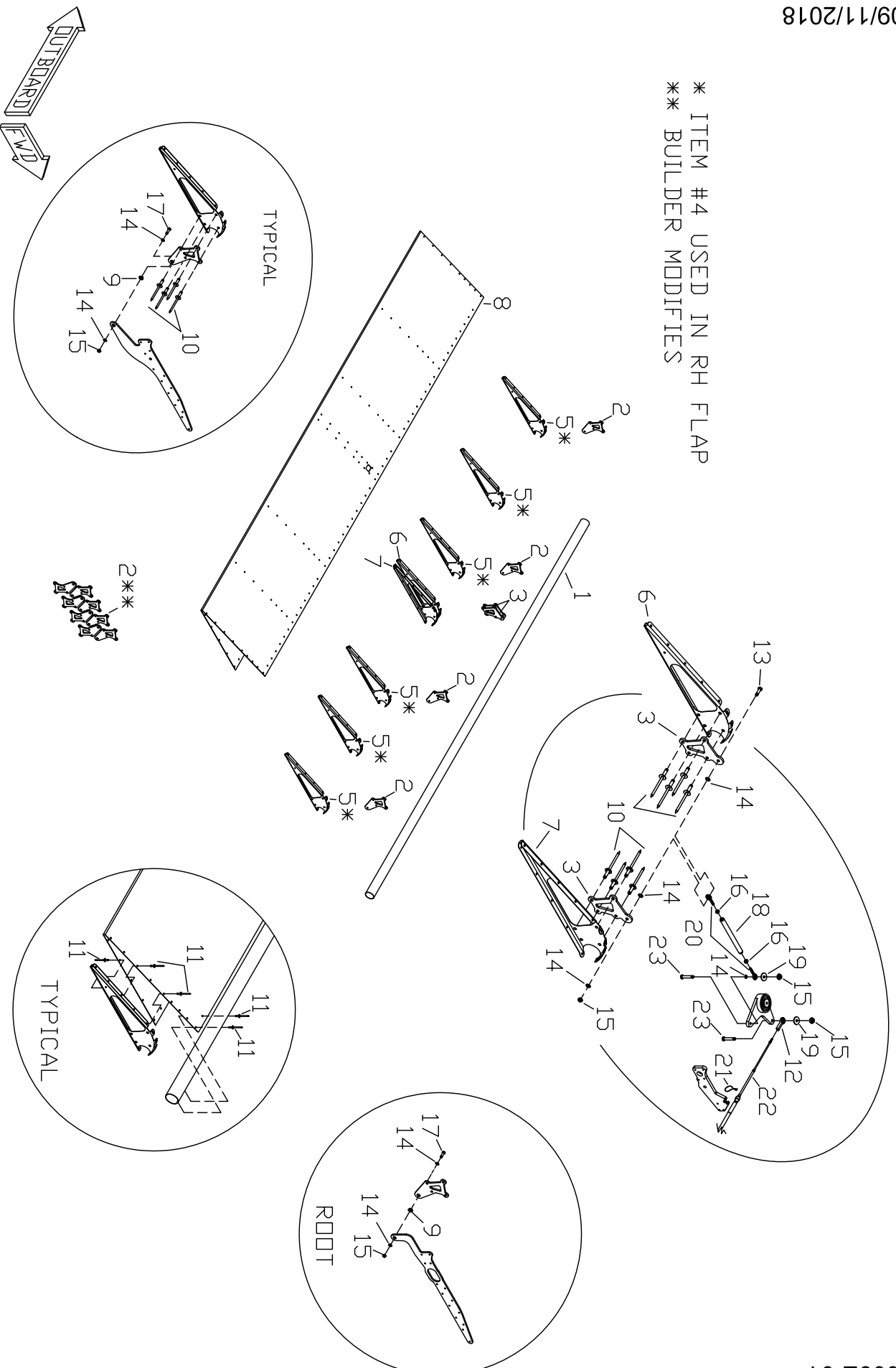
REV. A

```

** ITEM #4 USED IN RH FLAP
** BUILDER MODIFIES

```

BUILDER MODIFIES



LEFT-HAND FLAP SHOWN

RRR-141 S-21 OUTBOUND WING-FLAP ASSEMBLY

MD5649
REV. - ORIG

141 WING - FLAP ASSEMBLY AND INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Flap Spar	KPFL0167	2
2.	Flap Hinge - Part Assembly * **	KAFL0019	1
3.	Flap Push-Pull Tube Attach	KPFL0165	4
4.	Aileron / Flap Rib - RH	KPAL0146-R	6
5.	Aileron / Flap Rib - LH	KPAL0146-L	6
6.	Aileron / Flap Action Rib - LH	KPAL0147-L	2
7.	Aileron / Flap Action Rib - RH	KPAL0147-R	2
8.	Flap Skin - LH	KPFL0168-L	1
8.	Flap Skin - RH	KPFL0168-R	1
9.	Bronze Flange Bushing	KSAC0071	8
10.	3/16" Aluminum Rivet - Cherry Q	AAPQ-62	48
11.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	420
12.	Female Rod End	NF-3	2
13.	3/16" Bolt	AN3-10A	2
14.	3/16" Thin Washer	AN960-10L	24
15.	3/16" Shear Nut	AN364-1032A	16
16.	3/16" Plain Nut	AN345-10	4
17.	3/16" Bolt	AN3-6A	8
18.	Flap Push-Pull Tube	KPFL0172	2
19.	#10 Stainless Steel Washer	BSHW0022	4
20.	3/16" Male Rod End	CM-3	4
21.	Safety Wire ***	-----	0
22.	12' Teleflex Cable	TELEFLEX-12	2
23.	3/16" Bolt	AN3-7A	4

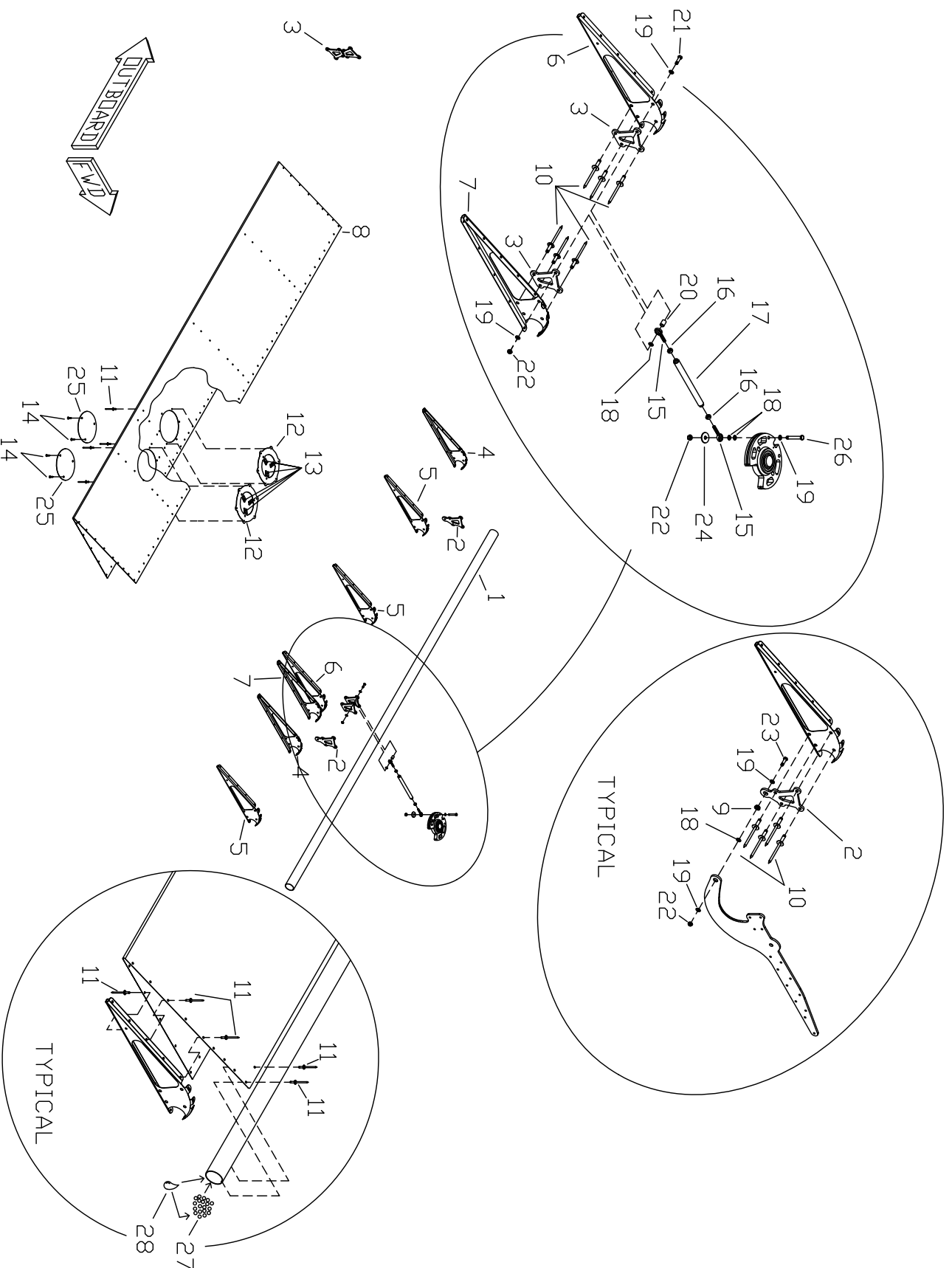
* Builder Modifies

** Individual parts may be purchased as KPFL0166

*** Builder Supplied

9/11/2018

REV. - ORIG



LEFT-HAND AILERON SHOWN

S-21 OUTBOUND 141 WING - AILERON ASSEMBLY

MD5649
REV. A

141 WING - AILERON ASSEMBLY AND INSTALLATION

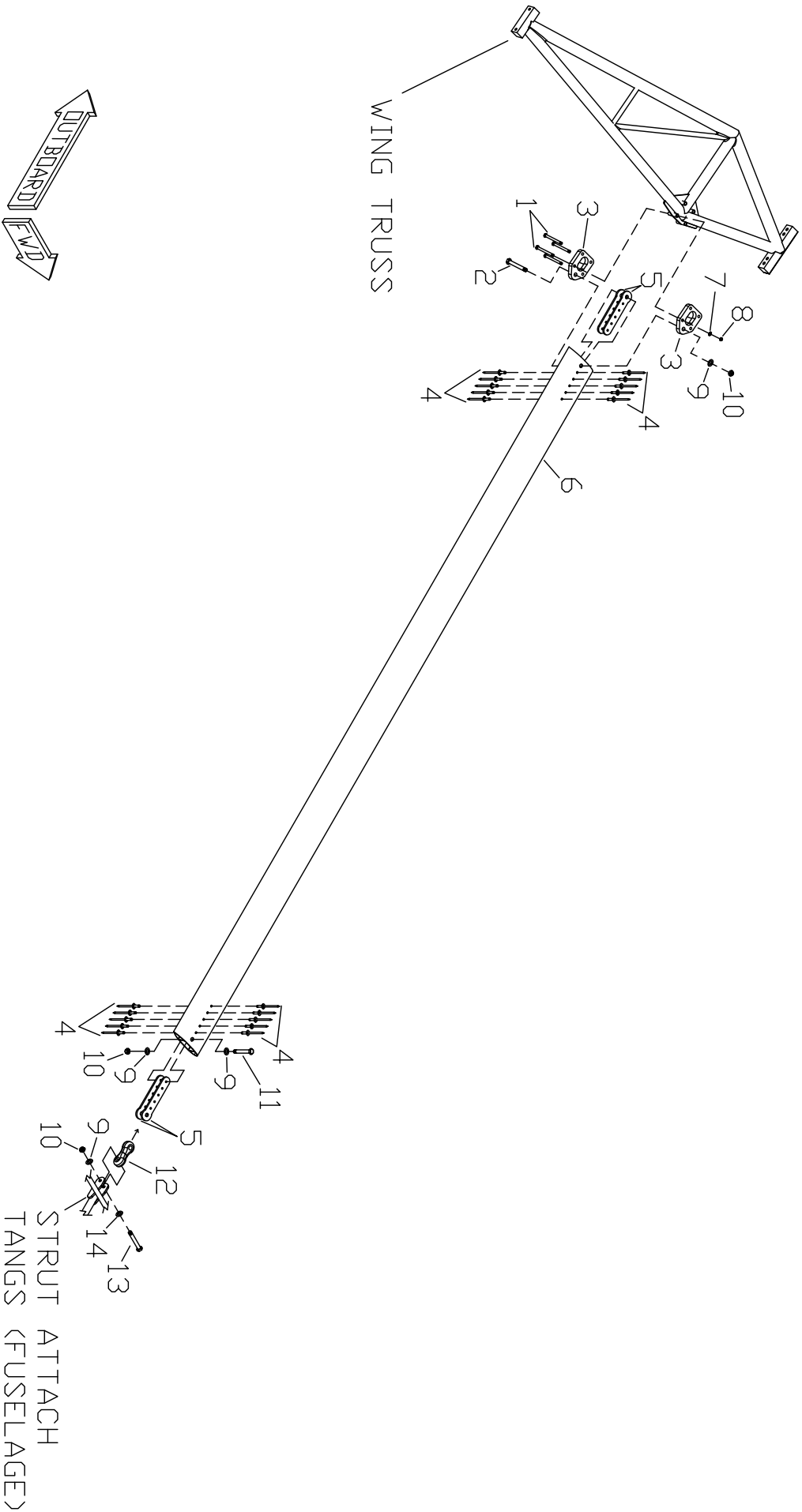
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Aileron Spar	KPAL0140	2
2.	Aileron Hinge	KPAL0144	4
3.	Aileron Push-Pull Attach *	KPAL0143	2
4.	Aileron / Flap Rib - RH	KPAL0146-R	5
5.	Aileron / Flap Rib - LH	KPAL0146-L	5
6.	Aileron / Flap Action Rib - LH	KPAL0147-L	2
7.	Aileron / Flap Action Rib - RH	KPAL0147-R	2
8.	Aileron Skin - LH	KPAL0145-L	1
8.	Aileron Skin - RH	KPAL0145-R	1
9.	Bronze Flange Bushing	KSAC0071	4
10.	3/16" Aluminum Rivet - Cherry Q	AAPQ-62	28
11.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	402
12.	3" Inspection Cover Tab Ring	KPWI0680	4
13.	Tinnerman	A1789-8Z-1	12
14.	#8 Pan Head Screw	8X1/2 PHS	12
15.	3/16" Male Rod End	CM-3	4
16.	3/16" Plain Nut	AN345-10	4
17.	Aileron Push-Pull Tube	KPAL0148	2
18.	3/16" Thick Washer	AN960-10	10
19.	3/16" Thin Washer	AN960-10L	14
20.	Aluminum Bushing - 3/8" x .095" *	KPAC0060	1
21.	3/16" Bolt	AN3-16A	2
22.	3/16" Shear Nut	AN364-1032A	8
23.	3/16" Bolt	AN3-6A	4
24.	#10 Stainless Steel Washer	BSHW0022	2
25.	3" Inspection Cover	KPWI0682	4
26.	3/16" Bolt	AN3-11A	2
27.	Lead Shot or BB's **	-----	0
28.	Expanding Foam Sealant **	-----	0

* Builder Modifies

** Builder Supplied

9/11/2018

REV. A



141 WING - LIFT STRUT ASSEMBLY

MD5649
REV. - A

RANS S-21 OUTBOUND

PAGE

006G-02

141 WING - LIFT STRUT ASSEMBLY & INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	1/4" Bolt	AN4-26A	8
2.	7/16" Bolt	AN7-30A	2
3.	Strut Truss Fitting	KPLS0055	4
4.	3/16" Stainless Steel Rivet - Cherry Q	CCPQ-66	40
5.	Strut Fitting Doubler	KPLS0053	8
6.	Lift Strut	KPLS0054	2
7.	1/4" Thick Washer	AN960-416	8
8.	1/4" Shear Nut	AN364-428A	8
9.	7/16" Thick Washer	AN960-716	8
10.	7/16" Shear Nut	AN364-720A	6
11.	7/16" Bolt	AN7-20A	2
12.	Lower Strut Fitting	KPLS0056	2
13.	7/16" Bolt	AN7-16A	2
14.	7/16" Thin Washer	AN960-716L	2

9/11/2018

REV. - A

RANS S-21 OUTBOUND

PAGE

006G-04

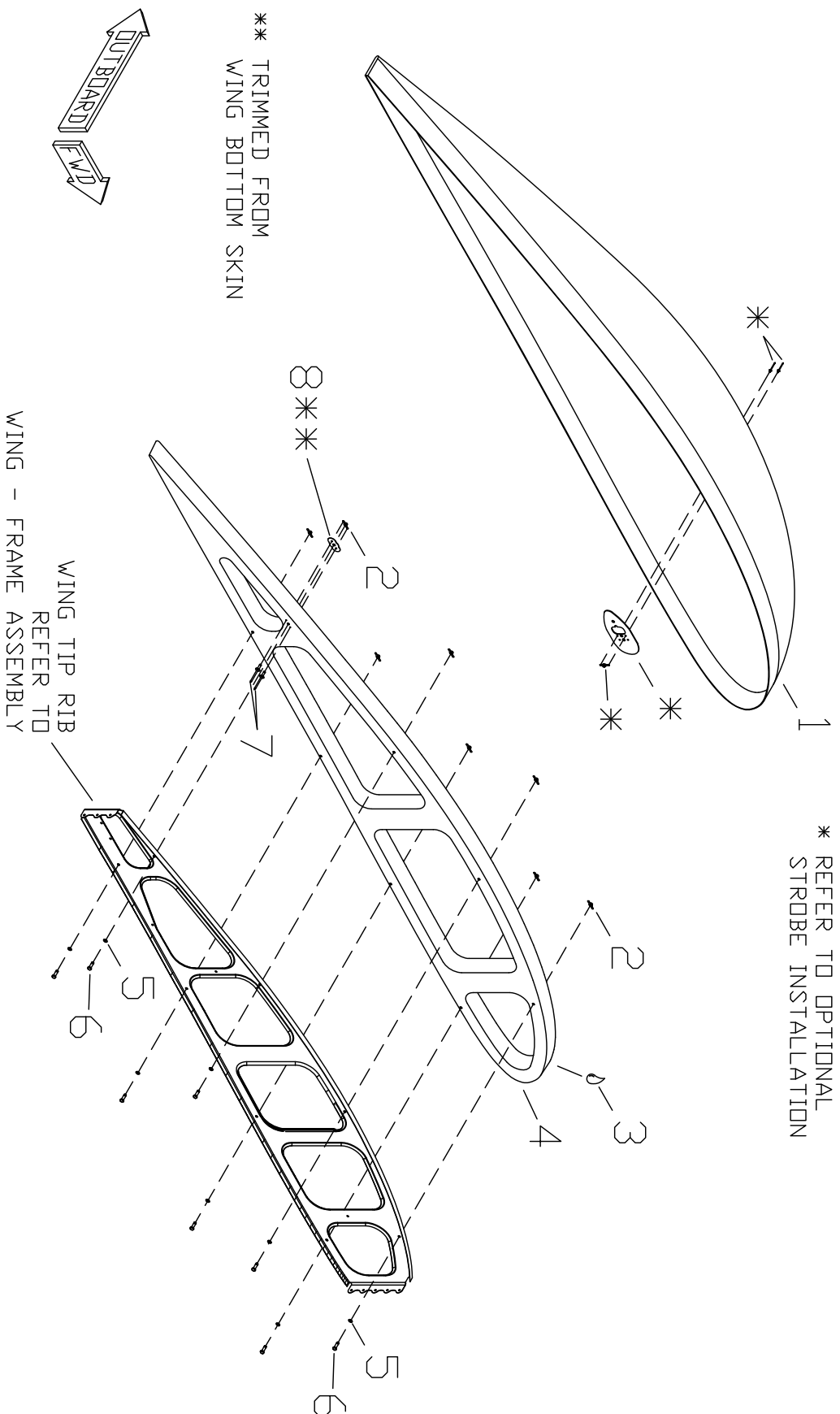
141 WING - OPTIONS - UPPER LIFT STRUT FAIRING

KAWI0042

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Upper Lift Strut Fairing - RH	KPWI0692-R	1
1.	Upper Lift Strut Fairing - LH	KPWI0692-L	1
2.	3/16" Truss Head Screw	AN526-C1032-R12	10
3.	3/16" Rivet Nut	MS27130-A25K	10
4.	Loctite Blue *	-----	0

* Builder Supplied

9/11/2018
REV. - ORIG



LEFT-HAND SHOWN

141 WING - WINGTIP ASSEMBLY

141 WING - WING TIP ASSEMBLY AND INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Wing Tip - LH	KPWI0685-L	1
1.	Wing Tip - RH	KPWI0685-R	1
2.	8-32 Nut Plate	MS21047-08	16
3.	PVC Cement *	-----	0
4.	Wing Tip Support Rib - LH	KPWI0686-L	1
4.	Wing Tip Support Rib - RH	KPWI0686-R	1
5.	#8 Washer	AN960-8	16
6.	8-32 Bolt	KSHW0102	16
7.	3/32" Aluminum Rivet	40APR1/8	32
8.	Nut Plate Support **	KPWI0703	0

* Builder Supplied

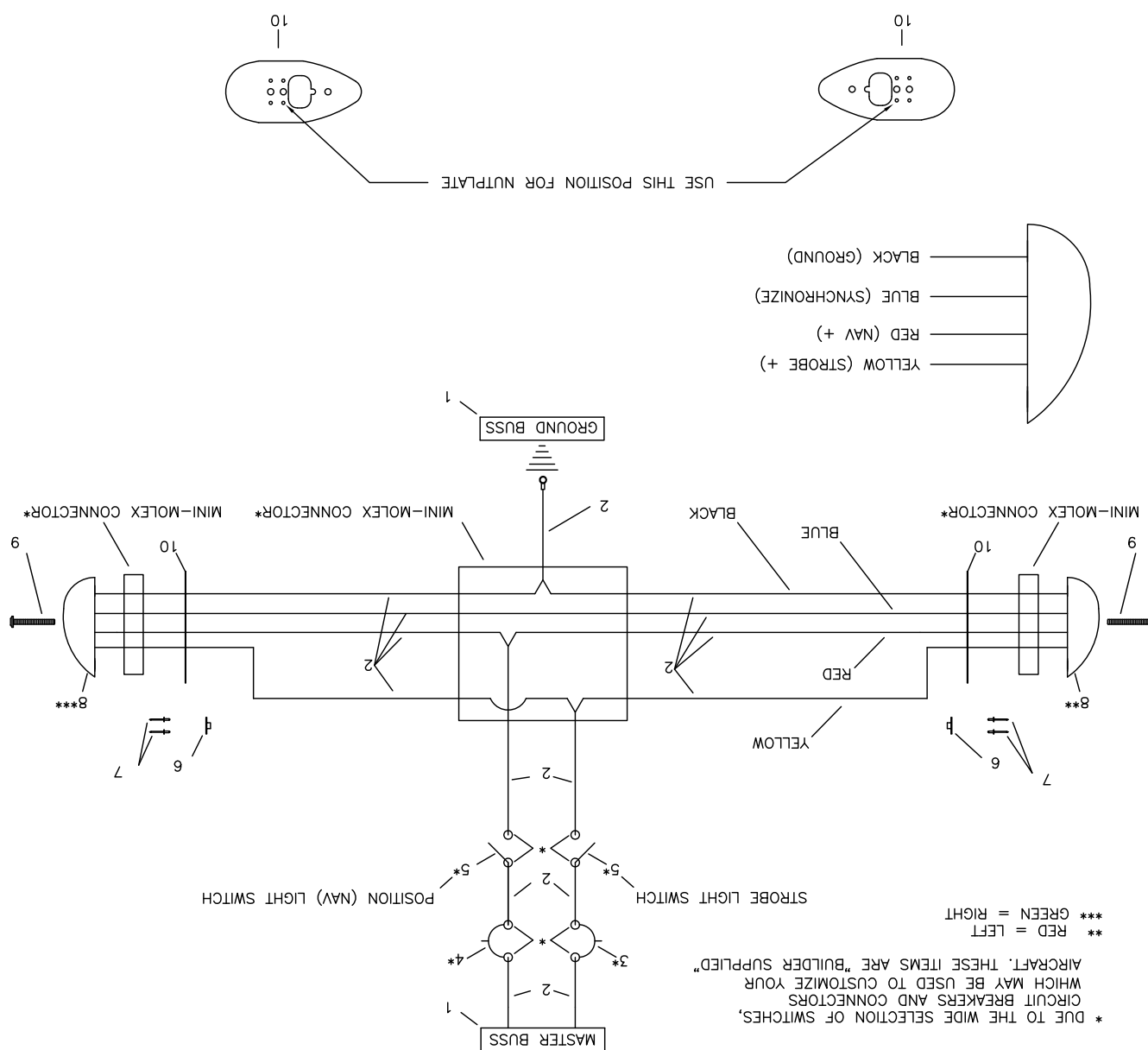
** Trimmed from KPWI0647

9/11/2018

REV. - ORIG

MD2668
REV. - ORIG

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



RANS S-21 OUTBOUND

PAGE

006H-04

141 WING - OPTIONS - AVEO STROBE INSTALLATION

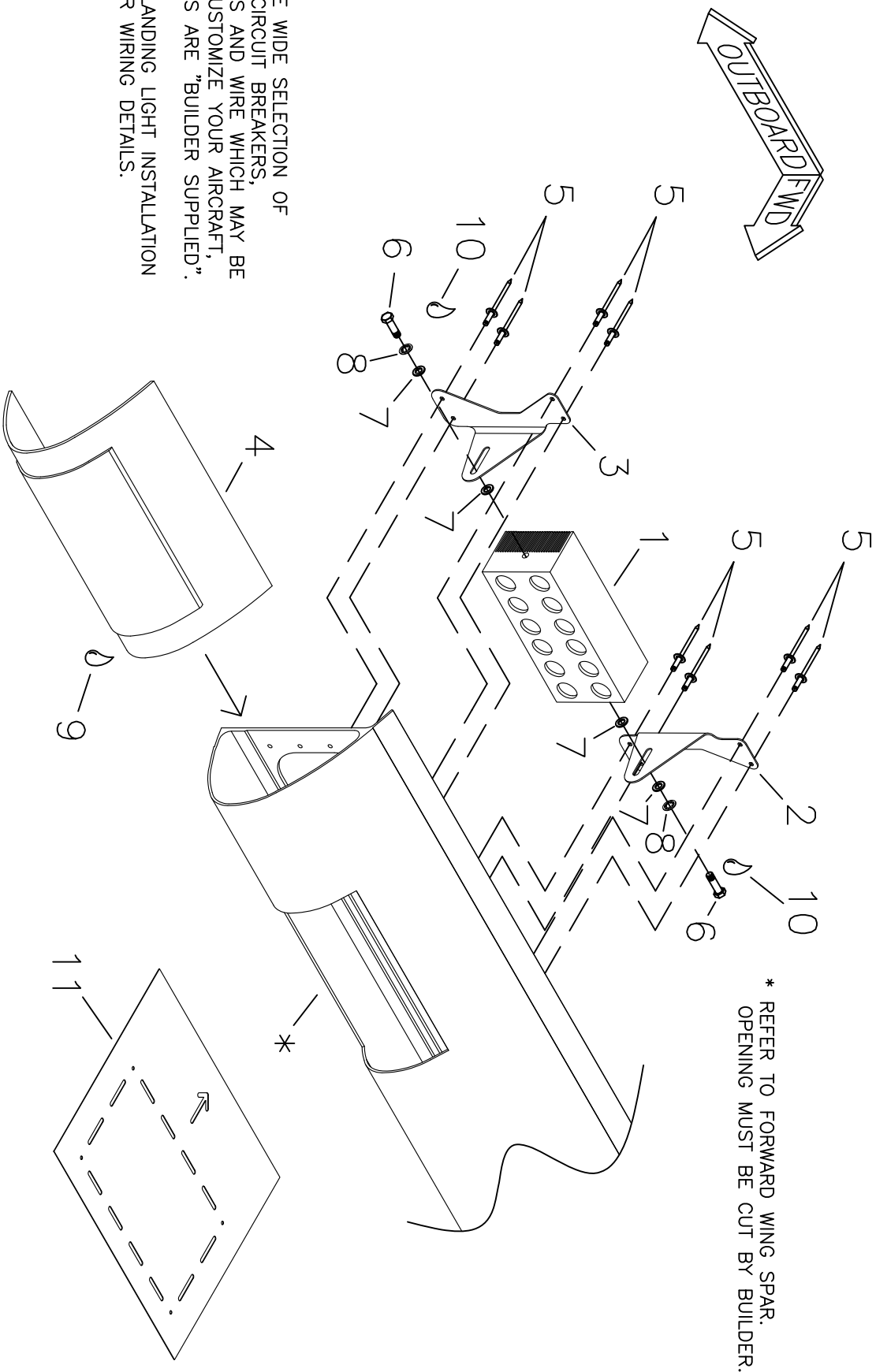
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Electrical Buss Bar * **	AMW 636	0
2.	18 Gauge Wire *	-----	0
3.	Circuit Breaker - 5 amp *	-----	0
4.	Circuit Breaker - 5 amp *	-----	0
5.	Switch *	-----	0
6.	3/16" Nut Plate	K-1000-3	2
7.	3/32" Aluminum Rivet	40APR1/4	4
8.	Strobe Light Set - AVEO	KSES0059	1 set
9.	10-32 Socket Head Cap Screw	KSHW0115	2
10.	Strobe Light Mount - AVEO	KPWI0541	2

* Builder Supplied

** May be purchased seperately, call RANS Parts Dept. for pricing

9/11/2018

REV. - ORIG



DUE TO THE WIDE SELECTION OF SWITCHES, CIRCUIT BREAKERS, CONNECTORS AND WIRE WHICH MAY BE USED TO CUSTOMIZE YOUR AIRCRAFT, THESE ITEMS ARE "BUILDER SUPPLIED". REFER TO LANDING LIGHT INSTALLATION MANUAL FOR WIRING DETAILS.

RIGHT HAND FORWARD WING SPAR SHOWN

**REPLACES S-21 OUTBOUND
141 WING - OPTIONS
LANDING LIGHTS INSTALLATION**

RANS S-21 OUTBOUND

PAGE

006H-06

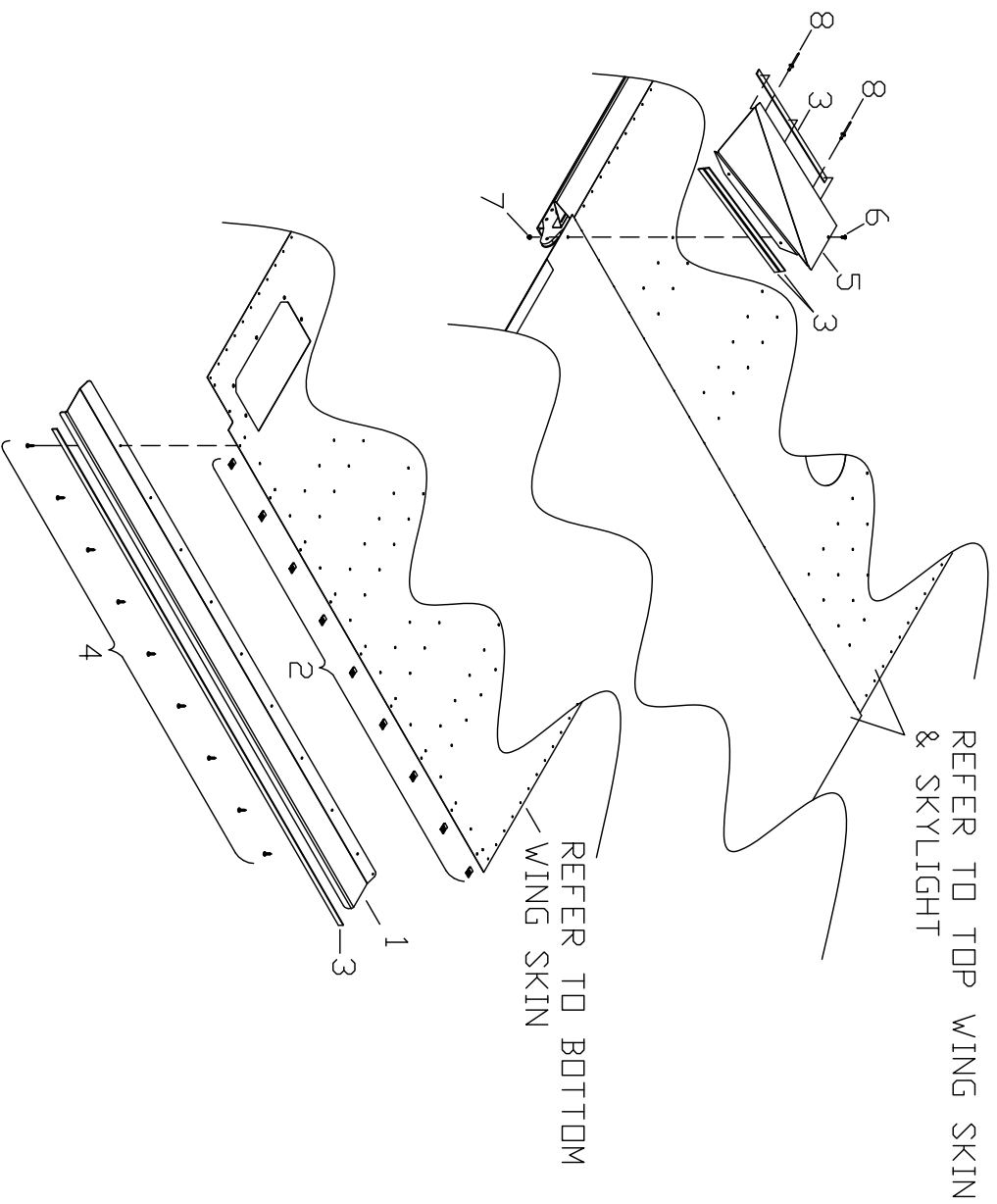
141 WING - OPTIONS - LANDING LIGHTS INSTALLATION

KAAC0109

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Landing Light	KSES0077	2
2.	Landing Light Mount - LH	KPWI0704-L	2
3.	Landing Light Mount - RH	KPWI0704-R	2
4.	Landing Light Lens	KPWI0705	2
5.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	16
6.	3/16" Bolt	AN3-3A	4
7.	3/16" Thick Washer	AN960-10	8
8.	3/16" Star Lock Washer	MS35333-39	4
9.	Silicone Seal *	-----	0
10.	Loctite Blue *	-----	0
11.	Landing Light Cut-Out Template	KPWI0708	1

* Builder Supplied

9/11/2018
REV. - ORIG



LEFT-HAND SHOWN

REFINISH S-21 OUTBOUND 141 WING - ROOT SEAL INSTALLATION

MD5649
REV. - ORIG

RANS S-21 OUTBOUND

PAGE

006I-02

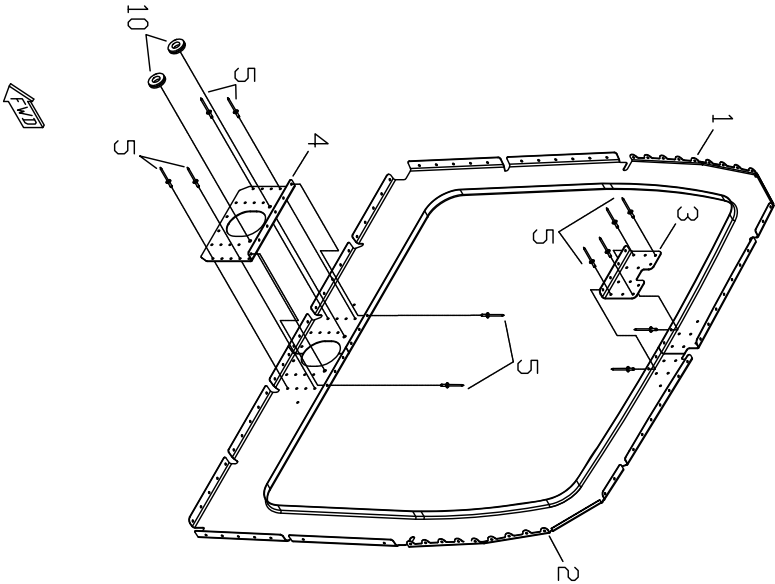
141 WING - ROOT SEAL INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Wing Root Bottom Gap Seal - RH	KPWI0690-R	1
1.	Wing Root Bottom Gap Seal - LH	KPWI0690-L	1
2.	Tinnerman	A1789-8Z-1	18
3.	1/2" Black Foam Tape *	-----	0
4.	#8 Pan Head Screw	8X1/2 PHS	18
5.	Flap Gap Seal - LH	KPWI0691-L	1
5.	Flap Gap Seal - RH	KPWI0691-R	1
6.	#6-32 Pan Head Machine Screw	MS35206-228	2
7.	#6-32 Nut	AN364-632A	2
8.	1/8" Aluminum Rivet - Avex	1691-0410	4

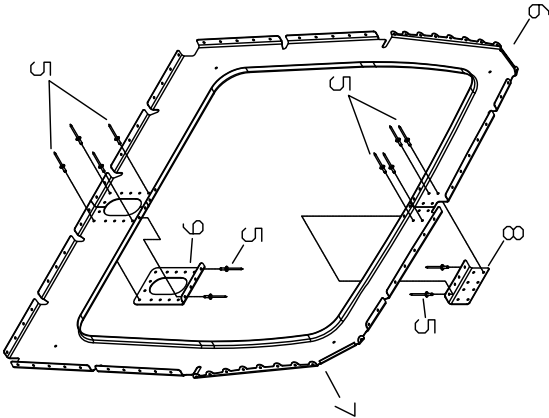
* Builder Supplied

9/11/2018
REV. - ORIG

STATION 4



STATION 5



REF ID: A11111 S-21 OUTBOUND
FUSELAGE - STATION 4 & 5 - BULKHEAD ASSEMBLY

MD5651
REV. - ORIG

RANS S-21 OUTBOUND

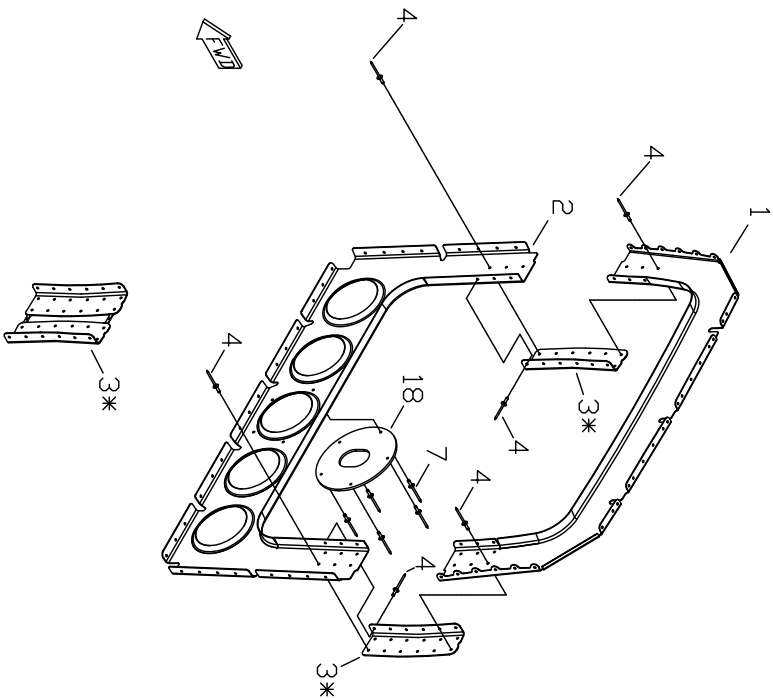
PAGE

007-02

FUSELAGE - STATION 4 & 5 - BULKHEAD ASSEMBLY

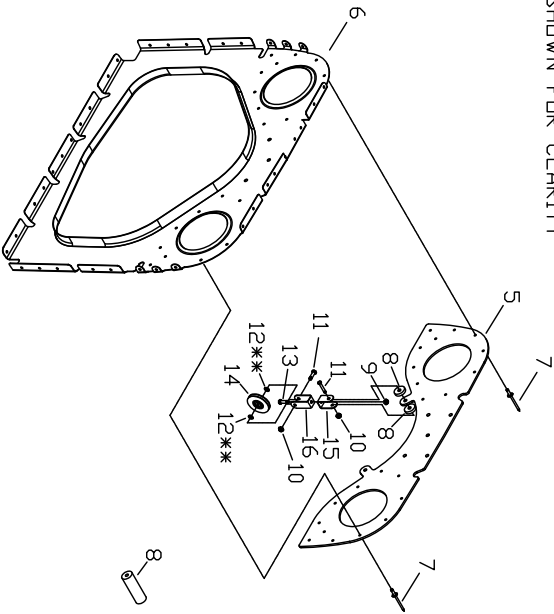
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	S-4 Bulkhead - RH	KPFU0707-R	1
2.	S-4 Bulkhead - LH	KPFU0707-L	1
3.	S-4 Top Doubler	KPFU0724	1
4.	S-4 Lower Doubler	KPFU0723	1
5.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	74
6.	S-5 Bulkhead - RH	KPFU0728-R	1
7.	S-5 Bulkhead - LH	KPFU0728-L	1
8.	S-5 Top Doubler	KPFU0730	1
9.	S-5 Lower Doubler	KPFU0729	1
10.	3/4" Rubber Grommet	MS35489-11	2

STATION 6

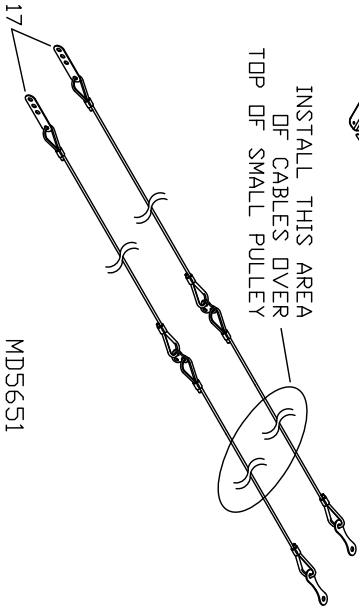


STATION 8

ONLY RIGHT SIDE
OF RUDDER PULLEY SYSTEM
SHOWN FOR CLARITY



INSTALL THIS AREA
OF CABLES OVER
TOP OF SMALL PULLEY



* SEPARATE AND ORIENTATE NOTCH TO TOP
** REPLACED BY KPAC0038 ON TAILDRAGGER

REF S-21 OUTBOUND

FUSELAGE - STATION 6 & 8 - BULKHEAD ASSEMBLY

MD5651
REV. - ORIG

RANS S-21 OUTBOUND

PAGE

007-04

FUSELAGE - STATION 6 & 8 - BULKHEAD ASSEMBLY

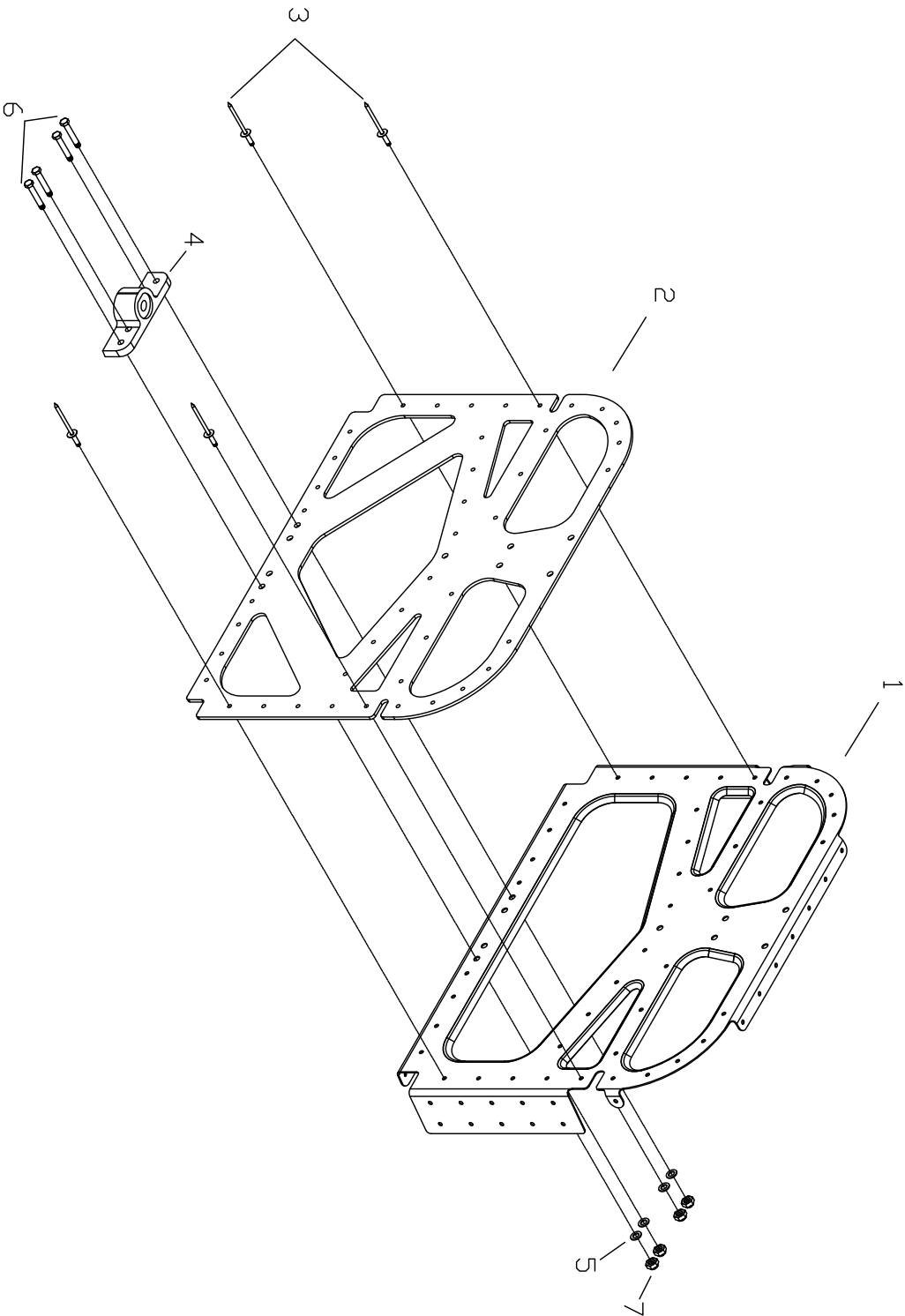
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	S-6 Bulkhead - Upper	KPFU0705	1
2.	S-6 Bulkhead - Lower	KPFU0706	1
3.	S-6 Doubler *	KPFU0725	1
4.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	36
5.	S-8 Doubler	KPFU0716	1
6.	S-8 Bulkhead	KPFU0704	1
7.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	27
8.	Aluminum Bushing - 3/8" x .095" x .15" **	KPAC0060	1
9.	3/16" Tensile Nut	AN365-1032A	2
10.	3/16" Shear Nut	AN364-1032A	4
11.	3/16" Bolt	AN3-7A	4
12.	3/16" Thick Washer	AN960-10	4
13.	3/16" Bolt	AN3-3A	2
14.	Small Pulley	AN210-1A	2
15.	U-Bracket	RL-205-T	2
16.	Pulley Shackle	KPCS0309	2
17.	Rudder Cable Assembly	KPCS0307	2
18.	Elevator Push-Pull Tube Guide	KPFU0756	1

* Builder modifies to make LH / RH parts

** Builder Modifies

9/11/2018

REV. - ORIG



REF ID: A12345
S-21 OUTBOUND
FUSELAGE - STATION 9 - BULKHEAD ASSEMBLY

MD5651
REV. - ORIG

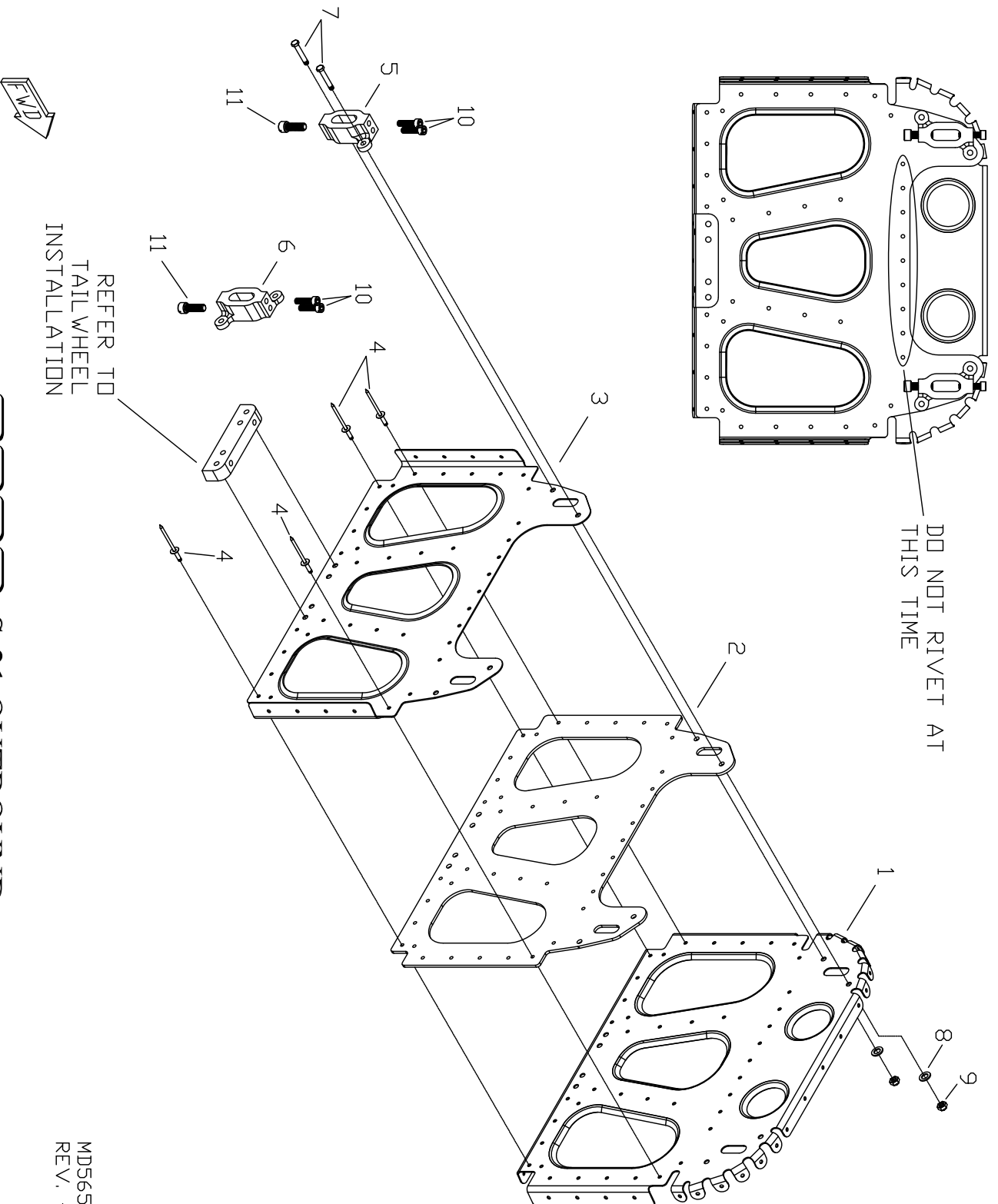
RANS S-21 OUTBOUND

PAGE

007-06

FUSELAGE - STATION 9 - BULKHEAD ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	S-9 Bulkhead	KPFU0702	1
2.	S-9 Bulkhead Doubler	KPFU0703	1
3.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	42
4.	FWD Attach Block	KPFU0697	1
5.	3/16" Thin Washer	AN960-10L	4
6.	3/16" Bolt	AN3-5A	4
7.	3/16" Shear Nut	AN364-1032A	4



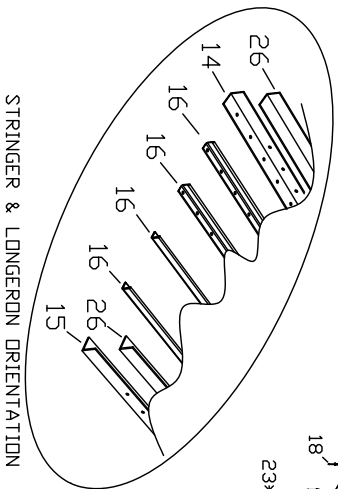
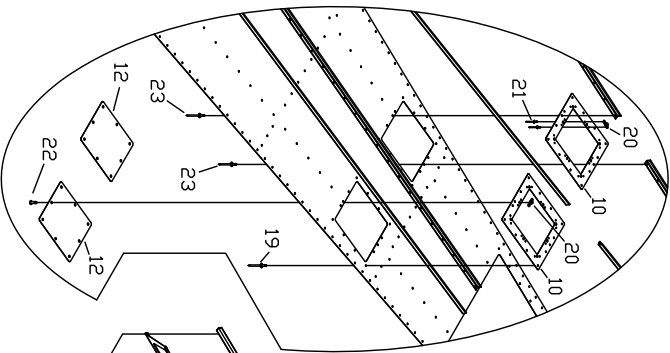
**REFINISH S-21 OUTBOUND
FUSELAGE - STATION 10 - BULKHEAD ASSEMBLY**

MD5651
REV. - ORIG

FUSELAGE - STATION 10 - BULKHEAD ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	S-10 Bulkhead	KPFU0701	1
2.	S-10 Bulkhead Doubler - FWD	KPFU0727	1
3.	S-10 Bulkhead Doubler - AFT	KPFU0726	1
4.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	32
5.	Horizontal Stabilizer Incidence Adjustor - LH	KPHS0091-L	1
6.	Horizontal Stabilizer Incidence Adjustor - RH	KPHS0091-R	1
7.	3/16" Bolt	AN3-5A	4
8.	3/16" Thin Washer	AN960-10L	4
9.	3/16" Shear Nut	AN364-1032A	4
10.	3/16" Socket Head Cap Screw - Drilled Head	KSHW0109	4
11.	1/4" Socket Head Cap Screw - Drilled Head	KSHW0110	2

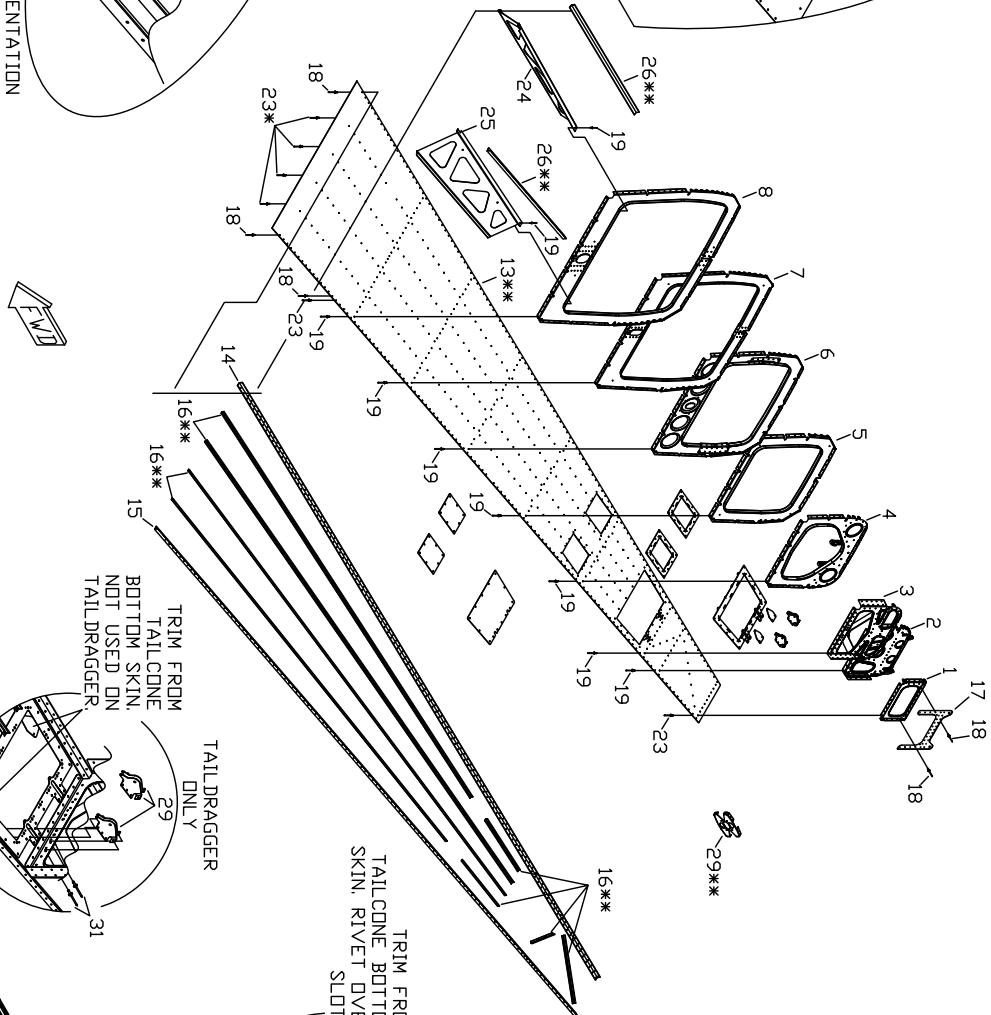
FWD TAILCONE ACCESS
COVER ASSEMBLY



STRINGER & LONGERON ORIENTATION

*DO NOT RIVET FORWARD END OF
STRINGERS UNTIL MATED TO FUSELAGE
CAGE & FUSELAGE BOTTOM SKIN

** BUILDER MODIFIES



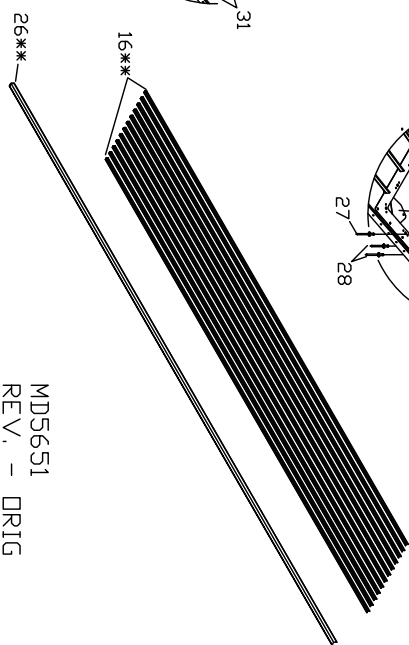
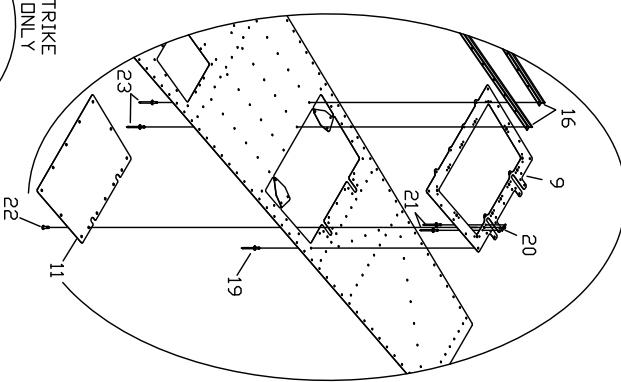
TRIM FROM
TAILCONE
BOTTOM SKIN.
NOT USED ON
TAILDRAGGER

TAILDRAGGER
ONLY

TRIM FROM
TAILCONE BOTTOM
SKIN. RIVET OVER
SLOTS.

TRIKE
ONLY

AFT TAILCONE
ACCESS COVER
ASSEMBLY



MD5651
REV. - ORIG

S-21 OUTBOUND
FUSELAGE - TAILCONE - BOTTOM SKIN ASSEMBLY

FUSELAGE - TAILCONE - BOTTOM SKIN ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	S-11 Bulkhead	KPFU0732	1
2.	Station 10 Bulkhead Assembly *	-----	0
3.	Station 9 Bulkhead Assembly *	-----	0
4.	Station 8 Bulkhead Assembly *	-----	0
5.	S-7 Bulkhead	KPFU0731	1
6.	Station 6 Bulkhead Assembly *	-----	0
7.	Station 5 Bulkhead Assembly *	-----	0
8.	Station 4 Bulkhead Assembly *	-----	0
9.	Tailcone Access Cover Tab Ring - AFT	KPFU0736	1
10.	Tailcone Access Cover Tab Ring - FWD	KPFU0746	2
11.	Tailcone Access Cover - AFT	KPFU0735	1
12.	Tailcone Access Cover - FWD	KPFU0747	2
13.	Bottom Skin - Tailcone **	KPFU0711	1
14.	Lower Longeron - RH	KPFU0709-R	1
15.	Lower Longeron - LH	KPFU0709-L	1
16.	Tailcone & Wing Stringer **	KPFU0743	12
17.	AFT Horizontal Stabilizer Mount	KPFU0733	1
18.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	51
19.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	144
20.	8-32 Nut Plate	MS21047-08	30
21.	3/32" Aluminum Rivet	40APR1/8	60
22.	8-32 Machine Screw	AN526-832R6	30
23.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	432
24.	S-3 to S-4 Support - R	KPFU0708-R	1
25.	S-3 to S-4 Support - L	KPFU0708-L	1
26.	Stiffener Angle - Tailcone **	KPFU0748	1
27.	1/8" Aluminum Rivet - Flush ***	AACQ-42	2
28.	1/8" Aluminum Rivet - Cherry Q ***	AAPQ-41	4
29.	Tailwheel Cable Pulley Mount ** ****	KPFU0754	1
30.	1/8" Aluminum Rivet - Cherry Q ****	AAPQ-42	12
31.	1/8" Aluminum Rivet - Cherry Q ****	AAPQ-43	4

* Refer to respective Bulkhead Assembly Parts pages

** Builder Modifies

*** Trike only - Supplied with Trike Gear Kit

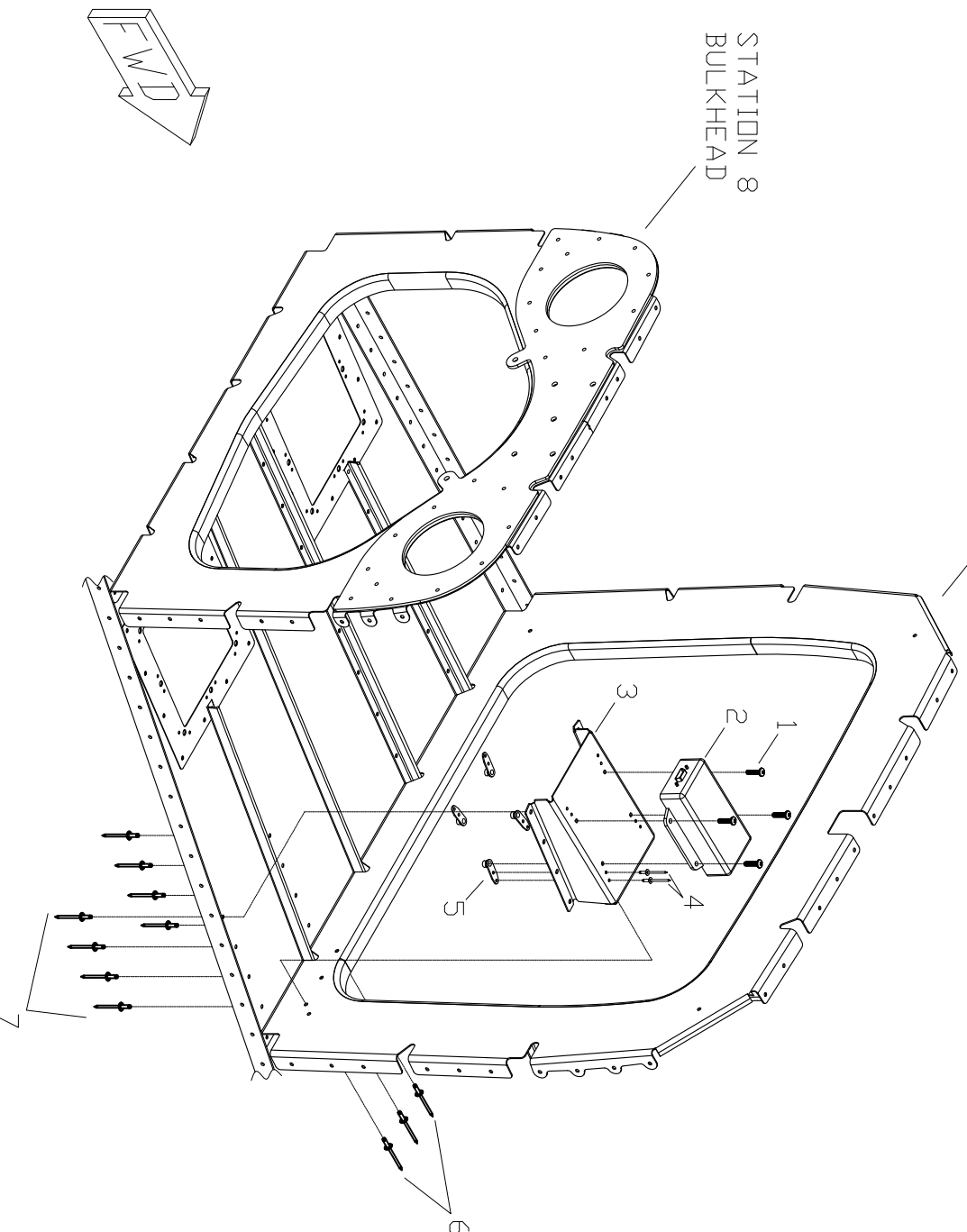
**** Taildragger Only - Supplied with Taildragger Gear Kit

9/11/2018

REV. - ORIG

STATION 7
BULKHEAD

STATION 8
BULKHEAD



MD5651
REV. - ORIG

REPLACES S-21 OUTBOUND FUSELAGE - OPTIONS - GARMIN GMU11 MAGNETOMETER MOUNT

RANS S-21 OUTBOUND

PAGE

007A-04

FUSELAGE - OPTIONS - GARMIN GMU11 MAGNETOMETER MOUNT

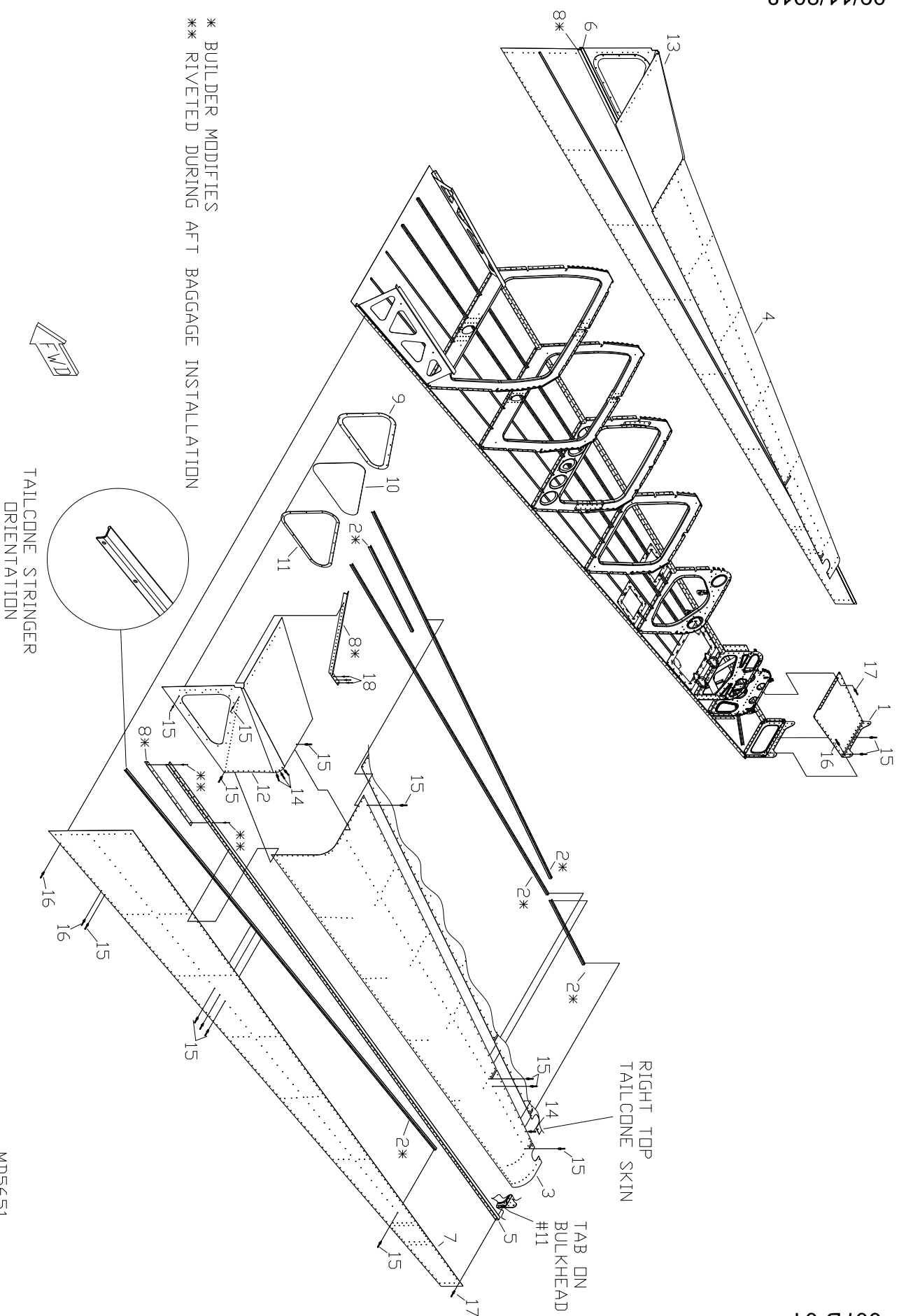
KAAV0004

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	#6 Stainless Steel Machine Screw *	----	0
2.	GARMIN GMU11 Magnetometer * **	----	0
3.	Magnetometer Mount (Garmin GMU11)	KPFU0763	1
4.	3/32" Aluminum Rivet	40APR1/8	8
5.	6-32 Single-Ear Nut Plate	K-2000-06	4
6.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	3
7.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	8

* Supplied with Garmin GMU11

** Builder Supplied

9/11/2018
REV. - ORIG



RFIING S-21 OUTBOUND
FUSELAGE - TAILCONE - SIDE & TOP SKIN ASSEMBLY

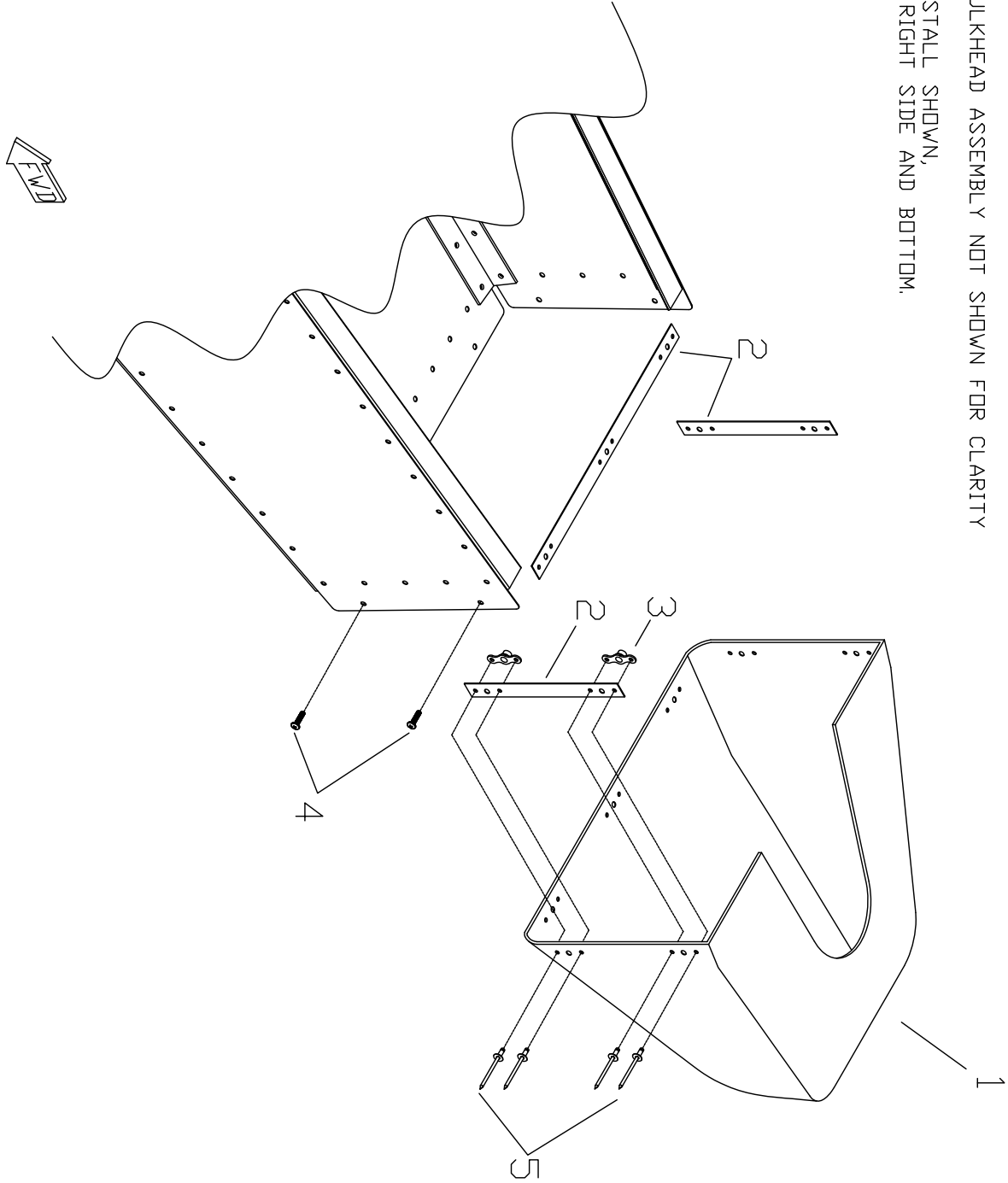
MD5651
REV. B

FUSELAGE - TAILCONE - SIDE & TOP SKIN ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	S-10/11 Closeout	KPFU0734	1
2.	Tailcone & Wing Stringer *	KPFU0743	0
3.	Top Skin - Tailcone - LH	KPFU0699-L	1
4.	Top Skin - Tailcone - RH	KPFU0699-R	1
5.	Side Longeron - LH	KPFU0710-L	1
6.	Side Longeron - RH	KPFU0710-R	1
7.	Side Skin - Tailcone	KPFU0700	2
8.	Stiffener Angle - Tailcone *	KPFU0748	0
9.	Window Retainer - Tailcone	KPFU0738	2
10.	Window - Tailcone	KPFU0722	2
11.	Window Spacer - Tailcone	KPFU0737	2
12.	Top FWD Skin - Tailcone - LH	KPFU0698-L	1
13.	Top FWD Skin - Tailcone - RH	KPFU0698-R	1
14.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	259
15.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	782
16.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	37
17.	1/8" Aluminum Rivet - Cherry Q	AAPQ-44	13
18.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-43	6

* Builder Modifies

STATION 11 BULKHEAD ASSEMBLY NOT SHOWN FOR CLARITY
LEFT SIDE INSTALL SHOWN,
TYPICAL FOR RIGHT SIDE AND BOTTOM.



REFUND S-21 OUTBOUND

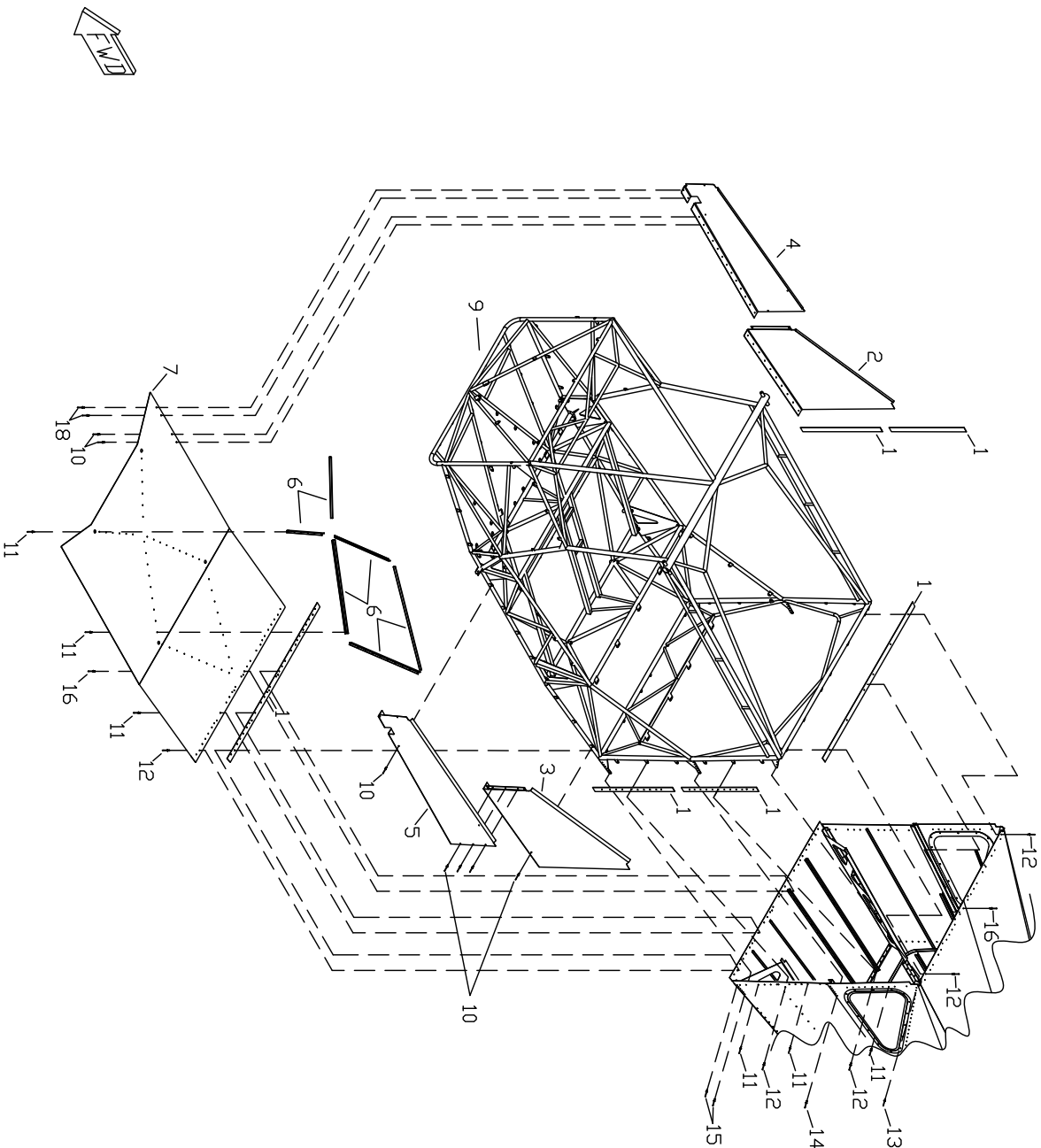
FUSELAGE - TAILCONE - AFT CLOSEOUT INSTALLATION

MD5651
REV. - ORIG

FUSELAGE - TAILCONE - AFT CLOSEOUT INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Tailcone AFT Closeout	KPFU0757	1
2.	Aft Closeout Reinforcement Strip *	KPFU0760	1
3.	8-32 Nut Plate	MS21047-08	7
4.	8-32 Machine Screw	AN526-832R10	7
5.	3/32" Aluminum Rivet	40APR1/8	14

* Builder Modifies



REF ID: A12345 S-21 OUTBOUND

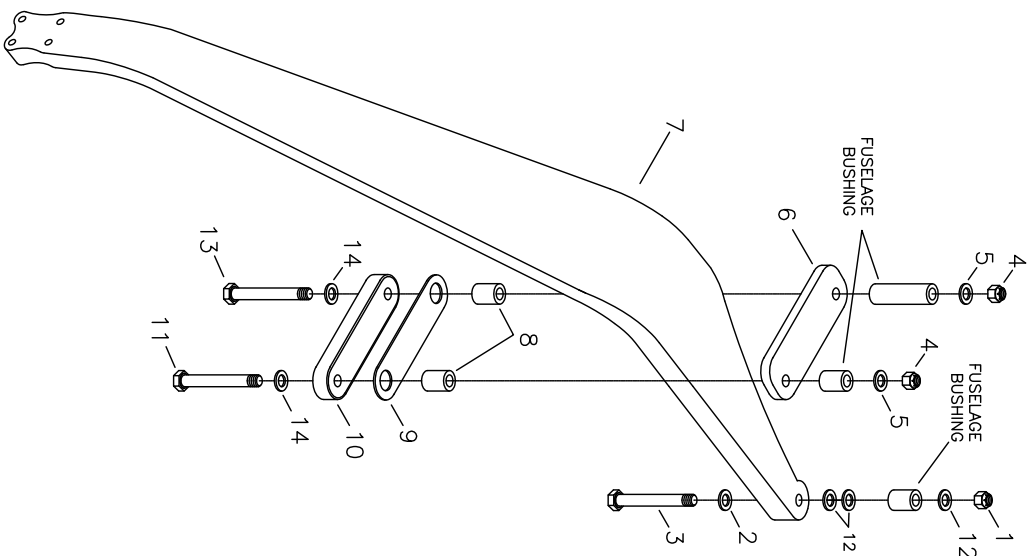
FUSELAGE - SKINS AND TAILCONE MATING INSTALLATION

MD5651
REV. - ORIG

FUSELAGE - SKINS AND TAILCONE MATING INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Tailcone Spacer Strip	KPFU0749	4
2.	Fuselage Side Skin - Rear - RH	KPFU0713-R	1
3.	Fuselage Side Skin - Rear - LH	KPFU0713-L	1
4.	Fuselage Side Skin - Front - RH	KPFU0712-R	1
5.	Fuselage Side Skin - Front - LH	KPFU0712-L	1
6.	Tailcone & Wing Stringer *	KPFU0743	0
7.	Fuselage Bottom Skin	KPFU0745	1
9.	S-21 Fuselage Cage Assembly	KAFU0062	1
10.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	66
11.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	124
12.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	25
13.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-43	6
14.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-44	12
15.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-45	12
16.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	9
17.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-41	14
18.	1/8" Aluminum Rivet - Flush	AACQ-42	20

* Builder Modifies



REF S-21 OUTBOUND
TAILDRAGGER - MAIN GEAR INSTALLATION

MD5581
REV. - ORIG

RANS S-21 OUTBOUND

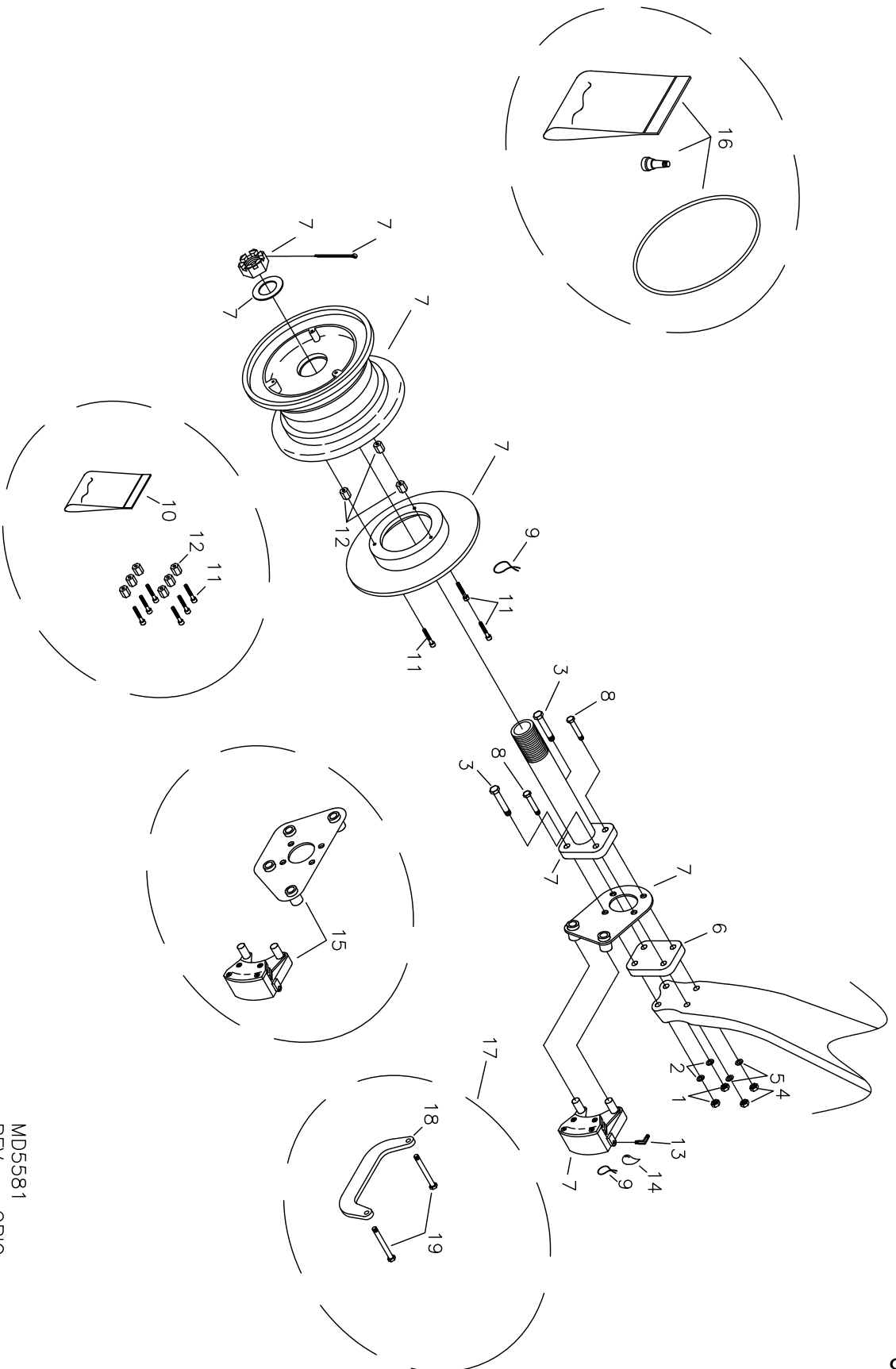
PAGE

008-02

TAILDRAGGER - MAIN GEAR INSTALLATION

TAILDRAGGER ONLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/8" Tensile Nut	AN365-624A	2
2.	3/8" Thin Washer	AN960-616L	2
3.	3/8" Bolt	AN6-31A	2
4.	5/16" Tensile Nut	AN365-524A	4
5.	5/16" Thick Washer	AN960-516	4
6.	Top Main Gear Clamp Plate	KPMG0206	2
7.	Gear Leg - Taildragger - RH	KPMG0227-R	1
7.	Gear Leg - Taildragger - LH	KPMG0227-L	1
8.	Landing Gear Spacer Bushing	KPMG0179	4
9.	Main Gear Anti-chafe Strip	KPMG0216	2
10.	Bottom Main Gear Clamp Plate	KPMG0208	2
11.	5/16" Bolt	AN5-32A	2
12.	3/8" Thick Washer	AN960-616	6
13.	5/16" Bolt	AN5-40A	2
14.	5/16" Thin Washer	AN960-516L	4



REAR S-21 OUTBOUND

TAILDRAGGER - WHEEL AND BRAKE INSTALLATION

MD5581
REV. - ORIG

TAILDRAGGER - WHEEL & BRAKE INSTALLATION

TAILDRAGGER ONLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/8" Tensile Nut	AN365-624A	4
2.	3/8" Thick Washer	AN960-616	4
3.	3/8" Bolt	AN6-30A	4
4.	5/16" Tensile Nut	AN365-524A	4
5.	5/16" Thick Washer	AN960-516	4
6.	Axle Spacer - 1/2"	KSMG0027	2
7.	Hydraulic Brake Assembly - 6"	KSBS0030	2
8.	5/16" Bolt	AN5-27A	4
9.	Safety Wire *	-----	0
10.	MATCO Adaptor Kit	KSBS0032	1
11.	Socket Head Cap Screw **	-----	0
12.	Disc Spacer **	-----	0
13.	45-degree Elbow - Flare 1/4" Tube to 1/8" NPT	AN823-4D	2
14.	Thread Sealant *	-----	0
15.	MATCO Dual Caliper Conversion Kit - OPTIONAL ***	KSBS0047	0
16.	MATCO Tubeless Kit for 6" Wheel (-2 if tubes) ****	KSBS0043	2
17.	Knight Rock Guard Kit - OPTIONAL ***	KNIGHT ROCK GUARD KIT	1
18.	Dual Brake Rock Guard *****	KPMG0231	0
19.	1/4" Bolt *****	AN4-20A	0

* Builder Supplied ** Supplied with KSBS0032

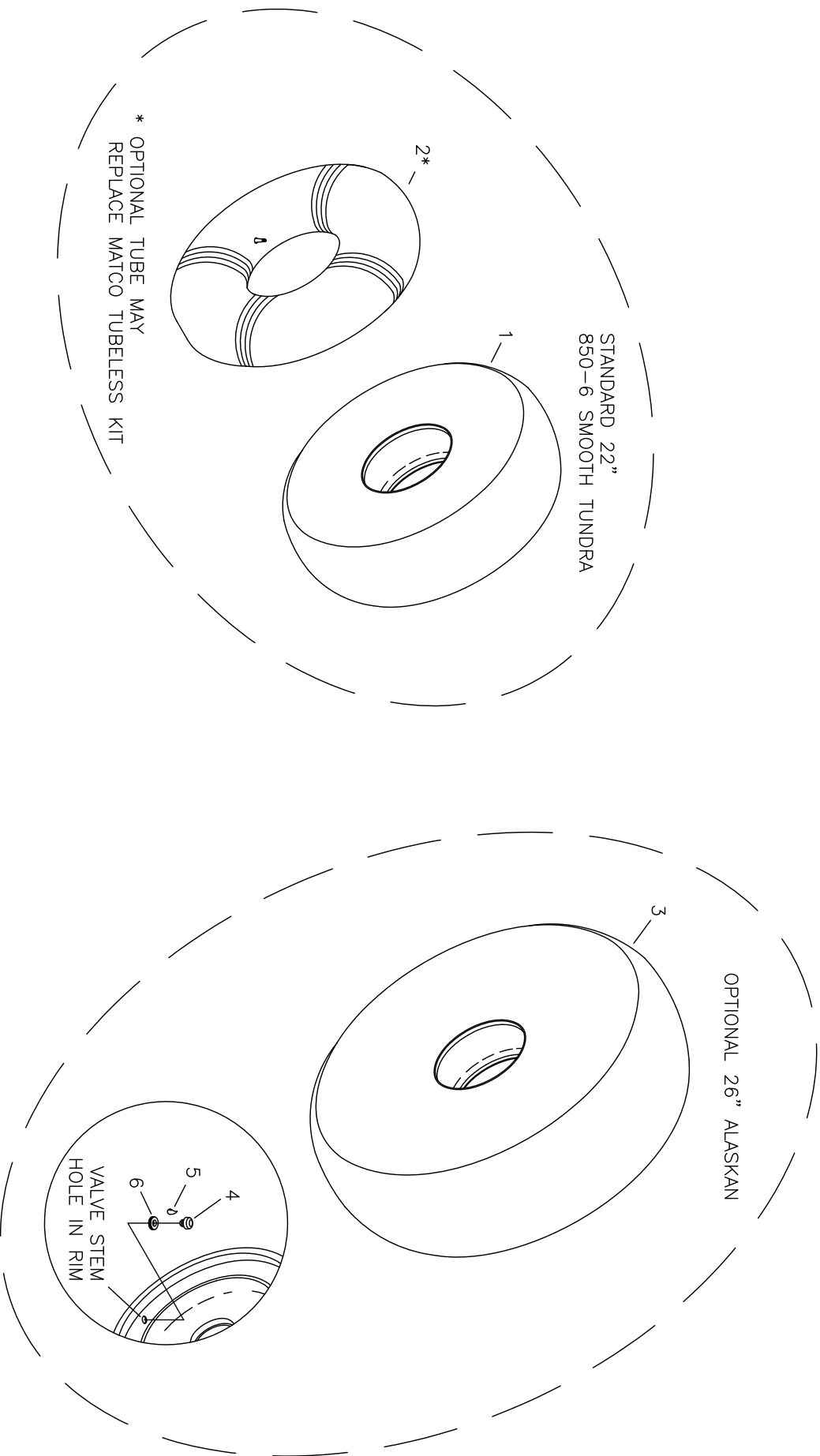
*** May be purchased seperately, call RANS Parts Dept. for pricing

**** Tubeless Kit Standard - Tube may replace Tubeless Kit

***** Supplied with KNIGHT ROCK GUARD KIT

9/11/2018

REV. - ORIG



REAR S-21 OUTBOUND TAILDRAGGER - 6" TIRES

RANS S-21 OUTBOUND

PAGE

008-06

TAILDRAGGER - 6" TIRES

TAILDRAGGER ONLY

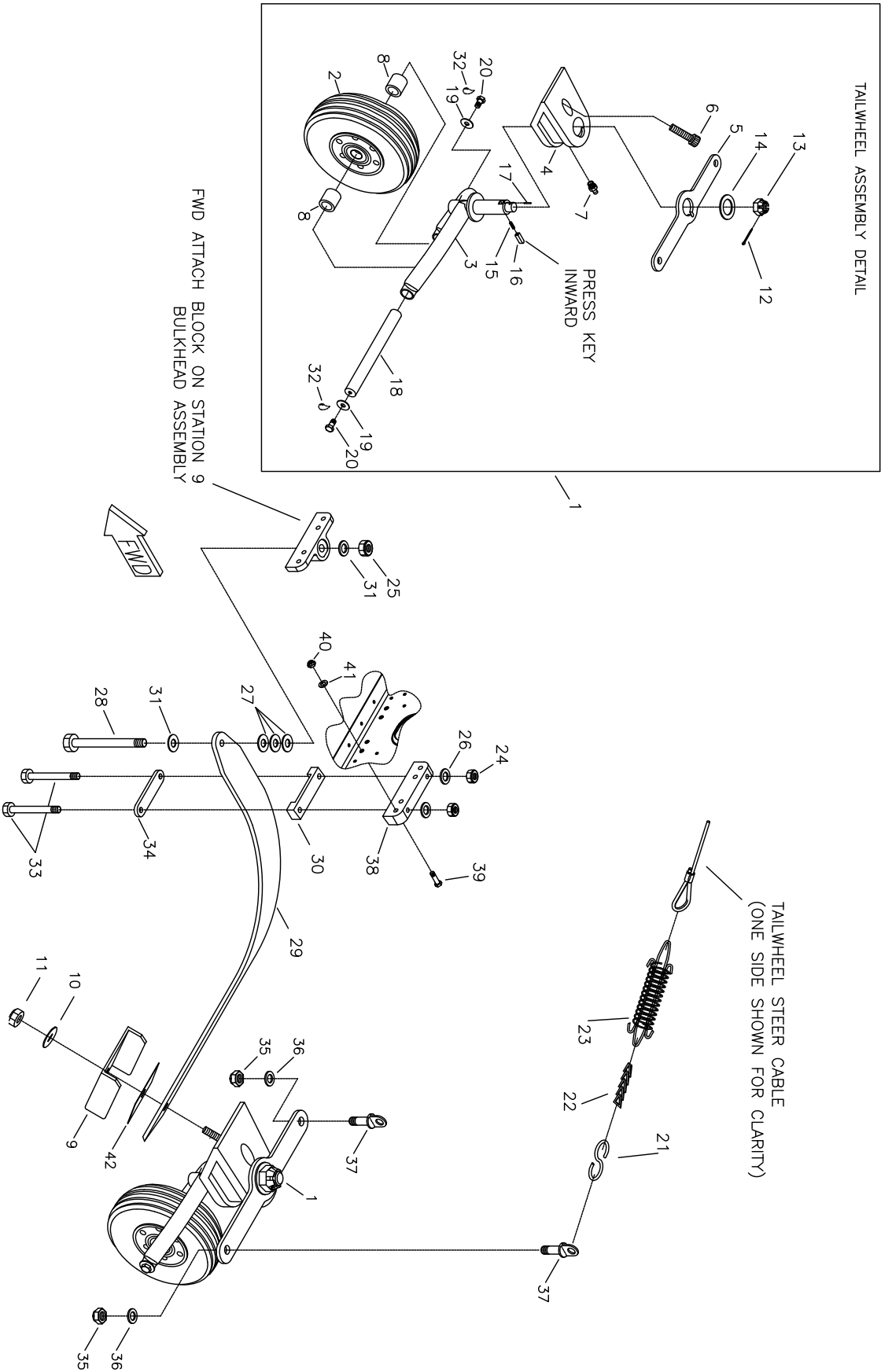
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	22" 850-6 Smooth Tundra Tire	KSMG0030	2
2.	850-6 Tundra Tube - OPTIONAL (-2 KSBS0043) *	KSMG0031	2
3.	26" Alaskan Tire - OPTIONAL (-2 KSMG0030 & -2 KSBS0043) *	KSMG0028	2
4.	Grommet Plug	9K13-DRBUMP	2
5.	Adhesive - Superglue **	-----	0
6.	Rubber Grommet	MS35489-6	2

* May be purchased seperately, call RANS Parts Dept. for pricing

** Builder Supplied

9/11/2018

REV. - ORIG



REVISED S-21 OUTBOUND

TAILDRAGGER - 8" TAILWHEEL INSTALLATION

MD4170
REV. - ORIG

RANS S-21 OUTBOUND

PAGE

008-08

TAILDRAGGER - 8" TAILWHEEL INSTALLATION

TAILDRAGGER ONLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	8" Pneumatic Tailwheel Assembly	KATG0006	1
2.	Tailwheel *	KSTG0010	0
3.	Tailwheel - Fork *	KPTG0039	0
4.	Tailwheel - Swivel Block *	KPTG0003	0
5.	Tailwheel - Steer Horn *	KPTG0004	0
6.	Socket Head Cap Screw *	KSHW0058	0
7.	Grease Fitting *	11-151	0
8.	Spacer Bushing - 3/4" X .058" Alum Tube *	-----	0
9.	Tailwheel - Spring Channel *	KPTG0007	0
10.	3/8" Thick Washer *	AN960-616	0
11.	3/8" Tensile Loc Nut *	AN363-624A	0
12.	Large Cotter Pin *	MS24665-285	0
13.	1/2" Castle Nut *	AN320-8	0
14.	1/2" Thick Washer *	MS27183-17	0
15.	Tailwheel - Tension Spring *	KSTG0003	0
16.	Tailwheel - Tension Key *	KPTG0006	0
17.	Tailwheel - Spring Pin *	T19-094-0625	0
18.	Axle *	KPTG0040	0
19.	3/16" Large Washer *	AN970-3	0
20.	3/16" Bolt *	AN3-3A	0
21.	S-Hook - Steer Horn	TW-SHOOK	2
22.	Chain - Steer Horn **	TW-C	1
23.	Spring - Steer Horn	TW-S-SPR	2
24.	3/16" Tensile Nut	AN365-1032A	2
25.	5/16" Tensile Nut	AN365-524A	1
26.	3/16" Thick Washer	AN960-10	2
27.	5/16" Thick Washer	AN960-516	3
28.	5/16" Bolt	AN5-16A	1
29.	Tail Spring	KPTG0042	1
30.	Tailspring - AFT Lower Saddle Block	KPTG0041	1
31.	5/16" Thin Washer	AN960-516L	2
32.	Loctite Blue ***	-----	0
33.	3/16" Bolt	AN3-17A	2
34.	Gear Strap	KPTG0036	1
35.	1/4" Shear Nut	AN364-428A	2
36.	1/4" Thick Washer	AN960-416	2
37.	1/4" Eyebolt	AN43B-5A	2
38.	Tailspring - AFT Attach Block	KPFU0739	1
39.	3/16" Bolt	AN3-10A	4
40.	3/16" Shear Nut	AN364-1032A	4
41.	3/16" Thin Washer	AN960-10L	4
42.	Tailwheel Channel Shim	KPTG0043	1

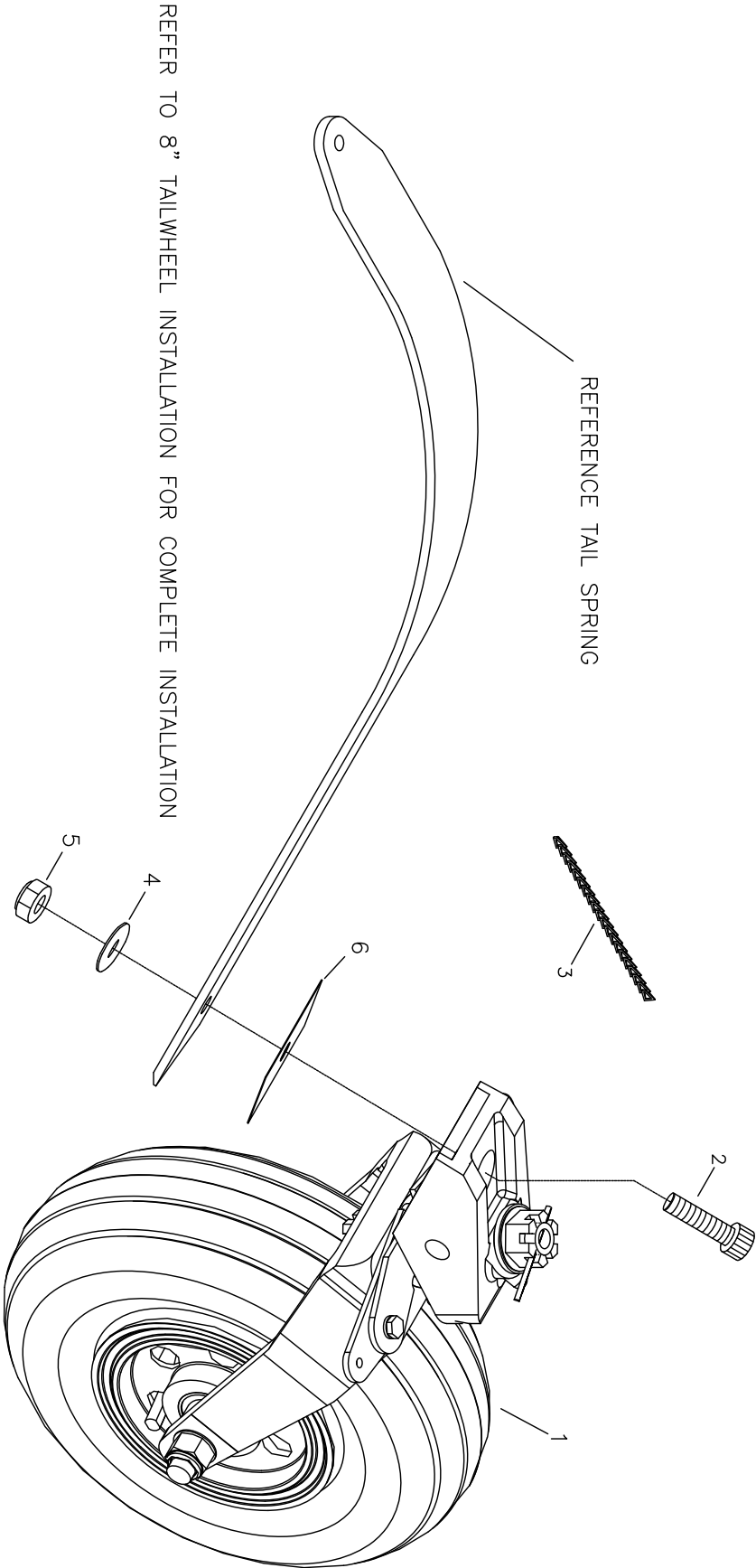
* Part of 8" Pneumatic Tailwheel Assembly (KATG0006).

** Builder Modifies

*** Builder Supplied

9/11/2018

REV. - ORIG



REFERENCE TAIL SPRING

REFER TO 8" TAILWHEEL INSTALLATION FOR COMPLETE INSTALLATION



MD4170

MD4170
REV. - ORIG

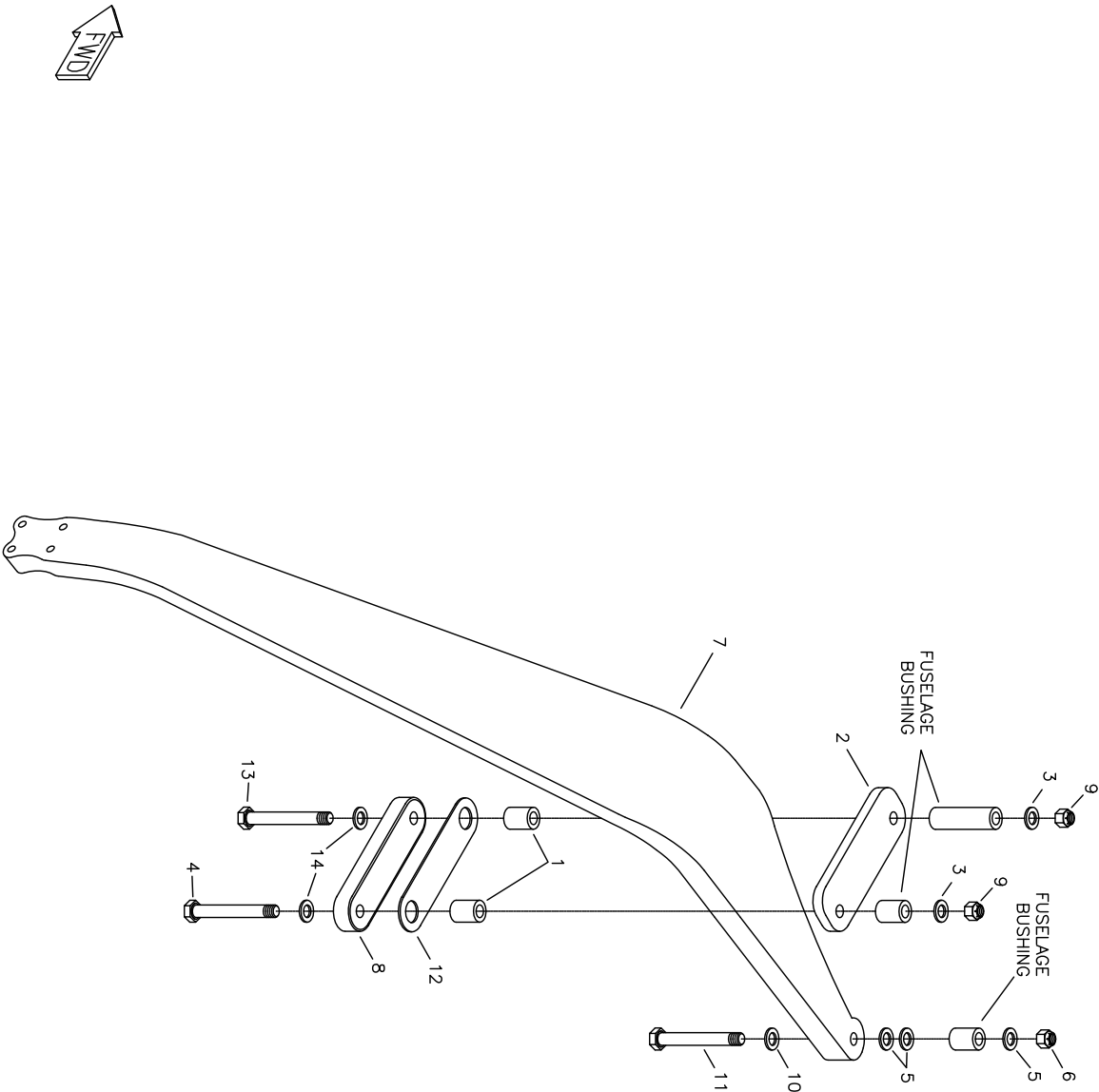
**REFINISH S-21 OUTBOUND
TAILDRAGGER - OPTIONS - 10" TAILWHEEL INSTALLATION**

TAILDRAGGER - OPTIONS - 10" TAILWHEEL INSTALLATION

TAILDRAGGER ONLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	10" Pneumatic Tailwheel Assembly * (-1 KATG0006)	KSTG0011	1
2.	Socket head Cap Screw	KSHW0058	1
3.	Chain - Steer Horn	TW-C	1
4.	3/8" Thick Washer	AN960-616	1
5.	3/8" Tensile Loc-Nut	AN363-624A	1
6.	Tailwheel Channel Shim	KPTG0043	1

* Replaces KATG0006 Tailwheel Assembly



REF ID: A12345 S-21 OUTBOUND
TRIKE - MAIN GEAR INSTALLATION

RANS S-21 OUTBOUND

PAGE

008A-02

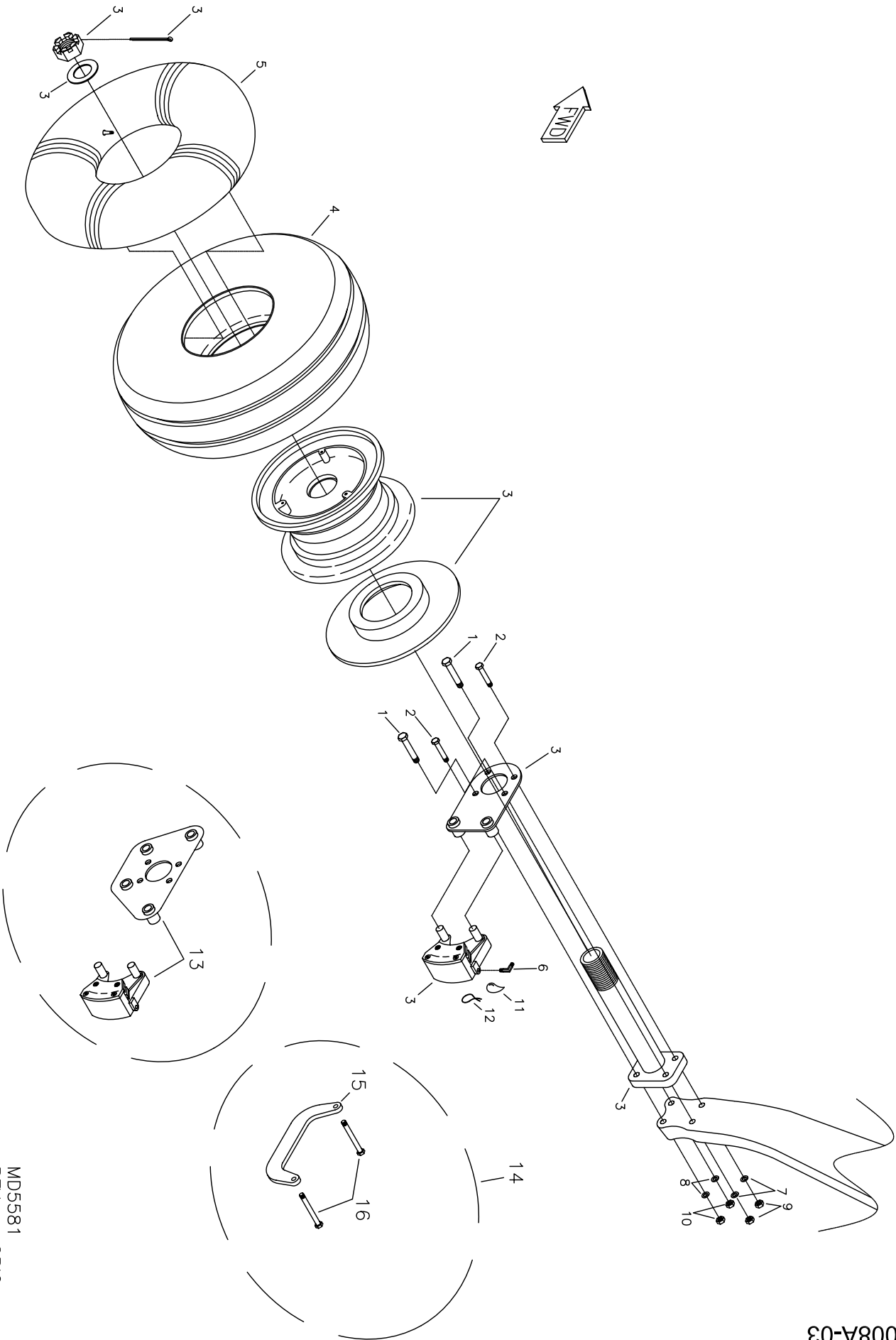
TRIKE - MAIN GEAR INSTALLATION

TRIKE ONLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Landing Gear Spacer Bushing	KPMG0179	4
2.	Top Main Gear Clamp Plate	KPMG0206	2
3.	5/16" Thick Washer	AN960-516	4
4.	5/16" Bolt	AN5-32A	2
5.	3/8" Thick Washer	AN960-616	6
6.	3/8" Tensile Nut	AN365-624A	2
7.	Gear Leg - Trike - LH	KPMG0228-L	1
7.	Gear Leg - Trike - RH	KPMG0228-R	1
8.	Bottom Main Gear Clamp Plate	KPMG0208	2
9.	5/16" Tensile Nut	AN365-524A	4
10.	3/8" Thin Washer	AN960-616L	2
11.	3/8" Bolt	AN6-31A	2
12.	Main Gear Anti-chafe Strip	KPMG0216	2
13.	5/16" Bolt	AN5-40A	2
14.	5/16" Thin Washer	AN960-516L	4

9/11/2018

REV. - ORIG



REFINISH S-21 OUTBOUND

TRIKE - STANDARD - WHEEL AND BRAKE INSTALLATION

MD5581
REV. — ORIG

RANS S-21 OUTBOUND

PAGE

008A-04

TRIKE - STANDARD - WHEEL AND BRAKE INSTALLATION

TRIKE ONLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/8" Bolt	AN6-24A	4
2.	5/16" Bolt	AN5-23A	4
3.	Hydraulic Brake Assembly, 6"	KSBS0030	2
4.	600 x 6 Tire	KSMG0008	2
5.	600 x 6 Tube	KSMG0016	2
6.	45-degree Elbow - Flare 1/4" Tube to 1/8" NPT	AN823-4D	2
7.	5/16" Thick Washer	AN960-516	4
8.	3/8" Thick Washer	AN960-616	4
9.	5/16" Tensile Nut	AN365-524A	4
10.	3/8" Tensile Nut	AN365-624A	4
11.	Thread Sealant *	-----	0
12.	Safety Wire *	-----	0
13.	MATCO Dual Caliper Conversion Kit - OPTIONAL **	KSBS0047	0
14.	Knight Rock Guard Kit - OPTIONAL **	KNIGHT ROCK GUARD KIT	1
15.	Dual Brake Rock Guard ***	KPMG0231	0
16.	1/4" Bolt ***	AN4-20A	0

* Builder Supplied

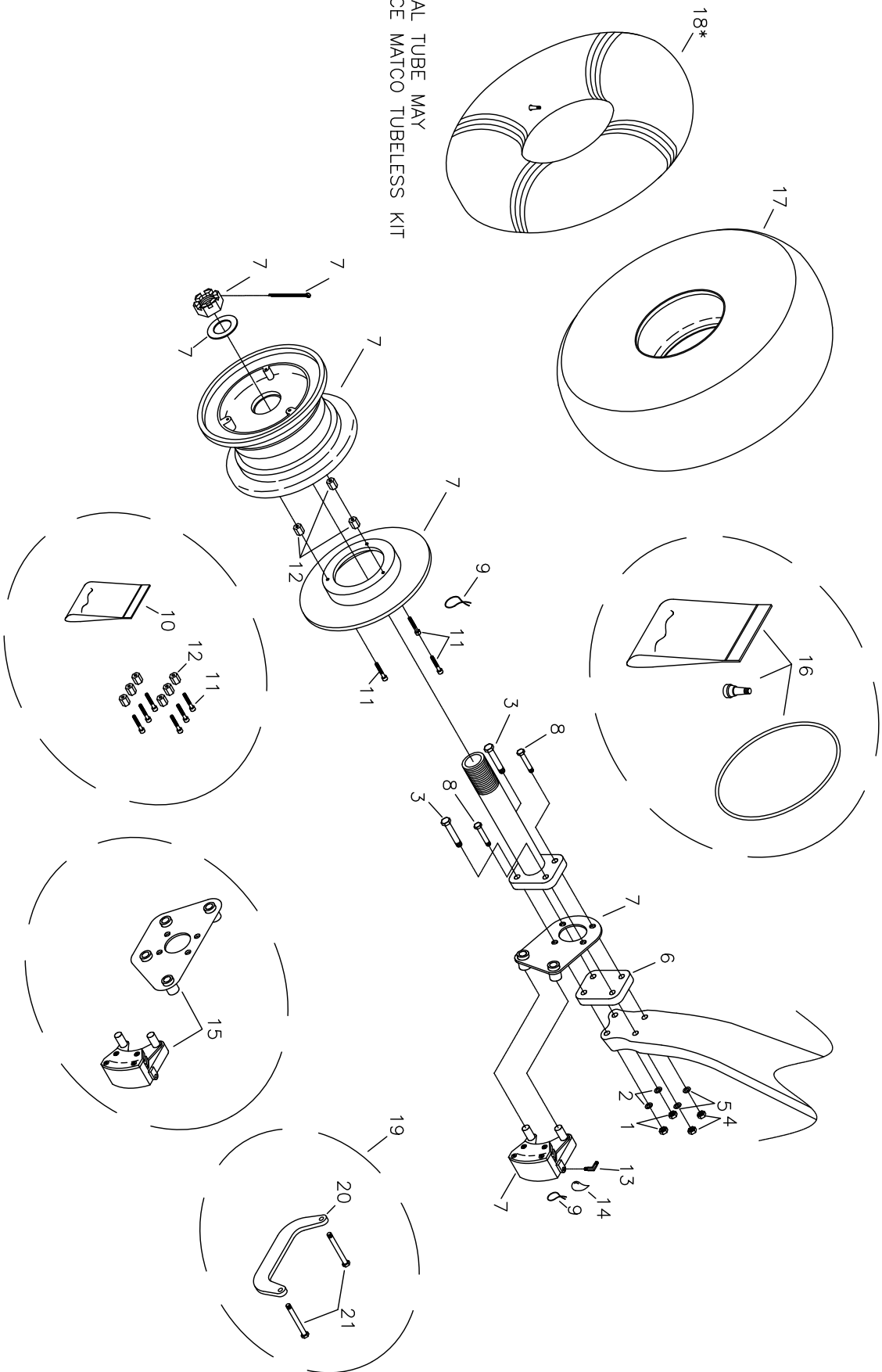
** May be purchased seperately, call RANS Parts Dept. for pricing

*** Supplied with KNIGHT ROCK GUARD KIT

9/11/2018

REV. - ORIG

* OPTIONAL TUBE MAY
REPLACE MATCO TUBELESS KIT



RRR S-21 OUTBOUND

TRIKE - OPTIONS - TUNDRA - WHEEL AND BRAKE INSTALLATION

MD5581
REV. - ORIG

RANS S-21 OUTBOUND

PAGE

008A-04B

TRIKE - OPTIONS - TUNDRA - WHEEL AND BRAKE INSTALLATION

TRIKE ONLY KAAC0110

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/8" Tensile Nut	AN365-624A	4
2.	3/8" Thick Washer	AN960-616	4
3.	3/8" Bolt	AN6-30A	4
4.	5/16" Tensile Nut	AN365-524A	4
5.	5/16" Thick Washer	AN960-516	4
6.	Axle Spacer - 1/2"	KSMG0027	2
7.	Hydraulic Brake Assembly - 6"	KSBS0030	2
8.	5/16" Bolt	AN5-27A	4
9.	Safety Wire *	-----	0
10.	MATCO Adaptor Kit	KSBS0032	1
11.	Socket Head Cap Screw **	-----	0
12.	Disc Spacer **	-----	0
13.	45-degree Elbow - Flare 1/4" Tube to 1/8" NPT	AN823-4D	2
14.	Thread Sealant *	-----	0
15.	MATCO Dual Caliper Conversion Kit	KSBS0047	1
16.	MATCO Tubeless Kit for 6" Wheel (delete if tubes) ****	KSBS0043	2
17.	22" 850-6 Smooth Tundra Tire	KSMG0030	2
18.	850-6 Tundra Tube - OPTIONAL (-2 KSBS0043) ***, ****	KSMG0031	2
19.	Knight Rock Guard Kit - OPTIONAL ***	KNIGHT ROCK GUARD KIT	1
20.	Dual Brake Rock Guard *****	KPMG0231	0
21.	1/4" Bolt *****	AN4-20A	0

* Builder Supplied

** Supplied with KSBS0032

*** May be purchased seperately, call RANS Parts Dept. for pricing

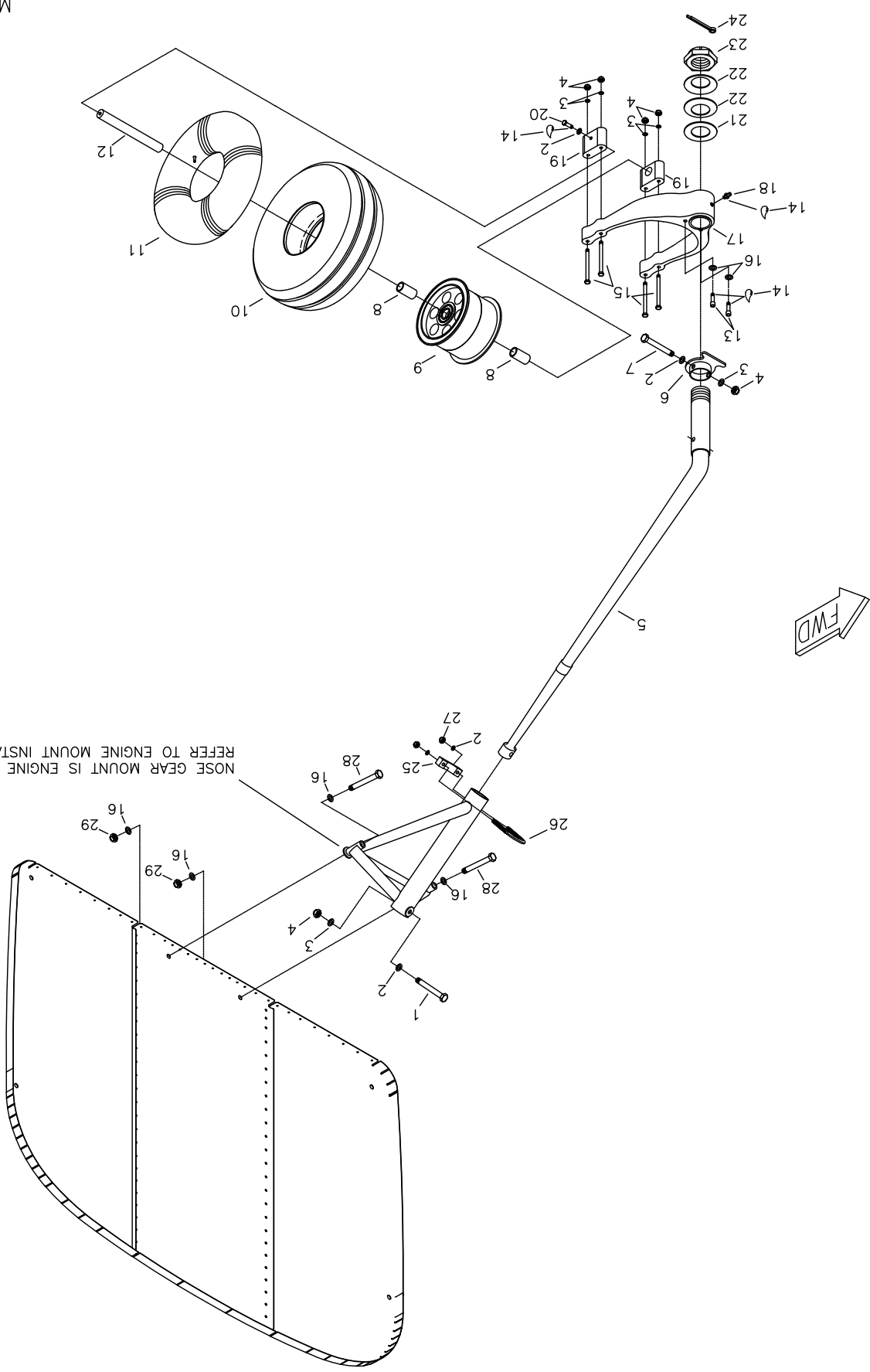
**** Tubeless Kit Standard - Tube may replace Tubeless Kit

***** Supplied with KNIGHT ROCK GUARD KIT

9/11/2018

REV. - ORIG

NOSE GEAR MOUNT IS ENGINE SPECIFIC.
REFER TO ENGINE MOUNT INSTALLATION.



MD5085
REV. A

RFD S-21 OUTBOUND TRIKE - STANDARD - NOSE GEAR INSTALLATION

RANS S-21 OUTBOUND

PAGE

008A-06

TRIKE - STANDARD - NOSE GEAR INSTALLATION

TRIKE ONLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	1/4" Bolt - Close Tolerance	NAS6604-25	1
2.	1/4" Thin Washer	AN960-416L	6
3.	1/4" Thick Washer	AN960-416	6
4.	1/4" Tensile Nut	AN365-428A	6
5.	Nose Gear	KPNG0090	1
6.	Nose Gear Collar	KPNG0087	1
7.	1/4" Bolt - Close Tolerance	NAS6604-23	1
8.	Nose Gear Spacer Bushing *	KPNG0108	1
9.	Nose Wheel - 5"	KSNG0009	1
10.	Tire - 5"	KSMG0005	1
11.	Tire Tube - 5"	KSMG0014	1
12.	Axle - Nose Wheel	KPNG0110	1
13.	5/16" Sockethead Capscrew	KSHW0083	2
14.	Loctite Blue **	-----	0
15.	1/4" Bolt	AN4-35A	4
16.	5/16" Thick Washer	AN960-516	6
17.	Nose Gear Fork Assembly	KANG0020	1
18.	Grease Fitting	11-151	1
19.	Axle Block - Nose Gear	KPNG0106	2
20.	1/4 " Plain Bolt	1/4 X 1 BOLT	2
21.	1 1/4" Washer	AN960-2016	1
22.	Spring Washer	KSHW0084	2
23.	1 1/4" Castle Nut	MS21025-20	1
24.	Cotter Pin - Large	MS24665-360	1
25.	Nose Gear Clamp Block	KPNG0104	1
26.	1/4" U-bolt	KSHW0107	1
27.	1/4" Course Thread Nut	KSHW0108	2
28.	5/16" Bolt	AN5-34A	2
29.	5/16" Tensile Nut	AN365-524A	2

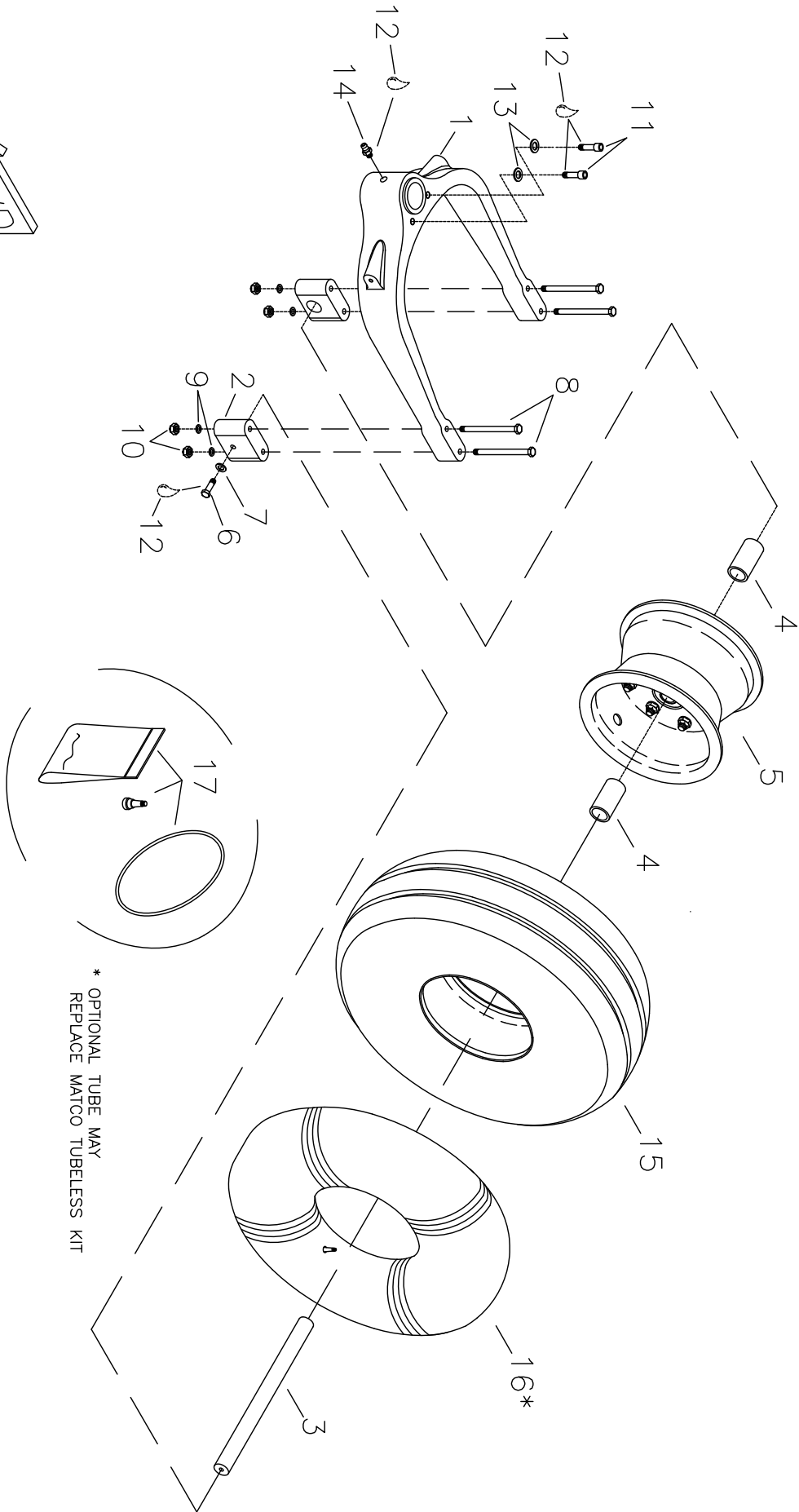
* Builder Modifies

** Builder Supplied

9/11/2018

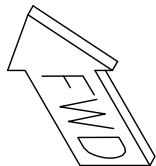
REV. A

REFER TO STANDARD NOSE GEAR INSTALLATION FOR ADDITIONAL MOUNTING INFORMATION



* OPTIONAL TUBE MAY
REPLACE MATCO TUBELESS KIT

MD5085
REV. - ORIG



RRM S-21 OUTBOUND

TRIKE - OPTIONS - TUNDRA - NOSE FORK INSTALLATION

RANS S-21 OUTBOUND

PAGE

008A-06B

TRIKE - OPTIONS - TUNDRA - NOSE FORK INSTALLATION

TRIKE ONLY KAAC0110

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Nose Gear Fork Assembly - Tundra	KANG0022	1
2.	Axle Block - Nose Gear - Tundra	KPNG0106	2
3.	Axle - Nose Wheel - Tundra	KPNG0107	1
4.	Axle Spacer - Nose Wheel - Tundra	KPNG0108	1
5.	Nose Wheel - 6"	KSNG0008	1
6.	1/4" Plain Bolt	1/4 X 1 BOLT	2
7.	1/4" Thin Washer	AN960-416L	2
8.	1/4" Bolt	AN4-35A	4
9.	1/4" Thick Washer	AN960-416	4
10.	1/4" Tensile Nut	AN365-428A	4
11.	5/16" Sockethead Capscrew	KSHW0083	2
12.	Loctite Blue *	-----	0
13.	5/16" Thick Washer	AN960-516	2
14.	Grease Fitting	11-151	1
15.	21" 800-6 Tundra Tire	KSMG0024	1
16.	800-6 Tube - OPTIONAL (-1 KSBS0043) **, ***	KSMG0023	1
17.	MATCO Tubeless Kit for 6" Wheels (delete if tube) **	KSBS0043	1

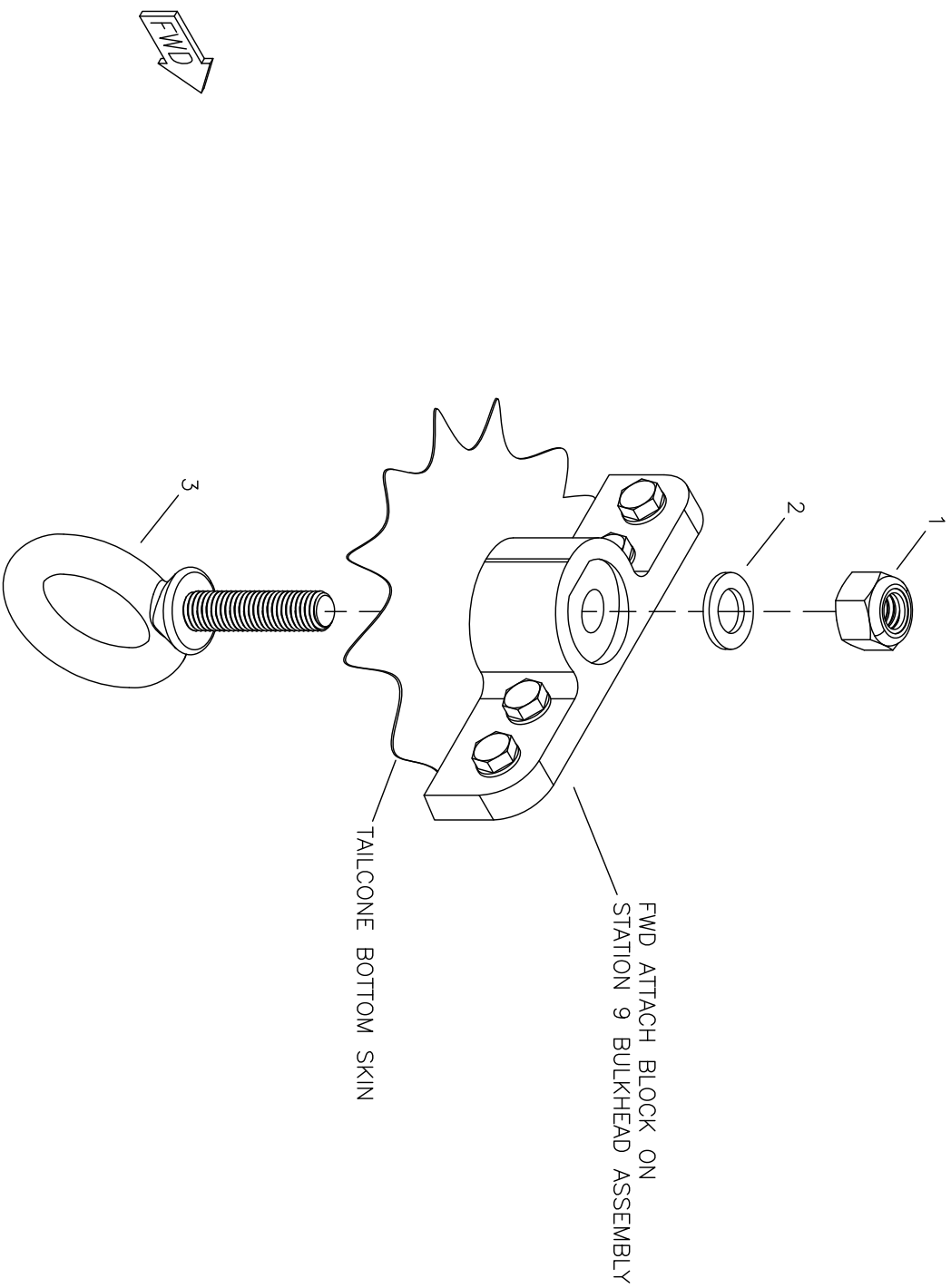
* Builder Supplied

** Tubeless Kit Standard - Tube may replace Tubeless Kit

*** May be purchased separately, call RANS Parts Dept. for pricing

9/11/2018

REV. - ORIG



MD55594
REV. - ORIG

REFUND S-21 OUTBOUND TRIKE - TAIL TIE-DOWN INSTALLATION

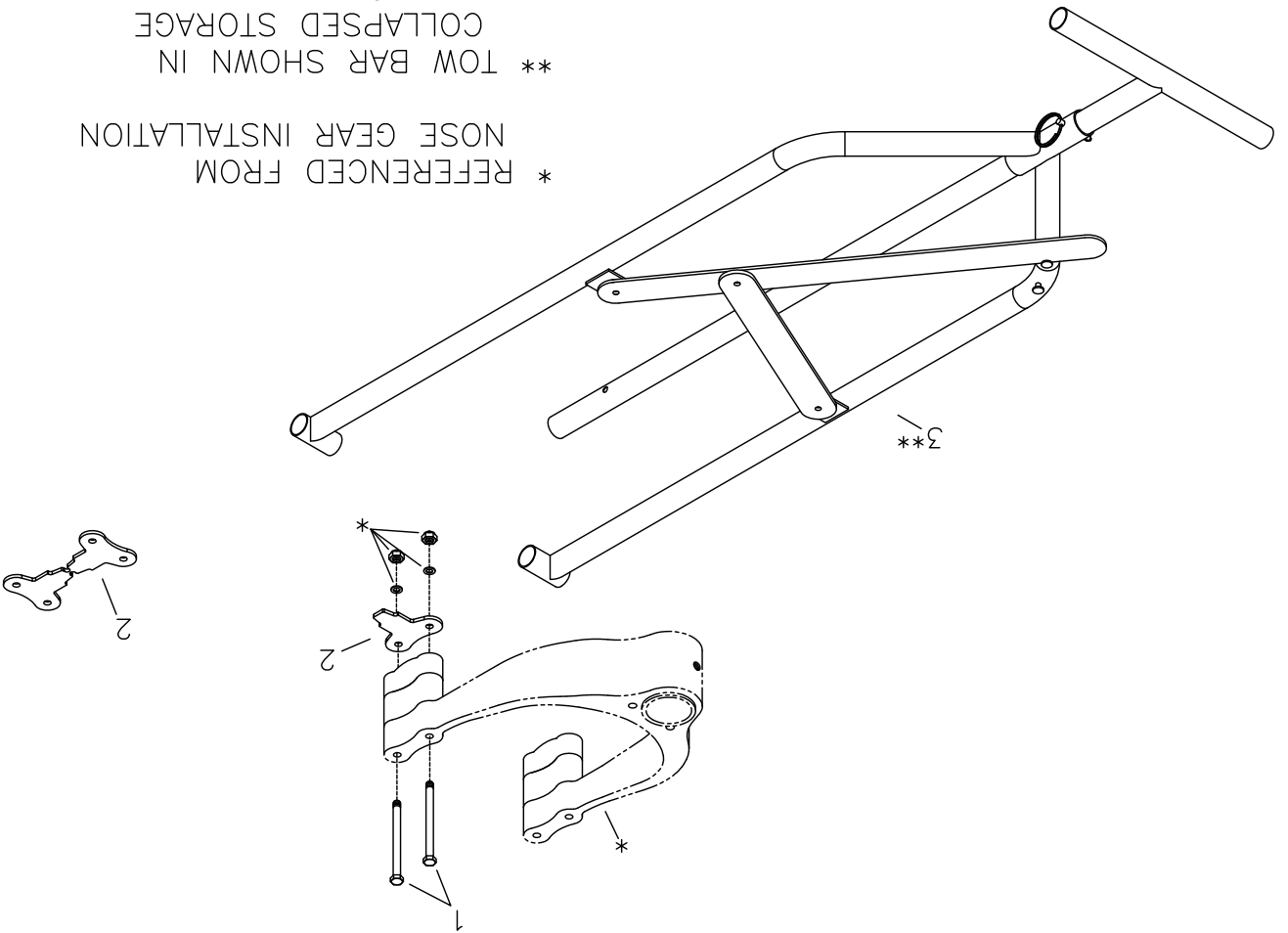
RANS S-21 OUTBOUND
TRIKE - TAIL TIE-DOWN INSTALLATION
TRIKE ONLY

PAGE

008A-08

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	5/16" Course Thread Tensile Nut	KSHW0106	1
2.	5/16" Thin Washer	AN960-516L	1
3.	Trike Tie-Down Eye Bolt	KSHW0105	1

ONLY LEFT HAND SIDE SHOWN FOR CLARITY



RRMS S-21 OUTBOUND TRIKE - OPTIONS - TOW BAR INSTALLATION

MD5480
REV. - ORIG

RANS S-21 OUTBOUND

PAGE

008A-10

TRIKE - OPTIONS - TOW BAR INSTALLATION

TRIKE ONLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1 .	1/4" Bolt	AN4-36A	4
2 .	Nose Gear Tow Plate *	KPNG0101	1
3 .	Tow Bar & Storage Bag **	KPAC0233	0

* Builder modifies

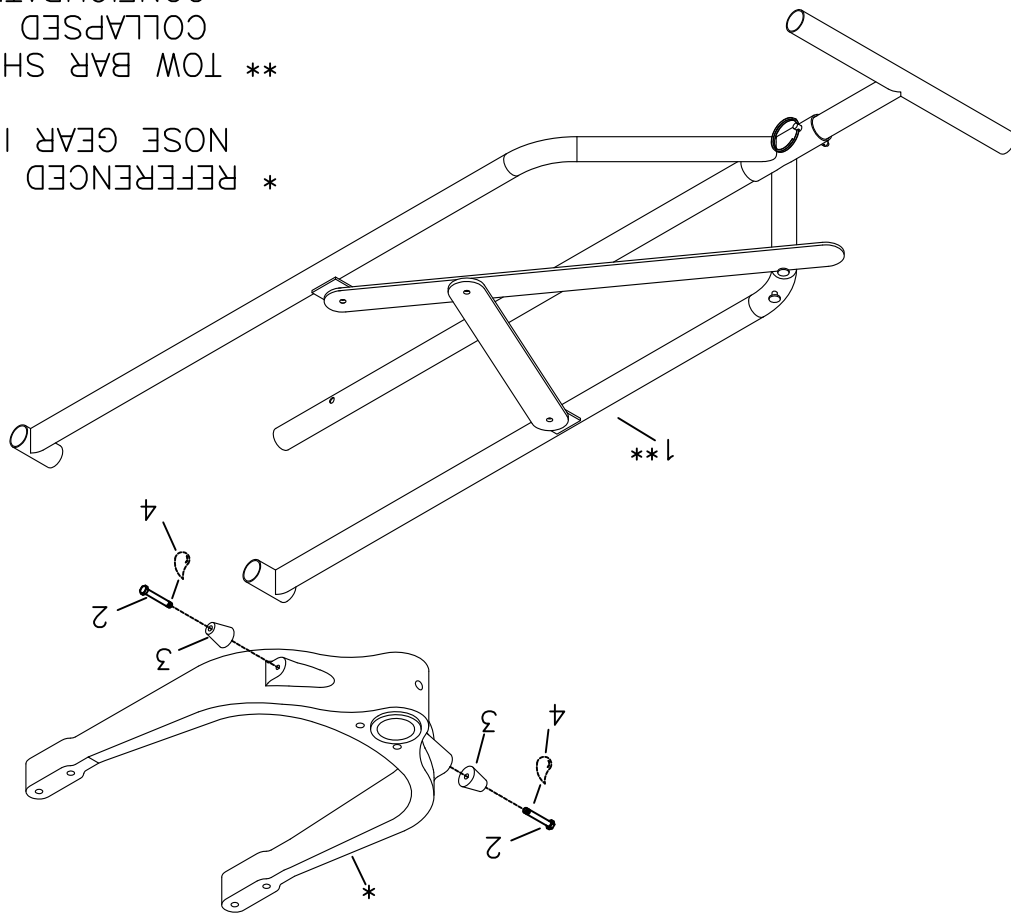
** May be purchased seperately, call RANS Parts Dept. for pricing

9/11/2018
REV. - ORIG

TRIKE - OPTIONS - TUNDRA NOSE GEAR TOW BAR INSTALLATION

MD5480
REV. - ORIG

* REFERENCED FROM
NOSE GEAR INSTALLATION
** TOW BAR SHOWN IN
COLLAPSED STORAGE
CONFIGURATION



TRIKE - OPTIONS - TUNDRA NOSE GEAR - TOW BAR INSTALLATION

TRIKE ONLY

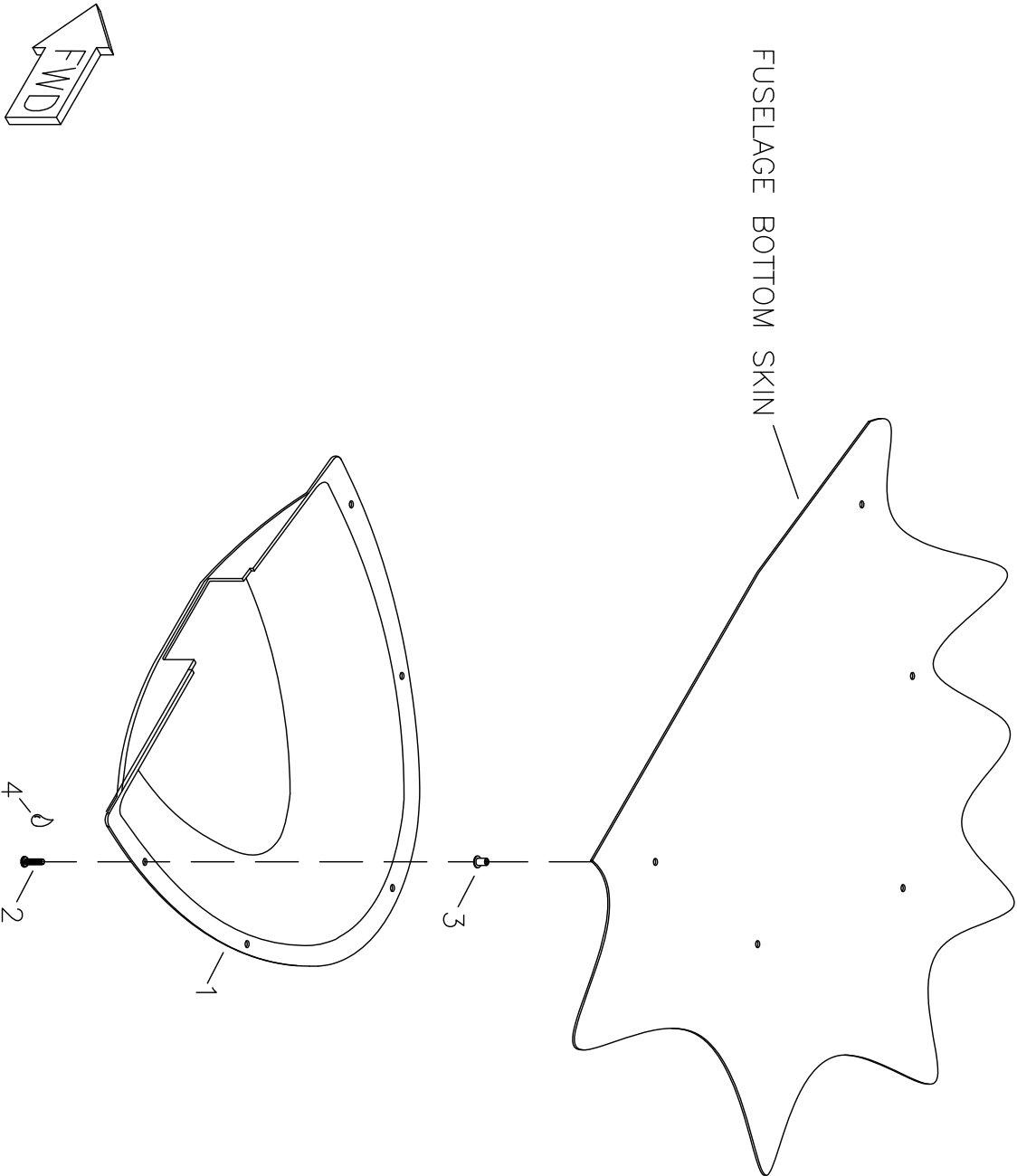
#	DESCRIPTION	PART NUMBER	QUANTITY
1 .	Tow Bar & Storage Bag *	KPAC0233	0
2 .	1/4" Bolt	AN4-11A	2
3 .	Tow Bar Bushing	KPNG0109	2
4 .	Loctite Blue **	-----	0

* May be purchased separately, call RANS Parts Dept. for pricing

** Builder Supplied

9/11/2018

REV. - ORIG



LEFT-HAND SHOWN

REF S-21 OUTBOUND
OPTIONS - BELLY FAIRINGS

MD5581
REV. - ORIG

RANS S-21 OUTBOUND

PAGE

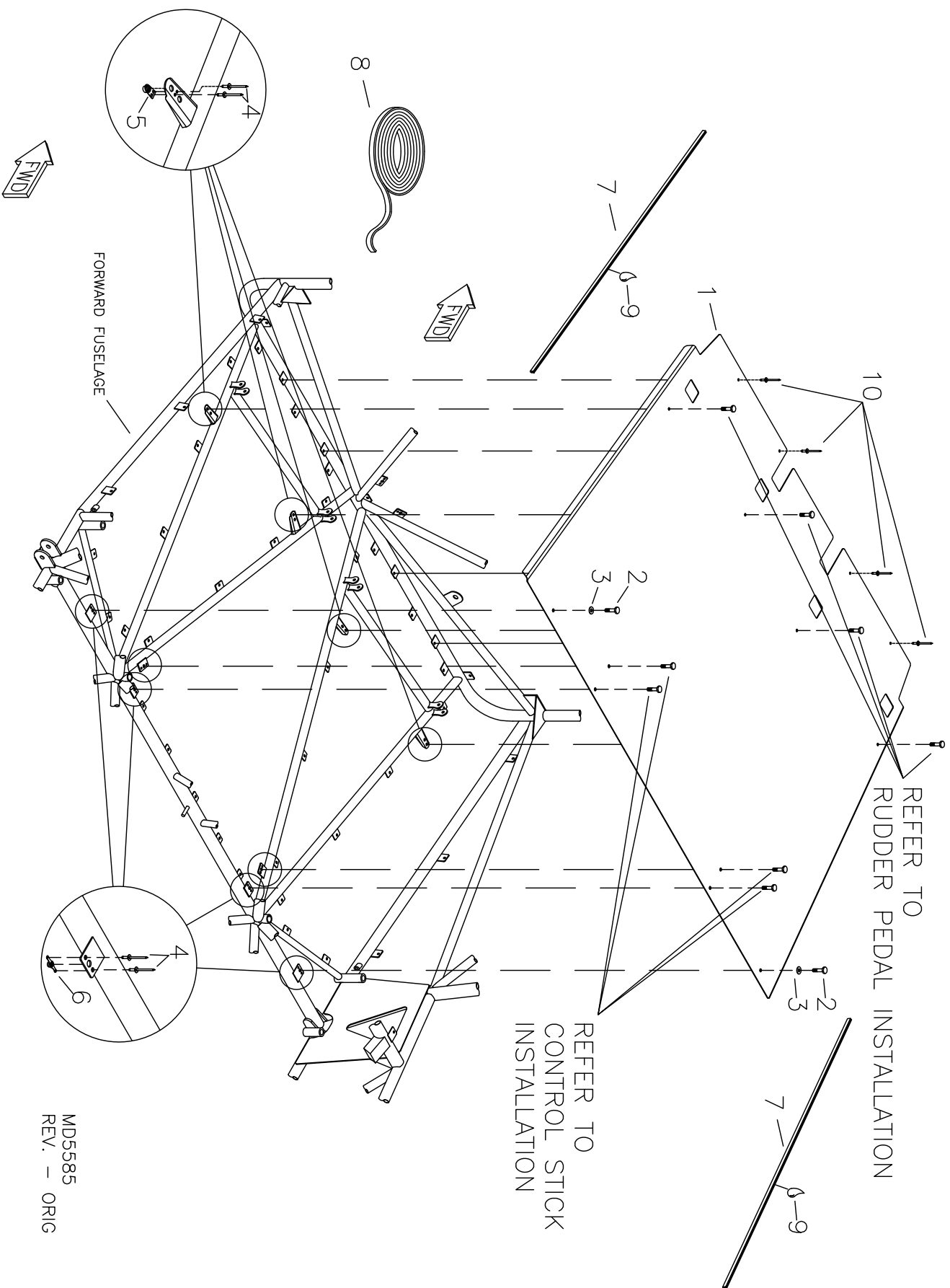
008B-02

OPTIONS - BELLY FAIRINGS

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Belly Fairing - RH	KPFU0753-R	1
1.	Belly Fairing - LH	KPFU0753-L	1
2.	3/16" Truss Head Screw	AN526-C1032-R12	10
3.	3/16" Rivet Nut	MS27130-A25K	10
4.	Loctite Blue *	-----	0

* Builder Supplied

9/11/2018
REV. - ORIG



REFINING S-21 OUTBOUND FUSELAGE - FLOORBOARD INSTALLATION

MD5585
REV. - ORIG

RANS S-21 OUTBOUND
FUSELAGE - FLOORBOARD INSTALLATION

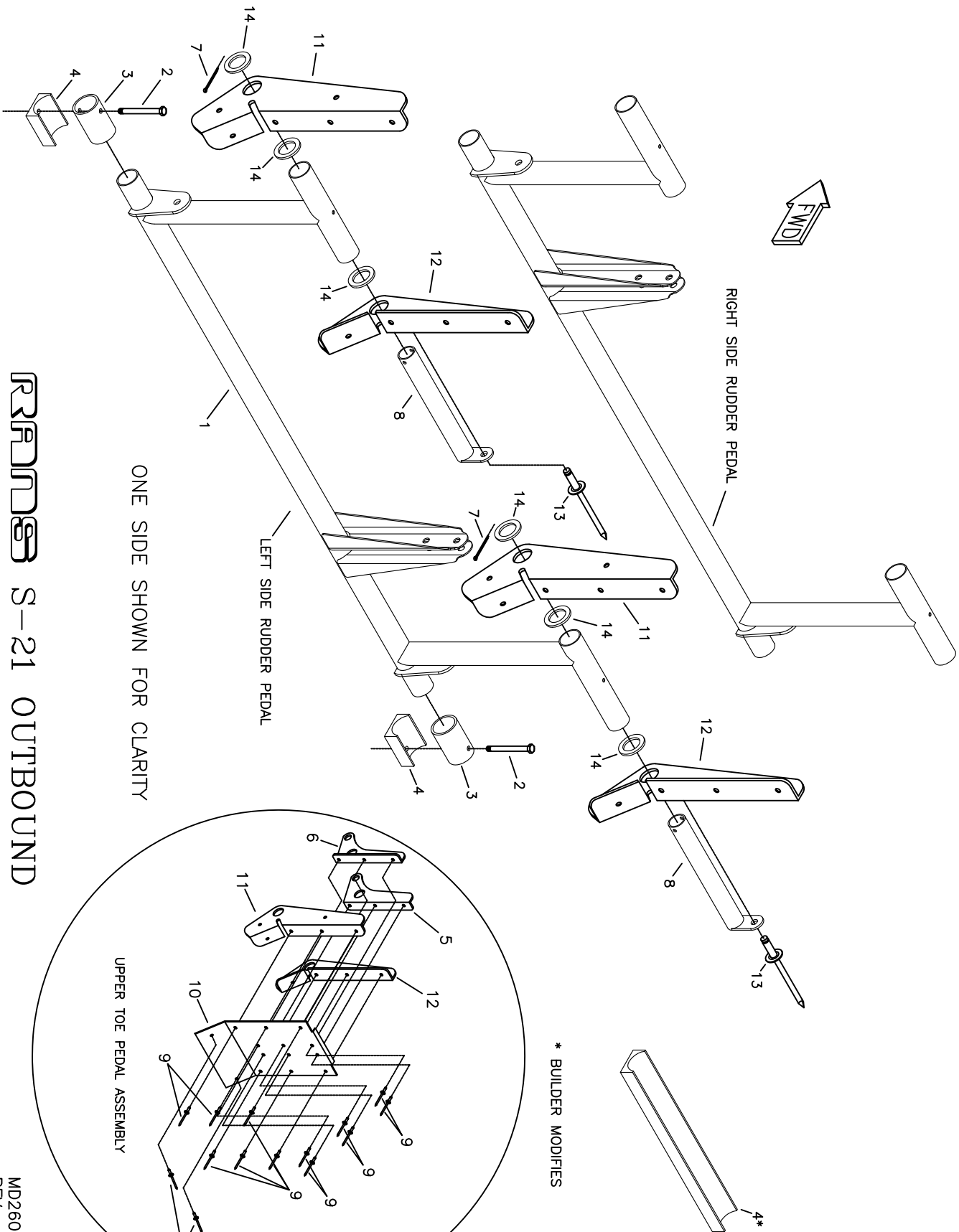
PAGE

009-02

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Floorboard	KPIN0139	1
2.	3/16" Bolt	AN3-3A	2
3.	3/16" Thin Washer	AN960-10L	2
4.	3/32" Aluminum Rivet	40APR1/8	20
5.	3/16" Side by Side Nut Plate	MS21086-L3	4
6.	3/16" Nut Plate	K-1000-3	6
7.	Rubber Trim	X1011	4 ft
8.	1/2" Black Foam Tape *	-----	0
9.	Adhesive - Superglue *	-----	0
10.	1/8" Aluminum Rivet - Avex	1691-0410	4

* Builder Supplied

9/11/2018
REV. - ORIG



RRR S-21 OUTBOUND
FUSELAGE - RUDDER PEDAL INSTALLATION

RANS S-21 OUTBOUND
FUSELAGE - RUDDER PEDAL INSTALLATION

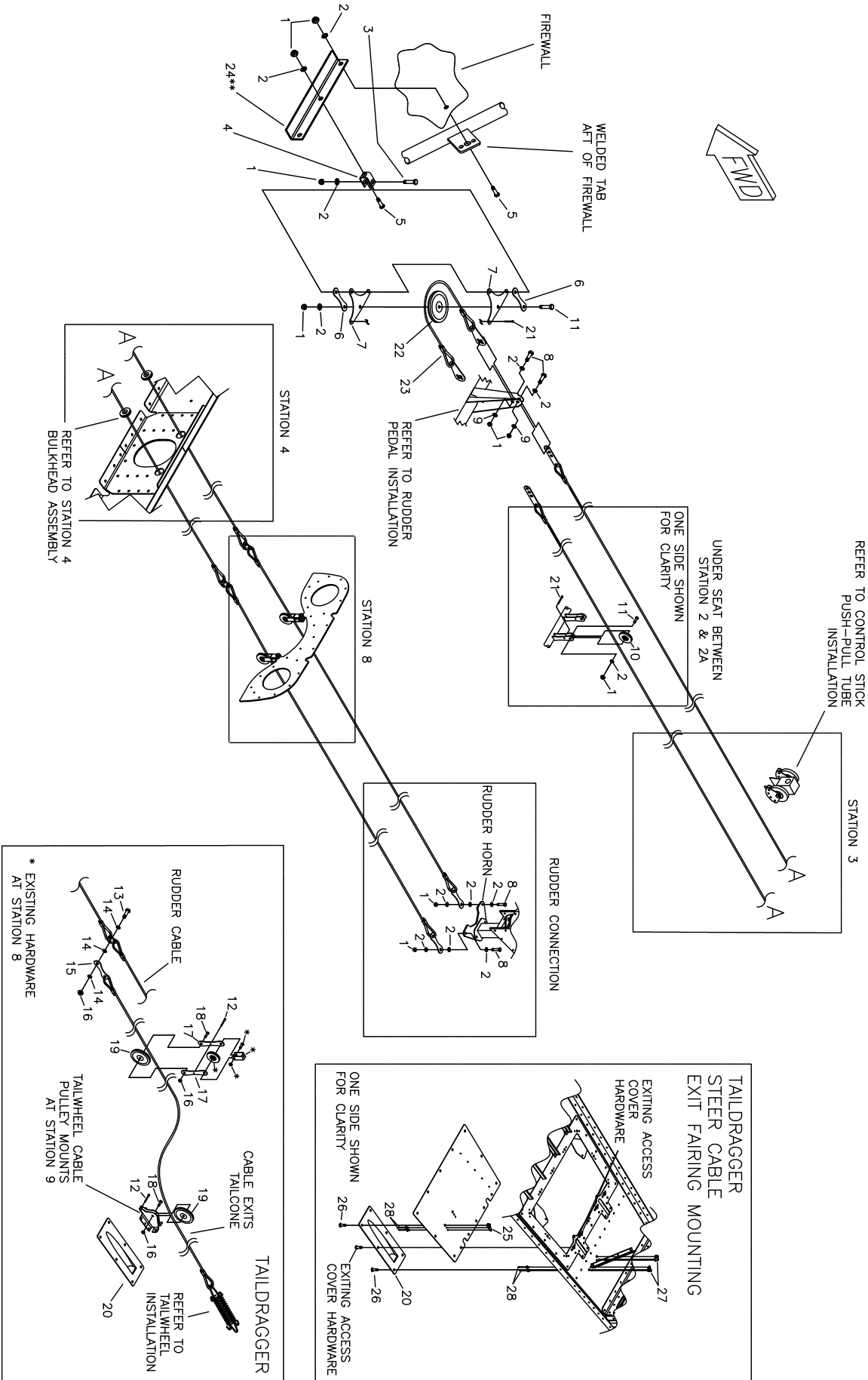
PAGE

009A-02

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Rudder Pedal	KPCS0306	2
2.	3/16" Bolt	AN3-12A	4
3.	Rudder Pedal Bushing	KPCS0017	4
4.	Brake Saddle *	KPCS0319	1
5.	Rudder Pedal - Cylinder Attach Bracket - RH	KPCS0300-R	4
6.	Rudder Pedal - Cylinder Attach Bracket - LH	KPCS0300-L	4
7.	Large Cotter Pin	MS24665-285	4
8.	Swivel Bushing	KPCS0056	4
9.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	56
10.	Rudder Pedal - Web	KPCS0301	4
11.	Rudder Pedal - Hinge Plate - LH	KPCS0302-L	4
12.	Rudder Pedal - Hinge Plate - RH	KPCS0302-R	4
13.	3/16" Stainless Steel Rivet - Cherry Q	CCPQ-62	4
14.	1/2" Plastic Washer	KSAC0005	12

* Builder Modifies

9/11/2018
REV. - A



** BUILDER MODIFIES

RUDDER S-21 OUTBOUND FUSELAGE - RUDDER SYSTEM INSTALLATION

FUSELAGE - RUDDER SYSTEM INSTALLATION

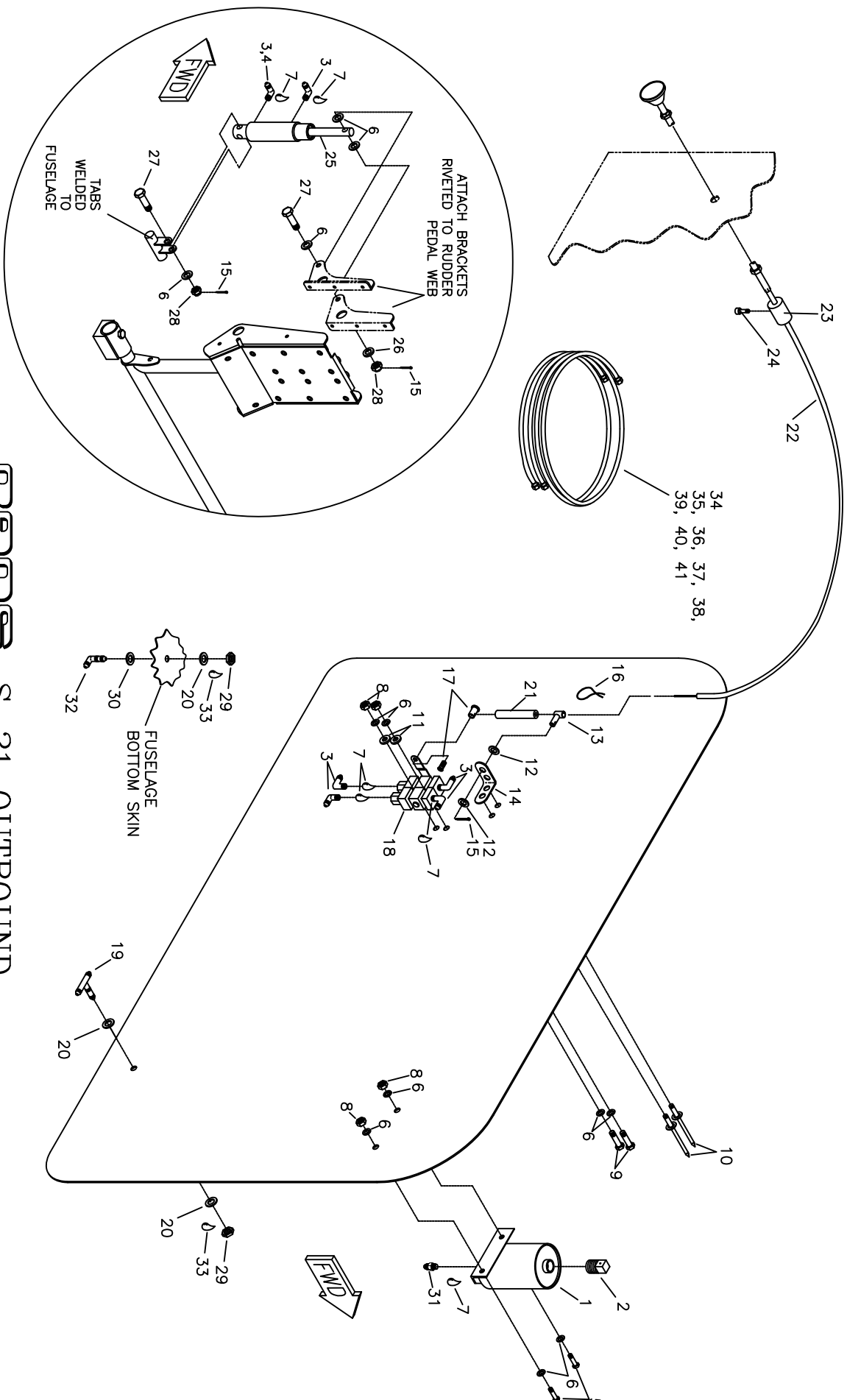
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/16" Shear Nut	AN364-1032A	11
2.	3/16" Thin Washer	AN960-10L	17
3.	3/16" Bolt	AN3-7A	1
4.	U-Bracket	RL-205-T	1
5.	3/16" Bolt	AN3-4A	3
6.	Hummer Tang	T12-HT6	2
7.	Pulley Cable Keeper	KPCS0317	2
8.	3/16" Bolt	AN3-5A	6
9.	3/16" Thick Washer	AN960-10	4
10.	Small Pulley	AN210-1A	2
11.	3/16" Bolt	AN3-6A	3
12.	Small Cotter Pin *	MS24665-134	4
13.	3/16" Bolt *	AN3-5A	2
14.	3/16" Thin Washer *	AN960-10L	6
15.	Tailwheel Steer Cable Assembly *	KPCS0308	2
16.	3/16" Shear Nut *	AN364-1032A	6
17.	Tang * **	KPAC0038	4
18.	3/16" Bolt *	AN3-6A	4
19.	Pulley *	AN210-2A	4
20.	Tailwheel Steer Cable Exit Fairing *	KPFU0755	2
21.	Small Cotter Pin	MS24665-134	4
22.	Pulley	AN210-2A	1
23.	Rudder Pedal Return Cable	KACS0036	1
24.	Return Pulley Mount Angle **	KPCS0318	1
25.	8-32 Single-Ear Nut Plate *	MS21051-08	4
26.	8-32 Machine Screw *	AN526-832R6	8
27.	8-32 Corner Nut Plate *	K-3000-08	4
28.	3/32" Aluminum Rivet *	40APR1/8	16

* Taildragger Only - Supplied with Taildragger Gear Kit

** Builder Modifies

9/11/2018

REV. - ORIG



REPLACES S-21 OUTBOUND FUSELAGE - HYDRAULIC BRAKE INSTALLATION

MD2600
REV. - ORIG

FUSELAGE - HYDRAULIC BRAKE INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Hydraulic Brake Reservoir	KSBS0034	1
2.	Vented 1/8" Cap Plug *	-----	0
3.	90-degree Elbow - Flare 1/4" Tube to 1/8" NPT	AN822-4D	11
4.	45-degree Elbow - Flare 1/4" Tube to 1/8" NPT	AN823-4D	1
5.	3/16" Bolt	AN3-3A	2
6.	3/16" Thin Washer	AN960-10L	16
7.	Thread Sealant **	-----	0
8.	3/16" Shear Nut	AN364-1032A	4
9.	3/16" Bolt	AN3-11A	2
10.	3/16" Stainless Steel Rivet - Cherry Q	CCPQ-62	2
11.	Rubber Washer ***	-----	0
12.	1/4" Thick Washer	AN960-416	2
13.	Cable Housing Swivel Stop	KPBS0009	1
14.	Cable Housing Swivel Stop Bracket	KPBS0010	1
15.	Small Cotter Pin	MS24665-134	13
16.	Safety Wire **	-----	0
17.	Cable Swivel Stop & Screw	2361	1
18.	Parking Brake	KSBS0007	1
19.	Bulkhead Tee - Flare 1/4" Tube	AN834-4D	1
20.	7/16" Thick Washer	AN960-716	2
21.	Blue Fuel Line - 1/4"	FS-FL	2 in
22.	Control Cable	4-336	1
23.	Cable Friction Block	T-STOP	1
24.	Socket Head Cap Screw	T-SC	1
25.	Master Brake Cylinder w/ Drilled Shaft	KSBS0048	4
26.	3/16" Thick Washer	AN960-10	4
27.	3/16" Bolt - Drilled Shank	AN3-10	8
28.	3/16" Castle Nut	AN310-3	8
29.	Nut - Flared Tube Bulkhead	AN924-4D	3
30.	7/16" Thin Washer	AN960-716L	2
31.	Straight Fitting - Flare 1/4" Tube to 1/8" NPT	AN816-4D	1
32.	Bulkhead 90-degree Elbow - Flare 1/4" Tube	AN833-4D	2
33.	Loctite Blue **	-----	0
34.	Braided Brake Line Kit - S-20 / S-21	KSBS0038	1
35.	Braided Line - 22" - Reservoir to Bulkhead Tee ****	KSBS0038-1	0
36.	Braided Line - 9" - Bulkhead Tee to Cylinders ****	KSBS0038-2	0
37.	Braided Line - 18.75" - RH to LH Cylinders ****	KSBS0038-3	0
38.	Braided Line - 15" - LH Cylinders to Park Valve ****	KSBS0038-4	0
39.	Braided Line - 87" - Park Valve to RH Bulkhead ****	KSBS0038-5	0
40.	Braided Line - 69" - Park Valve to LH Bulkhead ****	KSBS0038-6	0
41.	Braided Line - 30" - Bulkhead to Wheel Brakes ****	KSBS0038-7	0

* Supplied with Brake Reservoir.

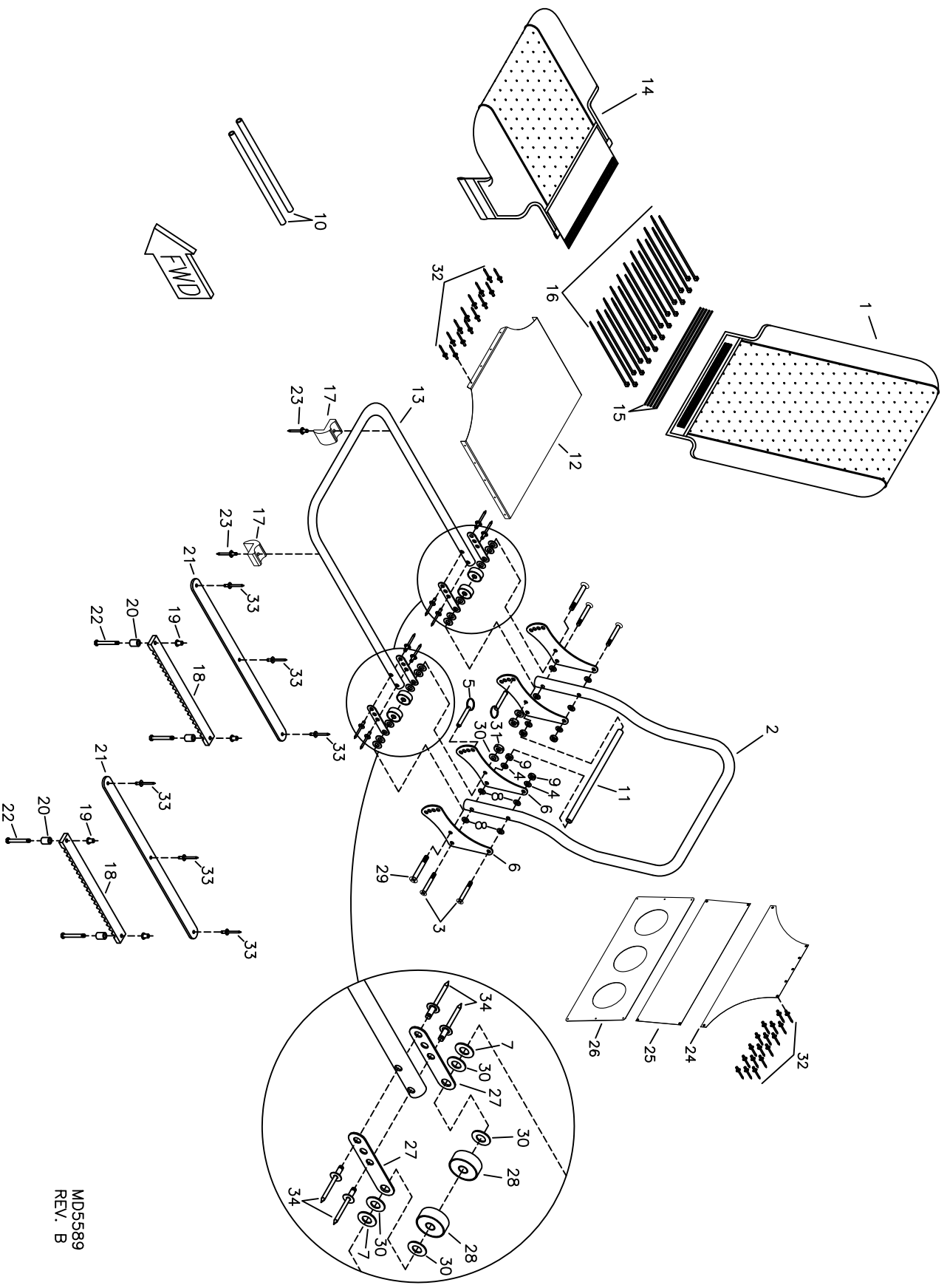
** Builder supplied

*** Supplied with Parking Brake

**** Supplied with KSBS0038

9/11/2018

REV. - ORIG



RRM S-21 OUTBOUND FUSELAGE - SLIDING SEAT ASSEMBLY

MD5589
REV. B

RANS S-21 OUTBOUND

FUSELAGE - SLIDING SEAT ASSEMBLY

PAGE

009D-02

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Seat Back Cushion	ST-SBC-A	2
2.	Seat Back Frame	ST-SBF	2
3.	3/16" Countersunk Machine Screw	MS24694-S67	8
4.	3/16" Thin Washer	AN960-10L	12
5.	1/4" Quick Pin	PIN 1/4X1.2	4
6.	Seat Side Plate	KPST0130	8
7.	1/4" Plastic Washer	PW-4	8
8.	3/16" Thick Washer	AN960-10	16
9.	3/16" Shear Nut	AN364-1032A	12
10.	Seat & Headrest - Raw Stock Kit	KAAC0014	2
11.	Seat Internal Tube, 1/2" x .035" x 13.75" * **	KAAC0014-1	0
12.	Seat Bottom Pan	KPST0131	2
13.	Sliding Seat Bottom Frame	KPST0127	2
14.	Seat Bottom Cushion	ST-SBTC-A	2
15.	Lacing Wires (stick), 36" x 1/16"	TG-LW-1/16	5
16.	Heavy-Duty Plastic Tie - Long	BSBK0001	40
17.	Slider Block	KPST0124	4
18.	Sliding Seat Position Rail	KPST0128	4
19.	3/16" Rivet Nut	MS27130-A25K	8
20.	Seat Stop Tube, 3/8" x .095" x 1/2" *	KPST0132	1
21.	Sliding Seat Rail Plate	KPST0129	4
22.	3/16" Bolt	AN3-11A	8
23.	3/16" Stainless Steel Rivet - Cherry Q	CCPQ-64	4
24.	Seat Back Plate - Upper	KPST0073-1	2
25.	Seat Back Plate - Middle	KPST0073-2	2
26.	Seat Back Plate - Lower	KPST0073-3	2
27.	Multi-Hole Tang	ST-16-FLAT	8
28.	Bearing	SR4APP	8
29.	1/4" Countersunk Machine Screw	MS24694-S111	4
30.	1/4" Thin Washer	AN960-416L	20
31.	1/4" Shear Nut	AN364-428A	4
32.	1/8" Aluminum Rivet - Avex	1691-0410	62
33.	1/8" Stainless Steel Rivet - Flush	CCC-42	12
34.	3/16" Stainless Steel Rivet - Cherry Q	CCPQ-62	16

* Fabricate from Raw Stock

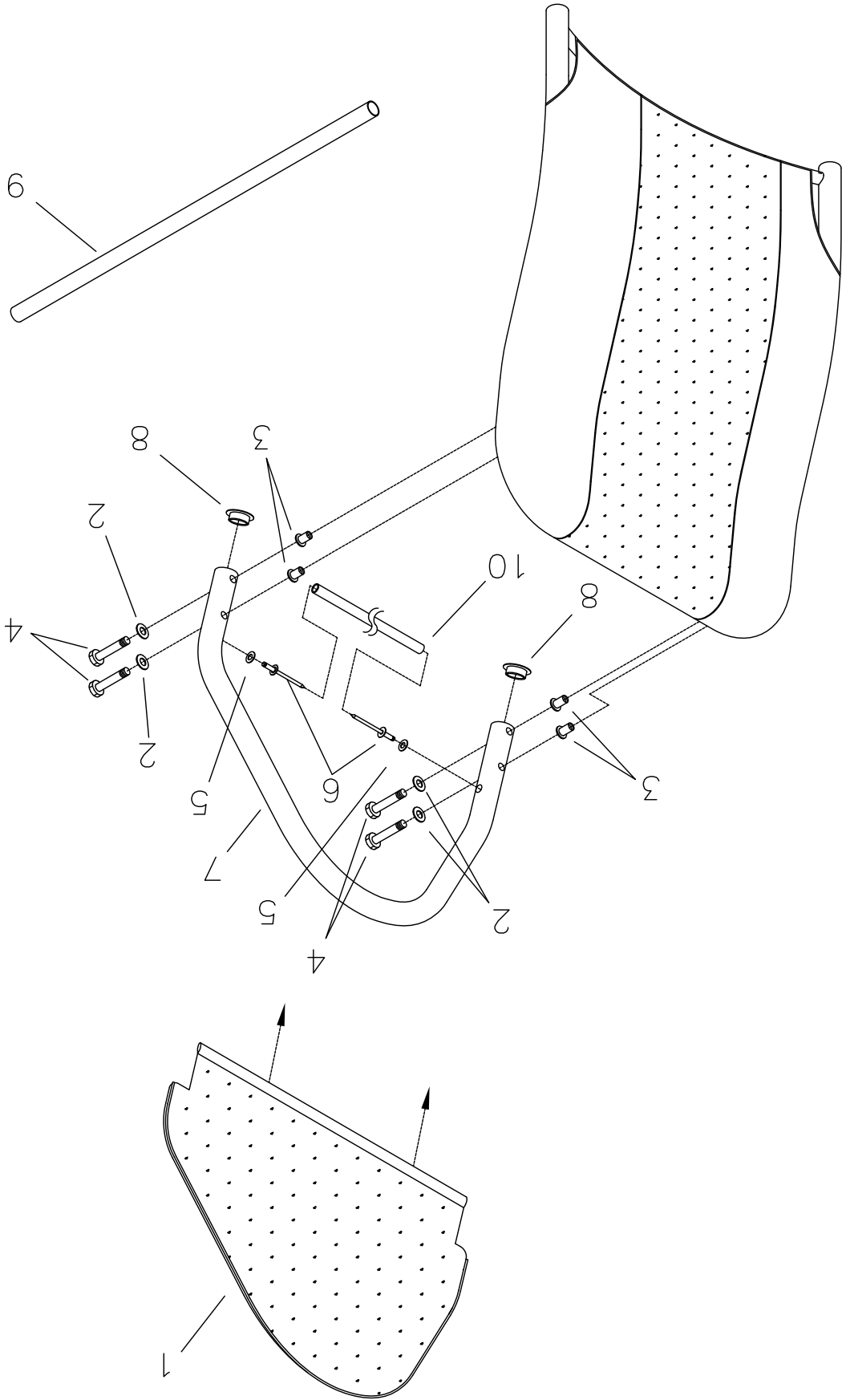
** Builder determines length

9/11/2018

REV. - B

FUSELAGE - OPTIONS - HEADREST ASSEMBLY

MD5108



FUSELAGE - OPTIONS - SEAT HEADREST INSTALLATION

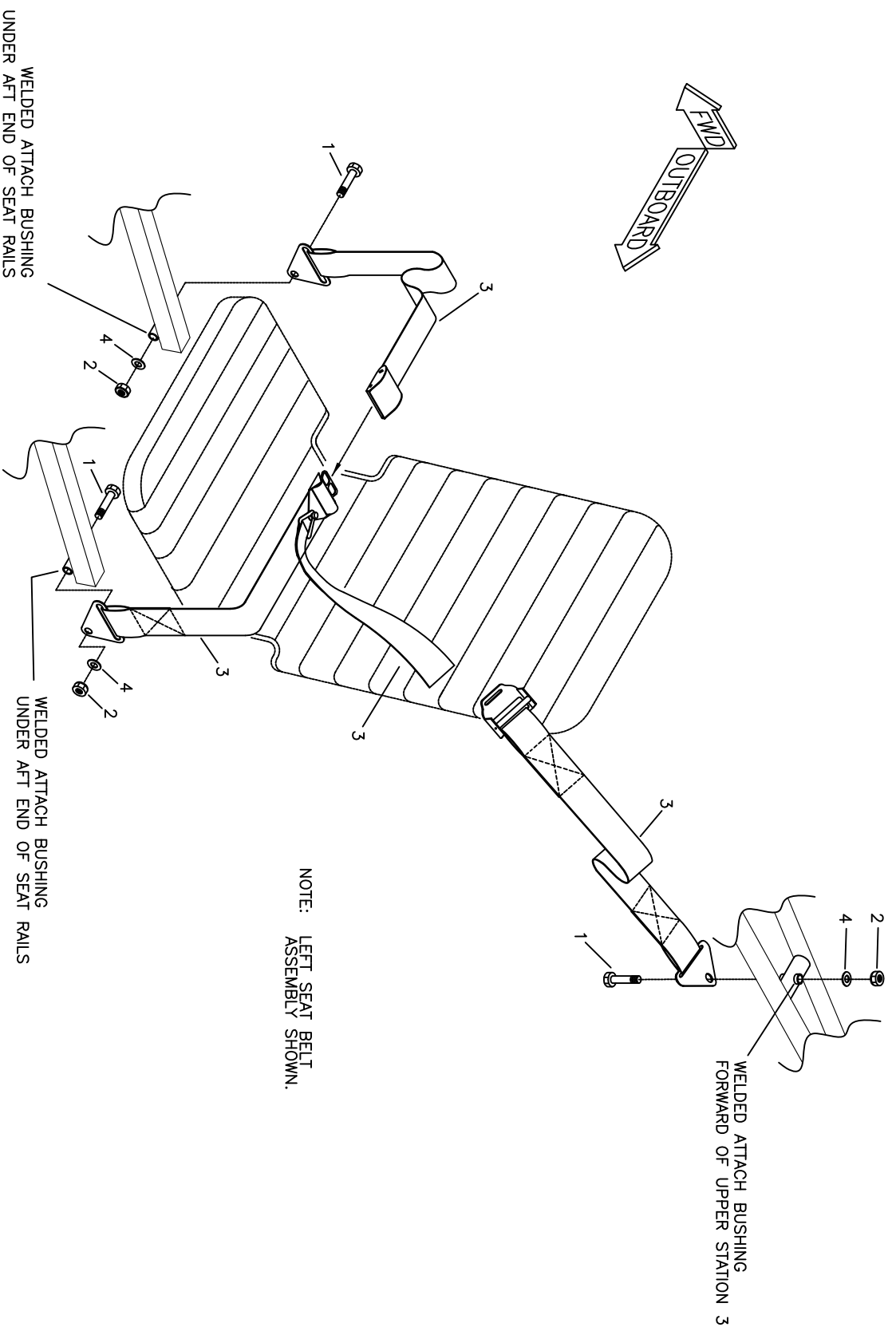
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Headrest Cover	ST-HRC-A	2
2.	3/16" Thin Washer	AN960-10L	8
3.	3/16" Rivet Nut	MS27130-A25K	8
4.	3/16" Bolt	AN3-13A	8
5.	3/16" Thick Washer	AN960-10	4
6.	3/16" Aluminum Rivet - Cherry Q	AAPQ-64	4
7.	Headrest Frame	ST-HRF(6/12)	2
8.	1" End Cap	1 CAP	4
9.	Seat & Headrest - Raw Stock Kit	KAAC0014	2
10.	Headrest Internal Tube, 1/2" x .035 x X * **	KAAC0014-1	0

* Fabricate from Raw Stock

** Builder determines length

9/11/2018

REV. - ORIG



RRM S-21 OUTBOUND FUSELAGE - SEAT BELT INSTALLATION

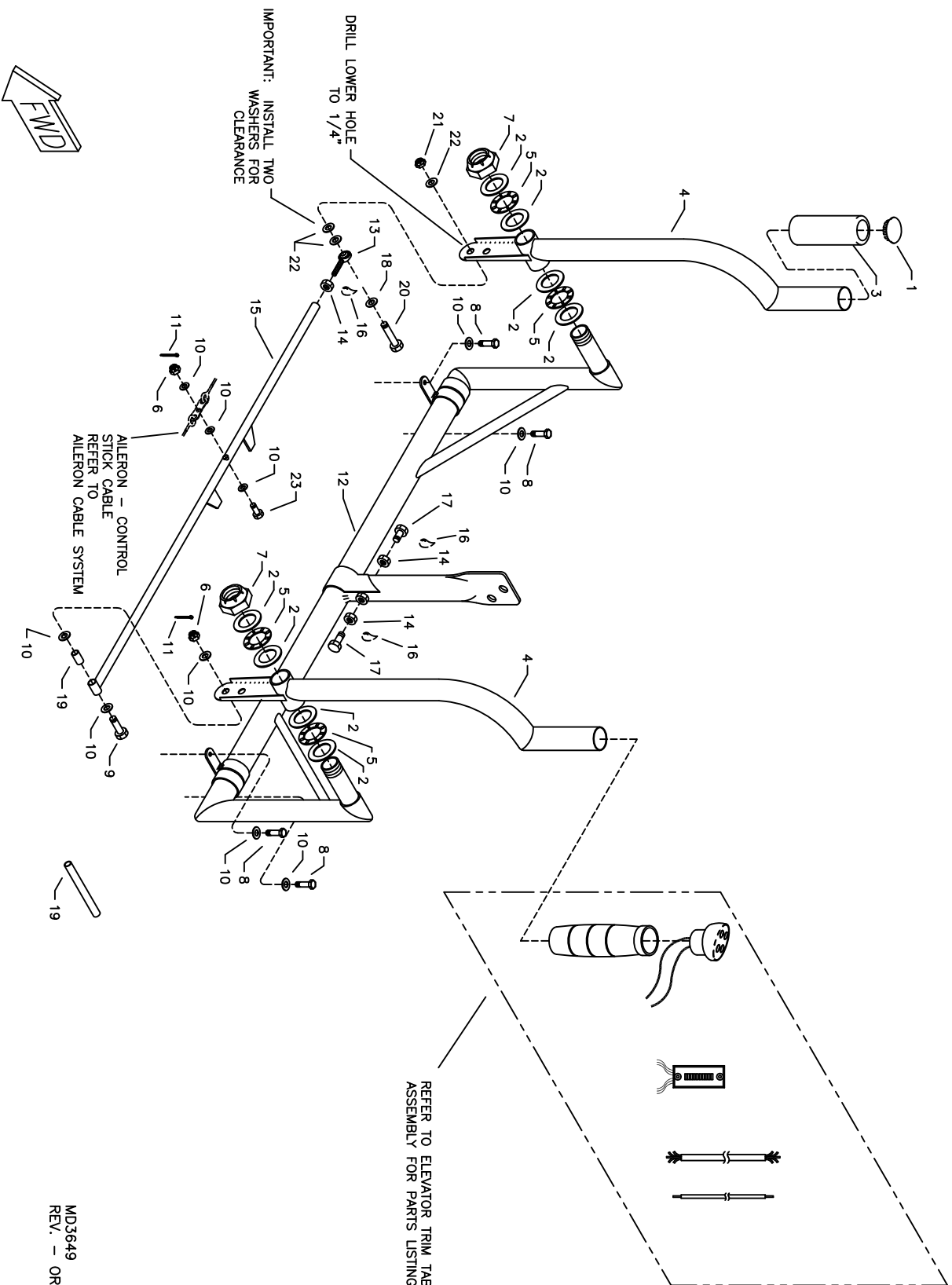
MD5590
REV. - ORIG

RANS S-21 OUTBOUND
FUSELAGE - SEAT BELT INSTALLATION

PAGE

009D-06

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	5/16" Bolt	AN5-15A	6
2.	5/16" Shear Nut	AN364-524A	6
3.	Seat Belt Kit	KAST0025	2
4.	5/16" Thin Washer	AN960-516L	6



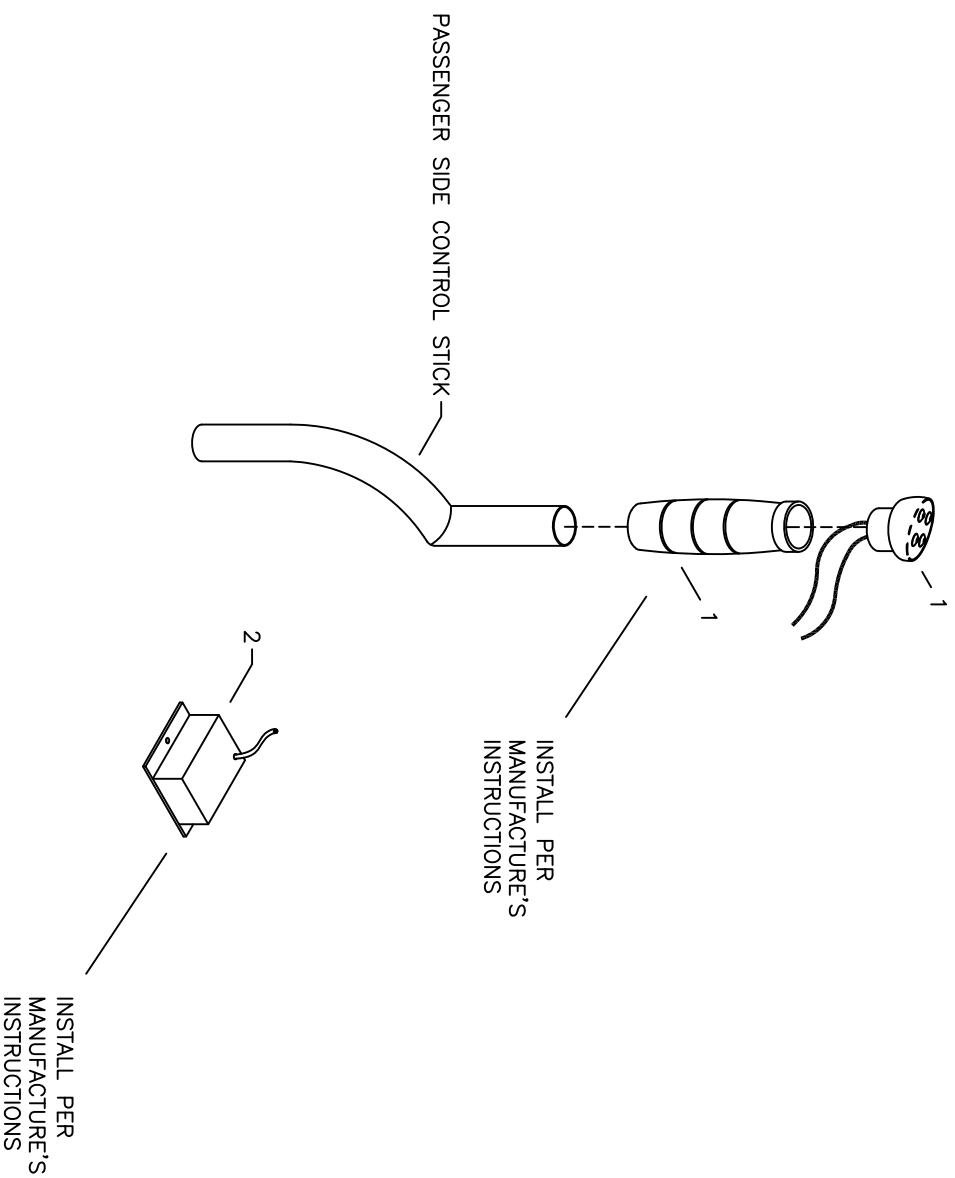
RRR S-21 OUTBOUND FUSELAGE - CONTROL STICK INSTALLATION

MD3649
REV. - ORIG

FUSELAGE - CONTROL STICK INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	7/8" End Cap	CS-EC	1
2.	Bearing Washer	CS-BW	8
3.	Control Stick Grip	CS-G	1
4.	Control Stick	KPCS0072	2
5.	Thrust Bearing	CS-TB	4
6.	3/16" Castle Nut	AN310-3	2
7.	3/4" Nyloc Nut	CS-3/4LOCNUT	2
8.	3/16" Bolt	AN3-6A	4
9.	3/16" Bolt - Drilled Shank	AN3-10	1
10.	3/16" Thin Washer	AN960-10L	10
11.	Small Cotter Pin	MS24665-134	2
12.	Control Stick Torque Tube	CS-TT-A	1
13.	Male Rod End, 1/4" x 1/4"	NM-4	1
14.	1/4" Plain Nut	AN345-416	3
15.	Control Stick Link Tube	CS-CSLT-3	1
16.	Loctite Blue ***	-----	0
17.	1/4" Plain Bolt	KSHW0094	2
18.	1/4" X 5/8" Steel Washer	KSHW0075	1
19.	Raw Stock - Aluminum Bushing, 1/4" x .028"	KAAC0044-2	1
19.	Aluminum Bushing, 1/4" x .028" x 17/32" *	KAAC0044-2	0
20.	1/4" Bolt	AN4-10A	1
21.	1/4" Shear Nut	AN364-428A	1
22.	1/4" Thick Washer	AN960-416	3
23.	3/16" Bolt - Drilled Shank	AN3-12	1

* Fabricate from Raw Stock



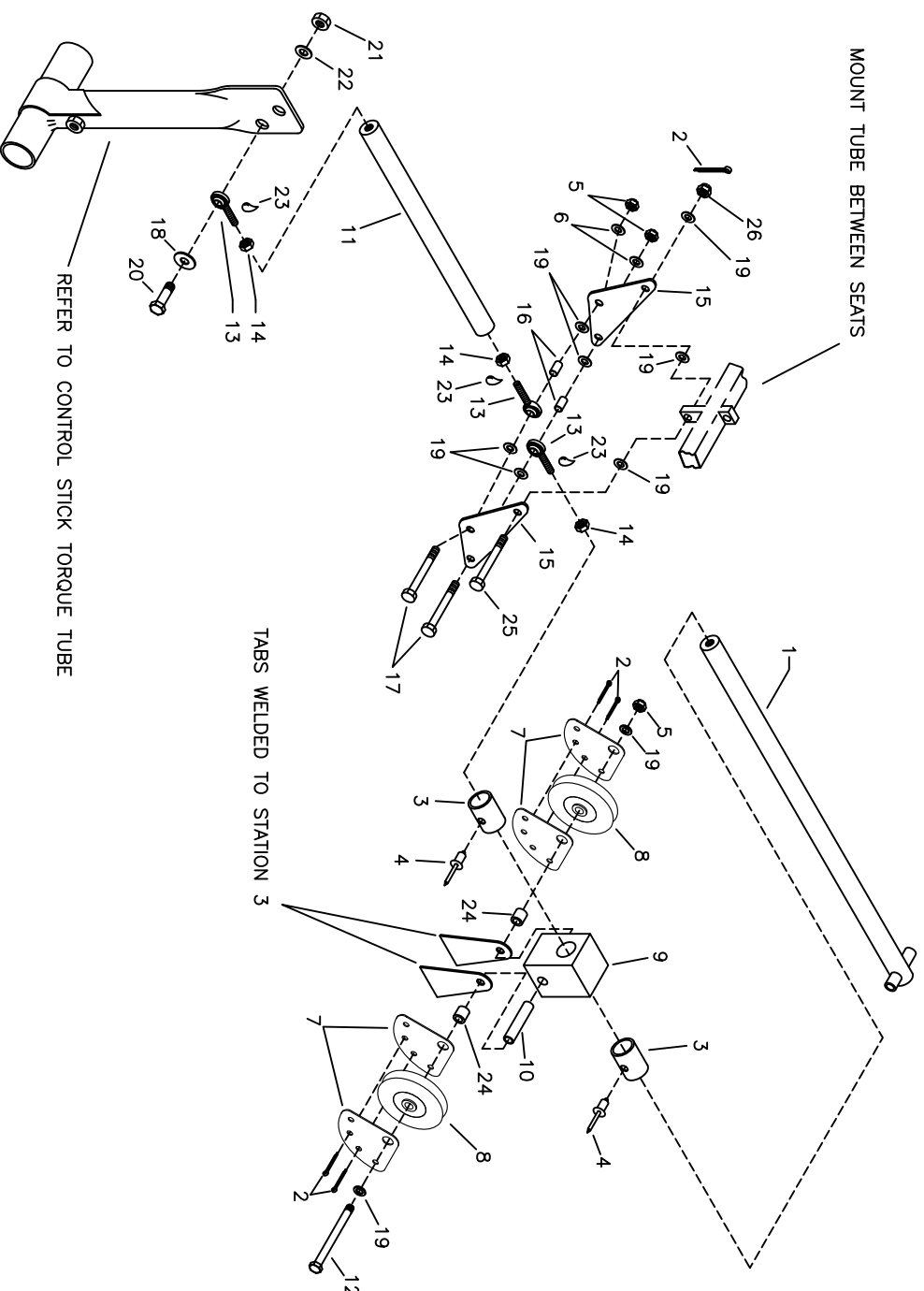
MD3649
REV. - ORIG

REVISION S-21 OUTBOUND FUSELAGE - OPTION - PASSENGER SEAT ELECTRIC ELEVATOR TRIM

FUSELAGE - OPTIONS - PASSENGER SEAT ELECTRIC ELEVATOR TRIM

KAAC0054

#	DESCRIPTION	PART NUMBER	QUANTITY
1 .	MAC Control Stick Grip	KSCS0016	1
2 .	Servo Relay Deck	KSCS0027	1



REVISION S-21 OUTBOUND FUSELAGE - CONTROL STICK PUSH-PULL TUBE INSTALLATION

MD3649
REV. - ORIG

FUSELAGE - CONTROL STICK PUSH-PULL TUBE INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	5/8" Push Pull Tube, 35"	KPCS0268	1
2.	Small Cotter Pin	MS24665-134	5
3.	Push-Pull Tube Stop Sleeve, 3/4" x .058" x 3/4" **	KPAC0277	1
4.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	2
5.	3/16" Shear Nut	AN364-1032A	3
6.	3/16" Thin Washer	AN960-10L	2
7.	Small Cable Keeper **	KPCS0207	1
8.	Small Pulley	AN210-1A	2
9.	Sliding Block	KPCS0263	1
10.	Aluminum Bushing, 1/4" x .028" x 1.125" *	KAAC0044-2	0
11.	5/8" Push Pull Tube, 12"	KPCS0267	1
12.	3/16" Bolt	AN3-31A	1
13.	Male Rod End, 1/4" x 1/4"	NM-4	3
14.	1/4" Plain Nut	AN345-416	3
15.	Side Plate	KPAC0154	2
16.	Aluminum Bushing, 1/4" x .028" x 3/8" *	KAAC0044-2	0
17.	3/16" Bolt	AN3-11A	2
18.	1/4" X 5/8" Steel Washer	KSHW0075	1
19.	3/16" Thick Washer	AN960-10	9
20.	1/4" Bolt	AN4-10A	1
21.	1/4" Shear Nut	AN364-428A	1
22.	1/4" Thick Washer	AN960-416	1
23.	Loctite Blue ***	-----	0
24.	Aluminum Bushing - 3/8" x .095" x .33" **	KPAC0060	1
25.	3/16" Bolt - Drilled Shank	AN3-11	1
26.	3/16" Castle Nut	AN310-3	1

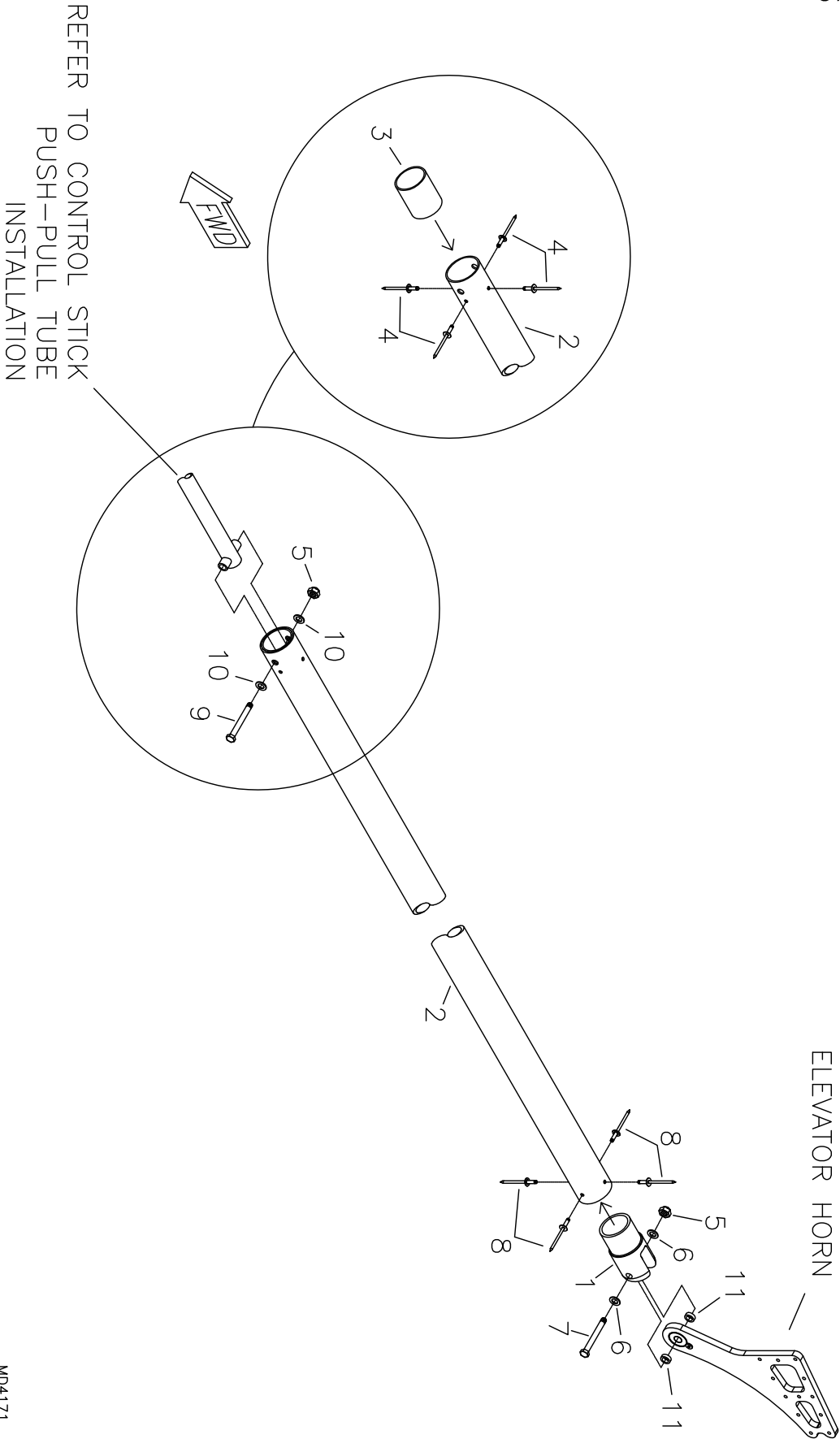
* Fabricate from Raw Stock

** Builder Modifies

*** Builder Supplied

9/11/2018

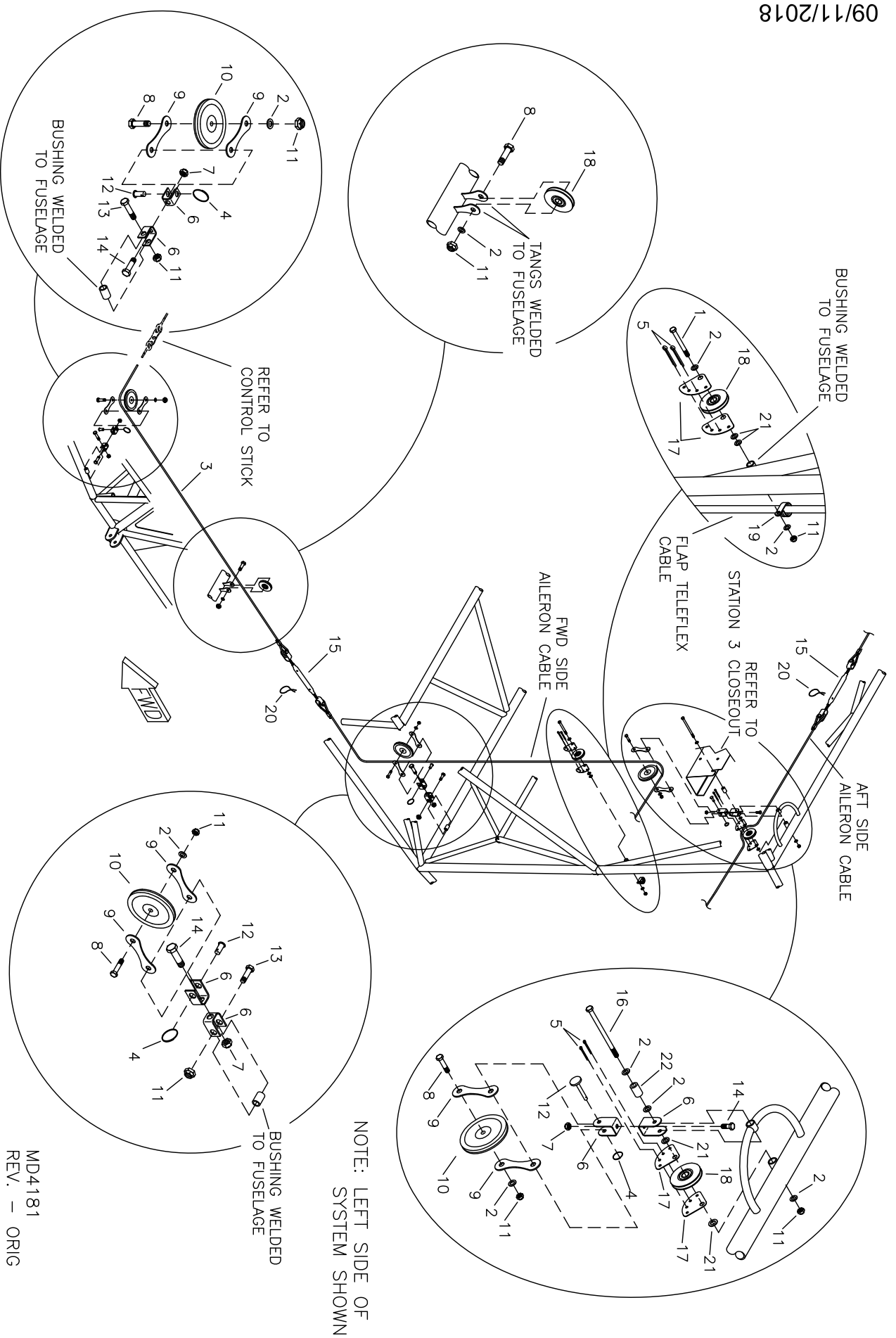
REV. - ORIG



REPAIRS S-21 OUTBOUND
FUSELAGE – ELEVATOR PUSH-PULL TUBE INSTALLATION

FUSELAGE - ELEVATOR PUSH-PULL TUBE INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Elevator Push-Pull Tube Fitting	KPCS0304	1
2.	Elevator Push-Pull Tube	KPCS0305	1
3.	Elevator Push-Pull Tube Doubler	KPCS0311	1
4.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	4
5.	1/4" Shear Nut	AN364-428A	2
6.	1/4" Thin Washer	AN960-416L	2
7.	1/4" Bolt	AN4-16A	2
8.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-43	4
9.	1/4" Bolt	AN4-17A	1
10.	1/4" Thick Washer	AN960-416	2
11.	Spacer Bushing, 3/8" x .058" x 1/8"	SB-3/8x1/8	2



S-21 OUTBOUND
FUSELAGE - AILERON CABLE SYSTEM INSTALLATION

MD4181
REV. - ORIG

FUSELAGE - AILERON CABLE SYSTEM INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/16" Bolt	AN3-16A	2
2.	3/16" Thin Washer	AN960-10L	16
3.	Aileron - Control Stick Cable	KPCS0269	1
4.	Loc Ring	RL 27 1/4	6
5.	Small Cotter Pin	MS24665-134	8
6.	U-Bracket	RL-205-T	12
7.	3/16" Tensile Nut	AN365-1032A	6
8.	3/16" Bolt	AN3-6A	8
9.	Hummer Tang	T12-HT6	12
10.	Pulley	AN210-2A	6
11.	3/16" Shear Nut	AN364-1032A	16
12.	3/16" Clevis Pin	MS20392-2C17	6
13.	3/16" Bolt	AN3-7A	4
14.	3/16" Bolt	AN3-3A	6
15.	Turnbuckle	RL-335-AT	3
16.	3/16" Bolt	AN3-32A	2
17.	Small Cable Keeper *	KPCS0207	2
18.	Small Pulley	AN210-1A	6
19.	3/8" Cushion Clamp	MS21919-WDG6	2
20.	Safety Wire **	-----	0
21.	3/16" Thick Washer	AN960-10	8
22.	Aluminum Bushing - 3/8" x .095" x 7/8" *	KPAC0060	2

* Builder Modifies

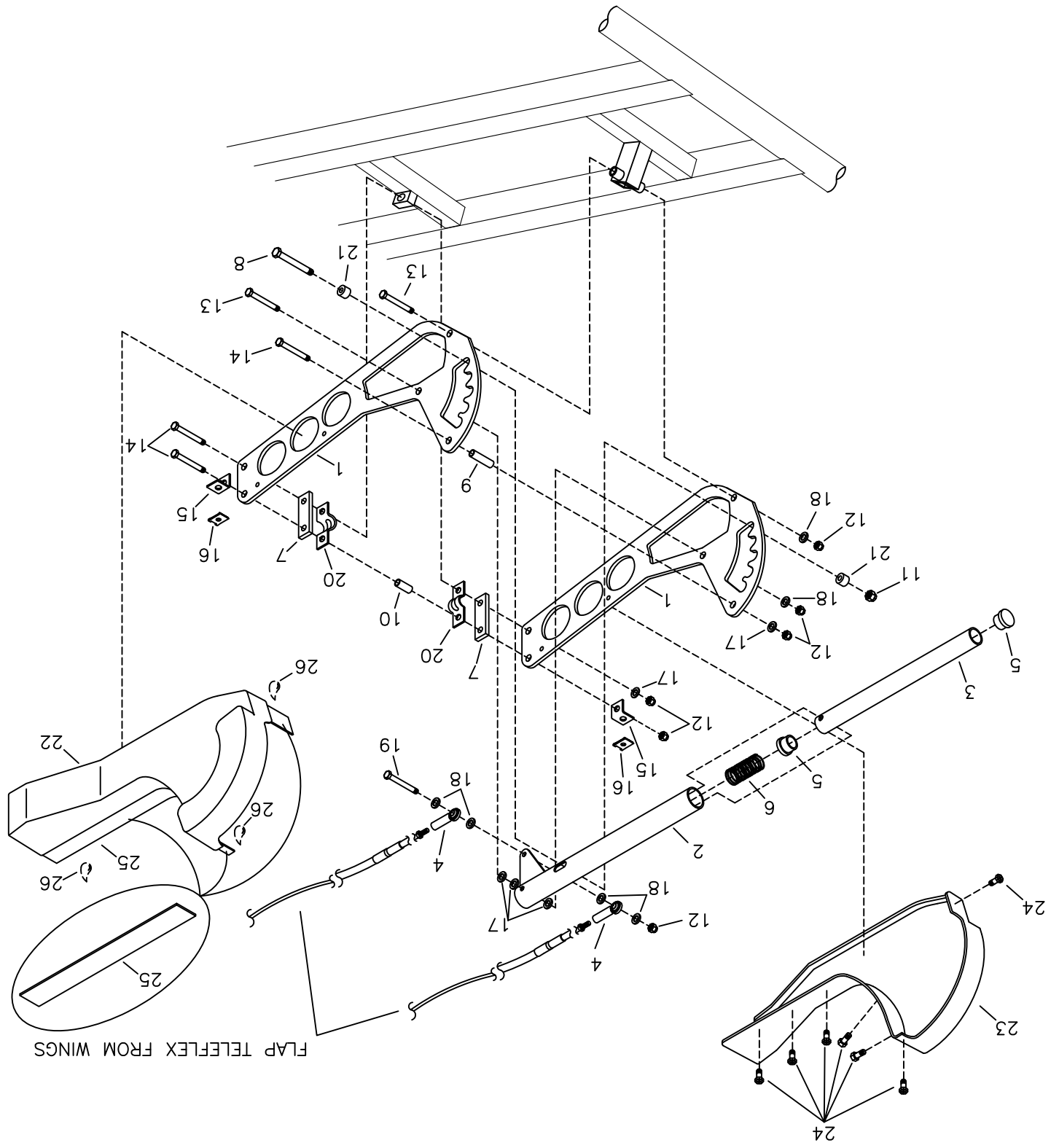
** Builder Supplied

9/11/2018

REV. - ORIG

RRMS S-21 OUTBOUND FUSELAGE - FLAP LEVER ASSEMBLY

MD5592
REV. - ORIG



RANS S-21 OUTBOUND

FUSELAGE - FLAP LEVER INSTALLATION

PAGE

010D-02

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Flap Lever Side Plate	KPFL0159	2
2.	Flap Handle	KPFL0044	1
3.	Flap Trip Release Tube	KPFL0045	1
4.	Female Rod End	NF-3	2
5.	Endcap	3/4 ENDCAP	2
6.	Spring	C-21	1
7.	Plastic Shim	KPAC0121	2
8.	1/4" Bolt	AN4-20A	1
9.	Spacer Bushing, 1/4" x .028" x 1.00" *	KAAC0044-2	0
10.	Spacer Bushing, 1/4" x .028" x .625" *	KAAC0044-2	0
11.	1/4" Shear Nut	AN364-428A	1
12.	3/16" Shear Nut	AN364-1032A	6
13.	3/16" Bolt	AN3-14A	2
14.	3/16" Bolt	AN3-15A	3
15.	Angle Bracket ** ***	KPAC0004	2
16.	Tinnerman ***	A1789-8Z-1	2
17.	3/16" Thick Washer	AN960-10	5
18.	3/16" Thin Washer	AN960-10L	6
19.	3/16" Bolt	AN3-11A	1
20.	Teleflex Retainer Bracket	KSCS0001	2
21.	Roller Bushing, 3/8" x .058" x 3/8" *	SB-3/8x2	1
22.	Flap Lever Cover - LH ***	KPIN0118-L	1
23.	Flap Lever Cover - RH ***	KPIN0118-R	1
24.	#4 Small Pan Head Screw ***	4X1/4 PHS	7
25.	Flap Lever Cover Splice **	KPIN0125	1
26.	PVC Cement ****	-----	0

* Fabricate from Raw Stock

** Builder Modifies

*** Part of Interior Installation

**** Builder Supplied

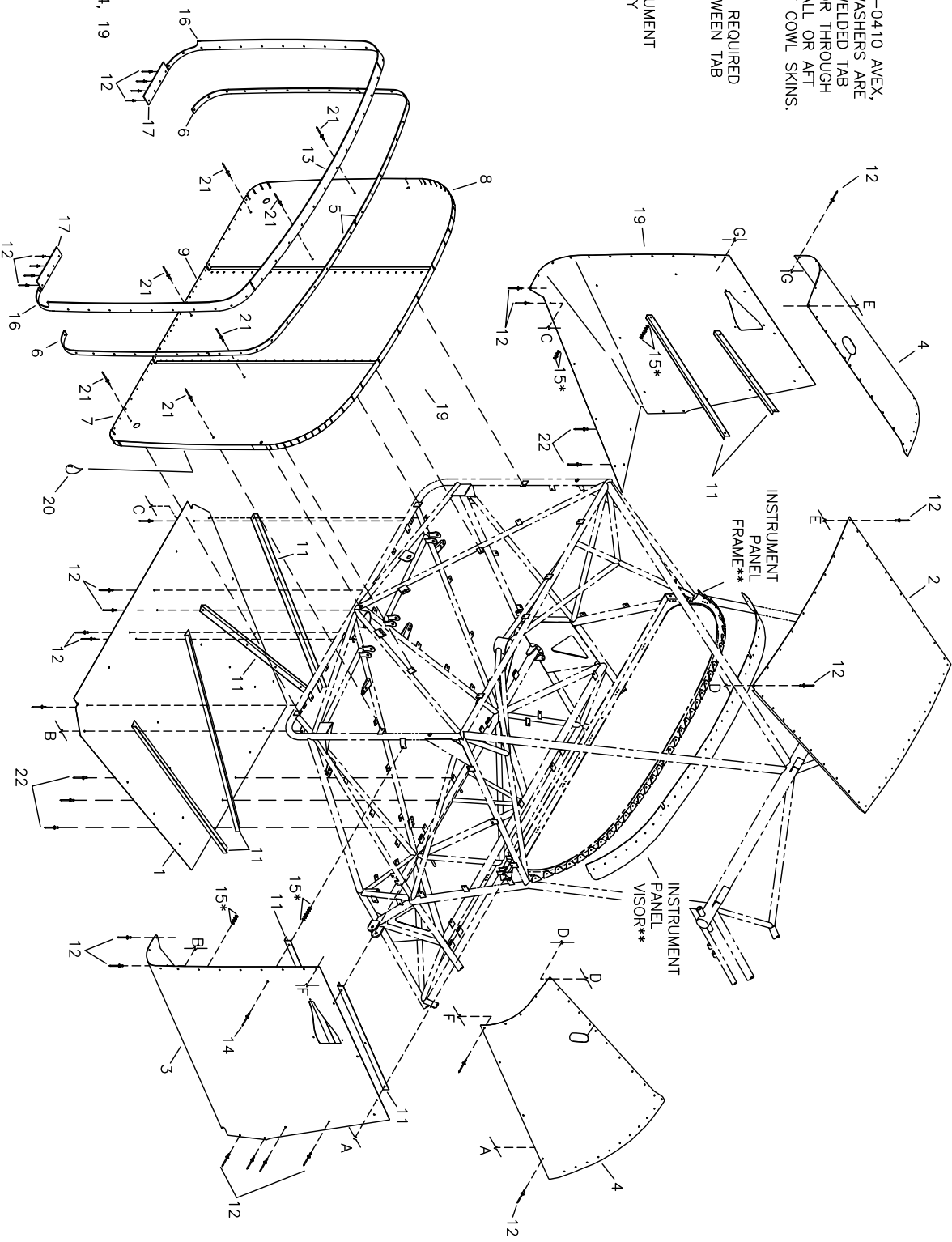
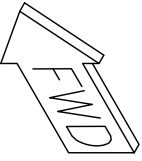
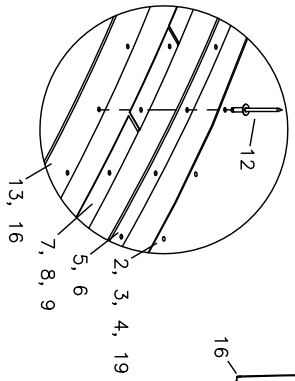
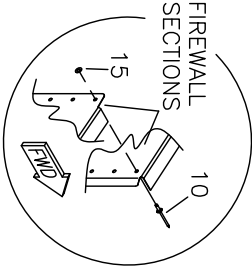
9/11/2018

REV. - ORIG

NOTE: ALL RIVETS 1691-0410 AVEX,
EXCEPT WHERE WASHERS ARE
USED BETWEEN WELDED TAB
AND STIFFENER OR THROUGH
FRONT OF FIREWALL OR AFT
OF BOTTOM BOOT COWL SKINS.

* USE WASHERS AS REQUIRED
TO FILL GAP BETWEEN TAB
AND STIFFENER.

** REFER TO INSTRUMENT
PANEL ASSEMBLY



**S-21 OUTBOUND
FUSELAGE - BOOT COWL ASSEMBLY**

MD5588
REV. - ORIG

RANS S-21 OUTBOUND

FUSELAGE - BOOT COWL ASSEMBLY

PAGE

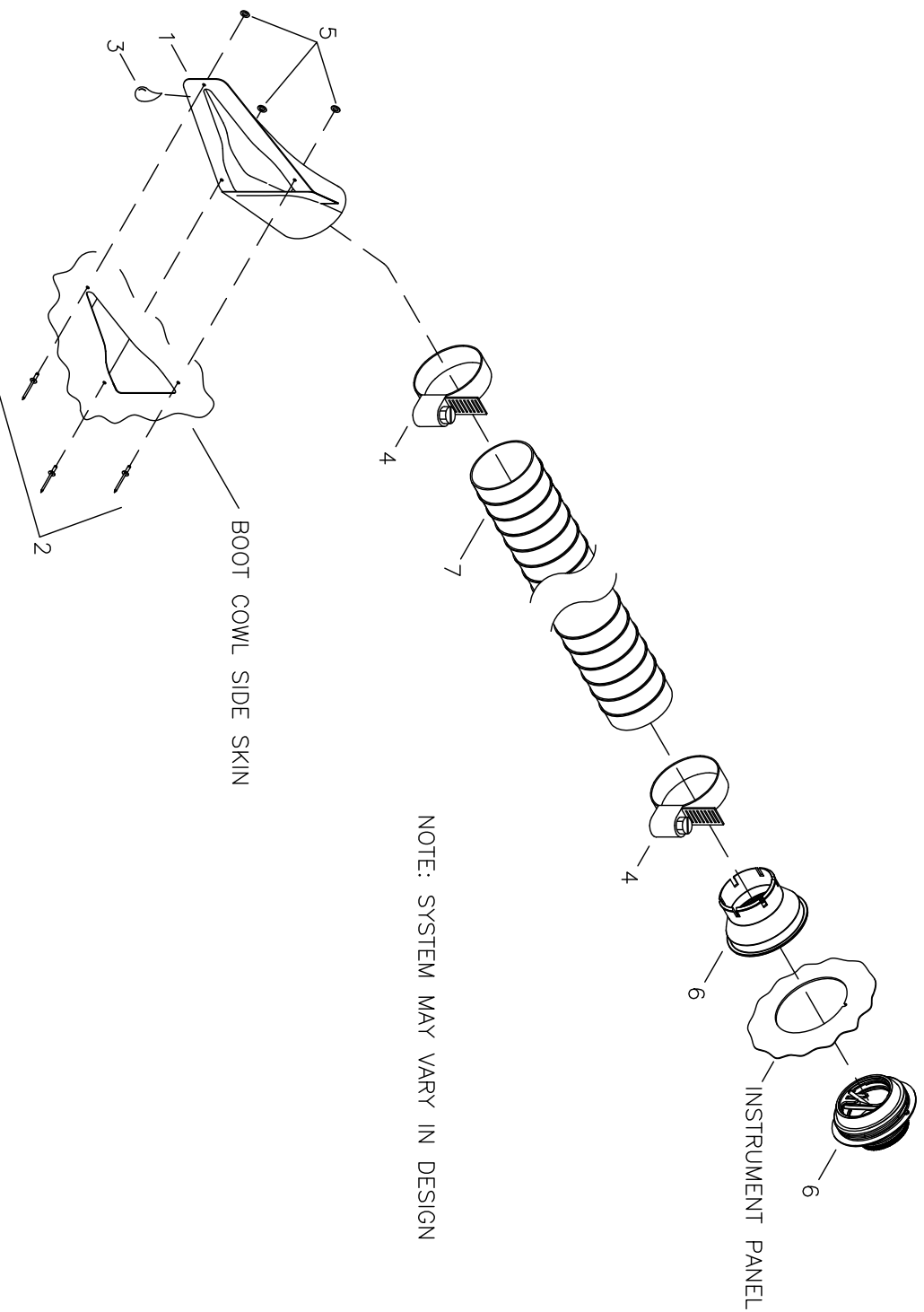
010E-02

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Bottom Boot Cowl Skin	KPFU0744	1
2.	Forward Top Boot Cowl Skin	KPFU0688	1
3.	Side Boot Cowl Skin - LH	KPFU0750-L	1
4.	Top Side Boot Cowl Skin	KPFU0690	2
5.	Boot Cowl Spacer Strip - Top	KPFU0691	2
6.	Boot Cowl Spacer Strip - Side	KPFU0692	2
7.	Firewall - Side - Left	KPFW0037-L	1
8.	Firewall - Side - Right	KPFW0037-R	1
9.	Firewall - Center	KPFW0038	1
10.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-41	44
11.	Skin Stiffener - Boot Cowl	KPFU0685	8
12.	1/8" Aluminum Rivet - Avex	1691-0410	211
13.	Cowling Attach Strap - Top	KPFU0694	1
14.	1/8" Aluminum Rivet - Cherry Q	AAPQ-45	2
15.	1/8" Small Brass Washer	AN960-B4	64
16.	Cowling Attach Strap - Side	KPFU0695	2
17.	Cowling Attach Strap - Bottom *	KPFU0584	1
18.	Double Stick Foam Tape **	-----	0
19.	Side Boot Cowl Skin - RH	KPFU0750-R	1
20.	Truck Bed Liner Spray **	-----	0
21.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	7
22.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	9

* Builder Modifies

** Builder Supplied

9/11/2018
REV. - ORIG



REFINING S-21 OUTBOUND VENT SYSTEM INSTALLATION

MD5062
REV. - A

RANS S-21 OUTBOUND
FUSELAGE - VENT SYSTEM INSTALLATION

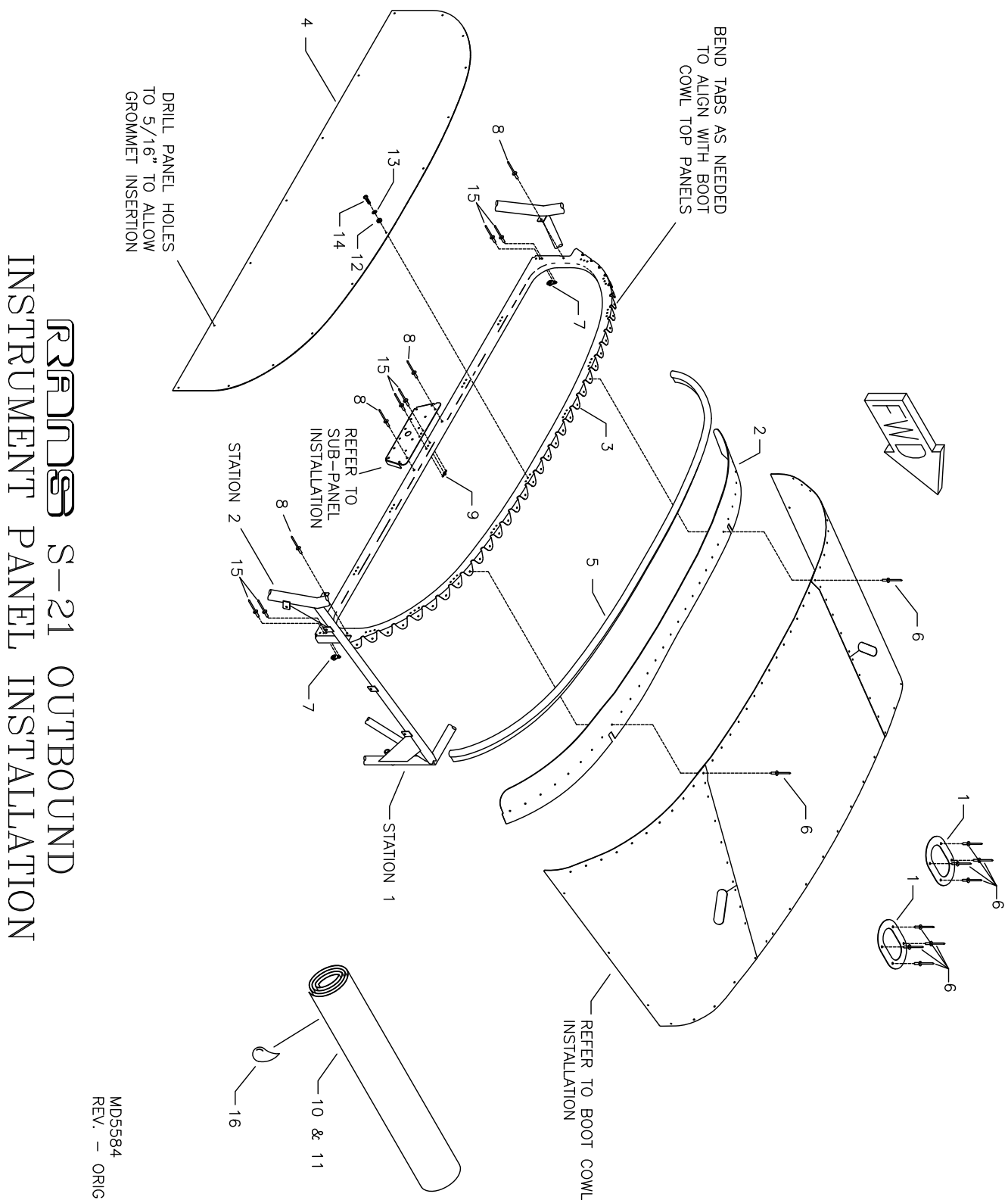
PAGE

010E-04

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Air Vent NACA Scoop	KSFU0004	2
2.	1/8" Aluminum Rivet - Avex	1691-0410	6
3.	Silicone Seal *	-----	0
4.	Hose Clamp - 2 1/4"	5-5228	4
5.	1/8" Small Brass Washer	AN960-B4	6
6.	Eyeball Air Vent	KSFU0006	2
7.	2" Fresh Air Duct	KSFU0005	1

* Builder Supplied

9/11/2018
REV. - A



**S-21 OUTBOUND
INSTRUMENT PANEL INSTALLATION**

FUSELAGE - INSTRUMENT PANEL INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Oval Glare Shield Ring	KPIP0147	2
2.	Instrument Panel Visor	KPIP0143	1
3.	Instrument Panel Frame	KPIP0140	1
4.	Instrument Panel - Standard Blank	KPIP0134	1
5.	Trimlock Cushion Lip	4100C-1/16	5 ft
6.	1/8" Aluminum Rivet - Avex	1691-0410	38
7.	8-32 Single-Ear Nut Plate	MS21051-08	2
8.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	4
9.	8-32 Nut Plate	MS21047-08	15
10.	Dash Cover Fabric - Optional *	KPIN0127	0
11.	Dash Foam - Optional *	KPIN0128	0
12.	3/16" Rubber Grommet	KSAC0002	17
13.	#8 Small Brass Washer	AN960-B8	17
14.	#8 Pan Head Machine Screw	MS27039-0809	17
15.	3/32" Aluminum Rivet	40APR1/8	34
16.	Contact Cement Adhesive - 3M Super 77 Spray **	-----	0

* May be purchased separately, call RANS Parts Dept. for pricing

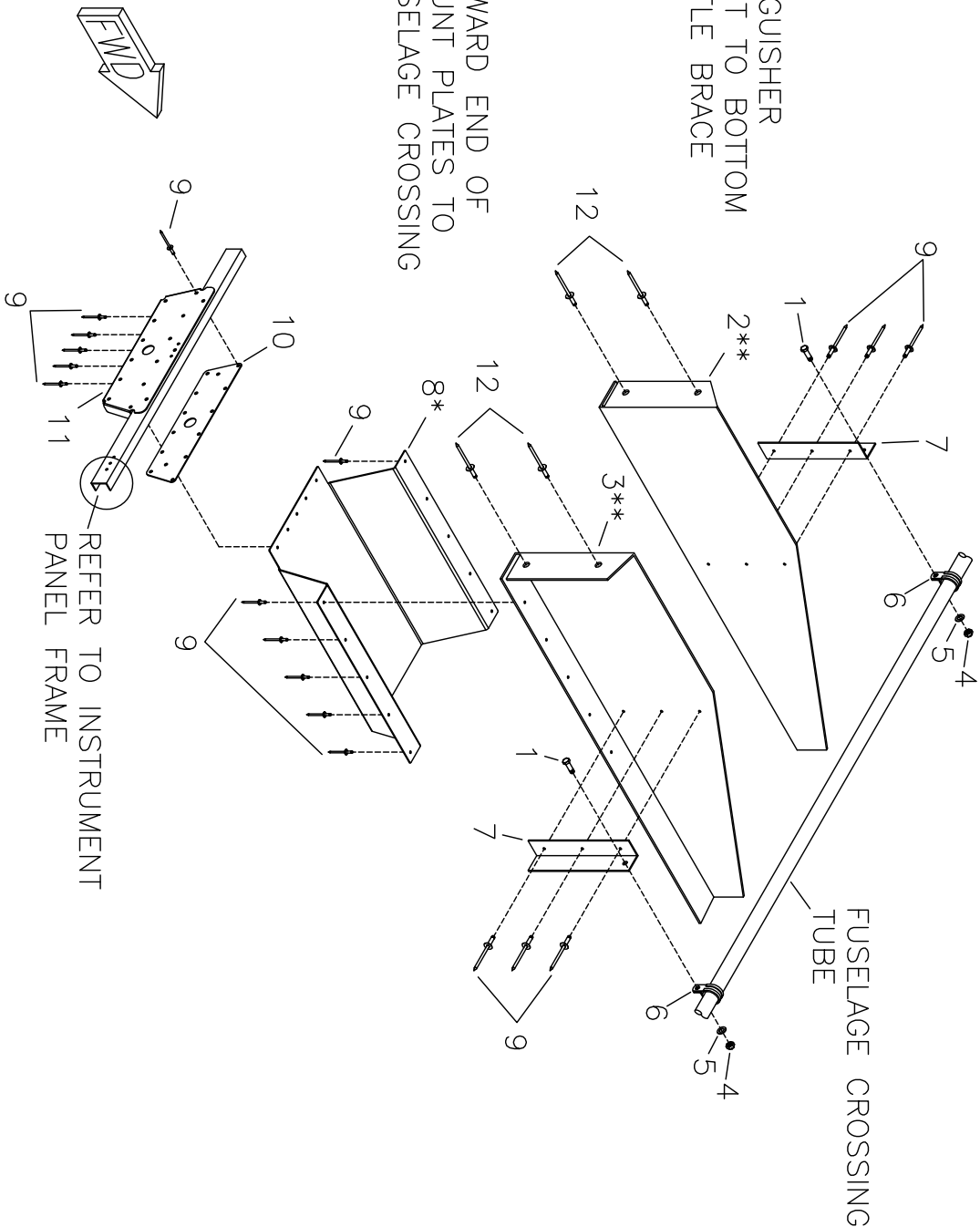
** Builder Supplied

9/11/2018

REV. - ORIG

*FIRE EXTINGUISHER
MAY MOUNT TO BOTTOM
OF THROTTLE BRACE

**TRIM FORWARD END OF
RADIO MOUNT PLATES TO
CLEAR FUSELAGE CROSSING
TUBE

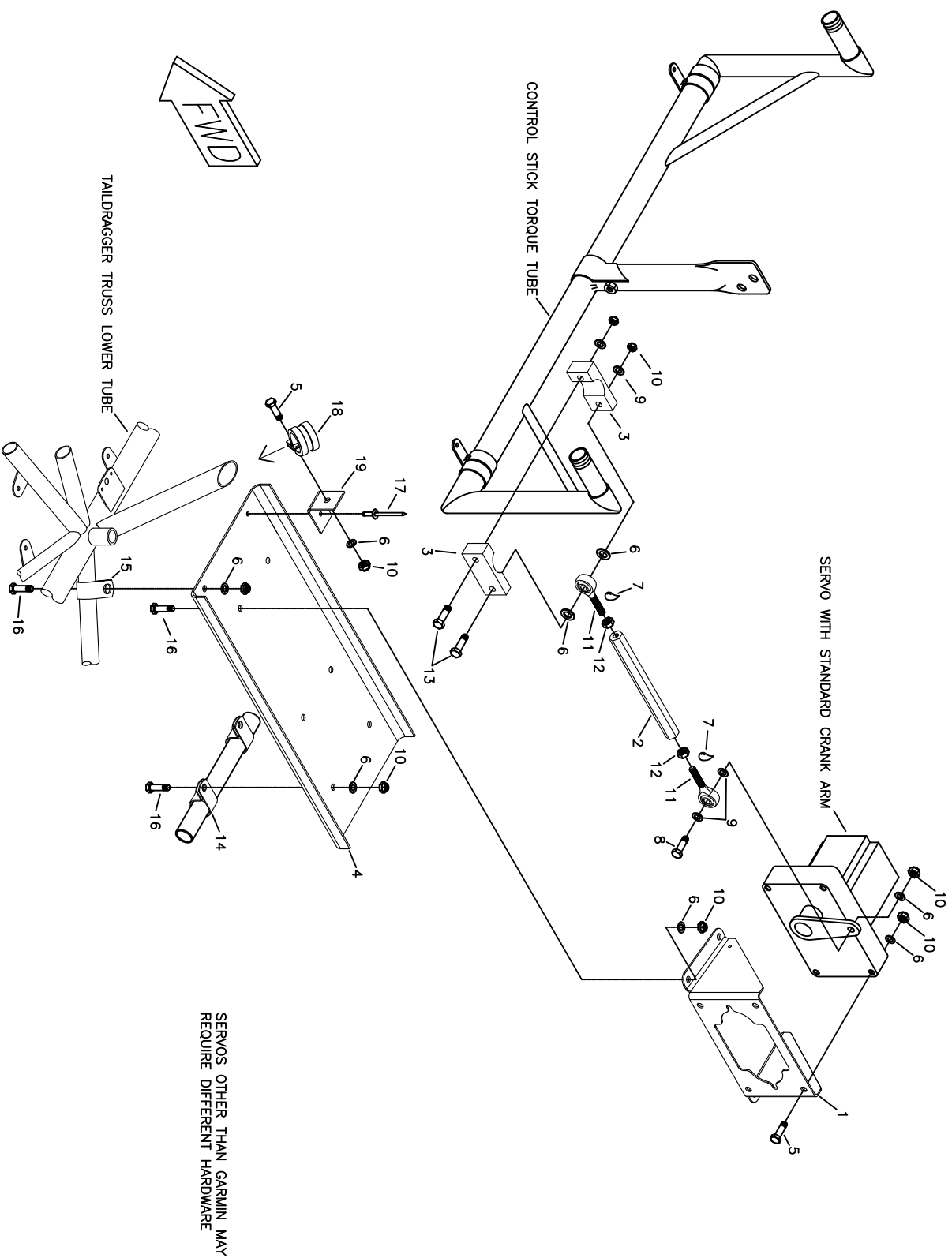


**REMOVE S-21 OUTBOUND
INSTRUMENT SUB-PANEL &
RADIO MOUNT PLATES INSTALLATION**

FUSELAGE - INSTRUMENT SUB-PANEL & RADIO MOUNT PLATES INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/16" Bolt	AN3-4A	2
2.	Radio Mount Plate - Double - LH	KPAV0003-L	1
3.	Radio Mount Plate - Double - RH	KPAV0003-R	1
4.	3/16" Shear Nut	AN364-1032A	2
5.	3/16" Thin Washer	AN960-10L	2
6.	1/2" Cushion Clamp	MS21919-DG8	2
7.	3/4" x 3/4" x .063" Aluminum Angle *	KAAC0044-12	1
8.	Throttle Brace and Fire Extinguisher Mount	KPIP0149	1
9.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	33
10.	Sub-Panel Reinforcement	KPIP0150	1
11.	Instrument Sub-Panel	KPIP0151	1
12.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	4

* Fabricate from Raw Stock



Garmin S-21 OUTBOUND FUSELAGE - OPTIONS - PITCH SERVO INSTALLATION

RANS S-21 OUTBOUND

PAGE

010F-06

FUSELAGE - OPTIONS - PITCH SERVO INSTALLATION

KAFU0064

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Autopilot Servo Mount	KPFU0665	1
2.	Autopilot Control Link Tube	KPCS0298	1
3.	Autopilot Control Stick Clamp	KPCS0294	2
4.	Autopilot Control Stick Mount	KPCS0297	1
5.	3/16" Bolt	AN3-3A	5
6.	3/16" Thin Washer	AN960-10L	15
7.	Loctite Blue *	-----	0
8.	3/16" Bolt	AN3-7A	1
9.	3/16" Thick Washer	AN960-10	4
10.	3/16" Shear Nut	AN364-1032A	15
11.	3/16" Male Rod End	CM-3	2
12.	3/16" Plain Nut	AN345-10	2
13.	3/16" Bolt	AN3-13A	2
14.	5/8" Plain Clamp	AN742-D10	2
15.	1/2" Plain Clamp	AN742-D8	1
16.	3/16" Bolt	AN3-4A	7
17.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	1
18.	5/8" Cushion Clamp	MS21919-DG10	1
19.	Support Angle - Baggage Compartment **, ***	KPIN0096	0

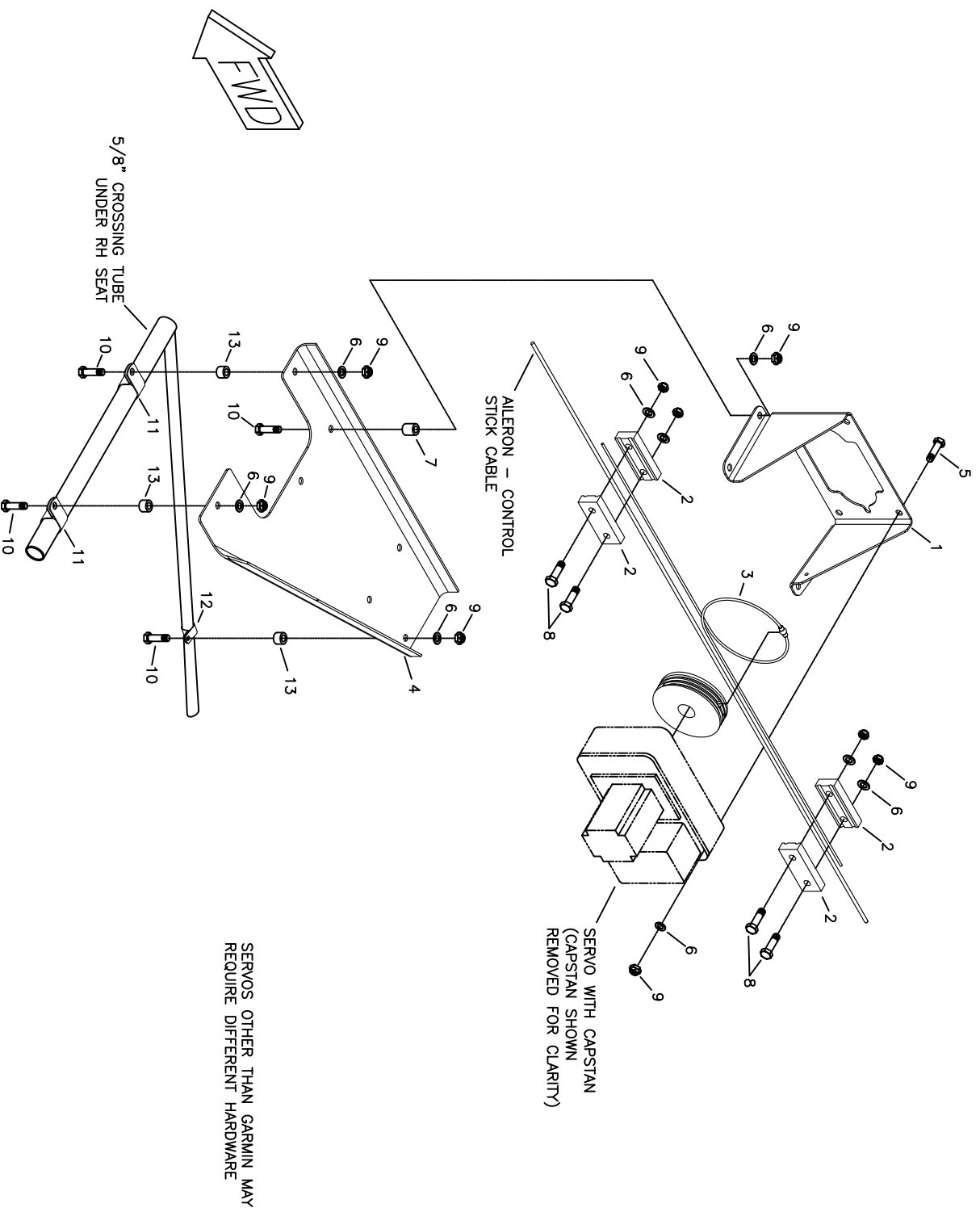
* Builder Supplied

** Builder Modifies

*** Use Drop-off from KPIN0096

9/11/2018

REV. - ORIG



RRM S-21 OUTBOUND

FUSELAGE - OPTIONS - ROLL SERVO INSTALLATION

RANS S-21 OUTBOUND

PAGE

010F-08

FUSELAGE - OPTIONS - ROLL SERVO INSTALLATION

KAFU0064

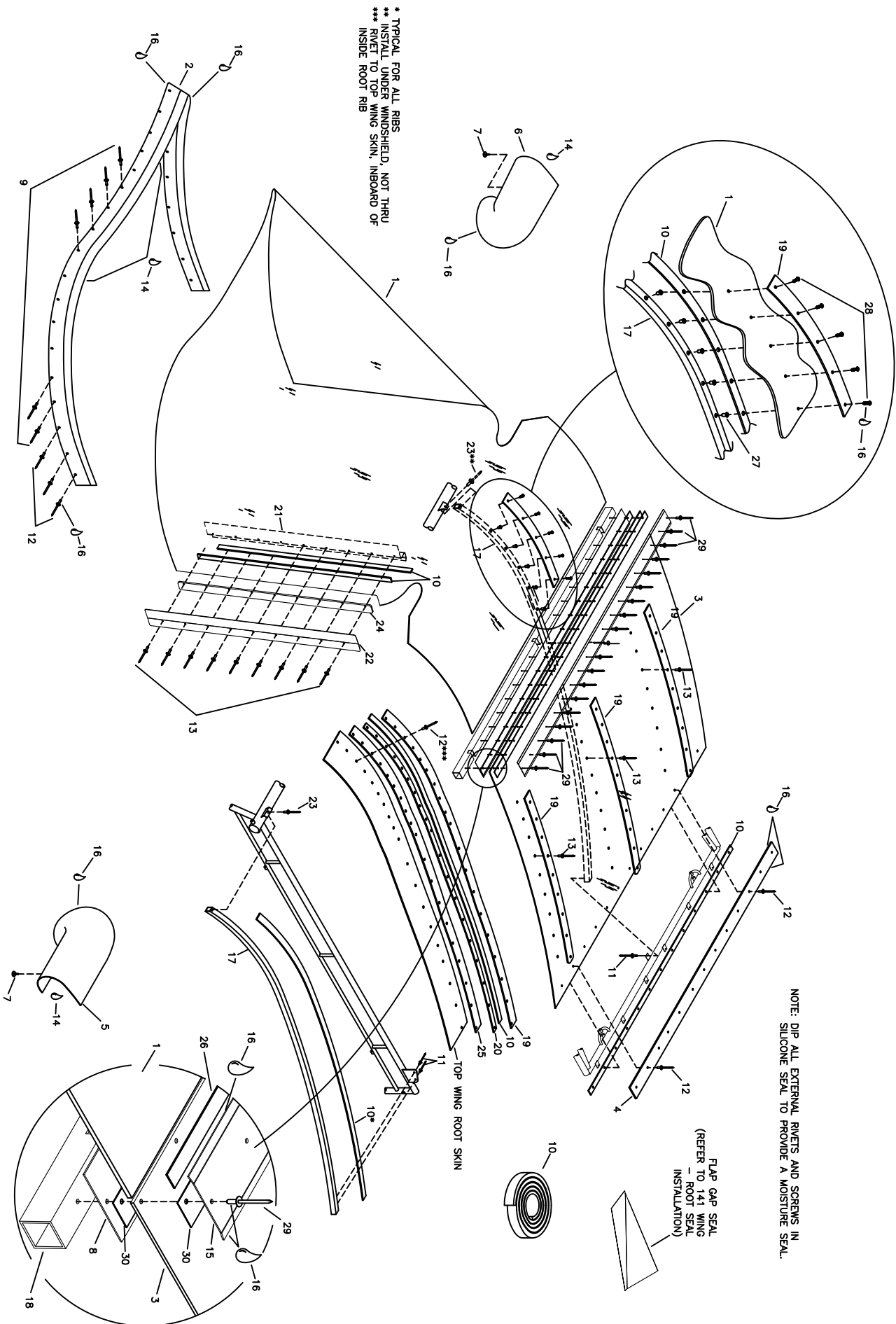
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Autopilot Servo Mount	KPFU0665	1
2.	Autopilot Cable Clamp	KPCS0295	4
3.	Autopilot Roll Control Cable	KPCS0316	1
4.	Autopilot Cable Control Mount	KPCS0296	1
5.	3/16" Bolt	AN3-3A	4
6.	3/16" Thin Washer	AN960-10L	15
7.	Aluminum Bushing - 3/8" x .095" x 3/8" *	KPST0132	1
8.	3/16" Bolt	AN3-7A	4
9.	3/16" Shear Nut	AN364-1032A	11
10.	3/16" Bolt	AN3-6A	7
11.	5/8" Plain Clamp	AN742-D10	2
12.	1/2" Plain Clamp	AN742-D8	1
13.	Aluminum Bushing - 3/8" x .095" x 5/16" *	KPST0132	0

* Builder Modifies

9/11/2018

REV. A

REFINISHED S-21 OUTBOUND FORMED WINDSHIELD & SKYLIGHT INSTALLATION



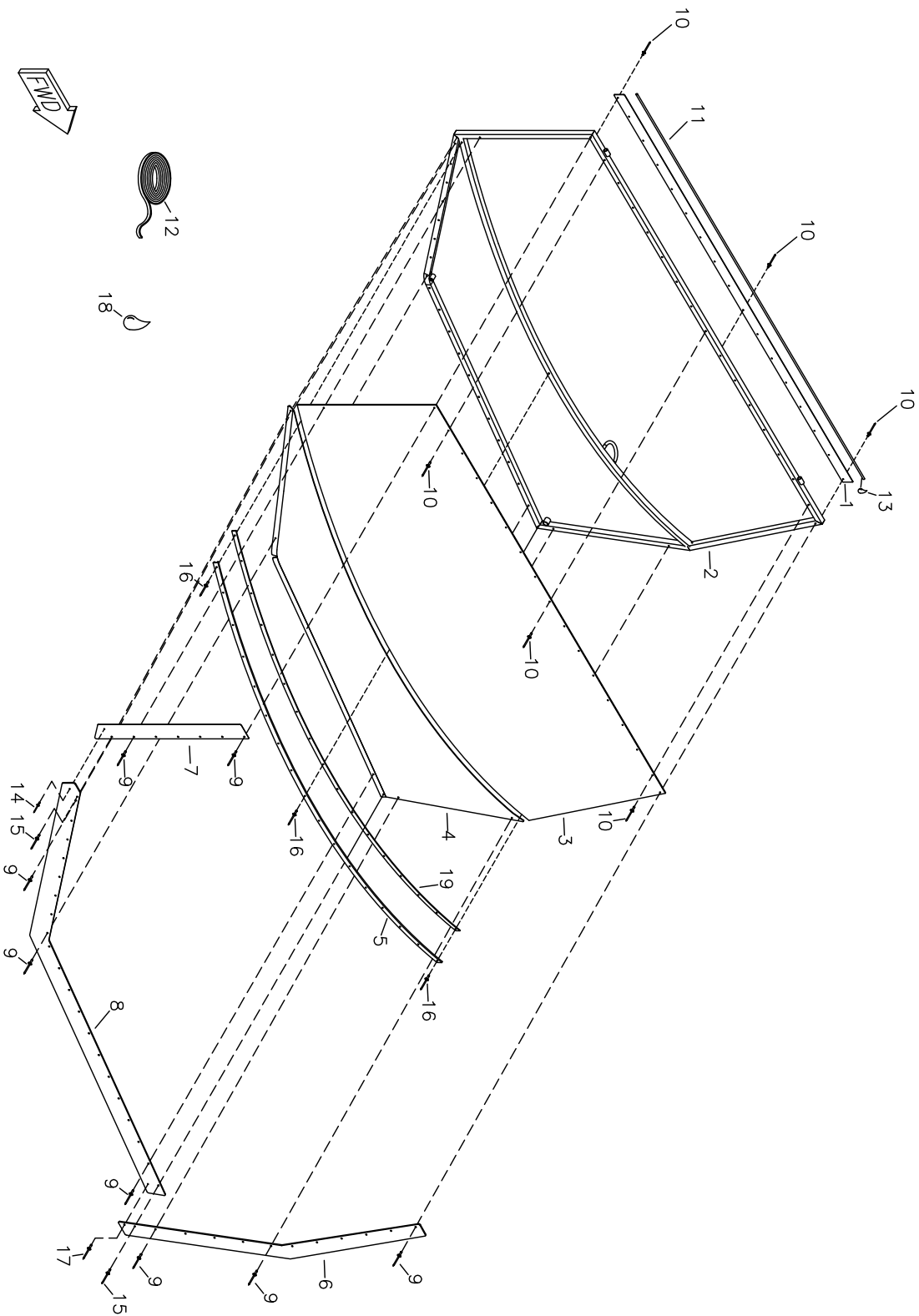
MD4934
REV. A

FUSELAGE - FORMED WINDSHIELD & SKYLIGHT INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Windshield	KWS0003	1
2.	Windshield Hold Down Strip	KPWS0063	1
3.	Skylight	KPWS0059	1
4.	AFT Trim Strip	WS-WSSLS	1
5.	Wing Cuff - LH	WS-CUFF-LH	1
6.	Wing Cuff - RH	WS-CUFF-RH	1
7.	#6 Pan Head Screw	6RX1/2 PHS	2
8.	Windshield Mating Strip - Lower	KPWS0072	1
9.	1/8" Aluminum Rivet - Avex	1691-0410	38
10.	1/2" Black Foam Tape *	----	0
11.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	5
12.	1/8" Aluminum Rivet - Cherry Q	AAPQ-44	57
13.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	46
14.	3M 2216 Adhesive - 4 ounce *	----	0
15.	Windshield Mating Strip - Upper	KPWS0071	1
16.	Silicone Seal - Clear *	----	0
17.	Cabin Rib	KPWS0074	3
18.	Mating Strip Support Tube	KPWS0077	1
19.	Skylight Trim Strip **	KPWS0010	5
20.	Windshield Outer Hold Down Spacer	KPWS0076	2
21.	Z Strip	KPWS0070	2
22.	Z Clamp Strip	KPWS0068	2
23.	1/8" Stainless Steel Rivet - Flush	CCC-42	3
24.	Z Strip Spacer	KPWS0069	2
25.	Windshield Outer Hold Down Strip	KPWS0075	2
26.	1/2" Acrylic Foam Tape	KSAC0078	4 ft
27.	8-32 Rivet Nut	KSHW0116	5
28.	8-32 Button Head Screw	KSHW0117	5
29.	1/8" Aluminum Rivet - Cherry Q	AAPQ-46	19
30.	Skylight Spacer Strip	KPWS0078	2

* Builder Supplied

** Builder Modifies



RRR S-21 OUTBOUND
DOOR ASSEMBLY, LEXAN & TRIM

MD5582
REV. - A

RANS S-21 OUTBOUND

DOOR ASSEMBLY, LEXAN AND TRIM

PAGE

010H-02

LEXAN & TRIM

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Upper Trim Strip *	KPDR0077	2
2.	Door Frame Assembly - RH	KADR0012-R	1
2.	Door Frame Assembly - LH	KADR0012-L	1
3.	Door - Lexan - Upper *	KPDR0129	2
4.	Door - Lexan - Lower - LH *	KPDR0130-L	1
4.	Door - Lexan - Lower - RH *	KPDR0130-R	1
5.	Channel Extrusion *	KPDR0131	2
6.	Door Trim - FWD *	KPDR0126	2
7.	Door Trim - AFT *	KPDR0127	2
8.	Door Trim - Lower *	KPDR0128	2
9.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	72
10.	1/8" Aluminum Rivet - Avex	1691-0410	64
11.	Rubber Edging	8510K11	8 ft
12.	1/2" Black Foam Tape **	-----	0
13.	Adhesive - Superglue **	-----	0
14.	3/32" Aluminum Rivet	40APR1/8	2
15.	1/8" Aluminum Rivet - Cherry Q	AAPQ-44	4
16.	1/8" Aluminum Rivet - Cherry Q	AAPQ-45	34
17.	1/8" Aluminum Rivet - Cherry Q	AAPQ-41	2
18.	Silicone Seal **	-----	0
19.	1/2" Acrylic Foam Tape	KSAC0078	8.5 ft

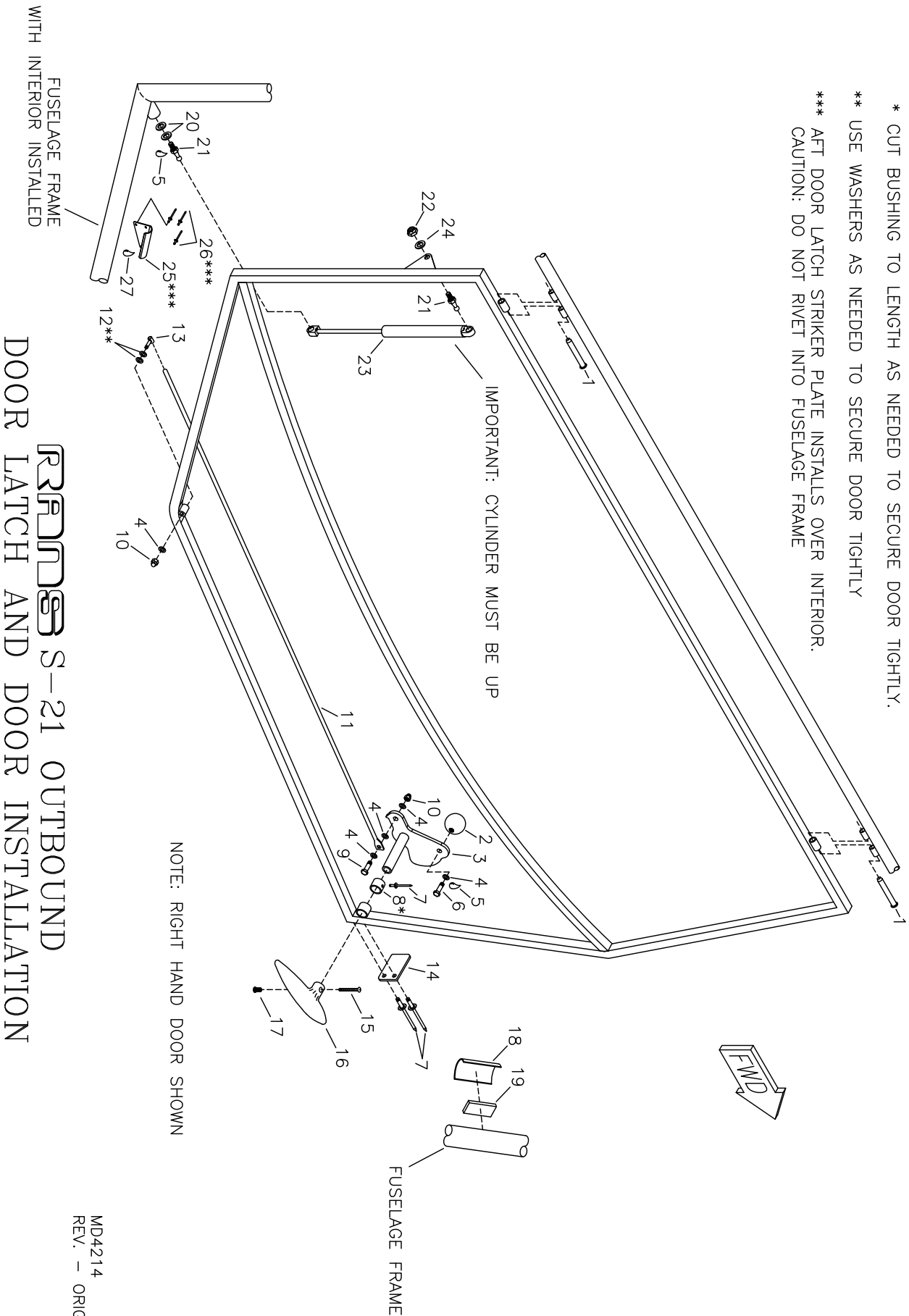
* Builder Modifies

** Builder Supplied

9/11/2018

REV. A

- * CUT BUSHING TO LENGTH AS NEEDED TO SECURE DOOR TIGHTLY.
 - ** USE WASHERS AS NEEDED TO SECURE DOOR TIGHTLY
 - *** AFT DOOR LATCH STRIKER PLATE INSTALLS OVER INTERIOR.
- CAUTION: DO NOT RIVET INTO FUSELAGE FRAME



MD4214
REV. - ORIG

RANS S-21 OUTBOUND

DOOR LATCH AND DOOR INSTALLATION

PAGE

010H-04

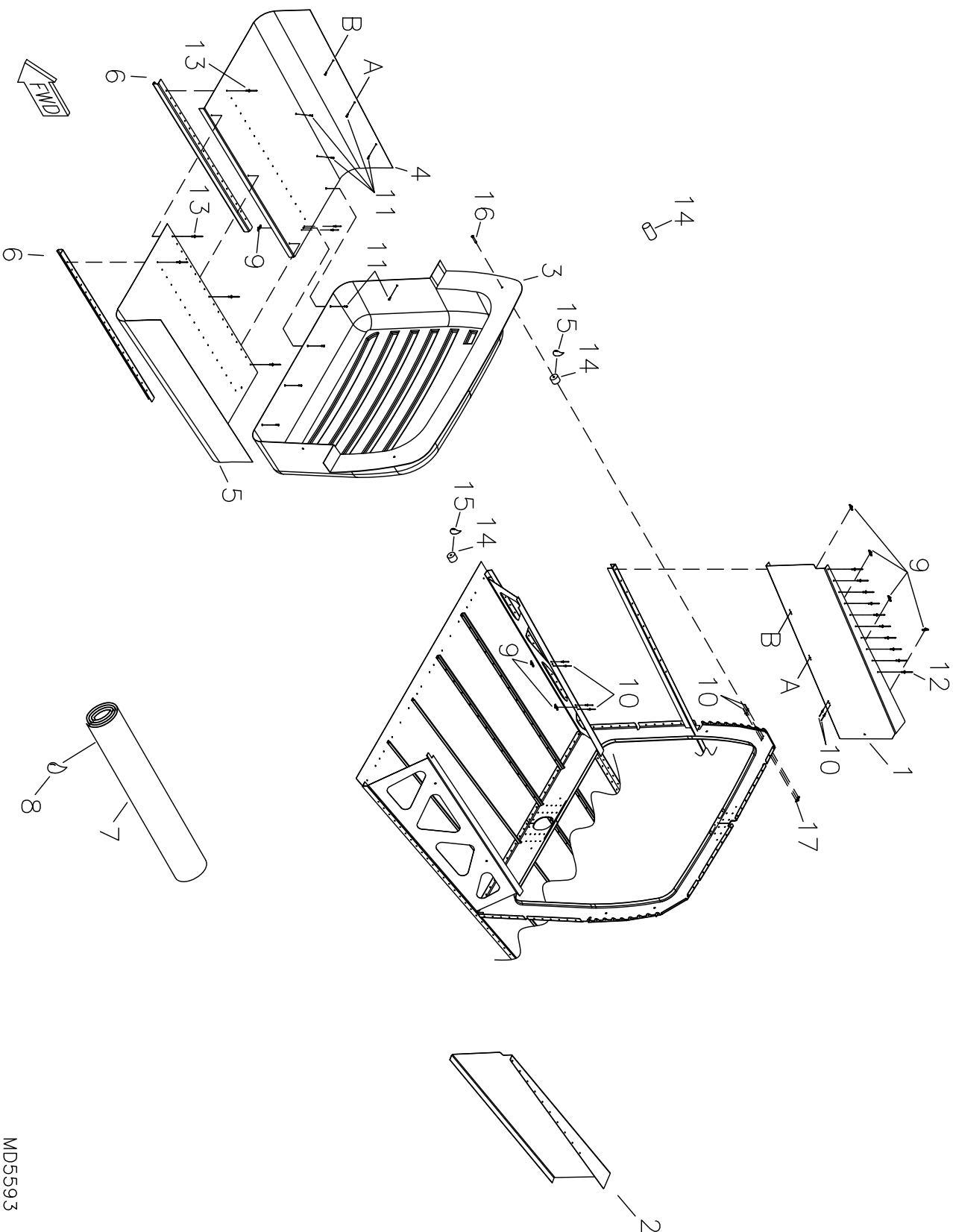
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Self-Locking Clevis Pin	KSHW0045	4
2.	Door Knob - 1" Black	KSHW0093	2
3.	Handle Plate - LH	KPDR0110-L	1
3.	Handle Plate - RH	KPDR0110-R	1
4.	3/16" Thin Washer	AN960-10L	10
5.	Loctite Blue *	-----	0
6.	3/16" Bolt	AN3-3A	2
7.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	6
8.	Door Spacer Bushing, 1/2" x .058 x 3/8" **	KPAC0278	1
9.	3/16" Bolt	AN3-4A	2
10.	3/16" Shear Acorn Nut	22NKM02	4
11.	Door Latch	KPDR0113	2
12.	3/16" Thick Washer	AN960-10	4
13.	Door Pivot Bushing	KPDR0057	2
14.	Handle Stop Plate	KPDR0111	2
15.	Button Head Screw	KSHW0024	2
16.	Door Handle	KPDR0026	2
17.	Brass Flange Nut	KSHW0025	2
18.	Door Latch Striker Plate	KPDR0122	2
19.	3/4" Acrylic Foam Tape *	-----	0
20.	5/16" Thick Washer	AN960-516	4
21.	Ball Stud	KSHW0021	4
22.	5/16" Loc-Nut - Course	KSHW0022	2
23.	Gas Spring	KSHW0078	2
24.	5/16" Thin Washer	AN960-516L	2
25.	Aft Door Latch Striker Plate - LH	KPDR0125-L	1
25.	Aft Door Latch Striker Plate - RH	KPDR0125-R	1
26.	1/8" Aluminum Rivet - Avex	1691-0410	6
27.	Adhesive or Double Stick Tape *	-----	0

* Builder Supplied

** Builder fabricates from raw stock

9/11/2018

REV. - ORIG



REVISION S-21 OUTBOUND
FUSELAGE - AFT BAGGAGE COMPARTMENT INSTALLATION

MD55593
REV. - ORIG

RANS S-21 OUTBOUND

PAGE

010I-02

AFT BAGGAGE COMPARTMENT INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Aft Side - Baggage - RH	KPIN0136-R	1
2.	Aft Side - Baggage - LH	KPIN0136-L	1
3.	S-4 Closeout	KPIN0137	1
4.	Aft Bottom - Baggage - RH	KPIN0135	1
5.	Aft Bottom - Baggage - LH	KPIN0134	1
6.	Aft Baggage Bottom Support	KPIN0138	2
7.	Baggage Compartment Fabric - Optional - 2.5 yards*	-----	0
8.	Contact Cement Adhesive - 3M Super 77 Spray **	-----	0
9.	8-32 Nut Plate	MS21047-08	16
10.	3/32" Aluminum Rivet	40APR1/8	36
11.	8-32 Machine Screw	AN526-832R10	16
12.	1/8" Aluminum Rivet - Cherry Q	AAPQ-43	20
13.	1/8" Aluminum Rivet - Avex	1691-0410	54
14.	Spacer - Station 4 Closeout - 0.75" ***	KPIN0141	1
15.	PVC Cement **	-----	0
16.	3/16" Bolt	AN3-12A	2
17.	3/16" Nut Plate	K-1000-3	2

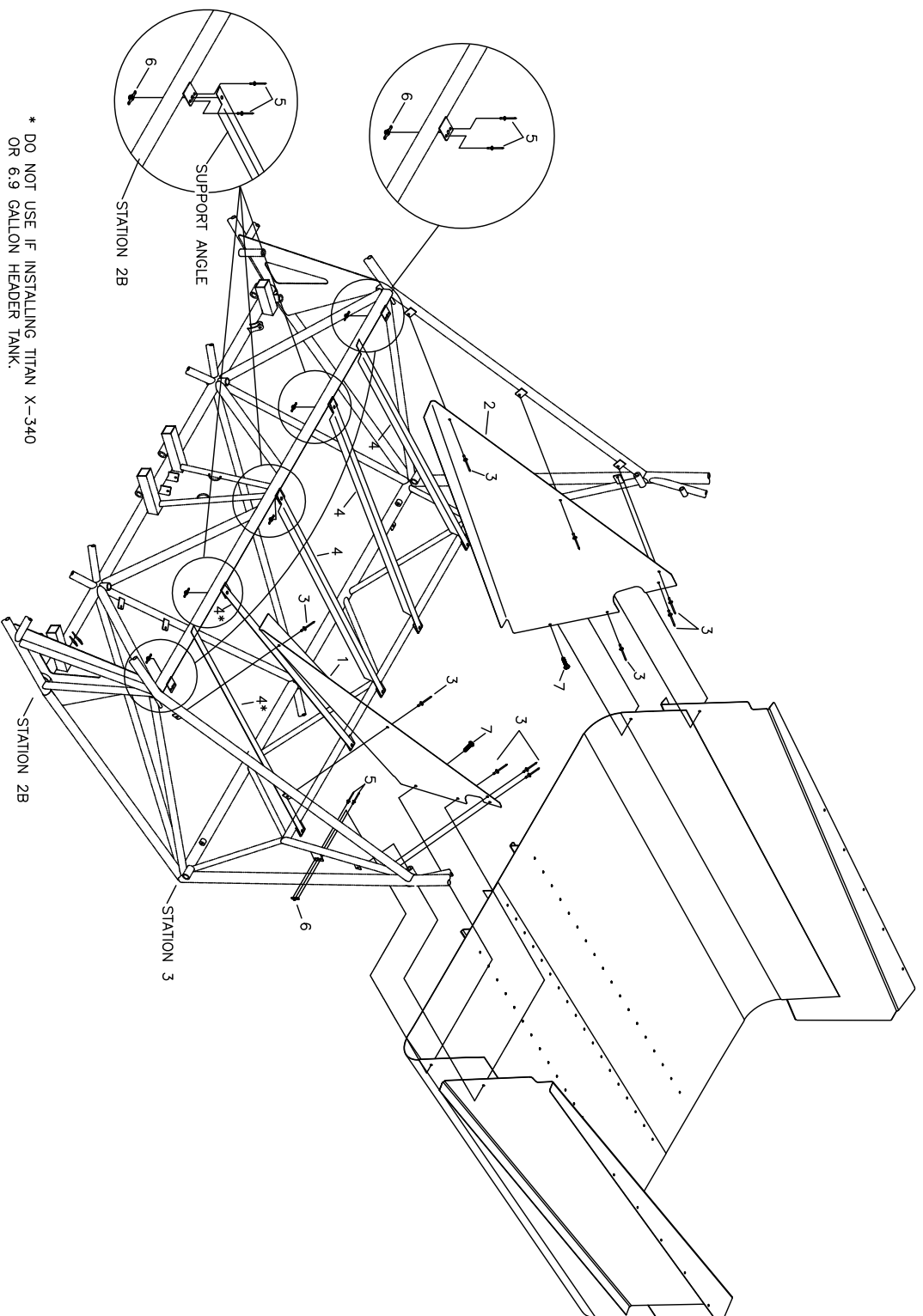
* May be purchased separately, call RANS Parts Dept. for pricing

** Builder Supplied

*** Builder Modifies

9/11/2018

REV. - ORIG



REFINOS S-21 OUTBOUND

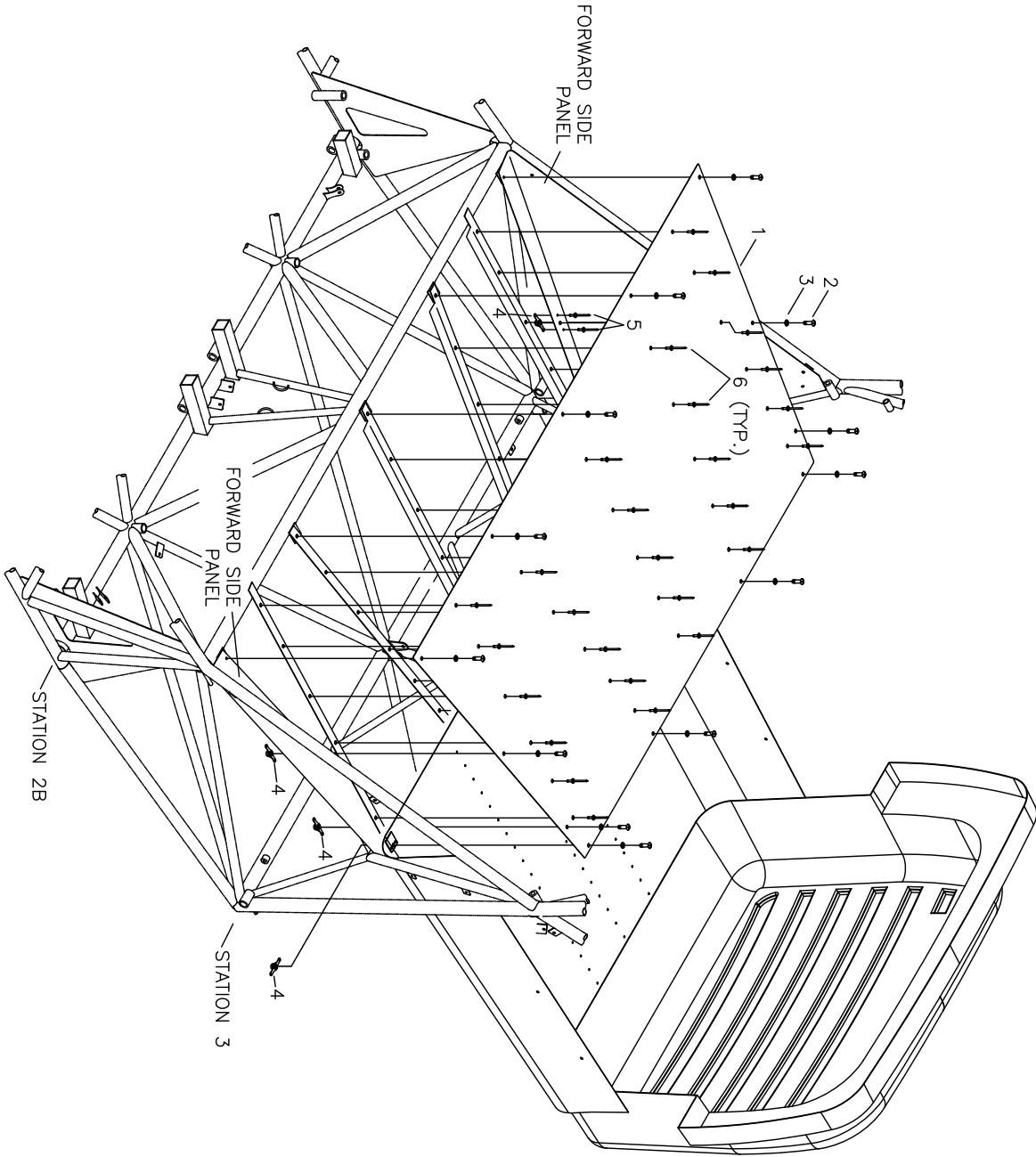
SIDES - FORWARD BAGGAGE COMPARTMENT INSTALLATION

MD5593
REV. - ORIG

SIDES - FORWARD BAGGAGE COMPARTMENT INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Forward Side - Baggage Compartment - LH	KPIN0094-L	1
2.	Forward Side - Baggage Compartment - RH	KPIN0094-R	1
3.	1/8" Aluminum Rivet - Avex	1691-0410	12
4.	Support Angle - Baggage Compartment *	KPIN0096	3
5.	3/32" Aluminum Rivet	40APR1/8	14
6.	8-32 Nut Plate	MS21047-08	7
7.	8-32 Machine Screw	AN526-832R10	2

* Builder Modifies



NOTE: ALL RIVETS
1691-0410 AVEX
EXCEPT AS NOTED

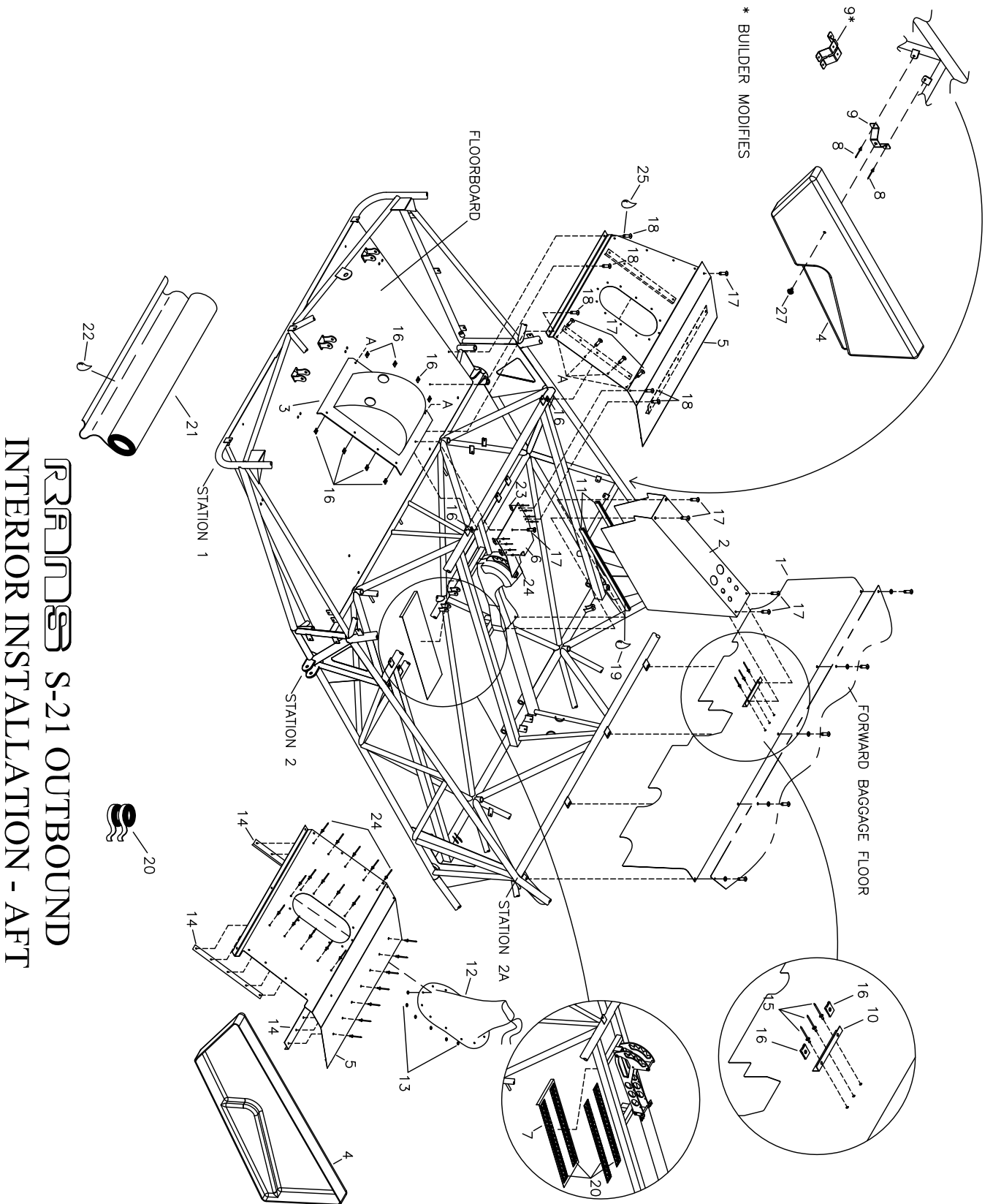
REFUND S-21 OUTBOUND

FLOOR - FORWARD BAGGAGE COMPARTMENT INSTALLATION

MD5593
REV. A

FLOOR - FORWARD BAGGAGE COMPARTMENT INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Forward Bottom - Baggage Compartment	KPIN0090	1
2.	8-32 Machine Screw	AN526-832R10	13
3.	#8 Small Brass Washer	AN960-B8	13
4.	8-32 Nut Plate	MS21047-08	8
5.	3/32" Aluminum Rivet	40APR1/8	16
6.	1/8" Aluminum Rivet - Avex	1691-0410	27



**S-21 OUTBOUND
INTERIOR INSTALLATION - AFT**

RANS S-21 OUTBOUND

PAGE

010I-08

INTERIOR INSTALLATION - AFT

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Station 2A Closeout	KPIN0099	1
2.	Middle Console	KPIN0122	1
3.	Rudder Cable Closeout	KPIN0101	1
4.	Seat Side Closeout - RH	KPIN0142-R	1
4.	Seat Side Closeout - LH	KPIN0142-L	1
5.	Control Stick Closeout - LH	KPIN0126-L	1
5.	Control Stick Closeout - RH	KPIN0126-R	1
6.	Flap Lever / Control Stick Closeout	KPIN0124	1
7.	Lower Flap Lever Closeout	KPIN0110	1
8.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	4
9.	Side Closeout Retainer *****	KPIN0143	1
10.	Support Angle - Baggage Compartment *	KPIN0096	0
11.	Rubber Trim	X1011	2 ft
12.	Control Stick Boot	KPIN0013	2
13.	1/8" Small Brass Washer	AN960-B4	24
14.	Skin Stiffener - Boot Cowl **	KPFU0685	1
15.	1/8" Aluminum Rivet - Avex	1691-0410	27
16.	Tinnerman	A1789-8Z-1	21
17.	#8 Pan Head Screw	8X1/2 PHS	15
18.	#6 Pan Head Screw	6RX1/2 PHS	10
19.	Adhesive - Superglue ***	----	0
20.	Velcro - Adhesive Back ***	----	0
21.	Interior Fabric - Optional - 2 yards *** *****	----	0
22.	Contact Cement Adhesive - Brush On ***	----	0
23.	Tinnerman	A6196-6Z-1	4
24.	3/32" Aluminum Rivet	40APR1/8	32
25.	Loctite Blue ***	----	0
26.	Flap Lever Cover - LH ****	KPIN0118-L	0
26.	Flap Lever Cover - RH ****	KPIN0118-R	0
27.	Screw Rivet	M60-0580-01	2

* Use Drop-Off from Baggage Compartment Installation

** Also Use Drop-Off from Boot Cowl Assembly *** Builder Supplied

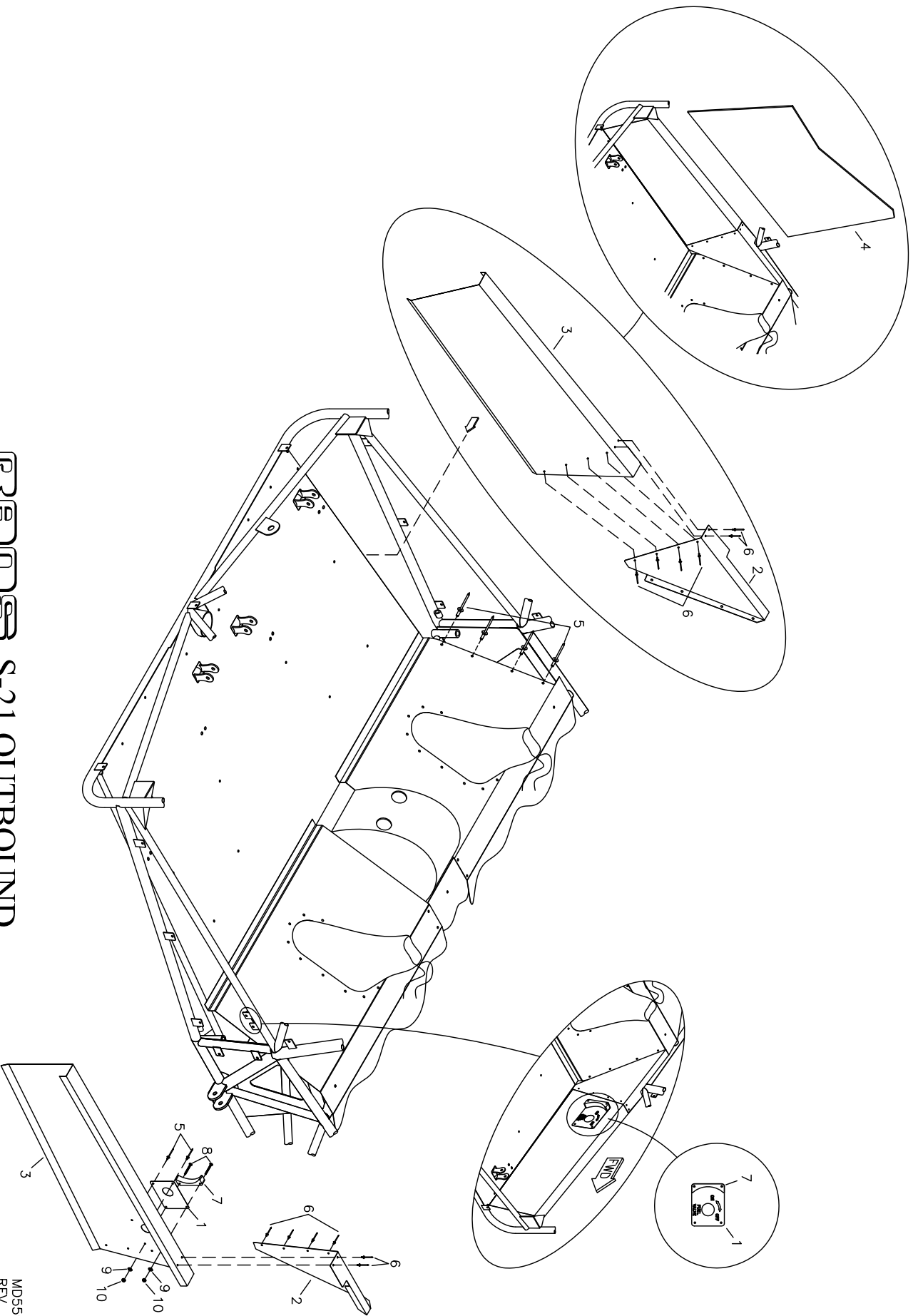
**** Refer to Flap Lever Assembly ***** May be purchased seperately, call RANS Parts Dept.

***** Builder Modifies

9/11/2018

REV. - ORIG

RRR S-21 OUTBOUND INTERIOR INSTALLATION - FWD



RANS S-21 OUTBOUND

PAGE

010I-10

INTERIOR INSTALLATION - FWD

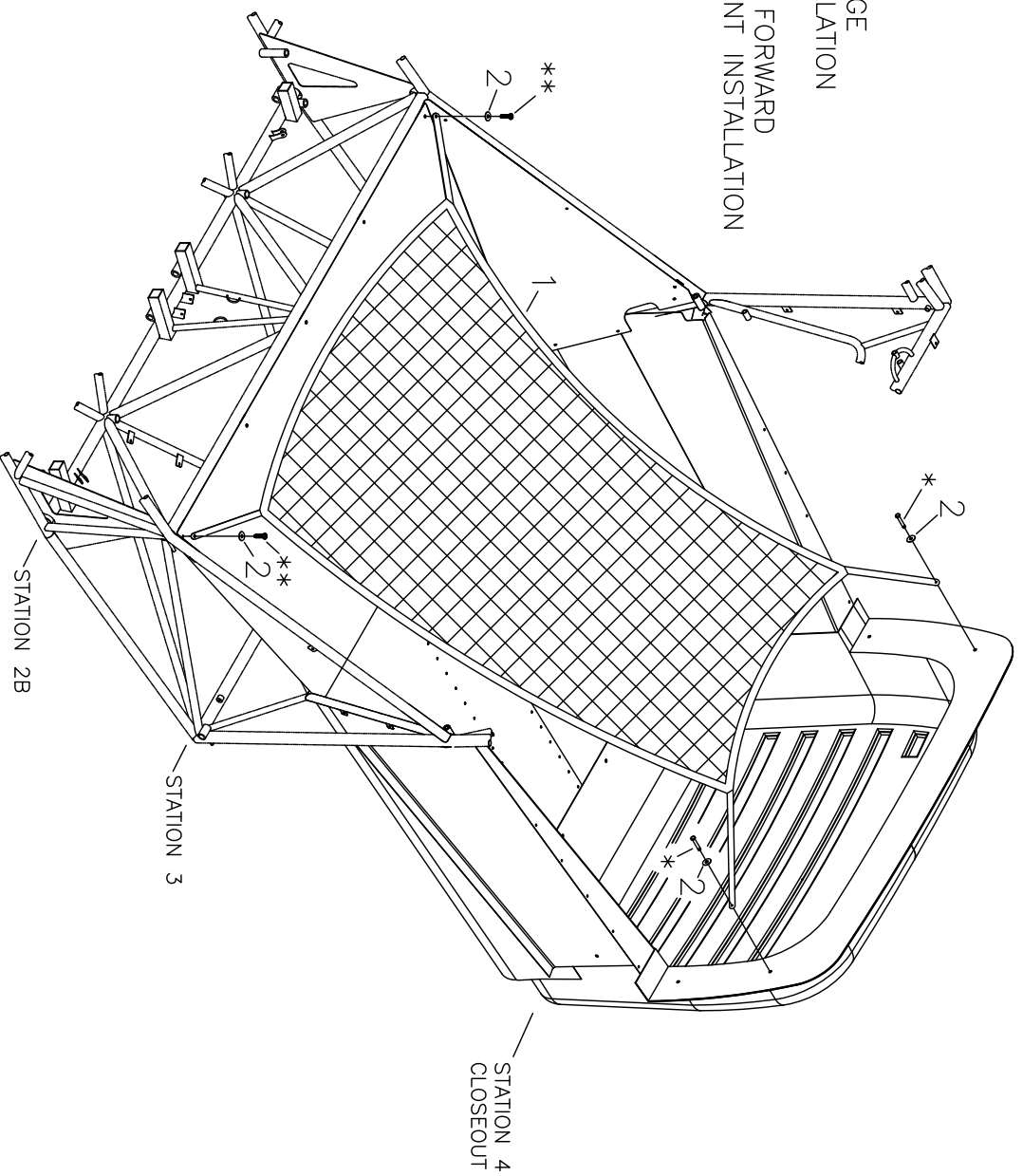
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Fuel Valve Indicator Plate	KPIN0131	1
2.	AFT Side Kick Panel - RH	KPIN0120-R	1
2.	AFT Side Kick Panel - LH	KPIN0120-L	1
3.	FWD Side Kick Panel - RH	KPIN0121-R	1
3.	FWD Side Kick Panel - LH	KPIN0121-L	1
4.	Side Kick Panel *	KPIN0123	0
5.	1/8" Aluminum Rivet - Avex	1691-0410	10
6.	3/32" Aluminum Rivet	40APR1/8	12
7.	Fuel Valve Guard	KPIN0130	1
8.	Brass Bolt	MS35214-20	2
9.	1/8" Small Brass Washer	AN960-B4	2
10.	#4-40 Nut	AN364-440A	2
13.	#8 Pan Head Screw	8X1/2 PHS	8

* Builder Supplied

9/11/2018
REV. - ORIG

* REFER TO AFT BAGGAGE
COMPARTMENT INSTALLATION

** REFER TO FLOOR – FORWARD
BAGGAGE COMPARTMENT INSTALLATION



REFINISH S-21 OUTBOUND OPTIONS - CARGO NET INSTALLATION

MD5593
REV. – ORIG

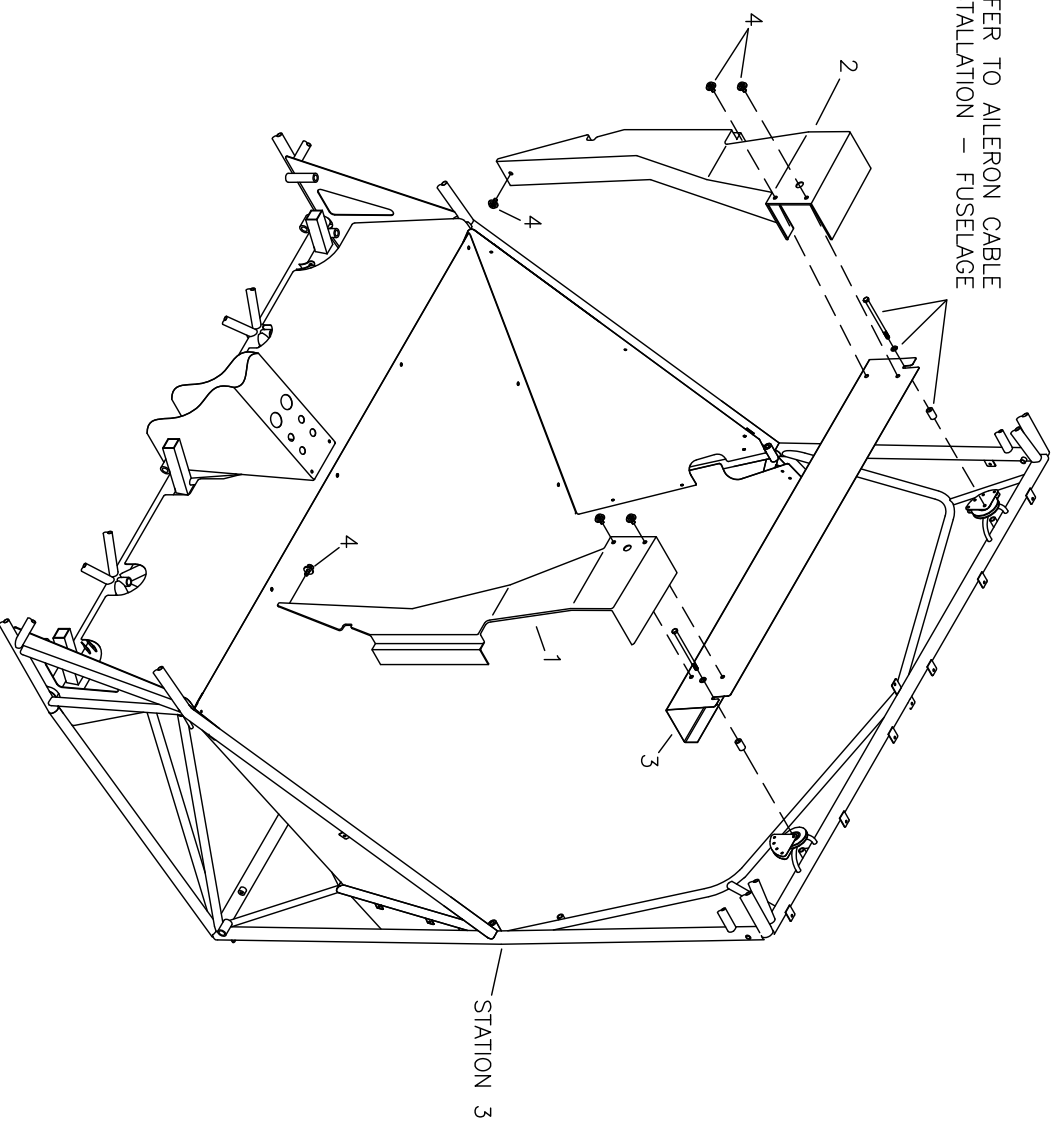
RANS S-21 OUTBOUND
OPTIONS - CARGO NET INSTALLATION

PAGE

010I-12

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Cargo Net	KPIN0105	1
2.	#10 Washer - Stainless Steel	BSHW0022	4

REFER TOAILERON CABLE
SYSTEM INSTALLATION – FUSELAGE



RRR S-21 OUTBOUND STATION 3 CLOSEOUT

RANS S-21 OUTBOUND
STATION 3 CLOSEOUT

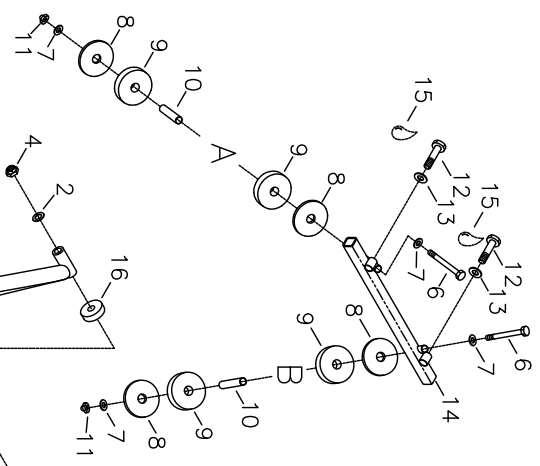
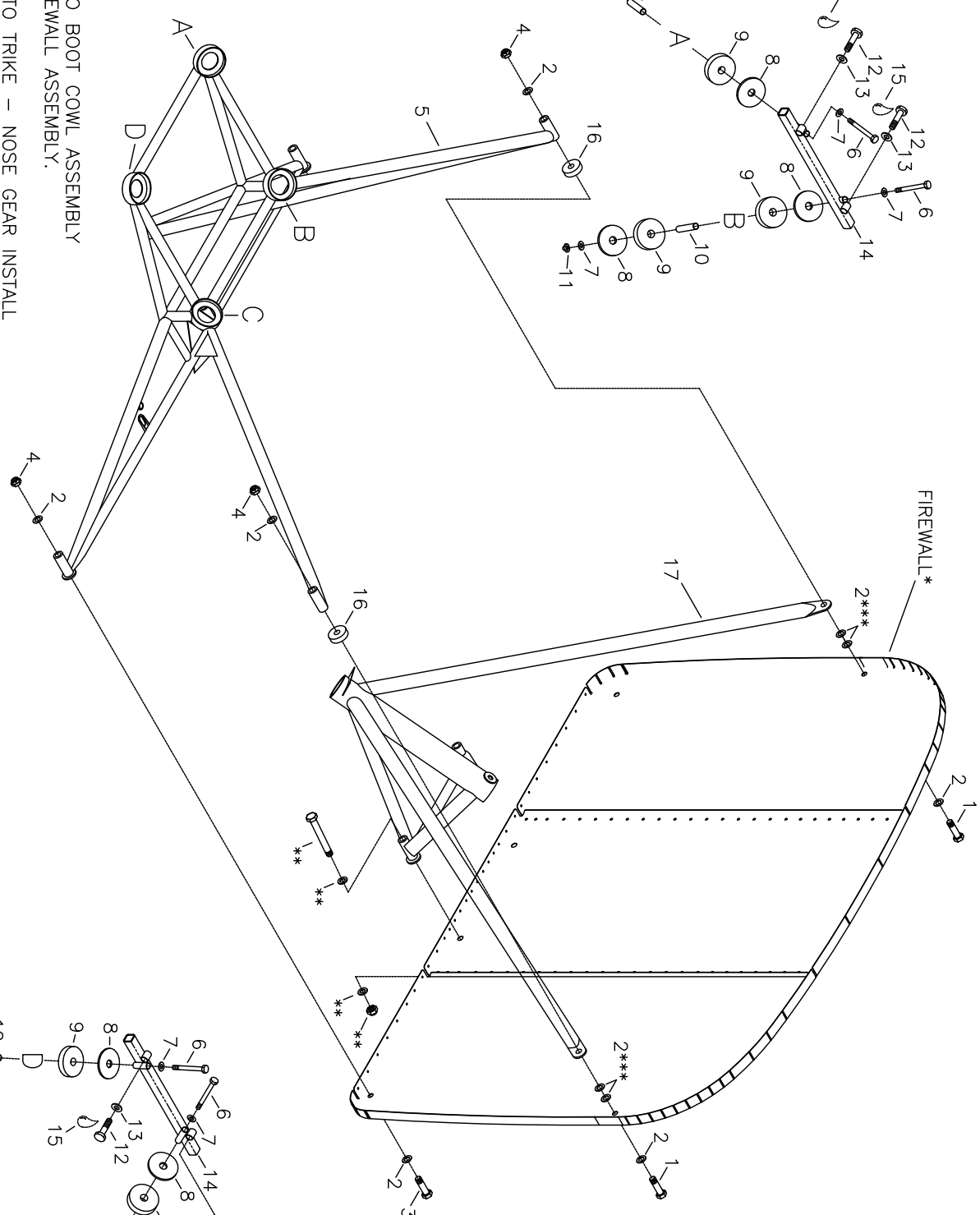
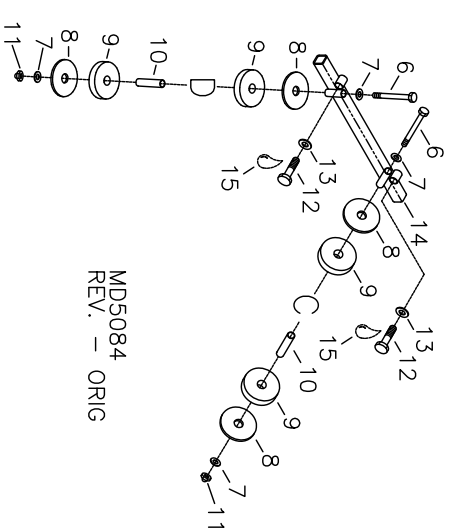
PAGE

010J-02

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Station 3 Closeout - Side - LH	KPIN0113-L	1
2.	Station 3 Closeout - Side - RH	KPIN0113-R	1
3.	Station 3 Closeout - Upper	KPIN0115	1
4.	Screw Rivet	M60-0580-01	6

* REFER TO BOOT COWL ASSEMBLY
FOR FIREWALL ASSEMBLY.
** REFER TO TRIKE - NOSE GEAR INSTALL
*** TALDRAGGER ONLY

ROTAX S-21 OUTBOUND ROTAX 912ULS ENGINE MOUNT INSTALLATION



RANS S-21 OUTBOUND

PAGE

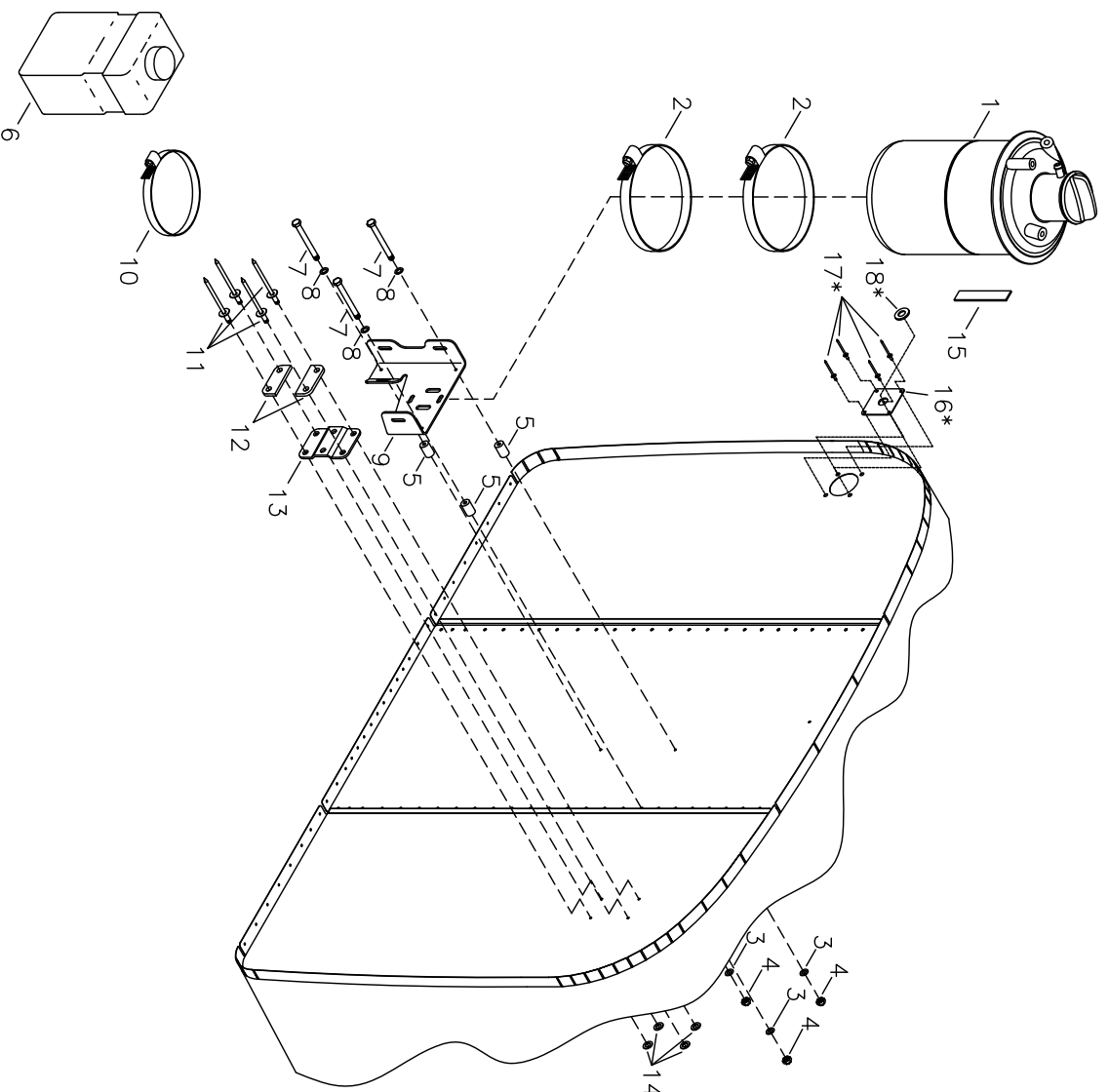
011-02 / 912ULS

ROTAX 912ULS - ENGINE MOUNT INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	5/16" Bolt	AN5-35A	2
2.	5/16" Thick Washer	AN960-516	12
3.	5/16" Bolt	AN5-34A	2
4.	5/16" Tensile Nut	AN365-524A	4
5.	Engine Mount	KPPW0274	1
6.	3/8" Bolt	AN6-33A	4
7.	3/8" Thick Washer	AN960-616	8
8.	Washer	912DONUT-2	8
9.	Rubber Washer	912DONUT-3	8
10.	Bushing	912DONUT-4	4
11.	3/8" Tensile Loc Nut	AN363-624A	4
12.	10mm Bolt	875-550	4
13.	10mm Loc-Washer	945-753	4
14.	912 Engine Attachment	EG-FEA-912	2
15.	Loctite Blue *	-----	0
16.	Engine Mount Spacer	KPAC0279	2
17.	Nose Gear Mount - Rotax 912ULS (TRIKE ONLY)	KAPW0075	1

* Builder Supplied

9/11/2018
REV. - ORIG



* AMP STANDARD SQUARE FLANGE
24 PIN RECEPTACLE & PLUG
MAY ALSO BE USED

RRD S-21 OUTBOUND ROTAX 912ULS FIREWALL ITEMS INSTALLATION

MD5135
REV. — ORIG

RANS S-21 OUTBOUND

PAGE 011A-02 / 912ULS

ROTAX 912ULS - FIREWALL ITEMS INSTALLATION

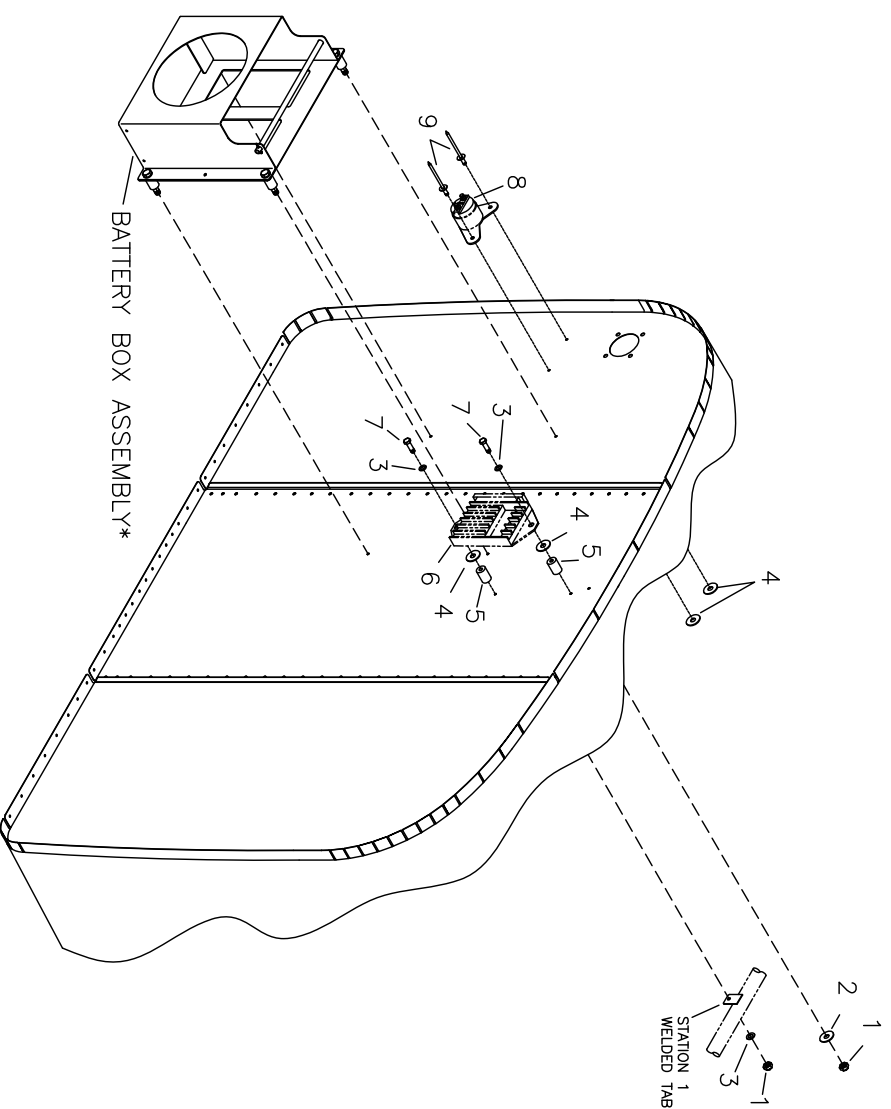
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Oil Tank *	-----	0
2.	Hose Clamp - 6"	5-5288	2
3.	3/16" Thick Washer	AN960-10	3
4.	3/16" Tensile Nut	AN365-1032A	3
5.	3/8" x 0.058" x 1/2" Aluminum Bushing **	KAAC0044-3	0
5.	Raw Stock - 3/8" x 0.058" Aluminum Tube	KAAC0044-3	0
6.	Overflow Bottle	KSPW0072	1
7.	3/16" Bolt	AN3-10A	3
8.	3/16" Thin Washer	AN960-10L	3
9.	Oil Bottle Mount	KPPW0261	1
10.	Hose Clamp - 4"	5-5256	1
11.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-44	4
12.	Spacer Shim - Mount Bracket	KPPW0230	2
13.	Mount Bracket - Coolant Recovery Bottle	KPPW0231	1
14.	1/8" Small Brass Washer	AN960-B4	4
15.	1" Black Foam Tape	KSAC0011	3 in
16.	.025 " Sheet (2" x 2") **	KAAC0042-12	1
17.	3/16" Stainless Steel Rivet - Cherry Q	CCPQ-62	4
18.	Rubber Grommet	MS35489-17	1

* Supplied with Engine

** Builder must fabricate from raw stock

9/11/2018

REV. - ORIG



* REFER TO BATTERY BOX ASSEMBLY AND INSTALLATION

ROTAX S-21 OUTBOUND ROTAX 912ULS ENGINE ELECTRICAL ACCESSORY INSTALLATION

RANS S-21 OUTBOUND

PAGE 011A-04 / 912ULS

ROTAX 912ULS - ENGINE ELECTRICAL ACCESSORY INSTALLATION

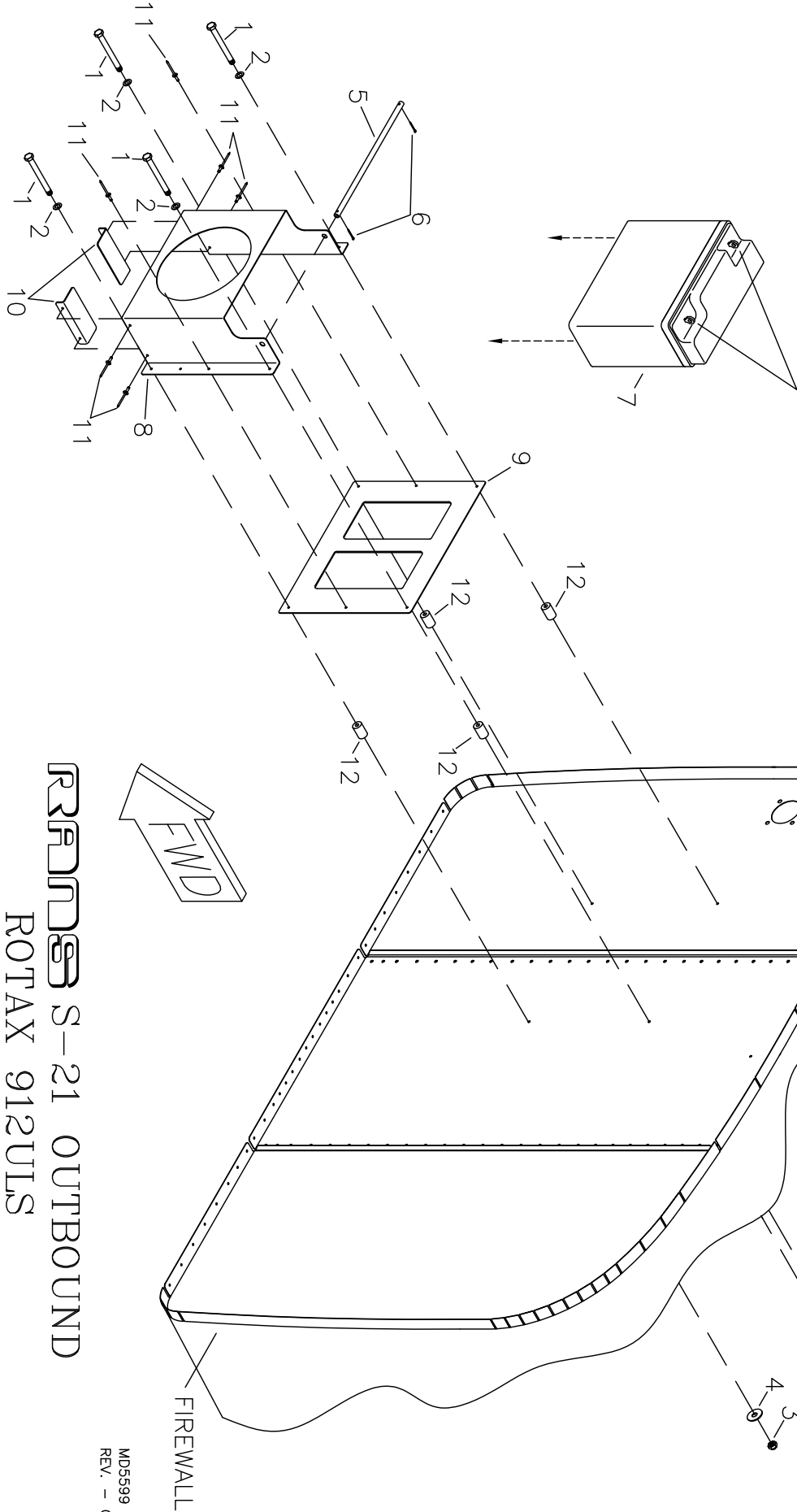
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/16" Shear Nut	AN364-1032A	2
2.	3/16" Large Washer	AN970-3	1
3.	3/16" Thin Washer	AN960-10L	3
4.	#10 Washer - Stainless Steel	BSHW0022	4
5.	3/8" x .058" x 3/16" Aluminum Bushing *	KAAC0044-3	0
6.	Regulator / Rectifier **	-----	0
7.	3/16" Bolt	AN3-7A	2
8.	Starter Solenoid **	-----	0
9.	3/16" Aluminum Rivet - Cherry Q	AAPQ-62	2

* Fabricate from Raw Stock

** Supplied with Engine

9/11/2018
REV. - ORIG

REFER TO ENGINE
ELECTRICAL FOR
BATTERY CONNECTIONS



ROTAX S-21 OUTBOUND
ROTAX 912ULS
BATTERY BOX ASSEMBLY AND INSTALLATION

MD5599
REV. - ORIG

RANS S-21 OUTBOUND

PAGE 011A-06 / 912ULS

ROTAX 912ULS - BATTERY BOX ASSEMBLY AND INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/16" Bolt	AN3-10A	4
2.	3/16" Thin Washer	AN960-10L	4
3.	3/16" Shear Nut	AN364-1032A	4
4.	3/16" Large Washer	AN970-3	4
5.	Battery Bar *	BAT-BAR-503/582	1
6.	Small Cotter Pin	MS24665-134	2
7.	Battery **	PS12150-NB	0
8.	Battery Box Front Plate	BAT-BOX-1	1
9.	Battery Box Mount Plate	BAT-BOX-2	1
10.	Battery Box Support Angle	BAT-BOX-3	2
11.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	6
12.	3/8" x .058" x 1/2" Aluminum Bushing ***	KAAC0044-3	0

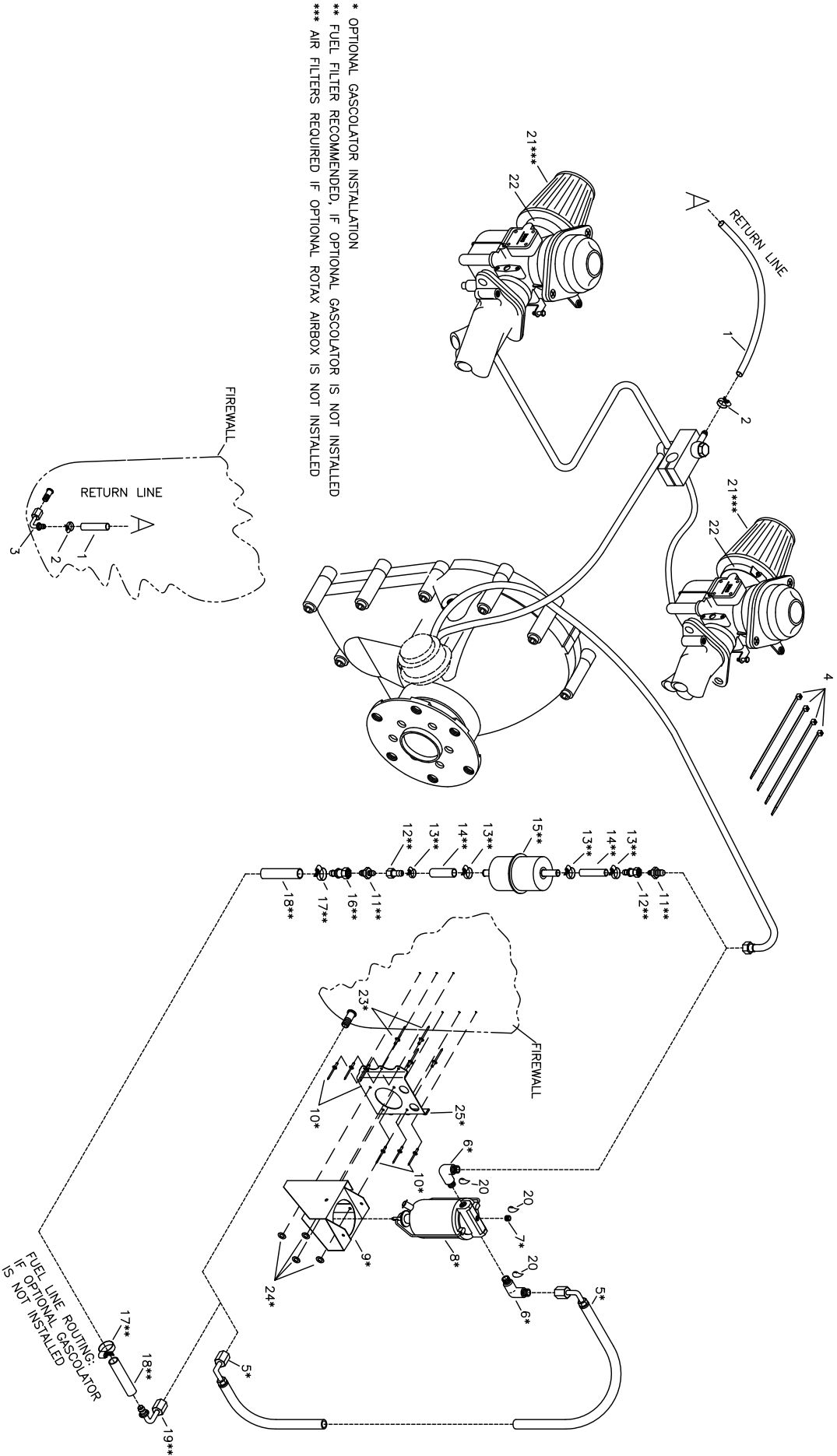
* Builder Modifies

** May be purchased seperately, call RANS Parts Dept. for pricing

*** Fabricate from Raw Stock

9/11/2018

REV. - ORIG



ROTAX S-21 OUTBOUND
ROTAX 912ULS
FUEL SYSTEM INSTALLATION – FIREWALL FORWARD

RANS S-21 OUTBOUND

PAGE 011B-02 / 912ULS

ROTAX 912ULS - FUEL SYSTEM - FIREWALL FORWARD

WITH OPTIONAL GASCOLATOR

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Black Fuel Line - 1/4"	KSFS0002	3 ft
2.	Hose Clamp - 5/8"	5-6202	2
3.	45 degree 1/4" Hose Fitting	KSFS0023	1
4.	Plastic Tie - 7.5"	N-TIES	4
5.	Fuel Line Assembly - Firewall to Gascolator *	KPFS0102	1
6.	90 Degree Fitting *	AN822-6D	2
7.	1/8" Pipe Plug *	PIPE-PLUG 1/8	1
8.	Gascolator *	KSPW0067	1
9.	Gascolator Bracket *	KSPW0066	1
10.	1/8" Stainless Steel Rivet - Cherry Q *	CCPQ-41	6
11.	Reducer - External Thread - Flared Tube ***	AN919-6D	2
12.	1/4" Hose Fitting ***	30682-4-4	1
13.	Hose Clamp - 5/8" ***	5-6202	4
14.	Black Fuel Line - 1/4" ***	KSFS0002	0.5 ft
15.	Fuel Filter **, ***, ****	-----	0
16.	3/8" Hose Fitting ***	30682-6-6	1
17.	Hose Clamp - 7/8" ***	5-6203	2
18.	Black Fuel Line - 3/8" ***	27004	2 ft
19.	90 degree 3/8" Hose Fitting ***	33982-6-6	1
20.	Thread Sealant ****	-----	0
21.	Air Filter ****, *****	EG-AF-912	0
22.	63mm Clamp *****	-----	0
23.	1/8" Stainless Steel Rivet - Cherry Q *	CCPQ-42	4
24.	1/8" Small Brass Washer *	AN960-B4	4
25.	Gascolator Mount *	KPPW0277	1

* Optional Gascolator ** Contact ROTAX for recommended fuel filter

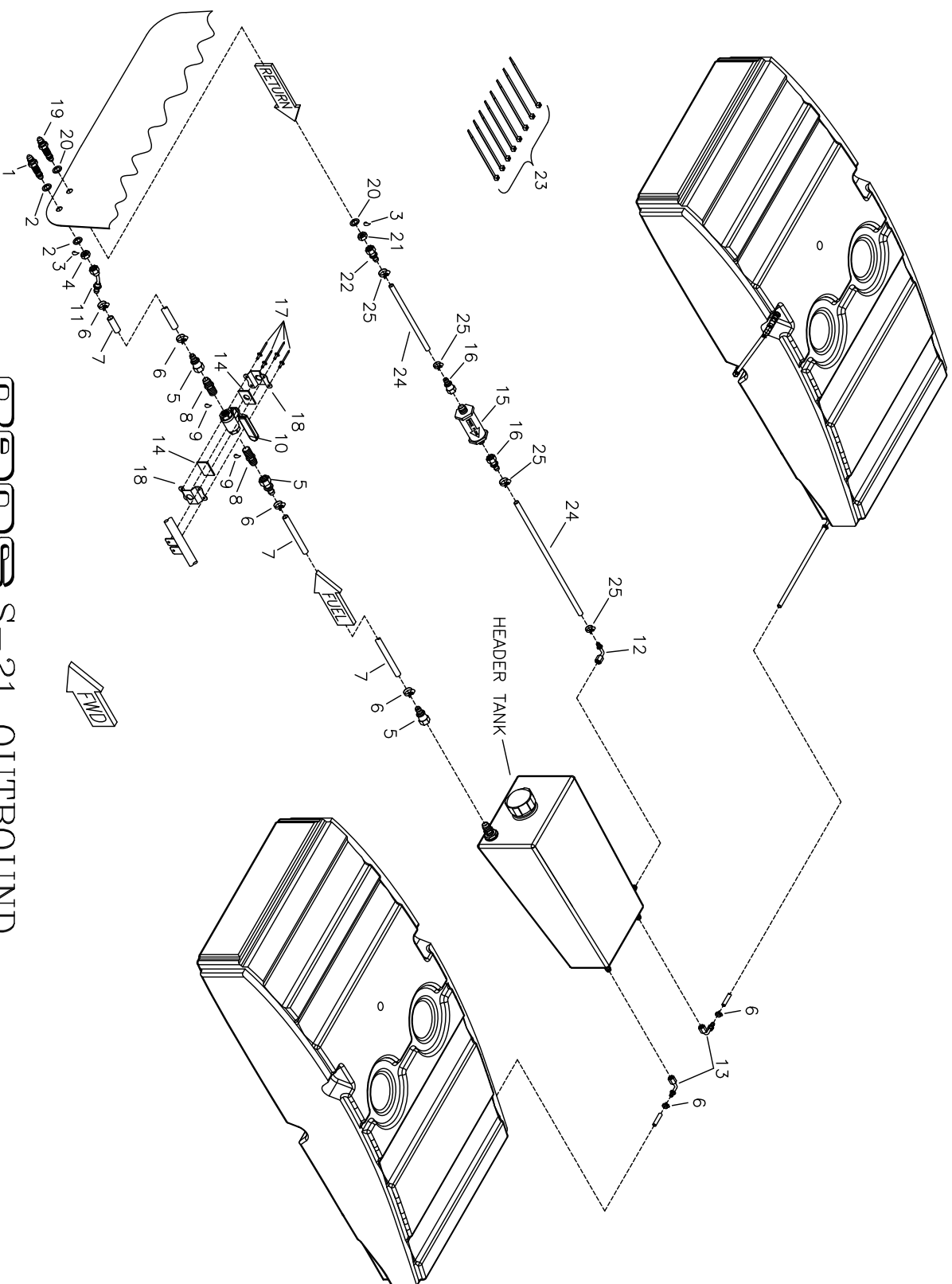
*** Fuel Filter recommended if Optional Gascolator is not installed.

**** Builder Supplied ***** Supplied with Air Filter

***** Available from RANS Parts Dept.

9/11/2018

REV. - ORIG



Rotax S-21 OUTBOUND
ROTAX 912ULS
FUEL SYSTEM - FUSELAGE

RANS S-21 OUTBOUND

ROTAX 912ULS - FUEL SYSTEM - FUSELAGE

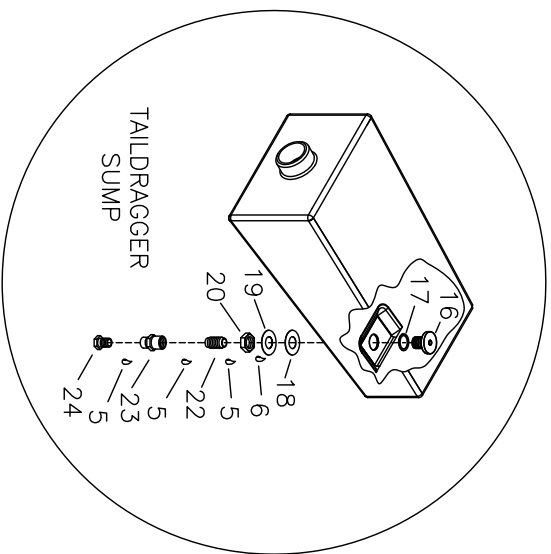
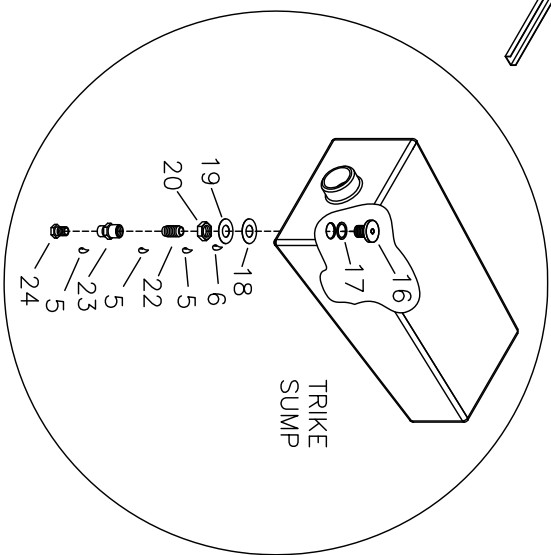
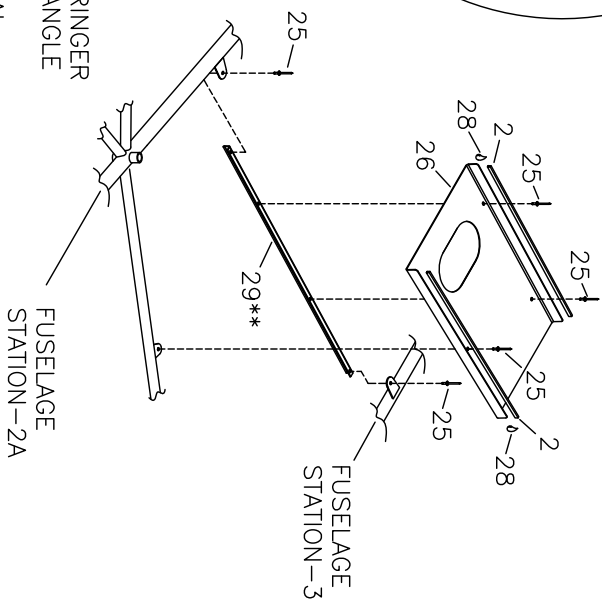
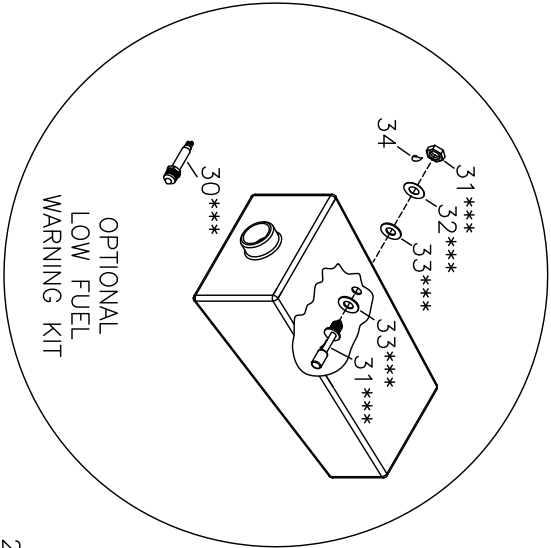
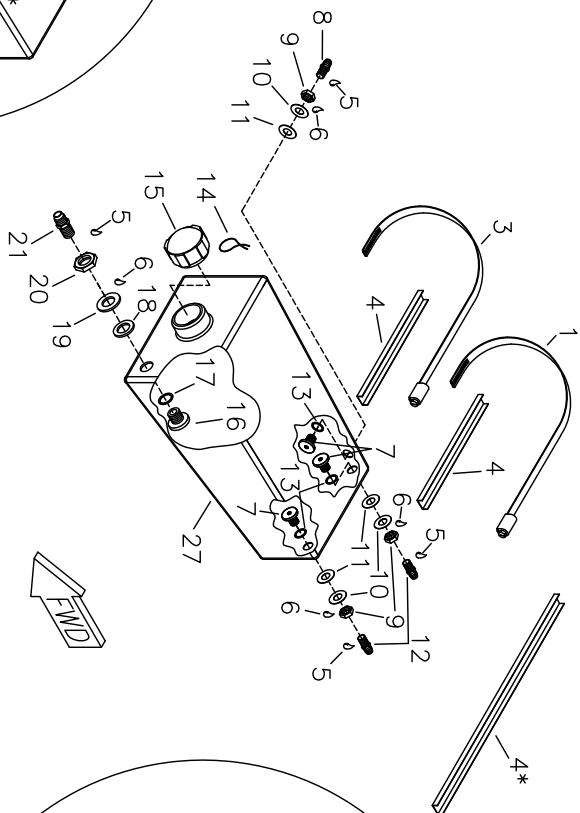
PAGE 011B-04 / 912ULS

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Union - Flared Tube - Bulkhead	AN832-6D	1
2.	9/16" Thick Washer	AN960-916	2
3.	Loctite Blue *	-----	0
4.	Nut - Flared Tube Bulkhead	AN924-6D	1
5.	3/8" Hose Fitting	30682-6-6	3
6.	Hose Clamp - 7/8"	5-6203	6
7.	Black Fuel Line - 3/8"	27004	5 ft
8.	Nipple - Flared Tube & Pipe Thread	AN816-6D	2
9.	Thread Sealant *	-----	0
10.	Fuel Valve	KSFS0018	1
11.	45 Degree Fitting	33782-6-6	1
12.	90 degree 1/4" Hose Fitting	33982-4-4	1
13.	90 degree 3/8" Hose Fitting	33982-6-6	2
14.	Fuel Valve Silicone Pad **	KPFS0106	1
15.	Check Valve	KSFS0036	1
16.	1/4" Hose Fitting	30682-6-4B	2
17.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	4
18.	Fuel Valve Mount Bracket	KPFS0037	2
19.	Union - Flared Tube - Bulkhead	AN832-4D	1
20.	7/16" Thick Washer	AN960-716	2
21.	Nut - Flared Tube Bulkhead	AN924-4D	1
22.	1/4" Hose Fitting	30682-4-4	1
23.	Plastic Tie - 7.5"	N-TIES	8
24.	Black Fuel Line - 1/4"	KSFS0002	6 ft
25.	Hose Clamp - 5/8"	5-6202	4

* Builder Supplied

** Builder Modifies

9/11/2018
REV. - ORIG



- * MUST MODIFY
- ** NOTCH FUSELAGE BOTTOM SKIN STRINGER TO CLEAR HEADER TANK SUPPORT ANGLE
- *** LOW FUEL WARNING KIT IS OPTIONAL

RRR S-21 OUTBOUND ROTAX 912ULS FUEL SYSTEM - HEADER TANK

RANS S-21 OUTBOUND

PAGE 011B-06 / 912ULS

ROTAX 912ULS - FUEL SYSTEM - HEADER TANK

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	8" Hose Clamp	KSHW0091	1
2.	Rubber Edging	8510K11	3 ft
3.	10" Hose Clamp	KSHW0047	1
4.	2.75 Gal. Header Tank Mount Channel *	KPFS0108	1
5.	Thread Sealant **	-----	0
6.	Loctite Blue **	-----	0
7.	Tank Withdrawal Fitting	KPFS0017	3
8.	Straight Fitting - Flare 1/4" Tube to 1/8" NPT	AN816-4D	1
9.	Nut - Flared Tube Bulkhead	AN924-5D	3
10.	1/2" Thick Washer	AN960-816	3
11.	Rubber Washer	KSFS0010	3
12.	Straight Fitting	AN816-6-2D	2
13.	O-Ring	KSFS0009	3
14.	Safety Wire **	-----	0
15.	Fuel Cap	KSFS0007	1
16.	3/4" Bulkhead Fitting	KSFS0037	2
17.	O-Ring - 3/4" Bulkhead	KSFS0039	2
18.	Rubber Washer	KSFS0016	2
19.	3/4" Thick Washer	AN960-1216	2
20.	Nut - 3/4" Bulkhead - Reverse Thread	KSFS0038	2
21.	Nipple - Flared Tube & Pipe Thread	AN816-6D	1
22.	Close Nipple	KSFS0021	1
23.	Reducer	KSFS0022	1
24.	Flush Valve	KSFS0011	1
25.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	5
26.	2.75 Gal. Header Tank Mount	KPFS0107	1
27.	Header Tank - 2.75 Gal.	KPFS0104	1
28.	Adhesive - Superglue **	-----	0
29.	Header Tank Support Angle	KPFU0758	1
30.	Red LED Indicator Light, 12V ***	KSES0071	1
31.	Low Fuel Warning Switch ***	KSES0072	1
32.	5/8" Thick Washer (AN960-1016) ***	TW-5/8-W	1
33.	5/8" Rubber Washer ***	KSFS0040	2
34.	DOW 730 Sealant **	-----	0

* Builder Modifies

** Builder Supplied

*** KAFS0003 - Low Fuel Warning Kit is Optional

9/11/2018

REV. - ORIG

RANS S-21 OUTBOUND

PAGE 011B-08 / 912ULS

ROTAX 912ULS - FUEL SYSTEM - OPTIONAL ELECTRIC FUEL PUMP

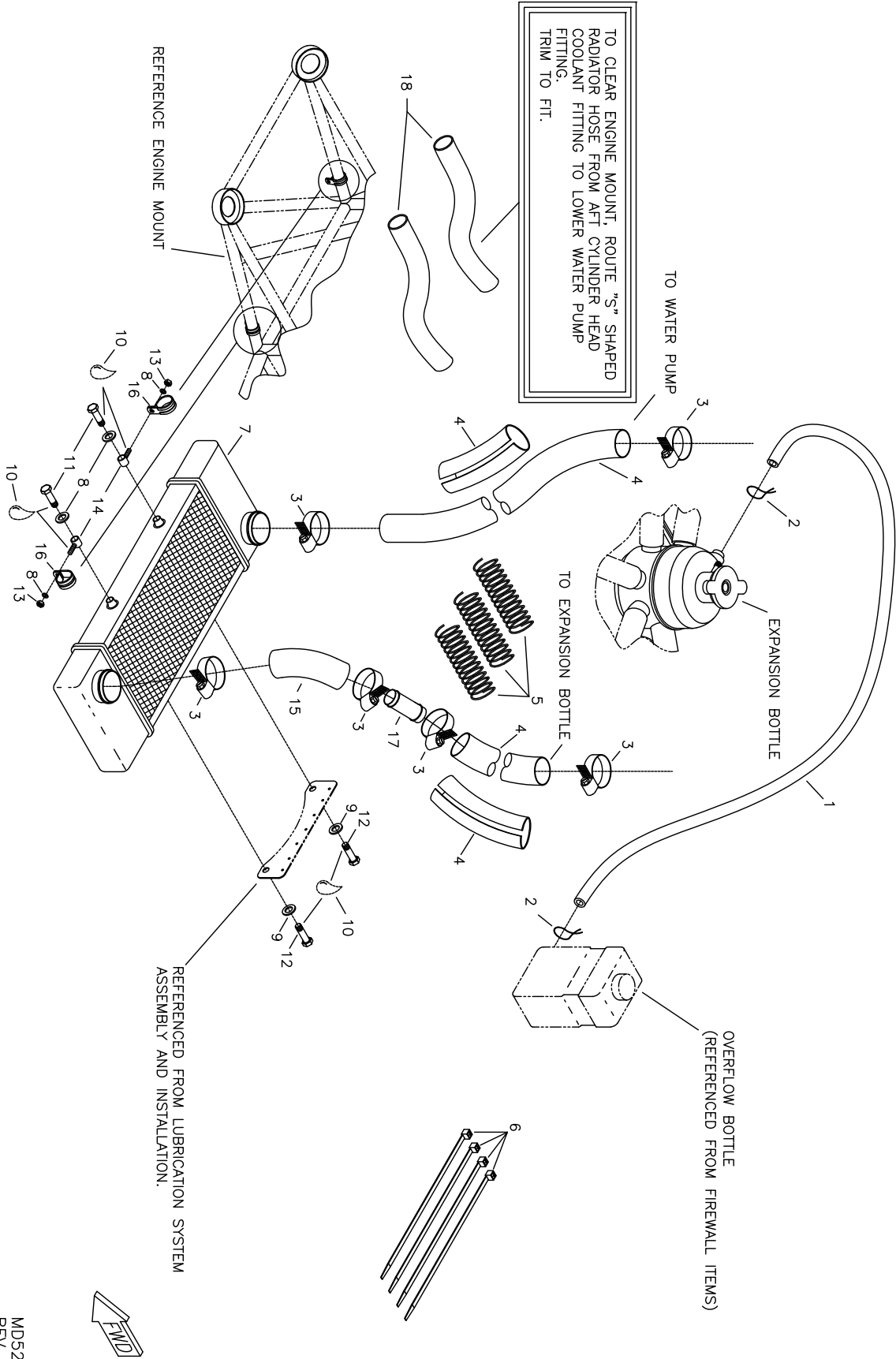
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Fuel Pump - Electric	KSPW0077	1
2.	3/16" Bolt	AN3-3A	2
3.	#10 Washer - Stainless Steel	BSHW0022	2
4.	45 Degree Fitting	33782-6-6	1
5.	3/16" Nut Plate	K-1000-3	2
6.	3/32" Aluminum Rivet	40APR1/8	4
7.	Black Fuel Line - 3/8" *	27004	0
8.	Hose Clamp - 7/8"	5-6203	2
9.	3/8" Hose Fitting	30682-6-6	1
10.	Straight Fitting	AN816-6-2D	2
11.	Thread Sealant **	-----	0

* Existing fuel line

** Builder Supplied

9/11/2018

REV. - ORIG



ROTAX S-21 OUTBOUND ROTAX 912ULS COOLING SYSTEM INSTALLATION

MD5205
REV. - ORIG



RANS S-21 OUTBOUND

PAGE 011C-02 / 912ULS

ROTAX 912ULS - COOLING SYSTEM INSTALLATION

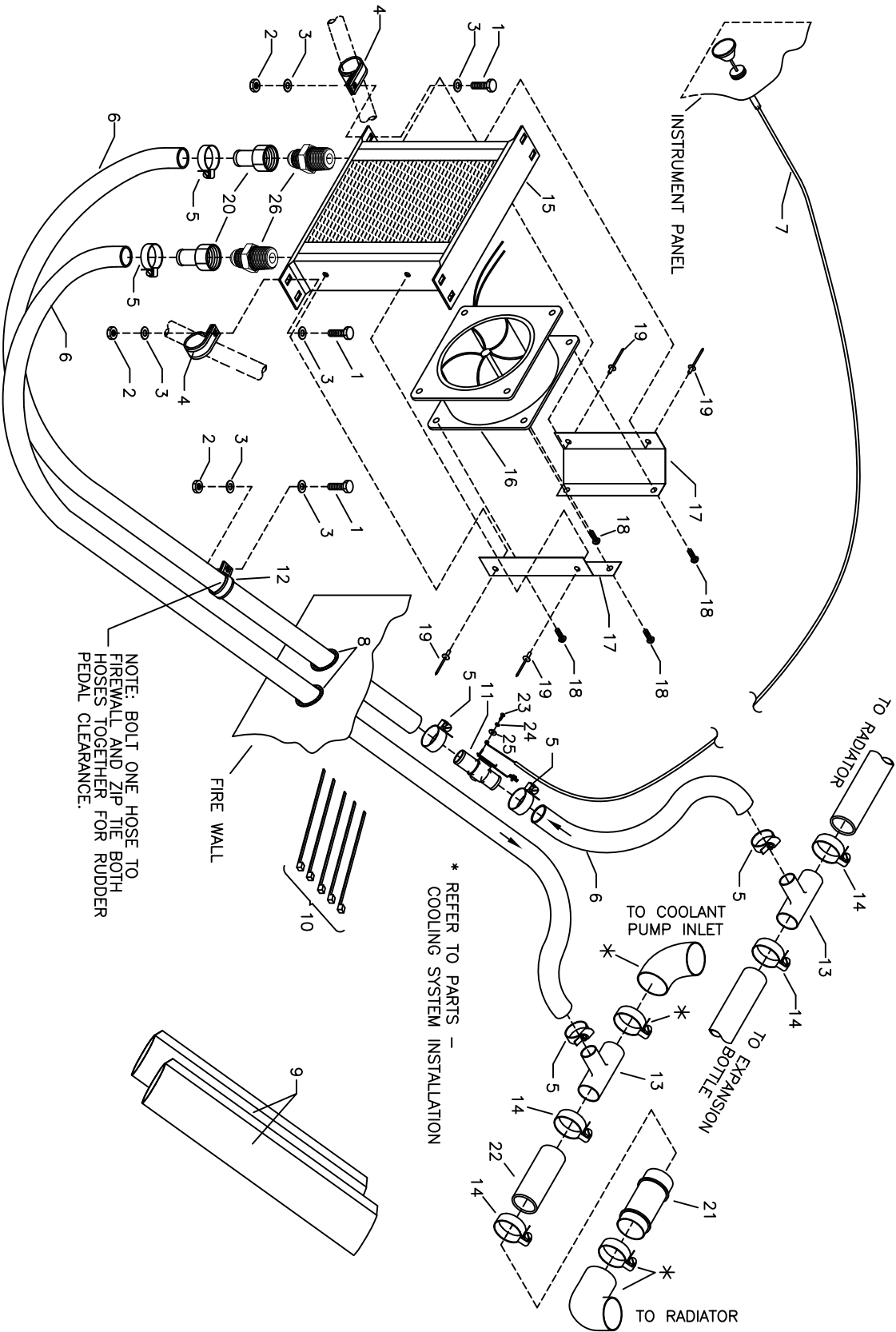
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	5/16" Overflow Hose	EGCS-OFH	3 ft
2.	Safety Wire *	-----	0
3.	Hose Clamp - 1 1/2"	5-5216	6
4.	Radiator Hose - 1"	RADIATOR HOSE	3 ft
5.	Hose Spring	EGCS-HS	3
6.	Nylon Tie	N-TIES	4
7.	Radiator	KSPW0071	1
8.	1/4" Thick Washer	AN960-416	4
9.	1/4" Thin Washer	AN960-416L	2
10.	Loctite Blue *	-----	0
11.	6MM Bolt	M6X16 BOLT	2
12.	6MM Bolt	M6X12 BOLT	2
13.	6mm Hex Nut	6MM HEX NUT	2
14.	Radiator Mount	KPPW0278	2
15.	Pre-formed Radiator "U" Shaped Hose **	KSPW0075	1
16.	5/8" Cushion Clamp	MS21919-DG10	2
17.	Cooling Tube Union	KPPW0189	1
18.	Pre-formed Radiator "S" Hose **	KSPW0025	2

* Builder Supplied

** Builder Modifies

9/11/2018

REV. - ORIG



Rotax S-21 OUTBOUND

ROTAX 912ULS

OPTIONS – CABIN HEATER INSTALLATION – RADIANT STYLE

MD379
REV. A

RANS S-21 OUTBOUND

PAGE 011C-04 / 912ULS

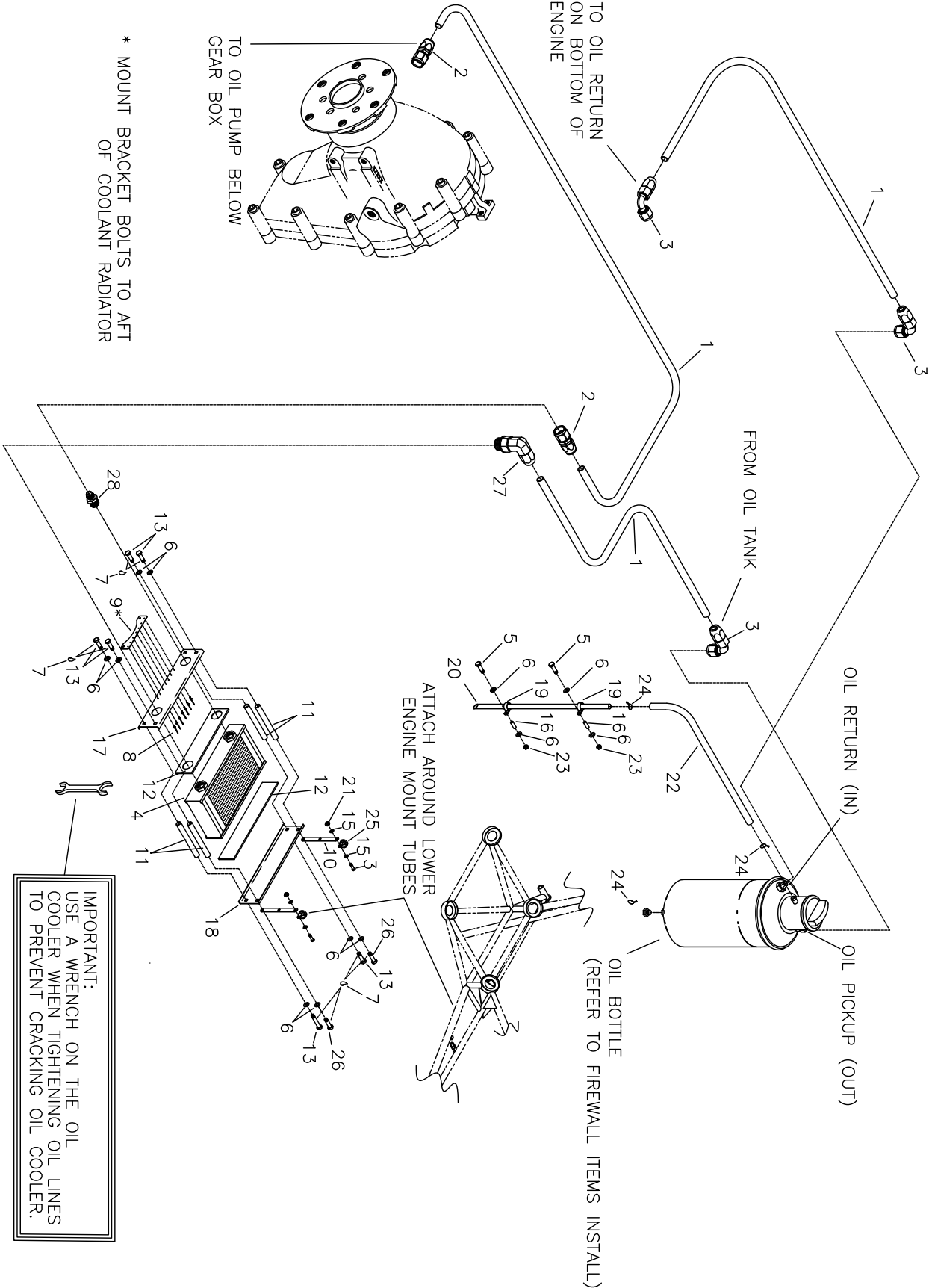
ROTAX 912ULS - OPTIONS - CABIN HEATER INSTALLATION

RADIANT STYLE

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/16" Bolt	AN3-4A	3
2.	3/16" Shear Nut	AN364-1032A	3
3.	3/16" Thin Washer	AN960-10L	6
4.	1/2" Cushion Clamp	MS21919-DG8	2
5.	Hose Clamp - 1"	5-5210	6
6.	5/8" Heater Hose	HEATER HOSE 5/8	6 ft
7.	Control Cable	4-336	1
8.	Serrated Grommet Strip	KSAC0023	8 in
9.	Hose Cover	H-HC	2
10.	Plastic Tie - 7.5"	N-TIES	5
11.	Control Valve	277813	1
12.	1" Cushion Clamp	MS21919-DG16	1
13.	1" To 5/8" Tee	H-TEE	2
14.	Hose Clamp - 1 1/2"	5-5216	4
15.	Heater Core	21608	1
16.	Fan	032207	1
17.	Fan Mounting Plate	H-HFMP	2
18.	3/16" Truss Head Screw	AN526-C1032-R12	4
19.	1/8" Aluminum Rivet - Cherry Q	AAPQ-42	4
20.	5/8" Nipple	80146	2
21.	Cooling Tube - Union	KPPW0189	1
22.	1" Radiator Hose	RADIATOR HOSE	0.5 ft
23.	#6 Pan Head Screw	6RX1/2 PHS	1
24.	#10 Washer - Stainless Steel	BSHW0022	1
25.	#8 Small Brass Washer	AN960-B8	1
26.	Oil Cooler Adaptor	KSPW0112	2

9/11/2018

REV. A



* MOUNT BRACKET TO AFT OF COOLANT RADIATOR

TO OIL PUMP BELOW GEAR BOX

TO OIL RETURN ON BOTTOM OF ENGINE

FROM OIL TANK

OIL RETURN (IN)

OIL PICKUP (OUT)

OIL BOTTLE (REFER TO FIREWALL ITEMS INSTALL)

ATTACH AROUND LOWER ENGINE MOUNT TUBES

IMPORTANT:
USE A WRENCH ON THE OIL COOLER WHEN TIGHTENING OIL LINES TO PREVENT CRACKING OIL COOLER.

ROTAX S-21 OUTBOUND ROTAX 912ULS LUBRICATION ASSEMBLY AND INSTALLATION

RANS S-21 OUTBOUND

PAGE 011D-02 / 912ULS

ROTAX 912ULS - LUBRICATION SYSTEM INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Oil Line - Nomex - 1/2"	KSPW0100	9 ft
2.	Straight Fitting	KSPW0101	2
3.	90-Degree Fitting	KSPW0102	3
4.	Oil Cooler	KSPW0085	1
5.	3/16" Bolt	AN3-11A	2
6.	3/16" Thin Washer	AN960-10L	12
7.	Loctite Blue *	-----	0
8.	1/8" Stainless Steel Rivet - Flush	CCC-42	7
9.	Oil Cooler Mount Bracket	KPPW0271	1
10.	Mount Bracket - Radiator	KPAC0174	2
11.	Threaded Bushing - Oil Cooler	KPPW0280	4
12.	.093 Silicone Sheet **	KPPW0254	2
13.	3/16" Bolt	AN3-4A	6
14.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	7
15.	3/16" Thick Washer	AN960-10	4
16.	3/8" x 0.058" x 3/4" Aluminum Bushing ***	KAAC0044-3	0
17.	Oil Cooler Mount - Upper	KPPW0272	1
18.	Oil Cooler Mount - Lower	KPPW0276	1
19.	3/8" Plain Clamp	AN742-D6	2
20.	3/8" x .035" Aluminum Tube ***	KAAC0044-14	1
21.	3/16" Shear Nut - Steel	AN364-1032C	2
22.	Medium Temperature Tubing	KSPW0069	2 ft
23.	3/16" Shear Nut	AN364-1032A	2
24.	Safety Wire *	-----	0
25.	5/8" Cushion Clamp	MS21919-DG10	2
26.	3/16" Bolt	AN3-5A	4
27.	90-Degree Fitting, Swivel	KSPW0106	1
28.	Oil Cooler Adaptor	KSPW0112	1

* Builder Supplied

** Builder Modifies

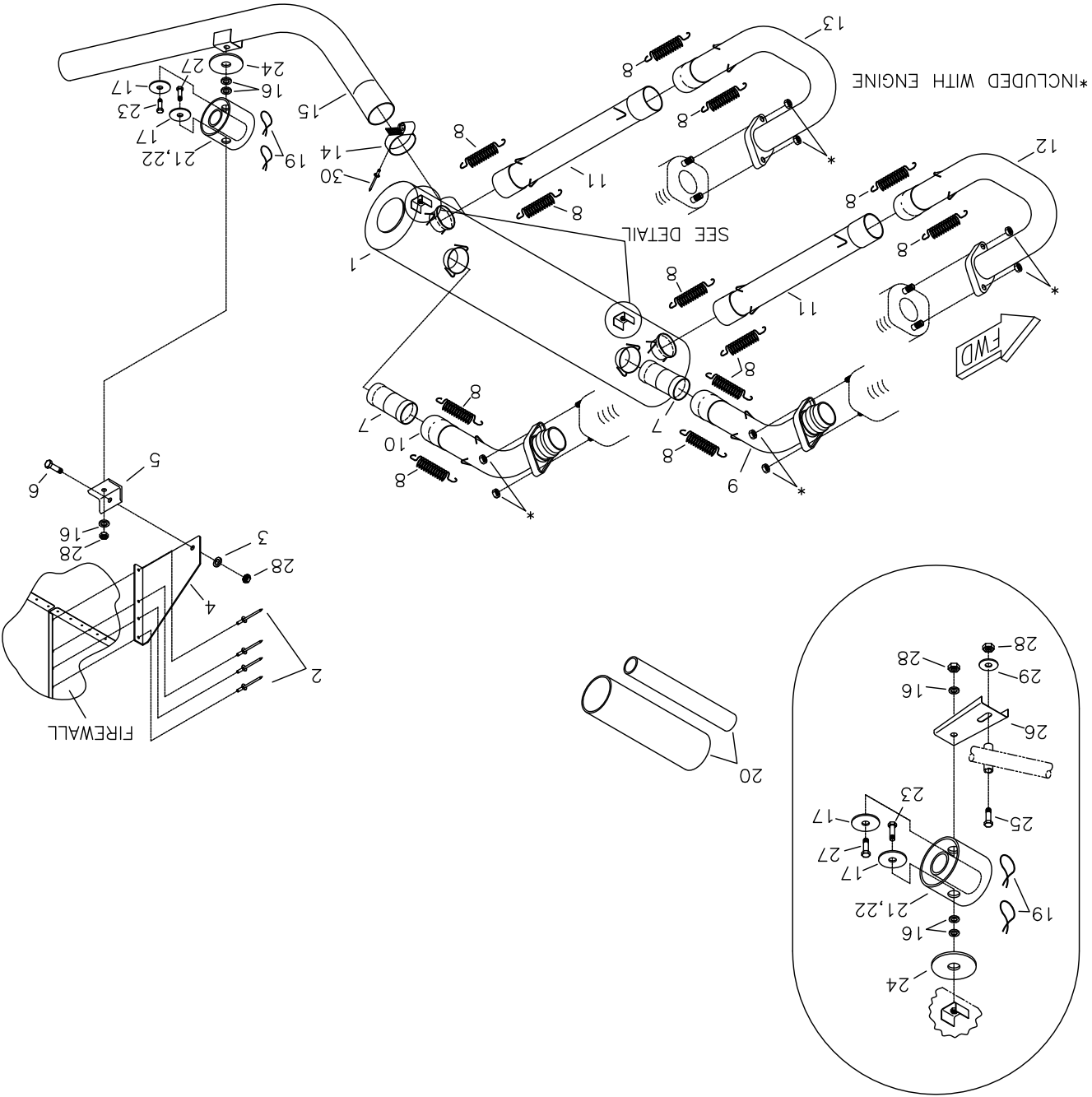
*** Builder must fabricate from raw stock

9/11/2018

REV. - ORIG

RRRND S-21 OUTBOUND
ROTAX 912ULS
MUFFLER ASSEMBLY

MD5201
REV. - ORIG



RANS S-21 OUTBOUND

ROTAX 912ULS - MUFFLER ASSEMBLY

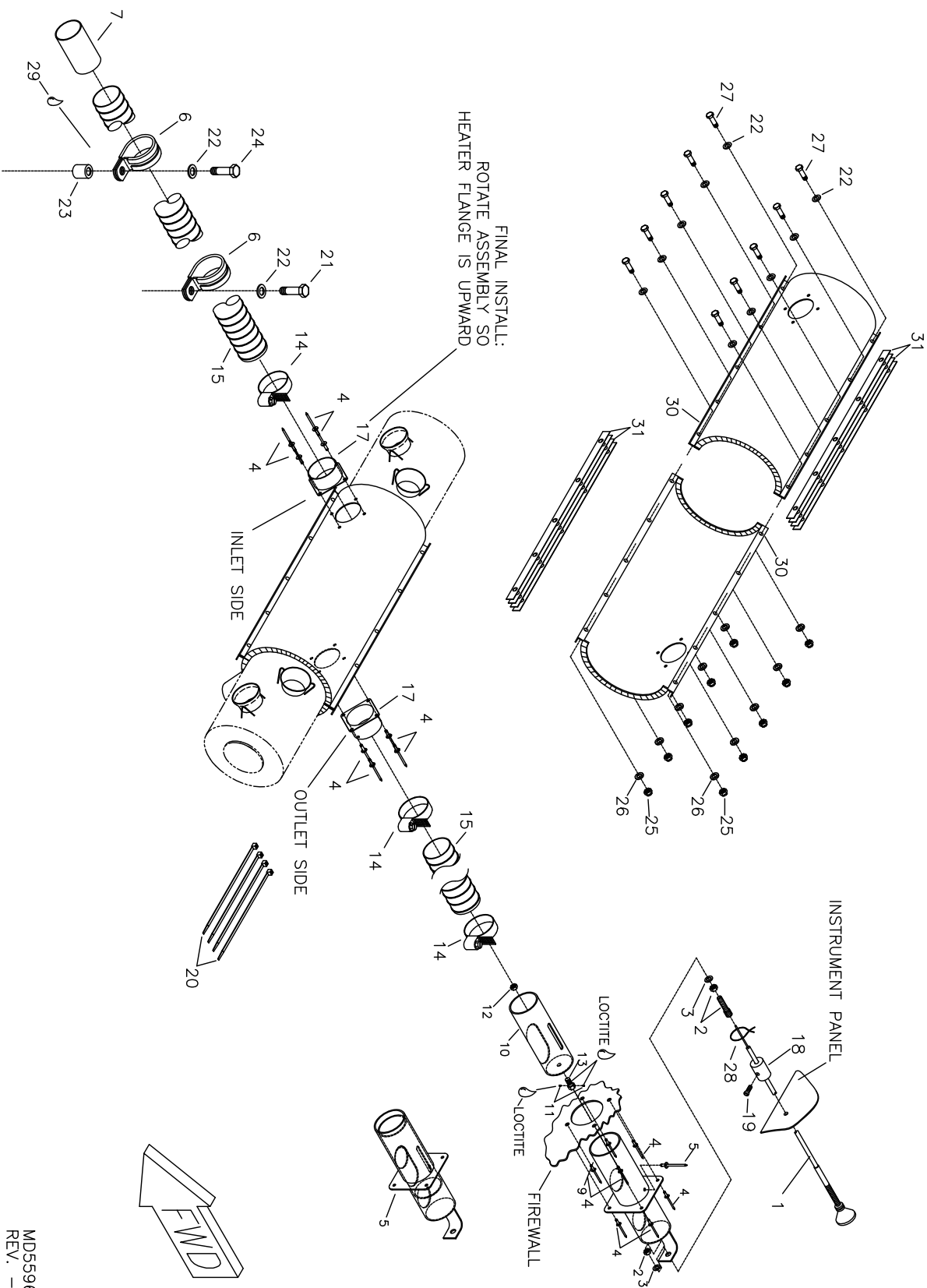
PAGE 011E-02 / 912ULS

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	S-19 / S-20 / S-21 Muffler - Rotax 912ULS	KPEX0071	1
2.	1/8" Stainless Steel Rivet - Cherry Q	AAPQ-43	4
3.	1/4" Thin Washer	AN960-416L	1
4.	Exhaust Mount Bracket	KPEX0076	1
5.	Tail Pipe Support - Angle	KPEX0075	1
6.	1/4" Bolt	AN4-5A	1
7.	Muffler Canister Coupler	KPEX0072	2
8.	Muffler Spring	KSEX0002	12
9.	Aft Top Pipe - RH	KPEX0069	1
10.	Aft Top Pipe - LH	KPEX0070	1
11.	Forward Manifold #2 Pipe	KPEX0068	2
12.	Forward Manifold #1 Pipe - RH	KPEX0022	1
13.	Forward Manifold #1 Pipe - LH	KPEX0020	1
14.	Hose Clamp - 2 1/4"	5-5228	1
15.	Tail Pipe Extension	KPEX0067	1
16.	1/4" Thick Washer	AN960-416	8
17.	Formed Washer	KPAC0053	6
18.	6mm Hex Nut	6MM HEX NUT	3
19.	Safety Wire *	-----	0
20.	912 Muffler Raw Stock Kit	KAAC0017	1
21.	Rubber Hose - 3/4" o.d. x 1 3/8" **	KAAC0017-1	0
22.	Rubber Hose - 1 1/4" o.d. x 1 3/8" **	KAAC0017-2	0
23.	6MM Bolt	M6X20 BOLT	6
24.	1/8" Aluminum Washer	EG-AW	3
25.	1/4" Bolt	AN4-16A	2
26.	Muffler Attach Channel	KPEX0027	2
27.	1/4" Plain Bolt	KSHW0016	3
28.	1/4" Shear Nut - Steel	AN364-428C	6
29.	1/4" Large Washer	AN970-4	2
30.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-44	1

* Builder Supplied

** Fabricate from Raw Stock

9/11/2018
REV. - ORIG



Rotax S-21 Outbound

Rotax 912ULS

Options - Cabin Heater Installation - Muffler Style

MD5596
REV. - ORIG

RANS S-21 OUTBOUND

PAGE 011E-04 / 912ULS

ROTAX 912ULS - OPTIONS - CABIN HEATER INSTALLATION

MUFFLER STYLE

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Control Cable	4-336	1
2.	Adjustable Cable Ferrule	12553	1
3.	1/4" Plastic Washer	PW-4	2
4.	1/8" Stainless Steel Rivet - Cherry Q	CCPQ-42	12
5.	1/8" Aluminum Rivet - Cherry Q *	AAPQ-42	0
6.	1-1/2" Cushioned Clamp	MS21919-DG24	2
7.	Inlet Tube	H-OT	1
8.	Air Diverter Assembly	KASY0006	1
9.	Air Diverter - Slide *	KASY0006-1	0
10.	Air Diverter - Body *	KASY0006-2	0
11.	Set Screw	KSHW0043	2
12.	6mm Hex Nut	6MM HEX NUT	1
13.	Reverse Cable Stop	BPHW0006	1
14.	Hose Clamp - 1 3/4"	5-5220	3
15.	1 1/2" Heater Duct / Creet Hose	CREET HOSE	5 ft
16.	Cabin Heat Shield	KPFU0653	1
17.	Heater Flange Assembly	KPSY0030	2
18.	Cable Friction Block	T-STOP	1
19.	Socket Head Cap Screw	T-SC	1
20.	Nylon Tie - 15"	LONG-N-TIE	4
21.	6MM Bolt	M6X16 BOLT	1
22.	1/4" Thin Washer	AN960-416L	2
23.	3/8" x 0.058" x 1/2" Aluminum Bushing **	KAAC0044-3	0
24.	6MM Bolt	M6X30 BOLT	1

* Component of KASY0006

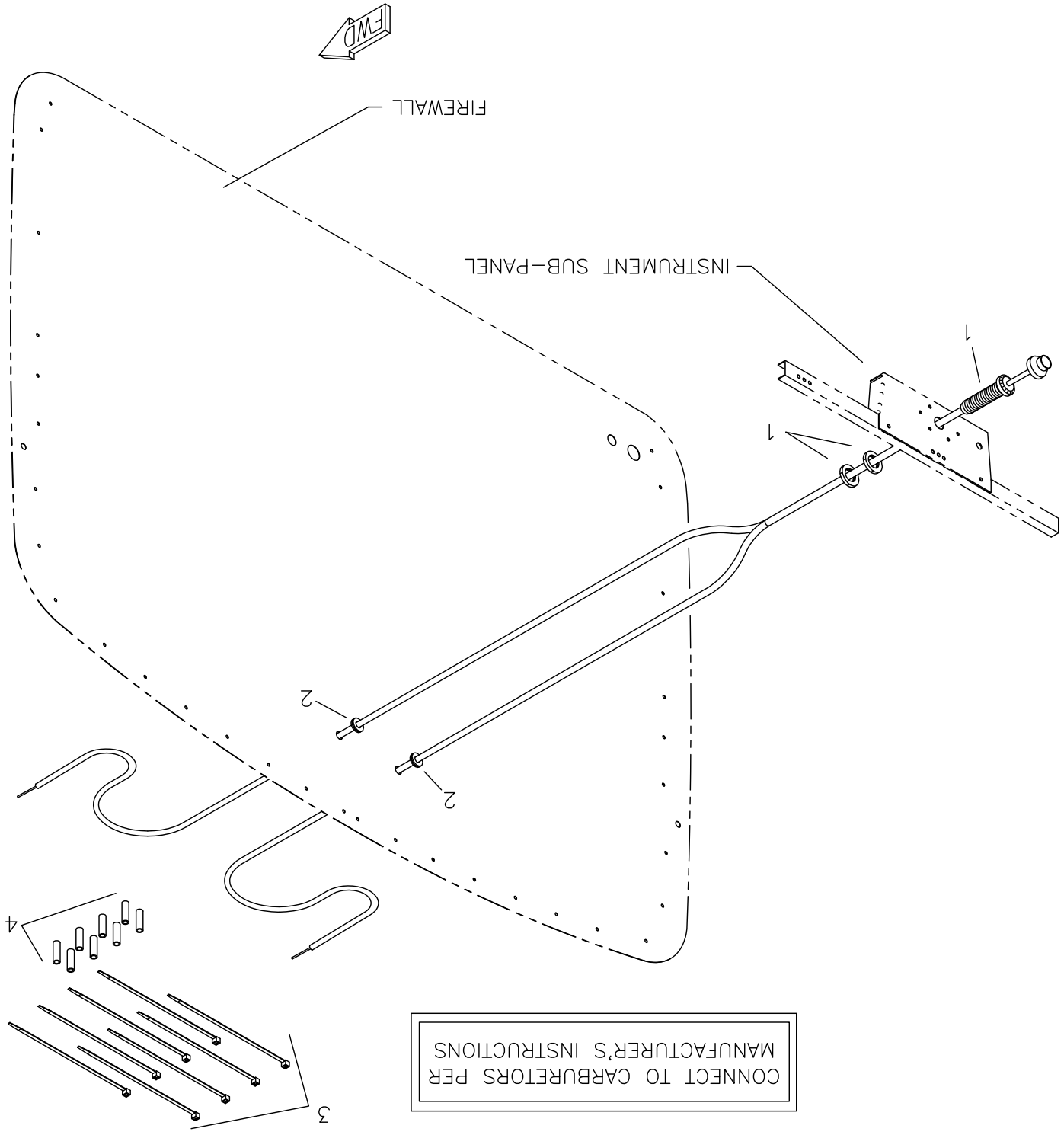
** Fabricate from Raw Stock

9/11/2018

REV. - ORIG

RPM S-21 OUTBOUND
ROTAX 912ULS
THROTTLE ASSEMBLY

MD5597
REV. - ORIG



RANS S-21 OUTBOUND

PAGE 011F-02 / 912ULS

ROTAX 912ULS - THROTTLE CONTROL ASSEMBLY

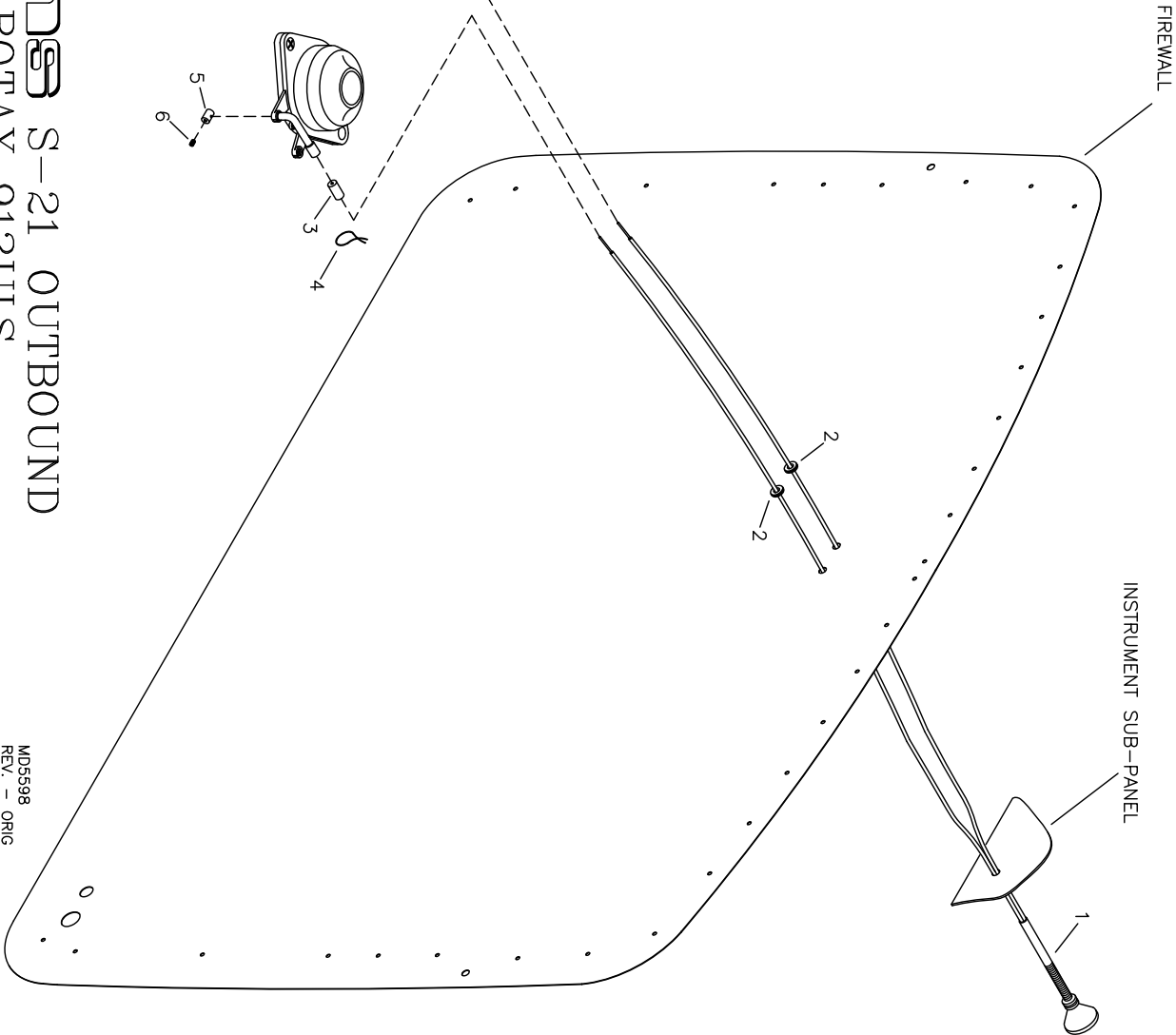
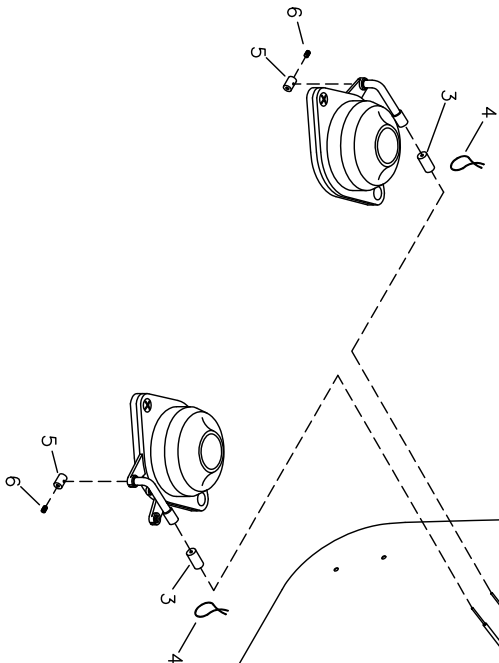
#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Throttle Cable Assembly - Dual	KSCS0025	1
2.	3/16" Rubber Grommet	KSAC0002	2
3.	Plastic Tie - 7.5"	N-TIES	8
4.	Blue Fuel Line - 1/4" *	FS-FL	12 in

* Builder Modifies

9/11/2018
REV. - ORIG



CONNECT TO CARBURETORS PER
MANUFACTURER'S INSTRUCTIONS



RRR S-21 OUTBOUND
ROTAX 912ULS
CHOKE CONTROL ASSEMBLY

MD5598
REV. - ORIG

RANS S-21 OUTBOUND

PAGE 011G-02 / 912ULS

ROTAX 912ULS - CHOKE CONTROL ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Choke Cable Assembly - Dual	KSCS0026	1
2.	3/16" Rubber Grommet	KSAC0002	2
3.	Cable Housing Endcap	ENDCAP-12000	2
4.	Safety Wire *	-----	0
5.	Barrel Stop **	-----	0
6.	Set Screw **	-----	0

* Builder Supplied

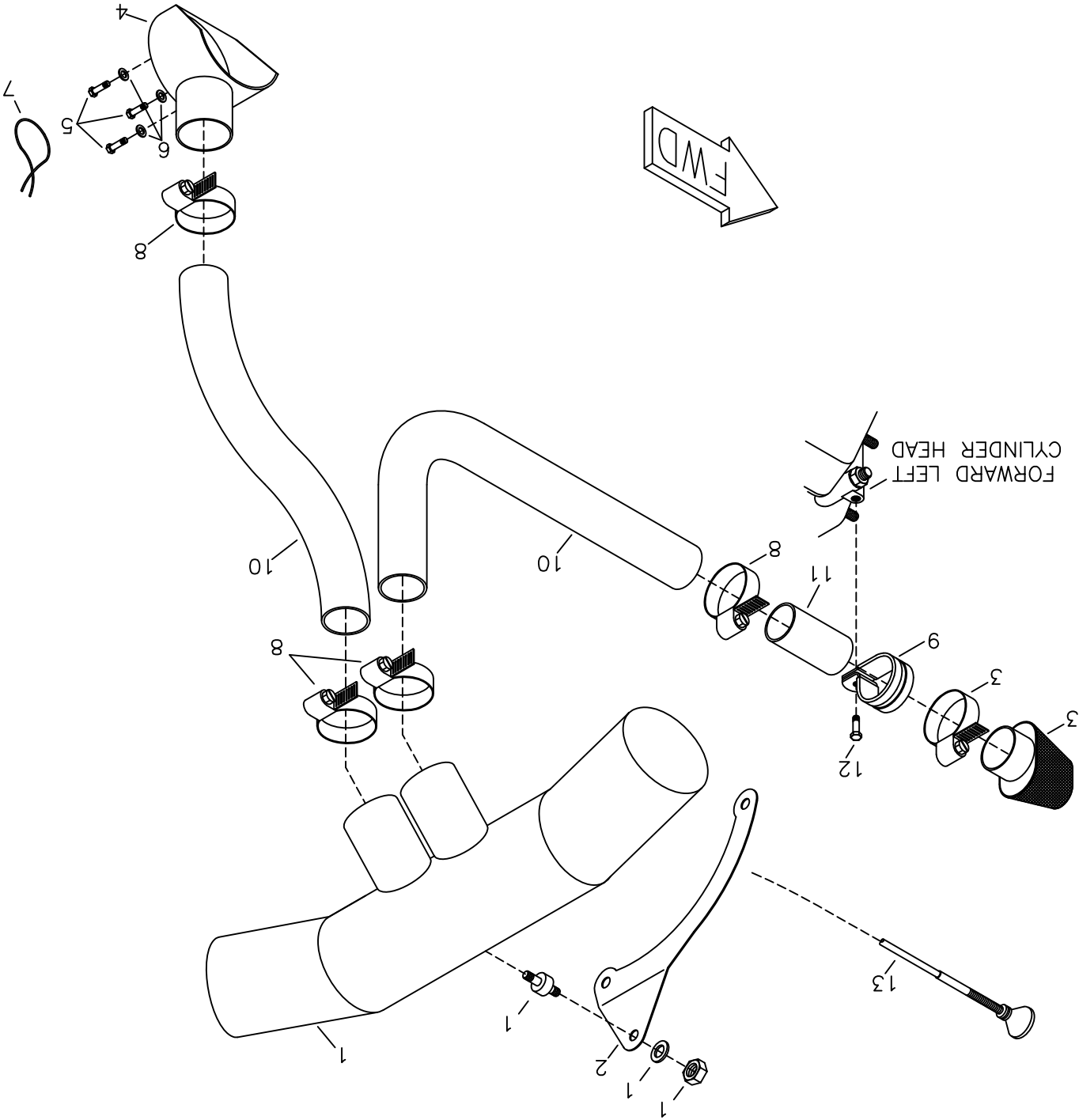
** Supplied with Choke Cable Assembly

9/11/2018

REV. - ORIG

RRMS S-21 OUTBOUND ROTAX 912ULS OPTIONS - CARB HEAT ASSEMBLY

MD5464
REV. - ORIG



RANS S-21 OUTBOUND

PAGE 011H-02 / 912ULS

ROTAX 912ULS - OPTIONS - CARB HEAT ASSEMBLY

RANS Part Assembly # KAPW0055 (with Airbox), KAPW0056 (without Airbox)

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Rotax Airbox Assembly - OPTIONAL *	KSPW0115	1
2.	Airbox Support Bracket	KPPW0264	1
3.	Air Filter	SN-2540	1
4.	Heat Exchanger	KPPW0263	1
5.	3/16" Bolt - Drilled Head	AN3H-4A	3
6.	1/4" Thick Washer	AN960-416	3
7.	Safety Wire **	-----	0
8.	Hose Clamp - 2 3/4"	5-5236	4
9.	2-1/2" Cushioned Clamp	MS21919-DG40	1
10.	2-1/2" Duct Hose	KSPW0087	5 ft
11.	Intake Splice Tube	KPPW0281	1
12.	6MM Bolt	M6x20 BOLT	1
13.	Control Cable	4-336	1

* May be purchased seperately, call RANS Parts Dept. for pricing

** Builder Supplied

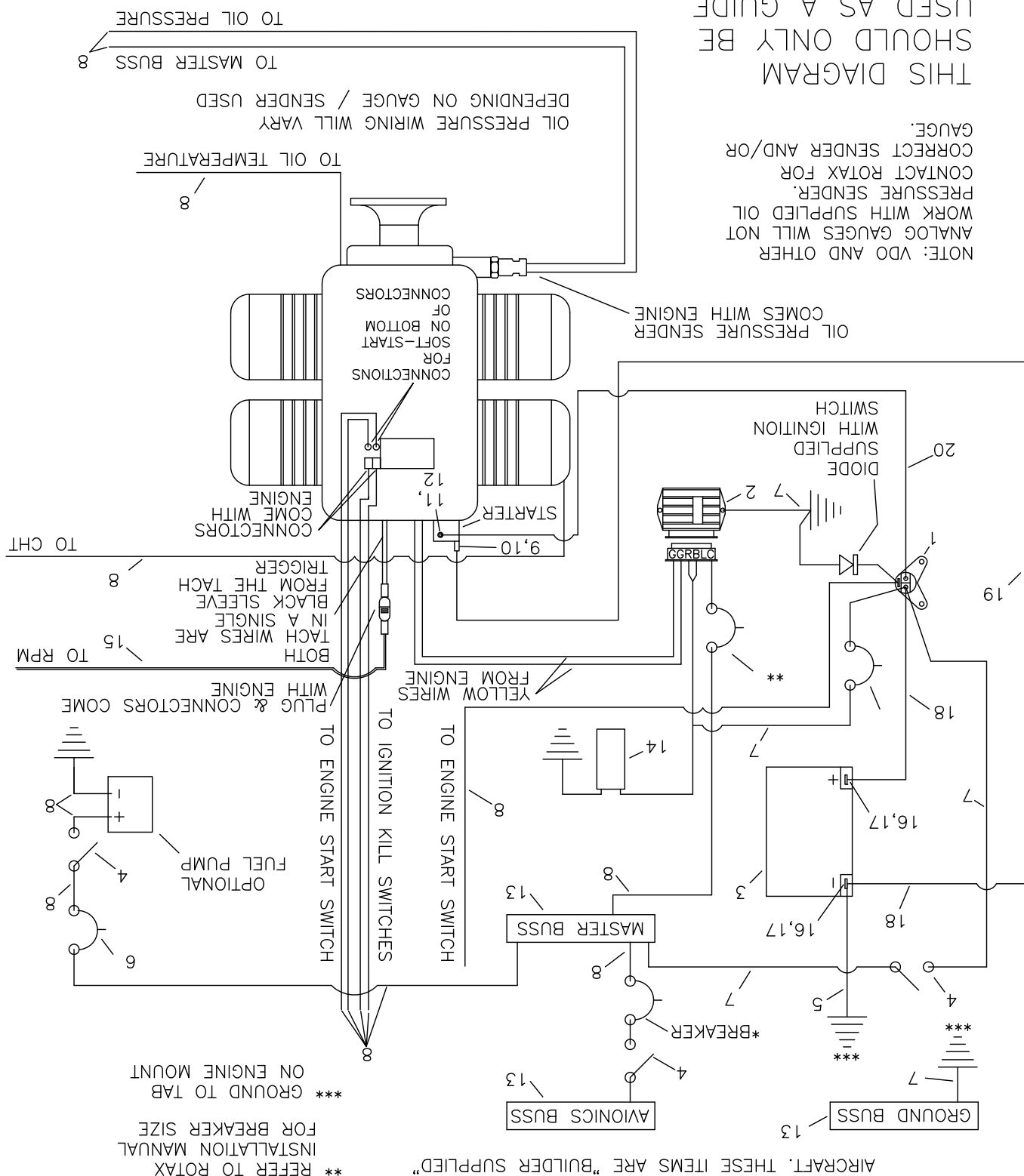
9/11/2018

REV. - ORIG

RRMS S-21 OUTBOUND

THIS DIAGRAM
SHOULD ONLY BE
USED AS A GUIDE

NOTE: VDO AND OTHER
ANALOG GAUGES WILL NOT
WORK WITH SUPPLIED OIL
PRESSURE SENDER.
CONTACT ROTAX FOR
CORRECT SENDER AND/OR
GAUGE.



* AMPERAGE TO BE DETERMINED BY BUILDER

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

RANS S-21 OUTBOUND
ROTAX 912ULS - ENGINE ELECTRICAL
SAMPLE SCHEMATIC

PAGE 011I-02 / 912ULS

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Solenoid *	----	0
2.	Regulator / Rectifier *	----	0
3.	Battery **	----	0
4.	Switch ***	----	0
5.	Battery / Ground Cable	KAES0004	1
6.	5 Amp Breaker ***	----	0
7.	12 Gauge Wire ***	----	0
8.	14 Gauge Wire ***	----	0
9.	1/4" Bolt	AN4-10A	1
10.	1/4" Shear Nut - Steel	AN364-428C	1
11.	1/4" Loc Washer	AN935-416L	2
12.	6mm Hex Nut	6MM HEX NUT	1
13.	Electrical Buss Bar *** ****	AMW 636	0
14.	Capacitor - 22,000 microFarad / 25v ***	----	0
15.	2 Plex 20 Gauge Wire ***	----	0
16.	3/16" Shear Nut - Steel	AN364-1032C	2
17.	3/16" Bolt	AN3-3A	2
18.	Battery / Solenoid Cable	KAES0019	1
19.	Starter / Ground Cable	KAES0008	1
20.	Solenoid / Starter Cable	KAES0007	1

* Supplied with Engine

** Referenced from Battery Box Assembly and Installation

*** Builder Supplied

**** May be purchased seperately, call RANS Parts Dept. for pricing

9/11/2018

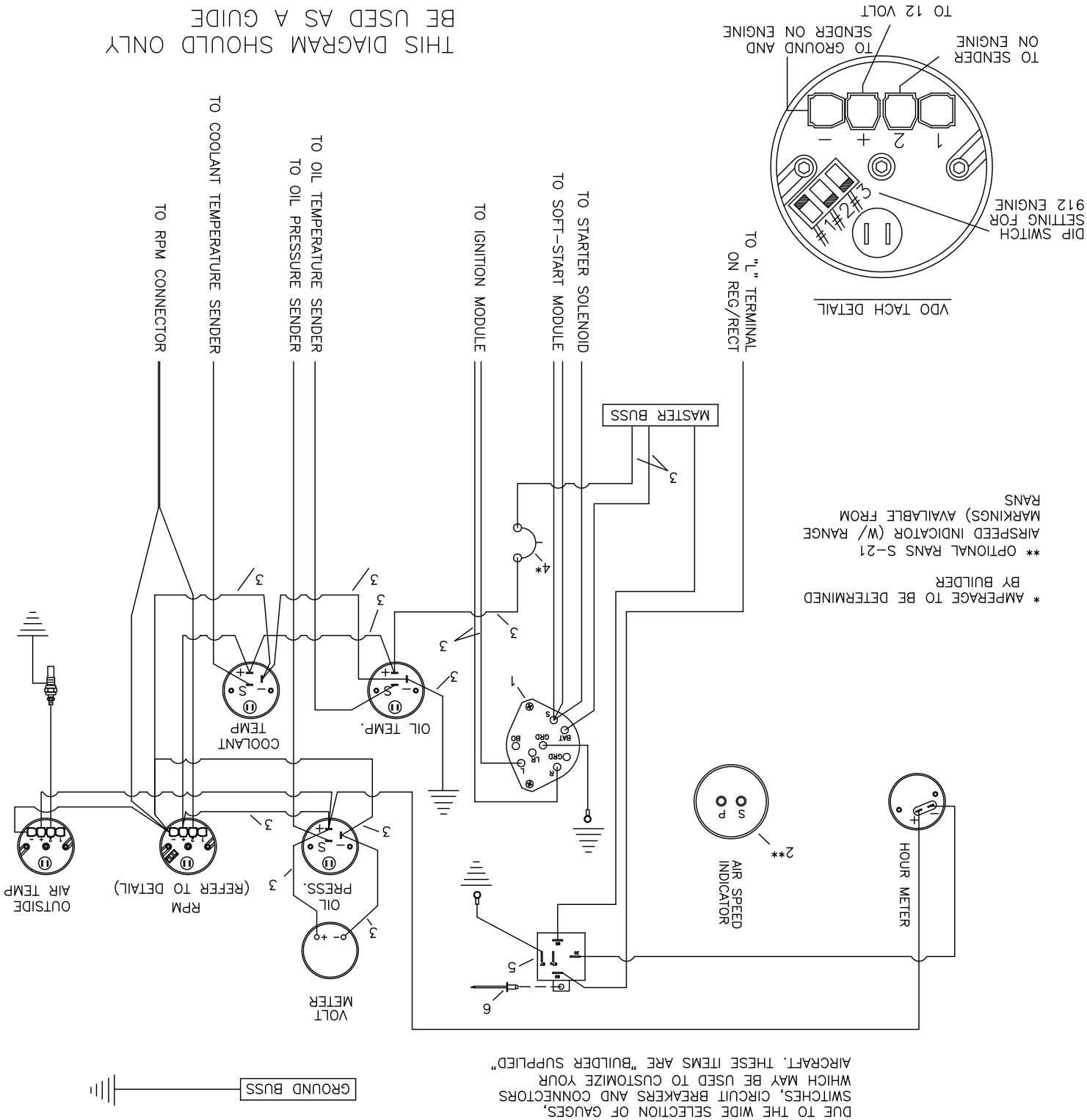
REV. - ORIG

ANALOG INSTRUMENTS/ELECTRICAL ROTAX 912ULS

RANS S-21 OUTBOUND

MD5231
REV. - ORIG

09/11/2018



RANS S-21 OUTBOUND

PAGE 011I-04 / 912ULS

ROTAX 912ULS - ANALOG INSTRUMENTS / ELECTRICAL

SAMPLE SCHEMATIC

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Switch - Ignition	KSES0027	1
2.	Optional RANS S-21 Airspeed Indicator - 3-1/8" * **	KSAV0031	0
3.	14 Gauge Wire *	-----	0
4.	Breaker *	-----	0
5.	Optional Hour Meter Relay Assembly ** ***	KAES0016	0
6.	3/16" Aluminum Rivet - Cherry Q ** ***	AAPQ-62	0

* Builder supplied

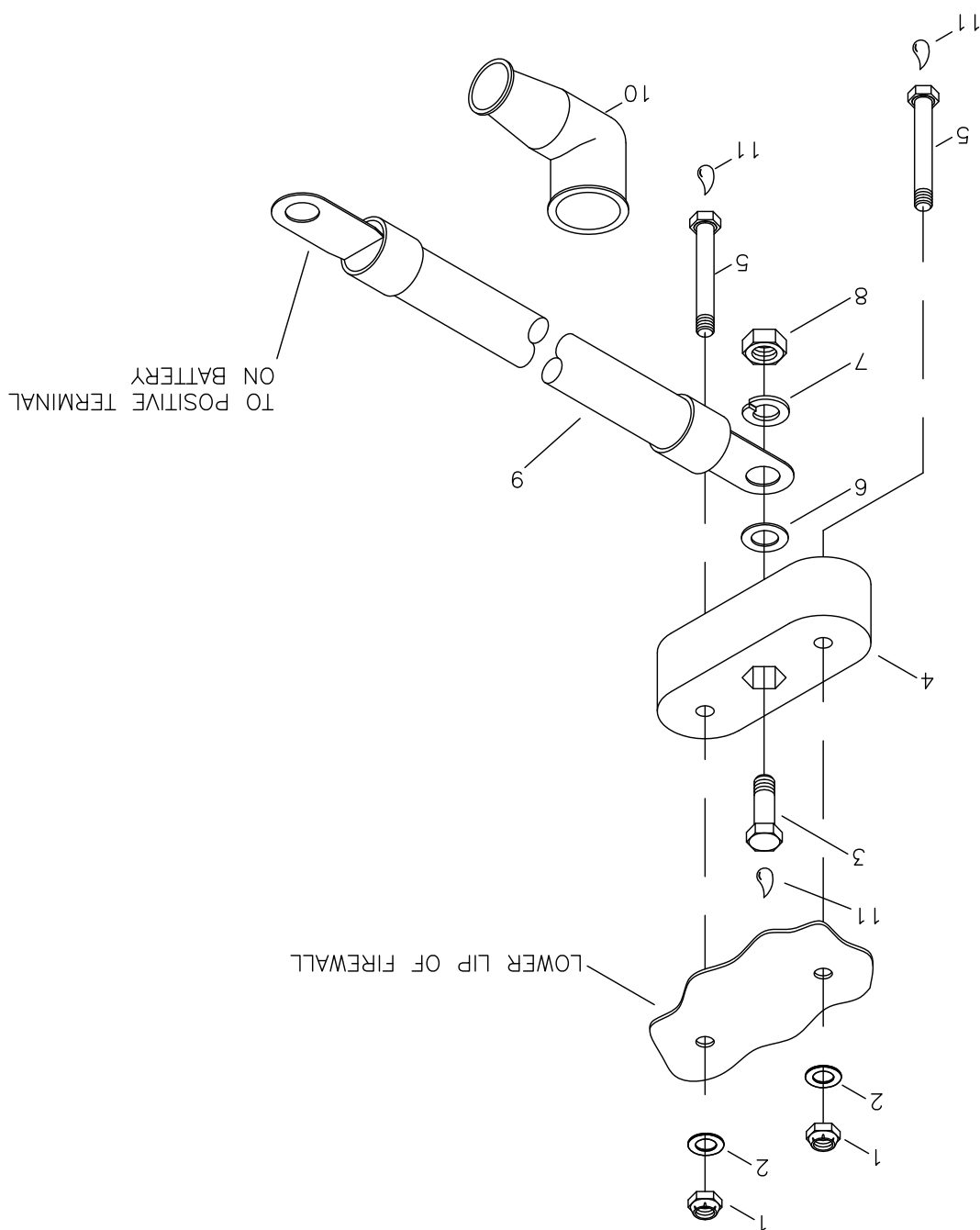
** May be purchased seperately, call RANS Parts Dept. for pricing

*** Required if installing Analog Instruments - Not required with most Digital Systems

9/11/2018

REV. - ORIG

MD5501
REV. - ORIG



RANS S-21 OUTBOUND

PAGE 011I-06 / 912ULS

ROTAX 912ULS - OPTIONS - REMOTE CHARGING POST INSTALLATION

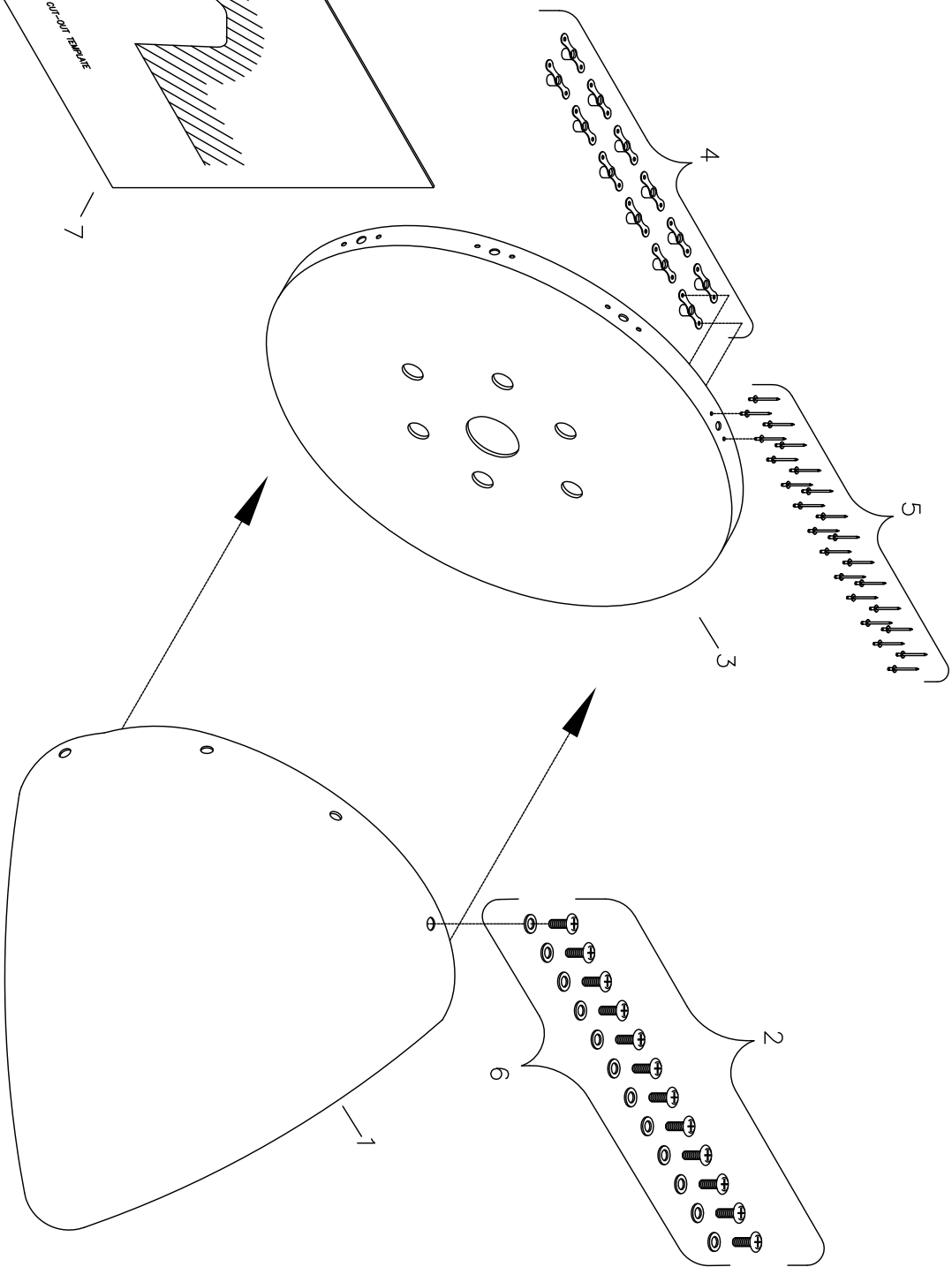
KPES0029

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/16" Shear Nut - Steel	AN364-1032C	2
2.	3/16" Thin Washer	AN960-10L	2
3.	1/4" Plain Bolt	1/4 X 1 BOLT	1
4.	Isolator Block	KPES0026	1
5.	3/16" Bolt	AN3-7A	2
6.	1/4" Thick Washer	AN960-416	1
7.	1/4" Lock Washer	AN935-416L	1
8.	1/4" Plain Nut	AN345-416	1
9.	Remote Battery Charger Cable	KAES0017	1
10.	Terminal Boot	MS25171-3S	1
11.	Silicone Seal *	-----	0

* Builder supplied

9/11/2018
REV. - ORIG

NOTE: 1" PROP EXTENSION REQUIRED.
REFER TO PROPELLER INSTALLATION



ROTAX S-21 OUTBOUND
ROTAX 912ULS
11.3" SPINNER ASSEMBLY

RANS S-21 OUTBOUND

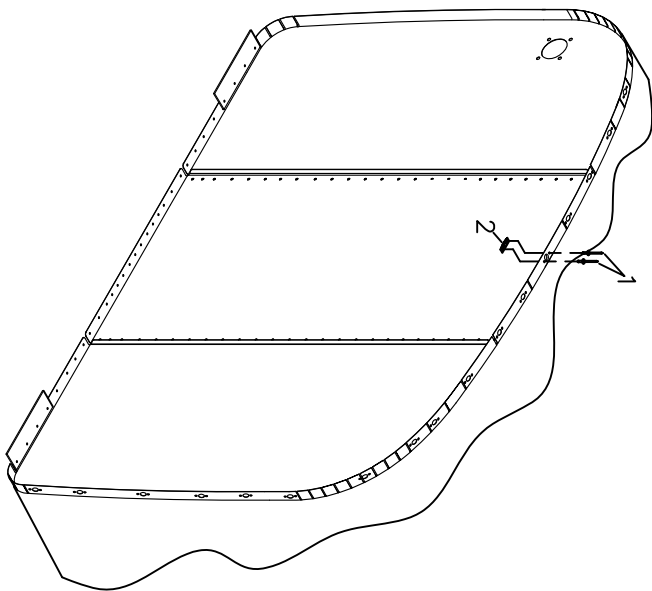
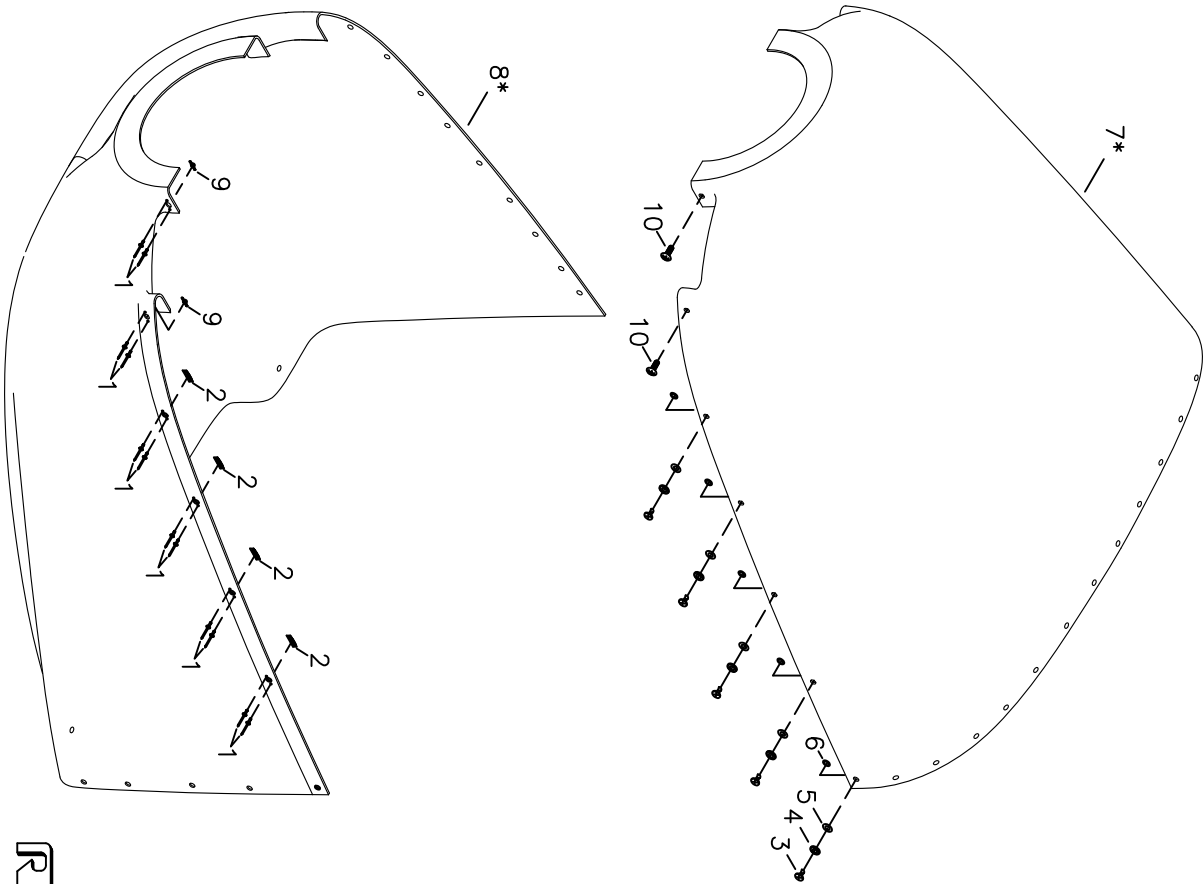
PAGE 011J-02 / 912ULS

ROTAX 912ULS - 11.3" SPINNER ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Spinner Dome - 11.3" - 912ULS	KSPW0095	1
2.	Pan Head Phillips Bolt (5/8" long)	KSHW0071	12
3.	Spinner Backing Plate - 11.3" - 912ULS	KPPW0296	1
4.	3/16" Nut Plate	K-1000-3	12
5.	3/32" Aluminum Rivet	40APR1/4	24
6.	3/16" Thin Washer	AN960-10L	12
7.	Spinner Cut-out Template *	-----	0

* Refer to Figures Manual for Spinner Cut-out Template

9/11/2018
REV. - ORIG



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

ROTAX S-21 OUTBOUND
ROTAX 912ULS
COWLING ASSEMBLY AND INSTALLATION

MD5141
REV. - ORIG

RANS S-21 OUTBOUND

PAGE 011K-02 / 912ULS

ROTAX 912ULS - COWLING ASSEMBLY AND INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/32" Aluminum Rivet	40APR1/4	82
2.	1/4 Turn Receptacle	#302	37
3.	1/4 Turn Stud *	#180	37
3.	1/4 Turn Stud *	#240	4
3.	1/4 Turn Stud *	#200	4
4.	Rubber Washer	#201	37
5.	Wear Washer Nylon	#103	37
6.	Snap Ring	#101	37
7.	Cowling - Upper - Optional - Carbon Fiber - 912 **	KPCW0040-C	1
7.	Cowling - Upper - Fiberglass - 912	KPCW0040-F	1
8.	Cowling - Lower - Optional - Carbon Fiber - 912 **	KPCW0041-C	1
8.	Cowling - Lower - Fiberglass - 912	KPCW0041-F	1
9.	8-32 Nut Plate	MS21047-08	4
10.	#8 Truss Head Screw	AN515-8R7	4

* Use as needed for secure attachment

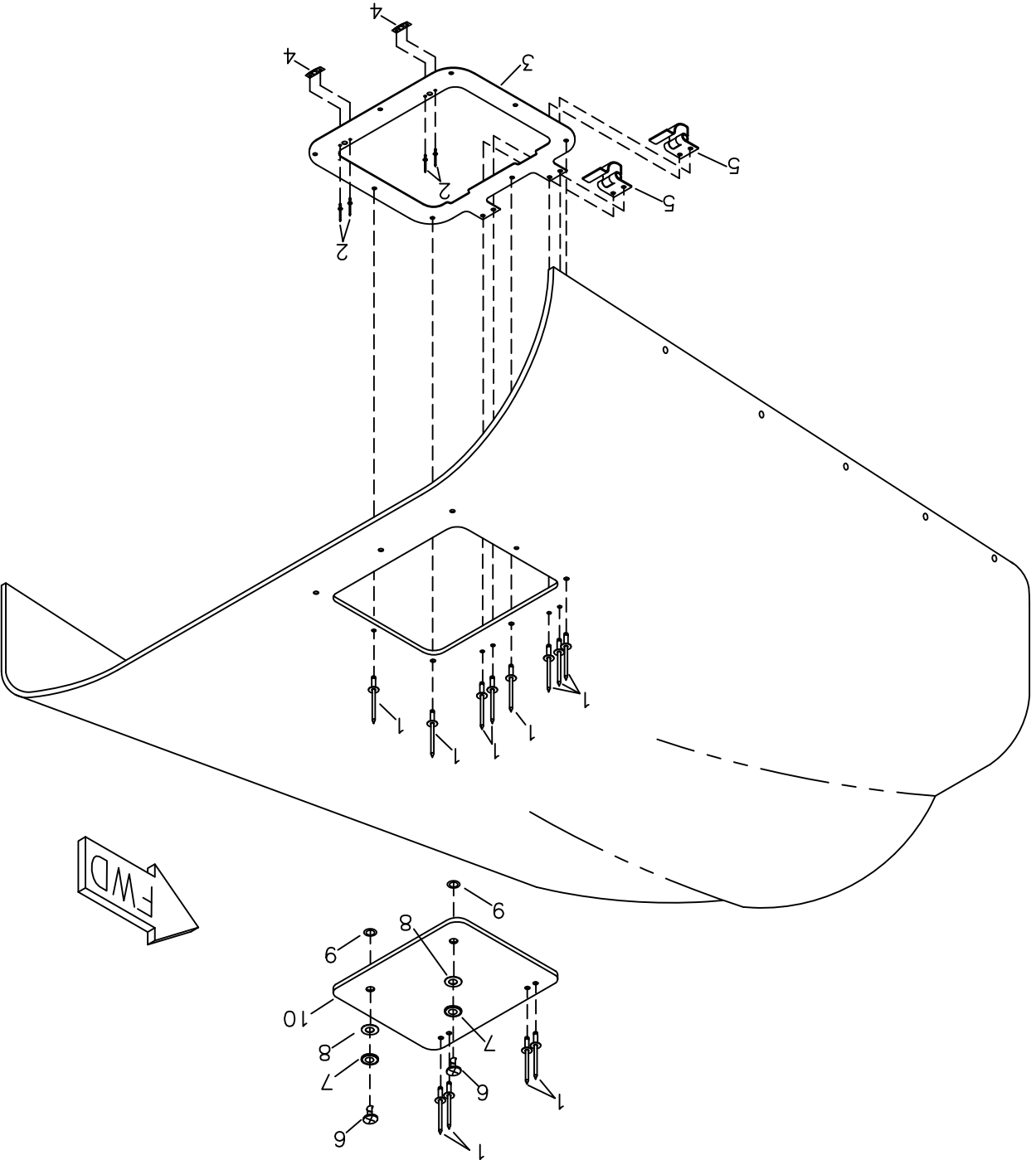
** Optional

9/11/2018

REV. - ORIG

RAMS S-21 OUTBOUND
ROTAX 912ULS
OIL CHECK DOOR INSTALLATION

MDS140
REV. - ORIG



RANS S-21 OUTBOUND

PAGE 011K-04 / 912ULS

ROTAX 912ULS - OIL CHECK DOOR INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	1/8" Aluminum Rivet - Avex	1691-0410	18
2.	3/32" Aluminum Rivet	40APR1/4	4
3.	Reinforcement Ring - Maintenance Hatch	KPCW0015	1
4.	1/4 Turn Receptacle	#302	2
5.	Oil Door Hinge	KSHW0053	2
6.	1/4 Turn Stud	#180	2
7.	Rubber Washer	#201	2
8.	Wear Washer Nylon	#103	2
9.	Snap Ring	#101	2
10.	Maintenance Hatch	KPCW0036	1

ROTAX 912ULS - OPTIONS - WHIRL WIND PROPELLER INSTALLATION

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3-Blade - Propeller - 75" STOL - 912ULS (TAILDRAGGER ONLY)	PROP WHIRLWIND / 3B 75"	1
1.	2-Blade - Propeller - 70" - 912ULS (TRIKE ONLY) *	PROP WHIRLWIND / 2B 70"	1
2.	Spinner Backing Plate **	-----	0
3.	Flange Bushing - 912	KPPW0038	6
4.	1" Prop Extension Assembly	KAPW0034	1

* Mounting Hardware included with Prop

** Referenced from Spinner Assembly