

SECTION: 503 ENGINE, INSTRUMENTATION, AND ELECTRICAL  
 DETAIL: 503 ENGINE MOUNT ASSEMBLY

**Section:****503 ENGINE, INSTRUMENTATION & ELECTRICAL SYSTEMS****Detail:****503 ENGINE MOUNT ASSEMBLY****Page:**

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**Date:**

7/25/96

#	Description	Part Number	Quantity
1.	1/4" Bolt	AN4-25A	4
2.	Stainless Steel U Bracket	SU-118	2
3.	Barry Mount	22001	4
4.	Spacer Bushing, 1 1/8" X 3/8" X .058	EG-B-3/8X1 1/8	4
5.	Engine Upper Mount Plate	KPPW0063	2
6.	Engine Mount Angle, RH	KPPW0040-RH	1
7.	5/16" Thin Washer	AN960-516L	6
8.	5/16" Shear Nut	AN364-524A	2
9.	5/16" Bolt	AN5-31A	2
10.	Engine Mount Angle, LH	KPPW0040-LH	1
11.	1/4" Bolt	AN4-12A	4
12.	Engine Lower Mount Plate	KPPW0064	2
13.	1/4" Thick Washer	AN960-416	12
14.	1/4" Tensile Nut	AN365-428A	8
15.	1/8" Aluminum Washer	EG-AW	20
16.	5/16" Bolt	AN5-10A	2
17.	5/16" Tensile Nut	AN365-524A	2

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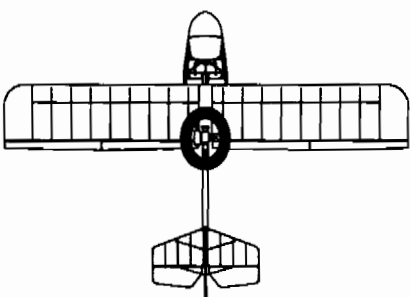
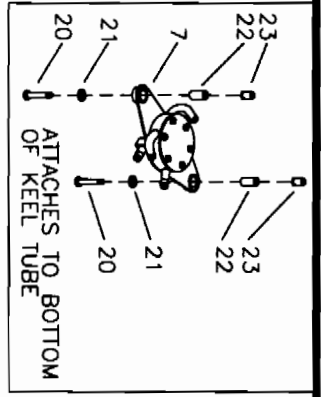
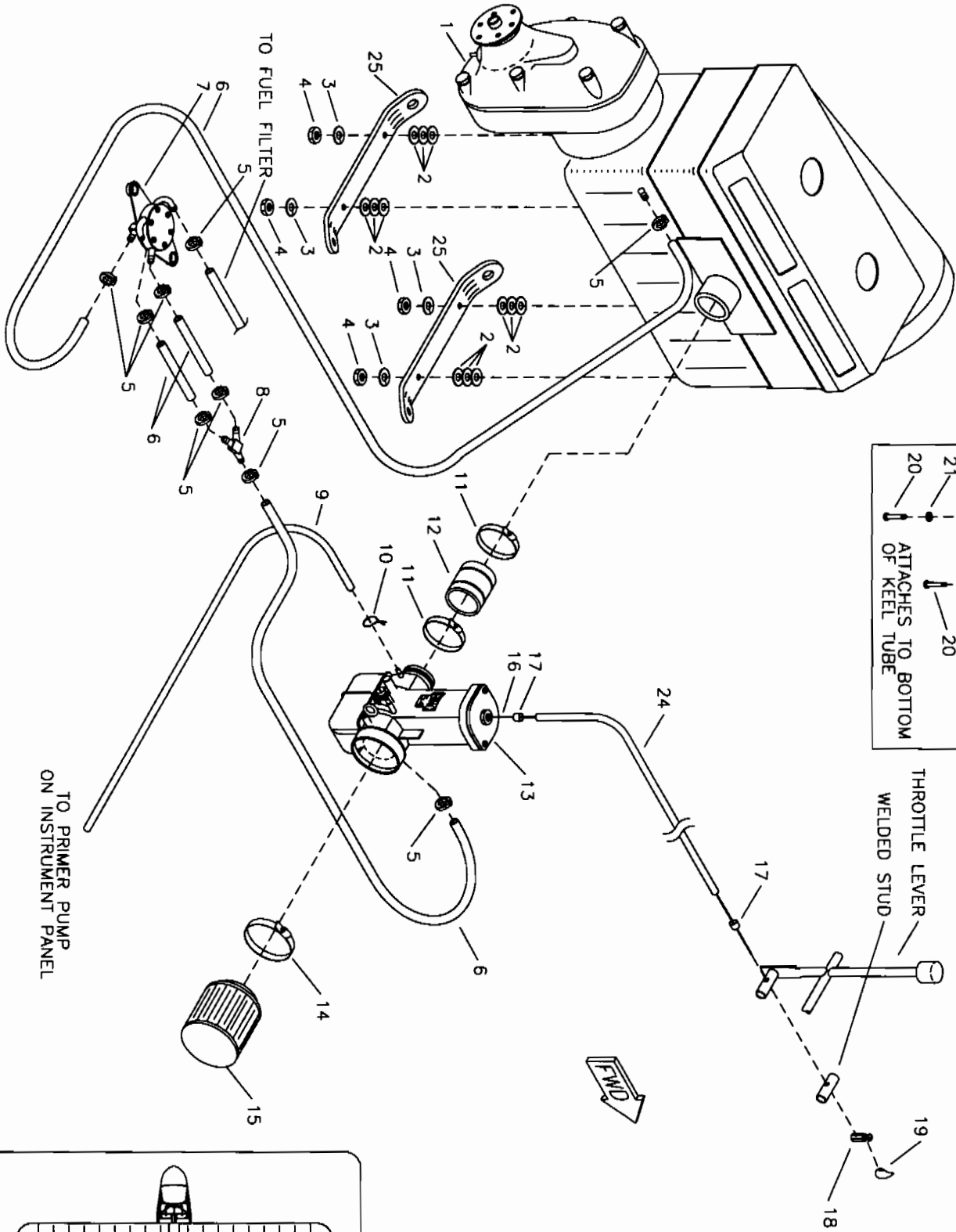
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# RRMS S-12 AIRRALE

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GEAR BOX COMES FROM FACTORY IN UP POSITION, MUST BE ROTATED TO DOWN POSITION FOR PROPER ALIGNMENT OF THRUST LINE.



SECTION: 503 ENGINE, INSTRUMENTATION, AND ELECTRICAL

DETAIL: 503 SINGLE CARB ENGINE INSTALLATION

NOTES: SEE ALSO WING TANK ASSY AND THROTTLE ASSY

**Section:****503 ENGINE, INSTRUMENTATION & ELECTRICAL SYSTEMS****Detail:****503 SINGLE CARB ENGINE INSTALLATION****Page:**

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**Date:**

9/27/95

#	Description	Part Number	Quantity
1.	Rotax 503 Engine	EG-EG-503	1
2.	7/16" Thick Washer	AN960-716	12
3.	Loc Washer *	EG-EG-503-1	4
4.	Nut *	EG-EG-503-2	4
5.	Line Clamp, 5/16" ID	FS-LCL 5/16ID	9
6.	1/4" Fuel Line ****	FS-FL	0 ft
7.	Fuel Pump *	EG-EG-503-3	1
8.	Fuel Line "Y" Connector	8345	1
9.	Primer Pump Kit	SINGLE PRIMER	1
10.	Safety Wire	SAFETY WIRE	0 ft
11.	Carb Clamp *	EG-EG-503-4	2
12.	Carb Boot *	EG-EG-503-5	1
13.	Bing Carburetor *	EG-EG-503-6	1
14.	Air Filter Clamp *	EG-EG-503-7	1
15.	Air Filter, K & N	EG-AF	1
16.	Throttle Cable	EG-CAB-12	1
17.	Cable Ferrule Cap	ENDCAP-12000	2
18.	Wire Stop/Screw	2360	1
19.	Loctite Blue	LOC-TITE	0
20.	3/16" Bolt	AN3-15A	2
21.	3/16" Thick Washer	AN960-10	2
22.	Spacer Bushing, 3/8" X .058 X 1" ***	KAAC0001	2
23.	3/16" Rivet Nut	MS27130-A25K	2
24.	Cable Housing	EG-T-CAB-H	9 ft
25.	Focalized Mount Plate **	EG-FOMP	0

\*Supplied with engine.

\*\*Referenced from engine mount.

\*\*\*Builder fabricates from raw stock.

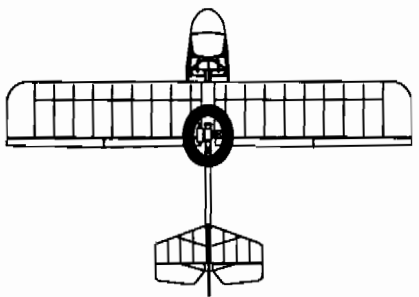
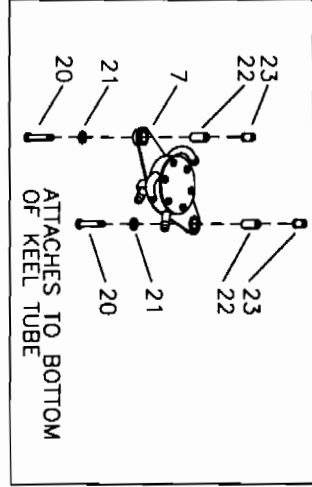
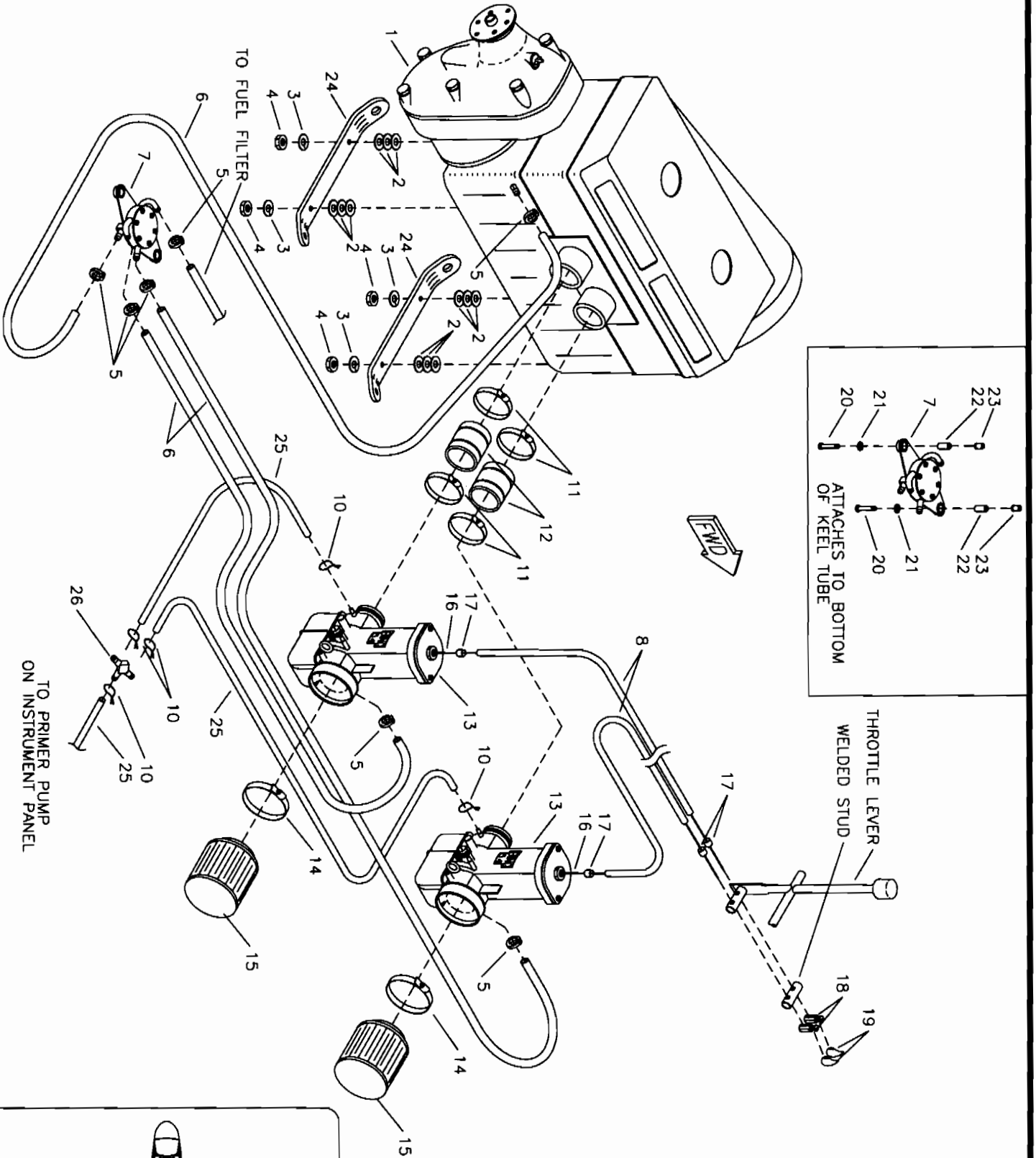
\*\*\*\*Referenced from fuel system.

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# RPM 5 S-12 AIRRALE

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SECTION: 04-05

503 ENGINE, INSTRUMENTATION, AND ELECTRICAL

DETAIL: 503 ENGINE WITH DUAL CARBURETOR ASSEMBLY

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NOTES: SEE ALSO WING TANK ASS'Y AND THROTTLE ASS'Y

**Section:****503 ENGINE, INSTRUMENTATION & ELECTRICAL SYSTEMS****Detail:****503 DUAL CARB ENGINE INSTALLATION****Page:**

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**Date:**

5/ 1/97

#	Description	Part Number	Quantity
1.	Rotax 503 Engine	EG-EG-503DC	1
2.	7/16" Thick Washer	AN960-716	12
3.	Loc Washer *	EG-EG-503-1	4
4.	Nut *	EG-EG-503-2	4
5.	Line Clamp, 5/16" ID	FS-LCL 5/16ID	7
6.	1/4" Fuel Line ****	FS-FL	0 ft
7.	Fuel Pump *	EG-EG-503-3	1
8.	Cable Housing	EG-T-CAB-H	18 ft
9.	Primer Pump Kit	DUAL PRIMER	1
10.	Safety Wire	SAFETY WIRE	0 ft
11.	Carb Clamp *	EG-EG-503-4	4
12.	Carb Boot *	EG-EG-503-5	2
13.	Bing Carburetor *	EG-EG-503-6	2
14.	Air Filter Clamp *	EG-EG-503-7	2
15.	Air Filter, K & N	EG-AF	2
16.	Throttle Cable	EG-CAB-12	2
17.	Cable Ferrule Cap	ENDCAP-12000	4
18.	Wire Stop Screw	2360	2
19.	Loctite Blue	LOC-TITE	0
20.	3/16" Bolt	AN3-15A	2
21.	3/16" Thick Washer	AN960-10	2
22.	Spacer Bushing, 3/8" X .058 X 1" ***	KAAC0001	2
23.	3/16" Rivet Nut	MS27130-A25K	2
24.	Focal Mount Plate, Upper **	EG-FOMP	0
25.	1/8" Primer Line *****	PRIMER LINE	0 ft
26.	Primer Line Tee *****	PRIME-LINE-T	0

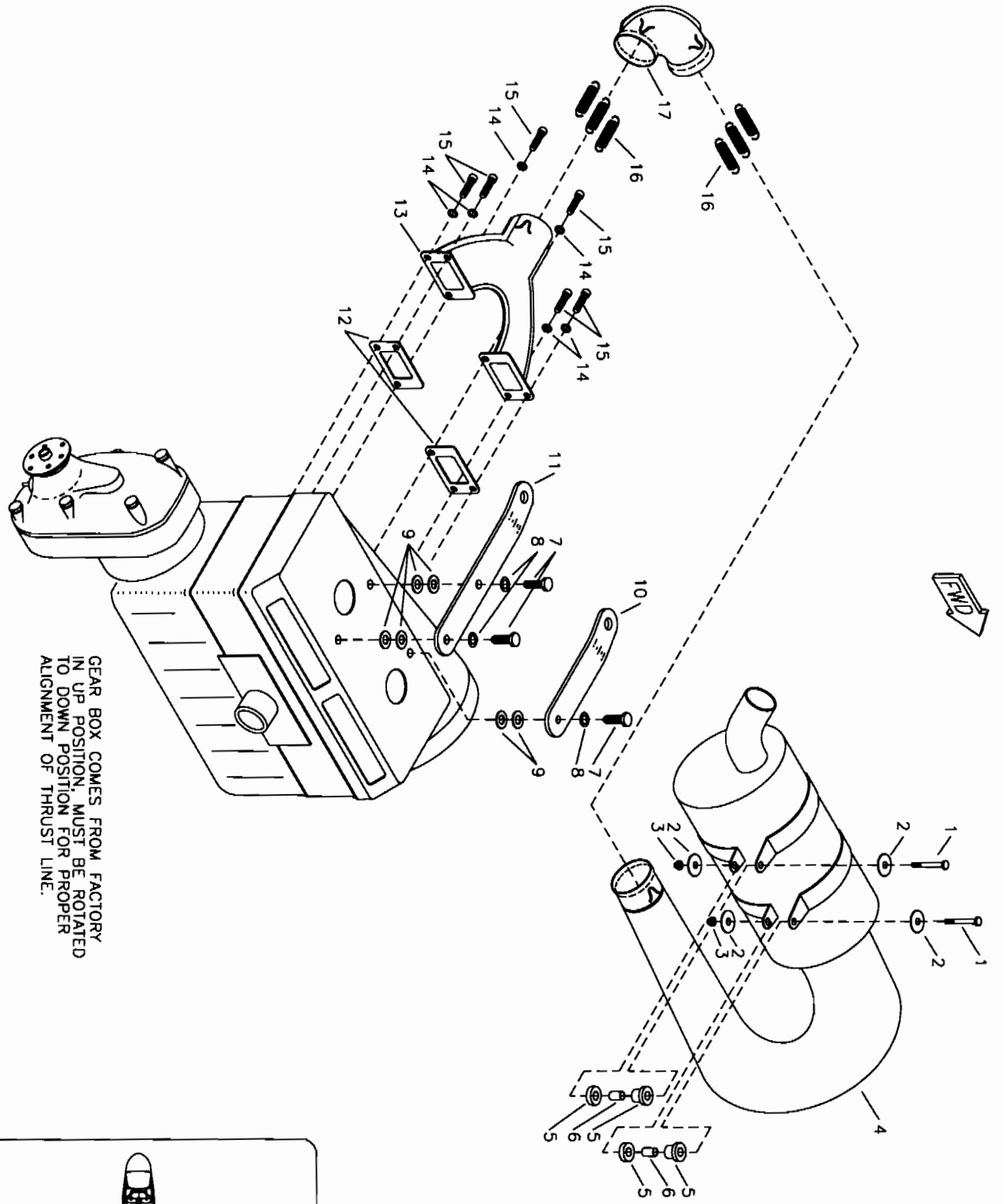
\*Comes with engine. \*\*Referenced from engine mount.

\*\*\*Builder fabricates from raw stock. \*\*\*\*Referenced from fuel system.

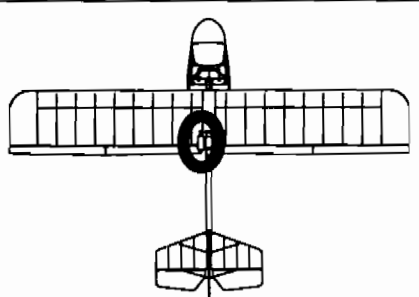
\*\*\*\*\*Comes with Primer Kit.

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GEAR BOX COMES FROM FACTORY  
 IN UP POSITION. MUST BE ROTATED  
 TO DOWN POSITION FOR PROPER  
 ALIGNMENT OF THRUST LINE.



SECTION: 503 ENGINE, INSTRUMENTATION, AND ELECTRICAL  
 DETAIL: 503 EXHAUST AND MOUNT ASSEMBLY

**S-12XL AIRAILE - 503 EXHAUST ASSEMBLY**

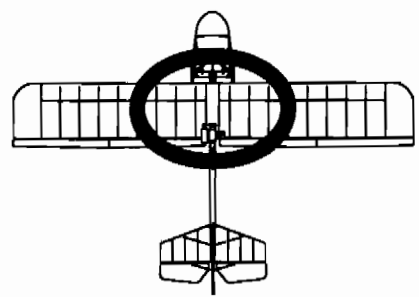
<b>#</b>	<b>DESCRIPTION</b>	<b>PART NUMBER</b>	<b>QUANTITY</b>
1.	1/4" Bolt	AN4-20A	2
2.	1/8" Aluminum Washer	EG-AW	4
3.	1/4" Shear Nut	AN364-428A	2
4.	Muffler, 503	KSEX0006	1
5.	Barry Mount	22001	2
6.	Spacer Bushing, 1 1/8" x 3/8" x .058	EG-B-3/8X1 1/8	2
7.	8MM x 30MM Bolt	M8X30 BOLT	3
8.	5/16" Loc Washer	AN935-516	3
9.	5/16" Thick Washer	AN960-516	6
10.	FWD Mount Plate	EG-FMP(12/14)	1
11.	AFT Mount Plate	EG-AMP(12/14)	1
12.	Exhaust Gasket *	----	0
13.	Exhaust Manifold, 503	KSEX0008	1
14.	10MM Loc Washer *	----	0
15.	10MM Shoulder Screw *	----	0
16.	Muffler Springs , 503	EG-MUFF-SPRINGS	6
17.	Muffler Elbow, 503	KAEX0008	1

\*Supplied with engine.



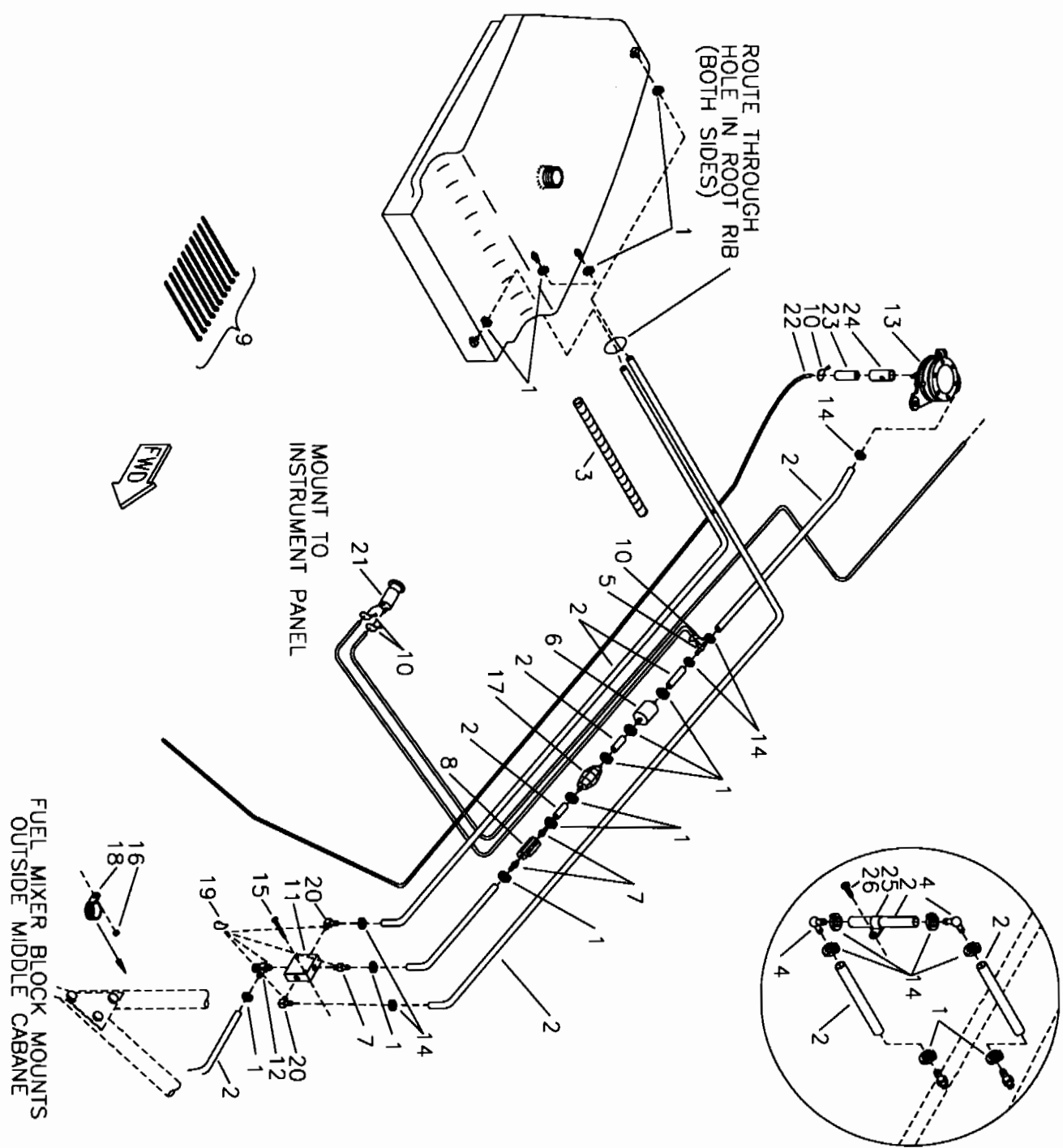
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SECTION:  
**503 ENGINE, INSTRUMENTATION, AND ELECTRICAL**

DETAIL:  
**503 FUEL SYSTEM - SINGLE WING TANK**



**Section:**

**503 ENGINE, INSTRUMENTATION & ELECTRICAL SYSTEMS**

**Detail:**

**503 FUEL SYSTEM  
SINGLE WING TANK**

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**Date:**

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#	Description	Part Number	Quantity
1.	Line Clamp, 3/8"	FS-LCL 3/8	11
2.	1/4" Fuel Line	FS-FL	25 ft
3.	Coil Wrap	1/2 SPIRAL LOOM	1 ft
4.	1/4" X 1/4" Elbow	7-11044	2
5.	Primer Line T*	PRIME-LINE-T	0
6.	Fuel Filter	FS-FIL	1
7.	Straight Fitting	8330	3
8.	Fuel Shut Off Valve	FS-S-OFF	1
9.	Zip Ties	ZIP TIES	10
10.	Safety Wire	SAFETY WIRE	0
11.	Fuel Mixer Block	FS-FMB	1
12.	Sump Drain Valve	8336	1
13.	Fuel Pump**	EG-EG-503-3	0
14.	Line Clamp, 5/16" ID	FS-LCL 5/16ID	8
15.	8 X 32 Bolt	AN526-832R16	1
16.	8 X 32 Nut	AN364-832A	1
17.	Primer Bulb	FS-PB	1
18.	1" Cushioned Clamp	MS21919-DG16	1
19.	Loctite Blue	LOC-TITE BLUE	0
20.	90 Fitting	8342	2
21.	Primer Pump*	PRIME-PUMP	0
22.	Primer Line	PRIME LINE	6 ft
23.	Overflow Hose	EGCS-OFH	6 in
24.	Shrink Wrap	KSAC0006	5 in
25.	3/8" Loop Clamp	KSHW0015	1
26.	#6 Pan Head Screw	6RX1/2 PHS	1

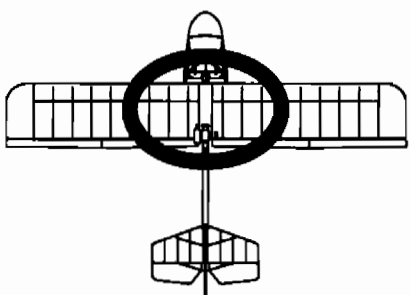
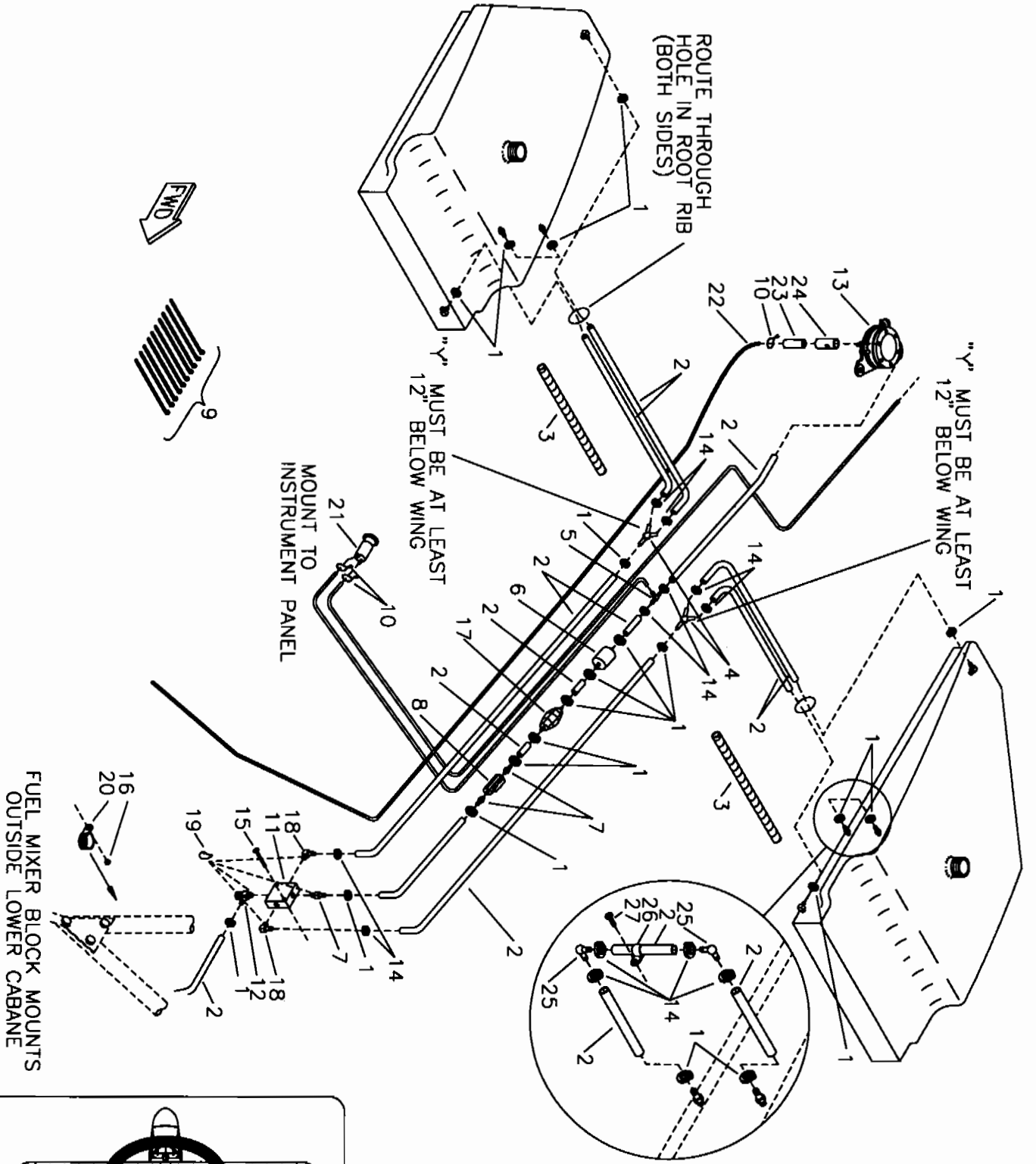
\*Comes with primer kit.

\*\*Comes with engine.

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S-12 Airaile**

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SECTION: 503 ENGINE, INSTRUMENTATION, AND ELECTRICAL

DETAIL: 503 FUEL SYSTEM - DUAL WING TANKS

**Section:****503 ENGINE, INSTRUMENTATION & ELECTRICAL SYSTEMS****Detail:****503 FUEL SYSTEM  
DUAL WING TANKS****Page:**

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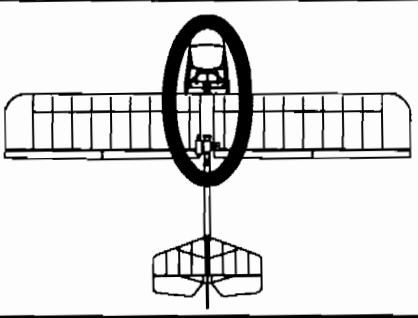
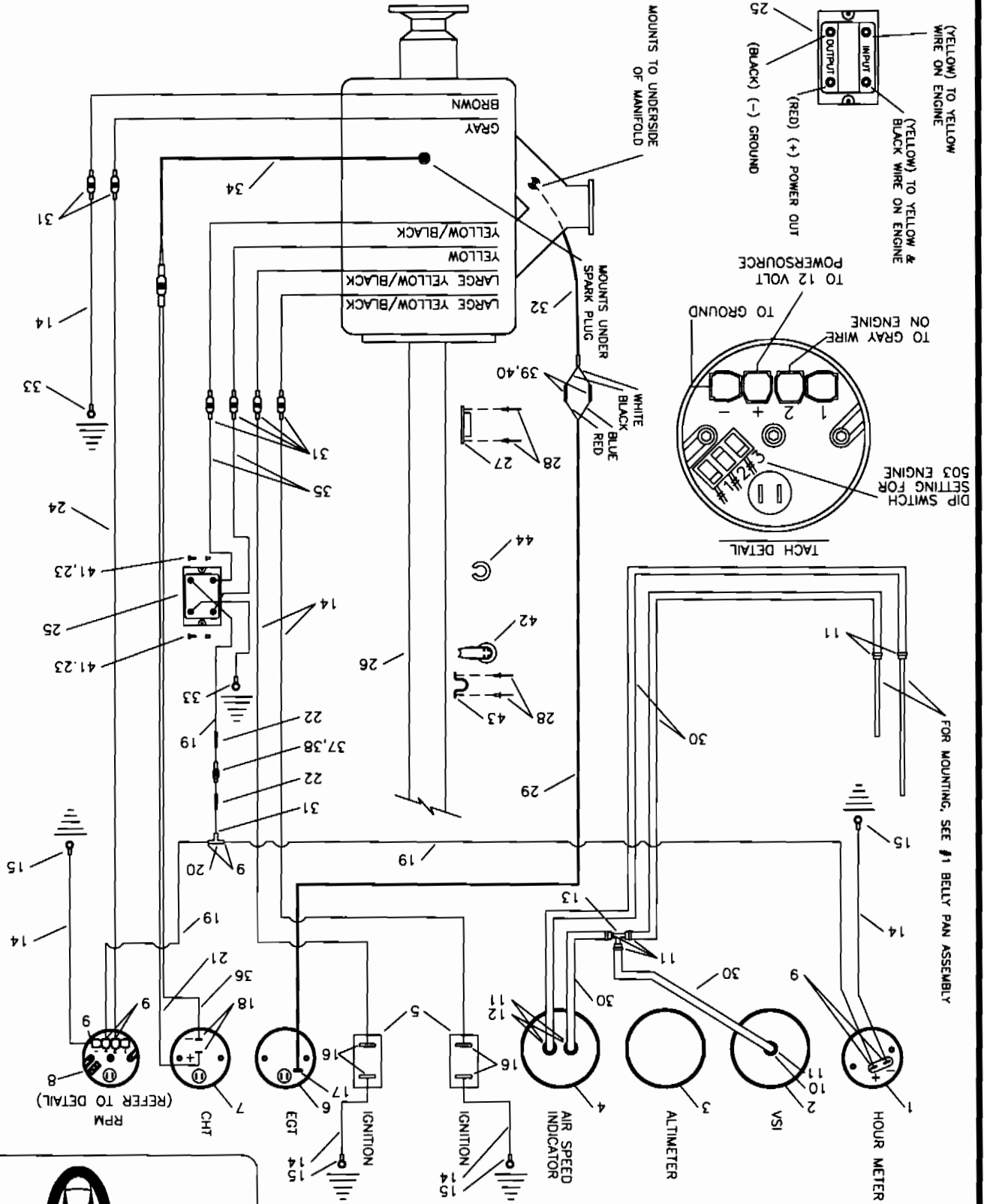
#	Description	Part Number	Quantity
1.	Line Clamp, 3/8"	FS-LCL 3/8	24
2.	1/4" Fuel Line	FS-FL	45 ft
3.	Coil Wrap	1/2 SPIRAL LOOM	2 ft
4.	Line Y	8345	2
5.	Primer Fuel Line T*	PRIME-LINE-T	0
6.	Fuel Filter	FS-FIL	1
7.	Straight Withdrawl Fitting	8330	3
8.	Fuel Shut Off Valve	FS-S-OFF	1
9.	Zip Ties	ZIP TIES	10
10.	Safety Wire	SAFETY WIRE	0
11.	Fuel Mixer Block	FS-FMB	1
12.	Sump Valve	8336	1
13.	Fuel Pump**	EG-EG-503-3	0
14.	Line Clamp, 5/16" ID	FS-LCL 5/16ID	12
15.	8 X 32 Bolt	AN526-832R16	1
16.	8 X 32 Nut	AN364-832A	1
17.	Primer Bulb	FS-PB	1
18.	90 Withdrawl Fitting	8342	2
19.	Loctite Blue	LOC-TITE BLUE	0
20.	1" Cushioned Clamp	MS21919-DG16	1
21.	Primer Pump*	PRIME PUMP	0
22.	1/8" Primer Line	PRIME LINE	6 ft
23.	Overflow Hose	EGCS-OFH	6 in
24.	Shrink Wrap	KSAC0006	5 in
25.	1/4" X 1/4" Elbow	7-11044	4
26.	3/8" Loop Clamp	KSHW0015	2
27.	#6 Pan Head Screw	6RX1/2 PHS	2

\*Comes with primer kit.

\*\*Comes with engine.

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S-12 Airaile****dBase Page #:**

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SECTION: 503 ENGINE, INSTRUMENTATION, AND ELECTRICAL

DETAIL: 503 INSTRUMENTS AND ELECTRICAL WITHOUT ELECTRICAL START

**S-12XL AIRAILE - 503 INSTRUMENTS & ELECTRICAL - WITHOUT OPTIONAL ELECTRIC START**

NOTE: Gauges may vary, consult directions provided with gauge for wiring diagram.

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Hour Meter	KSPW0022	1
2.	Vertical Speed Indicator - Feet per Minute *	KSAV0008	1
3.	Altimeter *	KSAV0001	1
4.	Air Speed Indicator, 0-120	KSAV0004	1
5.	Ignition Switch	MS35058-22	2
6.	Exhaust Gas Temperature Gauge *	KSPW0008	1
7.	Cylinder Head Temperature Gauge	KSPW0010	1
8.	RPM Gauge	KSPW0028	1
9.	14 Gauge Female Spade Terminal, Blue	IP-7128	7
10.	90 Withdrawal Fitting	8342	1
11.	Line Clamp, 3/8"	FS-LCL 3/8	8
12.	Straight Withdrawal Fitting	8330	2
13.	Line Tee	8338	1
14.	14 Gauge Black Wire	14 GA WIRE/BLACK	30 ft
15.	14 Gauge Eye Terminal, Blue 3/16"	IP-7102	4
16.	14 Gauge Eye Terminal, Blue 5/32"	KSES0003	4
17.	EGT End Plug **	KSPW0008-1	0
18.	Female Terminal ***	KSPW0010-1	0
19.	14 Gauge Red Wire	14 GA WIRE/RED	16 ft
20.	Terminal Y Connector, Brass	IP-YC	1
21.	CHT Wire, Red ***	KSPW0010-2	0
22.	14 Gauge Splice, Butt Connector	IP-7132	2
23.	3/16" Rivet Nut	MS27130-A25K	2
24.	14 Gauge White Wire	14 GA WIRE/WHITE	12 ft
25.	Regulator/Rectifier	KSES0005	1
26.	Keel ****	KPFU0043	0
27.	Starter Pulley	109	1
28.	3/16" Stainless Steel Pop Rivet - Cherry Q	CCPQ-64	4
29.	EGT Wires **	KSPW0008-2	0
30.	1/4" Blue Pitot/Static Line	FS-FL	8 ft
31.	14 Gauge Male Spade Terminal, Blue	IP-7126	7
32.	EGT Probe **	KSPW0008-3	0
33.	14 Gauge Eye Terminal, Blue 1/4"	1/4 EYE 14 GA	1
34.	CHT Probe ***	KSPW0010-3	0
35.	14 Gauge Yellow Wire	14 GA WIRE/YELLOW	6 ft
36.	CHT Wire, Black ***	KSPW0010-4	0
37.	14 Gauge, In Line Fuse Holder	KSES0019	1
38.	25 AMP Fuse	KSES0020-25	1
39.	Female Bullet Terminal	02-09-1103	8
40.	Shrink Wrap	KSAC0009	1 ft

\*Optional gauge. \*\*Supplied with EGT.

\*\*\*Supplied with CHT.

\*\*\*\*Referenced from super structure assembly.

**S-12XL AIRAILE - 503 INSTRUMENTS & ELECTRICAL - WITHOUT OPTIONAL ELECTRIC START**

NOTE: Gauges may vary, consult directions provided with gauge for wiring diagram.

<b># DESCRIPTION</b>	<b>PART NUMBER</b>	<b>QUANTITY</b>
41. Pan Head Phillips Bolt (10-32)	KSHW0006	2
42. Pulley	KSHW0040	1
43. Eye Strap	KSHW0019	1
44. Small Rubber Edging	8510K11	6 in

\*Optional gauge.      \*\*Supplied with EGT.  
\*\*\*Supplied with CHT.  
\*\*\*\*Referenced from super structure assembly.





**S-12XL AIRAILE - 503 INSTRUMENTS & ELECTRICAL - WITH ELECTRIC START**

NOTE: Gauges may vary, consult directions provided with gauge for wiring diagram.

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Hour Meter	KSPW0022	1
2.	Vertical Speed Indicator - Feet per Minute *	KSAV0008	1
3.	Altimeter *	KSAV0001	1
4.	Air Speed Indicator, 0-120	KSAV0004	1
5.	Switch	MS35058-23	2
6.	Exhaust Gas Temperature Gauge *	KSPW0008	1
7.	Cylinder Head Temperature Gauge	KSPW0010	1
8.	RPM Gauge	KSPW0028	1
9.	14 Gauge Female Spade Terminal, Blue	IP-7128	5
10.	90 Withdrawal Fitting	8342	1
11.	Line Clamp, 3/8"	FS-LCL 3/8	8
12.	Straight Withdrawal Fitting	8330	2
13.	1/4" Blue Pitot/Static Line	FS-FL	8 ft
14.	14 Gauge Eye Terminal, Blue 3/16"	IP-7102	10
15.	14 Gauge Black Wire	14 GA WIRE/BLACK	30 ft
16.	14 Gauge Eye Terminal, Blue 5/32"	KSES0003	6
17.	EGT End Plug **	KSPW0008-1	0
18.	Female Terminal ***	KSPW0010-1	0
19.	CHT Wire, Black ***	KSPW0010-4	0
20.	CHT Wire, Red ***	KSPW0010-2	0
21.	14 Gauge Red Wire	14 GA WIRE/RED	38 ft
22.	Key Start Switch	25-6	1
23.	14 Gauge Eye Terminal, Blue 1/4"	1/4 EYE 14 GA	2
24.	4 Gauge Eye Cable Terminal	4 GA CABLE LUG	8
25.	4 Gauge Battery Cable, Black Wire	4 GA WIRE/BLACK	20 ft
26.	3/16" Rivet Nut	MS27130-A25K	2
27.	14 Gauge, In Line Fuse Holder	KSES0019	1
28.	25 AMP Fuse	KSES0020-25	1
29.	14 Gauge Splice, Butt Connector	IP-7132	2
30.	Battery ****	PS12150-NB	0
31.	Regulator/Rectifier	KSES0005	1
32.	14 Gauge White Wire	14 GA WIRE/WHITE	12 ft
33.	14 Gauge Eye Terminal, Blue 5/16"	5/16 I TERM	1
34.	14 Gauge Yellow Wire	14 GA WIRE/YELLOW	6 ft
35.	14 Gauge Male Spade Terminal, Blue	IP-7126	6
36.	Electric Starter Kit (503)	MESK-1-503	1
37.	CHT Probe ***	KSPW0010-3	0
38.	EGT Wires **	KSPW0008-2	0
39.	EGT Probe **	KSPW0008-3	0
40.	Female Bullet Terminal	02-09-1103	8

\*Optional gauge. \*\*Supplied with EGT.

\*\*\*Supplied with CHT.

\*\*\*\*Referenced from battery box installation.

**S-12XL AIRAILE - 503 INSTRUMENTS & ELECTRICAL - WITH ELECTRIC START**

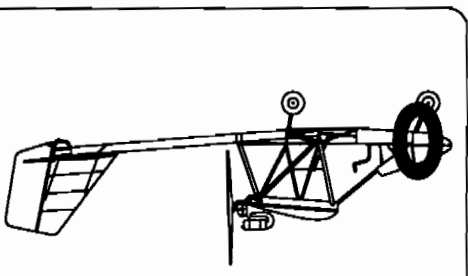
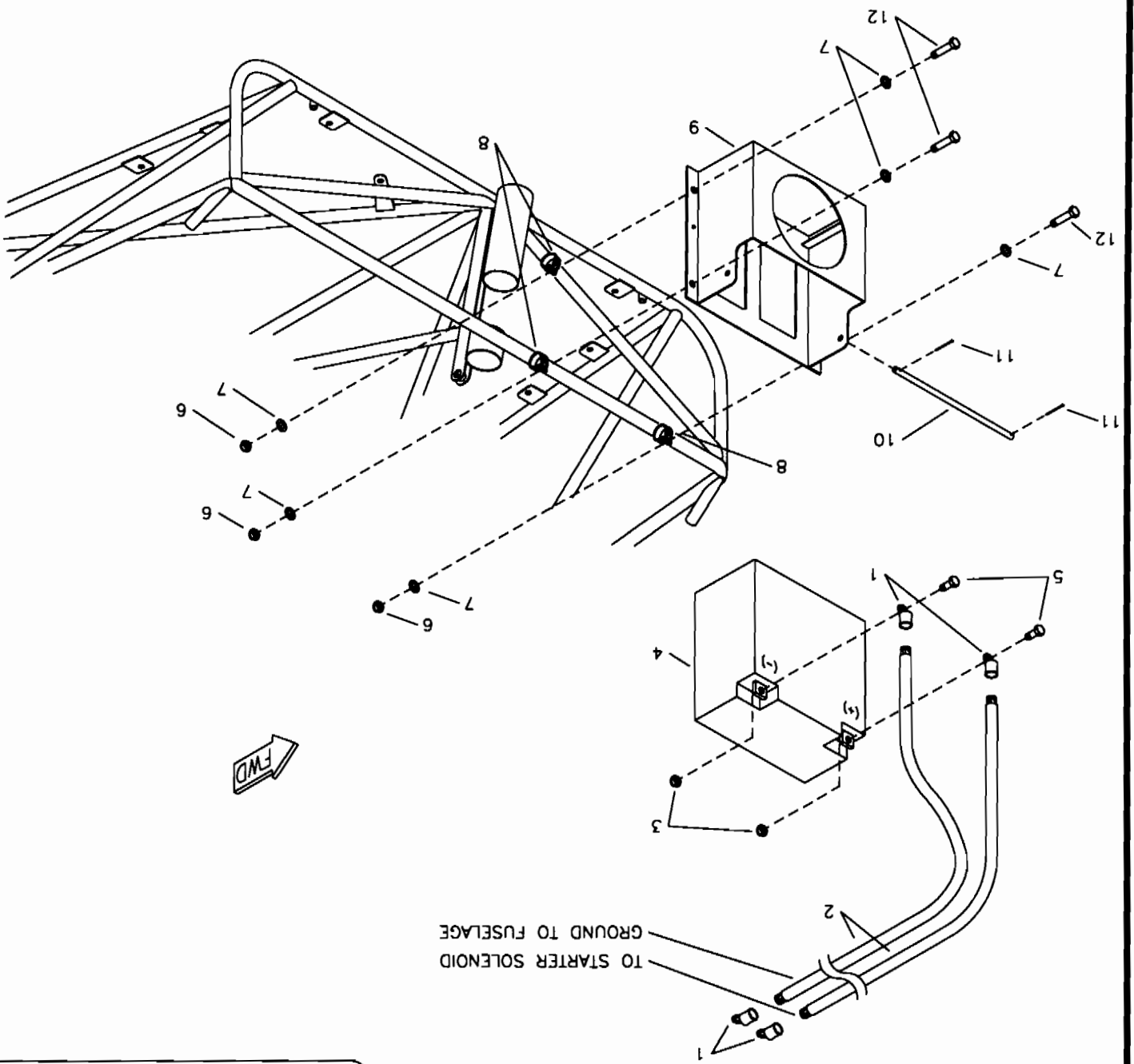
NOTE: Gauges may vary, consult directions provided with gauge for wiring diagram.

<b># DESCRIPTION</b>	<b>PART NUMBER</b>	<b>QUANTITY</b>
41. Shrink Wrap	KSAC0009	1 ft
42. 3/16" Aluminum Pop Rivet - Cherry Q	AAPQ-64	2
43. Pan Head Phillips Bolt (10-32)	KSHW0006	2

\*Optional gauge.      \*\*Supplied with EGT.

\*\*\*Supplied with CHT.

\*\*\*\*Referenced from battery box installation.



503 BATTERY BOX INSTALLATION

DETAIL:

503 ENGINE, INSTRUMENTATION, AND ELECTRICAL

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**503 ENGINE, INSTRUMENTATION & ELECTRICAL SYSTEMS**

**Detail:**

**503 BATTERY BOX INSTALLATION**

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7/25/95

#	Description	Part Number	Quantity
1.	4 Gauge Terminal Cable	4 GA CABLE LUG	0
2.	Battery Cable**	4 GA WIRE/BLACK	0
3.	Nut*	BATT-1	2
4.	Battery	PS12150-NB	1
5.	Bolt*	BATT-2	2
6.	3/16" Shear Nut	AN364-1032A	3
7.	3/16" Thick Washer	AN960-10	6
8.	1/2" Cushioned Clamp	MS21919-DG8	3
9.	Battery Box	503-BAT-BOX	1
10.	Battery Bar***	503-BAT-BAR	1
11.	Small Cotter Pin***	MS24665-134	2
12.	3/16" Bolt	AN3-3A	3

\*Comes with battery.

\*\*Referenced from 503 Instruments & Electrical.

\*\*\*Comes with 503 battery box.

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**S-12 Airaile**

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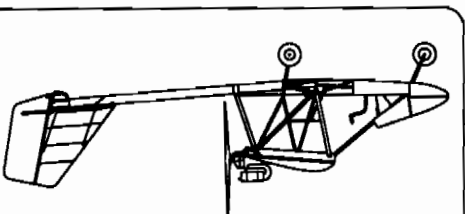
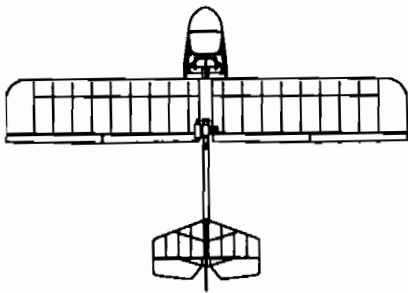
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RPMSS

DATE: X/XX/XX

MANUAL DRAWING #: MD2081

503 MUFFLER WRAP AT A LATER DATE.  
503 DEVELOPMENT, TO BE RELEASED FOR  
503 MUFFLER WRAP HEATER STILL IN  
PRODUCTION.



SECTION: 503 ENGINE, INSTRUMENTATION, AND ELECTRICAL

DETAIL: 503 MUFFLER WRAP HEATER

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NOTES:

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**503 ENGINE, INSTRUMENTATION & ELECTRICAL SYSTEMS**

**Detail:**

**503 MUFFLER WRAP HEATER**

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**Date:**

**# Description**

**Part Number**

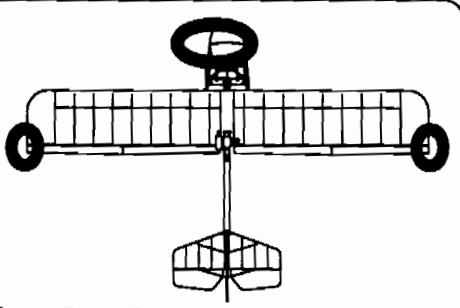
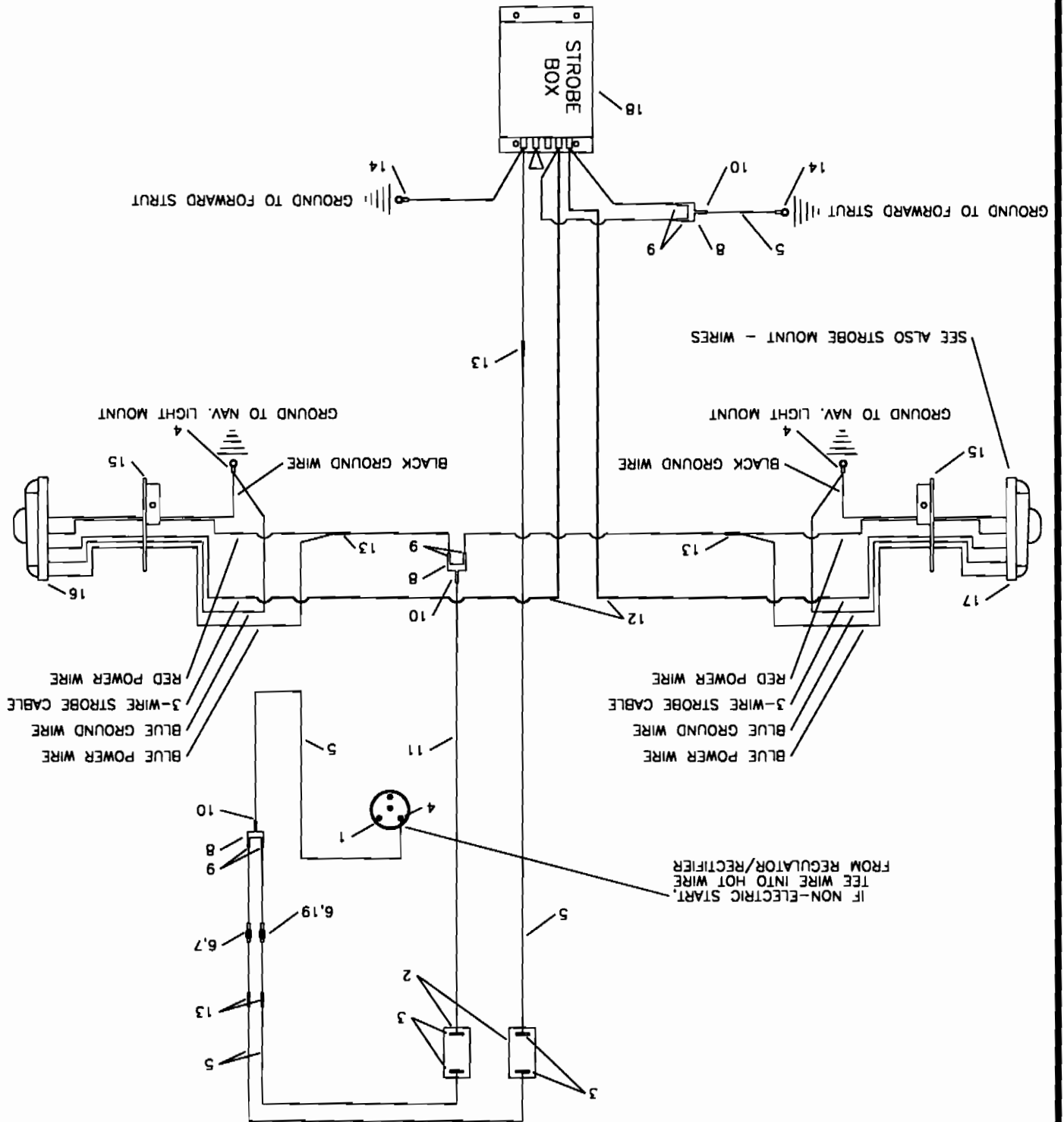
**Quantity**

**503 MUFFLER WRAP HEATER IN DEVELOPMENT.  
TO BE RELEASED FOR PRODUCTION AT A LATER DATE.**

**RANS, Inc.  
S-12 Airaile**

**dBase Page #:**

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STROBE SYSTEM SCHEMATIC

DETAIL

503 ENGINE, INSTRUMENTATION, AND ELECTRICAL

SECTION:

**S-12XL AIRAILE - 503 STROBE SYSTEM SCHEMATIC**

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	Key Start Switch *	25-6	0
2.	Switch	MS35058-22	2
3.	14 Gauge Eye Terminal, Blue 5/32"	KSES0003	4
4.	14 Gauge Eye Terminal, Blue 3/16"	IP-7102	3
5.	14 Gauge Red Wire	14 GA WIRE/RED	8 ft
6.	14 Gauge, In Line Fuse Holder	KSES0019	2
7.	15 AMP Fuse	KSES0020-15	1
8.	Terminal Y Connector, Brass	IP-YC	1
9.	14 Gauge Female Spade Terminal, Blue	IP-7128	6
10.	14 Gauge Male Spade Terminal, Blue	IP-7126	3
11.	14 Gauge Yellow Wire	14 GA WIRE/YELLOW	50 ft
12.	Whelen Installation & Cable	HD-60	1
13.	14 Gauge Splice, Butt Connector	IP-7132	4
14.	14 Gauge Eye Terminal, Blue 1/4"	1/4 EYE 14 GA	2
15.	Navigation Light Tip Mount **	NAV-TIP-MT	0
16.	Whelen Left Strobe Light **	A600-PR	0
17.	Whelen Right Strobe Light **	A600-PG	0
18.	Whelen Strobe Light Power Supply	A413A, HDA-DF	1
19.	10 AMP Fuse	KSES0020-10	1

\*Referenced from Instruments & Electrical.

\*\*Referenced from Strobe Mount.