



BERINGER AERO FRANCE
 Aéroport
 05130 TALLARD
 Phone: +33 (0)4 92 20 16.19
 sales@beringer-aero.com


BERINGER AERO USA
 400 Birnie street – Suite E
 Greenville, SC 29611
 Phone: +33 (0)4 92 20 16 19
 Us.sales@beringer-aero-usa.com

Installation and Maintenance Manual

Van's RV3,4,6,6A,7,7A,8,8A,9,9A,



*This document contains **36** pages - Original in color*

E						
D						
C	12/07/2018	GAILLARD.C	BERINGER.G	BERINGER.C	Delete RV10 and RV14 add Udate	TERMINÉ
B	06/09/2017	GAILLARD.C	BERINGER.G	SALLÉ.F	Update	TERMINÉ
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	Date	Name - Visa Redaction	Name – Visa Verification	Name – Visa Approbation	Modifications	Status

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Installation and maintenance manual

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MODIFICATION LIST

REV	Modifications
A	Edition initiale
B	Minor Change
C	Delete RV10 and RV14 add Update

Référence documents

Title	Assembly reference	Rev
Van's RV3 Main Wheel Assy	AV-VANS-320	A
Van's RV8 Main Wheel Assy	AV-VANS-420	A
Van's RV6,6A,7,7A,8A,9,9A Main Wheel Assy	AV-VANS-620	A
Van's RV6A,7A,8A,9A Nose Wheel	AV-VANS-630	A
VANS _Hose 01_Hose Main Wheel	AV-VANS-410/610	A
VANS _Hose 02 Fuselage/FP	AV-VANS-512	A
VANS _Hose 03 FP/Regulator	AV-VANS-513	A
VANS _Hose 04 Regulator/MC Pilot	AV-VANS-514	A
VANS _Hose 05 MC Pilot/MC Copilot	AV-VANS-515	A
VANS_Hose 06 MC Copilot-Reservoir	AV-VANS-516	A
VANS_ Hose 07 MC pilot-FP	AV-VANS-517	A
VANS_Hose 08 Fuselage-MC Pilot	AV-VANS-518	A
VANS_Hose 09 MC pilot-Reservoir	AV-VANS-519	A
VANS_Left Master Cylinder	AV-VANS-560L	A
VANS_Right Master Cylinder	AV-VANS-560R	A
VANS_Reservoir	AV-VANS-570	A
VANS_Parking brake valve	AV-VANS-580	A
VANS_Regulator	AV-VANS-590	A

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1. General

This manual gives the installation procedures of BERINGER wheel and brake system on the Van's RV3,4,6,6A,7,7A,8,8A,9,and 9A

CAUTION: Substitution of parts by other than originally certified parts may cause failure of brake system. BERINGER quality process assures that replacement parts are produced and controlled with the same quality level as originally certified.

BERINGER brake system functioning is similar to original brake system.

CAUTION: Standard MIL-H-5606 Brake fluid is replaced by fire resistant fluid:
MIL-PRF-87257 and MIL-PRF83282, make sure that only those brake fluids are used.

Note: after each part number the (-) indicates the minor revision status starting from letter A then B, C,

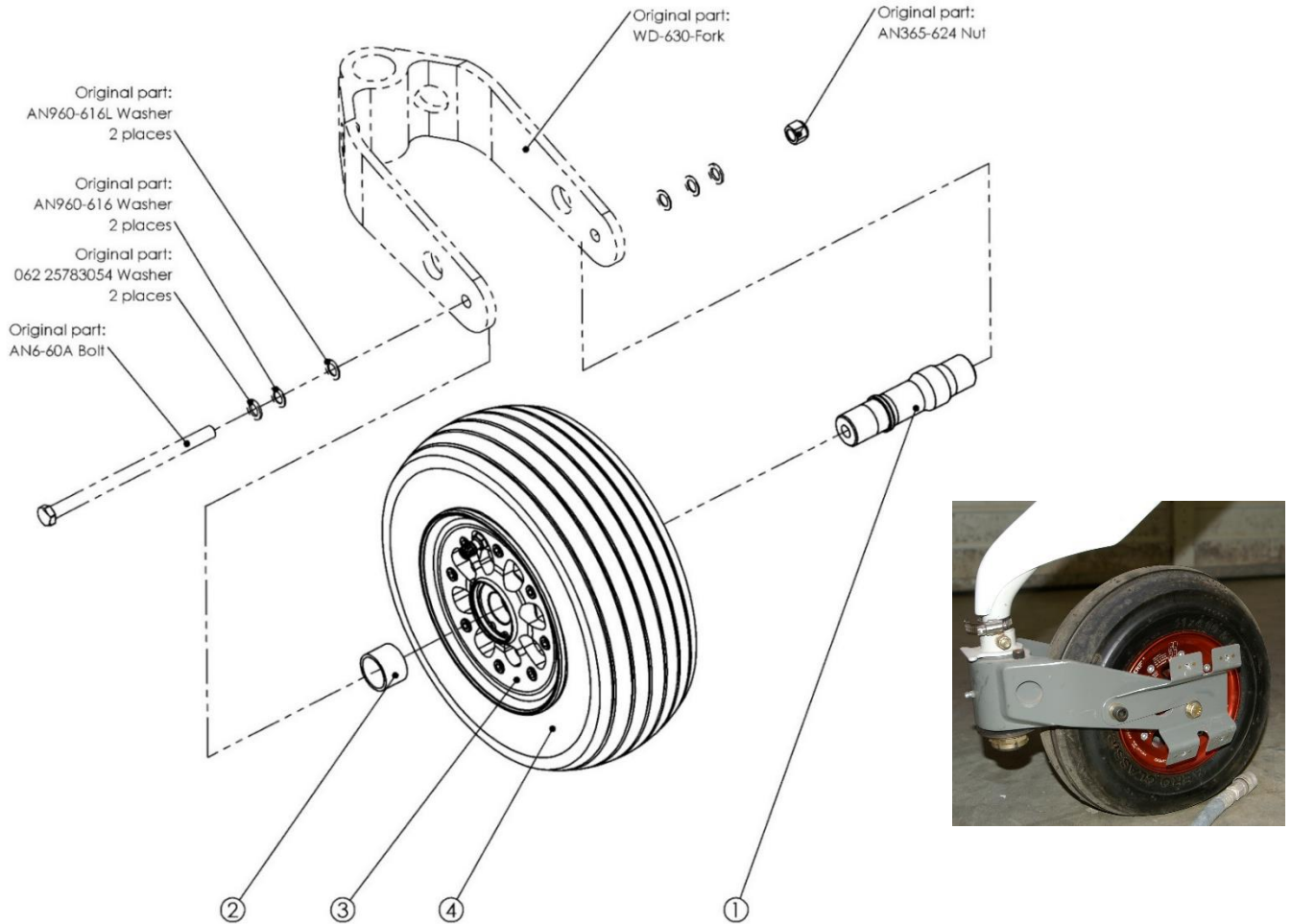
2. Tightening Torque

Description	Torque tightening					
	Min		Nominal		Max	
	IN-LBS	N/m	IN-LBS	N/m	IN-LBS	N/m
Axle bolt AN4	90.725	10.26	95.5	10.8	100.275	11.34
Axle bolt AN5	147.15	16.62	154.9	17.5	162.6	18.37
HYD-003P	140.6	16.15	148	17	155.4	17.85
ECR-002	148.68	15.2	141.6	16	148.68	16.8

3. Nose wheel Kit

3.1. RV6A,RV7A,RV8A and RV9A

3.1.1. Nose wheel Assy (Drawing reference: AV-VANS-630)

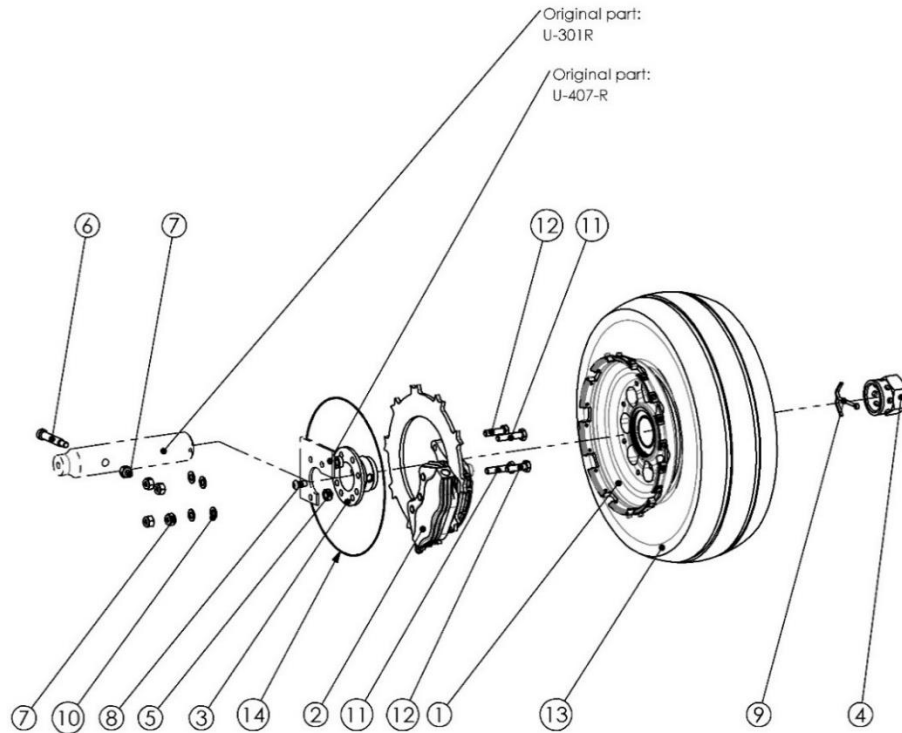


4	PAC01	Tire 11x4.00x5"	1
3	RA-015(A)	Wheel Assy.	1
2	AV-VANS-004(A)	Bearing spacer	1
1	AV-VANS-001(A)	Nose wheel Axle	1
REP	PART NUMBER	DESCRIPTION	QTY.

4. Finishing Kit for main wheels

4.1. RV3

4.1.1. Main wheel Assy Right (Drawing reference: AV-VANS-320R)

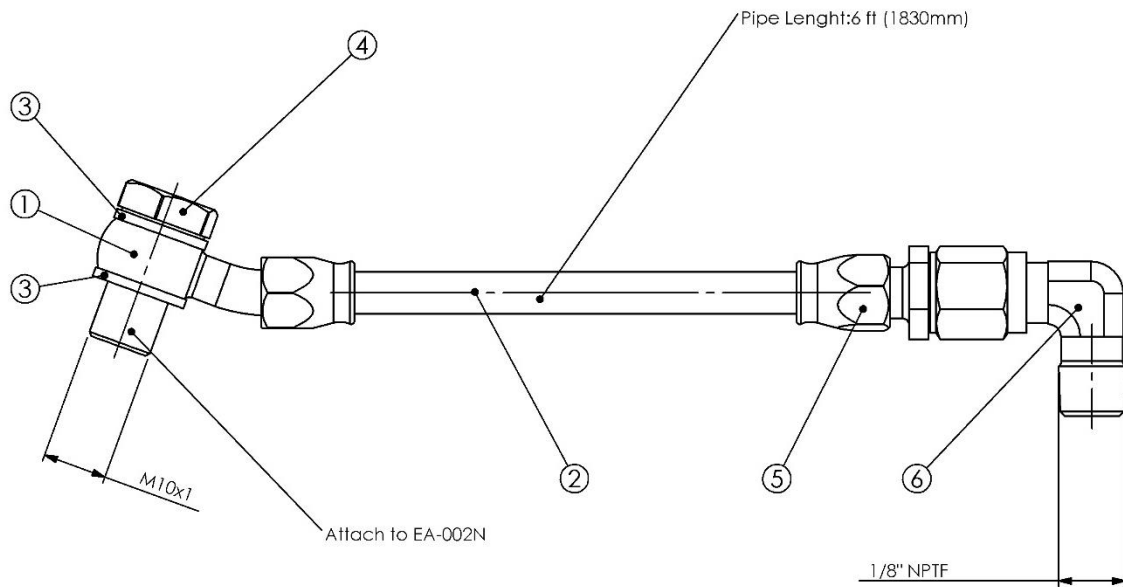


14	-	Safety Wire	1
13	Tire	Tire 11x4.00-5	1
12	AN4-7A	Bolt	2
11	AN4-11A	Bolt	2
10	NAS1149F0432P	Washer	4
9	L-V-003	Cotter Pin	1
8	V-BHC-004(A)	Screw	1
7	E-HN-003	self-locking Nut	5
6	V-EP-001	Screw	1
5	RDL-008(A)	Spacer	3
4	AV-VANS-005(A)	Nut 1.25"x16	1
3	AV-VANS-002(A)	Caliper plate	1
2	EA-002N(A)	Brake Assy	1
1	RF-022(A)	Main Wheel Assy.	1
REP	PART NUMBER	DESCRIPTION	QTY.

4.1.2. Main wheel Assy Left (Drawing reference: AV-VANS-320L)

Same assembly as AV-VANS-320R (Symmetrical assembly).

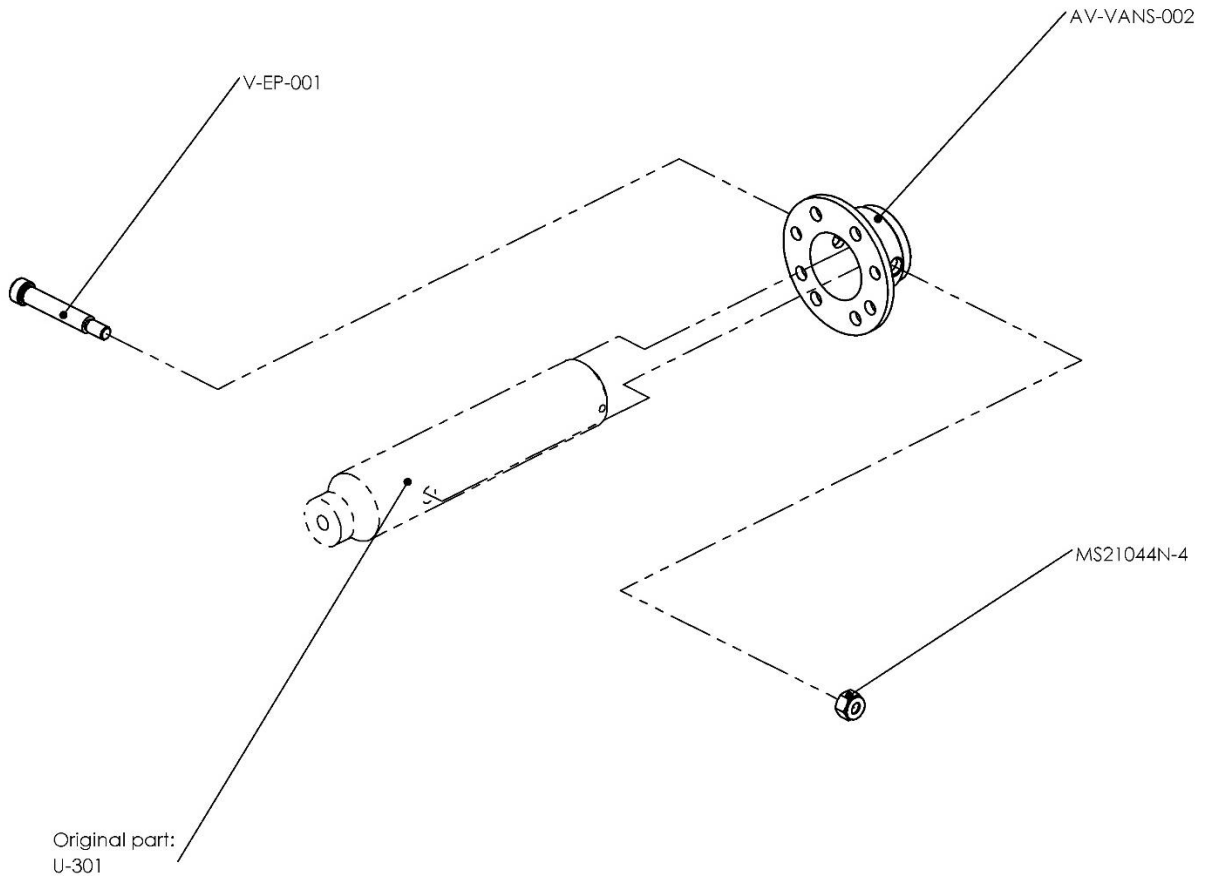
4.1.3. Hose Main wheel Assy Right and Left (Drawing reference: AV-VANS-410)



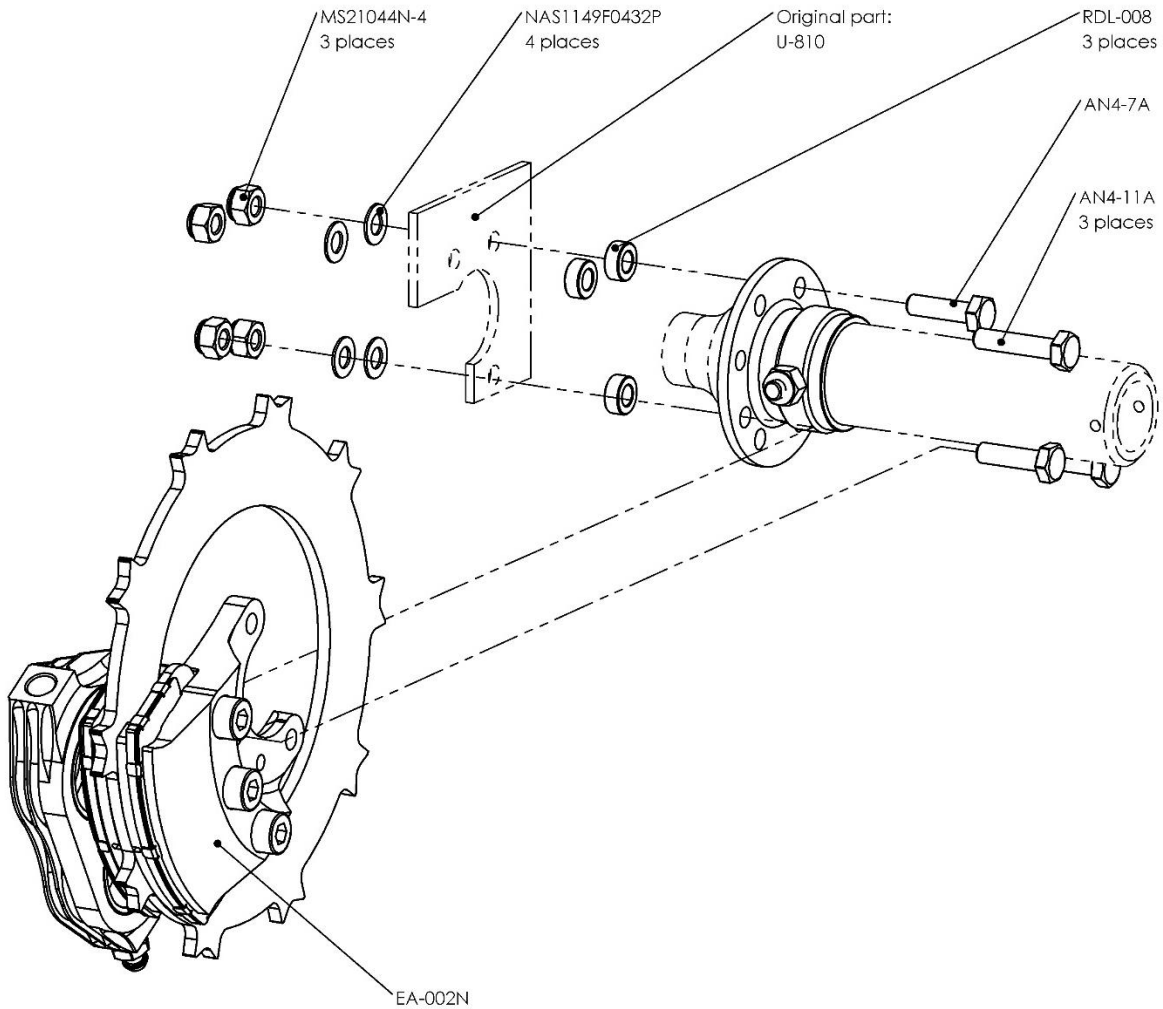
6	HYD-028D	90° Elbow	1
5	HYD-008OP	femelle fitting 3/8x24	1
4	HYD-003P	Banjo Bolt	1
3	HYD-005B	Copper Seal	2
2	HYD-032	Stainless steel brake hose	1
1	HYD-002OP	Banjo	1
REP	PART NUMBER	DESCRIPTION	QTY.

4.1.4. Installation Main wheel Assy Right and left (Drawing reference: AV-VANS-320R)

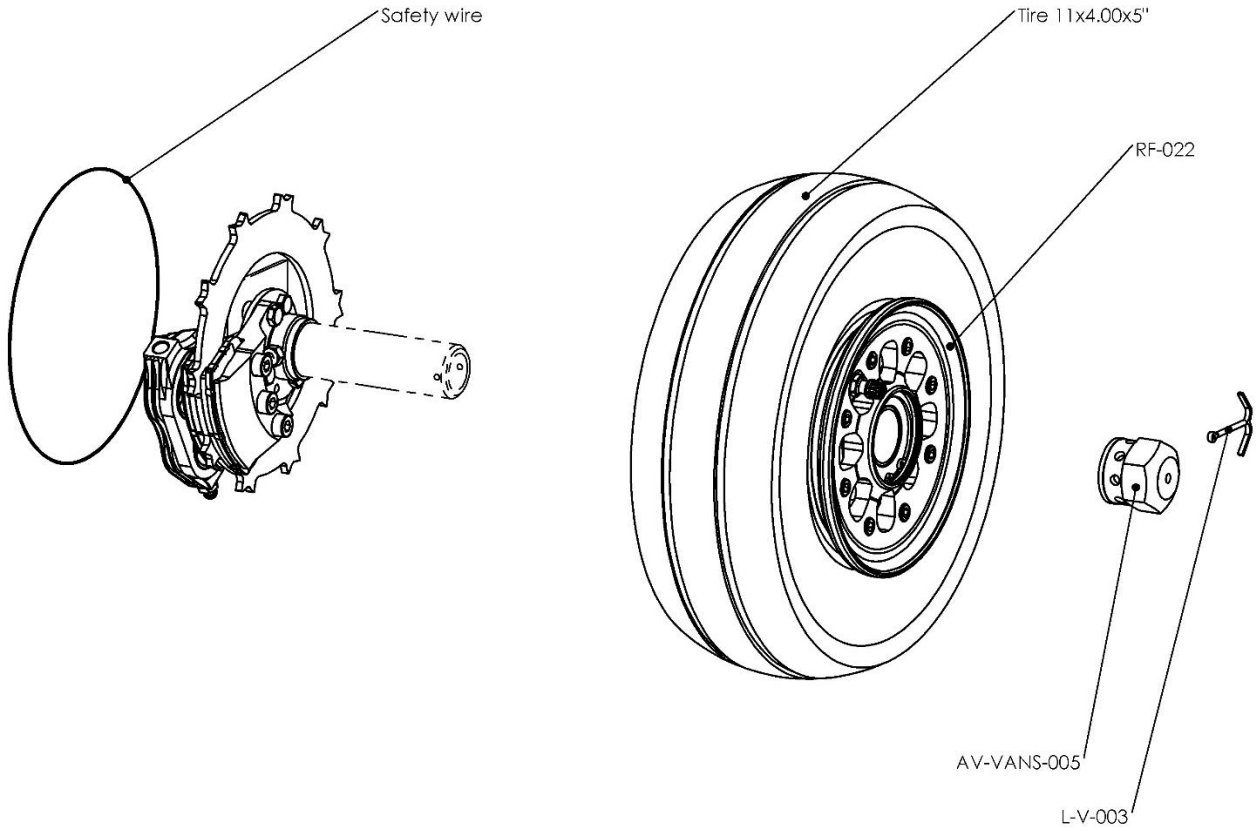
- a) Assemble the brake caliper on the landing gear.



b) Assemble the brake caliper on the landing gear.

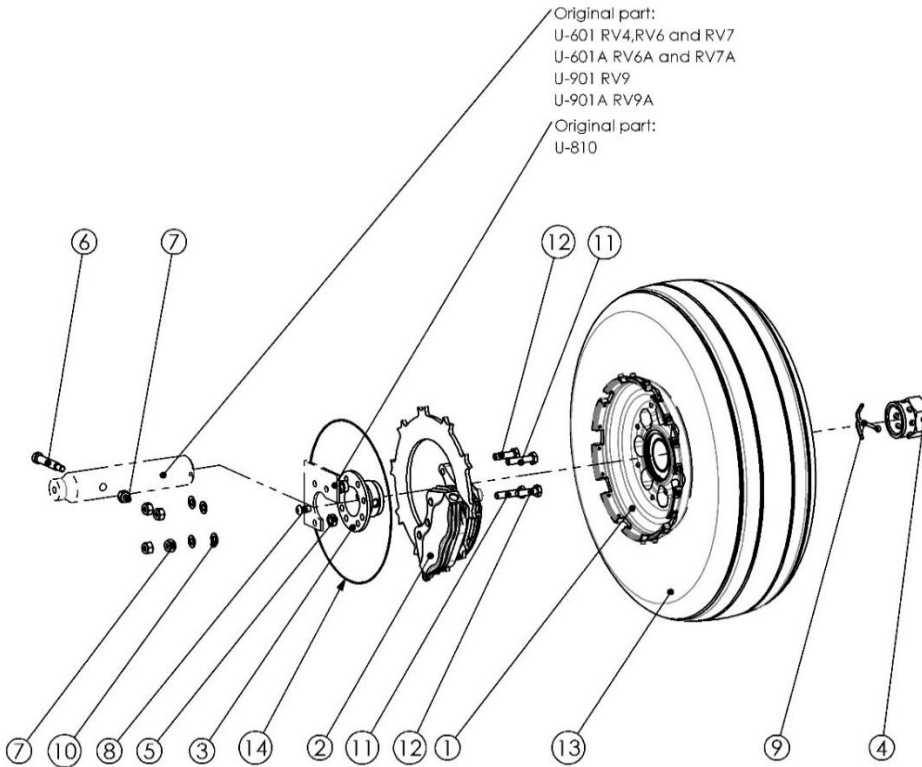


c) Assemble the main wheel



4.2. RV4, RV6, RV6A,RV7,RV7A,RV8A,RV9 and RV9A

4.2.1. Main wheel Assy Right (Drawing reference: AV-VANS-620R)

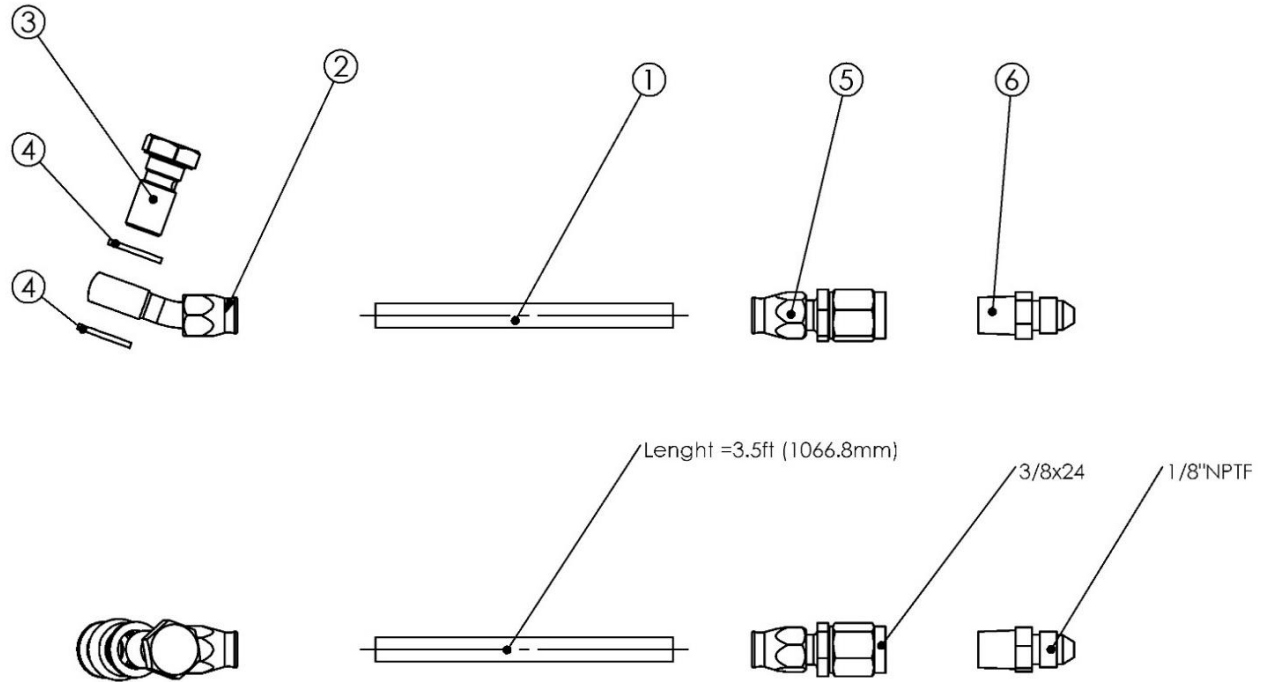


14	-	Safety Wire	1
13	PAA02	Tire 5.00-5 TUBELESS	1
12	AN4-7A	Bolt	2
11	AN4-11A	Bolt	2
10	NAS1149F0432P	Washer	4
9	L-V-003	Cotter Pin	1
8	V-BHC-004(A)	Screw	1
7	E-HN-003	self-locking Nut	5
6	V-EP-001	Screw	1
5	RDL-008(A)	Spacer	3
4	AV-VANS-005(A)	Nut 1.25"x16	1
3	AV-VANS-002(A)	Caliper plate	1
2	EA-002N(A)	Brake Assy	1
1	RF-022(A)	Main Wheel Assy.	1
REP	PART NUMBER	DESCRIPTION	QTY.

4.2.2. Main wheel Assy Left (Drawing reference: AV-VANS-620L)

Same assembly as AV-VANS-620R (Symetrical assembly)

4.2.3. Hose Main wheel Assy Right and Left (Drawing reference: AV-VANS-610)



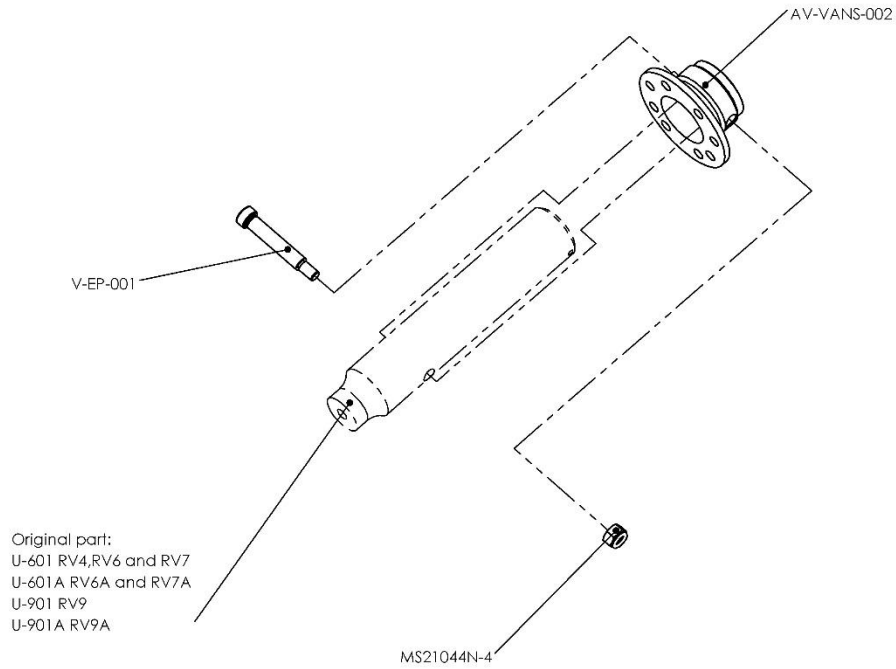
Note:

Qty 10 ZGA01 Brake line Clamp

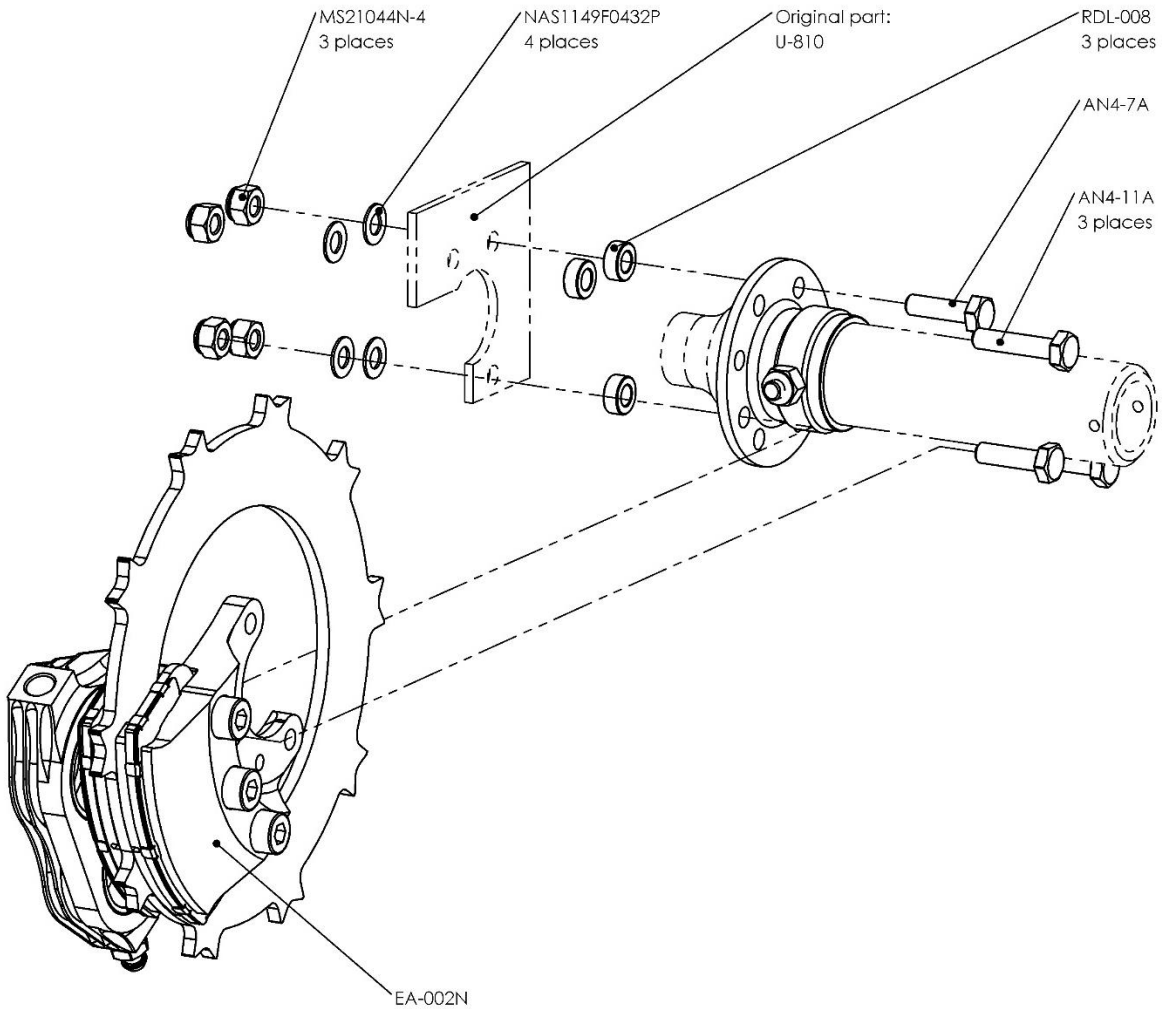
6	HYD-024D	Adaptator	1
5	HYD-008OP	female fitting 3/8x24	1
4	HYD-005B	Copper Seal	2
3	HYD-003P	Banjo Bolt	1
2	HYD-002OP	Banjo	1
1	HYD-032	Stainless steel brake hose	1
REP	PART NUMBER	DESCRIPTION	QTY.

4.2.4. Installation Main wheel Assy Right and left (Drawing reference: AV-VANS-620R)

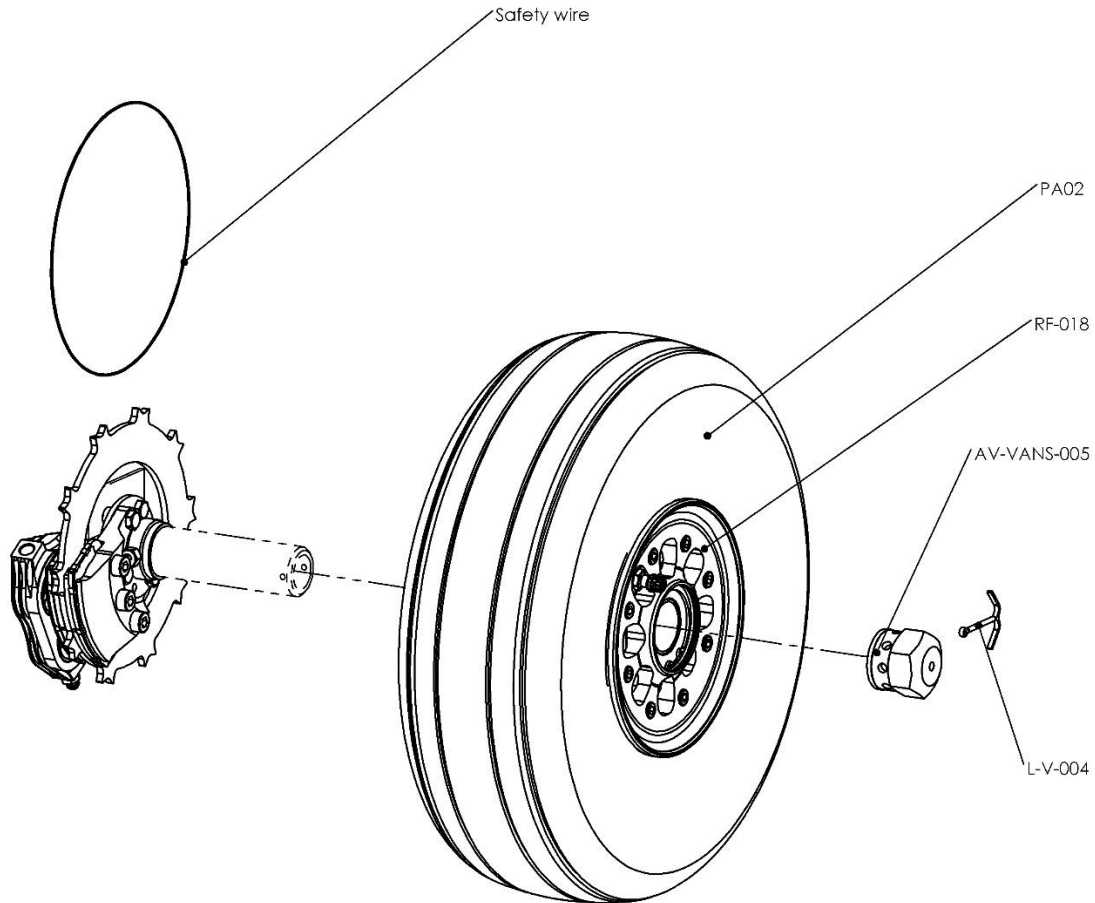
- a) Assemble the caliper plate on the landing gear.



b) Assemble the brake caliper on the landing gear.

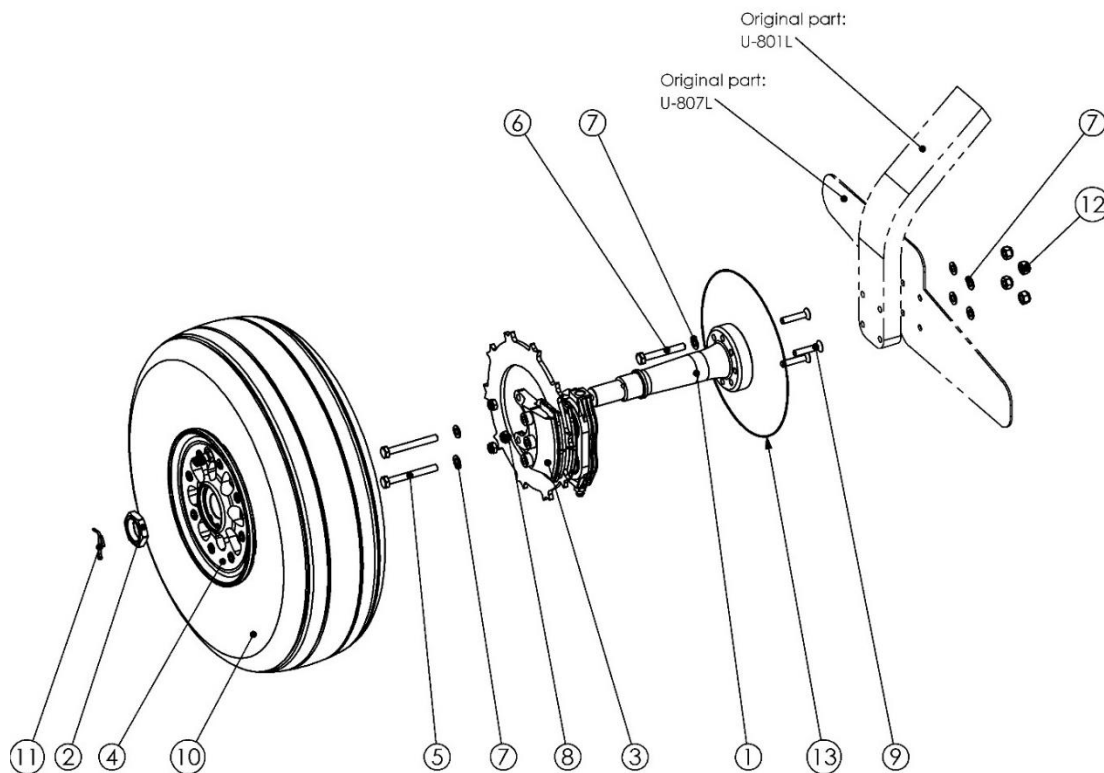


c) Assemble the main wheel



4.3. RV8 Grove Landing Gear

4.3.1. Main wheel Assy Left (Drawing reference: AV-VANS-420L)

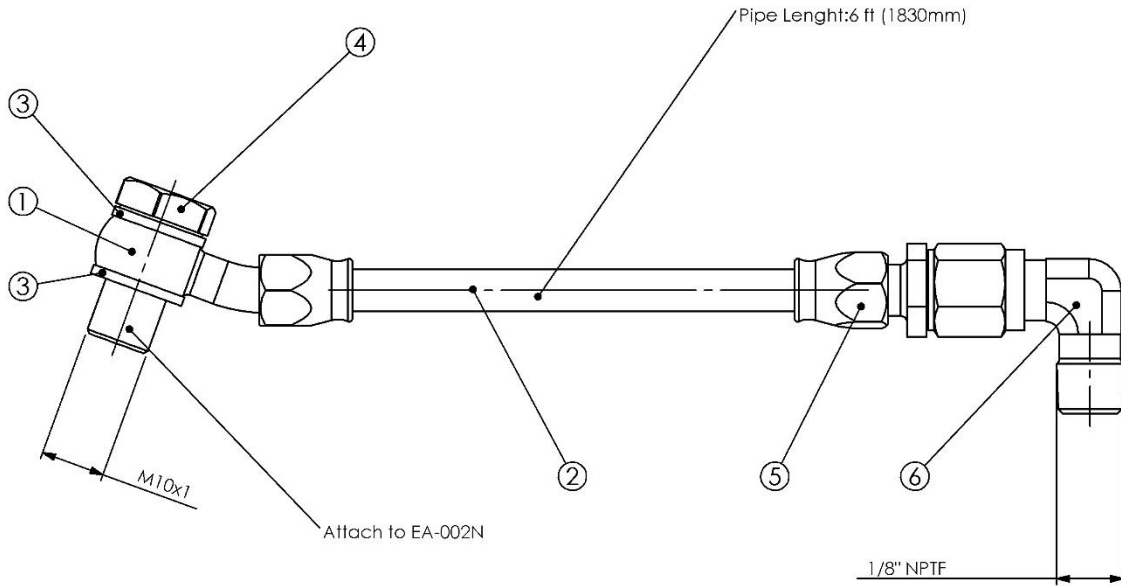


13	-	Safety Wire	1
12	MS21044N-4	self-locking Nut	4
11	L-V-004	Cotter Pin	1
10	PAA02	Tire 5.00-5 TUBELESS	1
9	V-FHC-007	Screw	3
8	E-HN-003	self-locking Nut	3
7	NAS1149F0432P	Washer	8
6	AN4-17A	Axle bolt	2
5	AN4-22A	Axle bolt	2
4	RF-018(A)	Main Wheel Assy.	1
3	EA-002N(A)	Brake Assy	1
2	ECR-002(B)	Axle nut	1
1	FUS-009.2(D)	Axle	1
REP	PART NUMBER	DESCRIPTION	QTY.

4.3.2. Main wheel Assy Right (Drawing reference: AV-VANS-420R)

Same assembly as AV-VANS-420L (Symetrical assembly).

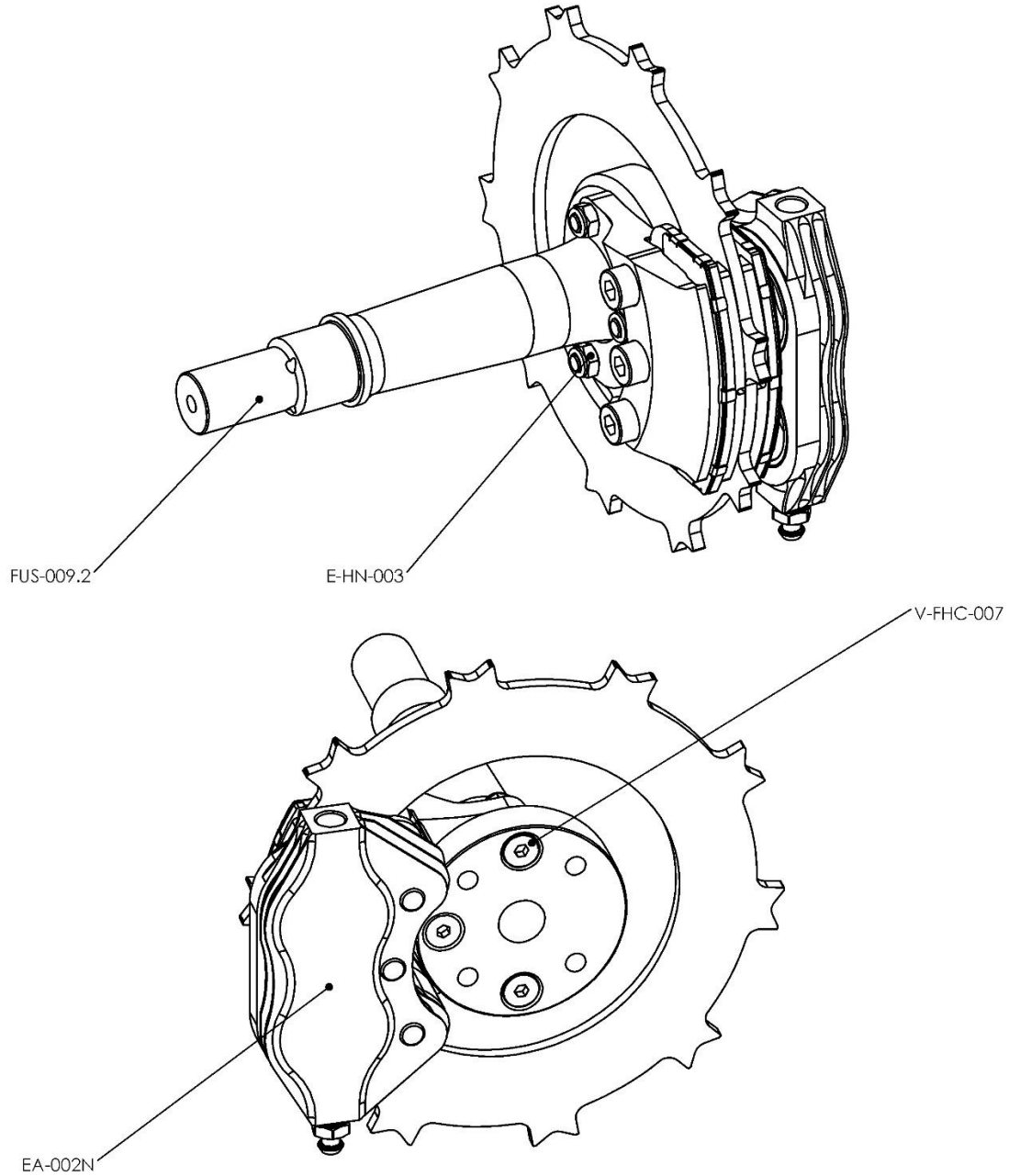
4.3.3. Hose Main wheel Assy Right and Left (Drawing reference: AV-VANS-410)



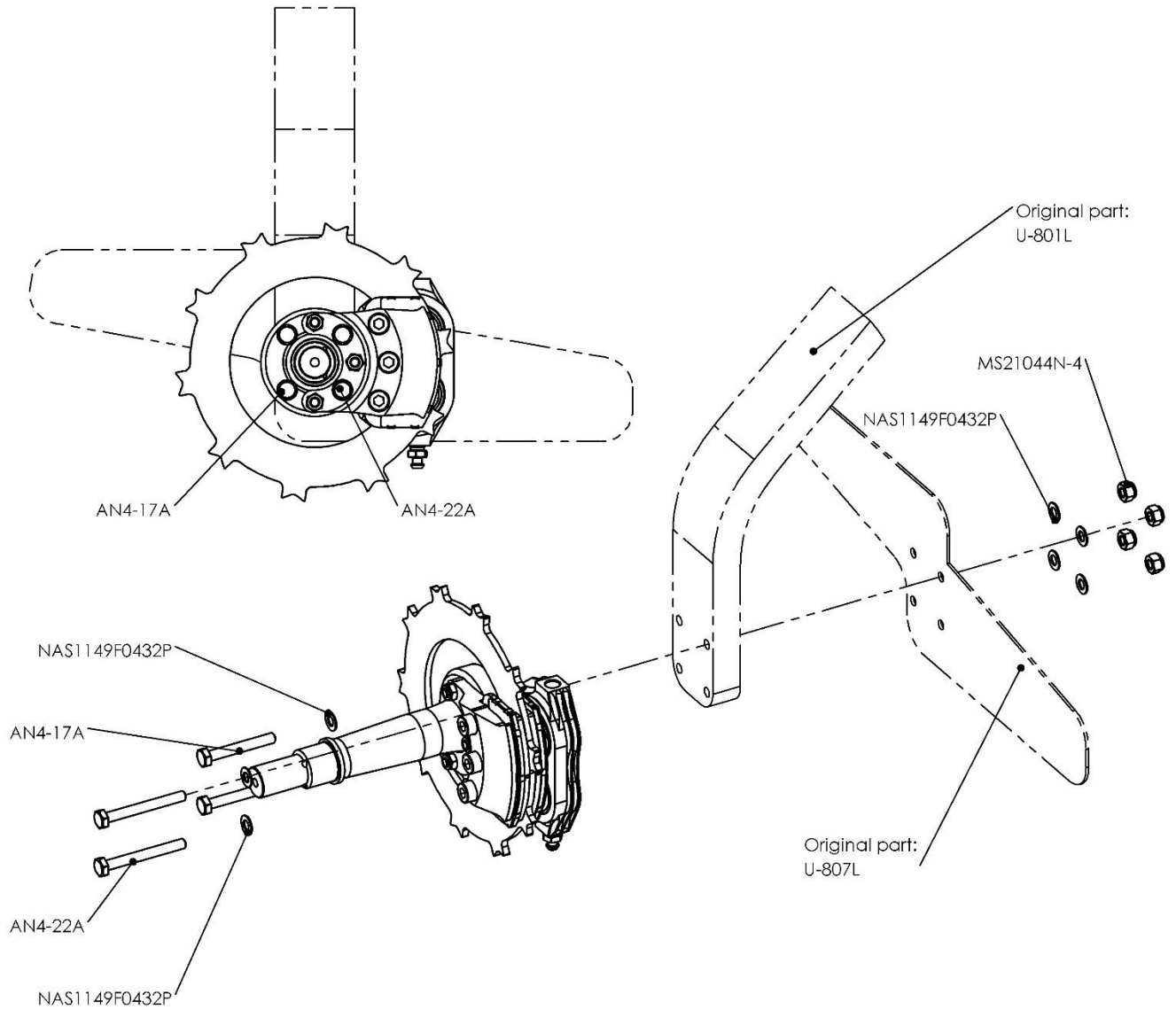
6	HYD-028D	90° Elbow	1
5	HYD-008OP	femelle fitting 3/8x24	1
4	HYD-003P	Banjo Bolt	1
3	HYD-005B	Copper Seal	2
2	HYD-032	Stainless steel brake hose	1
1	HYD-002OP	Banjo	1
REP	PART NUMBER	DESCRIPTION	QTY.

4.3.4. Installation Main wheel Assy Right and left (Drawing reference: AV-VANS-420L)

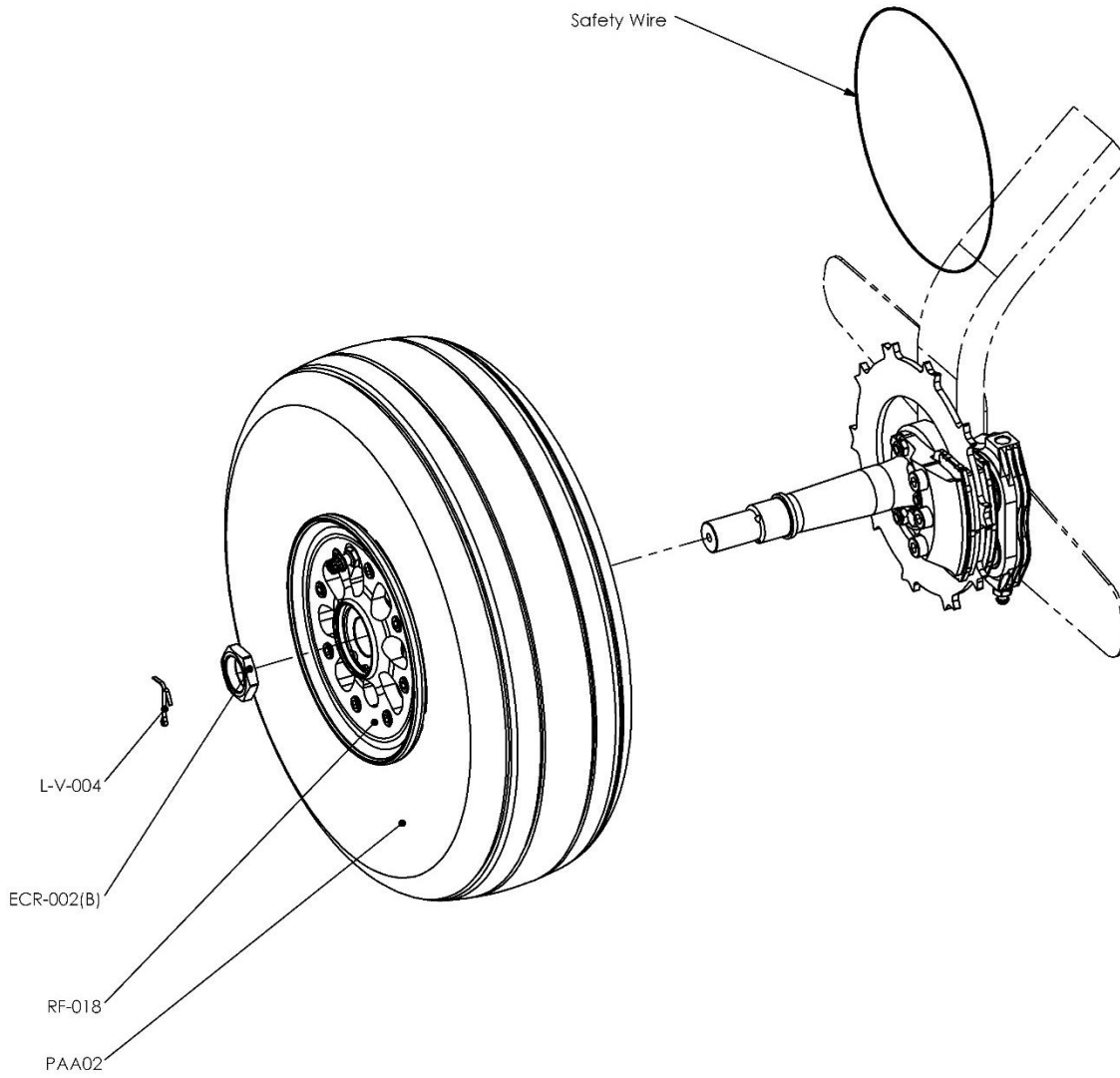
a) This assembly is mounted in factory.



b) Assemble the brake caliper on the landing gear.



c) Assemble the main wheel

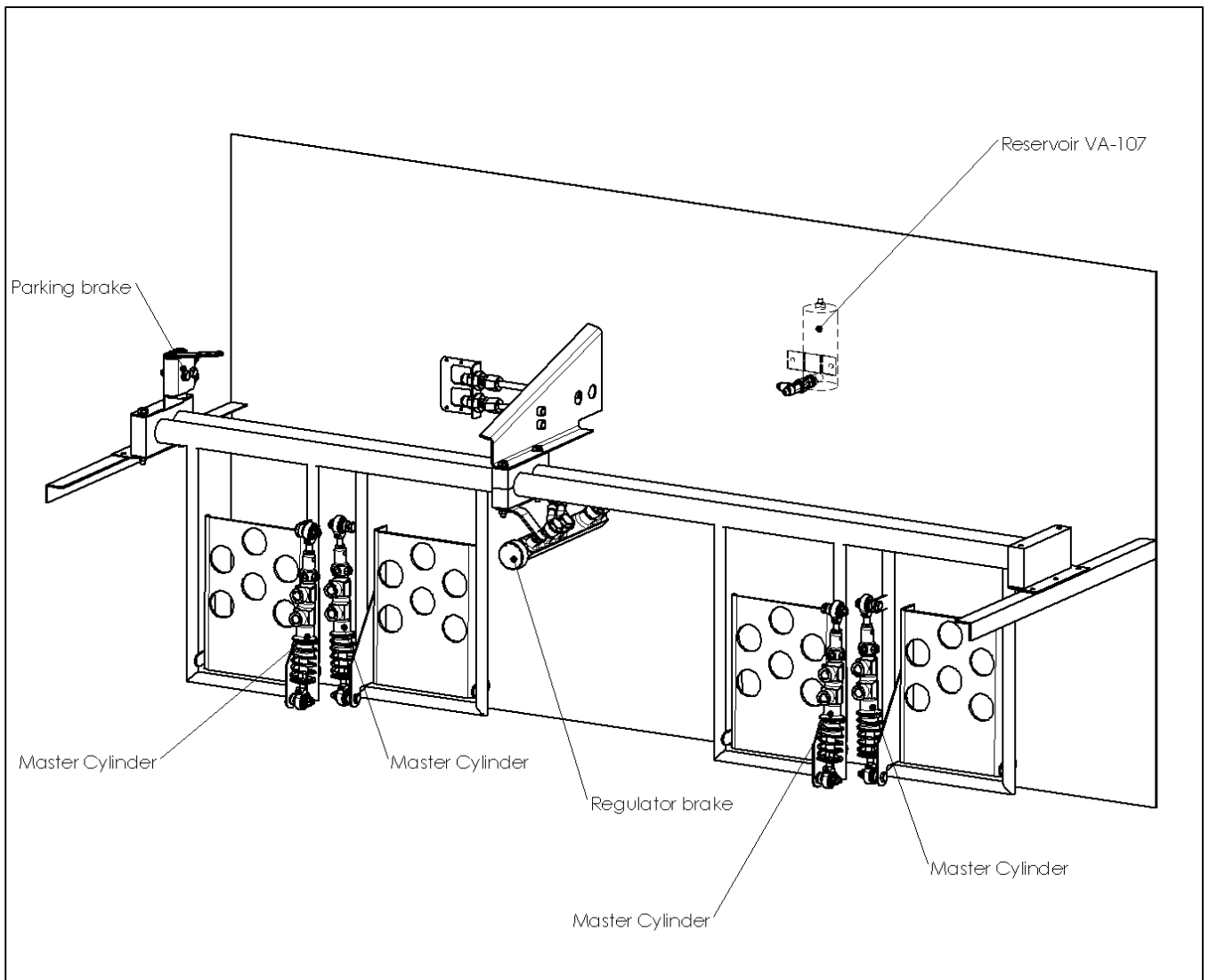


5. Fuselage Kit

5.1. Fuselage Kit VANS RV6,RV6A,RV7,RV7A,RV9 and RV9A

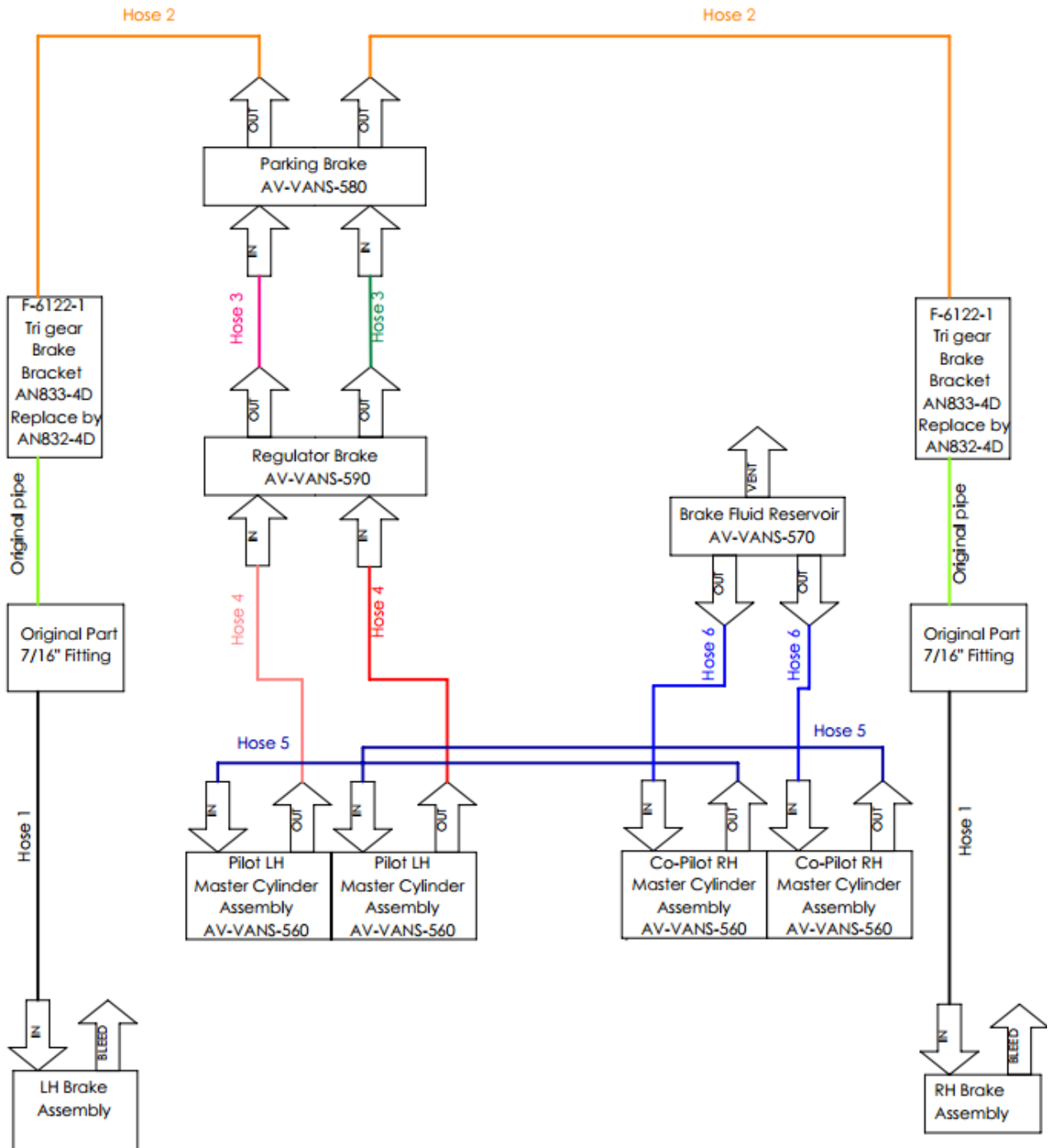
In the fuselage Kit, BERINGER offers 4 optional.

- Basic Kit only Pilot Master cylinder.
- Basic Kit + Copilote Master cylinder.
- Basic Kit only Pilot Master cylinder + Parking brake valve.
- Basic Kit + Copilote Master cylinder + Parking brake valve.
- Regulator Kit.

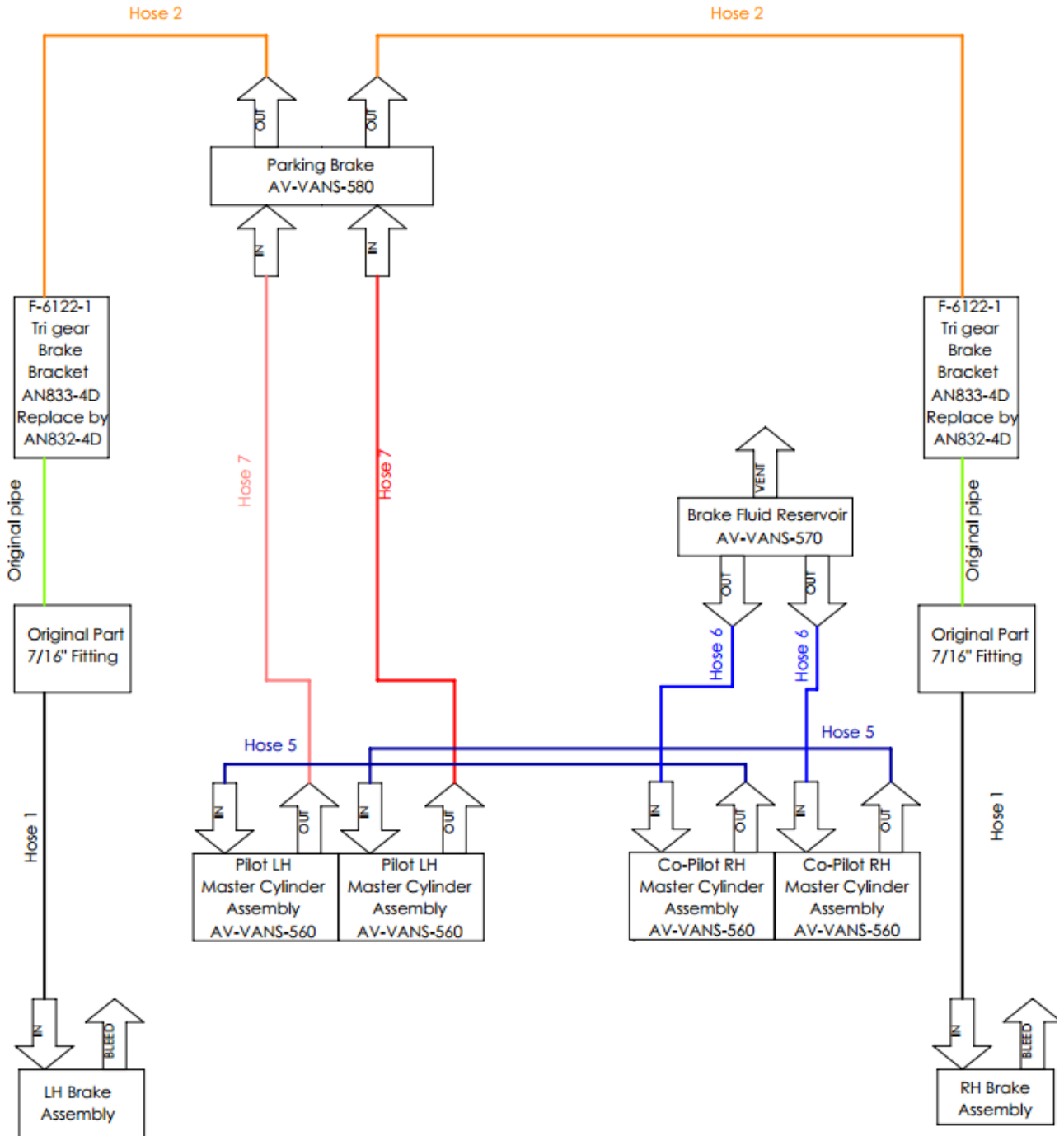


5.1.1. Full Hydraulic digram (Drawing reference AV-VANS-550)

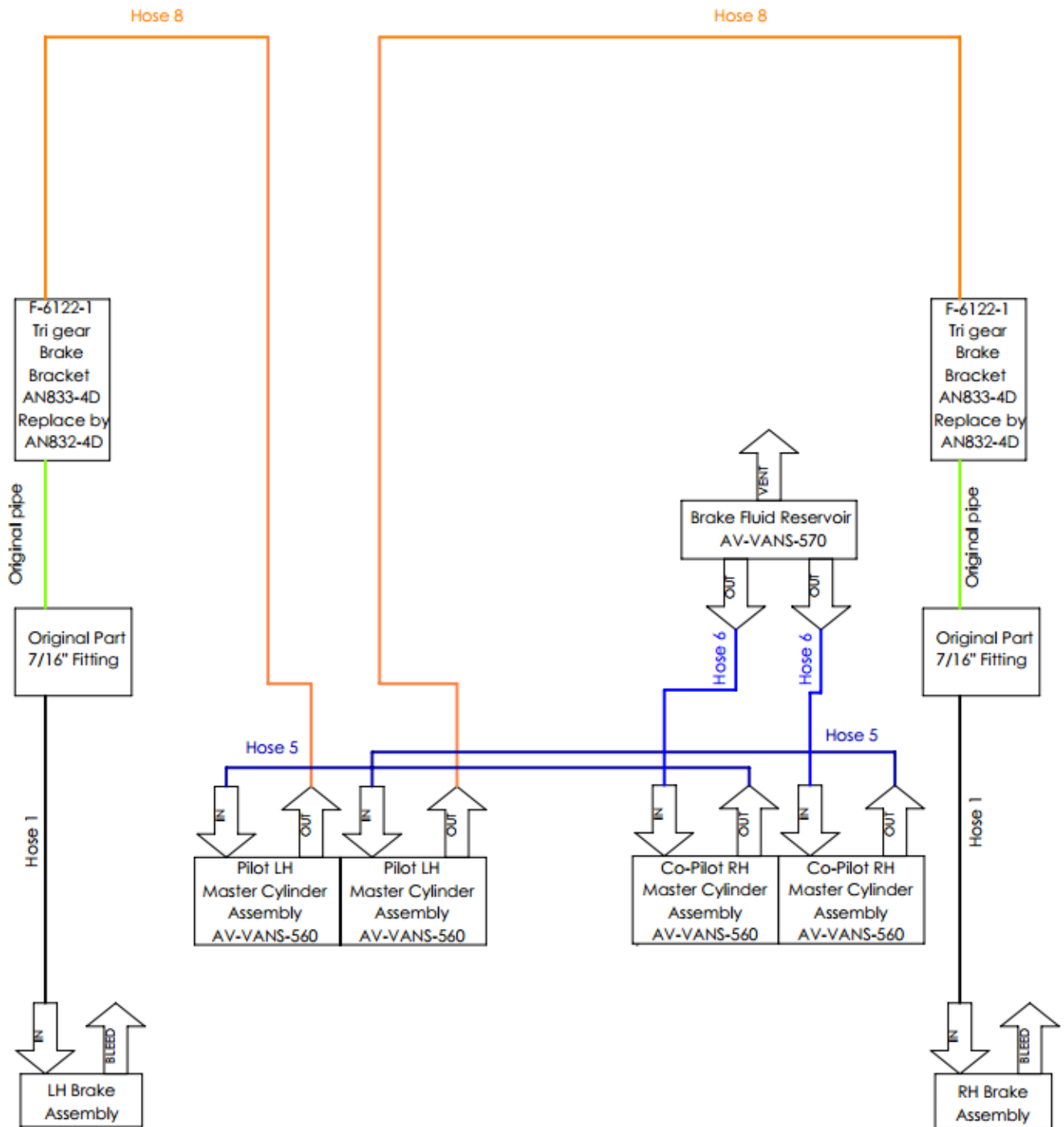
5.1.1.1 Basic+parking+copilot+regulator Kit (SRVFU04)+ (SRVFU06).



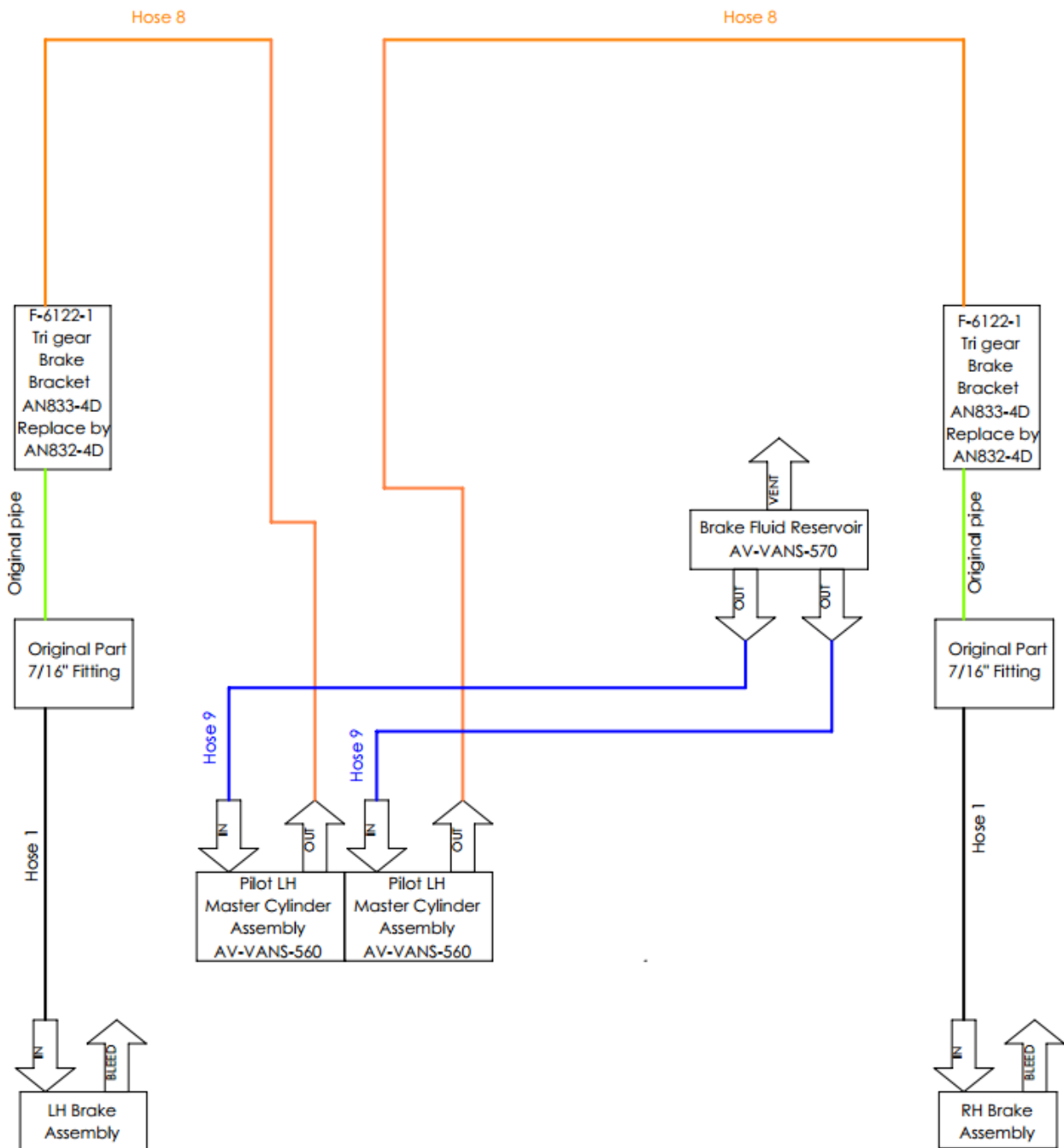
5.1.1.2 Basic+parking+copilot Kit(SRVFU04)



5.1.1.3 Basic+copilot (SRVFU02)



5.1.1.4 Basic (SRVFU01)

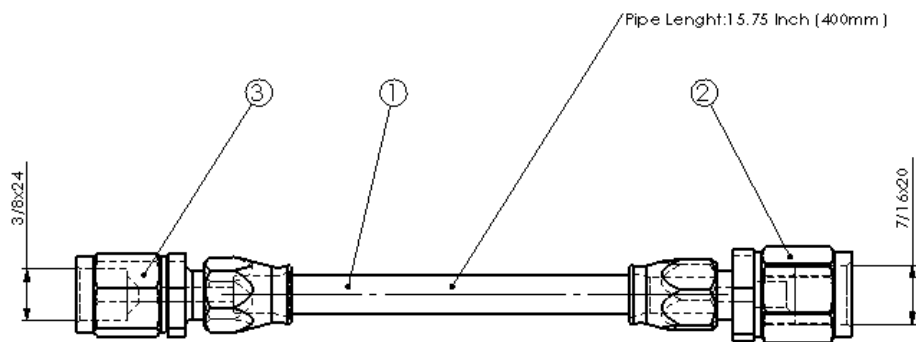


5.1.2. Brake line

5.1.2.1 Hose 01 (Main wheel / Fuselage)

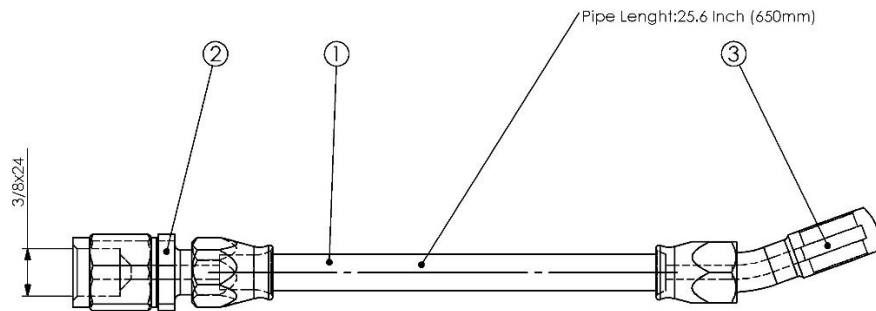
- See §Erreur ! Source du renvoi introuvable. and Erreur ! Source du renvoi introuvable.

5.1.2.2 Hose 02 (Fuselage/FP) (AV-VANS-511)



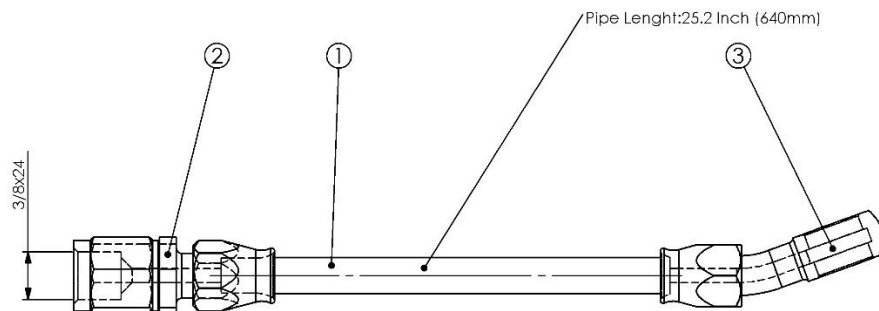
3	HYD-008OP	female fitting 3/8x24	1
2	HYD-009OC	female fitting 7/16x20	1
1	HYD-032	Stainless steel brake hose	1
REP	PART NUMBER	DESCRIPTION	QTY.

5.1.2.3 Hose 03 (FP/Regulator) (AV-VANS-512)



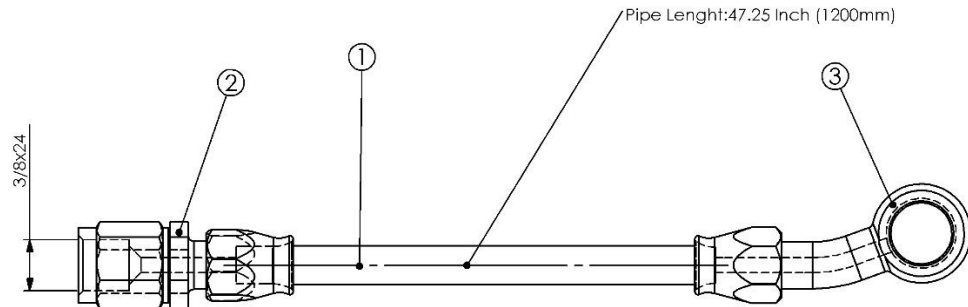
3	HYD-002OP	Banjo	1
2	HYD-008OP	female fitting 3/8x24	1
1	HYD-032	Stainless steel brake hose	1
REP	PART NUMBER	DESCRIPTION	QTY.

5.1.2.4 Hose 04 (Regulator/MC Pilot) (AV-VANS-513)



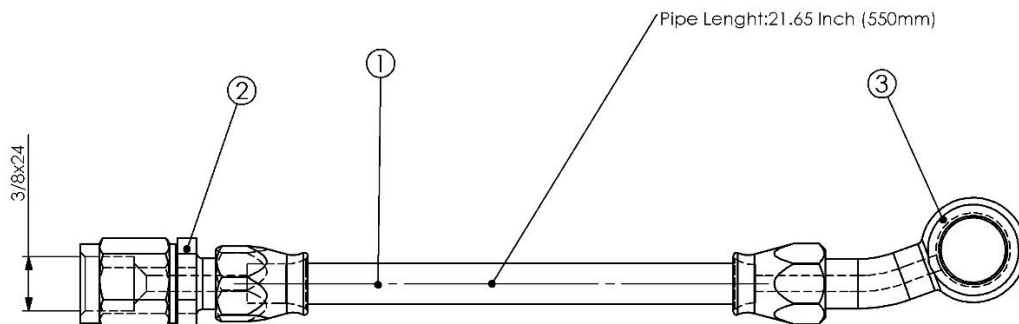
3	HYD-002OP	Banjo	1
2	HYD-008OP	female fitting 3/8x24	1
1	HYD-032	Stainless steel brake hose	1
REP	PART NUMBER	DESCRIPTION	QTY.

5.1.2.5 Hose 05 (MC Pilot/MC Copilot) (AV-VANS-514)



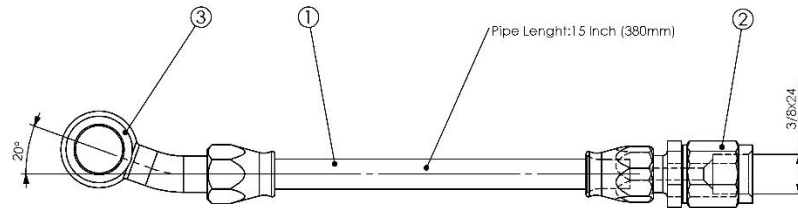
3	HYD-022OP	Banjo	1
2	HYD-008OP	female fitting 3/8x24	1
1	HYD-032	Stainless steel brake hose	1
REP	PART NUMBER	DESCRIPTION	QTY.

5.1.2.6 Hose 06 (MC Copilot-Reservoir) (AV-VANS-515)



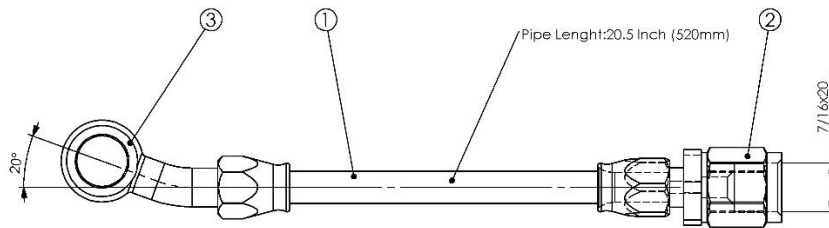
3	HYD-022OP	Banjo	1
2	HYD-008OP	female fitting 3/8x24	1
1	HYD-032	Stainless steel brake hose	1
REP	PART NUMBER	DESCRIPTION	QTY.

5.1.2.7 Hose 07 (MC pilot-FP) (AV-VANS-516)



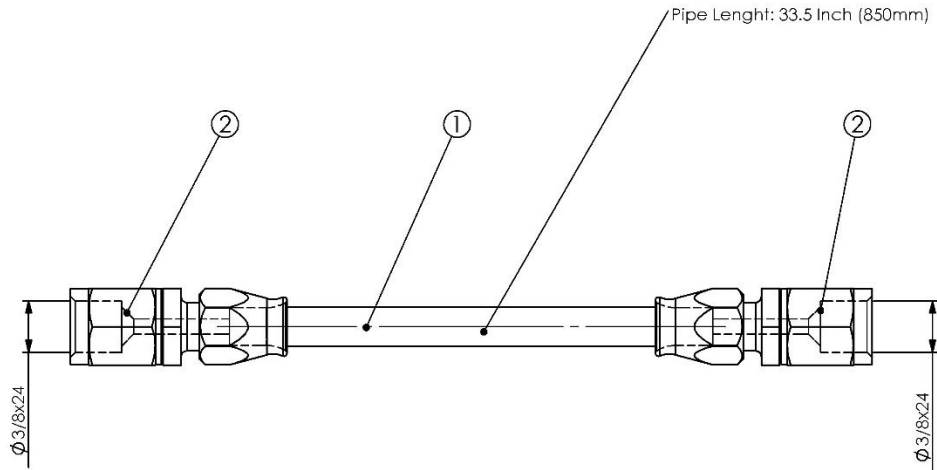
3	HYD-022OP	Banjo	1
2	HYD-008OP	female fitting 3/8x24	1
1	HYD-032	Stainless steel brake hose	1
REP	PART NUMBER	DESCRIPTION	QTY.

5.1.2.8 Hose 08 (Fuselage -MC pilot) (AV-VANS-517)



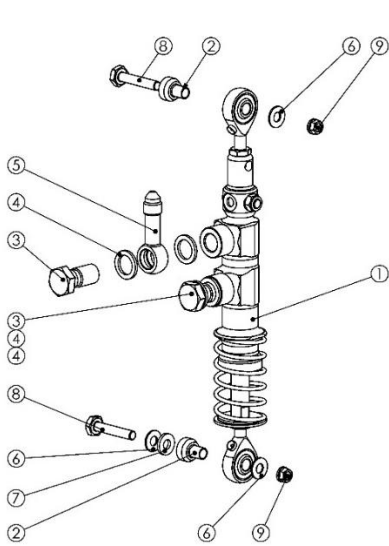
3	HYD-022OP	Banjo	1
2	HYD-009OC	female fitting 7/16x20	1
1	HYD-032	Stainless steel brake hose	1
REP	PART NUMBER	DESCRIPTION	QTY.

5.1.2.9 Hose 09 (MC pilot-Reservoir) (AV-VANS-518)

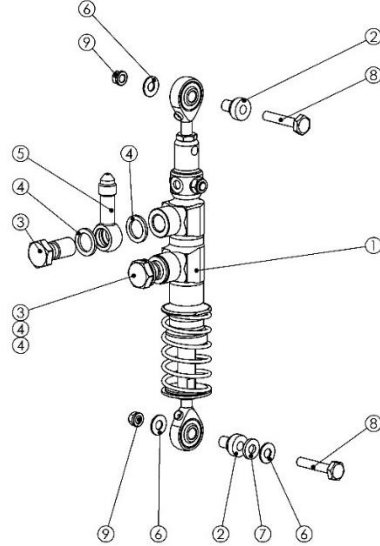


2	HYD-008OP	female fitting 3/8x24	2
1	HYD-032	Stainless steel brake hose	1
REP	PART NUMBER	DESCRIPTION	QTY.

5.1.3. Assembly Master cylinder right and left (Drawing reference AV-VANS-560)

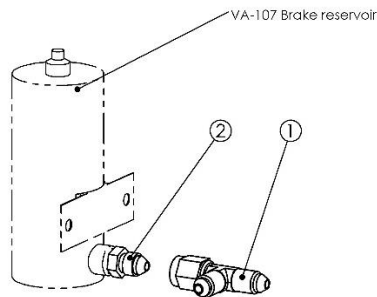


9	MS21042-3	Self locking Nut	2
8	AN3-10A	Axle bolt	2
7	NAS1149F0363P	Washer	1
6	NAS1149F0332P	Washer	3
5	HYD-019VC	Banjo	1
4	HYD-005B	Copper Seal	4
3	HYD-003P	Banjo Bolt	2
2	BGE-011(A)	Ball end	2
1	MP-002.6N(A)	Master cylinder	1
REP	PART NUMBER	DESCRIPTION	QTY.



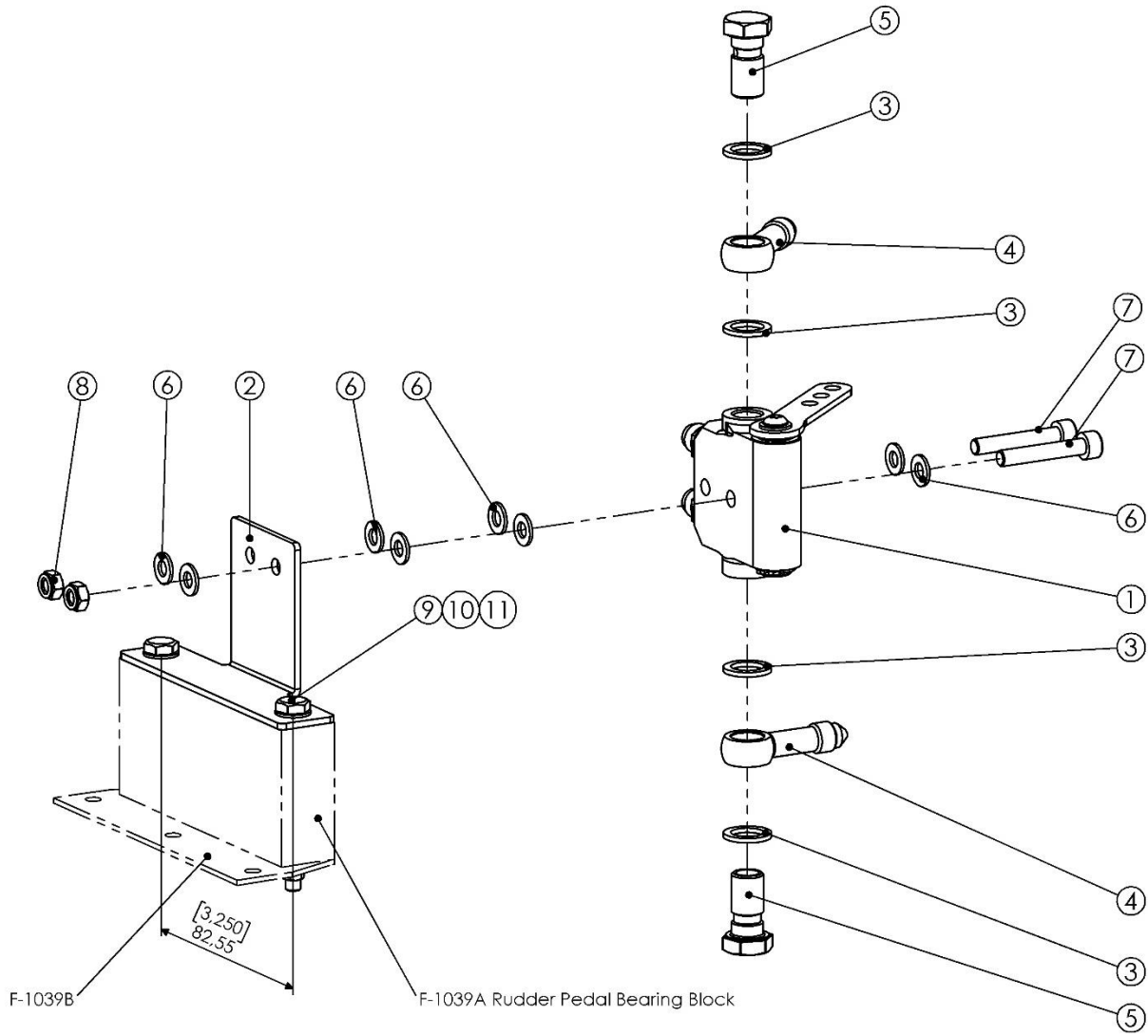
9	MS21042-3	Self locking Nut	2
8	AN3-10A	Axle bolt	2
7	NAS1149F0363P	Washer	1
6	NAS1149F0332P	Washer	3
5	HYD-019VC	Banjo	1
4	HYD-005B	Copper Seal	4
3	HYD-003P	Banjo Bolt	2
2	BGE-011(A)	Ball end	2
1	MP-002.6N(A)	Master cylinder	1
REP	PART NUMBER	DESCRIPTION	QTY.

5.1.4. Assembly Brake reservoir (Drawing reference AV-VANS-570)



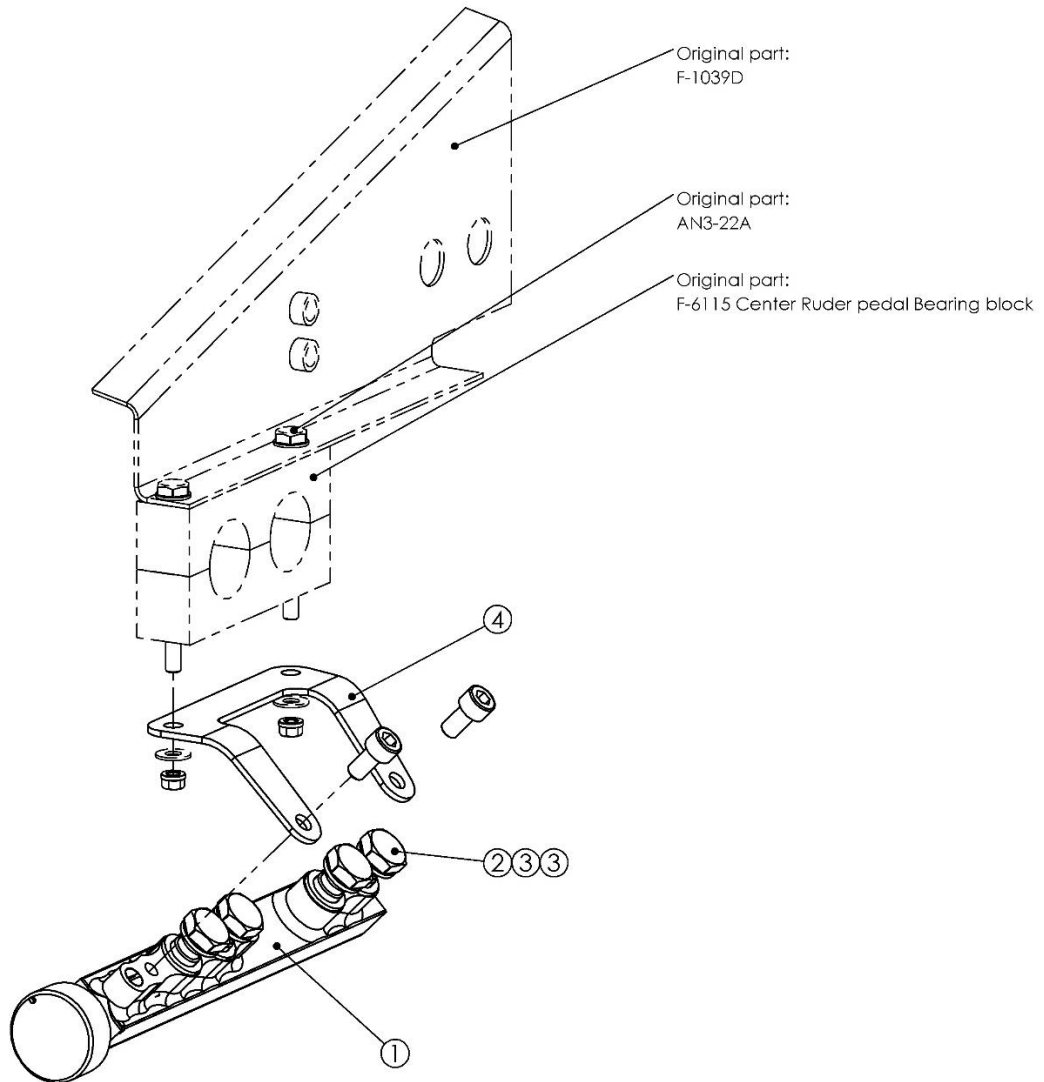
2	HYD-024D	Adaptator	1
1	HYD-042D	T 3/8"	1
REP	PART NUMBER	DESCRIPTION	QTY.

5.1.5. Assembly Parking brake valve(Drawing reference AV-VANS-580)



11	MS21042-3	Self locking Nut	2
10	NAS1149F0332P	Washer	4
9	AN3-22A	Axle bolt	2
8	E-HN-002	self-locking Nut	2
7	V-CHC-041	Screw	2
6	R-AP-004	Washer	8
5	HYD-003P	Banjo Bolt	2
4	HYD-019VC	Banjo	2
3	HYD-005B	Copper Seal	4
2	AV-VANS-015(A)	Support	1
1	FP-001 (A)	Parking Brake	1
REP	PART NUMBER	DESCRIPTION	QTY.

5.1.6. Assembly Regulator (Drawing reference AV-VANS-590)



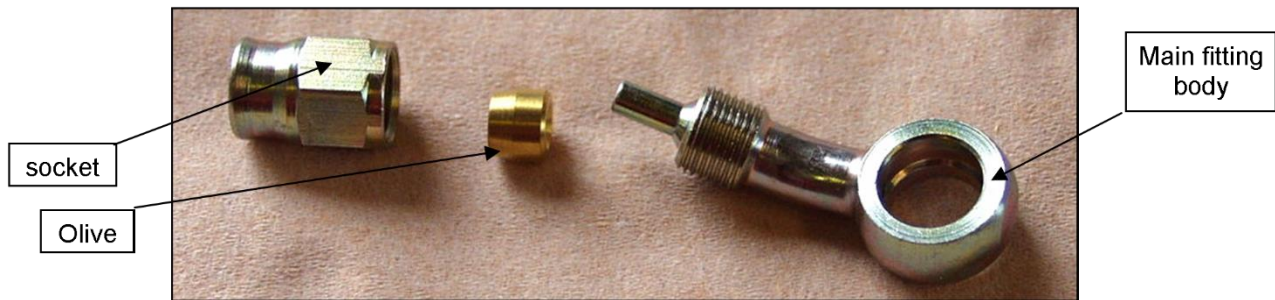
4	AV-VANS-006 (A)	Elbow	1
3	HYD-005B	Copper Seal	8
2	HYD-003P	Banjo Bolt	4
1	RE-001N(B)	Regulator	1
REP	PART NUMBER	DESCRIPTION	QTY.

6. Brake line

See on YOUTUBE:

- BERINGER tech Tip #2

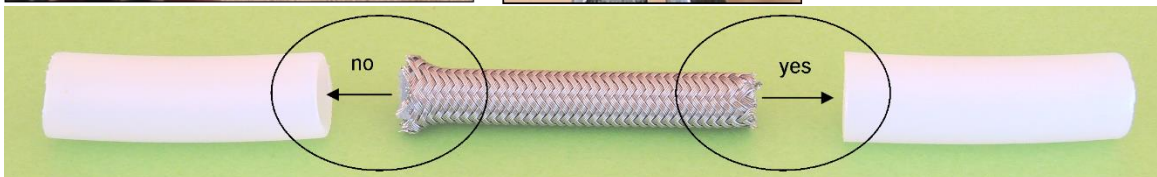
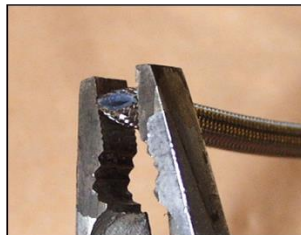
A. Banjo Assembly



B. Cut the hose



- Using a fine tooth saw blade or cutter plier, cut hose to the required length.
- Clean any loose debris from both the cut ends and inside the hose.
- Then use a flat pliers to make the hole circular, as shown on the picture below.

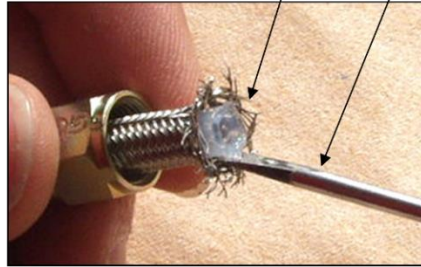


C. Put the nut in the hose



Flare out stainless steel from PTFE tube
(5mm length min.)

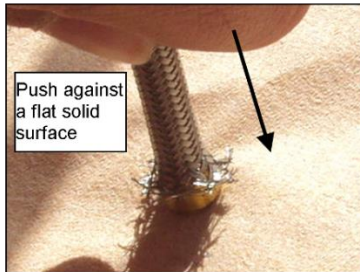
Use a fine screwdriver



D. Put the olive



Push the olive onto the end of PTFE inner tube and under the stainless steel braid. **Make sure that all stainless steel filaments are outside of the olive.**



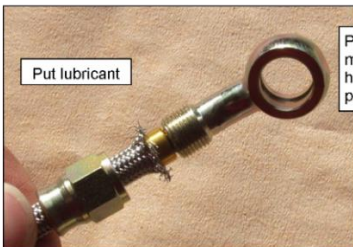
Push against a flat solid surface



PTFE tube must be in contact with the olive

Make sure that PTFE tube is fully homed in the olive.

E. Put the banjo



Put lubricant

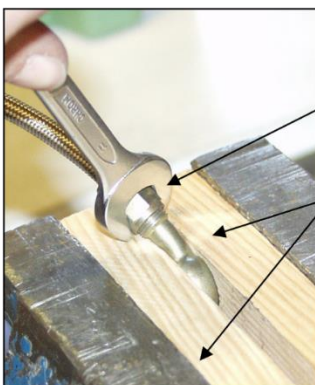
Push between hands the main fitting body and hose as shown on left picture.

Turn with hand the main fitting body to start threading the socket as shown on picture below.



Lubrificant: Drop off oil or WD40 on the thread

F. Tightening torque the socket



Torque tightening the socket at 10N.m to 15N.m (90 IN-LBS to 132 IN-LBS)

Maintain with wood plates to preserve the main fitting body

7. Maintenance

7.1. Equipment concerned

- Nose wheel :
 - P/N: RA-015
- Main wheel:
 - P/N: RF-018 et RF-022
- Brake assembly:
 - P/N: EA-002N

Notes :

- L and R indicates the Left and Right brake assemblies

7.2. Maintenance Manual Equipment concerned

For RA-015 see Last revision of BERINGER General maintenance manual

For RF-018 and EA-002N see Last revision of MM-ETSO-007 (available on demand by email)

For tire Assembly see on YOUTUBE:

- BERINGER tech Tip #1