

NR	Swagelok?	Name	Description	Amount	Price in €	Shipping	Overall	Link
2.1.0	x	N2 Tank	300 Bar N2 tank with W30x2-M thread	1	152			<a href="https://www.linde-gas.de/shop/de/de-ig/stickstoff-50l-300-bar-2200153">https://www.linde-gas.de/shop/de/de-ig/stickstoff-50l-300-bar-2200153</a>
2.1.1	x	Pressure Regulator	W30x2 on one side G1/4 the other, lower the pressure from 300Bar too ca. 40Bar, probably requires second stage regulator	1	249,99	5,99	255,98	<a href="https://shop.gase-dopp.de/Flaschendruckminderer-Inertgas-Argon-Helium-300-bar-1-stufig-bis-50-bar-regelbar-Anschluss-W30x2-DIN-477-5-Nr54-Ausgang-G-1-4-AG-Messing-HERCULES">https://shop.gase-dopp.de/Flaschendruckminderer-Inertgas-Argon-Helium-300-bar-1-stufig-bis-50-bar-regelbar-Anschluss-W30x2-DIN-477-5-Nr54-Ausgang-G-1-4-AG-Messing-HERCULES</a>
2.2.0	S	SS-4-TA-7-4RP	adapt G1/4-F to SL-G1/4-M for N2 Solenoid	2	26,98		53,96	<a href="https://products.swagelok.com/en/c/straights/p/SS-4-TA-7-4RP?q=:relevance:bodyMaterial:316+Stainless+Steel:connection2Size:1%2F4+in.:connection2Type:Female+ISO+Parallel+Thread">https://products.swagelok.com/en/c/straights/p/SS-4-TA-7-4RP?q=:relevance:bodyMaterial:316+Stainless+Steel:connection2Size:1%2F4+in.:connection2Type:Female+ISO+Parallel+Thread</a>
2.2.1	S	SS-400-1-6RS	adapt SL-G1/4-F to G3/8-M for N2 Solenoid	2	22,19		44,38	<a href="https://products.swagelok.com/en/c/straights/p/SS-400-1-6RS?q=:relevance:connection1Size:1%2F4+in.:connection2Size:3%2F8+in.:connection2Type:Male+ISO+Parallel+Thread%2C+Straight+Shoulder">https://products.swagelok.com/en/c/straights/p/SS-400-1-6RS?q=:relevance:connection1Size:1%2F4+in.:connection2Size:3%2F8+in.:connection2Type:Male+ISO+Parallel+Thread%2C+Straight+Shoulder</a>
2.2.2	x	KB 15 NC	300Bar NC N2 Solenoid	1	261		261	
2.2.3	S	SS-FL4TA4TA4-48	hose to connect HP system too LP system	1	277,68		277,68	<a href="https://products.swagelok.com/en/c/fl-series-flexible-metal-hose/p/SS-FL4TA4TA4-48">https://products.swagelok.com/en/c/fl-series-flexible-metal-hose/p/SS-FL4TA4TA4-48</a>
2.2.4	x	AGS4003-M-0400-G-AB-5P	pressure sensor for N2 G1/4-M (400Bar)	1	291		291	
	x	U-Sit Seal from Trelleborg	seals the pressure sensors Min. 3					
2.2.6	S	SS-400-3	tee-joint with SL-G1/4-F on all three sides	6	37,84		227,04	<a href="https://products.swagelok.com/en/c/tees/p/SS-400-3">https://products.swagelok.com/en/c/tees/p/SS-400-3</a>
2.2.6.1	S	SS-400-4	cross joint with SL-G1/4-F on all sides	1	68,75		68,75	<a href="https://products.swagelok.com/en/c/crosses/p/SS-400-4">https://products.swagelok.com/en/c/crosses/p/SS-400-4</a>
2.2.7	S	SL-G1/4 Tubing	fractional carbon steel tubing G1/4 in OD, 0.035 in wall thickness, 18m	1				<a href="https://products.swagelok.com/en/all-products/tubing-tube-accessories/tubing/c/811?clp=true">https://products.swagelok.com/en/all-products/tubing-tube-accessories/tubing/c/811?clp=true</a>
2.2.8	S	SS-4C-TR-1	check valves G1/4 stop ETh and LOx from getting into N2 sys	3	87,18		261,54	<a href="https://products.swagelok.com/en/c/fixed-pressure/p/SS-4C-TR-1?q=:relevance:bodyMaterial:316+Stainless+Steel:connection1Size:1%2F4+in.:connection2Size:1%2F4+in.:oringMaterial:PTFE">https://products.swagelok.com/en/c/fixed-pressure/p/SS-4C-TR-1?q=:relevance:bodyMaterial:316+Stainless+Steel:connection1Size:1%2F4+in.:connection2Size:1%2F4+in.:oringMaterial:PTFE</a>
2.2.9	S	SS-4-TA-7-4RP	adapt SL-G1/4-M to NPT-1/4-F for burst discs	2	26,98		53,96	<a href="https://products.swagelok.com/en/c/straights/p/SS-4-TA-7-4?q=:relevance:connection1Size:1%2F4+in.:connection1Type:Swagelok%C2%AE+Tube+Adapter:connection2Size:1%2F4+in.:connection2Type:Female+NPT">https://products.swagelok.com/en/c/straights/p/SS-4-TA-7-4?q=:relevance:connection1Size:1%2F4+in.:connection1Type:Swagelok%C2%AE+Tube+Adapter:connection2Size:1%2F4+in.:connection2Type:Female+NPT</a>
2.2.10	x	Burst Disc	male, maby think about replacing this on the LOx-side	2	229,89	44,12	503,9	<a href="https://www.mcmaster.com/4412T217/">https://www.mcmaster.com/4412T217/</a>
2.2.11	S	SS-400-1-8RS	adapt SL-G1/4-F to G1/2-M for pressure relief solenoids	2	30,21		60,42	<a href="https://products.swagelok.com/en/c/straights/p/SS-400-1-8RS?q=:relevance:connection1Size:1%2F4+in.:connection2Size:1%2F2+in.:connection1Type:Swagelok%C2%AE+Tube+Fitting:connection2Type:Male+ISO+Parallel+Thread%2C+Straight+Shoulder">https://products.swagelok.com/en/c/straights/p/SS-400-1-8RS?q=:relevance:connection1Size:1%2F4+in.:connection2Size:1%2F2+in.:connection1Type:Swagelok%C2%AE+Tube+Fitting:connection2Type:Male+ISO+Parallel+Thread%2C+Straight+Shoulder</a>
2.2.12			pressure relief Solenoid, G1/2-F (should be normaly open)	2				
2.2.13	x	G1/4 Tank Adapters	adapt SL-G1/4-F to whatever the tank will use	2				
2.2.14	x	Boil-off Valve	relive pressure created by boiling Lox	1				<a href="https://www.nieruf.de/Kryo-Sicherheitsventil-1-4-AG-x-3-8-IG">https://www.nieruf.de/Kryo-Sicherheitsventil-1-4-AG-x-3-8-IG</a>
2.2.15	x	PT 100 Temperature Sensor	measure fluid temperature, G1/2 male	4	13,57 €		54,28	<a href="https://www.sensorshop24.de/temperaturfuehler-passiv/einschraubfuehler/einschraubtemperaturfuehler-mit-g1-2-gewinde?gad_source=1">https://www.sensorshop24.de/temperaturfuehler-passiv/einschraubfuehler/einschraubtemperaturfuehler-mit-g1-2-gewinde?gad_source=1</a>
2.2.16	x	Tanks	house	2				
2.3.1	S	SL-G1/2 Tubing	fractional carbon steel tubing G1/2 in OD, 0.065in wall thickness 18m	1			0	<a href="https://products.swagelok.com/en/all-products/tubing-tube-accessories/tubing/c/811?clp=true">https://products.swagelok.com/en/all-products/tubing-tube-accessories/tubing/c/811?clp=true</a>
2.3.2	S	SS-810-3	tee-joint with SL-G1/2-F on all three sides	2	75,43		150,86	<a href="https://products.swagelok.com/en/c/tees/p/SS-810-3?q=Tee%20fitting:relevance:bodyMaterial:316+Stainless+Steel:connection1Size:1%2F2+in.:connection2Size:1%2F2+in.:connection3Size:1%2F2+in.">https://products.swagelok.com/en/c/tees/p/SS-810-3?q=Tee%20fitting:relevance:bodyMaterial:316+Stainless+Steel:connection1Size:1%2F2+in.:connection2Size:1%2F2+in.:connection3Size:1%2F2+in.</a>
2.3.2.1	S	SS-810-4	cross joint with SL-G1/2-F on all sides	3	98,98		296,94	<a href="https://products.swagelok.com/en/c/crosses/p/SS-810-4">https://products.swagelok.com/en/c/crosses/p/SS-810-4</a>
2.3.3	S	SS-810-1-8RS	adapt SL-G1/2-F to G1/2-M for the fill valves and main valves	20	39,52		790,4	<a href="https://products.swagelok.com/en/c/straights/p/SS-810-1-8RS">https://products.swagelok.com/en/c/straights/p/SS-810-1-8RS</a>
2.3.4	x	Fill Valve	G1/2-F on both sides, PTFE gasket	4	22,4		89,6	<a href="https://www.esska.de/shop/Kugelhahn-einteilig-Edelstahl-2-Wege-reduzierter-Durchgang-IG-G-1-4-bis-G-2-DN-5-bis-32-PN-0-bis-63--85121094xxx-9990">https://www.esska.de/shop/Kugelhahn-einteilig-Edelstahl-2-Wege-reduzierter-Durchgang-IG-G-1-4-bis-G-2-DN-5-bis-32-PN-0-bis-63--85121094xxx-9990</a>
2.3.5	x	MK 15 NC 2E (Ethanol)	ETh main Solenoid, G1/2-F, and ETh fill valve	2	523		1046	
2.3.6	x	KB 20 NC	LOx main Solenoid, G1/2-F, (we need a nother LOx valve for ejection of LOx, pressur rating probably too low) LOx fill valve	3	591		1773	
2.3.7	S	SS-400-R-8	adapt SL-G1/2-M to SL-G1/4-F for pressure sensor	2	18,08		36,16	<a href="https://products.swagelok.com/en/c/straights/p/SS-400-R-8?q=:relevance:connection1Size:1%2F4+in.:connection2Size:1%2F2+in.:connection1Type:Swagelok%C2%AE+Tube+Fitting:connection2Type:Swagelok%C2%AE+Tube+Adapter">https://products.swagelok.com/en/c/straights/p/SS-400-R-8?q=:relevance:connection1Size:1%2F4+in.:connection2Size:1%2F2+in.:connection1Type:Swagelok%C2%AE+Tube+Fitting:connection2Type:Swagelok%C2%AE+Tube+Adapter</a>
2.3.8	S	SS-400-7-4RG	adapt SL-G1/4-F to G1/4-F for pressure sensor	2	27,87		55,74	<a href="https://products.swagelok.com/en/c/straights/p/SS-400-7-4RG?q=:relevance:connection1Size:1%2F4+in.:connection2Size:1%2F4+in.:connection1Type:Swagelok%C2%AE+Tube+Fitting:connection2Type:Female+ISO+Parallel+Gauge+Thread">https://products.swagelok.com/en/c/straights/p/SS-400-7-4RG?q=:relevance:connection1Size:1%2F4+in.:connection2Size:1%2F4+in.:connection1Type:Swagelok%C2%AE+Tube+Fitting:connection2Type:Female+ISO+Parallel+Gauge+Thread</a>
2.3.9	x	AGS4003-M-0060-G-AB-5P	pressure sensors for ETh G1/4-M (60Bar) we need one more for the injector plate, or do we, check that in fluent	2	291		582	
2.3.10	S	SS-FM8SL8SL8-18	steel core hose, connect fluid system to engines, 45.7 cm, one missing to decouple engine from rinsing pipe	3	269,28		807,84	<a href="https://products.swagelok.com/en/c/fm-series-flexible-metal-hose/p/SS-FM8SL8SL8-18?q=SS-FM8SL8SL8-">https://products.swagelok.com/en/c/fm-series-flexible-metal-hose/p/SS-FM8SL8SL8-18?q=SS-FM8SL8SL8-</a>
2.3.11	S	SS-810-6	adapt G1/2 F to G1/2 F in order to connect hoses	2	39,49		78,98	<a href="https://products.swagelok.com/en/c/straights/p/SS-810-6?q=SS-810-6">https://products.swagelok.com/en/c/straights/p/SS-810-6?q=SS-810-6</a>
2.3.12	x	LOx-Pressure Sensors	no product	2				

2.3.14	x	Fuel Filter	to be determined	1				
2.3.15	x	LOx Filter	to be determined	1				

to be procured
may require re-procurement due to a possibility of not meeting requirements



