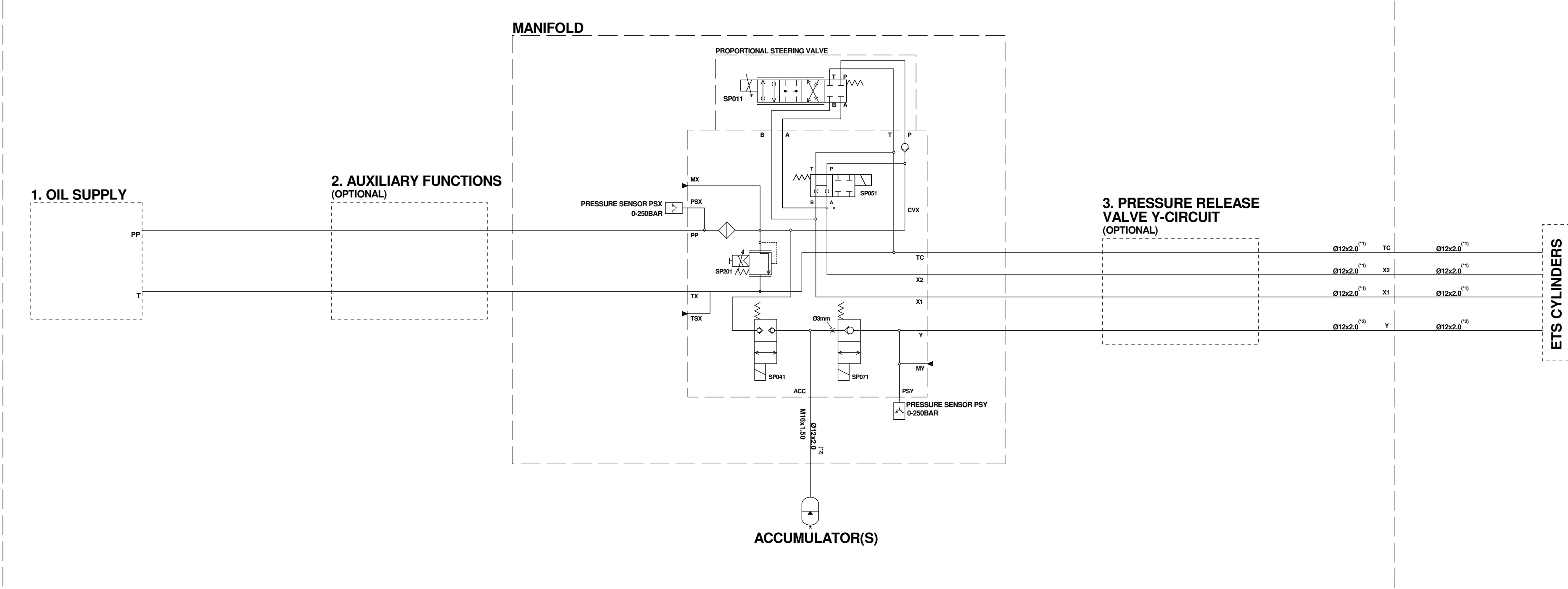


BASIC HYDRAULIC CONNECTING SCHEME ETS1

STANDARD ETS1 LOCKER



IMPORTANT !

INTERCONNECTION (e.g. T-COUPLING) BETWEEN PIPES OF DIFFERENT SIZES SHOULD ALWAYS HAVE THE SIZE OF THE LARGEST PIPE USE REDUCING COUPLING AFTER INTERCONNECTION.

IMPORTANT: ALL PIPES/HOSES/COUPLINGS SHOULD BE CLEAN BEFORE MOUNTING !

NOTE 1: ALL PIPES, HOSES AND COUPLINGS EXCEPT THE CENTRING CIRCUIT HAVE TO WITHSTAND A MINIMAL NOMINAL PRESSURE OF 250 BAR.
PIPE SIZES MENTIONED ARE THE EXTERNAL DIAMETERS x WALL THICKNESSES
PROPOSED HOSES: ACCORDING EN857
COUPLINGS: L OR S TYPE

NOTE 2: FROM Y-PORT ON MANIFOLD UNTIL CYLINDER CONNECTIONS MUST BE DESIGNED TO WITHSTAND 700 BAR STATIC PRESSURE FOR 1-3 s.
PIPE SIZES MENTIONED ARE THE EXTERNAL DIAMETERS x WALLTHICKNESSES
PROPOSED HOSES: ACCORDING EN857
COUPLINGS: S TYPE

NOTE 3: THE SYSTEM DEMANDS AN OIL CLEANLINESS OFF CLASS 18/16/13 ACCORDING ISO4406
PROPOSED FILTER MATERIAL: SYNTHETIC.
PROPOSED FILTRATION EFFICIENCY: $\beta_5 = 75$.

NOTE 4: ACCUMULATORS MAY ALSO BE CONNECTED SEPERATLY TO ACC1 AND ACC2, OR TOGETHER TO CONNECTION ACC2.

NOTE 5: CLOSE BALL VALVE WHEN ETS SYSTEM IS CONNECTED!
THE BALL VALVE SHOULD BE ALWAYS OPEN WHEN ETS SYSTEM IS DISCONNECTED TO AVOID PUMP DAMAGE
BEFORE DISCONNECTING THE QUICK COUPLINGS, OPEN THE BALL VALVE TO RELEASE PRESSURE.

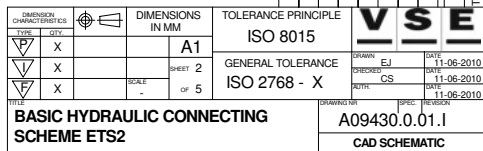
NOTE 6: FOR PUMP AND RESERVOIR SPECIFICATIONS CONTACT VSE

NOTE 7: RETURN LINE SHOULD ALWAYS BE OPEN, NO VALVES ALLOWED IN RETURN LINE

DIMENSION CHARACTERISTICS				DIMENSIONS IN MM		TOLERANCE PRINCIPLE			
	X	A1		SHEET 1 OF 6		GENERAL TOLERANCE ISO 2768 - X		DRAWN	
	X							EJ	
	X							DATE	
SCALE		-		-				DATE	
-		-		-		-		11-06-2010	
-		-		-		-		11-06-2010	
-		-		-		-		11-06-2010	
BASIC HYDRAULIC CONNECTING SCHEME ETS1						A09430.0.01.i			
						CAD SCHEMATIC			

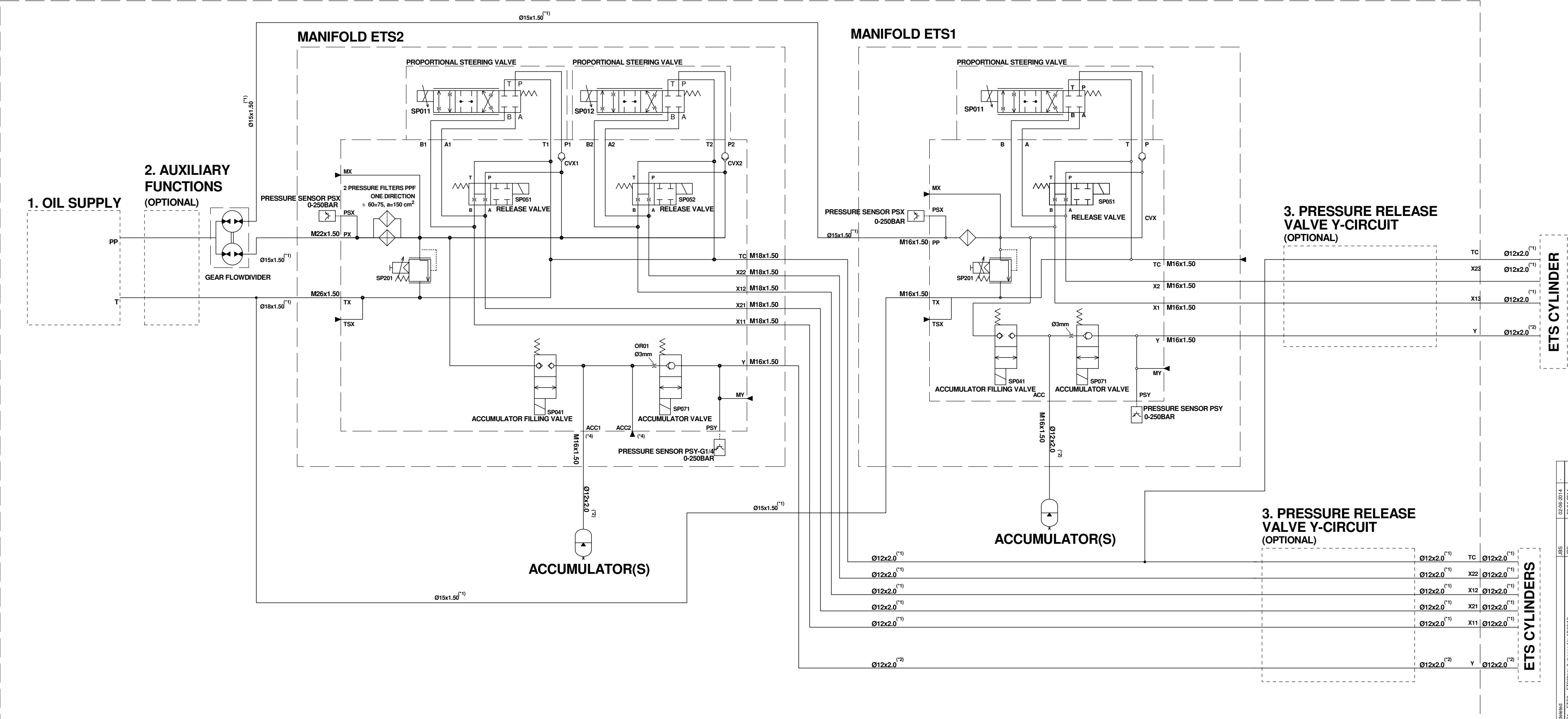
DATE	NAME	DESCRIPTION
03-06-2014	JRS	1 of supply, diamonds PPT and T updated, 2 auxiliary functions, proportional value deleted
03-06-2014	JRS	1 ETSZ, Value SH97 changed to T, updated, 2 auxiliary functions, proportional value deleted
14-10-2013	GRH	1 New powerpack added (1.5)
14-10-2013	GRH	1 New powerpack added (1.5)
13-03-2012	GRH	1 changed pipes sizes pressure and main line Mapping and added auxiliary functions 2,3
21-12-2011	EJ	1 update scheme
09-12-2010	EJ	1 changed position 1 line external of supply
24-09-2010	EJ	1 changed pipes sizes auxiliary functions, position filter and pipe between powerpack and external reservoir
DATE	NAME	DESCRIPTION

STANDARD ETS2 LOCKER



BASIC HYDRAULIC CONNECTING SCHEME ETS2+1

STANDARD ETS2+1 LOCKER



IMPORTANT !

INTERCONNECTION (e.g. T-COUPLING) BETWEEN PIPES OF DIFFERENT SIZES SHOULD ALWAYS HAVE THE SIZE OF THE LARGEST PIPE.
USE REDUCING COUPLING AFTER INTERCONNECTION.

IMPORTANT: ALL PIPES/HOSES/COUPLINGS SHOULD BE CLEAN BEFORE MOUNTING !

NOTE 1: ALL PIPES, HOSES AND COUPLINGS EXCEPT THE CENTRING CIRCUIT HAVE TO WITHSTAND
A MINIMAL NOMINAL PRESSURE OF 250 BAR.
PIPE SIZES MENTIONED ARE THE EXTERNAL DIAMETERS x WALLTHICKNESSES
PROPOSED HOSES: ACCORDING EN857
COUPLINGS: L OR S TYPE

NOTE 2: FROM Y-PORT ON MANIFOLD UNTIL CYLINDER CONNECTIONS MUST BE DESIGNED TO WITHSTAND 700 BAR STATIC PRESSURE FOR 1-3 s.
PIPE SIZES MENTIONED ARE THE EXTERNAL DIAMETERS x WALLTHICKNESSES
PROPOSED HOSES: ACCORDING EN857
COUPLINGS: S TYPE

NOTE 3: THE SYSTEM DEMANDS AN OIL CLEANLINESS OFF CLASS 18/16/13 ACCORDING ISO4406.
PROPOSED FILTER MATERIAL: SYNTHETIC.
PROPOSED FILTRATION EFFICIENCY: 85 = 75.

NOTE 4: ACCUMULATORS MAY ALSO BE CONNECTED SEPERATLY TO ACC1 AND ACC2, OR TOGETHER TO CONNECTION ACC2.

NOTE 5: CLOSE BALL VALVE WHEN ETS SYSTEM IS CONNECTED!
THE BALL VALVE SHOULD BE ALWAYS OPEN WHEN ETS SYSTEM IS DISCONNECTED TO AVOID PUMP DAMAGE!
BEFORE DISCONNECTING THE QUICK COUPLINGS, OPEN THE BALL VALVE TO RELEASE PRESSURE.

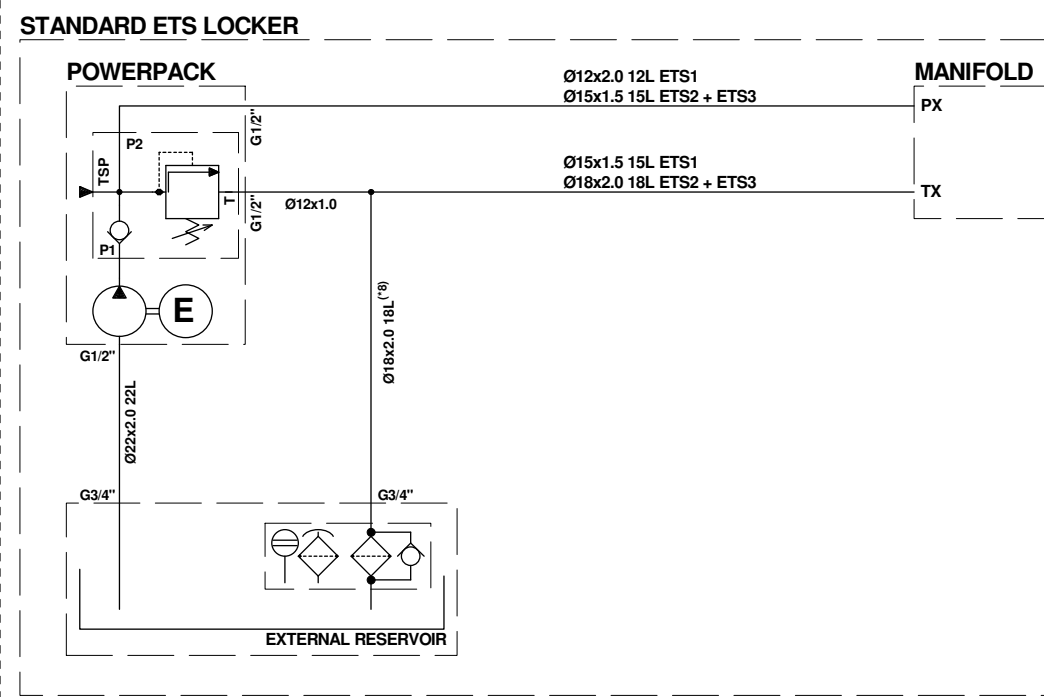
NOTE 6: FOR PUMP AND RESERVOIR SPECIFICATIONS CONTACT VSE.

NOTE 7: RETURN LINE SHOULD ALWAYS BE OPEN, NO VALVES ALLOWED IN RETURN LINE!

DIMENSIONS		TOLERANCE PRINCIPLE	
IN MM		ISO 8015	
A1		GENERAL TOLERANCE	
SHEET 3		ISO 2768 - X	
OF 6			
SCALE			
FILE			
DRAWN		DATE	
EJ		11-06-2019	
CHECKED		DATE	
CS		11-06-2019	
REVISED		DATE	
		11-06-2019	
DRAWING		SPEC	
A09430.0.01.1			
CAD SCHEMATIC			

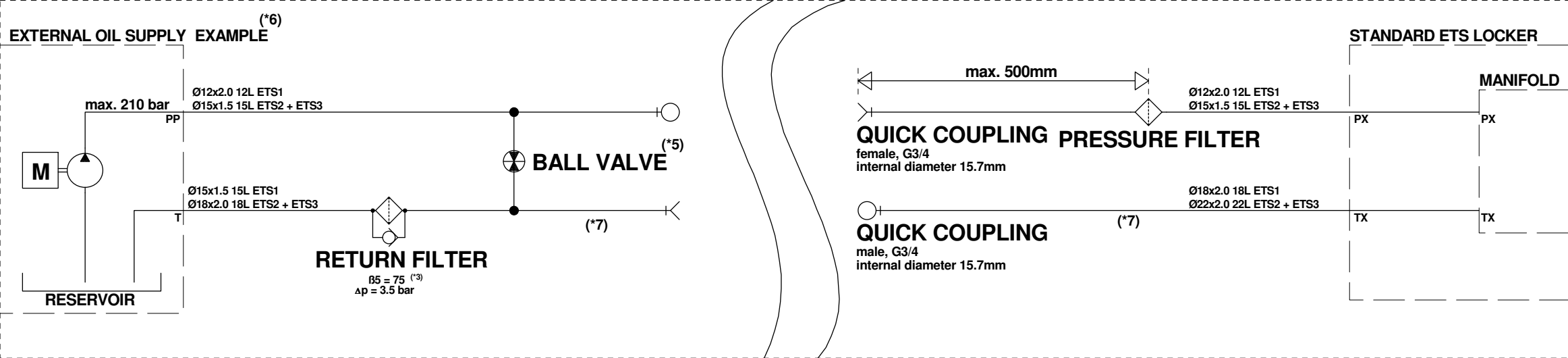
1. OIL SUPPLY OPTIONS

1.1 POWER PACK (4,0kW - 8.26cc/rev.) SPEED REGULATED EXTERNAL RESERVOIR



PMAX PRESSURE RELIEF VALVE 8,26cc/rev. = 250BAR

1.2 EXTERNAL OIL SUPPLY INCLUDING PRESSURE FILTER



IMPORTANT !

INTERCONNECTION (e.g. T-COUPLING) BETWEEN PIPES OF DIFFERENT SIZES SHOULD ALWAYS HAVE THE SIZE OF THE LARGEST PIPE.
USE REDUCING COUPLING AFTER INTERCONNECTION.

IMPORTANT: ALL PIPES/HOSES/COUPLINGS SHOULD BE CLEAN BEFORE MOUNTING !

NOTE 1: ALL PIPES, HOSES AND COUPLINGS EXCEPT THE CENTRING CIRCUIT HAVE TO WITHSTAND

A MINIMAL NOMINAL PRESSURE OF 250 BAR.
PIPE SIZES MENTIONED ARE THE EXTERNAL DIAMETERS x WALLTHICKNESSES
PROPOSED HOSES: ACCORDING EN857
COUPLINGS: L OR S TYPE

NOTE 2: FROM Y-PORT ON MANIFOLD UNTIL CYLINDER CONNECTIONS MUST BE DESIGNED TO WITHSTAND 700 BAR STATIC PRESSURE FOR 1-3 s.

PIPE SIZES MENTIONED ARE THE EXTERNAL DIAMETERS x WALLTHICKNESSES
PROPOSED HOSES: ACCORDING EN857
COUPLINGS: S TYPE

NOTE 3: THE SYSTEM DEMANDS AN OIL CLEANLINESS OFF CLASS 18/16/13 ACCORDING ISO4406.

PROPOSED FILTER MATERIAL: SYNTHETIC.
PROPOSED FILTRATION EFFICIENCY: 85 = 75.

NOTE 4: ACCUMULATORS MAY ALSO BE CONNECTED SEPERATLY TO ACC1 AND ACC2, OR TOGETHER TO CONNECTION ACC2.

NOTE 5: CLOSE BALL VALVE WHEN ETS SYSTEM IS CONNECTED!

THE BALL VALVE SHOULD BE ALWAYS OPEN WHEN ETS SYSTEM IS DISCONNECTED TO AVOID PUMP DAMAGE!
BEFORE DISCONNECTING THE QUICK COUPLINGS, OPEN THE BALL VALVE TO RELEASE PRESSURE.

NOTE 6: FOR PUMP AND RESERVOIR SPECIFICATIONS CONTACT VSE.

NOTE 7: RETURN LINE SHOULD ALWAYS BE OPEN, NO VALVES ALLOWED IN RETURN LINE!

DIMENSIONS		TOLERANCE PRINCIPLE	
IN MM	A1	ISO 8015	
GENERAL TOLERANCE		ISO 2768 - X	
SHEET 4			
OF 6			

1. OIL SUPPLY OPTIONS

A09430.0.01.1

CAD SCHEMATIC

REV.	POSITION	DESCRIPTION	NAME	DATE	MOD.
01.1	-	1. oil supply, diameter PP and T modified 2. auxiliary functions, proportional valve deleted	JBS	02-08-2014	-
01.H	-	ETS2: Valve SP071 changed to NC version, was wrongly drawn as NO version; ETS1 + ETS2 + ETS3; Note 3 changed to 18/16/13	JBS	09-04-2014	-
01.G	-	New powerpack added (1.5)	DAIR	14-10-2013	-
01.F	-	ETS2+1 added	JBS	06-09-2012	-
01.E	-	changed pipe sizes pressure and return line M pump and added auxiliary functions 2.3	JBS	31-03-2012	-
01.D	-	changed position filter external oil supply	EJ	08-12-2010	-
01.C	-	changed pipe sizes auxiliary functions, position filter and pipet between powerpack and external reservoir	EJ	08-12-2010	-
01.B	-	changed position filter and pipet between powerpack and external reservoir	EJ	24-09-2010	-
REV.	POSITION	DESCRIPTION	NAME	DATE	MOD.

F

C

B



3

3

NO.	POSITION	NAME	DATE	MOD.
01.01	-	1. of supply, changed PP and T updated. 2. auxiliary functions, power valve deleted	JRS	02/06/2014
01.04	-	ETSS: Valve S177, damaged P and T updated. 2. auxiliary functions, proportional valve deleted	JRS	09/04/2014
01.05	-	New powerpack added (1.5)	JRS	14/10/2013
01.07	-	ETSS: 2 added	OMR	06/09/2013
01.08	-	ETSS: 2 added	OMR	06/09/2013
01.09	-	ETSS: 2 added	OMR	06/09/2013
01.10	-	ETSS: 2 added	OMR	06/09/2013
01.11	-	ETSS: 2 added	OMR	06/09/2013
01.12	-	ETSS: 2 added	OMR	06/09/2013
01.13	-	ETSS: 2 added	OMR	06/09/2013
01.14	-	ETSS: 2 added	OMR	06/09/2013
01.15	-	ETSS: 2 added	OMR	06/09/2013
01.16	-	ETSS: 2 added	OMR	06/09/2013
01.17	-	ETSS: 2 added	OMR	06/09/2013
01.18	-	ETSS: 2 added	OMR	06/09/2013
01.19	-	ETSS: 2 added	OMR	06/09/2013
01.20	-	ETSS: 2 added	OMR	06/09/2013
01.21	-	ETSS: 2 added	OMR	06/09/2013
01.22	-	ETSS: 2 added	OMR	06/09/2013
01.23	-	ETSS: 2 added	OMR	06/09/2013
01.24	-	ETSS: 2 added	OMR	06/09/2013
01.25	-	ETSS: 2 added	OMR	06/09/2013
01.26	-	ETSS: 2 added	OMR	06/09/2013
01.27	-	ETSS: 2 added	OMR	06/09/2013
01.28	-	ETSS: 2 added	OMR	06/09/2013
01.29	-	ETSS: 2 added	OMR	06/09/2013
01.30	-	ETSS: 2 added	OMR	06/09/2013
01.31	-	ETSS: 2 added	OMR	06/09/2013
01.32	-	ETSS: 2 added	OMR	06/09/2013
01.33	-	ETSS: 2 added	OMR	06/09/2013
01.34	-	ETSS: 2 added	OMR	06/09/2013
01.35	-	ETSS: 2 added	OMR	06/09/2013
01.36	-	ETSS: 2 added	OMR	06/09/2013
01.37	-	ETSS: 2 added	OMR	06/09/2013
01.38	-	ETSS: 2 added	OMR	06/09/2013
01.39	-	ETSS: 2 added	OMR	06/09/2013
01.40	-	ETSS: 2 added	OMR	06/09/2013
01.41	-	ETSS: 2 added	OMR	06/09/2013
01.42	-	ETSS: 2 added	OMR	06/09/2013
01.43	-	ETSS: 2 added	OMR	06/09/2013
01.44	-	ETSS: 2 added	OMR	06/09/2013
01.45	-	ETSS: 2 added	OMR	06/09/2013
01.46	-	ETSS: 2 added	OMR	06/09/2013
01.47	-	ETSS: 2 added	OMR	06/09/2013
01.48	-	ETSS: 2 added	OMR	06/09/2013
01.49	-	ETSS: 2 added	OMR	06/09/2013
01.50	-	ETSS: 2 added	OMR	06/09/2013
01.51	-	ETSS: 2 added	OMR	06/09/2013
01.52	-	ETSS: 2 added	OMR	06/09/2013
01.53	-	ETSS: 2 added	OMR	06/09/2013
01.54	-	ETSS: 2 added	OMR	06/09/2013
01.55	-	ETSS: 2 added	OMR	06/09/2013
01.56	-	ETSS: 2 added	OMR	06/09/2013
01.57	-	ETSS: 2 added	OMR	06/09/2013
01.58	-	ETSS: 2 added	OMR	06/09/2013
01.59	-	ETSS: 2 added	OMR	06/09/2013
01.60	-	ETSS: 2 added	OMR	06/09/2013
01.61	-	ETSS: 2 added	OMR	06/09/2013
01.62	-	ETSS: 2 added	OMR	06/09/2013
01.63	-	ETSS: 2 added	OMR	06/09/2013
01.64	-	ETSS: 2 added	OMR	06/09/2013
01.65	-	ETSS: 2 added	OMR	06/09/2013
01.66	-	ETSS: 2 added	OMR	06/09/2013
01.67	-	ETSS: 2 added	OMR	06/09/2013
01.68	-	ETSS: 2 added	OMR	06/09/2013
01.69	-	ETSS: 2 added	OMR	06/09/2013
01.70	-	ETSS: 2 added	OMR	06/09/2013
01.71	-	ETSS: 2 added	OMR	06/09/2013
01.72	-	ETSS: 2 added	OMR	06/09/2013
01.73	-	ETSS: 2 added	OMR	06/09/2013
01.74	-	ETSS: 2 added	OMR	06/09/2013
01.75	-	ETSS: 2 added	OMR	06/09/2013
01.76	-	ETSS: 2 added	OMR	06/09/2013
01.77	-	ETSS: 2 added	OMR	06/09/2013
01.78	-			

RAW

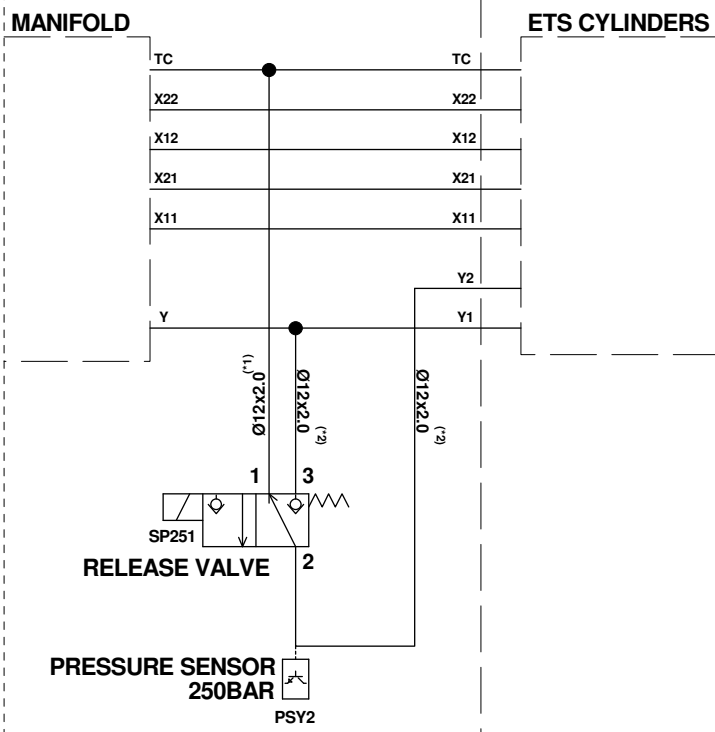
NPA

WEST

3. PRESSURE RELEASE VALVE Y-CIRCUIT (OPTIONAL)

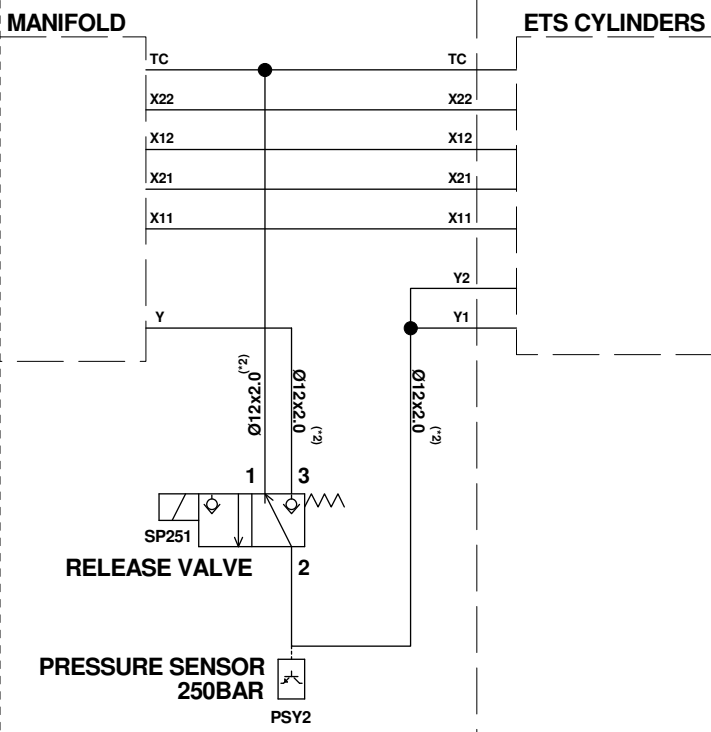
3.1 RELEASE VALVE Y-CIRCUIT AXLE 2

STANDARD ETS LOCKER



3.2 RELEASE VALVE Y-CIRCUIT AXLE 1 + 2

STANDARD ETS2 LOCKER



IMPORTANT !

INTERCONNECTION (e.g. T-COUPLING) BETWEEN PIPES OF DIFFERENT SIZES SHOULD ALWAYS HAVE THE SIZE OF THE LARGEST PIPE. USE REDUCING COUPLING AFTER INTERCONNECTION.

IMPORTANT: ALL PIPES/HOSES/COUPLINGS SHOULD BE CLEAN BEFORE MOUNTING !

NOTE 1: ALL PIPES, HOSES AND COUPLINGS EXCEPT THE CENTRING CIRCUIT HAVE TO WITHSTAND A MINIMAL NOMINAL PRESSURE OF 250 BAR.
PIPE SIZES MENTIONED ARE THE EXTERNAL DIAMETERS x WALLTHICKNESSES
PROPOSED HOSES: ACCORDING EN857
COUPLINGS: L OR S TYPE

NOTE 2: FROM Y-PORT ON MANIFOLD UNTIL CYLINDER CONNECTIONS MUST BE DESIGNED TO WITHSTAND 700 BAR STATIC PRESSURE FOR 1-3 s.
PIPE SIZES MENTIONED ARE THE EXTERNAL DIAMETERS x WALLTHICKNESSES
PROPOSED HOSES: ACCORDING EN857
COUPLINGS: S TYPE

NOTE 3: THE SYSTEM DEMANDS AN OIL CLEANLINESS OFF CLASS 18/16/13 ACCORDING ISO4406.
PROPOSED FILTER MATERIAL: SYNTHETIC.
PROPOSED FILTRATION EFFICIENCY: 95 = 75.

NOTE 4: ACCUMULATORS MAY ALSO BE CONNECTED SEPERATLY TO ACC1 AND ACC2, OR TOGETHER TO CONNECTION ACC2.

NOTE 5: CLOSE BALL VALVE WHEN ETS SYSTEM IS CONNECTED!
THE BALL VALVE SHOULD BE ALWAYS OPEN WHEN ETS SYSTEM IS DISCONNECTED TO AVOID PUMP DAMAGE!
BEFORE DISCONNECTING THE QUICK COUPLINGS, OPEN THE BALL VALVE TO RELEASE PRESSURE.

NOTE 6: FOR PUMP AND RESERVOIR SPECIFICATIONS CONTACT VSE.

NOTE 7: RETURN LINE SHOULD ALWAYS BE OPEN, NO VALVES ALLOWED IN RETURN LINE!

DIMENSIONS		TOLERANCE PRINCIPLE	
IN MM		ISO 8015	
A1		GENERAL TOLERANCE	
ISO 2768 - X		A09430.0.01.1	
3. PRESSURE RELEASE VALVE Y-CIRCUIT (OPTIONAL)		CAD SCHEMATIC	

REV.	POSITION	DESCRIPTION	NAME	DATE	MOD.
01.1	-	1. oil supply, diameter PP and T modified, 2. auxiliary functions, proportional valve deleted	JBS	02-06-2014	-
01.H	-	ETS2: Valve SP251 changed to NC version, was wrongly drawn as NO version; ETS1 + ETS2 + ETS3 + ETS4 + ETS5 + ETS6 + ETS7 + ETS8 + ETS9 + ETS10 + ETS11 + ETS12 + ETS13 + ETS14 + ETS15 + ETS16 + ETS17 + ETS18 + ETS19 + ETS20 + ETS21 + ETS22 + ETS23 + ETS24 + ETS25 + ETS26 + ETS27 + ETS28 + ETS29 + ETS30 + ETS31 + ETS32 + ETS33 + ETS34 + ETS35 + ETS36 + ETS37 + ETS38 + ETS39 + ETS40 + ETS41 + ETS42 + ETS43 + ETS44 + ETS45 + ETS46 + ETS47 + ETS48 + ETS49 + ETS50 + ETS51 + ETS52 + ETS53 + ETS54 + ETS55 + ETS56 + ETS57 + ETS58 + ETS59 + ETS60 + ETS61 + ETS62 + ETS63 + ETS64 + ETS65 + ETS66 + ETS67 + ETS68 + ETS69 + ETS70 + ETS71 + ETS72 + ETS73 + ETS74 + ETS75 + ETS76 + ETS77 + ETS78 + ETS79 + ETS80 + ETS81 + ETS82 + ETS83 + ETS84 + ETS85 + ETS86 + ETS87 + ETS88 + ETS89 + ETS90 + ETS91 + ETS92 + ETS93 + ETS94 + ETS95 + ETS96 + ETS97 + ETS98 + ETS99 + ETS100 + ETS101 + ETS102 + ETS103 + ETS104 + ETS105 + ETS106 + ETS107 + ETS108 + ETS109 + ETS110 + ETS111 + ETS112 + ETS113 + ETS114 + ETS115 + ETS116 + ETS117 + ETS118 + ETS119 + ETS120 + ETS121 + ETS122 + ETS123 + ETS124 + ETS125 + ETS126 + ETS127 + ETS128 + ETS129 + ETS130 + ETS131 + ETS132 + ETS133 + ETS134 + ETS135 + ETS136 + ETS137 + ETS138 + ETS139 + ETS140 + ETS141 + ETS142 + ETS143 + ETS144 + ETS145 + ETS146 + ETS147 + ETS148 + ETS149 + ETS150 + ETS151 + ETS152 + ETS153 + ETS154 + ETS155 + ETS156 + ETS157 + ETS158 + ETS159 + ETS160 + ETS161 + ETS162 + ETS163 + ETS164 + ETS165 + ETS166 + ETS167 + ETS168 + ETS169 + ETS170 + ETS171 + ETS172 + ETS173 + ETS174 + ETS175 + ETS176 + ETS177 + ETS178 + ETS179 + ETS180 + ETS181 + ETS182 + ETS183 + ETS184 + ETS185 + ETS186 + ETS187 + ETS188 + ETS189 + ETS190 + ETS191 + ETS192 + ETS193 + ETS194 + ETS195 + ETS196 + ETS197 + ETS198 + ETS199 + ETS200 + ETS201 + ETS202 + ETS203 + ETS204 + ETS205 + ETS206 + ETS207 + ETS208 + ETS209 + ETS210 + ETS211 + ETS212 + ETS213 + ETS214 + ETS215 + ETS216 + ETS217 + ETS218 + ETS219 + ETS220 + ETS221 + ETS222 + ETS223 + ETS224 + ETS225 + ETS226 + ETS227 + ETS228 + ETS229 + ETS230 + ETS231 + ETS232 + ETS233 + ETS234 + ETS235 + ETS236 + ETS237 + ETS238 + ETS239 + ETS240 + ETS241 + ETS242 + ETS243 + ETS244 + ETS245 + ETS246 + ETS247 + ETS248 + ETS249 + ETS250 + ETS251 + ETS252 + ETS253 + ETS254 + ETS255 + ETS256 + ETS257 + ETS258 + ETS259 + ETS260 + ETS261 + ETS262 + ETS263 + ETS264 + ETS265 + ETS266 + ETS267 + ETS268 + ETS269 + ETS270 + ETS271 + ETS272 + ETS273 + ETS274 + ETS275 + ETS276 + ETS277 + ETS278 + ETS279 + ETS280 + ETS281 + ETS282 + ETS283 + ETS284 + ETS285 + ETS286 + ETS287 + ETS288 + ETS289 + ETS290 + ETS291 + ETS292 + ETS293 + ETS294 + ETS295 + ETS296 + ETS297 + ETS298 + ETS299 + ETS300 + ETS301 + ETS302 + ETS303 + ETS304 + ETS305 + ETS306 + ETS307 + ETS308 + ETS309 + ETS310 + ETS311 + ETS312 + ETS313 + ETS314 + ETS315 + ETS316 + ETS317 + ETS318 + ETS319 + ETS320 + ETS321 + ETS322 + ETS323 + ETS324 + ETS325 + ETS326 + ETS327 + ETS328 + ETS329 + ETS330 + ETS331 + ETS332 + ETS333 + ETS334 + ETS335 + ETS336 + 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