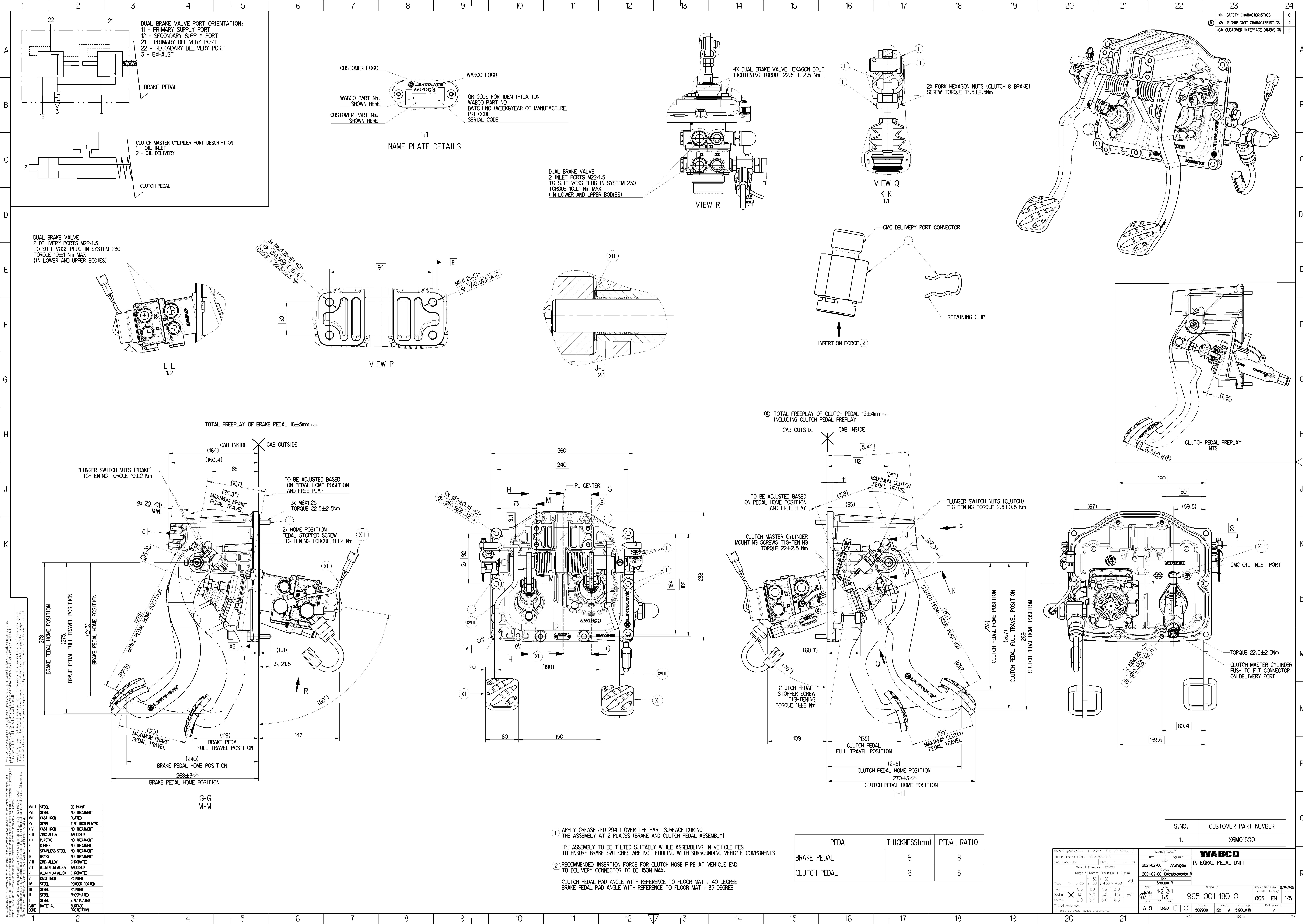
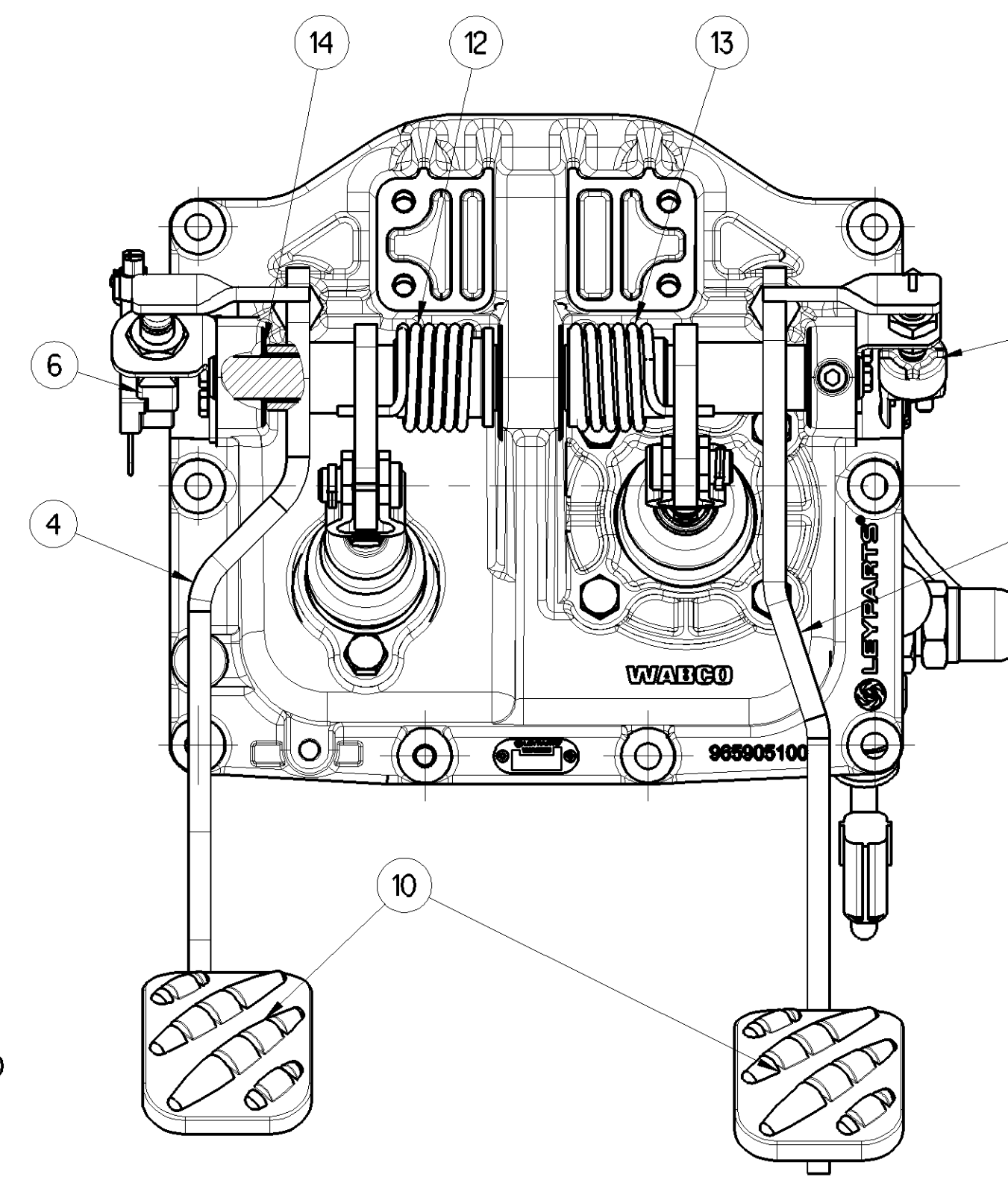
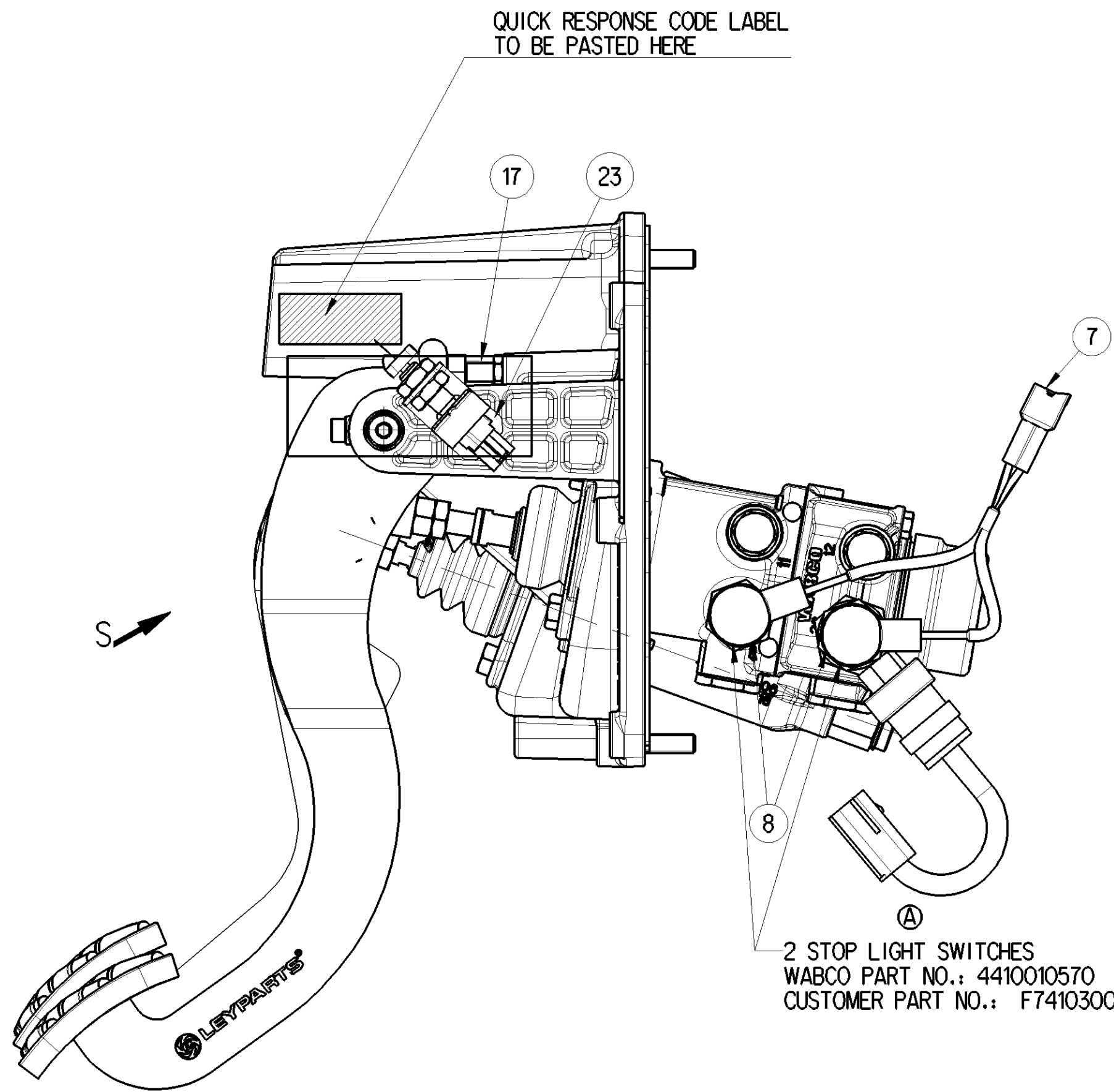
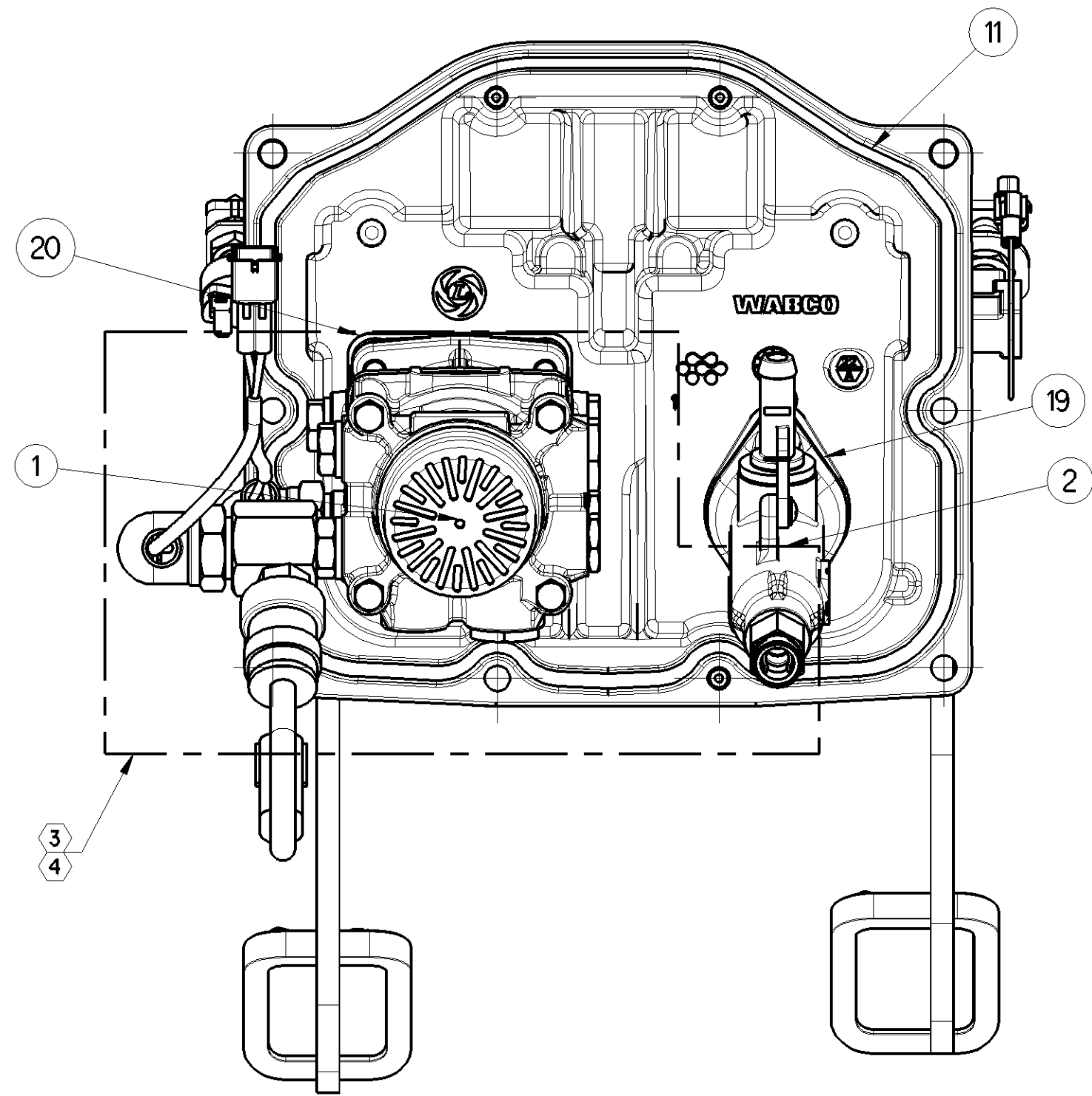
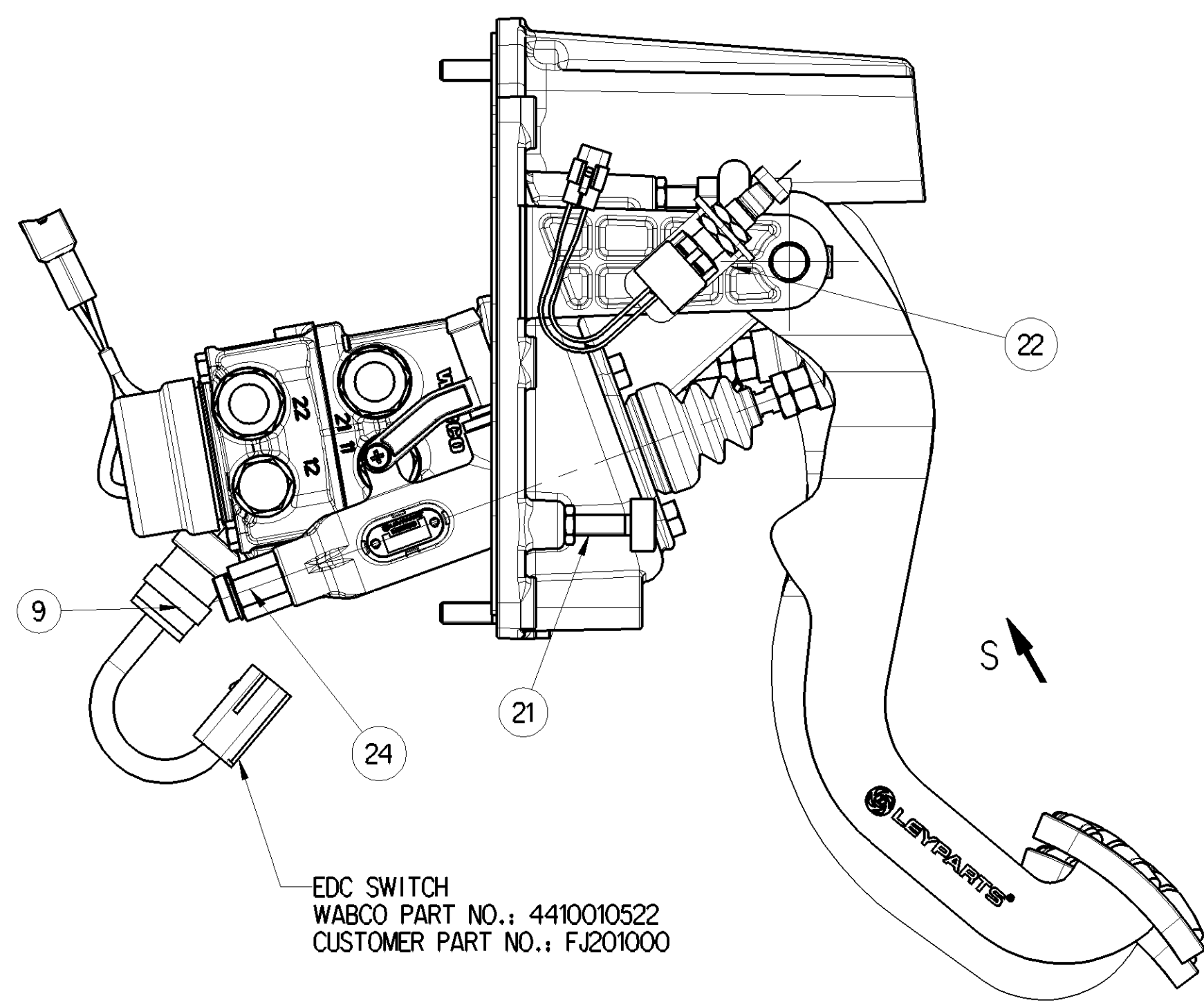
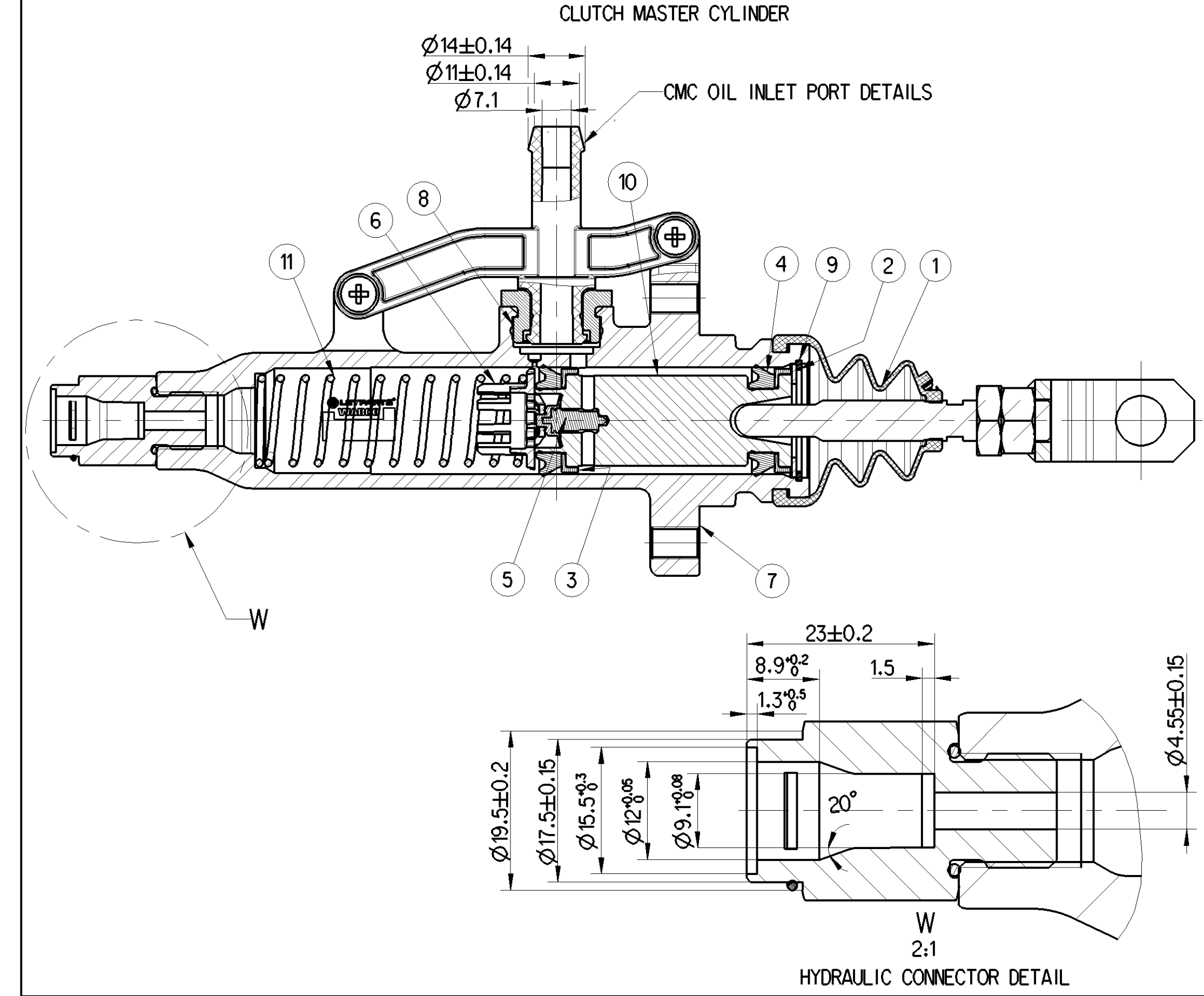
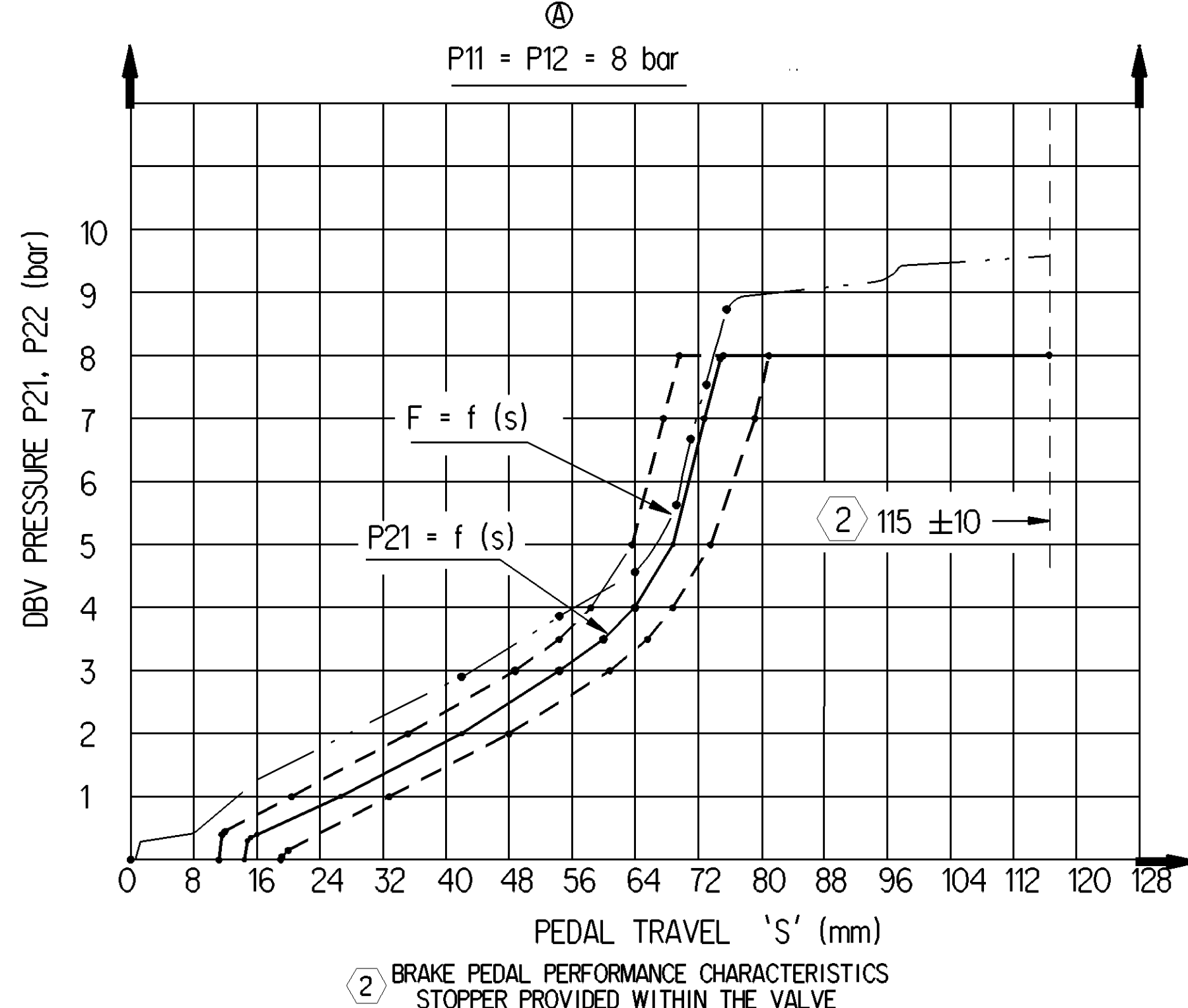
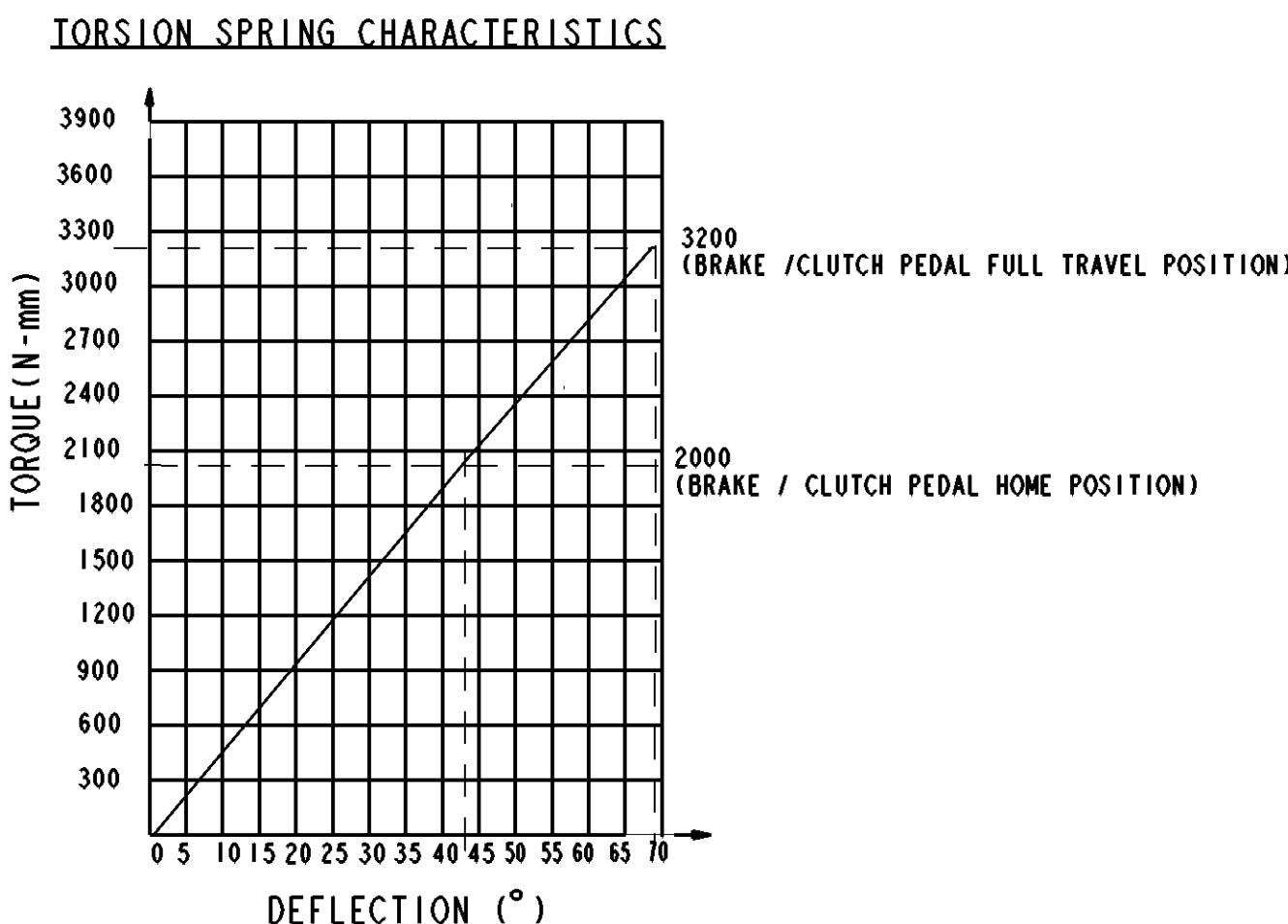
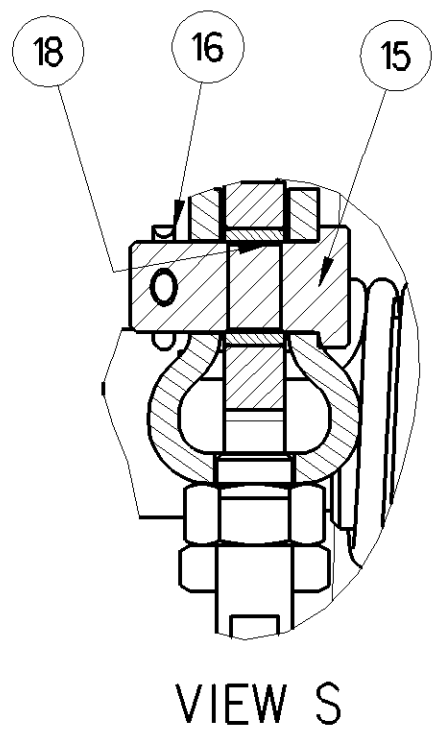






IPU-OVERHAULING HOUSING KIT MAJOR KIT				
Sl No.	DESCRIPTION	WABCO PART NUMBER	QTY.	REMARKS
1	DUAL BRAKE VALVE	461001140	1	
2	MASTER CYLINDER	4700530650	1	
3	BRAKE PEDAL ASSEMBLY	9659051022	1	
4	CLUTCH PEDAL ASSEMBLY	9659051002	1	
5	BRAKE SWITCH ASSEMBLY	4410060140	1	
6	CLUTCH SWITCH ASSEMBLY	4410010542	1	
7	CONNECTOR ASSEMBLY	9659050302	1	

IPU-OVERALL HOUSING KIT MINOR KIT				
Sl No.	DESCRIPTION	WABCO PART NUMBER	QTY.	REMARKS
8	STOP LIGHT SWITCHES	4410010570	2	
9	EDC SWITCH	4410010522	1	
10	PEDAL COVER	9659014764	2	
11	GASKET	9659051014	1	
12	TORSION SPRING CLUTCH	9659051124	1	
13	TORSION SPRING BRAKE	9659051134	1	
14	PLAIN BEARING	8997598654	4	
15	PIN	9659077194	2	
16	SPLIT PIN	8105110274	2	
17	PEDAL STOPPER	9650013012	2	
18	BUSHING	9650011524	2	
19	GASKET	8840073224	1	
20	GASKET	9650011424	1	
21	PEDAL STOPPER	9650013042	1	
22	BRAKET CLUTCH SWITCH	9659051074	1	
23	BRAKET BRAKE SWITCH	9659060544	1	
24	HYDRAULIC CONNECTOR	8931294222	1	
-	GREASE SACKET	M619910	1	



SL.NO.	DESCRIPTION	QTY	PART NO	REMARKS
1	GAITER	1	4700537574	
2	RETAINING RING	1	8105180184	
3	GUIDE RING	2	9700014104	
4	LIP SEAL	2	8971616274	
5	VALVE	1	4700535002	
6	SPRING GUIDE	1	4700531504	
7	GASKET	1	8840073224	
8	GASKET	1	4700531404	
9	WASHER	1	8951000044	
10	PISTON	1	4700536314	
11	COMPRESSION SPRING	1	8962600004	

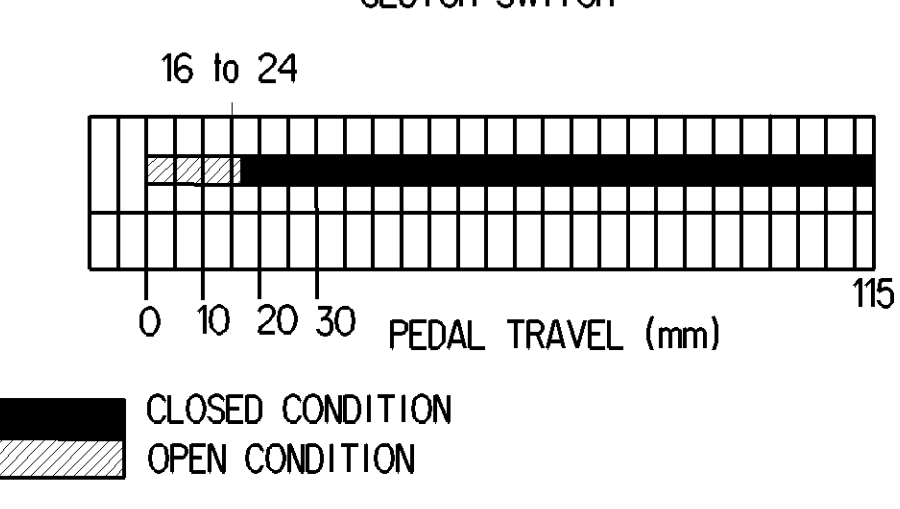
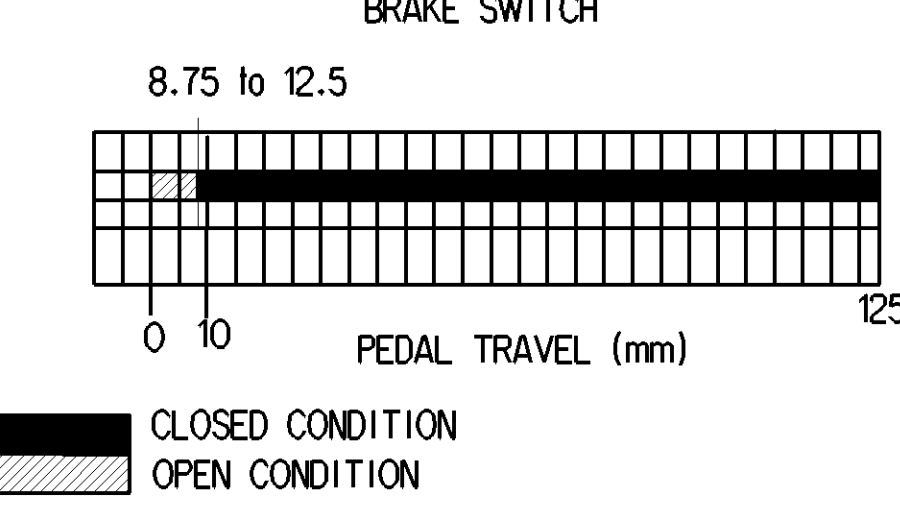
SL.No.	IPU GENERAL NOTES	
1	PRODUCT FUNCTION AND RELIABILITY	
1.1	PRODUCT SPECIFICATION NUMBER	965 001 180 0
1.2	THERMAL RANGE OF APPLICATION	-40° C TO +80° C
1.3	WEIGHT	8.85kg (APPROXIMATELY)
1.4	MAXIMUM CLUTCH PEDAL FORCE WITHOUT AIR ASSISTANCE TO CLUTCH SERVO	850N
1.5	MAXIMUM BRAKE PEDAL FORCE TO GENERATE 2 BAR DELIVERY PRESSURE, AT DBV IS 130 N	
1.6	MAXIMUM CLUTCH PEDAL FORCE WITH 7 BAR AIR ASSISTANCE TO CLUTCH SERVO IS 150N	
1.7	SERVICE LIFE TO FIRST OVERHAUL, IF FITTED AS PER RECOMMENDED LAYOUT 2 YEARS/ 2,00,000 Km WHICHEVER IS EARLIER FOR TRUCK AND INTERCITY BUS APPLICATION	
1.8	SALT SPRAY TEST AS PER ASTM B 117 (WITHOUT ACTUATION)	96 HOURS FOR INTERNAL CABIN PARTS 240 HOURS FOR EXTERNAL CABIN PARTS
1.9	AGREED DVP DATE ON	-
2.0	ALL OPEN PORTS AND FITTINGS ARE FITTED WITH CLOSURE PLUG AND CLOSURE SLEEVES RESPECTIVELY FOR STORAGE AND TRANSIT PURPOSE	

CONSIDERING FOLLOWING CLUTCH DETAILS:-

SL.NO	PARAMETERS	330 Dia (Diaphragm)	REMARKS
1	RELEASE LOAD AT CLUTCH BEARING - NEW CLUTCH	3200 N	
2	RELEASE LOAD AT CLUTCH BEARING - WORN CLUTCH	3700 N	
3	RELEASE STROKE AT CLUTCH BEARING MIN.	10 mm	
4	RELEASE STROKE AT CLUTCH BEARING MAX.	12 mm	
5	WEAR STROKE AT CLUTCH BEARING MAX.	18 mm	
6	CLUTCH FORK RATIO	1.5	
7	CLUTCH PEDAL TRAVEL	108 mm	
8	PEDAL RATIO	5	
9	MASTER CYLINDER BORE SIZE	Ø26.125	
10	AGREED DVP DATE ON		

SL.No.	DUAL BRAKE VALVE GENERAL NOTES	
1	PRODUCT FUNCTION AND RELIABILITY	
1.1	PRODUCT SPECIFICATION NUMBER	4610000090
1.2	WORKING MEDIUM	AIR
1.3	NORMAL WORKING PRESSURE	8 bar
1.4	MAXIMUM WORKING PRESSURE (TEMPORARILY)	10 bar
1.5	NOMINAL FLOW DIA (78.5 sq.mm) APPROX	10 mm
1.6	QUALITY COMPLIANCE TESTS WILL BE CARRIED OUT REGULARLY AS PER CLAUSE No. 6 OF PS 4610000090.	

SL.No.	CLUTCH MASTER CYLINDER GENERAL NOTES	
1	PRODUCT FUNCTION AND RELIABILITY	
1.1	PRODUCT SPECIFICATION NUMBER	4700530060
1.2	WORKING MEDIUM	BRAKE FLUID
1.3	CYLINDER DIAMETER	Ø26.125 mm
1.4	HYDRAULIC FLUID	DOT 3 / DOT 4 BASED BRAKE FLUID IN ACCORDANCE WITH SAE J1703
1.5	MAXIMUM FLUID PRESSURE	120 bar
1.6	MASTER CYLINDER TYPE	AMERICAN STANDARD (AS) TYPE
1.7	MASTER CYLINDER MAXIMUM STROKE	36 mm (Max.) NO INTERNAL STOPPER PROVIDED INSIDE MASTER CYLINDER. STROKE TO BE LIMITED AT CLUTCH PEDAL

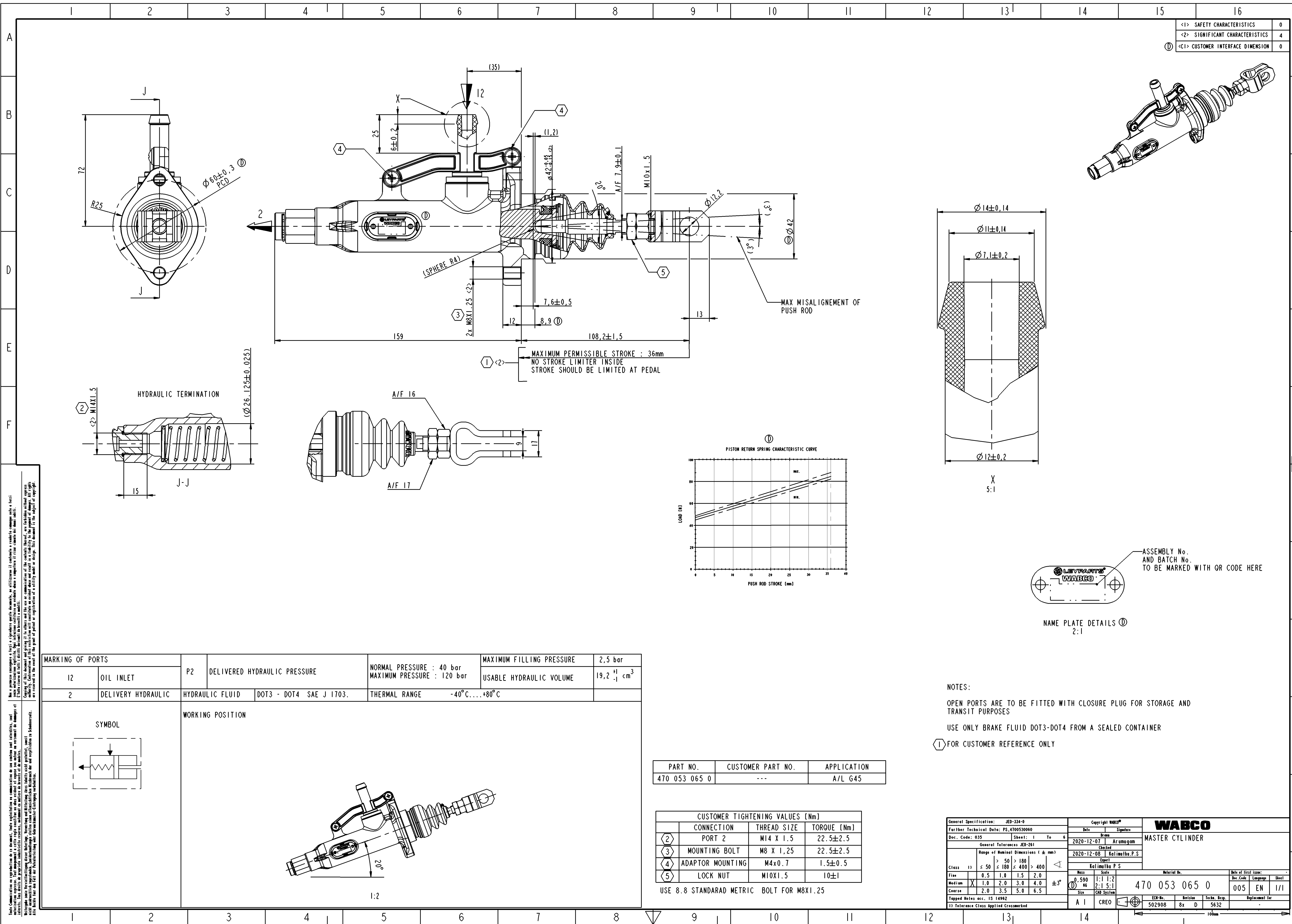


SWITCH CHARACTERISTICS IN THE IPU:

SL.NO	DESCRIPTION	CLUTCH SWITCH	BRAKE SWITCH	STOP LIGHT SWITCH	EDC SWITCH
1	RATED CURRENT OF THE SWITCH	10 mA max.	2A max, RESISTIVE	10A,(6A RESISTIVE & 4A INDUCTIVE)	300mA
2	NOMINAL OPERATING VOLTAGE	12 V / 24 V DC	12 V / 24 V DC	12 V / 24 V DC	12 V / 24 V DC
3	OPERATING VOLTAGE RANGE	8 TO 32 V DC	8 TO 32 V DC	8 TO 32 V DC	9 TO 36 V DC
4	CONTACT CONFIGURATION	NORMALLY CLOSED	NORMALLY CLOSED	NORMALLY OPEN	CHANGE OVER TYPE
5	CONTACT CLOSING PRESSURE (bar)	NA	NA	0.5 MAX	0.5 TO 1
6	TERMINAL	Lucar Blades - 2 x (6 x 0.8)mm	Lucar Blades - 2 x (6 x 0.8)mm	4MM EYE LET	TYCO TERMINAL PART NUMBER : 174259-2
7	OPERATING TEMPERATURE	-40° C TO +85° C	-40° C TO +80° C	-40° C TO +85° C	-40° TO +85°C
8	CONTACT RESISTANCE BEFORE ENDURANCE	5 Ω	25 mΩ	10 mΩ	<100Ω
9	CONTACT RESISTANCE AFTER ENDURANCE	20 Ω	150 mΩ	60 mΩ	-
10	LIFE OF THE SWITCH (MEASURED IN CYCLES)	1x10 ⁶ CYCLES	2x10 ⁵ CYCLES	1x10 ⁶ CYCLES	1x10 ⁵ CYCLES
11	IP LEVEL OF THE SWITCH	IP64, against dust and water	IP4, against dust	IP6k4,against dust and water (at inlet port sealed condition)	IP5K6, AGAINST DUST AND WATER
12	MATERIAL/PLATING SPECIFICATIONS OF THE TERMINALS	Brass	Brass, Tin plated	Brass	BRASS, TIN PLATED
13	PEDAL TRAVEL AT WHICH THE SWITCH CLOSE AND OPEN	CLUTCH PEDAL TRAVEL FOR CLUTCH SWITCH ACTUATION : (NO TO NC) : 16-24 mm CLUTCH SWITCH TO CHANGE STATE FROM NO TO NC DURING PEDAL TRAVEL	BRAKE PEDAL TRAVEL FOR BRAKE SWITCH ACTUATION : (NO TO NC) : 8.75 - 12.5mm. BRAKE SWITCH TO CHANGE STATE FROM NO TO NC DURING PEDAL TRAVEL	NA	NA
14	OPERATING FORCE	7 to 11N	15N MAX	NA	NA
15	APPLICATIONS	1. ECU 2. INTERRUPT MODE FOR CRUISE CONTROL	EXHAUST BRAKE SIGNAL	1. STOP LIGHT SIGNAL 2. PRESSURE SIGNAL	EDC SYSTEM
16	WIRE LENGTH	150mm	NIL	REFER SHEET 3/5	100mm
17	CONNECTOR	IPU END CONNECTOR : TYCO 174354-2. RECOMMENDED MATING CONNECTOR: TYCO-O-0174352	RECOMMENDED MATING CONNECTOR: BESMAK - 2FT 250 FHCL	END CONNECTOR PART NUMBER : 4MM 090 FHCL - BESMAK 3 CABLE TAG TO BE USED TO CLAMP WIRING HARNESS WITH OMC. THE CABLE TAG TO BE REMOVED BEFORE CONNECTING WIRING HARNESS AT CUSTOMER END WIRING HARNESS ROUTING ONLY FOR REFERENCE. IPU END CONNECTOR : BESMAK - 4MM 090 FHCL RECOMMENDED MATING CONNECTOR : BESMAK - 4FW 090 FHCL	IPU END CONNECTOR : 174259-2 RECOMMENDED MATING CONNECTOR: TYCO 174257 CABLE TAG TO BE USED TO CLAMP WIRING (4) HARNESS WITH DBV WIRING HARNESS. THE CABLE TAG TO BE REMOVED BEFORE CONNECTING WIRING HARNESS AT CUSTOMER END

IPU END CONNECTOR DETAILS			
DESCRIPTION	CLUTCH SWITCH	BRAKE SWITCH	EDC SWITCH
PIN DETAILS VIEW FROM TERMINAL SIDE			
TERMINAL DETAILS	1 - TERMINAL IN 2 - TERMINAL OUT	1 - TERMINAL IN 2 - TERMINAL OUT	TERMINAL 3 & 4 FOR STOP LIGHT SWITCH. CAVITY 1 & 2 DUMMY/CLOSED

General Specification: 461-554-1, Size ISO 14464-1	Copyright WABCO®	WABCO	
Further Technical Data: PS 965001800	Date: 2021-02-08	INTEGRAL PEDAL UNIT	
Doc. Code: 050	Sheet: 1 To 8	965 001 180 0	
Class: 0.5	Size: 1.0	Material: 8.85	2018-09-28
Medium: 1.0	Size: 2.0	Material: 1.1:1.2	005 EN 2/5
Coarse: 2.0	Size: 3.5	Material: 502908	2/5



General Specifications: 400-334-0		Copyright WABCO®		WABCO	
Further Technical Data: PS-4700530990		Date: 2020-12-07		Signature: Arumugam	
Doc. Code: 035		Sheet: 1		To: 6	
General Tolerances: ISO-281		2020-12-07		Arumugam	
Range of Nominal Dimensions (± mm)		Class		Expert	
Class (1)		≤ 50		≤ 180	
Fine		0.5		1.0	
Medium		1.0		2.0	
Coarse		2.0		3.5	
Tapped Holes acc. /		15 14982		6.5	
Tolerance Class Applied Crosshatched		A 1		CREO	
Material No.		470 053 065 0		005	
Date of first issue:		2020-09-28		EN 4/5	
Doc. Code		502908		Ex A	
Revision		8x		D	
Tech. Resp.		5632		Replacement for	

