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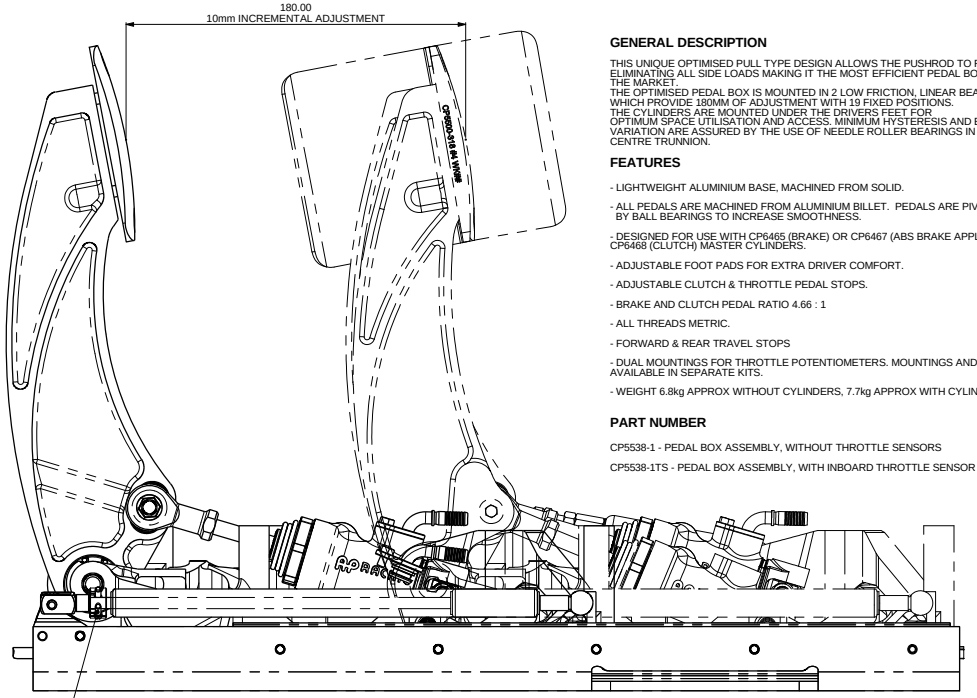


GENERAL DESCRIPTION

THIS UNIQUE OPTIMISED PULL TYPE DESIGN ALLOWS THE PUSHROD TO REMAIN STRAIGHT, ELIMINATING ALL SIDE LOADS MAKING IT THE MOST EFFICIENT PEDAL BOX ON THE MARKET.
THE OPTIMISED PEDAL BOX IS MOUNTED IN 2 LOW FRICTION, LINEAR BEARING RAILS WHICH PROVIDE 180MM OF ADJUSTMENT WITH 19 FIXED POSITIONS.
THE CYLINDERS ARE MOUNTED UNDER THE DRIVERS FEET FOR OPTIMUM SPACE UTILISATION AND ACCESS. MINIMUM HYSTERESIS AND BALANCE VARIATION ARE ASSURED BY THE USE OF NEEDLE ROLLER BEARINGS IN THE CENTRE TRUNNION.

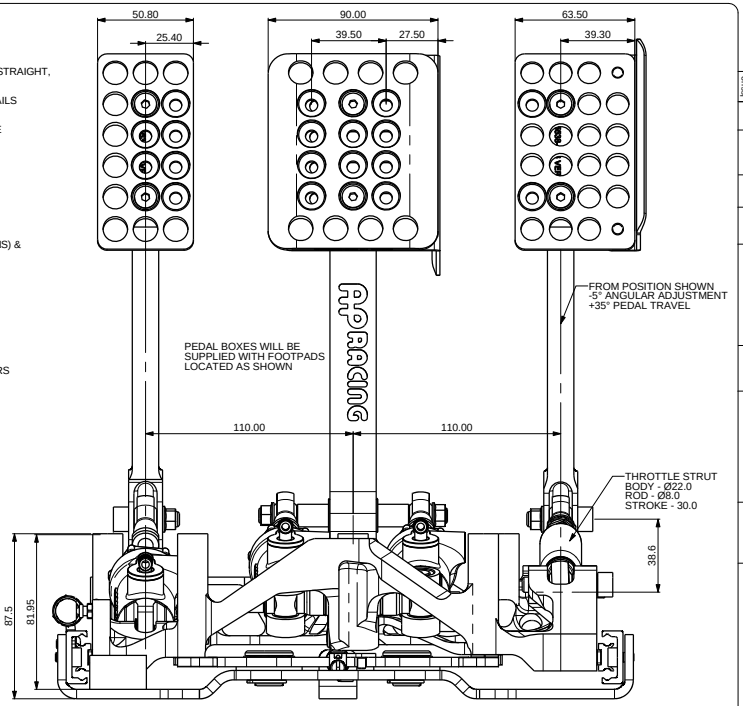
FEATURES

- LIGHTWEIGHT ALUMINIUM BASE, MACHINED FROM SOLID.
- ALL PEDALS ARE MACHINED FROM ALUMINIUM BILLET. PEDALS ARE PIVOTED BY BALL BEARINGS TO INCREASE SMOOTHNESS.
- DESIGNED FOR USE WITH CP6465 (BRAKE) OR CP6467 (ABS BRAKE APPLICATIONS) & CP6468 (CLUTCH) MASTER CYLINDERS.
- ADJUSTABLE FOOT PADS FOR EXTRA DRIVER COMFORT.
- ADJUSTABLE CLUTCH & THROTTLE PEDAL STOPS.
- BRAKE AND CLUTCH PEDAL RATIO 4.66 : 1
- ALL THREADS METRIC.
- FORWARD & REAR TRAVEL STOPS
- DUAL MOUNTINGS FOR THROTTLE POTENTIOMETERS. MOUNTINGS AND SENSORS AVAILABLE IN SEPARATE KITS.
- WEIGHT 6.8kg APPROX WITHOUT CYLINDERS, 7.7kg APPROX WITH CYLINDERS.

PART NUMBER

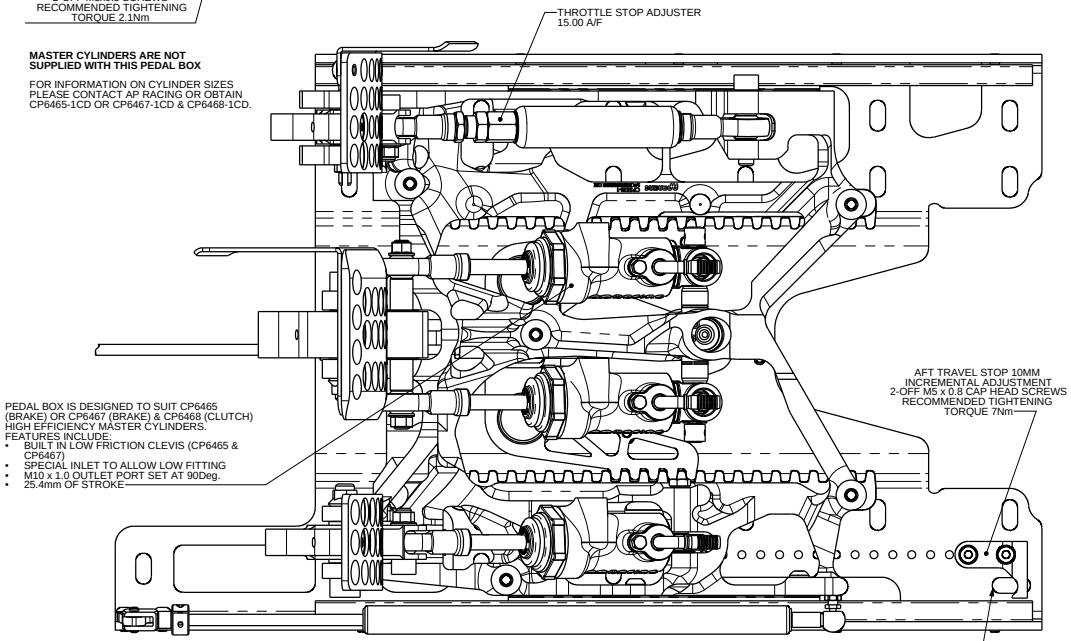
CP5538-1 - PEDAL BOX ASSEMBLY, WITHOUT THROTTLE SENSORS

CP5538-1TS - PEDAL BOX ASSEMBLY, WITH INBOARD THROTTLE SENSOR

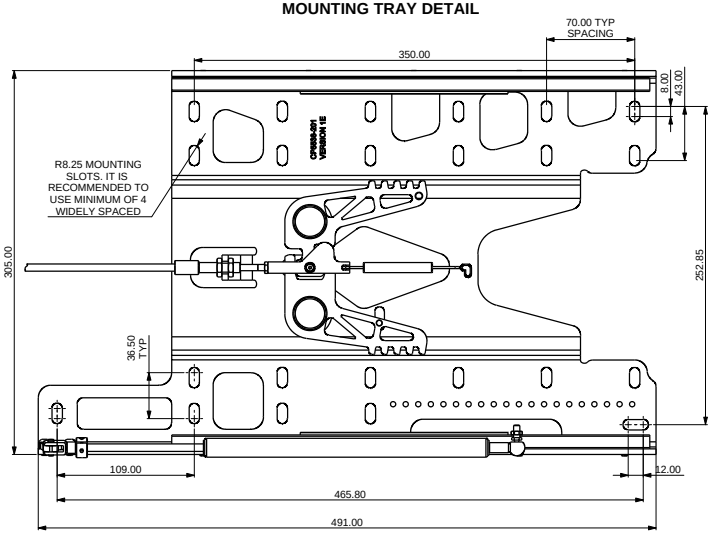


MASTER CYLINDERS ARE NOT SUPPLIED WITH THIS PEDAL BOX

FOR INFORMATION ON CYLINDER SIZES PLEASE CONTACT AP RACING OR OBTAIN CP6465-1CD OR CP6467-1CD & CP6468-1CD.



MOUNTING TRAY DETAIL



Issue No	Alterations: Date & No.	Particulars	Zone	Initials
1	04/02/16 B7058	FIRST ISSUE		SAT
2	17/03/16 B7058	PEDAL RATIO DETAILS UPDATED ADDITIONAL MOUNTING SLOT ADDED TO TRAY	11M 11A	SAT
3	22/03/16 B7058	SHEET 2 CABLE ATTACHMENT DETAILS ADDED		SAT
4	17/08/16 B7601_01	CHANGES TO BASEPLATE AND CLUTCH AND THROTTLE PEDAL STOPS		DW
5	25/01/17 B7601_06	MOUNTING TRAY MODIFIED **SHEET 3** CP5538-21 WAS -17 LOCKING MECH SUB ASSY **SHEET 4** THROTTLE SENSOR OPTIONS ADDED **SHEET 5 ADDED** THROTTLE SENSOR AND RELEASE CABLE DETAILS	B2 H1 D12	DW
6	21/03/17 B7601_09	THROTTLE SENSOR VERSION ADDED **SHEET 4** CP5538-1TS NOTE ADDED	L9 A14	DW
7	05/09/17 B7555_12	SHEET 3: TIGHTENING TORQUES AND LOCTITE SPECS ADDED SHEET 4: TIGHTENING TORQUES AND LOCTITE SPECS ADDED THROTTLE STOP ADJUSTED DETAILS ADDED SHEET 5: CABLE FITMENT DETAILS ADDED	 E10	SGW
8	04/10/17 B7601_10	SHEET 2: BRAKE PEDAL RATIO BOBBIN AND PULL ROD LOCTITE INSTALLATION NOTE ADDED	R13	DW
9	26/07/18 B7883_02	**SHEET 3** (21) (23) (24) REMOVED FROM TABLES (DRIVEN PAWL RETAINING BOLT AND TOPHAT REMOVED) (22) CP5538PAWLSHIM WAS CP7000-170 SHIMMING NOTE ADDED **SHEET 4** TABLE CORRECTED CP5538-251 WAS -210 TIGHTENING TORQUES ADDED 10Nm 3.5Nm	D18 P7 R9 P7 D14	BAT
10	08/08/18 B7841	**SHEET 5** PIVOT SHAFT (40) SLOT TOLERANCE ADDED 3.06-3.00. CP5540-220 SENSOR SHAFT TOLERANCE ADDED 2.975/2.925	L16 R11	BAT
11	26/11/18 B7924_06	**SHEET 3** PART 27 CP5538-273 SLEEVE WAS CP5538-213 TOP HAT SPACER	J17	BAT
12	18/04/19 RAC23330	**SHEET 2** PEDAL RATIO DIAGRAM CORRECTION, LOCTITE INSTRUCTION ADDED TO RATIO ADJUSTMENT NOTE **SHEET 3** TABLE CORRECTED, CP5538-235 WAS CP5538-103 CP3568-121 WAS CP6663-104 **SHEET 4** THROTTLE SENSOR TABLE CORRECTED TO REMOVE DUPLICATES	P18 P13 D15 C15	BAT

SCALE 1:1	SHEET 1 OF 5
DRAWN	Steve Thomas
APPROVED	
DERIVED FROM	

TITLE

FLOOR MTG REVERSE PULL
TYPE SLIDING PEDAL BOX

DRG NO. CP5538-1CD

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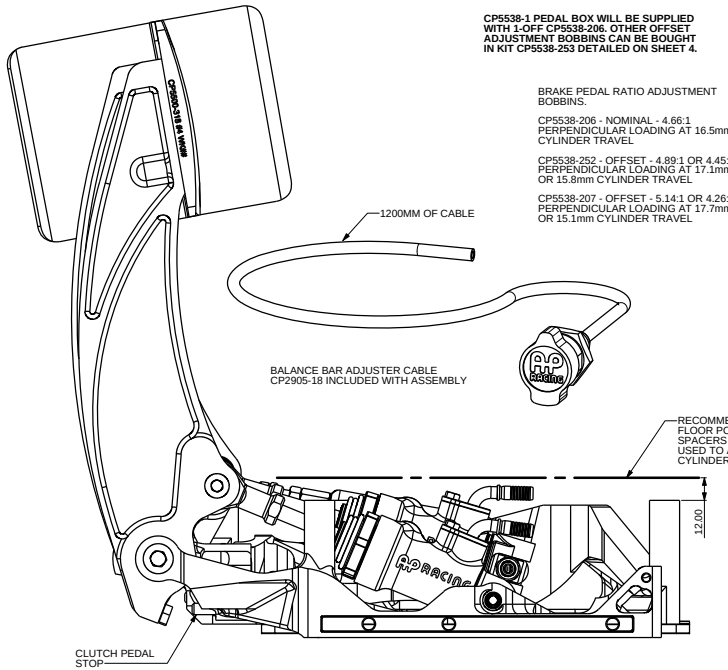


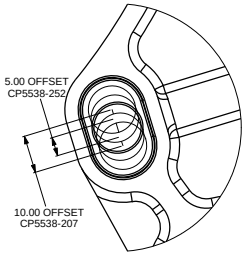
CP5538-1 PEDAL BOX WILL BE SUPPLIED WITH 1-OFF CP5538-206. OTHER OFFSET ADJUSTMENT BOBBINS CAN BE BOUGHT IN KIT CP5538-253 DETAILED ON SHEET 4.

BRAKE PEDAL RATIO ADJUSTMENT BOBBINS.

CP5538-206 - NOMINAL - 4.66:1 PERPENDICULAR LOADING AT 16.5mm CYLINDER TRAVEL

CP5538-252 - OFFSET - 4.89:1 OR 4.45:1 PERPENDICULAR LOADING AT 17.1mm OR 15.8mm CYLINDER TRAVEL

CP5538-207 - OFFSET - 5.14:1 OR 4.26:1 PERPENDICULAR LOADING AT 17.7mm OR 15.1mm CYLINDER TRAVEL

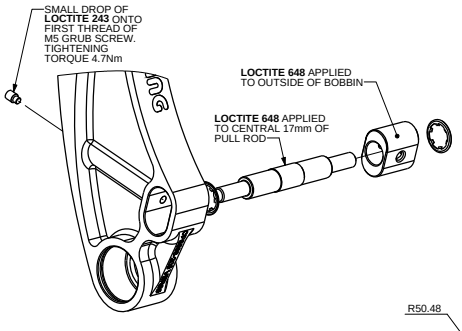


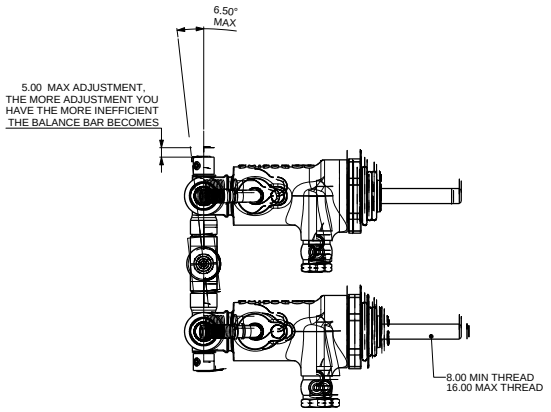
DETAIL M
SCALE 2 : 1

BRAKE PEDAL RATIO ADJUSTMENT INSTALLATION NOTE:

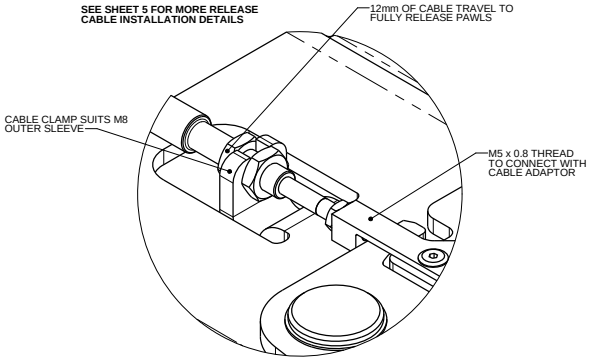
ONCE THE PEDAL RATIO BOBBIN HAS BEEN SELECTED BY THE CUSTOMER, IT IS RECOMMENDED TO LOCTITE BOTH THE BOBBIN INTO THE PEDAL AND PULL ROD INTO THE BOBBIN AS SHOWN BELOW USING **LOCTITE 648.** IT IS ALSO RECOMMENDED TO APPLY A SMALL AMOUNT OF **LOCTITE 243** ON THE GRUB SCREW.

EVERY TIME THE BOBBIN IS CHANGED, LOCTITE SHOULD BE REAPPLIED TO ALL PARTS AND 2x NEW GRIPPING WASHERS SHOULD BE USED.

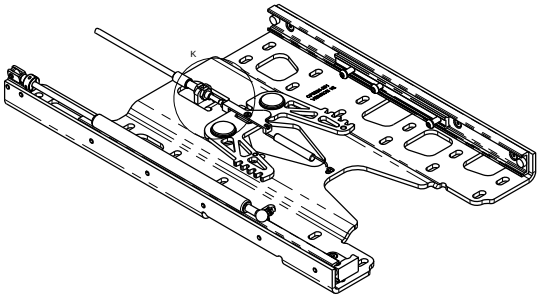


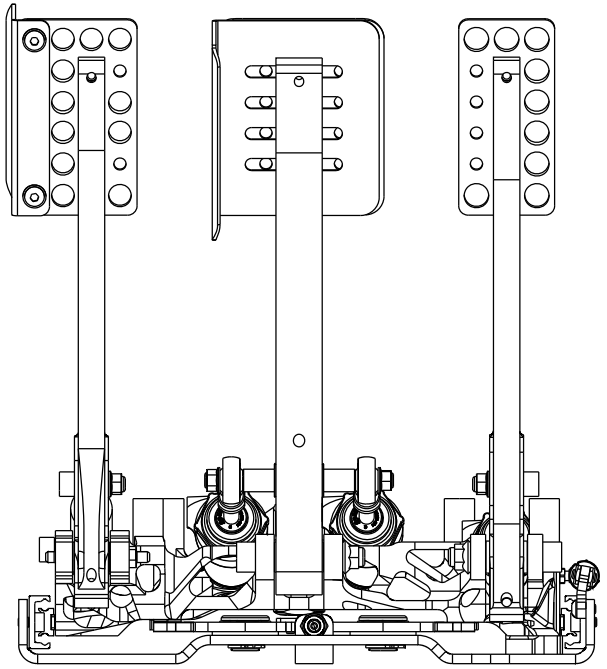


SEE SHEET 5 FOR MORE RELEASE CABLE INSTALLATION DETAILS



DETAIL K
SCALE 2 : 1





SETTING UP THE BALANCE BAR

ADJUST THE PUSHRODS SO THAT THE BALANCE BAR IS PERPENDICULAR TO THE PUSHRODS UNDER MAXIMUM LOAD. THE SYSTEM IS THEN SQUARE. IT IS NOT IMPORTANT THAT THE SYSTEM IS SQUARE WHEN RELEASED, BUT IT MUST BE WHEN UNDER LOAD.

FOR MAXIMUM EFFICIENCY, IT IS RECOMMENDED THAT THE PEDAL IS AT RIGHT ANGLE WITH THE PUSHRODS UNDER MAXIMUM BRAKING LOAD; AND ALSO KEEPING THE BALANCE BAR CENTRAL WITH BETTER SELECTION OF MASTER CYLINDER SIZES HELPS REDUCE INEFFICIENCIES.

ALSO MAKE SURE THAT THE MASTER-CYLINDER PISTONS FULLY RETURN BEFORE USE. THIS CAN BE CHECKED BY FEELING THE PUSHRODS FOR SLIGHT MOVEMENTS THERE SHOULD NOT BE ANY EXCESSIVE LOOSE MOVEMENT.

MAX ANGLE ADJUSTMENT AT SETUP (6.50º):
THIS IS SET BY ADJUSTING THE THREAD ENGAGEMENT OF THE ROD END AND MASTER CYLINDER PISTON.

THIS RELATES TO 8.0mm OF DIFFERENCE IN TRAVEL OF FRONT TO REAR CYLINDERS. REMEMBER THE BALANCE BAR SHOULD BE PERPENDICULAR WHEN AT MAX BRAKE PRESSURE.

SCALE 1:1	SHEET 2 OF 5
DRAWN	Steve Thomas
APPROVED	
DERIVED FROM	CP5516-7

TITLE
FLOOR MTG REVERSE PULL
TYPE SLIDING PEDAL BOX

DRG NO. CP5538-1CD

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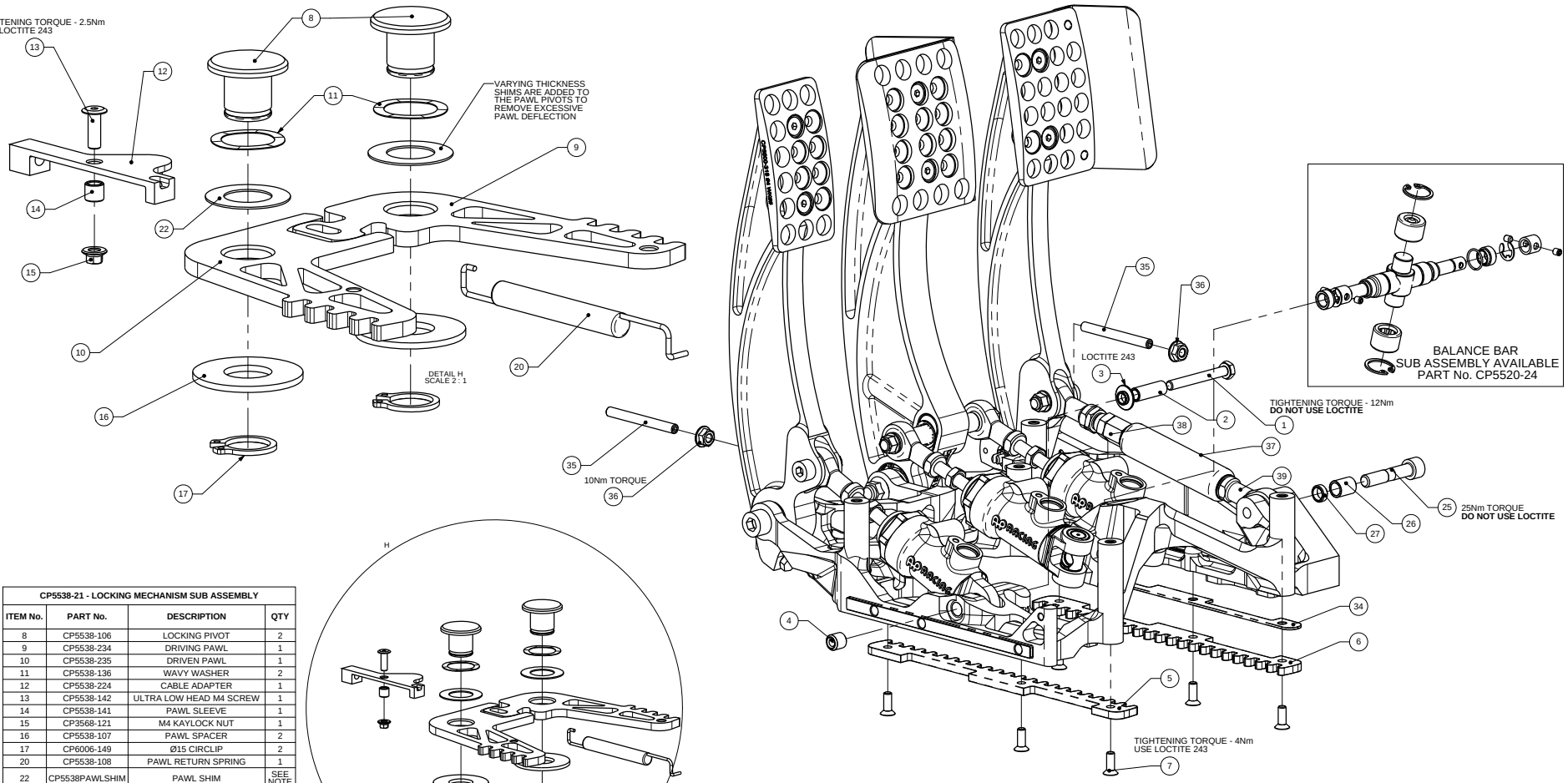

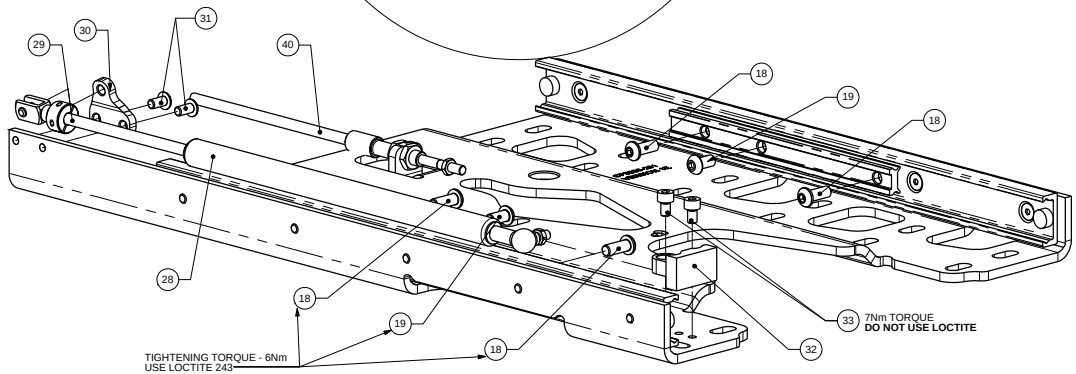

CP5538-21 - LOCKING MECHANISM SUB ASSEMBLY

ITEM No.	PART No.	DESCRIPTION	QTY
8	CP5538-106	LOCKING PIVOT	2
9	CP5538-234	DRIVING PAWL	1
10	CP5538-235	DRIVEN PAWL	1
11	CP5538-136	WAVY WASHER	2
12	CP5538-224	CABLE ADAPTER	1
13	CP5538-142	ULTRA LOW HEAD M4 SCREW	1
14	CP5538-141	PAWL SLEEVE	1
15	CP3568-121	M4 KAYLOCK NUT	1
16	CP5538-107	PAWL SPACER	2
17	CP6006-149	Ø15 CIRCLIP	2
20	CP5538-108	PAWL RETURN SPRING	1
22	CP5538PAWLSHIM	PAWL SHIM	SEE NOTE

ITEM No.	PART No.	DESCRIPTION	QTY
1	CP5538-243	M6 x 50 HEX HEAD BOLT	1
2	CP5538-122	SLEEVE	1
3	CP5538-143	TOP HAT SPACER	1
4	CP5520-156	M6 KEENSERT	1
5	CP5538-104	LH LOCKING RAIL	1
6	CP5538-105	RH LOCKING RAIL	1
7	CP5538-115	M5 CSK SCREW	6
8	CP5538-106	LOCKING PIVOT	2
9	CP5538-234	DRIVING PAWL	1
10	CP5538-235	DRIVEN PAWL	1
11	CP5538-136	WAVY WASHER	2
12	CP5538-224	CABLE ADAPTER	1
13	CP5538-142	ULTRA LOW HEAD M4 SCREW	1
14	CP5538-141	PAWL SLEEVE	1
15	CP3568-121	M4 KAYLOCK NUT	1
16	CP5538-107	PAWL SPACER	2
17	CP6006-149	Ø15 CIRCLIP	2
18	CP5144-106ST	M6 x 16 BUTTON HEAD SCREW	4
19	CP3160-106ST	M6 x 12 BUTTON HEAD SCREW	2
20	CP5538-108	PAWL RETURN SPRING	1

ITEM No.	PART No.	DESCRIPTION	QTY
22	CP5538PAWLSHIM	PAWL SHIM	SEE NOTE
25	CP3344-138	M8 x 40 BOLT	1
26	CP5538-214	SLEEVE	1
27	CP5538-237	SLEEVE	1
28	CP5538-109	RETURN GAS STRUT	1
29	CP5538-118	SHAFT COLLAR	1
30	CP5538-256	GAS STRUT BRACKET	1
31	CP9440-116ST	M4 x 10 BUTTON HEAD SCREW	2
32	CP5538-218	REAR TRAVEL STOP	1
33	CP3749-110	M5 x 8 CAP HEAD	2
34	CP5538-236	LOCKING RAIL SPACER	1
35	CP5538-238	M6 x 60 FLAT GRUB SCREW	2
36	CP2580-135	M6 NUT	2
37	CP5538-241	THROTTLE GAS STRUT	1
38	CP5538-223	SHAFT COLLAR	1
39	CP5506-106	M8 ROD END	5
40	CP5538-257	RELEASE CABLE	1

SCALE 1:1 | SHEET 3 OF 5

DRAWN: Steve Thomas

APPROVED:

DERIVED FROM:

TITLE

FLOOR MTG REVERSE PULL
TYPE SLIDING PEDAL BOX

DRG NO. CP5538-1CD

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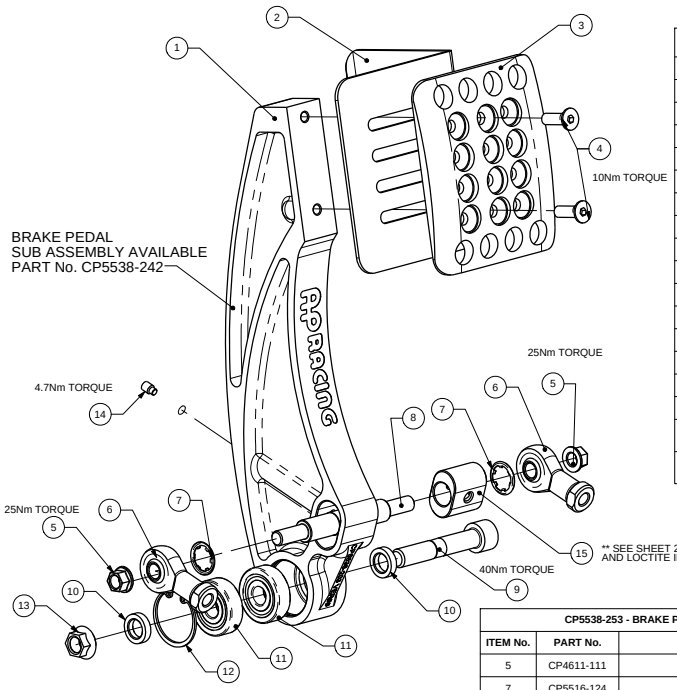
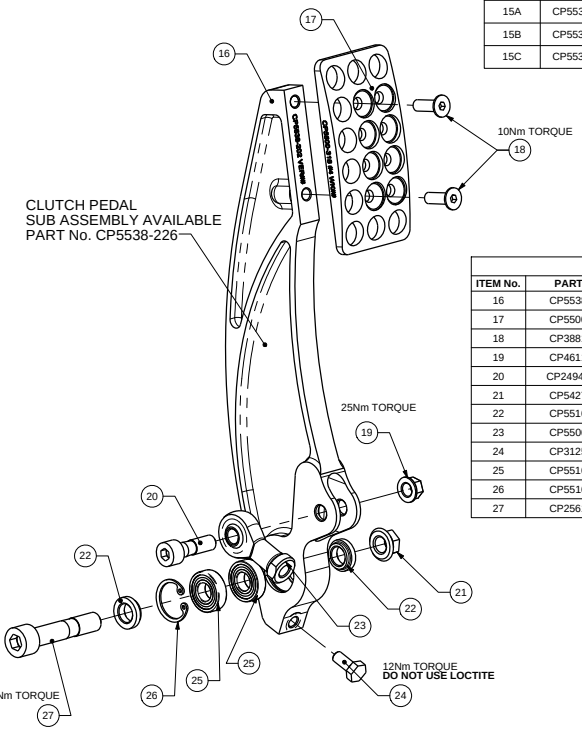
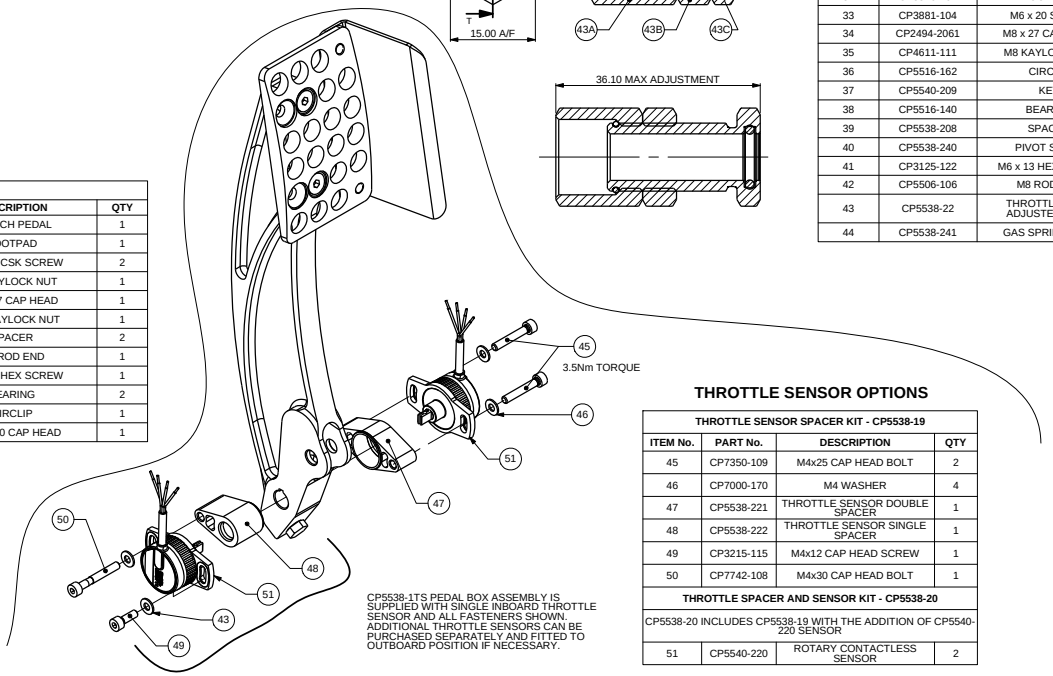


BRAKE PEDAL			
ITEM No.	PART No.	DESCRIPTION	QTY
1	CP5538-203	BRAKE PEDAL	1
2	CP5538-251	GUARD PLATE	1
3	CP5500-330	FOOTPAD	1
4	CP3881-104	M6 x 20 CSK SCREW	2
5	CP4611-111	M8 KAYLOCK NUT	2
6	CP5506-106	M8 ROD END	2
7	CP5516-124	GRIP RING	2
8	CP5506-110	BRAKE PULL ROD	1
9	CP5200-108	M10 x 58 CAP HEAD	1
10	CP5516-108	SPACER	2
11	CP5516-106	BEARING	2
12	CP5516-107	CIRCLIP	1
13	CP5427-101	M10 KAYLOCK NUT	1
14	CP4325-122	M5 x 8 GRUB SCREW	1
15A	CP5538-206	PEDAL RATIO BOBBIN - NOM	1
15B	CP5538-207	PEDAL RATIO BOBBIN - OFFSET	1
15C	CP5538-252	PEDAL RATIO BOBBIN - OFFSET	1

CP5538-253 - BRAKE PEDAL RATIO BOBBIN KIT			
ITEM No.	PART No.	DESCRIPTION	QTY
5	CP4611-111	M8 KAYLOCK NUT	2
7	CP5516-124	GRIP RING	2
15A	CP5538-206	PEDAL RATIO BOBBIN - NOM	1
15B	CP5538-207	PEDAL RATIO BOBBIN - OFFSET	1
15C	CP5538-252	PEDAL RATIO BOBBIN - OFFSET	1

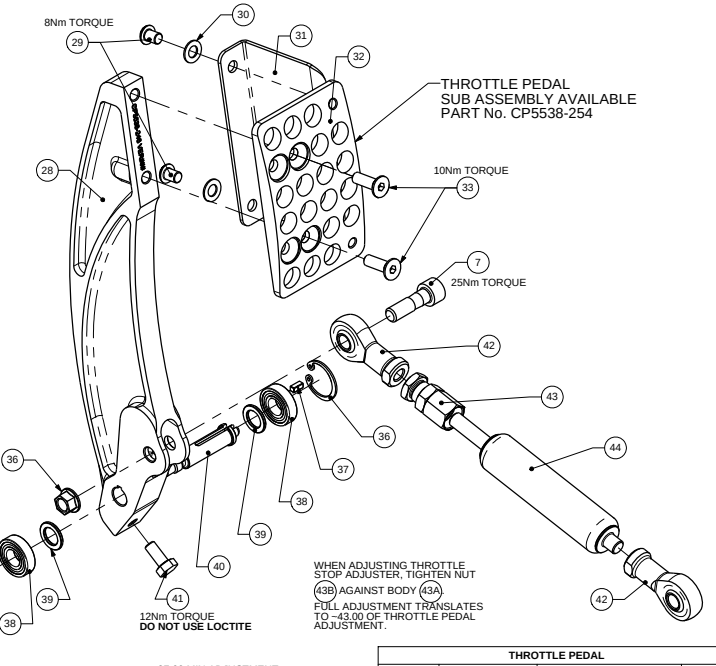


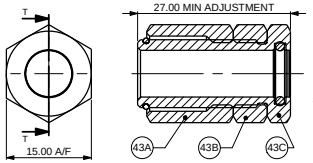
CLUTCH PEDAL			
ITEM No.	PART No.	DESCRIPTION	QTY
16	CP5538-202	CLUTCH PEDAL	1
17	CP5500-318	FOOTPAD	1
18	CP3881-104	M6 x 20 CSK SCREW	2
19	CP4611-111	M8 KAYLOCK NUT	1
20	CP2494-2061	M8 x 27 CAP HEAD	1
21	CP5427-101	M10 KAYLOCK NUT	1
22	CP5516-141	SPACER	2
23	CP5506-106	M8 ROD END	1
24	CP3125-122	M6 x 13 HEX SCREW	1
25	CP5516-140	BEARING	2
26	CP5516-162	CIRCLIP	1
27	CP2561-105	M10 x 50 CAP HEAD	1



THROTTLE SENSOR OPTIONS

THROTTLE SENSOR SPACER KIT - CP5538-19			
ITEM No.	PART No.	DESCRIPTION	QTY
45	CP7350-109	M4x25 CAP HEAD BOLT	2
46	CP7000-170	M4 WASHER	4
47	CP5538-221	THROTTLE SENSOR DOUBLE SPACER	1
48	CP5538-222	THROTTLE SENSOR SINGLE SPACER	1
49	CP3215-115	M4x12 CAP HEAD SCREW	1
50	CP7742-108	M4x30 CAP HEAD BOLT	1
THROTTLE SPACER AND SENSOR KIT - CP5538-20			
CP5538-20 INCLUDES CP5538-19 WITH THE ADDITION OF CP5540-220 SENSOR			
51	CP5540-220	ROTARY CONTACTLESS SENSOR	2





THROTTLE PEDAL			
ITEM No.	PART No.	DESCRIPTION	QTY
28	CP5538-246	THROTTLE PEDAL	1
29	CP2749-194	M6 x 8 SCREW	2
30	CP2494-1305	WASHER	2
31	CP5516-164	GUARD PLATE	1
32	CP5516-167	FOOT PAD	1
33	CP3881-104	M6 x 20 SCREW	2
34	CP2494-2061	M8 x 27 CAP HEAD	1
35	CP4611-111	M8 KAYLOCK NUT	2
36	CP5516-162	CIRCLIP	1
37	CP5540-209	KEY	1
38	CP5516-140	BEARING	2
39	CP5538-208	SPACER	2
40	CP5538-240	PIVOT SHAFT	1
41	CP3125-122	M6 x 13 HEX SCREW	1
42	CP5506-106	M8 ROD END	2
43	CP5538-22	THROTTLE STOP ADJUSTER ASSY	1
44	CP5538-241	GAS SPRING 170N	1

SCALE 1:1	SHEET 4 OF 5
DRAWN	Steve Thomas
APPROVED	
DERIVED FROM	CP5516-7

TITLE

FLOOR MTG REVERSE PULL
TYPE SLIDING PEDAL BOX

DRG NO. CP5538-1CD

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THROTTLE SENSOR DETAIL

PERFORMANCE

Electrical

Measurement range		20° to 360° in 1° increments
Supply voltage	**Vdc**	9 to 30 (unregulated) and 5 ±0.5 (regulated)
Over voltage protection	**Vdc**	Up to 40 (-40 to +60°C)
Maximum supply current	**mA**	<25
Reverse polarity protection		Yes
Short circuit protection		
Output to GND		Yes
Output to supply		In 5V regulated mode only
Power-on settlement time	**S**	<1
Resolution	**%**	0.025 of measurement range (12 bit)
Non-linearity*	**%**	<±0.4
Temperature coefficient ppm/°C		<±30 in 5V supply mode; <±90 in 9-30V supply mode

* Non-linearity is measured using the least-squares method on a computerised calibration system

Analog Output

Voltage output range		
9-30V supply	**Vdc**	Absolute voltage, 0.1 to 4.9 over measurement range (±3%)
5V supply	**Vdc**	Ratiometric output voltage - 2 to 98% (A4) of Vs over measurement range (±1%)
Monotonic range	**Vdc**	0.05 (1%) and 4.95 (99%) nominal
Load resistance	□	10k minimum (resistive to GND)
Output noise	**mVrms**	<1
Input/output delay	**mS**	<2

Mechanical

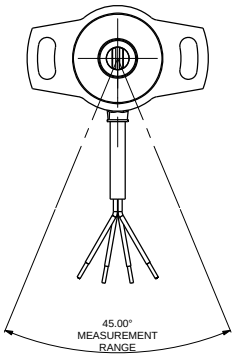
Mechanical angle	**°**	360, continuous
Operating torque	**g-cm**	120 Max
Weight	**g**	<35
Mounting		Use 2 x M4 socket head cap screws and M4 washer - maximum tightening torque 2Nm
Phasing		When shaft ident mark is facing toward the cable exit, output is at mid travel. The sensor housing allows for ±10° adjustment via the mounting flange slots.

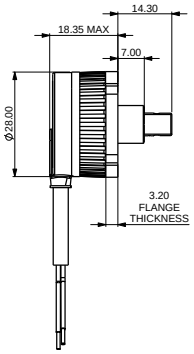
Environment

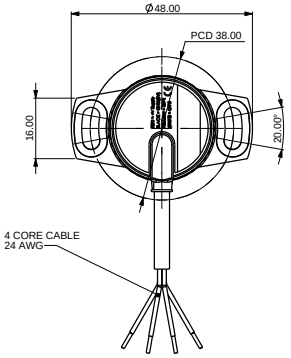
Protection class	IP68 (to 2m depth for 1 hour)
Life	20 million operations (10 x 106 cycles) of ±75°
Dither life	Contactless - no degradation due to shaft dither
Operational temperature† °C	-40 to +140 (5V supply) -40 to +135.7 (9V supply) Derate upper temperature limit by 1.7°C for every 1V increase in supply: e.g. -40 to +100 @30V
Storage temperature °C	-55 to +140
Vibration	BS EN 60068-2-64:1995 Sec 8.4 (31.4gn rms) 20 to 2000Hz Random
Shock	3m drop onto concrete
EMC Immunity level	BS EN 61000-4-3:1999, to 100V/m, 80MHz to 1GHz and 1.4GHz to 2.7GHz (2004/108/EC)

Other

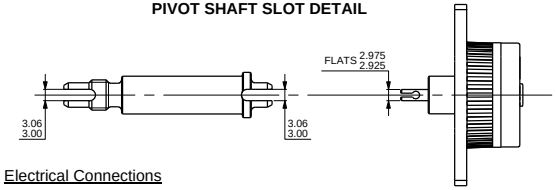
Measurement Range	**°**	45 both channels
Output		Analog voltage
Output direction		Channel 1 clockwise, Channel 2 anti-clockwise
Cable length		0.5m

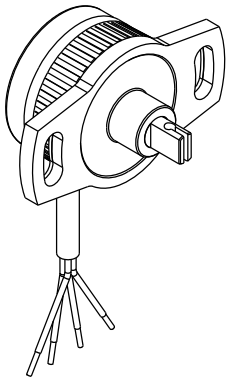






PIVOT SHAFT SLOT DETAIL





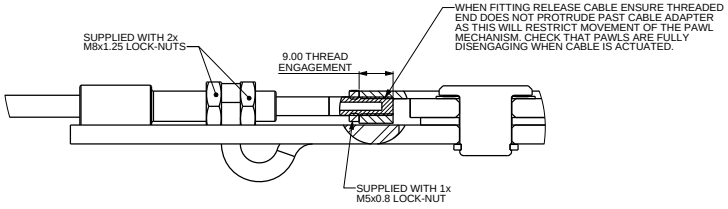
Electrical Connections

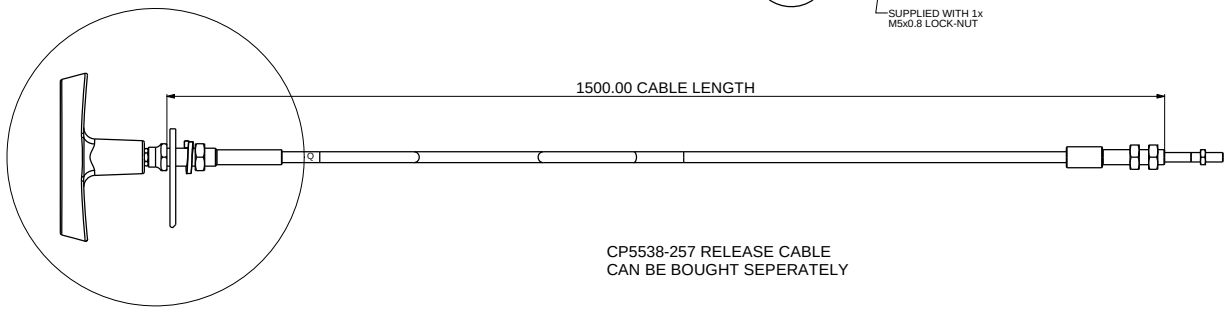
4-core cable: FDR-25 sheathed, with 55A spec (24AWG) cores

Cable colour	*Description*
Red	+V Supply
Yellow	Output 1
White	Output 2
Black	0V Supply (GND)

When connecting the sensor, care should be taken with the correct connections. The sensor is provided with reverse polarity protection and short circuit protection between outputs (Yellow & White) to GND (Black), but if the outputs (Yellow & White) are connected to the supply this will result in device failure.

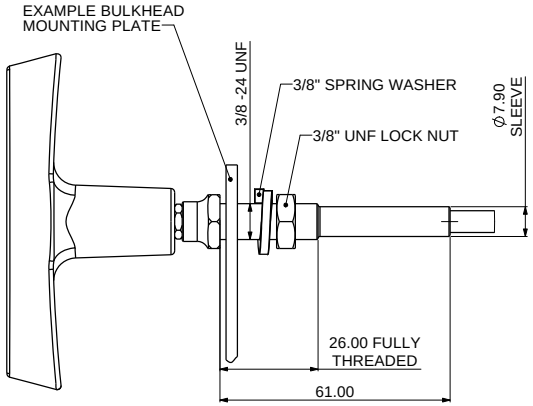
RELEASE CABLE DETAIL





CP5538-257 RELEASE CABLE
CAN BE BOUGHT SEPERATELY

RELEASE CABLE MOUNTING DETAIL



DETAIL Q

SCALE 2:1	SHEET 5 OF 5
DRAWN	Steve Thomas
APPROVED	
DERIVED FROM	

TITLE
THROTTLE SENSOR
SENSOR

DRG NO. CP5538-1CD