

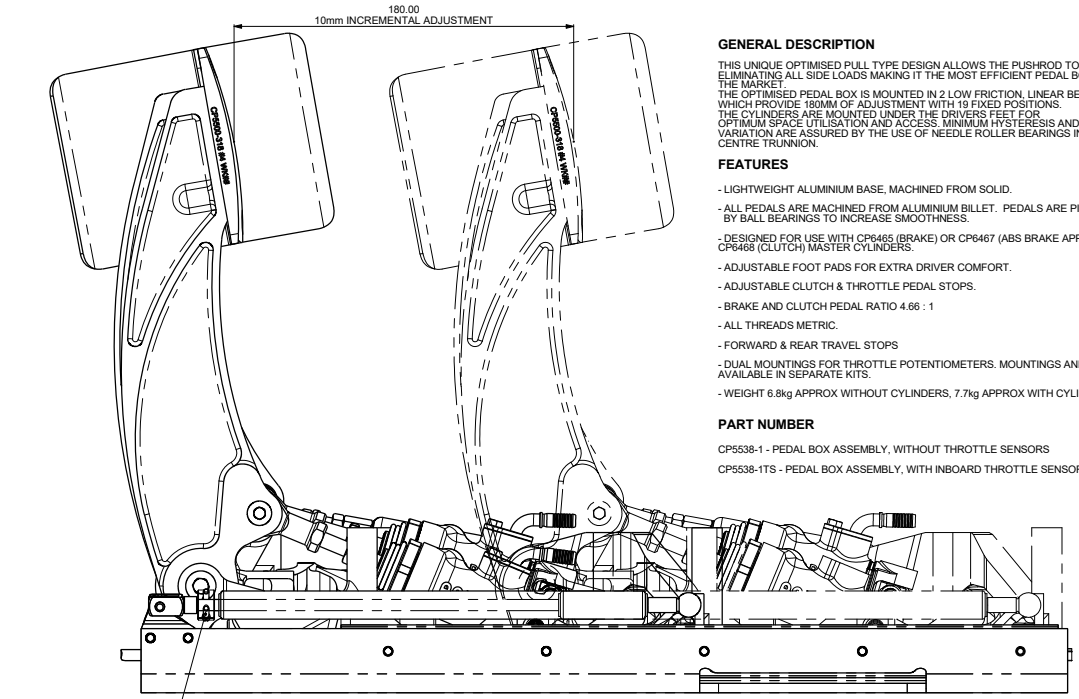
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FORWARD TRAVEL STOP CLAMPS OVER GAS SPRING ROD 2 OFF M3x0.5 SCREWS RECOMMENDED TIGHTENING TORQUE 2.1Nm

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.

PEDAL BOX IS DESIGNED TO SUIT CP6465 (BRAKE) OR CP6467 (BRAKE) & CP6468 (CLUTCH) HIGH EFFICIENCY MASTER CYLINDERS.
 FEATURES INCLUDE:
 • BUILT IN LOW FRICTION CLEVIS (CP6465 & CP6467)
 • SPECIAL INLET TO ALLOW LOW FITTING
 • M10 x 1.0 OUTLET PORT SET AT 90deg.
 25.4mm OF STROKE

GENERAL DESCRIPTION

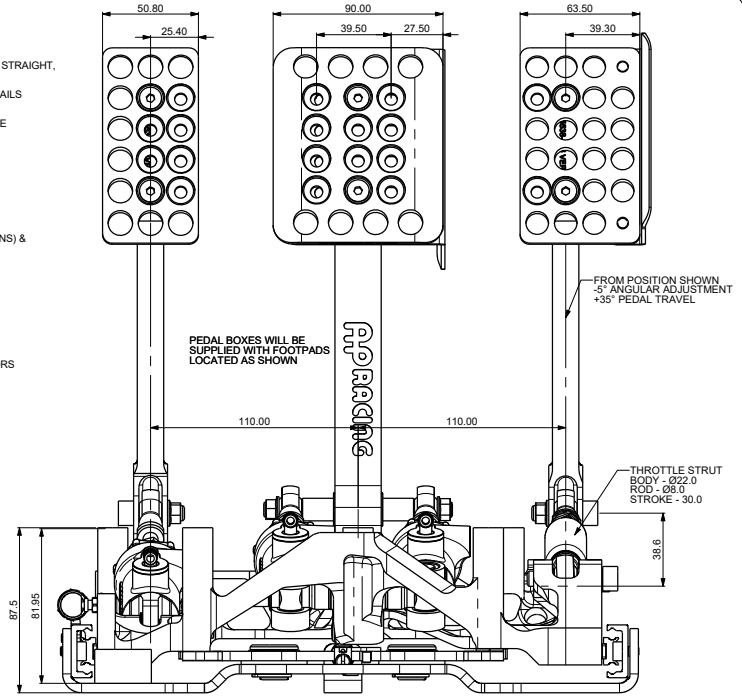
THIS UNIQUE OPTIMISED PULL TYPE DESIGN ALLOWS THE PUSHROD TO REMAIN STRAIGHT, ELIMINATING ALL SIDE LOADS MAKING IT THE MOST EFFICIENT PEDAL BOX ON THE MARKET!
 THE OPTIMISED PEDAL BOX IS MOUNTED IN 2 LOW FRICTION, LINEAR BEARING RAILS WHICH PROVIDE 180MM OF ADJUSTMENT WITH 13 FIXED POSITIONS.
 THE CYLINDERS 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.

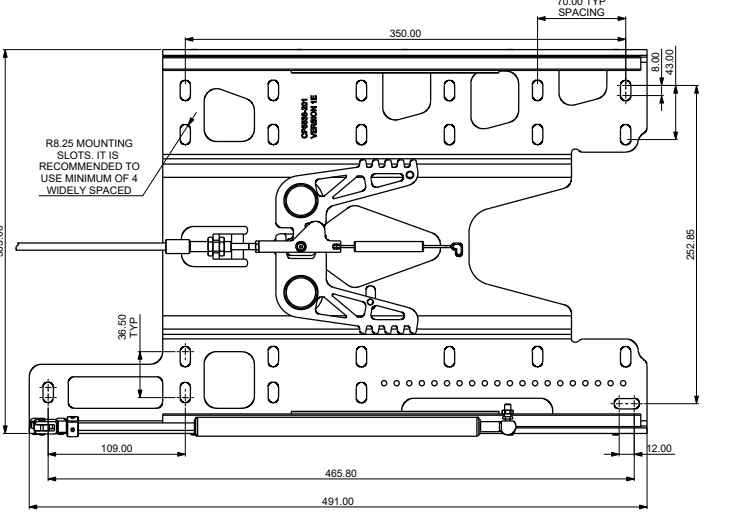
PART NUMBER

- CP5538-1 - PEDAL BOX ASSEMBLY, WITHOUT THROTTLE SENSORS
- CP5538-1TS - PEDAL BOX ASSEMBLY, WITH INBOARD THROTTLE SENSOR



IMPORTANT BALANCE BAR LIFE INFORMATION - ABS APPLICATIONS
 IT IS RECOMMENDED THAT THE BALANCE BAR, E-CLIPS AND SNAP RINGS ARE REPLACED AFTER 15,000KM OR USE IN HIGH PRESSURE ABS APPLICATIONS, SEE SHEET 3 FOR RELEVANT PART NUMBERS.

MOUNTING TRAY DETAIL



Rev	Alterations		Date	By	App'd
	Date & No.	Particulars			
1	04/02/16	FIRST ISSUE	B7058		SAT
2	17/03/16	PEDAL RATIO DETAILS UPDATED ADDITIONAL MOUNTING SLOT ADDED TO TRAY	B7058		11M/SAT
3	22/03/16	SHEET 2 CABLE ATTACHMENT DETAILS ADDED	B7058		SAT
4	17/08/16	CHANGES TO BASEPLATE AND CLUTCH AND THROTTLE PEDAL	B7601_01		DW
5	25/01/17	MOUNTING TRAY MODIFIED SHEET 3 CP5538-1 WAS -17 LOCKING MECH SUB ASS SHEET 4 THROTTLE SENSOR OPTIONS ADDED SHEET 5 ADDED THROTTLE SENSOR AND RELEASE CABLE DETAILS	B7601_06		B2 DW H1 D12
6	21/03/17	THROTTLE SENSOR VERSION ADDED SHEET 4 CP5538-1TS NOTE ADDED	B7601_08		L9 DW A14
7	05/09/17	SHEET 3 TIGHTENING TORQUES AND LOCITTE SPECS ADDED SHEET 4 TIGHTENING TORQUES AND LOCITTE SPECS ADDED SHEET 5 ADJUSTED DETAILS ADDED SHEET 6 CABLE FITMENT DETAILS ADDED	B7655_12		BGW E10
8	04/10/17	SHEET 2 BRAKE PEDAL RATIO BOBBIN AND PULL ROD LOCITTE INSTALLATION NOTE ADDED	B7601_10		R15 DW
9	26/07/18	SHEET 3 (21) (22) (24) REMOVED FROM TABLES (DRIVEN PAWL, RETAINING BOLT AND TOP HAT REMOVED) (22) CP5538PAWLISHIM WAS CP7000-170 SHIMMING NOTE ADDED SHEET 4 TABLE CORRECTED CP5538-251 WAS -210 TIGHTENING TORQUES ADDED 10Nm 3.5Nm	B7883_02		D18 BAT P7 R9 P7 D14
10	08/08/18	SHEET 5 PIVOT SHAFT (40) SLOTTED TOLERANCE ADDED 3.06-3.00. CP5540-220 SENSOR SHAFT TOLERANCE ADDED 2.9752-2.925	B7841		L16 R11
11	26/11/18	SHEET 3 PART 27 CP5538-273 SLEEVE WAS CP5538-213 TOP HAT SPACER	B7824_06		BAT J17
12	18/04/19	SHEET 2 PEDAL RATIO DIAGRAM CORRECTION. LOCITTE INSTRUCTION ADDED TO RATIO ADJUSTMENT NOTE SHEET 3 TABLE CORRECTED CP5538-236 WAS CP5538-103 CP5538-121 WAS CP6663-104 SHEET 4 THROTTLE SENSOR TABLE CORRECTED TO REMOVE DUPLICATES	RAC23330		P16 BAT P13 D15 C15
13	16/07/2019	BRAKE PEDAL GRUB SCREW CHANGED TO CP5538-280. WAS CP525-122	B8033_02		JDD
14	24/08/2019	BRAKE RATIO BOBBIN INSTRUCTIONS UPDATED FOR NEW GRUB SCREW	B8033_05		JDD
15	15/07/22	SHEET 1 IMPORTANT BALANCE BAR LIFE INFORMATION NOTE ADDED	B8281_01		H16 TS

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

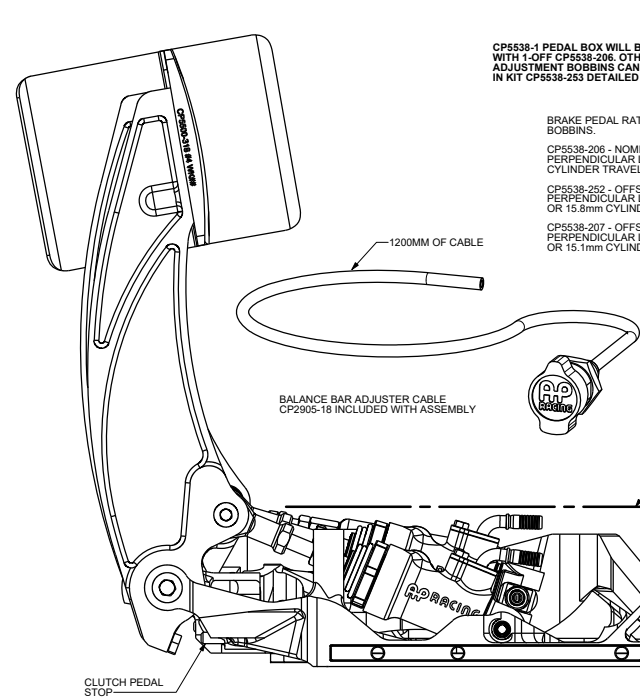
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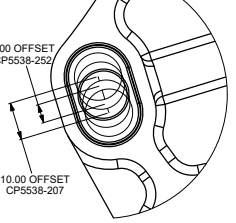
CP5538-1 PEDAL BOX WILL BE SUPPLIED WITH 1-OFF CP5538-206. OTHER OFFSET ADJUSTMENT BOBBINS CAN BE BOUGHT IN KIT CP5538-253 DETAILED ON SHEET 4.



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 15.6mm CYLINDER TRAVEL

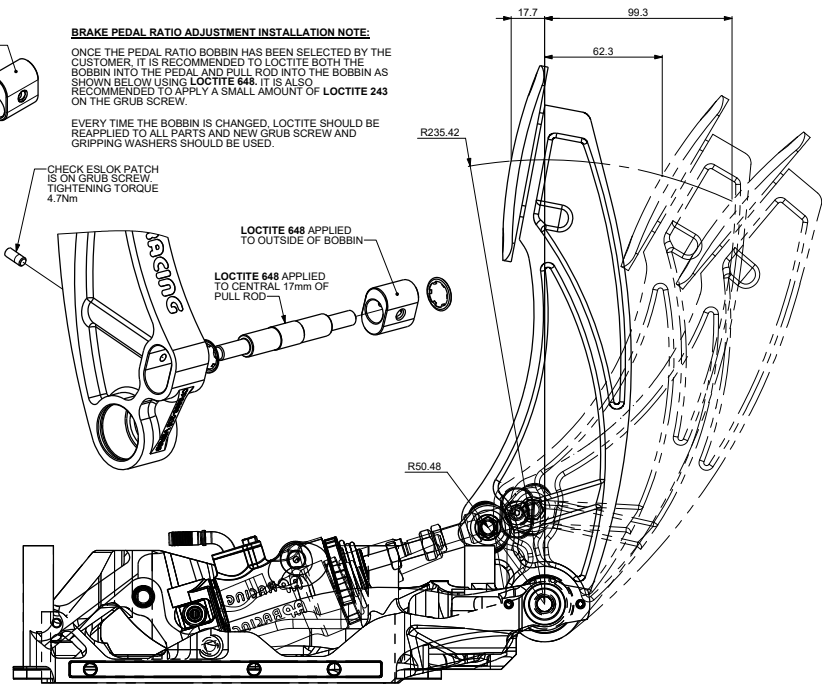
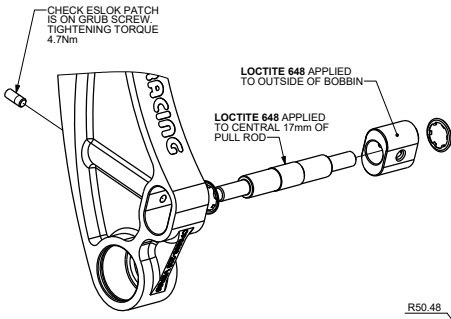
CP5538-207 - OFFSET - 5.14:1 OR 4.26:1 PERPENDICULAR LOADING AT 17.7mm OR 15.1mm CYLINDER TRAVEL



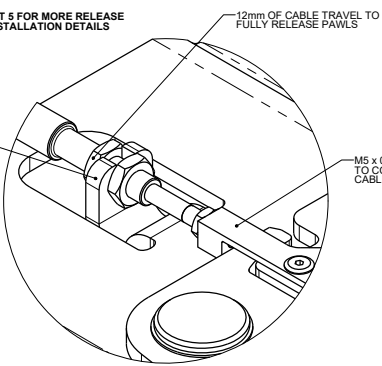
BRAKE PEDAL RATIO ADJUSTMENT INSTALLATION NOTE:

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.

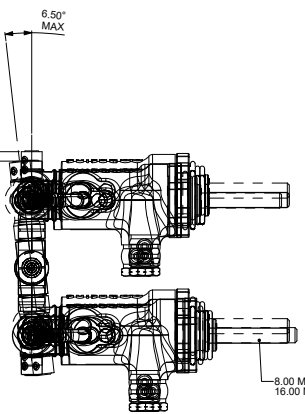
EVERY TIME THE BOBBIN IS CHANGED, LOCTITE SHOULD BE REAPPLIED TO ALL PARTS AND NEW GRUB SCREW AND GRIPPING WASHERS SHOULD BE USED.



SEE SHEET 5 FOR MORE RELEASE CABLE INSTALLATION DETAILS



5.00 MAX ADJUSTMENT. THE MORE ADJUSTMENT YOU HAVE THE MORE INEFFICIENT THE BALANCE BAR BECOMES.



8.00 MIN THREAD 16.00 MAX THREAD

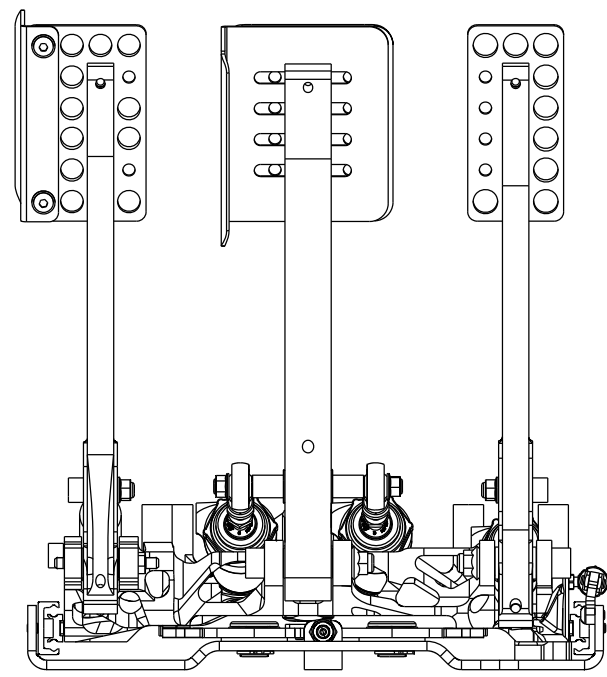
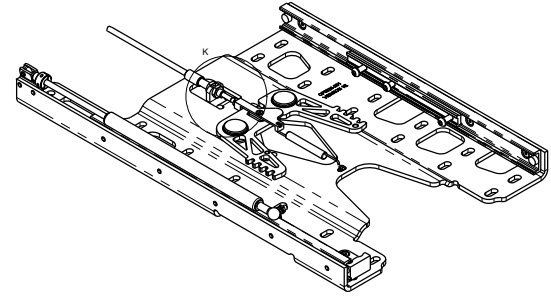
SETTING UP THE BALANCE BAR

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 (6.50"): THIS IS SET BY ADJUSTING THE THREAD ENGAGEMENT OF THE ROD END AND MASTER CYLINDER PISTON. THIS RELATES TO 8.00mm OF DIFFERENCE IN TRAVEL OF FRONT TO REAR CYLINDERS. REMEMBER THE BALANCE BAR SHOULD BE PERPENDICULAR WHEN AT MAX BRAKE PRESSURE.



Alterations		Issue
Date & No.	Particulars	Zone
01/22	SEE SHEET 1 FOR ISSUE INFORMATION.	

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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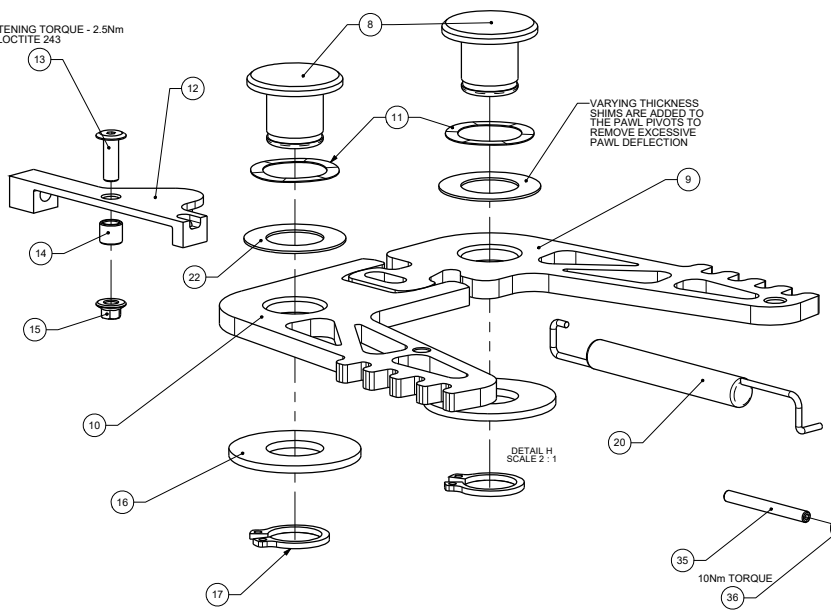
FIRST ANGLE PROJECTION

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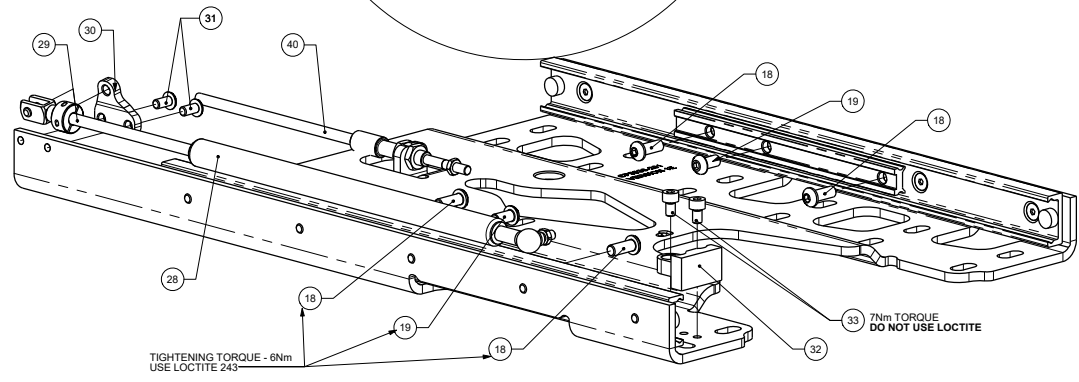
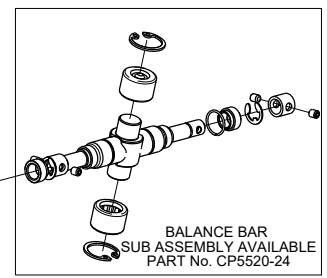
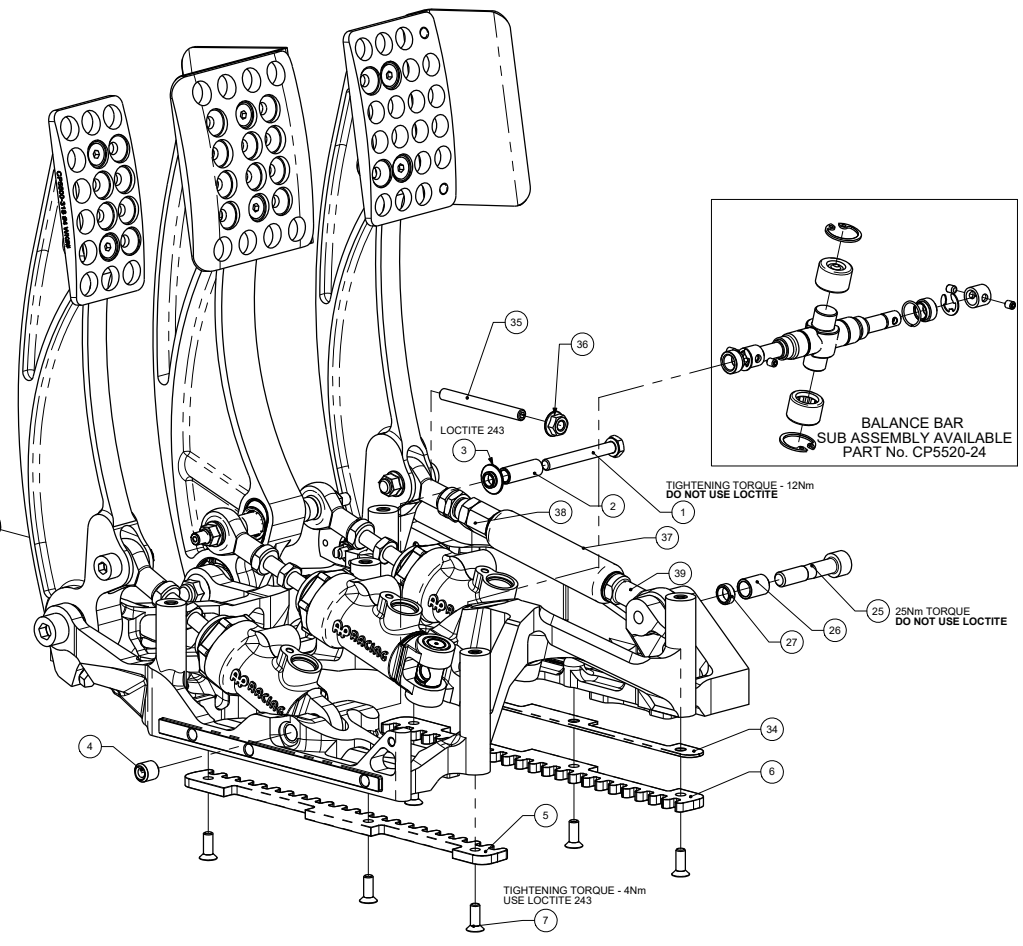
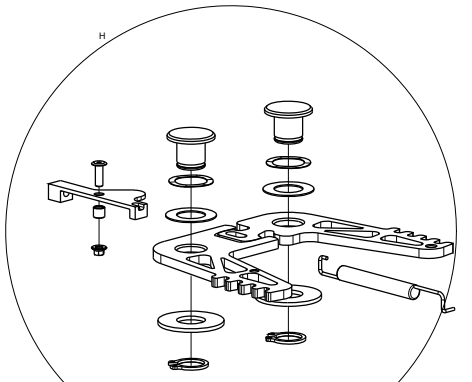


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TIGHTENING TORQUE - 2.5Nm
 USE LOCTITE 243



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

Alterations	
Date & No.	Particulars
09/22	SEE SHEET 1 FOR ISSUE INFORMATION.

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

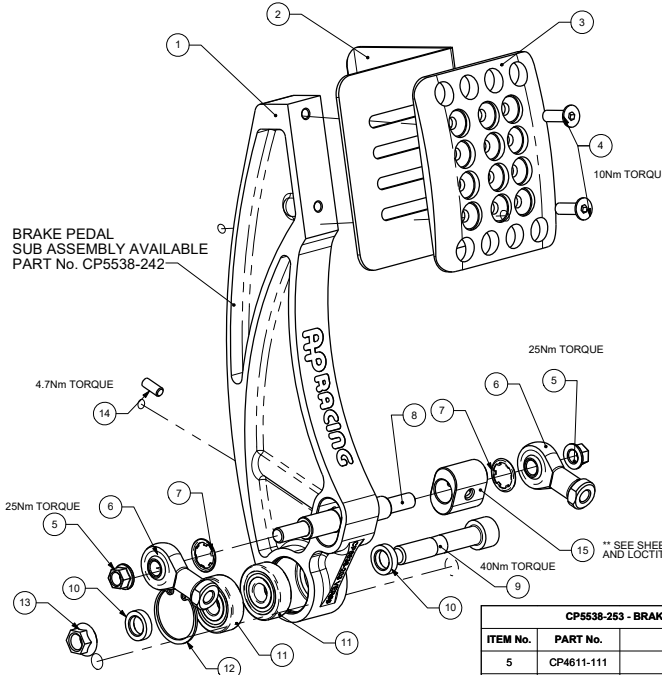
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BRAKE PEDAL SUB ASSEMBLY AVAILABLE PART No. CP5538-242

BRAKE PEDAL

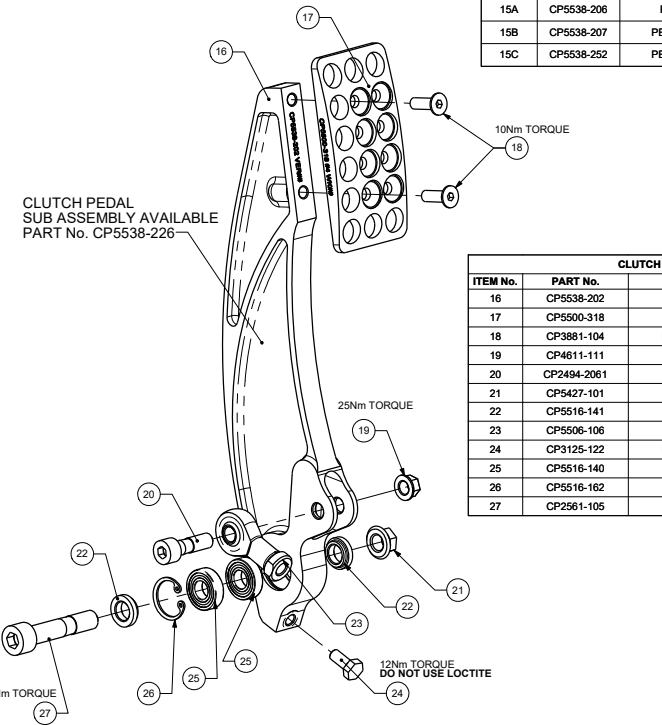
ITEM No.	PART No.	DESCRIPTION	QTY
1	CP5538-203	BRAKE PEDAL	1
2	CP5538-251	GUARD PLATE	1
3	CP5500-330	FOOTPAD	1
4	CP3881-104	M6 x 20 CSK SCREW	2
5	CP4611-111	M8 KAYLOCK NUT	2
6	CP5506-106	M8 ROD END	2
7	CP5516-124	GRIP RING	2
8	CP5506-110	BRAKE PULL ROD	1
9	CP5200-108	M10 x 58 CAP HEAD	1
10	CP5516-108	SPACER	2
11	CP5516-106	BEARING	2
12	CP5516-107	CIRCLIP	1
13	CP5427-101	M10 KAYLOCK NUT	1
14	CP5538-280	M5 x 12 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

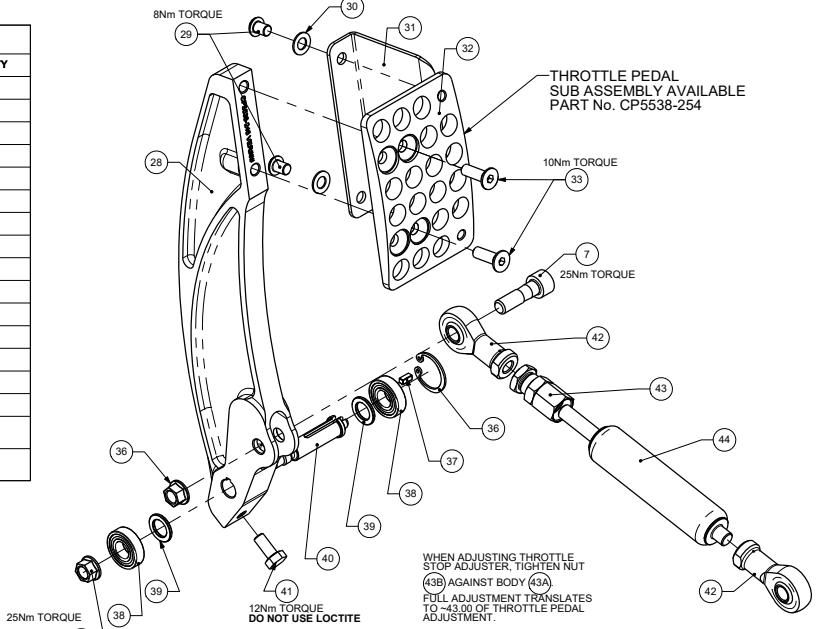
ITEM No.	PART No.	DESCRIPTION	QTY
5	CP4611-111	M8 KAYLOCK NUT	2
7	CP5516-124	GRIP RING	2
15A	CP5538-206	PEDAL RATIO BOBBIN - NOM	1
15B	CP5538-207	PEDAL RATIO BOBBIN - OFFSET	1
15C	CP5538-252	PEDAL RATIO BOBBIN - OFFSET	1

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

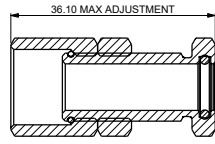
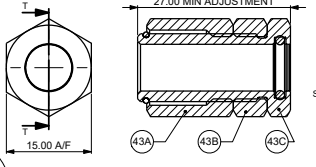


CLUTCH PEDAL SUB ASSEMBLY AVAILABLE PART No. CP5538-226



THROTTLE PEDAL SUB ASSEMBLY AVAILABLE PART No. CP5538-254

WHEN ADJUSTING THROTTLE STOP ADJUSTER, TIGHTEN NUT (43B) AGAINST BODY (43A). FULL ADJUSTMENT TRANSLATES TO ~43.00 OF THROTTLE PEDAL ADJUSTMENT.



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

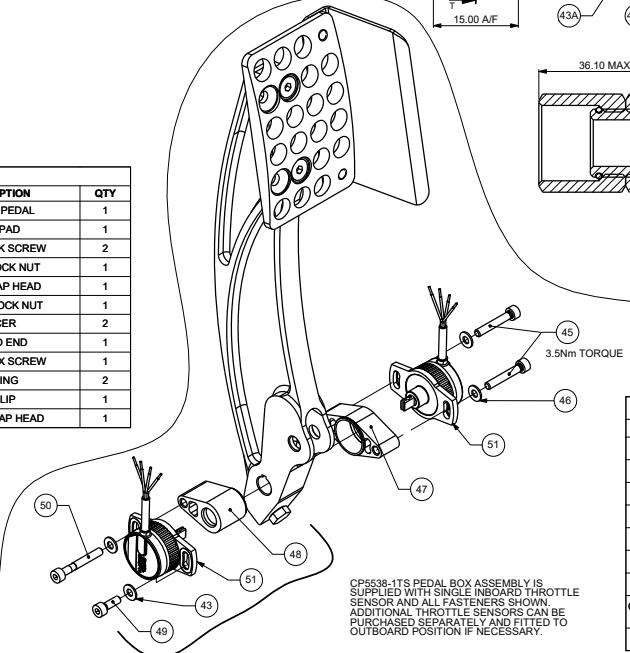
THROTTLE SENSOR OPTIONS

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

ITEM No.	PART No.	DESCRIPTION	QTY
51	CP5540-220	ROTARY CONTACTLESS SENSOR	2



CP5538-19S PEDAL BOX ASSEMBLY IS SUPPLIED WITH SINGLE INBOARD THROTTLE SENSOR AND ALL FASTENERS SHOWN. ADDITIONAL THROTTLE SENSORS CAN BE PURCHASED SEPARATELY AND FITTED TO OUTBOARD POSITION IF NECESSARY.

Alterations

Date & No.	Particulars
-	SEE SHEET 1 FOR ISSUE INFORMATION.

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

A0 INSTALLATION DRAWING

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THROTTLE SENSOR DETAIL

PERFORMANCE

Electrical		
Measurement range	Vdc	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		Yes
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

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

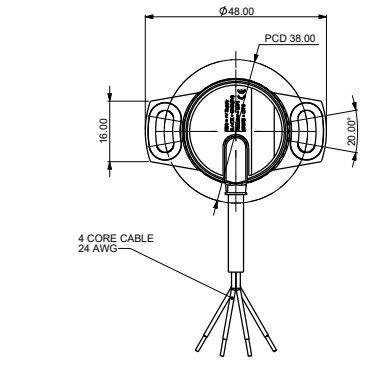
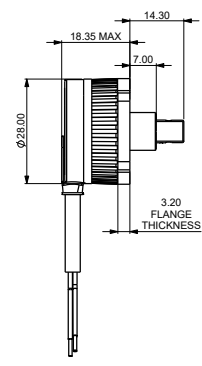
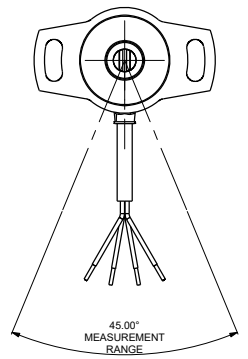
Mechanical angle	°	360, continuous
Operating torque	g-cm	120 Max
Weight	g	<35
Mounting		Use 2 x M4 socket head cap screws and M4 washer - maximum tightening torque 2Nm
Phasing		When shaft ident mark is facing toward the cable exit, output is at mid travel. The sensor housing allows for ±10° adjustment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

Environment

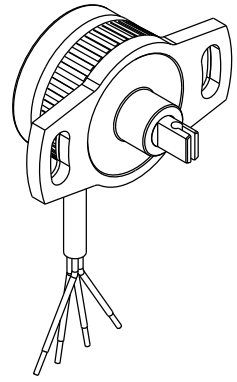
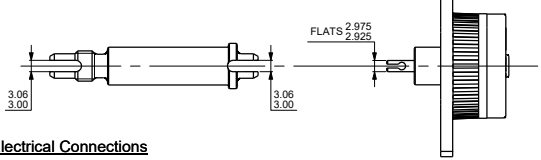
Protection class		IP68 (to 2m depth for 1 hour)
Life		20 million operations (10 x 106 cycles) of ±75°
Dither life		Contactless - no degradation due to shaft dither
Operational temperature† °C		-40 to +140 (5V supply) -40 to +135.7 (9V supply) Derate upper temperature limit by 1.7°C for every 1V increase 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

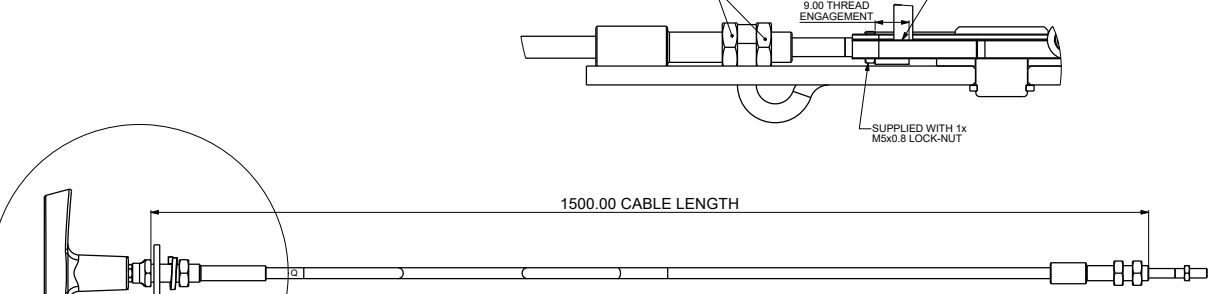
4-core cable: FDR-25 sheathed, with 55A spec (24AWG) cores

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.

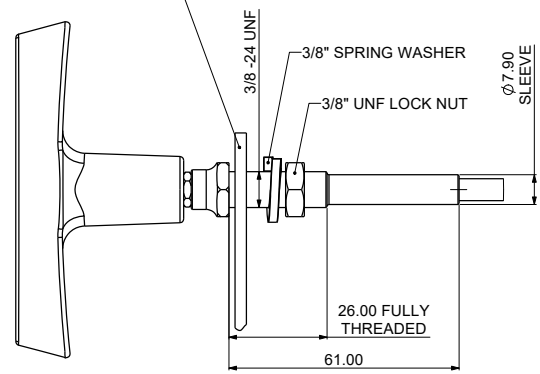
RELEASE CABLE MOUNTING DETAIL

RELEASE CABLE DETAIL



CP5538-257 RELEASE CABLE CAN BE BOUGHT SEPARATELY

EXAMPLE BULKHEAD MOUNTING PLATE



DETAIL Q

Date & No.	Alterations	Particulars
		SEE SHEET 1 FOR ISSUE INFORMATION.

SCALE 2:1 SHEET 5 OF 5
 DRAWN Steve Thomas
 APPROVED
 DERIVED FROM
 TITLE THROTTLE SENSOR
 DRG NO. CP5538-1CD