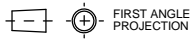


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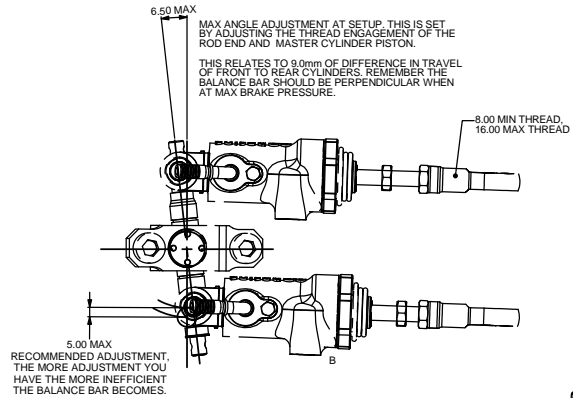
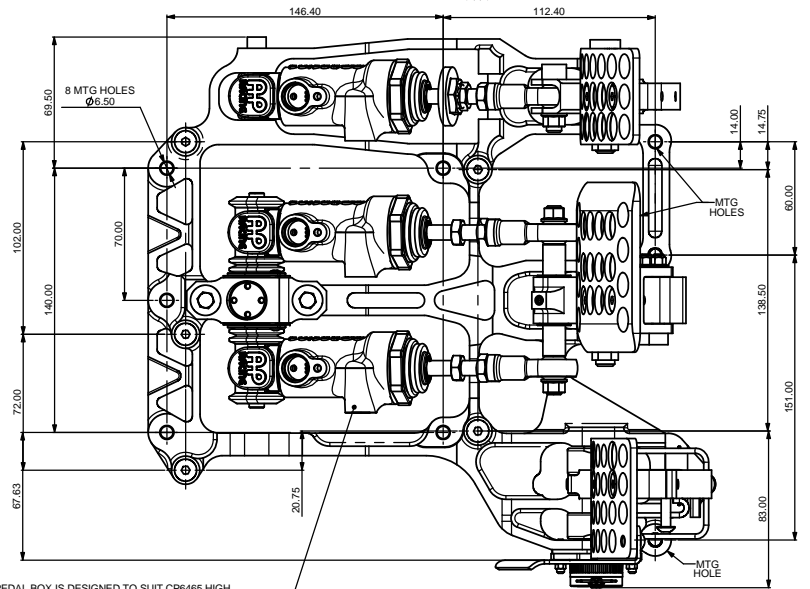
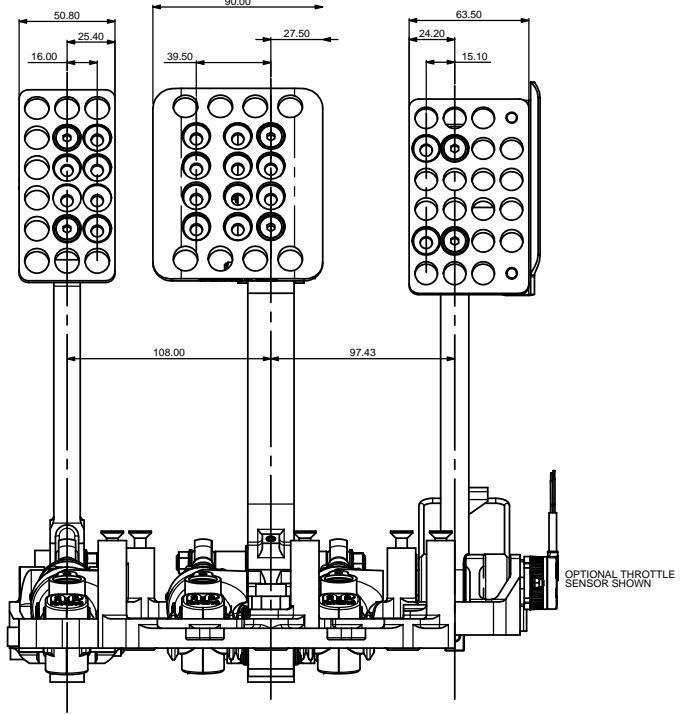
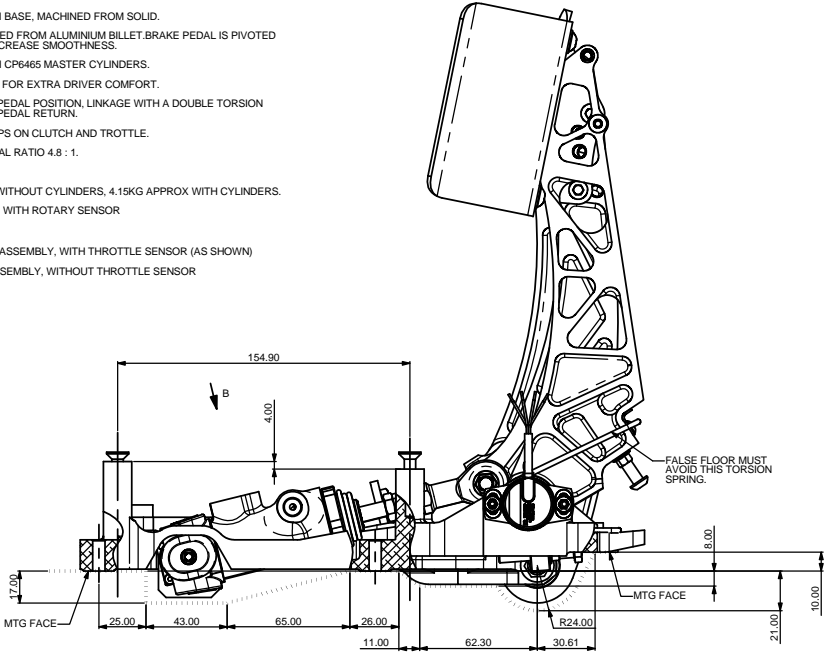
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**GENERAL DESCRIPTION**  
 THIS UNIQUE PULL TYPE DESIGN ALLOWS THE PUSHROD TO REMAIN STRAIGHT, ELIMINATING ALL SIDE LOADS MAKING IT THE MOST EFFICIENT PEDAL BOX ON THE MARKET. THE CYLINDERS ARE MOUNTED UNDER THE DRIVERS FEET FOR OPTIMUM SPACE UTILISATION 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. BRAKE PEDAL IS PIVOTED BY BALL BEARINGS TO INCREASE SMOOTHNESS.
  - DESIGNED FOR USE WITH CP6465 MASTER CYLINDERS.
  - ADJUSTABLE FOOT PADS FOR EXTRA DRIVER COMFORT.
  - ADJUSTABLE THROTTLE PEDAL POSITION, LINKAGE WITH A DOUBLE TORSION SPRING FOR A POSITIVE PEDAL RETURN.
  - ADJUSTABLE PEDAL STOPS ON CLUTCH AND TROTTLE.
  - BRAKE AND CLUTCH PEDAL RATIO 4.8 : 1.
  - ALL THREADS METRIC.
  - WEIGHT 3.4 KG APPROX WITHOUT CYLINDERS, 4.15KG APPROX WITH CYLINDERS.
  - THROTTLE PEDAL FITTED WITH ROTARY SENSOR

**PART NUMBERS**  
 CP5516-88TS - PEDAL BOX ASSEMBLY, WITH THROTTLE SENSOR (AS SHOWN)  
 CP5516-88 - PEDAL BOX ASSEMBLY, WITHOUT THROTTLE SENSOR



**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 HAS TO BE UNDER LOAD.

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

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.

PEDAL BOX IS DESIGNED TO SUIT CP6465 HIGH EFFICIENCY MASTER CYLINDERS. FEATURES:  
 - BUILT-IN LOW FRICTION CLEVIS.  
 - SPECIAL INLET TO ALLOW A LOW FITTING.  
 - M10x1.0 OUTLET PORT, SET AT 90 Deg.  
 - 25.4mm OF STROKE.

FOR INFORMATION ON CYLINDER SIZES PLEASE CONTACT AP RACING OR OBTAIN DRAWING CP6465-1CD FROM THE WEBSITE.

MASTER CYLINDERS ARE NOT SUPPLIED WITH THIS PEDAL BOX.

Alterations		Drawn	Checked
Date & No.	Particulars		
1 B6228 20/06/11	FIRST ISSUE		SAT
2 B6228 05/12/11	THROTTLE SENSOR PART No. CHANGED IN TABLE		SAT
3 B0660 29/11/12	CP5516-199 REPLACES CP5516-189		RS
4 B6722 19/02/13	MORE ACURATE SENSOR DETAILS ADDED		COA
5 B6502 11/06/13	DRAWING NUMBER CHANGED.		COA
6 B6985_01 30/01/14	SENSOR FIXING UPDATED		JN
7 24/04/14 B7022_04	DRAWING VEWS UPDATED STUDS, WASHERS AND NUTS ADDED AS KIT TO -88		JW
8 12/01/15 B7022	THROTTLE STOP KIT ADDED		CH
9 12/02/15 B7022	THROTTLE STOP KIT NOTES UPDATED		CH

SCALE 1:1	SHEET 1 OF 4
DRAWN Steve Thomas	
APPROVED	
DERIVED FROM CP5516-7	
TITLE	
FLOOR MTG REVERSE PULL TYPE PEDAL BOX + THROTTLE SENSOR	
DRG NO. CP5516-88CD	

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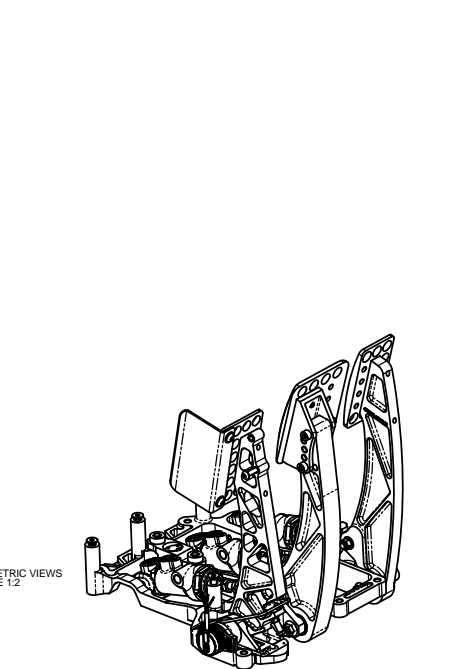
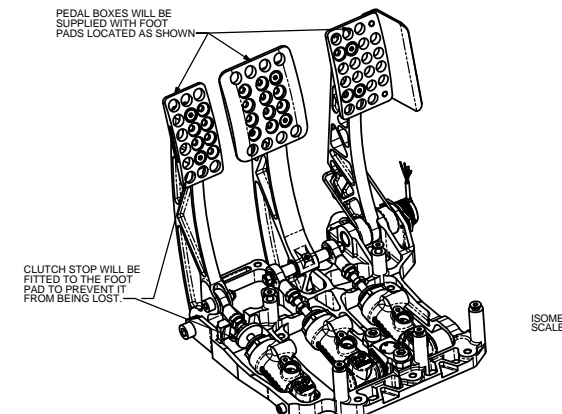
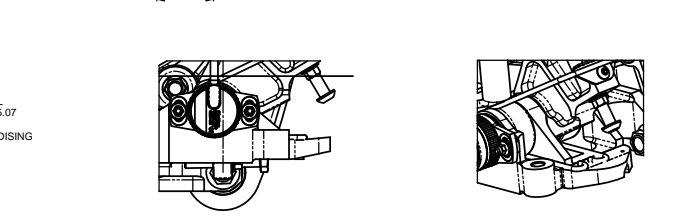
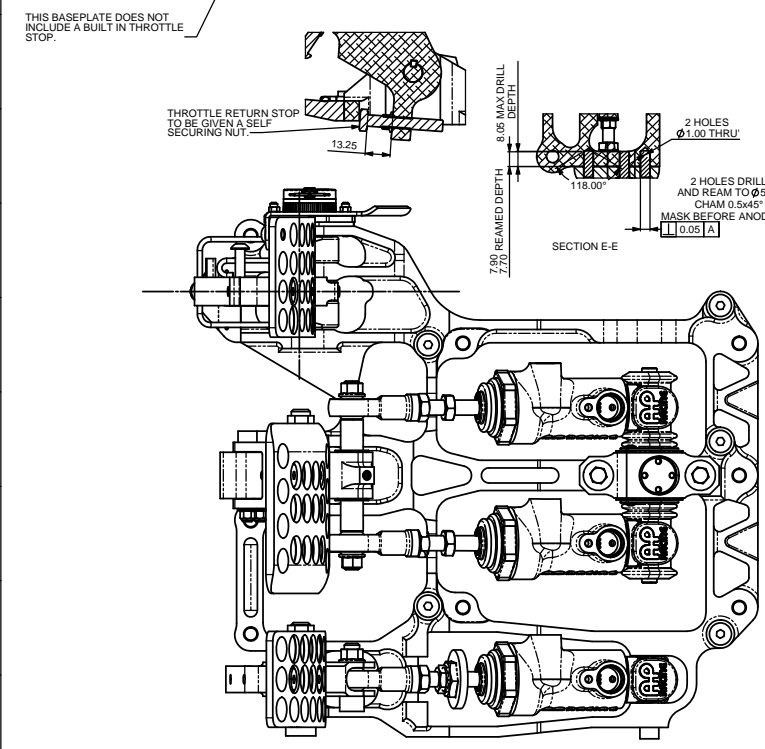
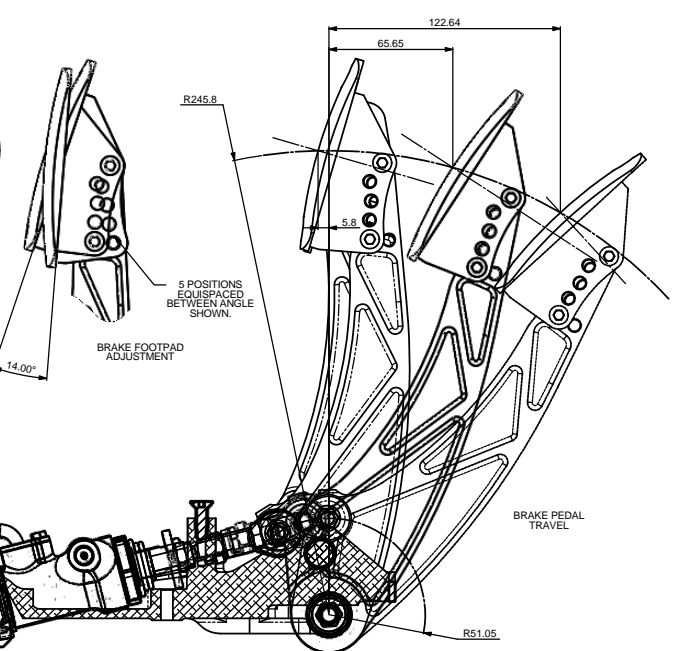
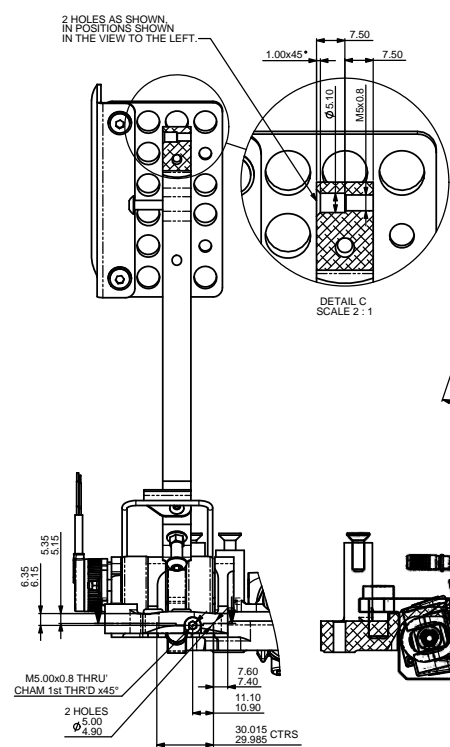
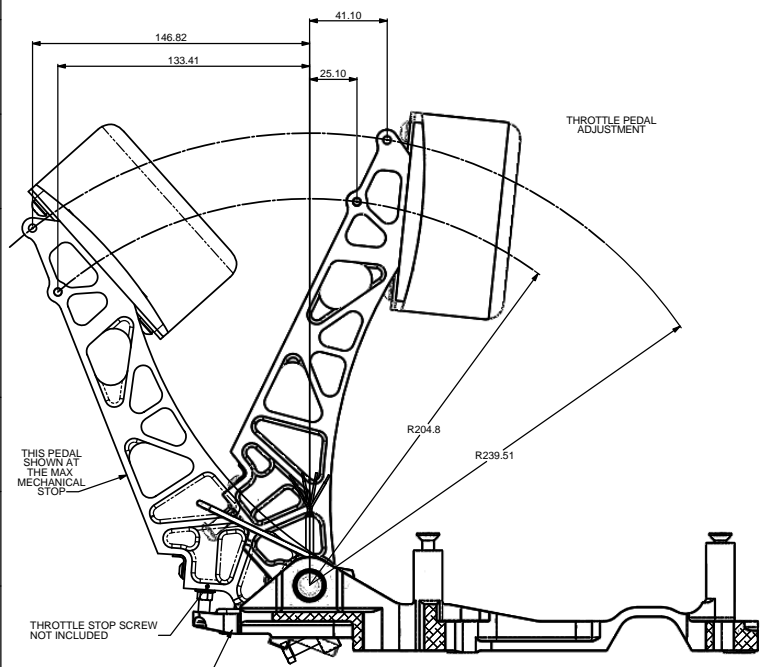
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Alterations

Date & No.	Particulars
#	#

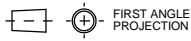
SEE SHEET 1 FOR ISSUE CHANGES.



SCALE 1:1	SHEET 2 OF 4
DRAWN Steve Thomas	
APPROVED	
DERIVED FROM CP5516-7	
TITLE	
FLOOR MTG REVERSE PULL TYPE	
PEDAL BOX + THROTTLE SENSOR	
DRG NO.	CP5516-88CD

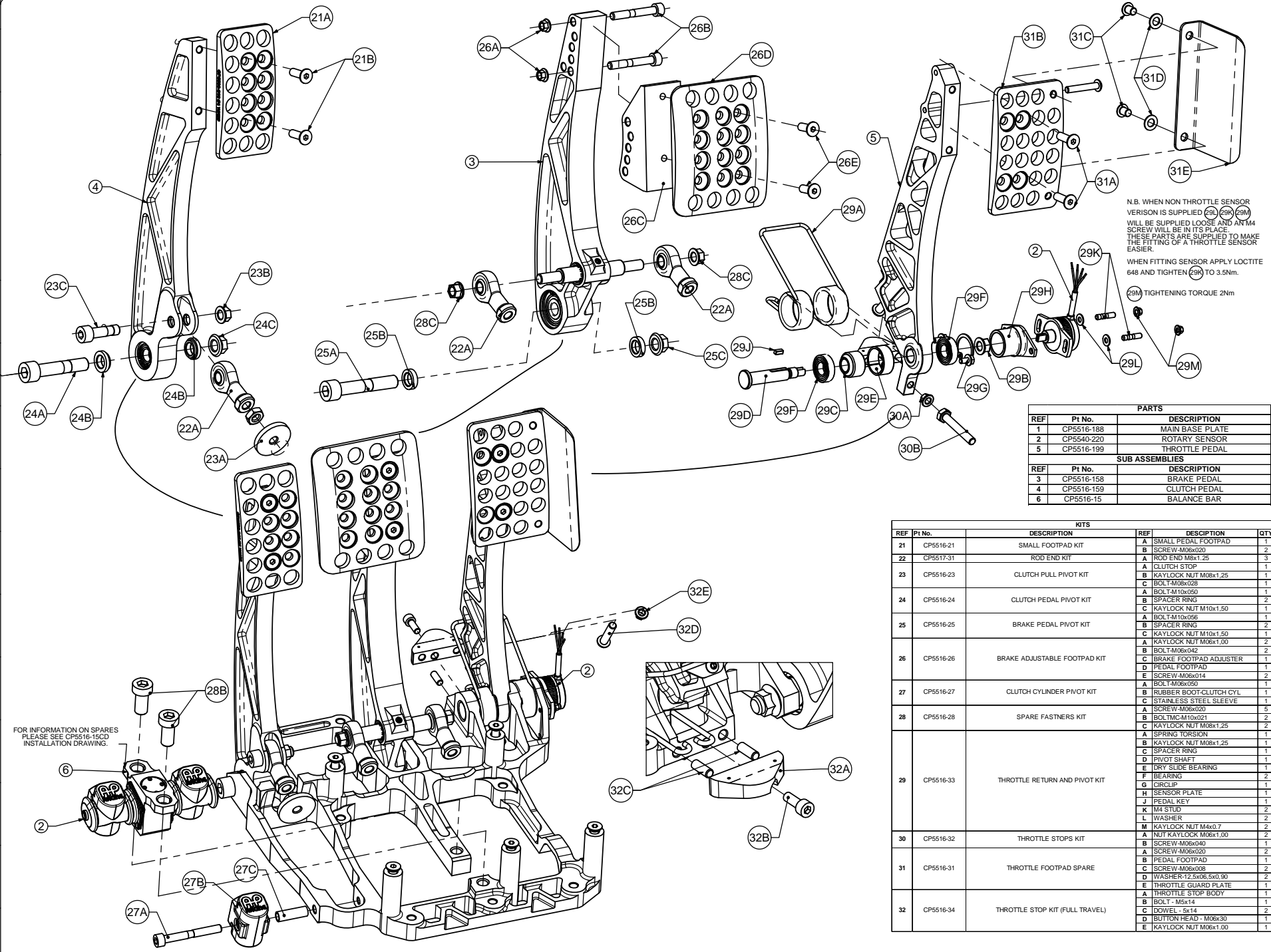
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N.B. WHEN NON THROTTLE SENSOR VERISON IS SUPPLIED (29B) (29K) (29M) WILL BE SUPPLIED LOOSE AND AN M4 SCREW WILL BE IN ITS PLACE. THESE PARTS ARE SUPPLIED TO MAKE THE FITTING OF A THROTTLE SENSOR EASIER.  
 WHEN FITTING SENSOR APPLY LOCTITE 648 AND TIGHTEN (29K) TO 3.5Nm.  
 (29M) TIGHTENING TORQUE 2Nm

PARTS		
REF	Pt No.	DESCRIPTION
1	CP5516-188	MAIN BASE PLATE
2	CP5540-220	ROTARY SENSOR
5	CP5516-199	THROTTLE PEDAL
SUB ASSEMBLIES		
REF	Pt No.	DESCRIPTION
3	CP5516-158	BRAKE PEDAL
4	CP5516-159	CLUTCH PEDAL
6	CP5516-15	BALANCE BAR

KITS					
REF	Pt No.	DESCRIPTION	REF	DESCRIPTION	QTY
21	CP5516-21	SMALL PEDAL FOOTPAD KIT	A	SMALL PEDAL FOOTPAD	1
			B	SCREW-M06x020	2
22	CP5517-31	ROD END KIT	A	ROD END M8x1.25	3
			B	CLUTCH STOP	1
23	CP5516-23	CLUTCH PULL PIVOT KIT	A	KAYLOCK NUT M08x1.25	1
			B	BOLT-M08x028	1
			C	BOLT-M10x050	1
			D	SPACER RING	2
24	CP5516-24	CLUTCH PEDAL PIVOT KIT	A	KAYLOCK NUT M10x1.50	1
			B	SPACER RING	2
			C	KAYLOCK NUT M10x1.50	1
			D	BOLT-M08x042	2
25	CP5516-25	BRAKE PEDAL PIVOT KIT	A	BOLT-M10x056	1
			B	SPACER RING	2
			C	KAYLOCK NUT M10x1.50	1
			D	BOLT-M08x042	2
26	CP5516-26	BRAKE ADJUSTABLE FOOTPAD KIT	A	SCREW-M06x014	2
			B	BOLT-M08x050	1
			C	RUBBER BOOT-CLUTCH CYL	1
			D	STAINLESS STEEL SLEEVE	1
27	CP5516-27	CLUTCH CYLINDER PIVOT KIT	A	SCREW-M06x020	5
			B	BOLT-M10x021	2
			C	KAYLOCK NUT M08x1.25	2
			D	SPRING TORSION	1
28	CP5516-28	SPARE FASTNERS KIT	A	BOLT-M10x021	1
			B	WASHER-12.5x06.5x0.90	2
			C	KAYLOCK NUT M08x1.25	1
			D	SPRING TORSION	1
			E	BOLT-M10x021	1
			F	WASHER	2
			G	KAYLOCK NUT M08x1.25	1
			H	SPACER RING	1
			I	DRY SLIDE BEARING	1
			J	BEARING	2
			K	CIRCLIP	1
			L	SENSOR PLATE	1
			M	PIVOT SHAFT	1
			N	PEDAL KEY	1
O	M4 STUD	1			
29	CP5516-33	THROTTLE RETURN AND PIVOT KIT	A	THROTTLE STOP BODY	1
			B	BOLT - M5x14	1
			C	DOWEL - 5x14	2
			D	BUTTON HEAD - M06x30	1
			E	KAYLOCK NUT M06x1.00	1
30	CP5516-32	THROTTLE STOPS KIT	A	SCREW-M06x040	1
			B	SCREW-M06x020	1
			C	PEDAL FOOTPAD	1
			D	SCREW-M06x008	2
			E	WASHER-12.5x06.5x0.90	2
31	CP5516-31	THROTTLE FOOTPAD SPARE	A	THROTTLE GUARD PLATE	1
			B	THROTTLE STOP BODY	1
			C	BOLT - M5x14	1
			D	DOWEL - 5x14	2
			E	BUTTON HEAD - M06x30	1
32	CP5516-34	THROTTLE STOP KIT (FULL TRAVEL)	A	THROTTLE STOP BODY	1
			B	BOLT - M5x14	1
			C	DOWEL - 5x14	2
			D	BUTTON HEAD - M06x30	1
			E	KAYLOCK NUT M06x1.00	1

FOR INFORMATION ON SPARES PLEASE SEE CP5516-15/CD INSTALLATION DRAWING.

Alterations		
Date & No.	Particulars	Drawn
#	#	#
	SEE SHEET 1 FOR ISSUE CHANGES.	

SCALE 1:1 SHEET 3 OF 4  
 DRAWN Steve Thomas  
 APPROVED  
 DERIVED FROM CP5516-7  
 TITLE FLOOR MTG REVERSE PLATE PEDAL BOX + THROTTLE SENSOR  
 DRG NO. CP5516-88CD

# A0 ASSEMBLY DRAWING

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## THROTTLE SENSOR DETAIL

### PERFORMANCE

#### Electrical

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

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

#### Mechanical

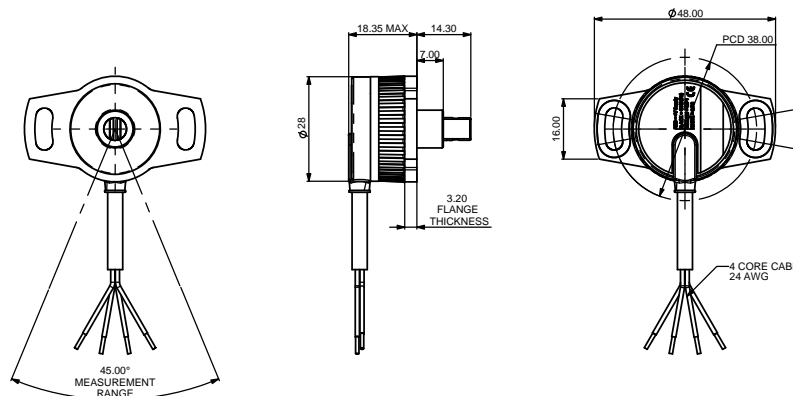
<b>Mechanical angle</b>	°	360, continuous
<b>Operating torque</b>	g-cm	120 Max
<b>Weight</b>	g	<35
<b>Mounting</b>		Use 2 x M4 socket head cap screws and M4 washer - maximum tightening torque 2Nm
<b>Phasing</b>		When shaft ident mark is facing toward the cable exit, output is at mid travel. The sensor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

#### Environment

<b>Protection class</b>		IP68 (to 2m depth for 1 hour)
<b>Life</b>		20 million operations (10 x 10 <sup>6</sup> cycles) of ±75°
<b>Dither life</b>		Contactless - no degradation due to shaft dither
<b>Operational temperature† °C</b>		-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 -55 to +140
<b>Storage temperature °C</b>		BS EN 60068-2-64:1995 Sec 8.4 (31.4gn rms) 20 to 2000Hz Random
<b>Vibration</b>		3m drop onto concrete
<b>Shock</b>		BS EN 61000-4-3:1999, to 100V/m, 80MHz to 1GHz and 1.4GHz to 2.7GHz (2004/108/EC)
<b>EMC immunity level</b>		

#### Other

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



#### 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.

#### Alterations

Date & No.	Particulars	Z-Rev	Issue
09/02	SEE SHEET 1 FOR ISSUE INFORMATION.		

SCALE 2:1	SHEET 4 OF 4
DRAWN Steve Thomas	
APPROVED	
DERIVED FROM	
TITLE	
CONTACTLESS ROTARY SENSOR	
DRG NO.	CP5516-88CD