

A0 INSTALLATION DRAWING

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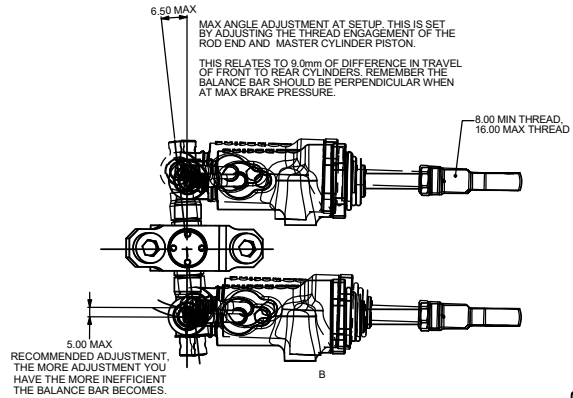
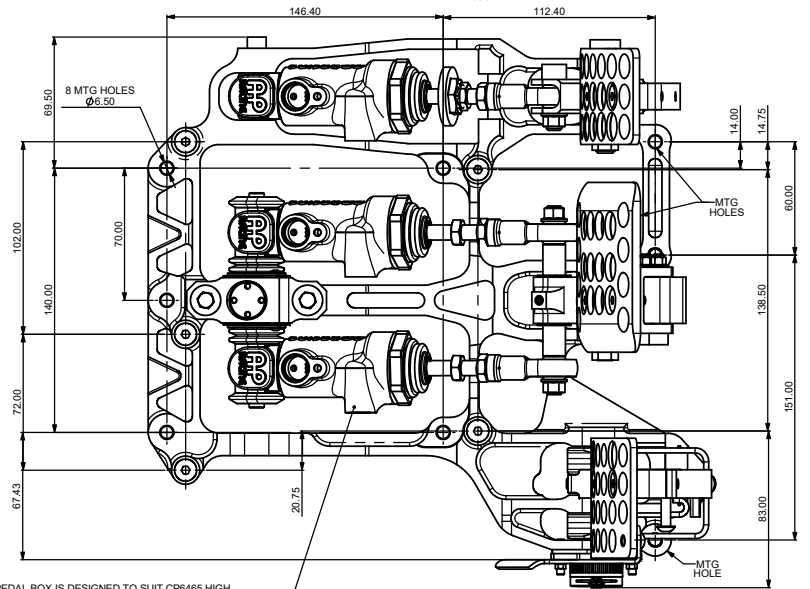
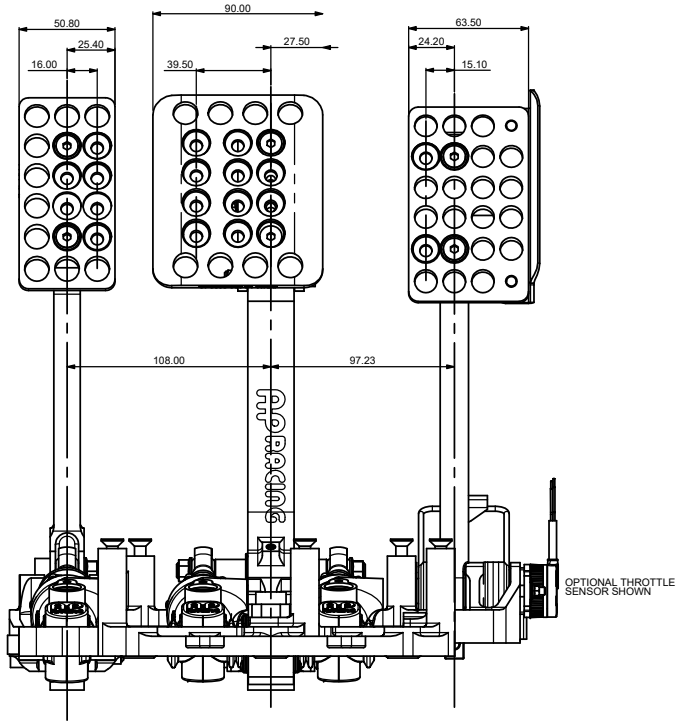
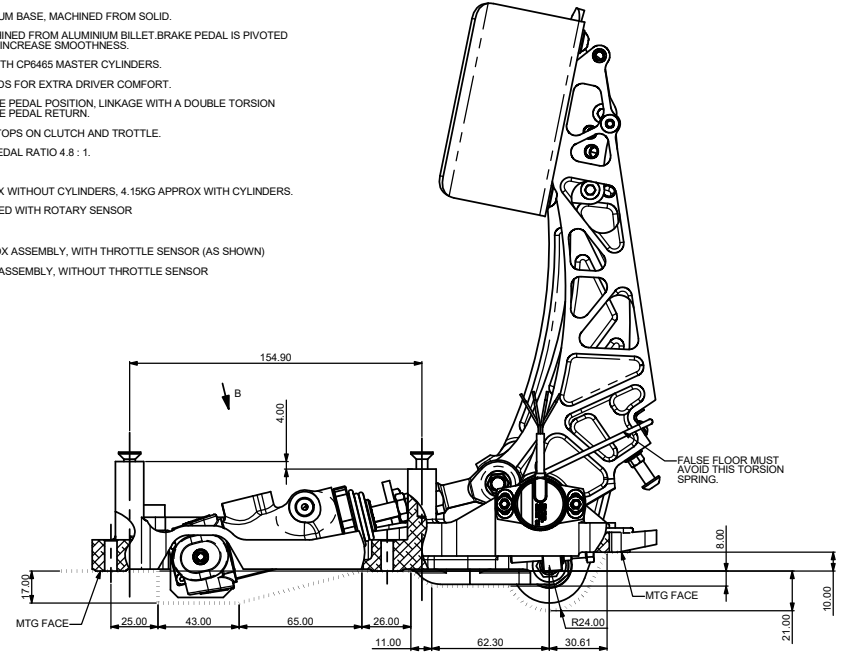
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GENERAL DESCRIPTION
THIS UNIQUE PULL TYPE DESIGN ALLOWS THE PUSHROD TO REMAIN STRAIGHT, ELIMINATING ALL SIDE LOADS MAKING IT THE MOST EFFICIENT PEDAL BOX ON THE MARKET. THE CYLINDERS ARE MOUNTED UNDER THE DRIVERS FEET FOR OPTIMUM SPACE UTILISATION 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 TROTTLER.
 - 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.

IMPORTANT BALANCE BAR LIFE INFORMATION - ABS APPLICATIONS
IT IS RECOMMENDED THAT THE BALANCE BAR, E-CLIPS AND SNAP RINGS ARE REPLACED AFTER 15,000km OF USE IN HIGH PRESSURE ABS APPLICATIONS. SEE SHEET 4 FOR RELEVANT PART NUMBERS.

PEDAL BOX IS DESIGNED TO SUIT CP6465 HIGH EFFICIENCY MASTER CYLINDERS. FEATURES:
- BUILT-IN LOW FRICTION CLEVIS.
- SPECIAL INLET TO ALLOW A LOW FITTING.
- 110x1.0 OUTLET PORT, SET AT 90 Deg.
- 25.4mm OF STROKE.
MASTER CYLINDERS ARE NOT SUPPLIED WITH THIS PEDAL BOX.

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

Alterations		Issue
Date & No.	Particulars	Author
1 06/22/2010/11	FIRST ISSUE	SAT
2 06/22/05/12/11	THROTTLE SENSOR PART No. CHANGED IN TABLE	SAT
3 06/60/29/11/12	CP5516-189 REPLACES CP5516-189	RB
4 06/22/19/02/13	MORE ACCURATE SENSOR DETAILS ADDED.	CDA
5 06/02/11/06/13	DRAWING NUMBER CHANGED.	CDA
6 06/985_01/30/01/14	SENSOR FIXING UPDATED	JN
7 24/04/14/07/022_04	DRAWING VIEWS UPDATED STUDS, WASHERS AND NUTS ADDED AS KIT TO -88	JN
8 12/01/15/07/022	THROTTLE STOP KIT ADDED	CH
9 12/02/15/07/022	THROTTLE STOP KIT NOTES UPDATED	CH
10 08/06/18/07/041	SHEET 4 THROTTLE PIVOT 290 TOLERANCES ADDED 3.06-3.00. SENSOR SHAFT DIMENSIONS ADDED 2.97/2.925	BAT R12
11 28/07/22/08/281_02	SHEET 1 IMPORTANT BALANCE BAR LIFE INFORMATION NOTE ADDED	B11 TS

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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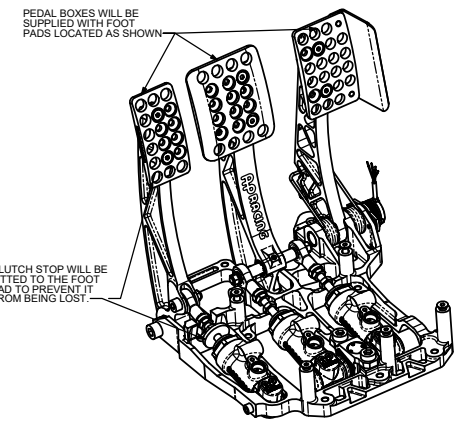
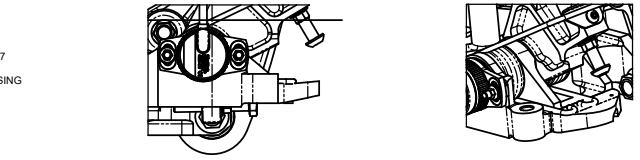
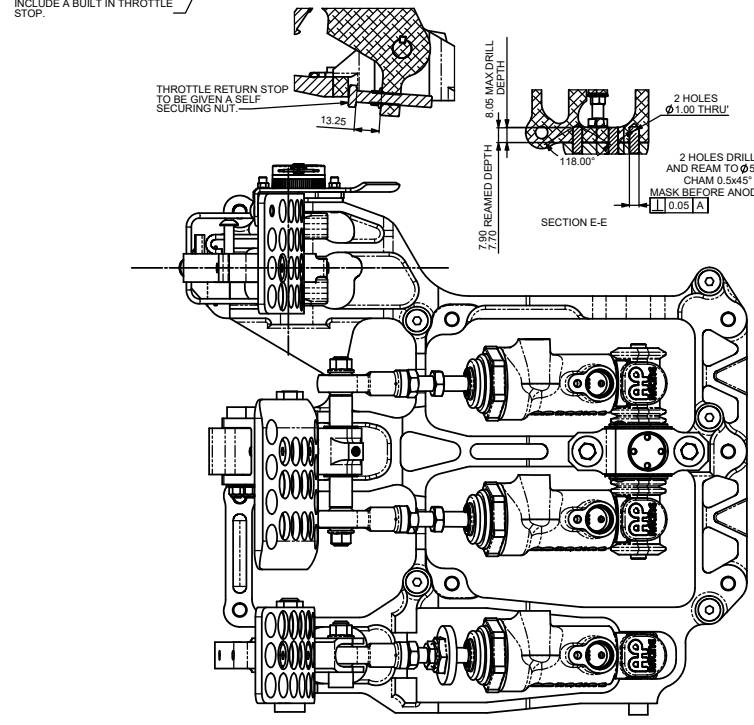
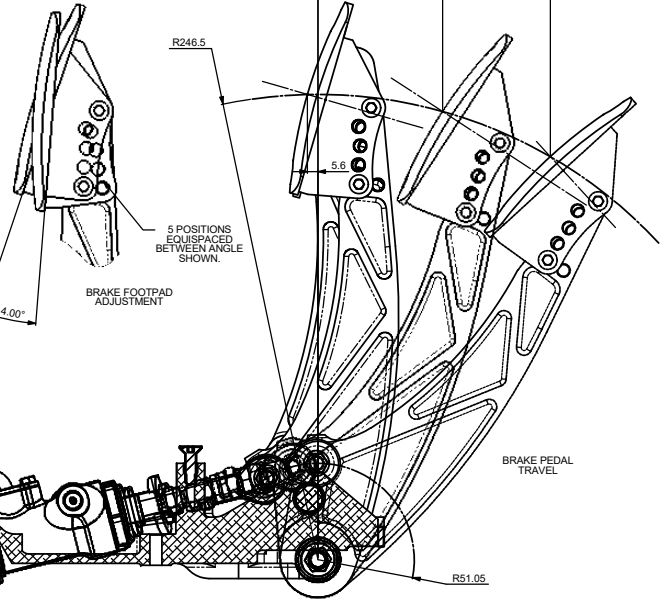
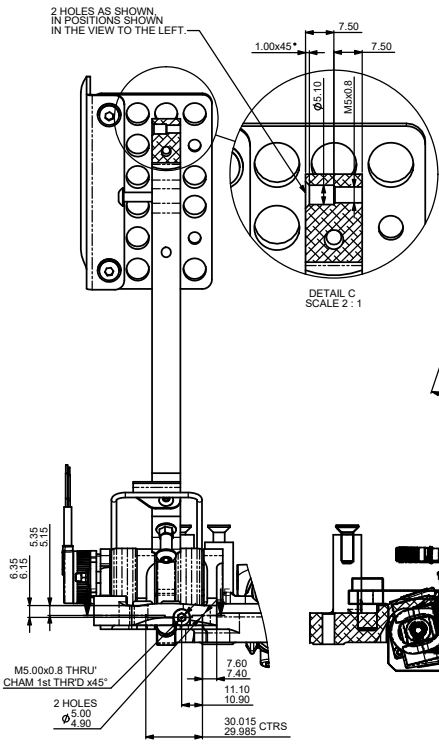
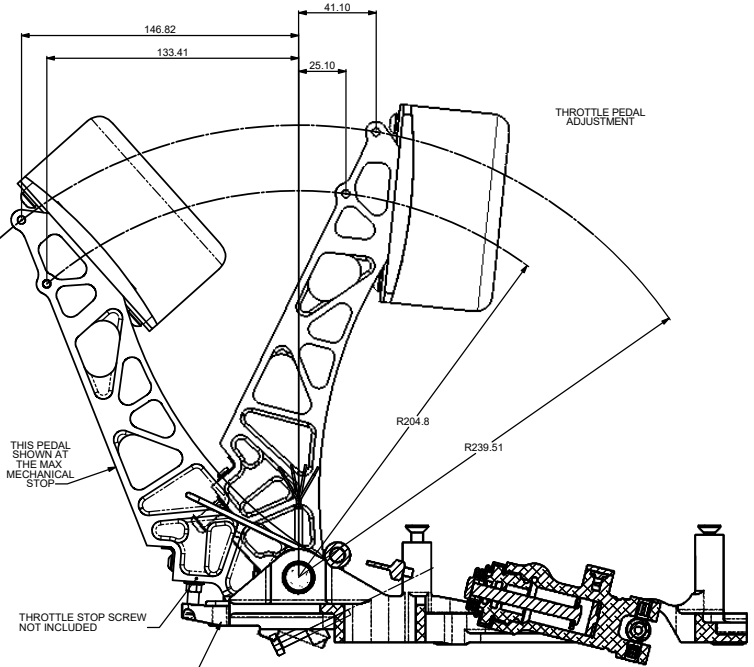


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ISOMETRIC VIEWS
SCALE 1:2

Alterations		Particulars	
Date & No.			
#	#	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

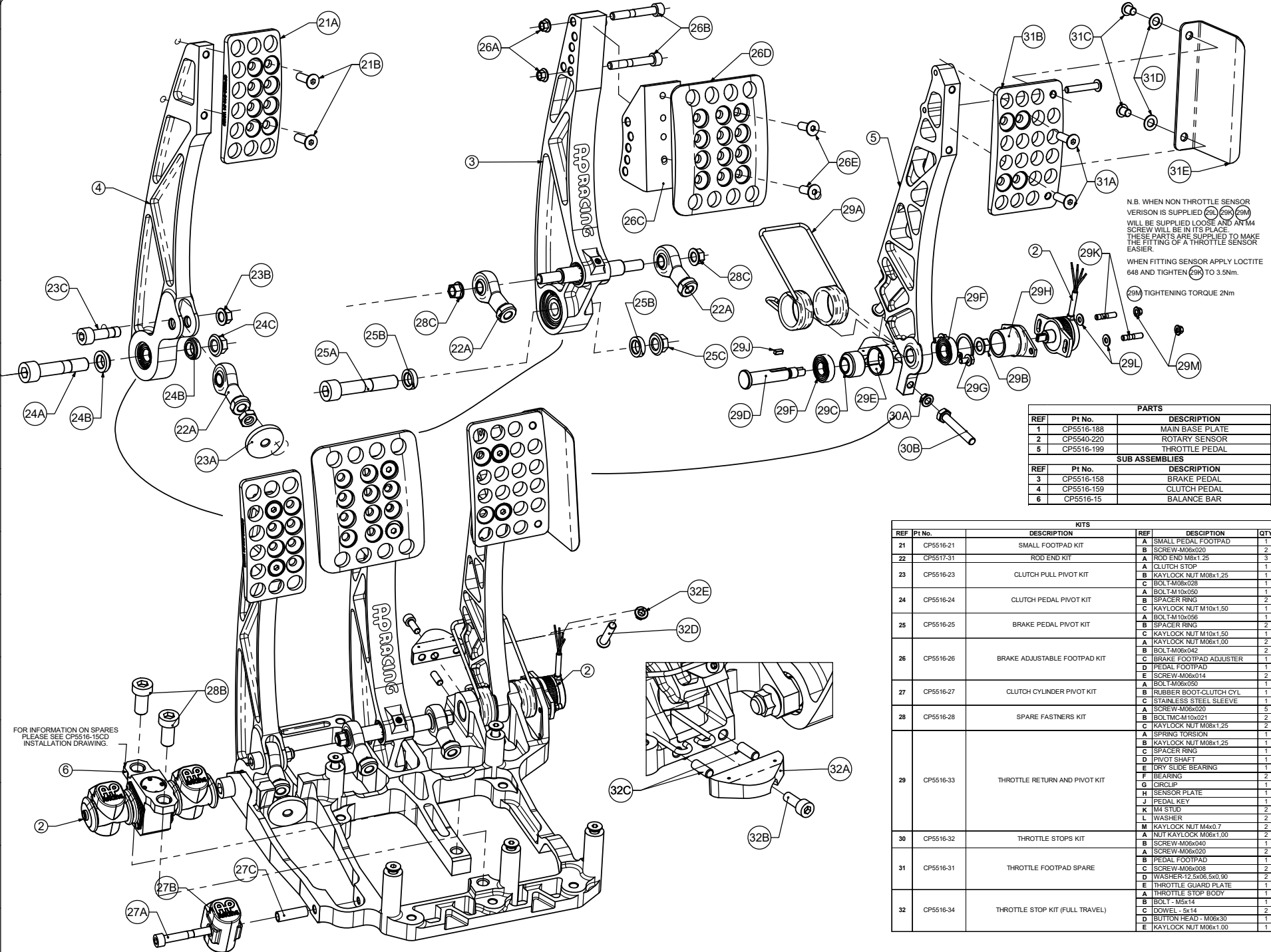
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N.B. WHEN NON THROTTLE SENSOR VERISON IS SUPPLIED (29J) (29K) (29M) WILL BE SUPPLIED LOOSE AND AN M4 SCREW WILL BE IN ITS PLACE. THESE PARTS ARE SUPPLIED TO MAKE THE FITTING OF A THROTTLE SENSOR EASIER.
 WHEN FITTING SENSOR APPLY LOCTITE 648 AND TIGHTEN (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	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
			C BOLT-M08x028 1
			A BOLT-M10x050 1
24	CP5516-24	CLUTCH PEDAL PIVOT KIT	B SPACER RING 2
			C KAYLOCK NUT M10x1.50 1
			A BOLT-M10x056 1
25	CP5516-25	BRAKE PEDAL PIVOT KIT	B SPACER RING 2
			C KAYLOCK NUT M10x1.50 1
			A KAYLOCK NUT M08x1.00 2
26	CP5516-26	BRAKE ADJUSTABLE FOOTPAD KIT	B BOLT-M08x042 2
			C BRAKE FOOTPAD ADJUSTER 1
			D PEDAL FOOTPAD 1
27	CP5516-27	CLUTCH CYLINDER PIVOT KIT	E SCREW-M06x014 2
			A BOLT-M08x050 1
			B RUBBER BOOT-CLUTCH CYL 1
28	CP5516-28	SPARE FASTNERS KIT	C STAINLESS STEEL SLEEVE 1
			A SCREW-M06x020 5
			B BOL TMC-M10x021 2
29	CP5516-33	THROTTLE RETURN AND PIVOT KIT	C KAYLOCK NUT M08x1.25 2
			A SPRING TORSION 1
			B KAYLOCK NUT M08x1.25 1
			C SPACER RING 1
			D PIVOT SHAFT 1
			E DRY SLIDE BEARING 1
			F BEARING 2
			G CIRCLIP 1
			H SENSOR PLATE 1
			J PEDAL KEY 1
			K M4 STUD 2
L WASHER 2			
30	CP5516-32	THROTTLE STOPS KIT	M KAYLOCK NUT M4x0.7 2
			A NUT KAYLOCK M06x1.00 2
			B SCREW-M06x040 1
31	CP5516-31	THROTTLE FOOTPAD SPARE	A SCREW-M06x020 2
			B PEDAL FOOTPAD 1
			C SCREW-M06x008 2
			D WASHER-12.5x06.5x0.90 2
			E THROTTLE GUARD PLATE 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 CP5516-15CD INSTALLATION DRAWING.

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

A0 ASSEMBLY DRAWING

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

Mechanical

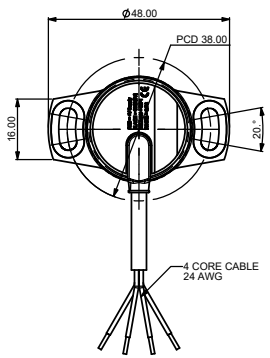
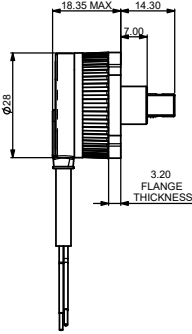
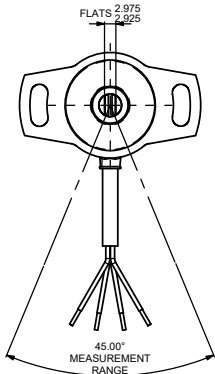
Mechanical angle	°	360, continuous
Operating torque	g-cm	120 Max
Weight	g	<35
Mounting		Use 2 x M4 socket head cap screws and M4 washer - maximum tightening torque 2Nm
Phasing		When shaft ident mark is facing toward the cable exit, output is at mid travel. The sensor housing allows for ±10° adjustment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

Environment

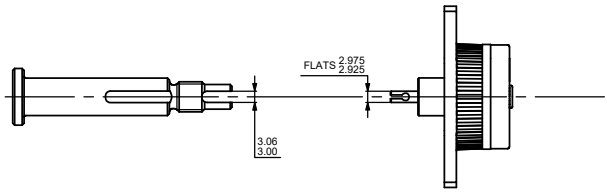
Protection class		IP68 (to 2m depth for 1 hour)
Life		20 million operations (10 x 10 ⁶ cycles) of ±75°
Dither life		Contactless - no degradation due to shaft dither
Operational temperature† °C		-40 to +140 (5V supply) -40 to +135.7 (9V supply) Derate upper temperature limit by 1.7°C for every 1V increase in supply: e.g. -40 to +100 @30V -55 to +140
Storage temperature °C		BS EN 60068-2-64:1995 Sec 8.4 (31.4gn rms) 20 to 2000Hz
Vibration		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.

Alterations		Particulars	Drawn	Checked
Date	No.			
08/02		SEE SHEET 1 FOR ISSUE INFORMATION.		

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