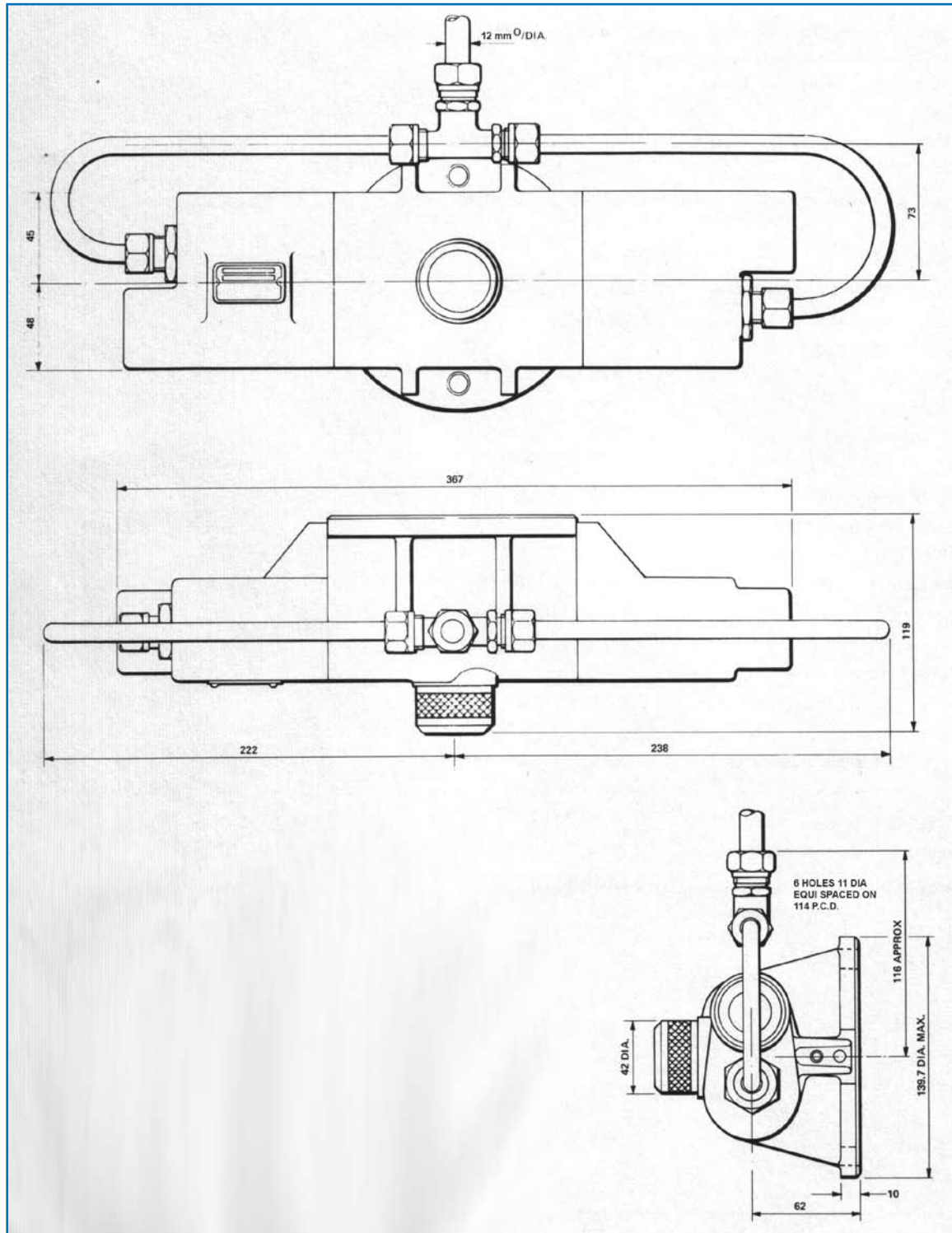


**PRODUCT DATA**  
**B35G STARTER UNIT**

Handraulic003/1\_07/07



## PRODUCT DATA

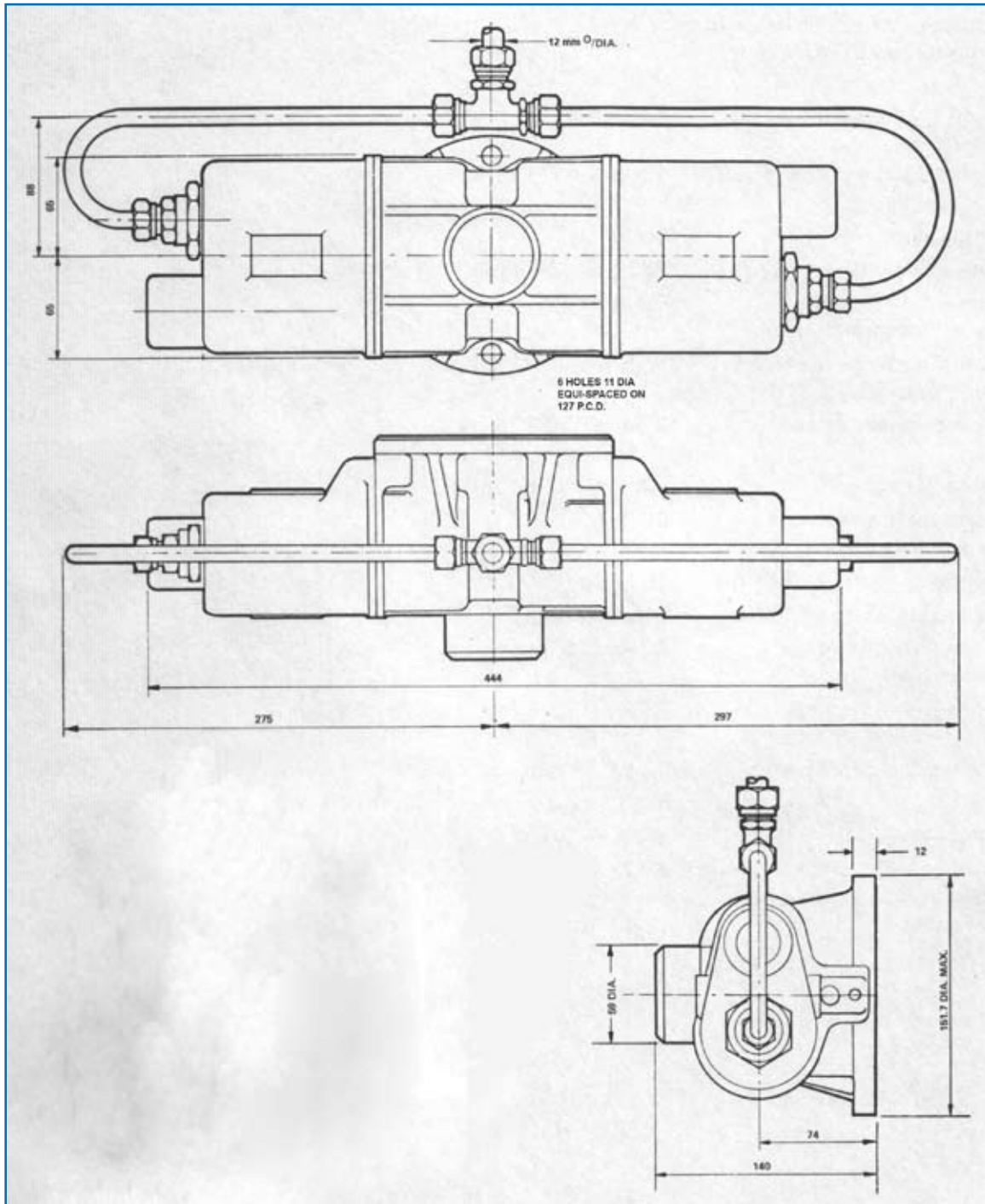
Handraulic003/2\_07/07

### B35G STARTER UNIT

1	Suitable for engines of clockwise rotation at free end and up to approximate bore size of	102 mm	4 in
2	Locked torque output at 293 bar	773 Nm	570 lb/ft
3	Cylinder bore	35 mm	1.378 in
4	Swept volume (2 cylinders)	1350 ml	8.23 in <sup>3</sup>
5	Pinion rotation (viewed from front cover)	Clockwise	
6	Pinion movement (axial) to engage dog	4.75 mm	0.187 in
7	Rack movement to engage dog	2.37mm	0.093 in
8	Total rack stroke	70 mm	2.76 in
9	Angular rotation after engagement	285°	
10	Pinion axial thrust 293 bar	802 kg	1764 lb
11	Springs (2 off) nominal installed load	19.36 kg	42.67 lb
12	Springs (2 off) nominal final load	38.44 kg	84.75 lb
13	Mounting flange diameter	139.70 mm (-0.03)	5.50 in (-0.001)
14	Mounting holes	6 x 11 mm	6 x 0.433 in
15	Mounting holes pitch circle diameter	114 mm	4.488 in
16	Unit weight	6.58 kg	14.5 lb

**PRODUCT DATA**  
**B50G STARTER UNIT**

Handraulic003/3\_07/07



## PRODUCT DATA

Handraulic003/4\_07/07

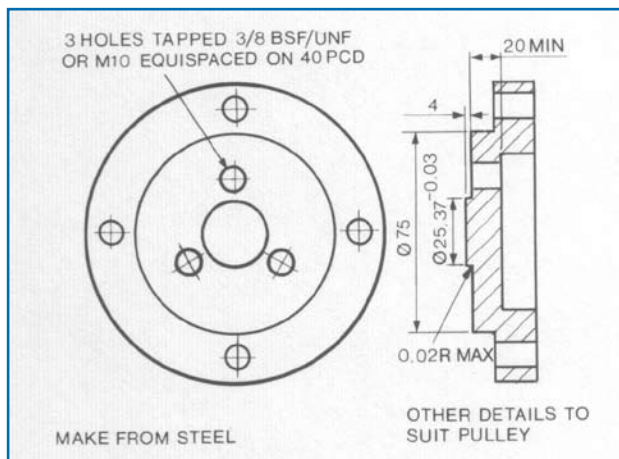
### B50G STARTER UNIT

1	Suitable for engines of clockwise rotation at free end and up to approximate bore size of	160 mm	6.25 in
2	Locked torque output at 293 bar	2264 Nm	1670 lb/ft
3	Cylinder bore	50 mm	2 in
4	Swept volume (2 cylinders)	6360 ml	21.96 in <sup>3</sup>
5	Pinion rotation (viewed from front cover)	Clockwise	
6	Pinion movement (axial) to engage dog	5.25 mm	0.21 in
7	Rack movement to engage dog	3.44mm	0.135 in
8	Total rack stroke	92.5 mm	3.64 in
9	Angular rotation after engagement	260°	
10	Pinion axial thrust 293 bar	1637 kg	3600 lb
11	Springs (2 off) nominal installed load	30 kg	66 lb
12	Springs (2 off) nominal final load	78 kg	171.6 lb
13	Mounting flange diameter	151.70 mm (-0.03)	5.972 in (-0.001)
14	Mounting holes	6 x 11 mm	6 x 0.433 in
15	Mounting holes pitch circle diameter	127 mm	5 in
16	Unit weight	12.47 kg	27.5 lb

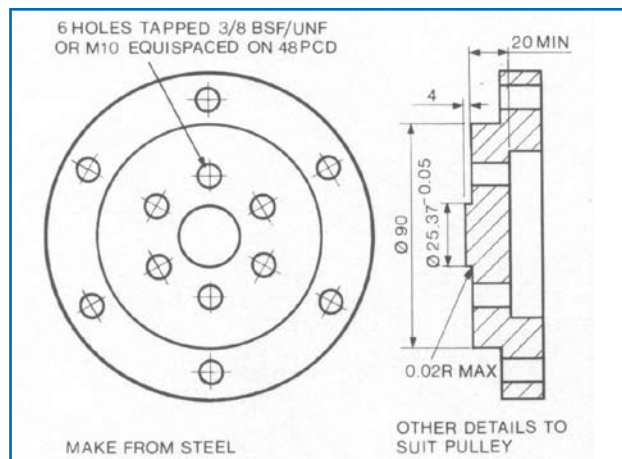
**PRODUCT DATA**

Handraulic003/5\_07/07

**ENGINE DOG ADAPTORS**



**Engine Dog Adaptor B35**



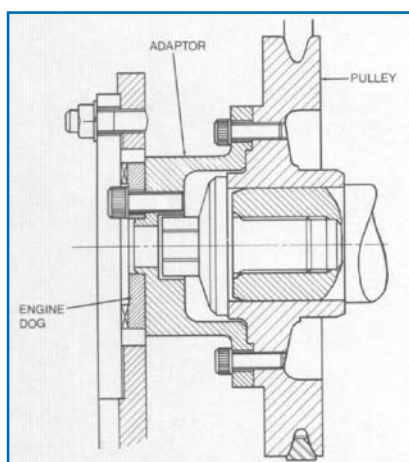
**Engine Dog Adaptor B50**

The starter torque is transmitted to the engine by engagement of the starter pinion with the engine dog attached to the crankshaft. The engine dog, which must be spigoted to the crankshaft of adaptor, can be fitted by either of the methods illustrated.

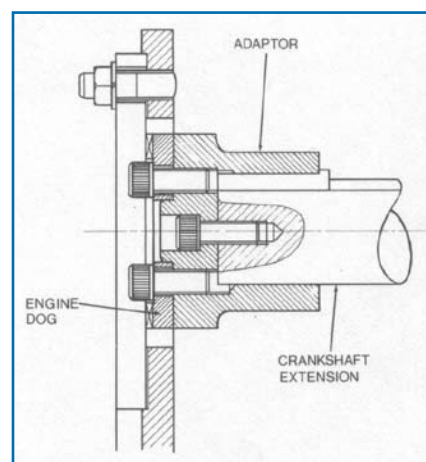
If an attachment similar to the design shown in figure 1 is adopted, it is necessary to check that the pulley is capable of transmitting the maximum torque produced by the starter. If a cast iron pulley is used it will be necessary to either substitute a steel replica or fit a steel adaptor, keyed to the crankshaft, which will transmit the starting torque and relieve the cast iron pulley of all load.

Care must be taken that the locating spigot is concentric with the crankshaft axis within 0.075mm. This can easily be checked with a dial indicator; the run-out must not exceed 0.15mm total clock reading. Check also that the dog abutment face is square within 0.15mm total clock reading at 45mm radius.

If it is impossible to fit the engine dog to an adaptor or to the pulley, it is sometimes possible to turn a spigot on the end of the crankshaft or crankshaft extension.



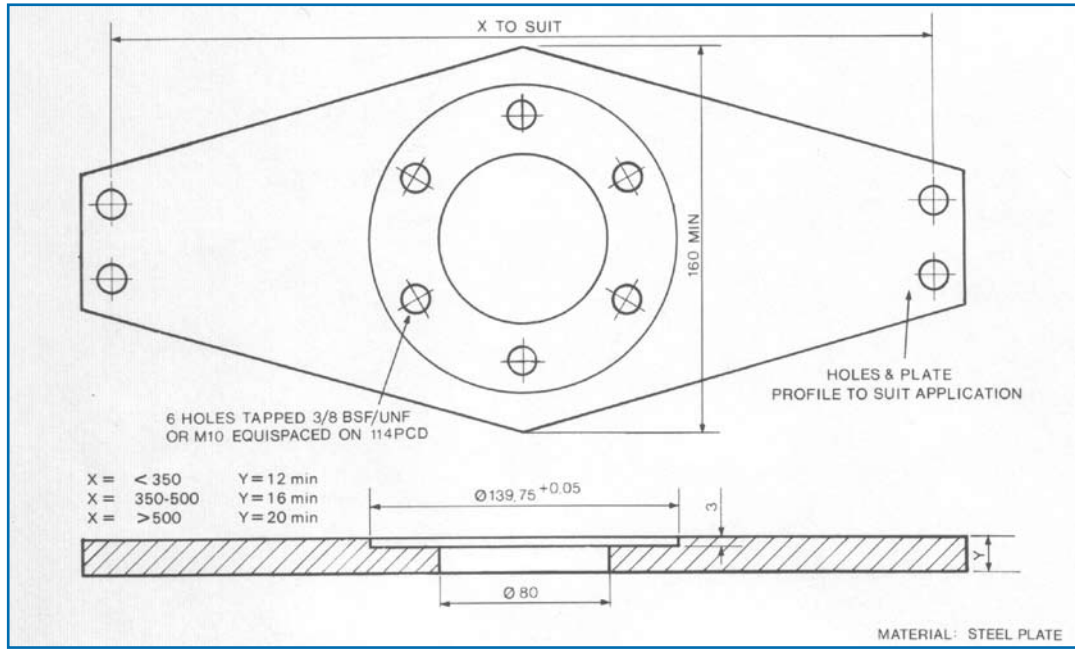
**Figure 1 Engine Dog Adaptor mounted on pulley**



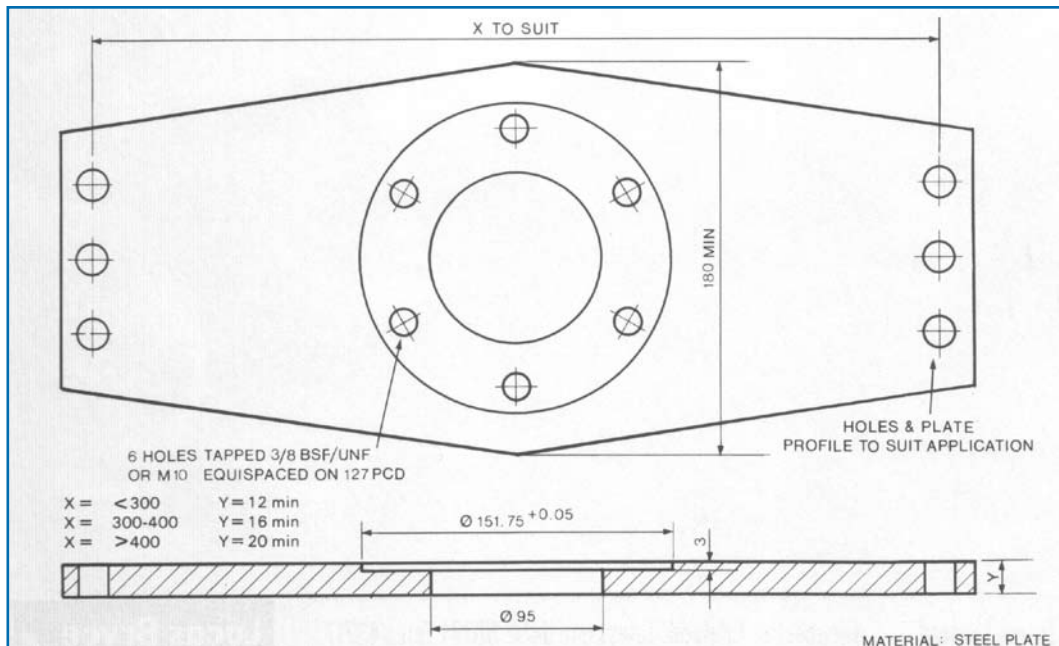
**Figure 2 Engine Dog Adaptor mounted on shaft**

**PRODUCT DATA**  
**MOUNTING PLATES**  
**B35G**

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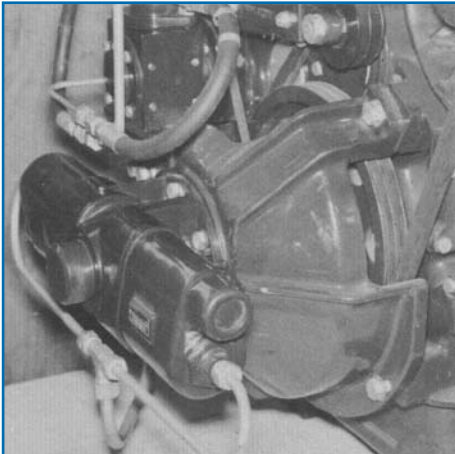
**B50G**



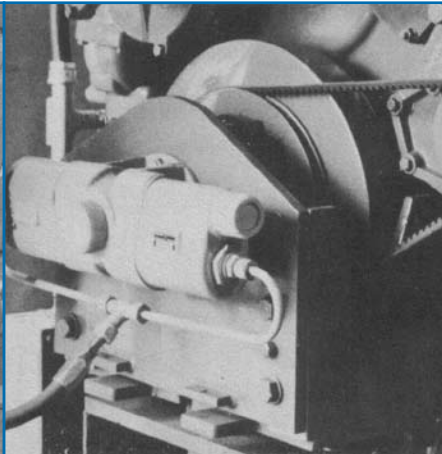
## PRODUCT DATA

### ATTACHMENT METHOD

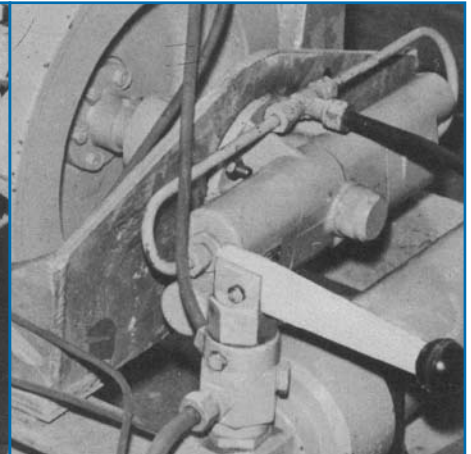
Handraulic003/7\_07/07



**Figure 1.**  
Method of attachment using a special casting supplied by the engine builder.



**Figure 2.**  
Method of attachment using a fabricated bracket secured to the engine.



**Figure 3.**  
Alternative fabricated bracket secured to the engine bearers. (Suitable for rigid mounted engines only)

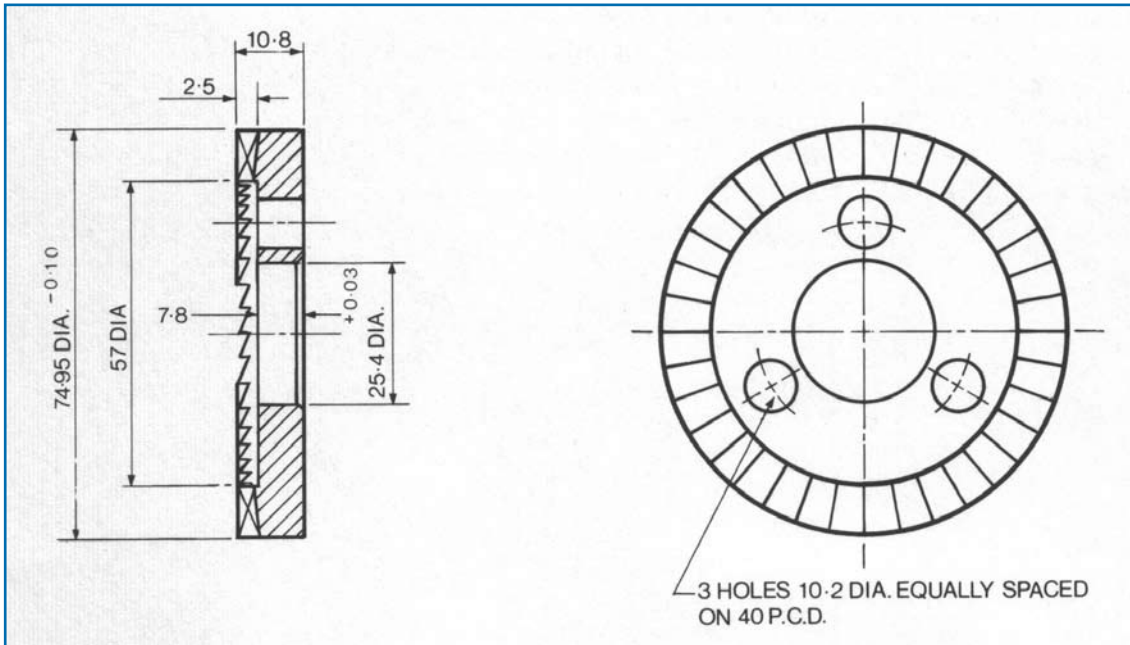
In most cases it will be possible to attach the Handraulic Starter to the engine by the methods shown in Figures 1 and 2.

If this is not possible, then the method shown in Figure 3 can be employed providing the engine is rigidly and not flexibly mounted. (Lucas Bryce will provide technical advice on flexible mounted engine applications)

In each case it is essential to ensure that the bracket can withstand the maximum starting torque and that it does not deflect axially more than 0.25mm when the starter is operated.

**PRODUCT DATA**  
**ENGINE DOG**  
**B35G**

Handraulic003/8\_07/07



**B50G**

