

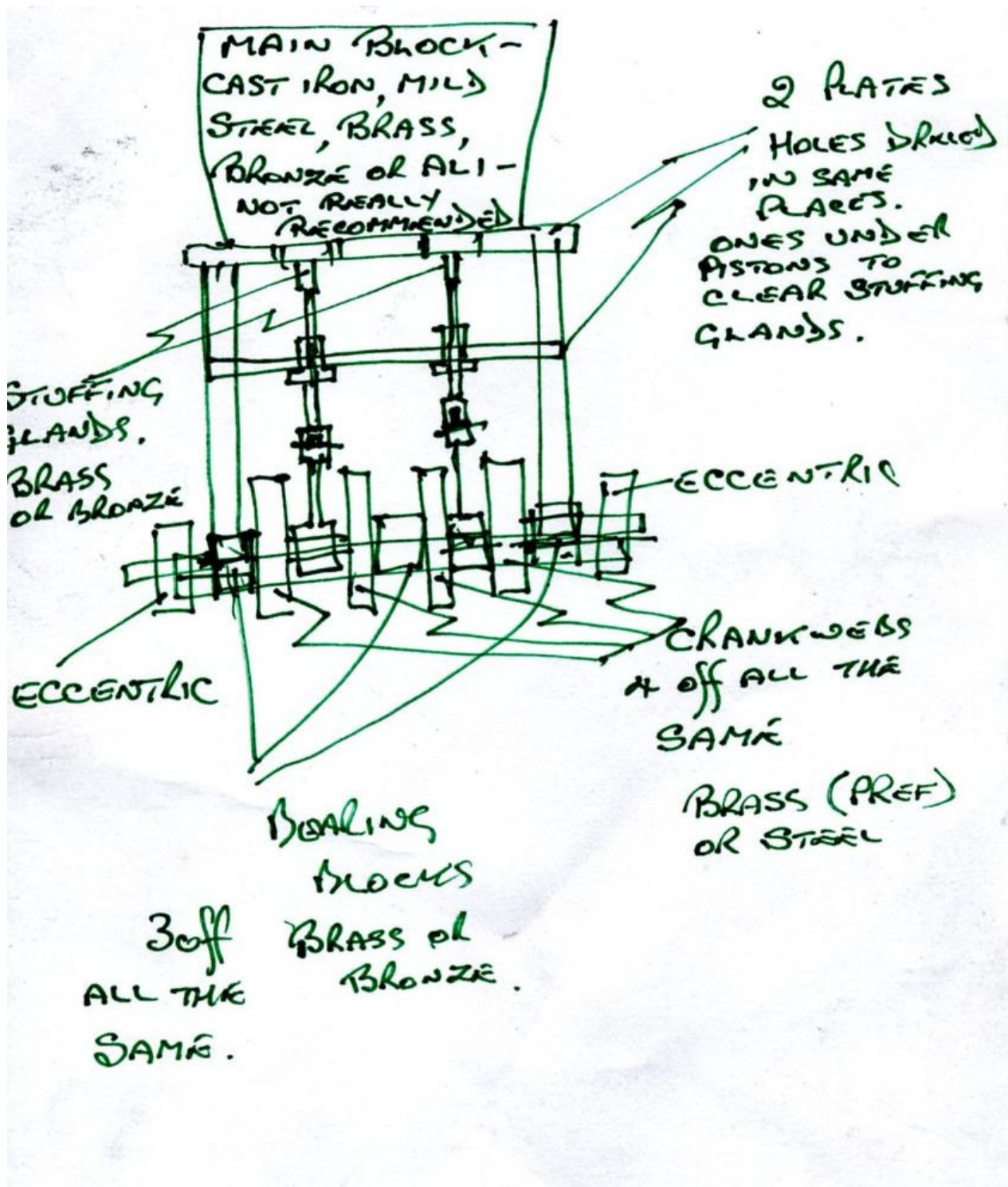
APPENDIX 1 – Design Sketches

This appendix contains the full size sketches referred to in the main text of the build instructions.

| <u>Pic #</u> | <u>Title</u> |
|--------------|--|
| 01 | – Overall Engine Layout |
| 02 | – Crank Layout |
| 03 | – Main Block |
| 13 | – Lapping |
| 21 | – Top Cap and Packing Glands |
| 22 | – Piston and Piston Rod |
| 26 | – Crosshead |
| 26A | – Need for Crosshead |
| 27 | – Block Port Drilling |
| 31 | – Block Mounting Plate |
| 33 | – Crosshead Guide Rods and Piston Rod Update |
| 35 | – Bearing Blocks |
| 41 | – Baseplate |
| 46 | – Flywheel and Crankwebs |
| 50 | – Crankweb Drilling Jig |
| 56 | – Crankshaft Shafting |
| 60 | – Eccentrics |
| 66 | – Support Columns and Conrods |
| 71 | – Piston Valve Packing Gland |
| 75 | – Piston Valve Block |
| 91A | – Modified Spool Valve |
| 102 | – Eccentric Strap and Connector Joint |
| 108 | – Piston Valve Packing Gland |
| 110 | – Pipe Flanges |
| 135 | – Steam Control Main Block |
| 144 | – Control Block Parts |
| 152 | – Lubricator |
| 156 | – Timing the Bottom End |
| 157 | – Timing the Top End |

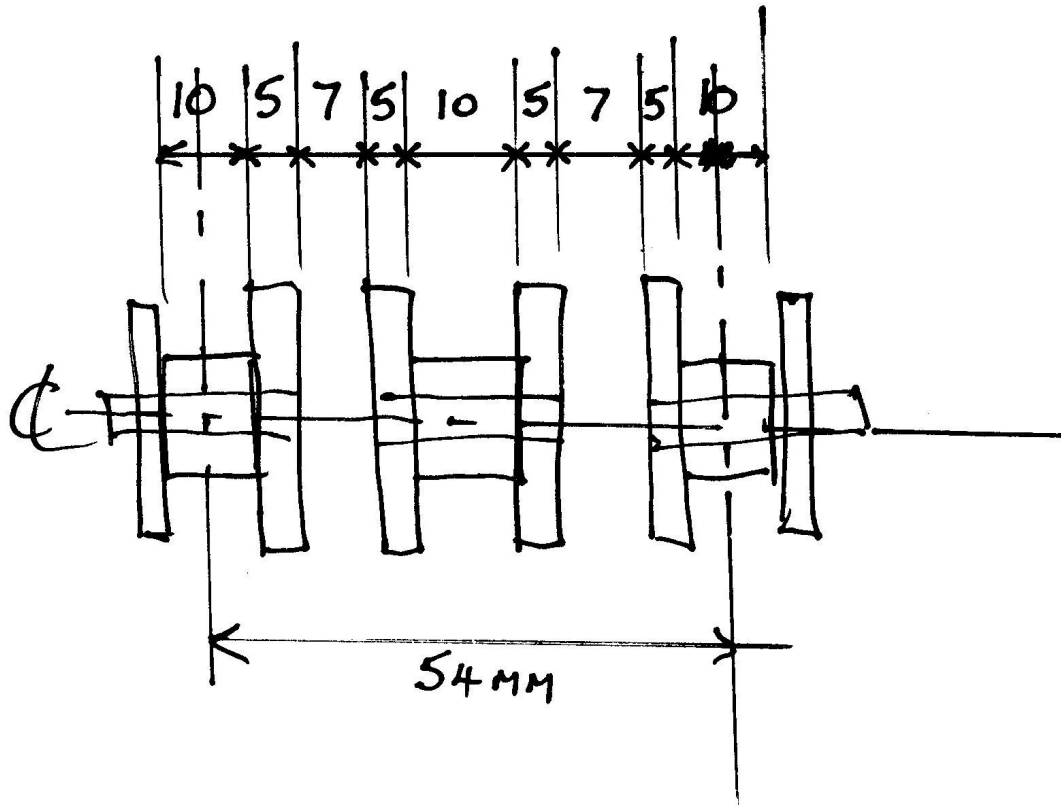
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01 – Overall Layout



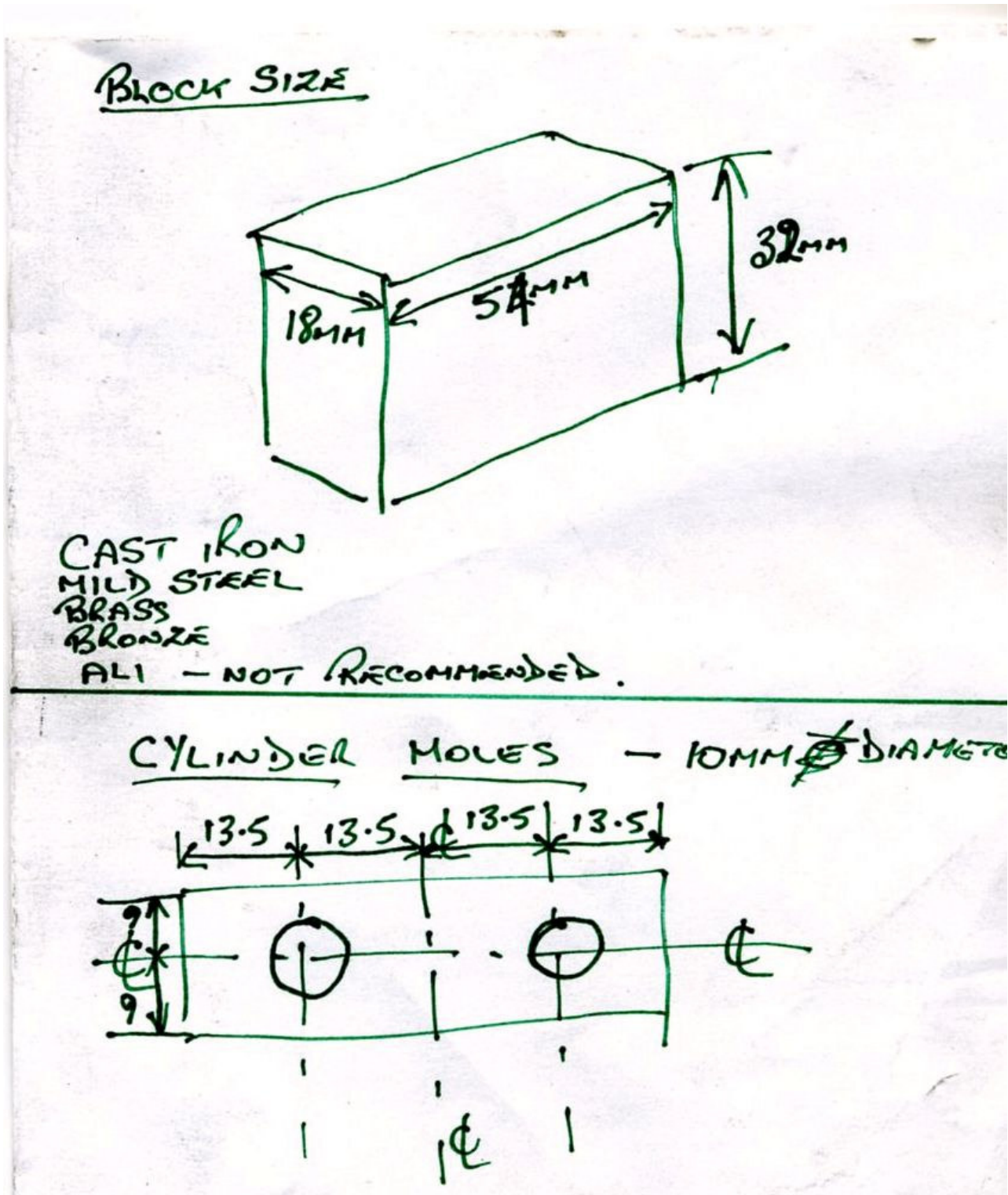
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02 – Crank Layout

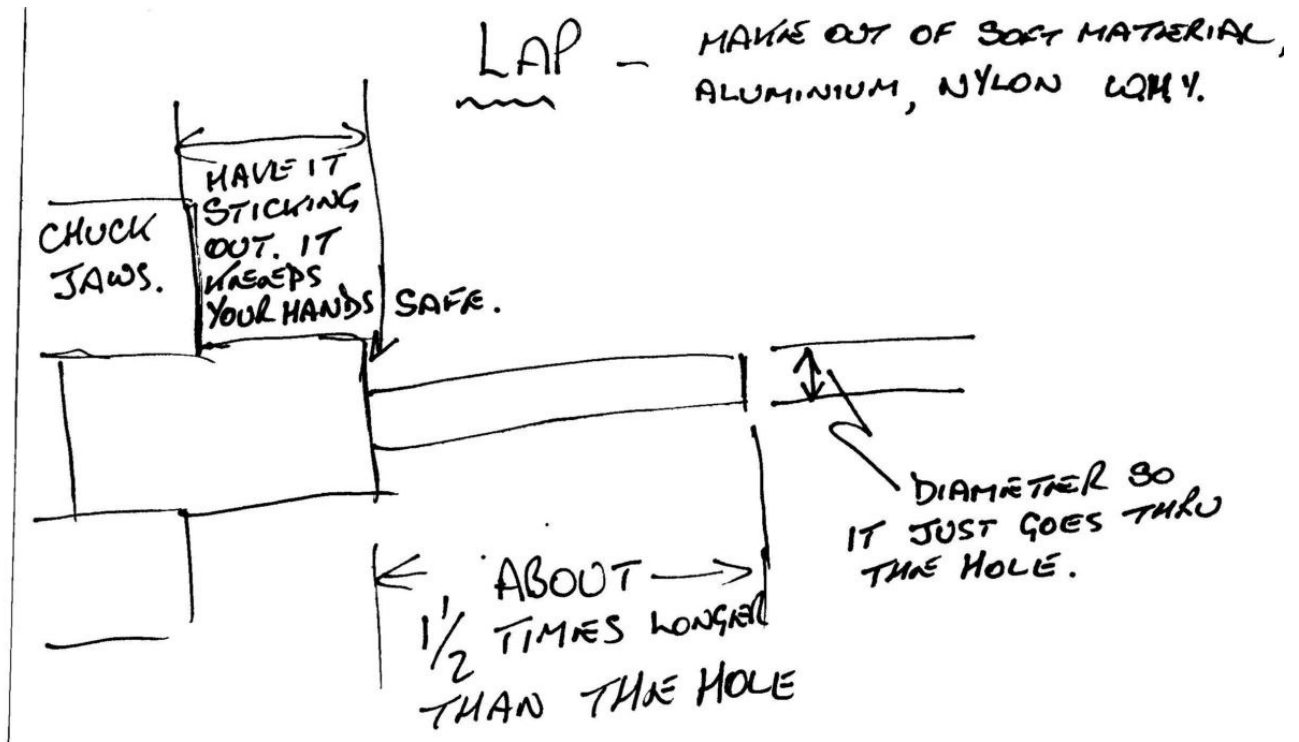


CRANK LAYOUT

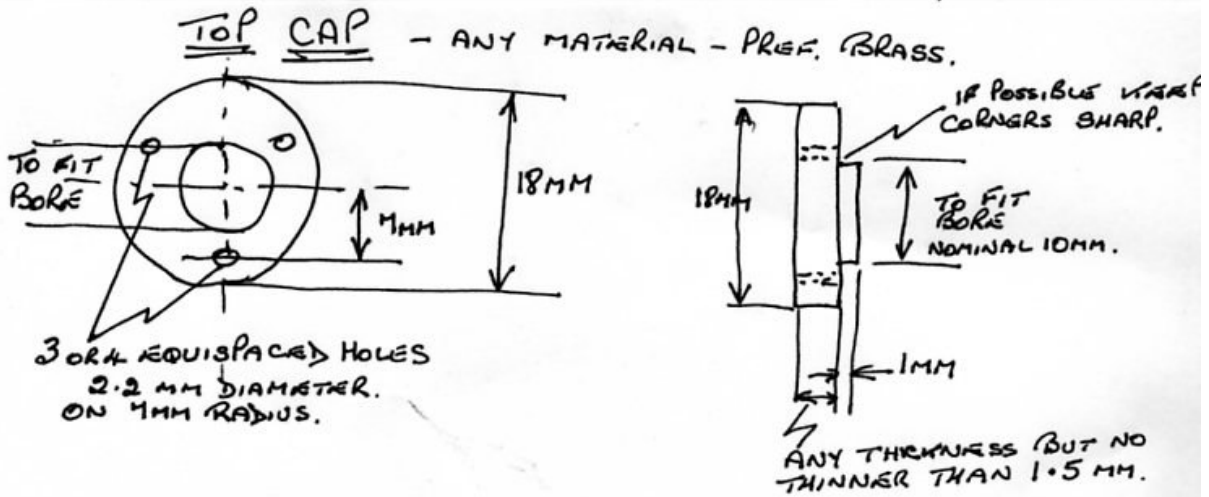
03 – Cylinder Block Layout



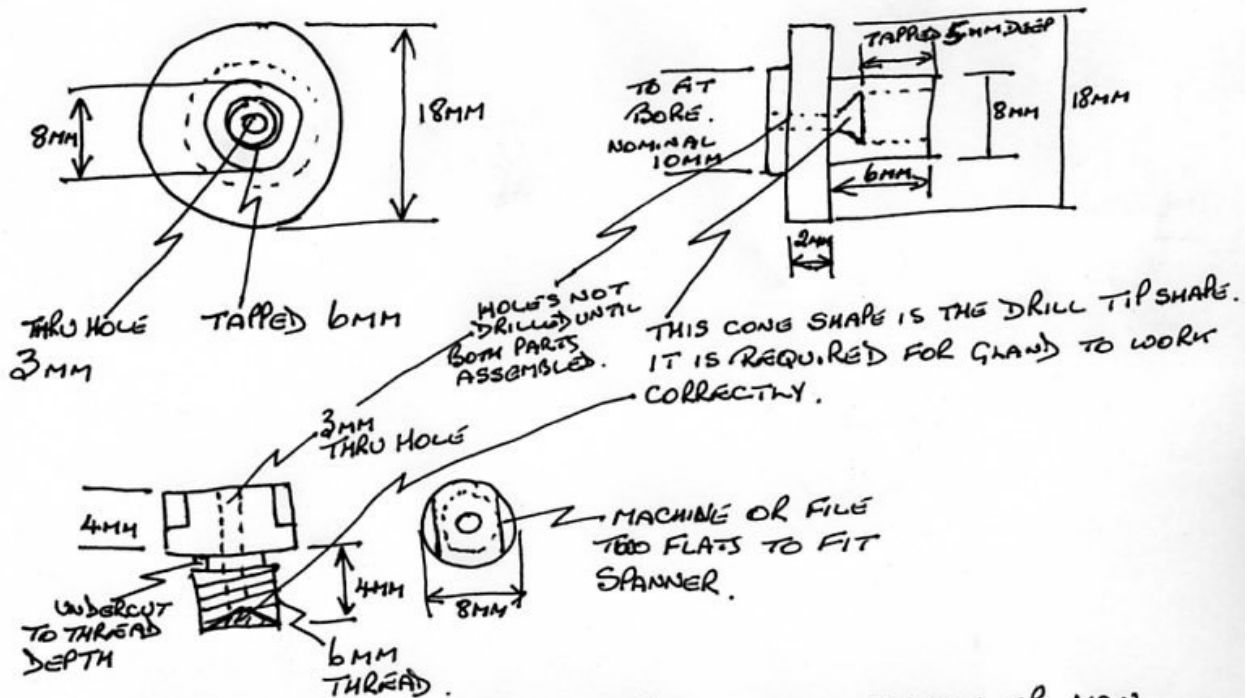
13 - Lapping



21 – Top Cap and Packing Glands



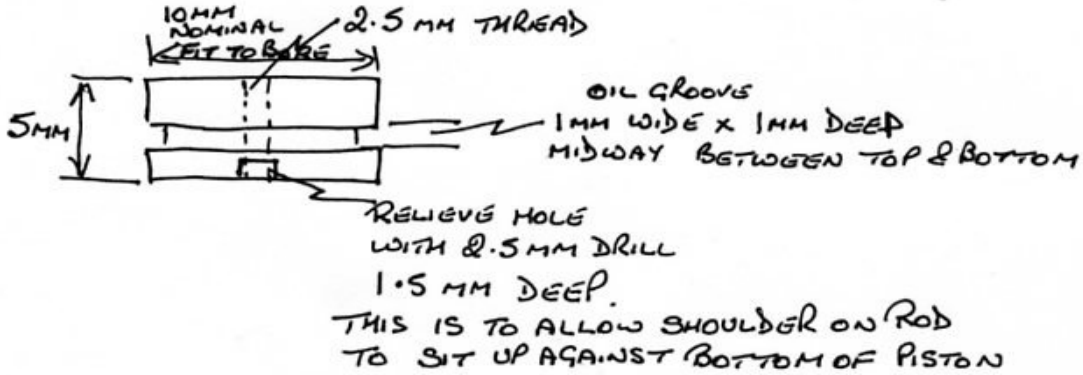
PACKING GLANDS - BRASS OR BRONZE.
 SAME MOUNTING HOLE SPACING AS TOP CAPS.



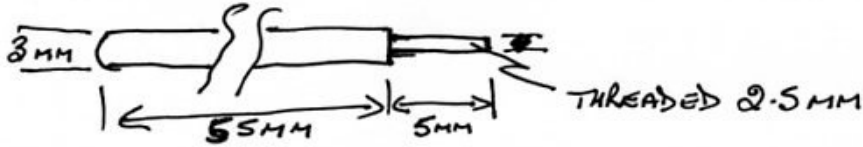
MAKE ADJUSTING SCREWS FIRST. THEN CHUCK UP MAIN
 PACKING GLANDS MATERIAL AND MACHINE THREADED END FIRST.
 DO NOT REMOVE FROM CHUCK. ASSEMBLE ADJUSTING SCREW
 IN MAIN GLAND AND TIGHTEN. THEN DRILL 3MM THRU HOLE.
 KEEP THEM AS MATCHED PAIRS. TURN GLAND AROUND IN CHUCK
 AND ~~FINISH~~ FINISH OFF MACHINING.

22 - Piston and Piston Rod

PISTONS - BRASS OR BRONZE

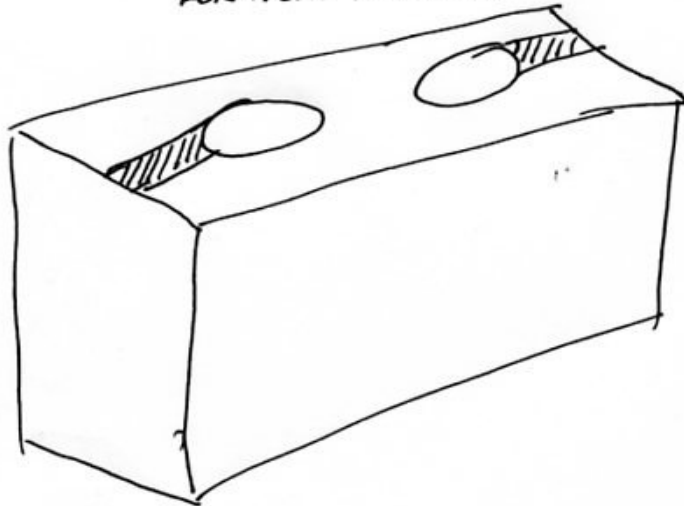


PISTON ROD - 3MM DIAM. STAINLESS STEEL OR SILVER STEEL

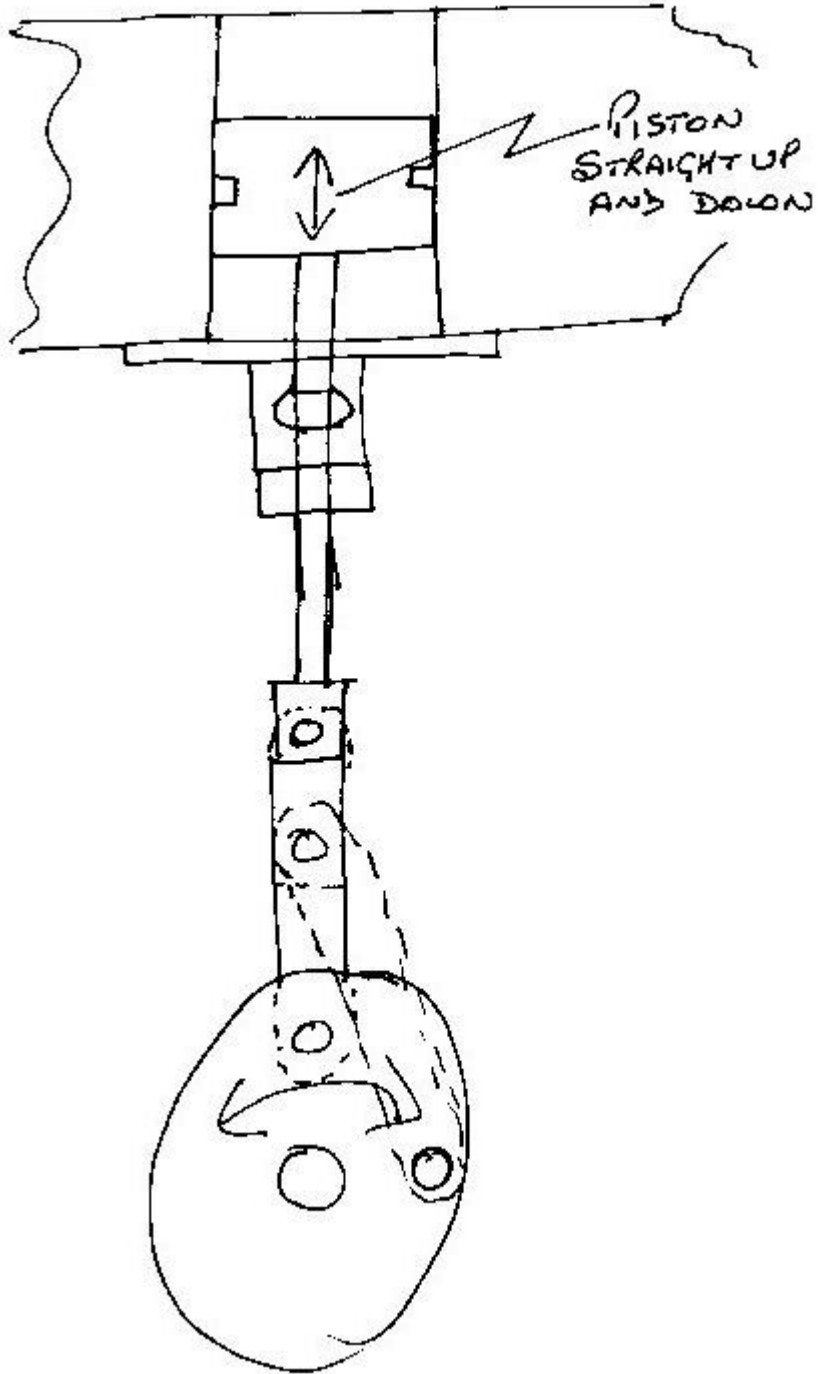


THE 55MM ROD LENGTH IS THERE TO ALLOW FOR MODIFICATION AS AND WHEN NEXT AREA IS FINISHED.

WARNING - KEEP AWAY FROM HATCHED AREAS BOTH TOP AND BOTTOM. THESE AREAS ARE RESERVED FOR PORT DRILLING

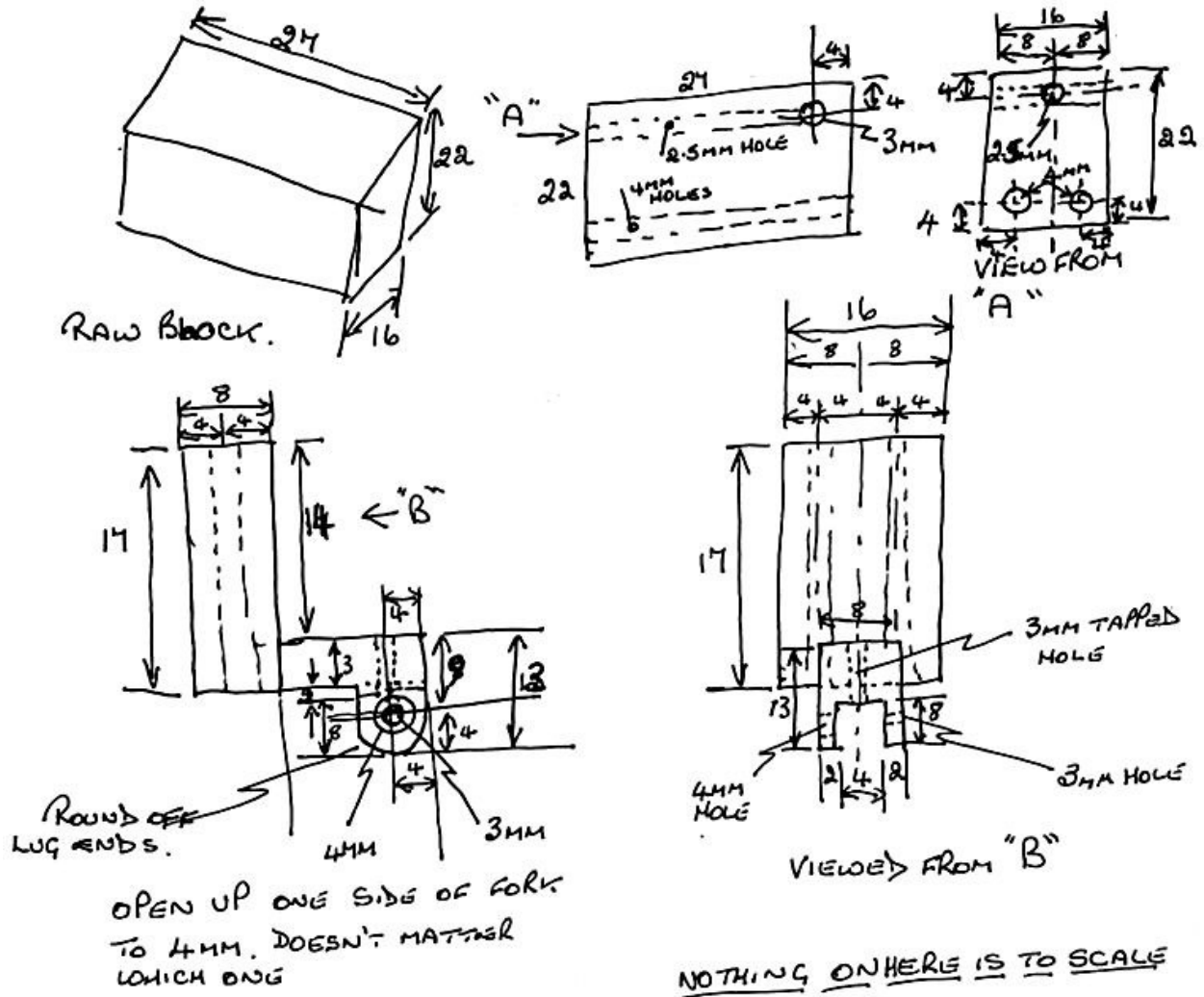


26A – Purpose of Crosshead



26 – Crosshead

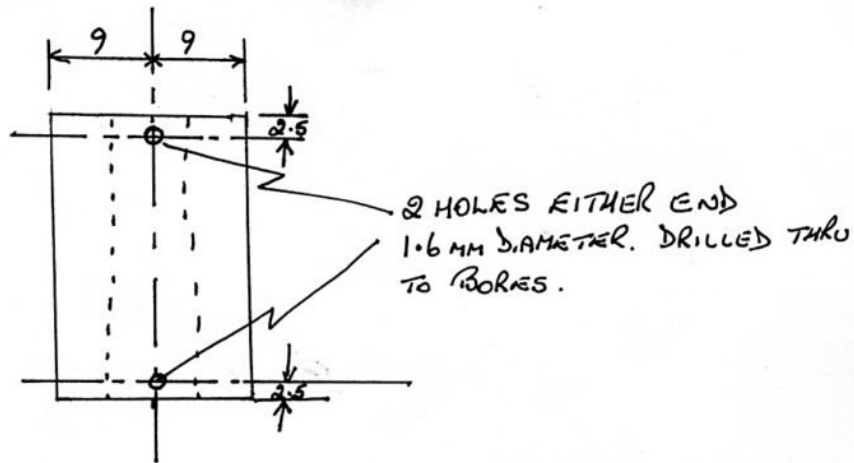
CROSSHEAD – BRASS OR BRONZE – 2 off



ALL THE THRU HOLES SHOULD BE DRILLED BEFORE ANY OTHER MACHINING IS CARRIED OUT. AFTER THE FORK IS MACHINED OPEN OUT ONE SIDE ONLY TO 4MM. IF USING A MACHING 4MM REAMER FOR LONG HOLES. DO IT AS YOU DRILL THE HOLES. THE 2.5MM HOLE ISN'T TAPPED OUT UNTIL ALL MACHING IS FINISHED - ENSURE TOTALLY SQUARE AND PARALLEL TO 4MM VERTICAL HOLES. THE HOLE DOESN'T HAVE TO GO ALL THE WAY TO THE CROSS DRILLED HOLE, IT CAN BE STOPPED ABOUT 2MM SHORT (ABOUT 19MM DEEP)

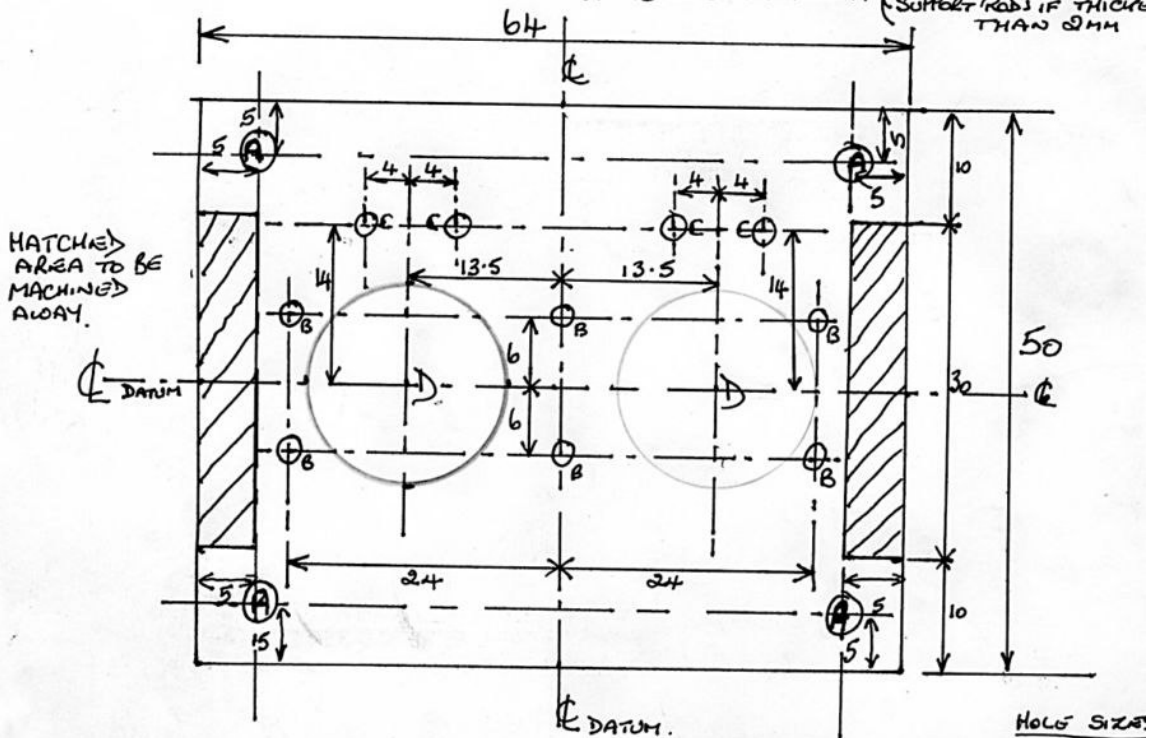
27 – Block Port Drilling

Block Port Drilling



31 – Block Mounting Plate

Block Mounting Plate – BRASS OR STEEL – 2MM THICK.
 SUGGEST DON'T GO ANY THINNER BUT
 UP TO 2.5 MM THICK. (NEED TO ADJUST ON
 SUPPORT RODS IF THICKER
 THAN 2MM)



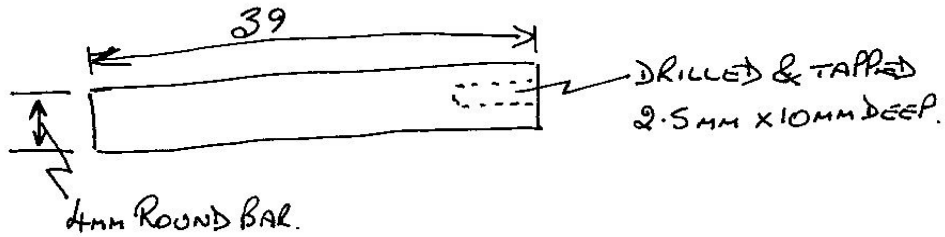
NOT TO SCALE – GO FROM DIMENSIONS
 NOT WHAT IT LOOKS
 LIKE.

| HOLE SIZES | |
|------------|---------|
| A | = 3MM |
| B | = 2.5MM |
| C | = 2.5MM |
| D | = 18MM |

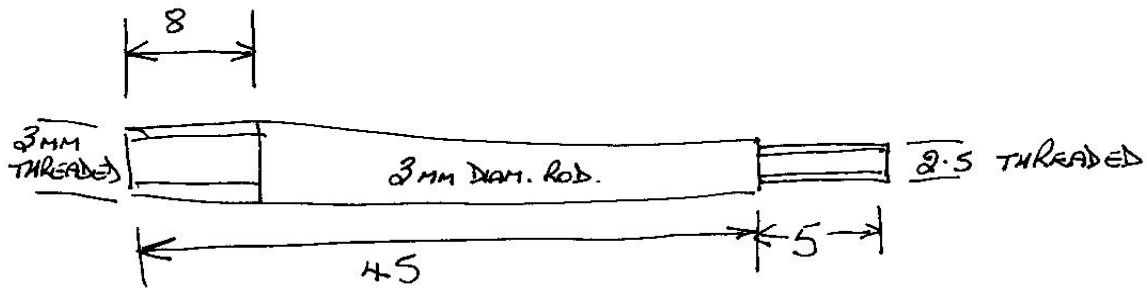
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33 - Crosshead Guide Rods and Piston Rod Update

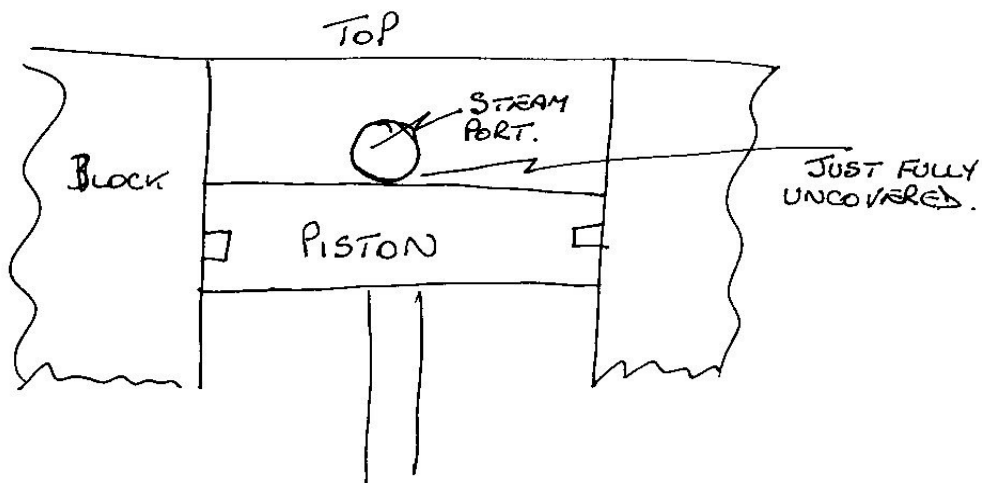
CROSSHEAD GUIDE RODS - 4 off - STAINLESS OR SILVER STEEL



UPDATE ON PISTON ROD - 2 off - STAINLESS OR SILVER STEEL



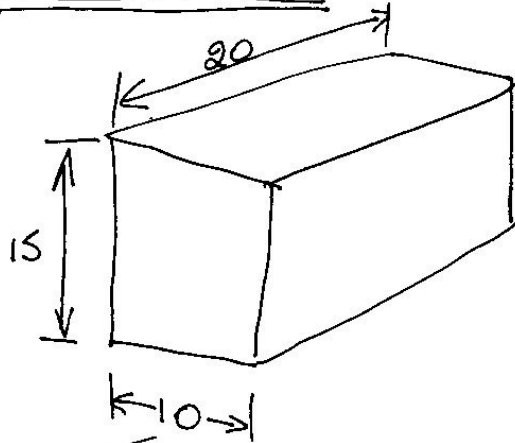
POSITION OF PISTON AND STEAM PORT ON
CROSSHEAD SETUP.



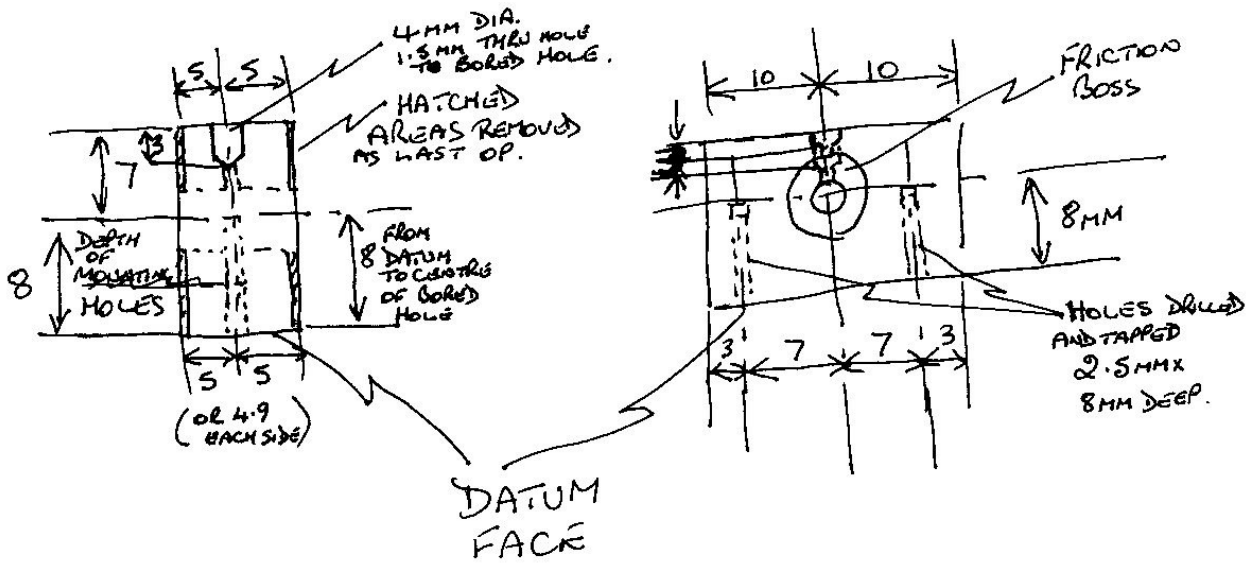
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35 - Bearing Blocks

BEARING BLOCKS — BRASS OR BRONZE — 4 off



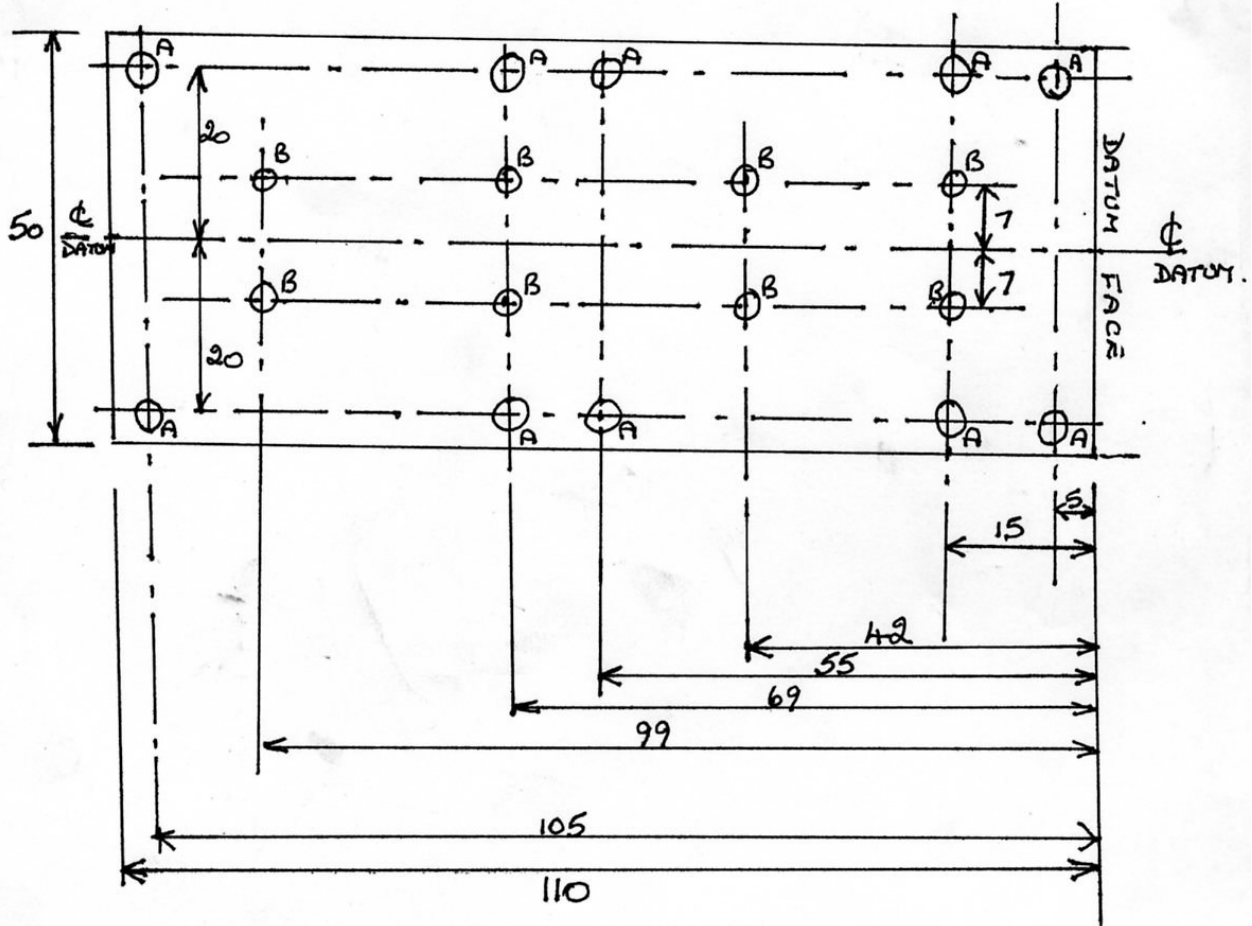
CAN BE 0.2MM UNDERSIZE



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41 – Baseplate

BASEPLATE – BRASS, STEEL OR ALUMINIUM – MINIMUM 2MM. 1off



HOLE SIZES

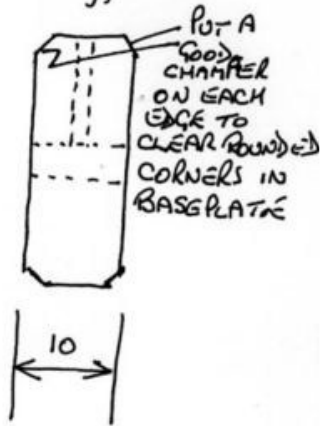
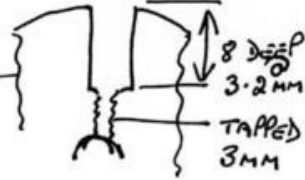
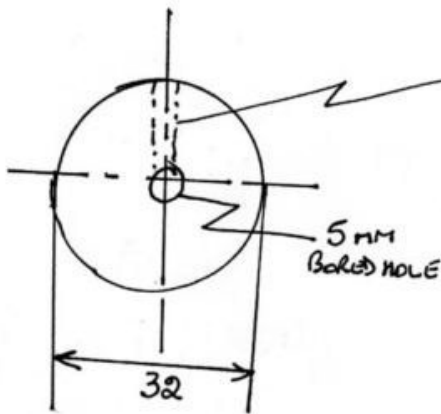
A = 3MM 10off

B = 2.5MM 8off

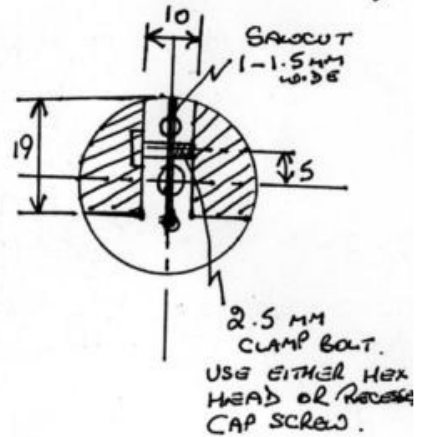
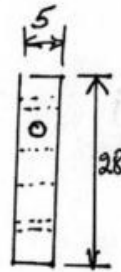
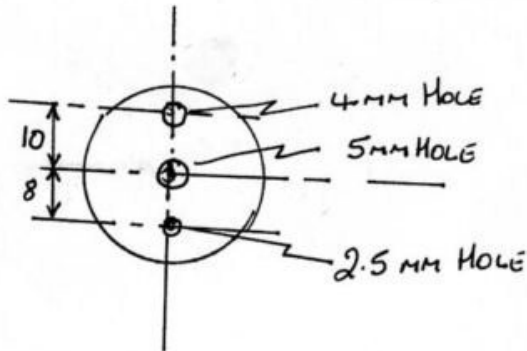
NOT TO SCALE.
USE DIMENSIONS AS SHOWN.

46 – Flywheel and Crankwebs

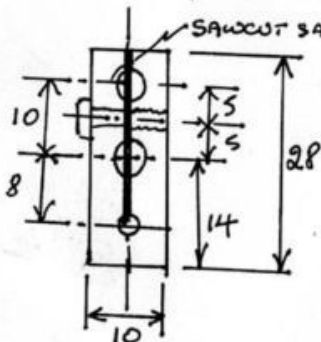
FLYWHEEL - BRASS, CAST IRON, MILD STEEL - 1 off



CRANKWEBS (~~BRASS~~) SEMI BALANCED - BRASS OR M. STEEL - 4 off

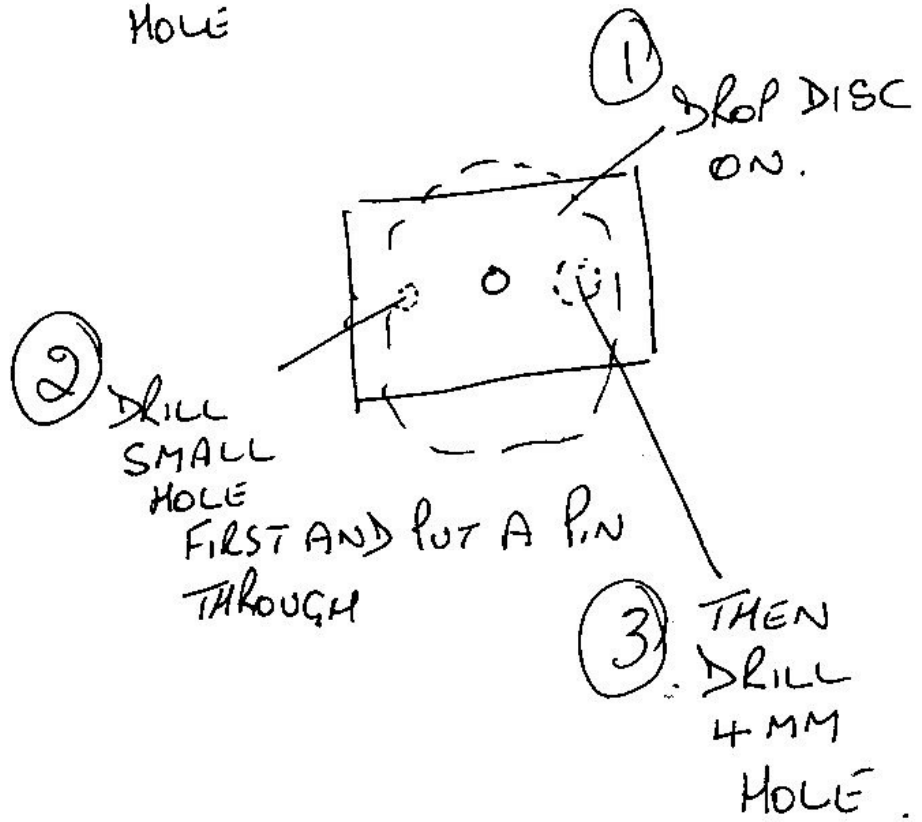
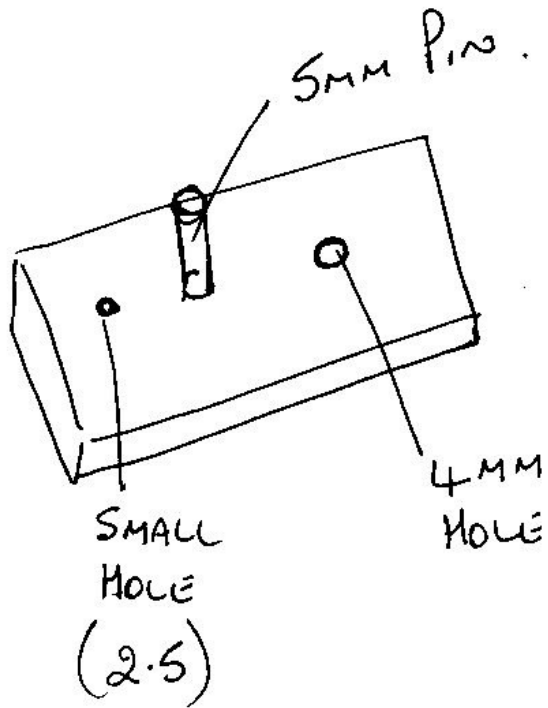


ALTERNATIVE CRANKWEBS - BRASS OR MILD STEEL - 4 off



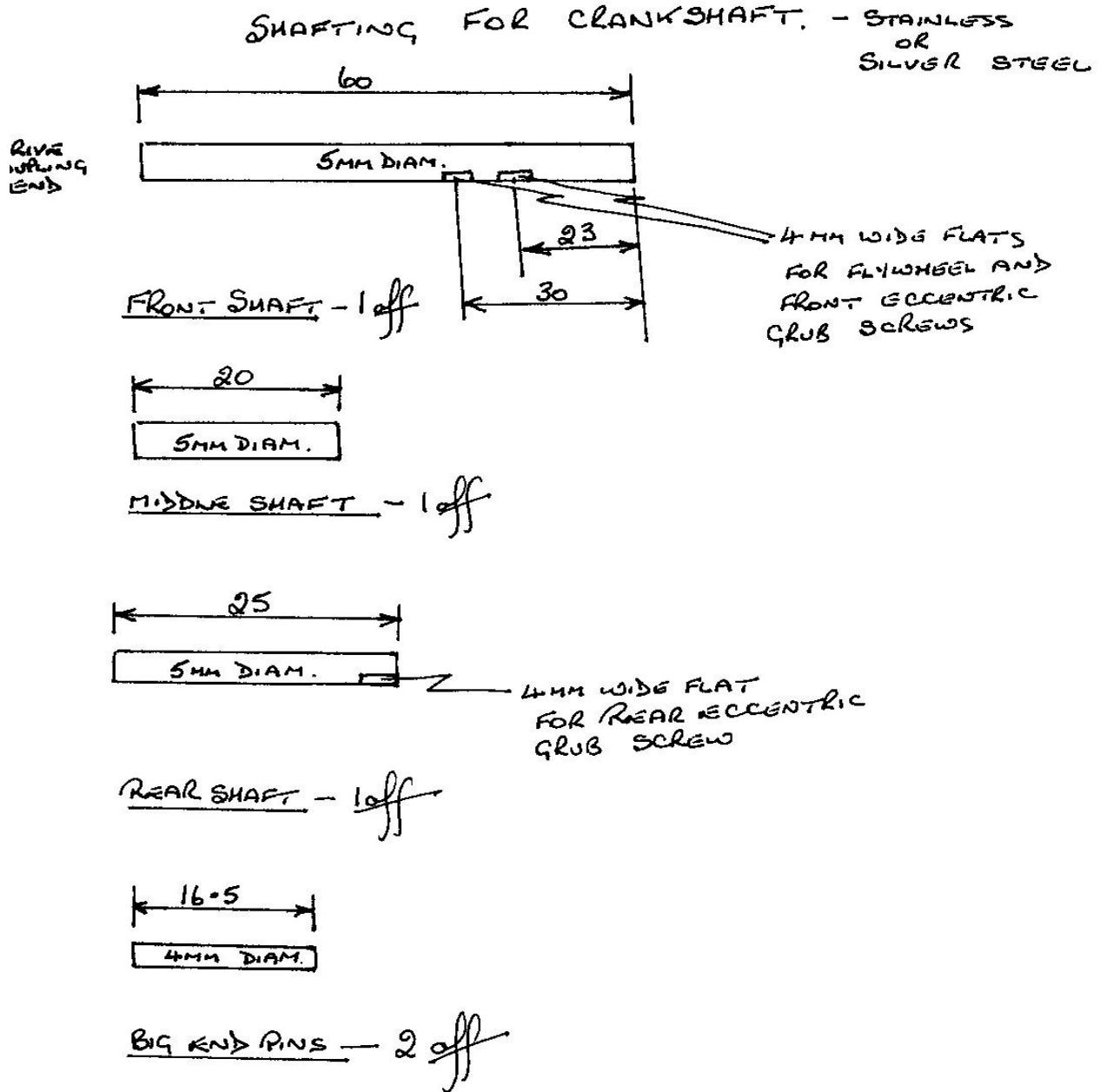
SAME HOLES AND SPACING AS ABOVE.
 SAME THICKNESS.

50 - Crankweb Drilling Jig



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56 - Crankshaft Shafting



NOT TO SCALE.

DEBURR ALL ENDS OF SHAFTS, AND POLISH ALL SHAFTS VERY LIGHTLY USING FINE EMERY WITH SHAFT ROTATING IN LATHE CHUCK.