

## **TECHNICAL TERMS, CONDITIONS & BROAD SPECIFICATIONS FOR DIE DESIGN AND MANUFACTURING**

### **DESCRIPTION:**

Design and manufacturing of Compound Die (Double segment- Punching of two component per stroke) for component as per sketch/drawing enclosed.

### **DATA FOR DESIGN**

In addition to our component drawing (enclosed here with), party must consider the following data while quoting / designing the tool.

### **COMPONENT**

Material – ETS

Thickness – 0.65 mm

### **DIE SET**

Should have 4 Guide Columns (2-Columns on rear side & 2-Columns in front) & Ball Cage set preferably as per our Drawing No. TL-10054 enclosed herewith.

- a) Top Plate 100 mm thick of mild steel. (Approx)
- b) Bottom Plate 100 mm thick of mild steel. (Approx)
- c) Base Plate Pads 50 mm (min.) thick of mild steel.
- d) Guide Column Dia 100 mm.
- e) Parallelism of Die Set should be within 0.04 mm per meter.

### **CUTTING ELEMENTS**

Cutting elements should have minimum thickness of 37 mm, with die life of minimum 17 mm.

Material of cutting elements should be imported XT215Cr12 (IS: 3748).

### **SPRINGS**

Only rectangular cross section wire heavy duty imported springs of reputed make should be used. Party must mention the source of supply of springs.

### **BLANK SIZE**

Cutting plan and sheet size enclosed.

**HOLDERS:**

Die Holder and Punch Holder to be assembled with Top / Bottom Plate using hardened Bushes and Dowel pins of minimum diameter 20 mm for easy repair and sharpening of Die / Punch sub assembly. Both Punch sub-assemblies shall be assembled on single Punch Holder.

**STRIPPER PLATE:**

Hardened inserts of 40Cr1 / EN24 / T-90 (or any better material) to be used all around the profile in both Stripper/ Ejector Plates.

**PRESS:**

Specifications of Press enclosed.

**TERMS AND CONDITIONS:-**

1. Delivery schedule will be effective from the date of issue of letter of intent / P.O. which ever is earlier to the date of Die delivered to our sub contracting Store duly inspected and accepted by our Quality Control Deptt.
2. Party will depute their technical representative along with two sets of proposed design of the Die including detail drawings of each and every component for our concurrence with in four weeks from the date of our P.O. / LOI. Along with Die design, party must submit quality plan also.
3. Party must intimate the progress of Die every month.
4. Original Tracing and CD (AutoCAD) of complete design will be supplied by the Party at the time of Die delivery. Drawings to be made on standard format size such as A4, A3....A1, A0 etc.
5. Under normal working condition the Die must produce 100000 (One Lac.) components per sharpening of Die and Punch and burr level should not exceed more than 20 microns.
6. Party will supply the test certificate of chemical composition, hardness and crack testing of materials used in manufacturing of (i) Cutting elements (Die & Punch) (ii) Guide column & Bushes (iii) Other hardened components.
7. Guarantee will be for a period of 12 months from the date of final acceptance of DIE at BHEL Hardwar.
8. Party will supply 1-Set of Guide Columns along with matching Bushes and Ball Cages and Round Punches dia 45.2 = 2no. Extra free of cost.

**PROCEDURE FOR INSPECTION.**

1. After Completing the sub assembly of DIE PUNCH Party will send their complete observation sheet along with inspection call.
2. The Quality Control (S.C.) will study the observation sheet received from the Party and if accepted, Inspector will be deputed to Party's works for inspecting the sub assembly of the Die Punch. The Party will provide all facilities of checking including that of checking the co-ordinates of the contour on their machine. Party will also provide test certificate for chemical composition of the material used for manufacturing Die, Die Punch segments (cutting elements) , Guide Columns , Guide Bushes and the hardness achieved of the items. One copy of the observation sheet will be handed over to the Party. Second copy of the inspection observation sheet will be brought back to BHEL, Hardwar.
3. The above observation will be studied further by Q.C. (S.C.), if accepted; clearance will be given to the Party to send the Die with courier. The Die will be delivered by the party to our sub-contracting store.
4. After the receipt of the Die in our sub contract store Party will be informed to depute their technical representative for conducting the trial run on our Press.
5. The Party's representative will open the Die and prepare it for trial run, in the mean time QC ( Block-VI ) will check :
  - (i) Height of the cutting elements.
  - (ii) Thickness of Top plate, Bottom plate, Die holder, Punch holder and diameter of Guide Column and Guide Bushes and Clamping Slots.
6. Die trial will be carried out at BHEL Hardwar in the presence of Party's representative and the trial run will be witnessed jointly by QC (S.C), QC (Block-VI) , JTE , Indenter, stamping Technologist and the User. The burr level of the stampings will also be checked jointly. After acceptance of stamping, SRIV will be cleared by QC (BL-VI) and the die will be handed over to Stamping Unit for further use.