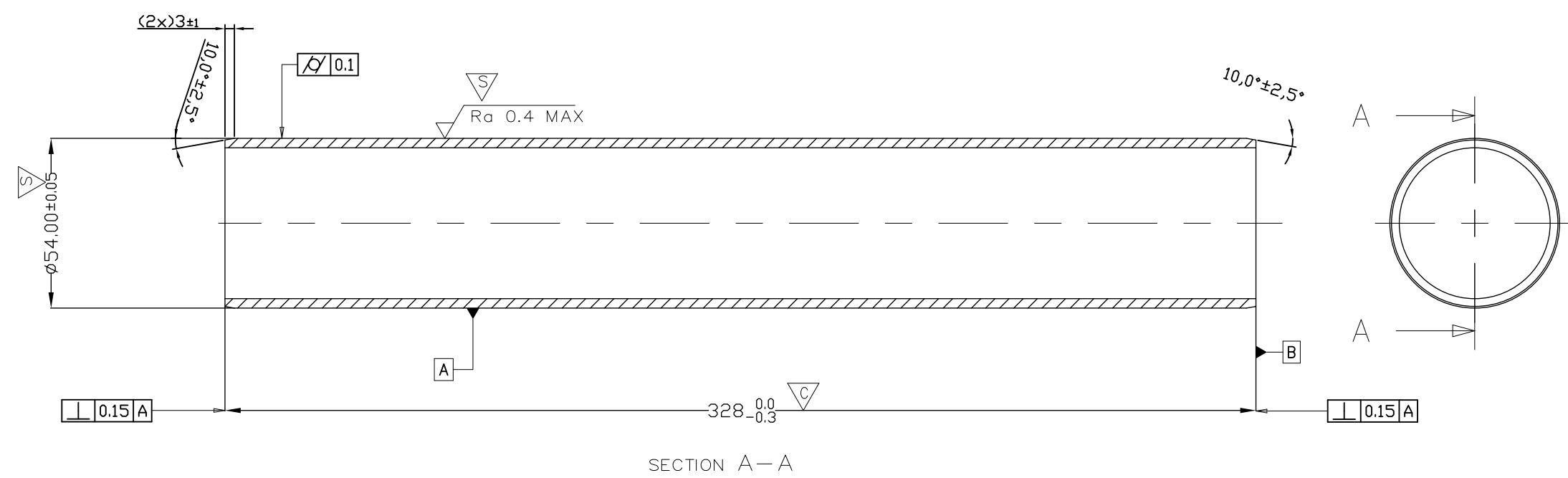


| REV | AMENDIG | DATE | COMENTS         |
|-----|---------|------|-----------------|
| A   | ***     | ***  | INICIAL RELEASE |
|     |         |      |                 |
|     |         |      |                 |



- NOTES:
- PART SHALL COMPLY WITH IMDS.
  - NO SWARF, WELD SPLATTER ALLOWED ON FUNCIONAL AREAS.
  - NO RUST ALLOWED.
  - SCRATCH / DRAWN MARKS MAX 0.2mm DEPTH AND MAX 0.05mm ELEVATION ON FUNCIONAL AREA ALLOWED.
  - ANY STAMPYNG / MACHINING OIL TO BE WELD COMAPATIBLE AND NOT TO BE A CATALYST FOR CORROSION.
  - PART TO BE FREE FROM NON PROCESS CONTAMINATION.  
PROCESS CONTAMINATION TO BE CONTROLLED BY BOUNDARY SAMPLES.
  - MISSING DIMENSIONS ACCORDING TO 3D MODEL.

|  |   |
|--|---|
|  | CRITICAL CHARACTERISTIC SPC REQUIRED    |
|  | SIGNIFICANT CHARACTERISTIC SPC REQUIRED |
|  | MANUFACTURING CHARACTERISTIC            |

Cpk=1.67

**MATERIAL: CARBON STEEL 1020**  
**ACCORDING ASTM A -513**  
**TYPE 5**  
**TH: 3MM**  
**WITH: A%:10-30%**  
**HARDNESS: 60-92 HRB**  
**YIELD STRENGHT: 413-589 MPa**  
**ULTIMATE STRENGHT: 480-655 MPa**

ALL DIMENSIONS IN MM

| Mechanical properties | Rm                        |       | ----- |
|-----------------------|---------------------------|-------|-------|
|                       | Re                        |       | ----- |
| Chemical composition  | EL % (sample length 5 mm) | ----- | ----- |
|                       | %C                        | Min   | ----- |
|                       |                           | Max   | ----- |
|                       | %Si                       | Min   | ----- |
|                       |                           | Max   | ----- |
|                       | %Mn                       | Min   | ----- |
|                       |                           | Max   | ----- |
|                       | %P                        | Min   | ----- |
|                       |                           | Max   | ----- |
|                       | %S                        | Min   | ----- |
|                       |                           | Max   | ----- |
|                       | %Cu                       | Min   | ----- |
|                       |                           | Max   | ----- |
|                       | %Ni                       | Min   | ----- |
|                       |                           | Max   | ----- |
| %Nb (Cb)              | Min                       | ----- |       |
|                       | Max                       | ----- |       |
| %V                    | Min                       | ----- |       |
|                       | Max                       | ----- |       |
| %Ti                   | Min                       | ----- |       |
|                       | Max                       | ----- |       |
| %Al                   | Min                       | ----- |       |
|                       | Max                       | ----- |       |

| REQUIREMENTS / STANDARS  |          |  |              |
|--|----------|--|--------------|
| EDGES OF UNDEFINED SHAPE ISO 13715                               |          |  |              |
| GEOMETRICAL TOLERANCING ISO 1101                                 |          |  |              |
| GENERAL TOLERANCES FOR SPECIFIC PROCESS SEE NOTE                 |          |  |              |
| GENERAL TOLERANCES 2768+ MI-E                                    |          |  |              |
| INDICATION OF SURFACE TEXTURE ISO 1302                           |          |  |              |
| MATERIAL AND PROCESS APPROVAL                                    |          |  |              |
| TRW'S STANDARD FOR CONTROL OF PROHIBITED & RESTRICTED SUBSTANCES |          |  |              |
| CIE CELAYA   |          | CUSTOMER REFERENCE: T1XX                                 |              |
| FIRST ISSUED   | BOSCH    | TITLE<br><b>TUBE_COLUM</b><br><b>(NO. PART: B018148)</b> |              |
| DRAWN BY   | E.L.A.Q  |  |              |
| CHECKED BY   | A. RIVAS |  |              |
| APPROVED BY  | D. LOPEZ | SIZE   | DRG NO.      |
|  |          | A2   | *****        |
|  |          | SHEET REV<br>A   |              |
|  |          | SCALE 1:1  | SHEET 1 OF 1 |