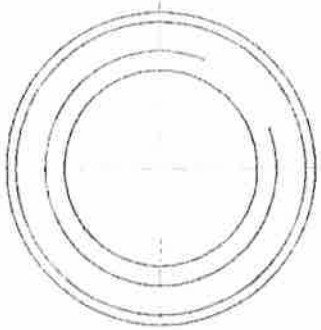

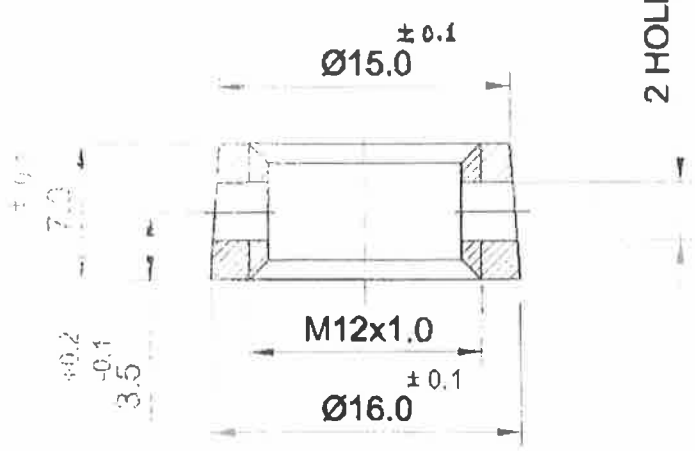


PROTECTIVE FINISH . ZINC &CHROMATE COATING 20 micron THICK TO IS: 1573.

| | | | | | |
|---|---|---|---|---|---|
| | 13-02-14 | C-2&3 | TOLERANCE AMENDED | ARD 2453 | |
| | 08.09.09 | | DCA Nº ADDED | ARD 2396 | |
| | 02-06-09 | | APPROVED | DGNAI | |
| R No | DATE | ZONE | BRIEF RECORD | AUTHORITY | INITIALS |
| SCALE:-NTS | TOL. | | DIMENSIONS ARE IN mm | ASSY DRG No NASK 1068 | |
| DGN – | DRN | TCD – | COMP | CHD | ASSY DRG LIST. |
| PASSED CTO(G) | APPD. | DGNAI | THREADS TO CONFIRM IS:4218 | DTE GEN OF NAVAL ARMAMENT INSPECTION IHQ,MOD (NAVY) N. DELHI | |
| MATL:-STEEL | | | GEN SPEC :- IS:2102 | | |
| MATL SPEC. BS:970 (Pt.I)-83 Gde - 080 M40 | | | STORE SPEC :- | | |
| | | | STORE REF No. | | |
| PROTECTIVE FINISH:SEE DRG | | | GAUGE SCH No. | | |
| | | | DCA Nº 5310242506 | | |

# NUT

DRG No.
NASK 1068/12
(PROVISIONAL)

A-4

USED ON: RGB-60

BASED ON:- CNAI(V) DRG No NAI(V) 8007/12 Dt 19-02-08

TRIM ON THIS LINE WHEN S PLIED TO TRADE

# QUALITY ASSURANCE PLAN FOR A/S ROCKET RGB 60 (EMPTY) MOD 1

| | |
|---|---|
| Item Description | **NUT** |
| Ref. Document | NASK 1068/12 (P) |
| Material | Steel to spec BS 970(Pt 3)-91 Gde 080 M40 |
| Heat Treatment | Normalised |

| Component name/operations | Characteristics | Class | Type of check | Quantum of check | Reference document | Acceptance norms | Format of record | Inspection Activity Categorisation | Inspection by |
|---|---|---|---|---|---|---|---|---|---|
| **Nut (Raw material)** | General finish, appearance | Semi critical | Visual | 100% | BS 970(Pt 3)-91 Gde 080 M40 (Normalised) | BS 970(Pt 3)-91 Gde 080 M40 (Normalised) | Visual Inspn. Report | Non-Critical | QC/HEPF |
| | Chemical properties | Critical | Chemical lab analysis | Three samples per lot or as per the discretion of inspection authority | | | Test report from NABL Lab / Govt Lab | | |
| | Mechanical properties | Critical | Mechanical lab analysis | Three samples per lot or as per the discretion of inspection authority | | | Test report from NABL Lab / Govt Lab | | |
| **In process - Turning,drilling and plating** | Dimensions specified in the inspection report of the component | Critical | Dimensional measurement | 100% or as per the discretion of inspection authority | Tolerance as specified in Drg.NASK 1068/12 (P) | Tolerance as specified in Drg. NASK 1068/12 (P) | Inspection report of Nut | | |
| **Final finish** | Zinc & Chromate coating 20 Microns | Critical | Visual / Test Sample | Samples as per the discretion of inspection authority | IS:1573 | IS:1573 | Test report from NABL Lab / Govt Lab | | |

# Inspection Report

| | |
|---|---|
| Description of the item | **NUT** |
| Drawing No. | NASK 1068/12 (P) |
| Date of Inspection | |

| Sno. | Description of parameter | Nominal dimension as per drawing in mm | Gauge used | Tolerance (As specified in the drawing) | Nature of Parameter | Observed dimension in mm | Deviation in mm | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | Outer diameter | 16 | | ±0.1 | Major | | | |
| 2 | Internal thread | M 12 x 1 | Screw plug 'Go' & 'No Go' gauge No.145 | | | | | |
| 3 | Outer diameter (other end) | 15 | | ±0.1 | | | | |
| 4 | Dia.of holes on circumference (2 nos) | 3 | | +0.2 | | | | |
| 5 | Centre distance of above hole from end | 3.5 | | +0.2 / -0.1 | | | | |
| 6 | Overall length | 7 | | ±0.1 | | | | |
| 7 | Zinc chromate coating thickness | 20 microns | | | | | | |

**Special Notes: -**

| Sno. | Note | Observations |
|---|---|---|
| 1 | Material: Steel to spec BS:970(Pt 3) -91 Gde-080 M40(Normalised) | |
| 2 | General Tolerance spec IS 2102 (Medium class) unless specified. | |
| 3 | Protective Finish: zinc and chromate coating 20 Microns to spec IS:1573 | |

**Table 13 — Chemical composition: carbon and carbon manganese steels**

| Steel | C | Si | Mn | P | S |
|---|---|---|---|---|---|
| | *%(m/m)* | *%(m/m)* | *%(m/m)* | *%(m/m)* | *%(m/m)* |
| 080A15 | 0.13 to 0.18 | 0.10 to 0.40 | 0.70 to 0.90 | 0.05 max. | 0.05 max. |
| 080M15 | 0.12 to 0.18 | 0.10 to 0.40 | 0.60 to 1.00 | 0.05 max. | 0.05 max. |
| 070M20 | 0.16 to 0.24 | 0.10 to 0.40 | 0.50 to 0.90 | 0.05 max. | 0.05 max. |
| 080A30 | 0.26 to 0.34 | 0.10 to 0.40 | 0.70 to 0.90 | 0.05 max. | 0.05 max. |
| 080M30 | 0.26 to 0.34 | 0.10 to 0.40 | 0.60 to 1.00 | 0.05 max. | 0.05 max. |
| 080M40 | 0.36 to 0.44 | 0.10 to 0.40 | 0.60 to 1.00 | 0.05 max. | 0.05 max. |
| 080A42 | 0.40 to 0.45 | 0.10 to 0.40 | 0.70 to 0.90 | 0.05 max. | 0.05 max. |
| 080A47 | 0.45 to 0.50 | 0.10 to 0.40 | 0.70 to 0.90 | 0.05 max. | 0.05 max. |
| 080M50 | 0.45 to 0.55 | 0.10 to 0.40 | 0.60 to 1.00 | 0.05 max. | 0.05 max. |
| 070M55 | 0.50 to 0.60 | 0.10 to 0.40 | 0.50 to 0.90 | 0.05 max. | 0.05 max. |
| 150M19 | 0.15 to 0.23 | 0.10 to 0.40 | 1.30 to 1.70 | 0.05 max. | 0.05 max. |
| 150M36 | 0.32 to 0.40 | 0.10 to 0.40 | 1.30 to 1.70 | 0.05 max. | 0.05 max. |

NOTE See also **3.3** g) and option **A.1**, **A.2** and **A.4**.

**Table 14 — Chemical composition: case hardening steels (carbon and carbon manganese steels)**

| Steel | C | Si | Mn | P | S |
|---|---|---|---|---|---|
| | *%(m/m)* | *%(m/m)* | *%(m/m)* | *%(m/m)* | *%(m/m)* |
| 045A10 | 0.08 to 0.13 | 0.10 to 0.40 | 0.30 to 0.60 | 0.05 max. | 0.05 max. |
| 045M10 | 0.07 to 0.13 | 0.10 to 0.40 | 0.30 to 0.60 | 0.05 max. | 0.05 max. |
| 080M15 | 0.12 to 0.18 | 0.10 to 0.40 | 0.60 to 1.00 | 0.05 max. | 0.05 max. |
| 210M15 | 0.12 to 0.18 | 0.10 to 0.40 | 0.90 to 1.30 | 0.05 max. | 0.10 to 0.18 |

**Table 15 — Chemical composition: alloy case hardening Steels[a]**

| Steel | C | Si | Mn | Cr | Mo | Ni |
|---|---|---|---|---|---|---|
| | *%(m/m)* | *%(m/m)* | *%(m/m)* | *%(m/m)* | *%(m/m)* | *%(m/m)* |
| 635M15 | 0.12 to 0.18 | 0.10 to 0.40 | 0.60 to 0.90 | 0.4 to 0.80 | — | 0.70 to 1.10 |
| 637M17 | 0.14 to 0.20 | 0.10 to 0.40 | 0.60 to 0.90 | 0.60 to 1.00 | — | 0.85 to 1.25 |
| 655M13 | 0.10 to 0.16 | 0.10 to 0.40 | 0.35 to 0.60 | 0.70 to 1.00 | — | 3.00 to 3.75 |
| 665M17 | 0.14 to 0.20 | 0.10 to 0.40 | 0.35 to 0.75 | — | 0.20 to 0.30 | 1.50 to 2.00 |
| 805M17 | 0.14 to 0.20 | 0.10 to 0.40 | 0.60 to 0.95 | 0.35 to 0.65 | 0.15 to 0.25 | 0.35 to 0.75 |
| 805M20 | 0.17 to 0.23 | 0.10 to 0.40 | 0.60 to 0.95 | 0.35 to 0.65 | 0.15 to 0.25 | 0.35 to 0.75 |
| 815M17 | 0.14 to 0.20 | 0.10 to 0.40 | 0.60 to 0.90 | 0.80 to 1.20 | 0.10 to 0.20 | 1.20 to 1.70 |
| 820M17 | 0.14 to 0.20 | 0.10 to 0.40 | 0.60 to 0.90 | 0.80 to 1.20 | 0.10 to 0.20 | 1.50 to 2.00 |
| 822M17 | 0.14 to 0.20 | 0.10 to 0.40 | 0.40 to 0.70 | 1.30 to 1.70 | 0.15 to 0.25 | 1.75 to 2.25 |
| 835M15 | 0.12 to 0.18 | 0.10 to 0.40 | 0.25 to 0.50 | 1.00 to 1.40 | 0.15 to 0.30 | 3.90 to 4.30 |

NOTE See also **3.3** c), **3.3** i) and options **A.2** and **A.5**.

[a] Sulfur 0.05 % max., phosphorous 0.04 % max. for all qualities.

**Table 20 — Mechanical properties for carbon and carbon manganese steels (18)**

| Steel | Condition (2) | Size (1) (diameter across flats or thickness) | $R_m$ | $R_e$ min. | $A$ min. on $5.65\sqrt{S_o}$ | Impact[a] | | $R_{p0.2}$ (3) min. | HB (13) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Izod min. | KCV min. | | |
| | | mm | N/mm² | N/mm² | % | J | J | N/mm² | |
| 080M40 | Normalized + turned or ground | ≥ 6 ≤ 150 | 550 min. | 280 | 16 | 20 | 16 | — | 152 to 207 |
| | | > 150 ≤ 250 | 510 min. | 245 | 17 | — | — | — | 146 to 197 |
| | Hot rolled + cold drawn or hot rolled + cold drawn + ground | ≥ 6 ≤ 13 | 660 min. | 530 | 7 | — | — | 495 | |
| | | > 13 ≤ 16 | 650 min. | 510 | 8 | — | — | 485 | |
| | | > 16 ≤ 40 | 620 min. | 480 | 9 | — | — | 435 | |
| | | > 40 ≤ 63 | 600 min. | 465 | 10 | — | — | 370 | |
| | | > 63 ≤ 76 | 570 min. | 430 | 10 | — | — | 350 | |
| | Hardened and tempered + turned or ground | $Q$ ≥ 6 ≤ 63 | 625 to 775 | 385 | 16 | 34 | 28 | 355 | 179 to 229 |
| | | $R$ ≥ 6 ≤ 19 | 700 to 850 | 465 | 16 | 34 | 28 | 450 | 201 to 255 |
| | Hardened and tempered + cold drawn or hardened and tempered + cold drawn + ground | $Q$ ≥ 6 ≤ 63 | 625 to 775 | 435 | 12 | 34 | — | 380 | 179 to 229 |
| | | $R$ ≥ 6 ≤ 19 | 700 to 850 | 490 | 12 | 34 | — | 460 | 201 to 255 |
| 080M50 | Normalized + turned or ground | ≥ 6 ≤ 150 | 620 min. | 310 | 14 | — | — | — | 179 to 229 |
| | | > 150 ≤ 250 | 570 min. | 295 | 14 | — | — | — | 163 to 217 |
| | Normalized + cold drawn or normalized + cold drawn + ground | ≥ 6 ≤ 13 | 740 min. | 590 | 7 | — | — | 555 | |
| | | > 13 ≤ 16 | 730 min. | 585 | 8 | — | — | 545 | |
| | | > 16 ≤ 40 | 690 min. | 555 | 8 | — | — | 485 | |
| | | > 40 ≤ 63 | 680 min. | 540 | 9 | — | — | 420 | |
| | | > 63 ≤ 76 | 650 min. | 510 | 10 | — | — | 400 | |
| | Hardened and tempered + turned or ground (4) | $Q$ ≥ 6 ≤ 150 | 625 to 775 | 390 | 15 | — | — | 360 | 179 to 229 |
| | | $R$ ≥ 6 ≤ 63 | 700 to 850 | 430 | 14 | — | — | 400 | 201 to 255 |
| | | $S$ ≥ 6 ≤ 29 | 775 to 925 | 495 | 14 | — | — | 465 | 223 to 277 |
| | | $T$ ≥ 6 ≤ 13 | 850 to 1 000 | 570 | 12 | — | — | 555 | 248 to 302 |
| | Hardened and tempered + cold drawn or hardened and tempered + cold drawn + ground (4) | $Q$ ≥ 13 ≤ 150 | 625 to 775 | 430 | 11 | — | — | 390 | 179 to 229 |
| | | $R$ ≥ 6 ≤ 63 | 700 to 850 | 490 | 10 | — | — | 450 | 201 to 255 |
| | | $S$ ≥ 6 ≤ 29 | 775 to 925 | 540 | 10 | — | — | 500 | 223 to 277 |
| | | $T$ ≥ 6 ≤ 13 | 850 to 1 000 | 595 | 9 | — | — | 550 | 248 to 302 |
| | Turned, ground or cold drawn and finally softened | — | — | — | — | — | — | — | 187 max. |

[a] See also option A.3.