



Expression of Interest: Test Knife and Spike Manufacturer for Body Armour Assessments

The Home Office Centre for Applied Science and Technology (CAST) invites expressions of interests from prospective manufacturers of knives and spikes for use in testing for the Home Office Body Armour Standard (2017)¹.

Background

The Home Office Body Armour Standard (2017) provides the minimum performance requirements and test methods for the evaluation of ballistic and/or stab resistant body armour for UK law enforcement. Stab testing consists of knife (edged weapon) and spike (non edged weapon) evaluations.

In such tests, the test instrument (knife or spike) is attached to a sabot, fitted inside a guided rail system. The sabot is raised to a pre-determined height and dropped onto the body armour to evaluate its penetration resistance capabilities. Each element of the test is controlled with tolerances to ensure consistency is maintained within and between tests on body armour samples. A key component of this is the test instrument, the Home Office Centre for Applied Science and Technology (CAST) have designed and engineered test instruments for use in these tests. Technical drawings for both the knife and spike are given in the Appendix.

Each knife or spike is used just once prior to replacement due to blunting of the test instrument following impact.

Home Office CAST is seeking manufacturers to provide engineered test knives and spikes within the specified tolerances to manufacturers of body armour and test facilities.

Specifications

A supplier of knives and spikes must be able to:

- Manufacture knives and spikes using the specified materials within the specified engineering tolerances.
- Arrange for the certification of sharpness against CATRA procedures HO/K and HO/S for knives and spikes respectively (Appendix B).
- Distribute the test instruments to a global customer base.

Market

Home Office test instruments are used extensively in UK and international evaluations of body armour. Anticipated customers for such products include, but are not limited to:

- Manufacturers of body armour;
- Test facilities evaluating body armour;
- Standards setting organisations;
- Academia.

Submission

Please respond to this with a confirmation of interest via e-mail to declarations@homeoffice.gsi.gov.uk

The deadline for submissions is **16th February 2018**.

Enquiries

Please direct any enquiries to declarations@homeoffice.gsi.gov.uk



Appendix A – Knife & Spike Drawings

REV.	DESCRIPTION	DATE	STATUS	APPROVED BY
A	REDRAWN AND UPDATED	14/08/2014	ISSUED	CM
B	TOLERANCES UPDATED TO ASSIST MANUFACTURE	06/07/2015	ISSUED	CM

DO NOT SCALE DRAWING - DRAWN ON SOLIDWORKS IF IN DOUBT ASK

UNLESS OTHERWISE SPECIFIED:

- 1) DIMENSIONS IN MILLIMETRES
- 2) SURFACE FINISH: 1.4µm
- 3) GENERAL TOLERANCES: ±0.10
- 4) HOLES: +0.10
- 5) ANGLES: ±0.25°
- 6) DEBURR ALL HOLES & SHARP EDGES

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DO NOT SCALE DRAWING - DRAWN ON SOLIDWORKS IF IN DOUBT ASK

UNLESS OTHERWISE SPECIFIED:
MATERIAL: GROUND FLAT STOCK BS4699 B01
FINISH: Harden & Temper 52-55 Rockwell C
WEIGHT: 18.57 g
VOLUME: 2362.07 mm³

SECURITY: OFFICIAL

DATE: 14/08/2014
DRAWN: MS
MODELLED: MS
CHECKED: GC
PROJECT NAME: 8027 ANKOR PRO
PROJECT CODE: 944130
A/E: RICHARD J. GIBSON

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NOTES:

- 1) GRINDING MUST PRODUCE A SHARP BLADE TIP. TIP HARDNESS TO BE MAINTAINED AFTER GRINDING.
- 2) ALL SURFACE TO BE GROUND TO A SURFACE ROUGHNESS OF 1µm ± 0.5µm, EXCEPT WHERE MARKED X.
- 3) SHARPNESS AT TIP TO BE 1.5 TO 3.0N - SEE CATRA SPECIFICATION FOR MORE INFORMATION.
- 4) 3 POSITIONS INDICATED FOR SURFACE HARDNESS TEST, MARKED

JOB NUMBER: **M100598**

STEP FILE NAME: **D62/14**

STL FILE NAME: **SLM100598-B**

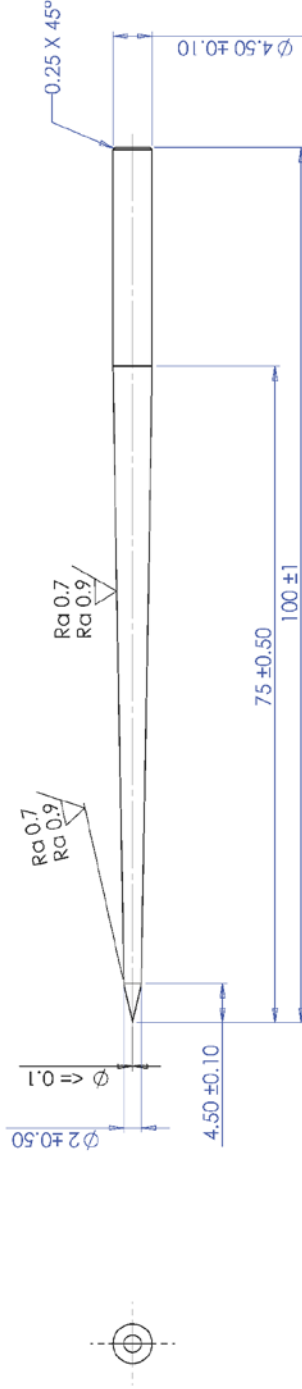
DWG FILE NAME: **DWF-M100598-B**

SCALE: 1:1

SHEET 1 OF 1



REV.	DESCRIPTION	DATE	STATUS	APPROVED
A	NEW ISSUE	16/10/2014	ISSUED	CM
B	TOLERANCES UPDATED TO ASSIST MANUFACTURE	06/07/2015	ISSUED	CM



DO NOT SCALE DRAWING - DRAWN ON SOLIDWORKS
IF IN DOUBT ASK

<p>Home Office Centre for Applied Science and Technology</p> <p>Woodstock Hill Sawbridge A14 8HQ</p> <p>Tel: 01727 810057 Email: info@homeoffice.gov.uk</p>	UNLESS OTHERWISE SPECIFIED: 1. DIMENSIONS ARE IN MILLIMETRES 2. GENERAL TOLERANCES: ±0.10 3. HOLES: +0.10 4. ANGLES: ±0.25° 5. DEBURR ALL HOLES & SHARP EDGES	MATERIAL: AIS1 T660 STEEL	FINISH: HEAT TREAT TO ROCKWELL C 45-50
	SECURITY: OFFICIAL	WEIGHT: 7.97 g	VOLUME: 1015.59 mm³
<p>DATE: 16/10/2014</p> <p>DESIGNED BY: [REDACTED]</p> <p>MODELLED BY: [REDACTED]</p> <p>CHECKED BY: [REDACTED]</p> <p>PROJECT NAME: R02Y1A0002R102</p> <p>PROJECT CODE: 104130</p> <p>FILE NAME: M100634</p>	<p>DATE: 16/10/2014</p> <p>DESIGNED BY: [REDACTED]</p> <p>MODELLED BY: [REDACTED]</p> <p>CHECKED BY: [REDACTED]</p> <p>PROJECT NAME: R02Y1A0002R102</p> <p>PROJECT CODE: 104130</p> <p>FILE NAME: M100634</p>	<p>TITLE: HO ENGINEERED SPIKE</p> <p>DWG NO: M100634</p> <p>UPTO ONLY: STEP 1A100634-8</p>	<p>JOB NUMBER: D62/14</p> <p>STEP FILE NAME: STEP 1A100634-8</p> <p>DWG FILE NAME: DRW 1A100634-8</p> <p>SHEET 1 OF 1 A3</p>

NOTE:-
 1) 0.1MM MAXIMUM TIP RADIUS AFTER GRINDING
 2) TIP HARDNESS MUST BE MAINTAINED AFTER GRINDING
 3) TIP MUST BE GROUND CONCENTRIC
 4) SHARPNESS AT TIP TO BE 2.5 TO 4.5N - SEE CAIRA SPECIFICATION
 FOR MORE INFORMATION



Appendix B – CATRA Procedure

Bespoke CATRA procedures, HO/K and HO/S, exist for the testing of Home Office P1/B knives and spikes. The test procedure has been outlined, in brief, below:

- An 8 mm square of calibrated silicone rubber is held around a 23.6mm diameter mandrill with the feed mechanism giving consistent tension
- The blade is mounted on a load platform and driven into the test media at 0.1mm/sec for a depth of 3mm
- Force data is collected at 26Hz
- At a penetration depth of 2.5mm the force must not exceed 3.47 N for the blades and 4.50 N for the spikes