	NATO STANDARDIZATION AGENCY
NATO / **OTAN**	AGENCE OTAN DE NORMALISATION

6 April 2004   NSA/0395-LAND/4512

STANAG 4512 LAND (EDITION 1) – DISMOUNTED PERSONNEL TARGET

Reference: AC/225-D/1365, dated 10 November 1995

1.   The enclosed NATO Standardization Agreement which has been ratified by nations as reflected in the NATO Standardization Document Database (NSDD), is promulgated herewith.

2.   The reference listed above is to be destroyed in accordance with local document destruction procedures.

3.   AAP-4 should be amended to reflect the latest status of the STANAG.

ACTION BY NATIONAL STAFFS

4.   National staffs are requested to examine their ratification status of the STANAG and, if they have not already done so, advise the Defence Support Division through their national delegation as appropriate of their intention regarding its ratification and implementation.
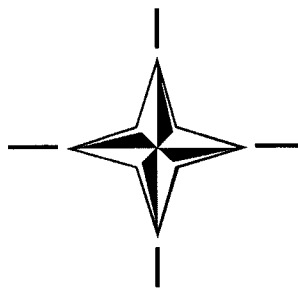
J. MAJ

Brigadier General, POLAR
Director, NSA

Enclosure:
STANAG 4512 (Edition 1)

NORTH ATLANTIC TREATY ORGANIZATION
(NATO)

NATO STANDARDIZATION AGENCY
(NSA)

STANDARDIZATION AGREEMENT
(STANAG)

SUBJECT: DISMOUNTED PERSONNEL TARGET

Promulgated on 6 April 2004

J. MA̶d̶
Brigadier General, POLAR
Director, NSA

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RECORD OF AMENDMENTS

No.	Reference/date of amendment	Date entered	Signature

EXPLANATORY NOTES

AGREEMENT

1.   This NATO Standardization Agreement (STANAG) is promulgated by the Director NATO Standardization Agency under the authority vested in him by the NATO Standardization Organisation Charter.

2.   No departure may be made from the agreement without informing the tasking authority in the form of a reservation. Nations may propose changes at any time to the tasking authority where they will be processed in the same manner as the original agreement.

3.   Ratifying nations have agreed that national orders, manuals and instructions implementing this STANAG will include a reference to the STANAG number for purposes of identification.

RATIFICATION, IMPLEMENTATION AND RESERVATIONS

4.   Ratification, implementation and reservation details are available on request or through the NSA websites (internet http://nsa.nato.int; NATO Secure WAN http://nsa.hq.nato.int).

FEEDBACK

5.   Any comments concerning this publication should be directed to NATO/NSA – Bvd Leopold III - 1110 Brussels - BE

NATO STANDARDISATION AGREEMENT
(STANAG)

DISMOUNTED PERSONNEL TARGET

Annexes:

A.   Unprotected man standing erect
B.   Basic Postures
C.   Protected man standing erect
D.   Helmet
E.   Visor (face shield)
F.   Splinter-proof jacket

Related Documents: None

AIM:

1.   The aim of this agreement is to standardize the dismounted combatant target for use when assessing the effectiveness of small arms.

AGREEMENT:

2.   Participating nations agree to use this target to assess the effectiveness of small arms.

GENERAL

3.   The target representative of a dismounted combatant comprises a man, wo can take up four postures, protected by a helmet with a visor and a splinter-proof jacket.

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DETAILS OF THE AGREEMENT:

4.   The standing target is 1.75m high and his anthropometric characteristics are specified in Annex A.

5.   The basic postures are advancing, kneeling (with and without support), prone and in a foxhole. These are detailed in Annex B.

6.   The protected target wears a helmet with a visor and a splinteproof jacket. this is decsribed in Annex C.

7.   The helmet is an aramid helmet with a polycarbonate visor. It is described in Annex D.

8.   The aramid helmet is fitted with a polycarbonate visor described in Annex E.

9.   The splinter-proof jacket is an aramid jacket with titanium plates on its front and back. It is described in Annex F.
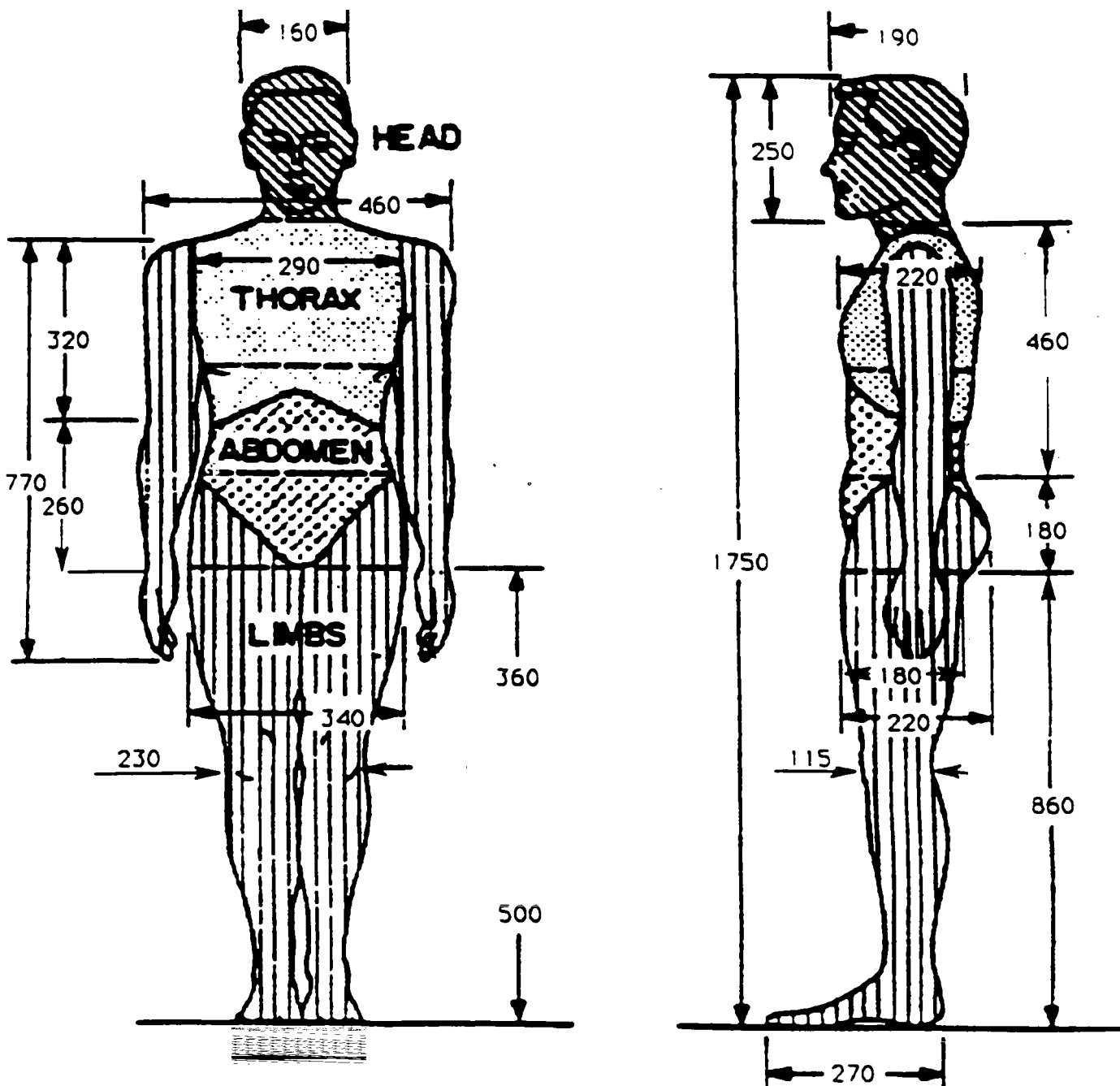

IMPLEMENTATION AGREEMENT:

10.   This STANAG is implemented when a nation uses the target described to assess the effectiveness of small arms.

ANNEX A to

STANAG 4512
(Edition 1)

DISMOUNTED PERSONNEL TARGET

Annex A : Unprotected man standing erect

POSTURES

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This annex gives the two-dimensional projections of the three-dimensional target. The target is located at the origin of the system of axes defined on the following page, and is looking in the positive X direction. The formulae for calculating the projections of the three-dimensional target onto the planes are also given on the following page.

Besides the reference system and the mathematical formulae this annex includes the positioning of the points of articulation corresponding with the upright man, and a right side view, a left side view, a front view and a view from above for each basic target (man advancing, kneeling man with support, kneeling man without support, prone man and man in a foxhole).

After each group of drawngs is a table giving the numerical values of the angles and the moduli of the vectors required to construct the target.

Finally, a summary table gives the planimetric area presented by the target and the circumscribing rectangle for each of the views.

Refence System of Planes of Projection

-        Each segment is projected onto at least two mutually perpendicular planes.

-        The projection of each segment onto a given plane is defined by its
« apparent » modulus and its angle of orientation.
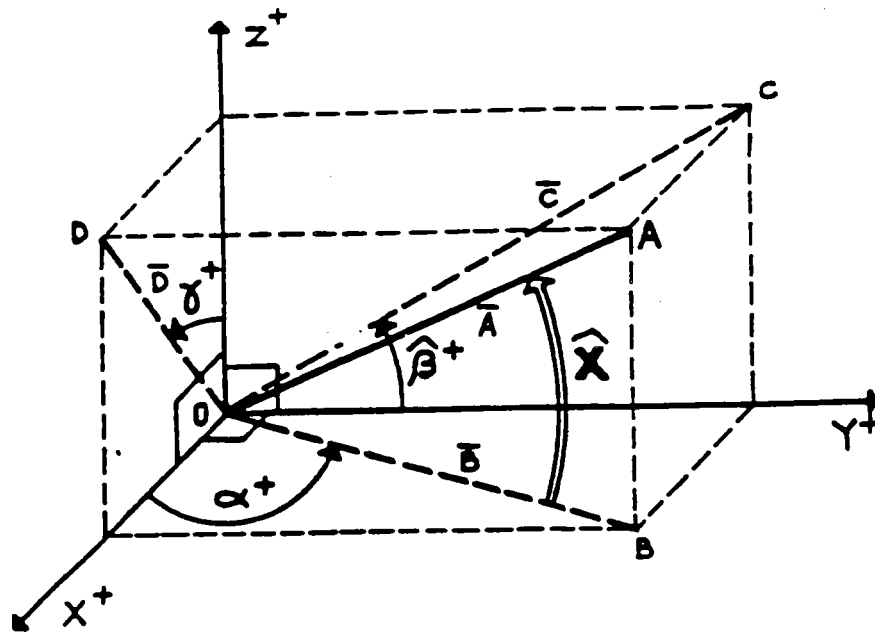
TWO PROJECTIONS ONLY ARE REQUIRED TO ESTABLISH THE REAL MODULUS AND THE ORIENTATION OF A SEGMENT IN SPACE

Example: modulus of OA

$$OA^2 = OB^2 + BA^2 \rightarrow \overline{A}^2 = \overline{B}^2 + \overline{D}^2 \cos^2\gamma$$

$$OA^2 = OC^2 + CA^2 \rightarrow \overline{A}^2 = \overline{C}^2 + \overline{B}^2 \cos^2\alpha$$

$$OA^2 = OD^2 + DA^2 \rightarrow \overline{A}^2 = \overline{D}^2 + \overline{C}^2 \cos^2\beta$$

Value of angle X :

$$\cos X = \frac{OB}{OA}$$

$$\cos X = \frac{OB}{\sqrt{OB^2 + OD^2 \cos^2\gamma}}$$

$$\cos X = \frac{\overline{B}}{\sqrt{\overline{B}^2 + \overline{D}^2 \cos^2\gamma}}$$

APPROXIMATE DIMENSIONING OF THE STRUCTURE AND ARTICULATIONS DERIVED FROM THE NATO SILHOUETTE
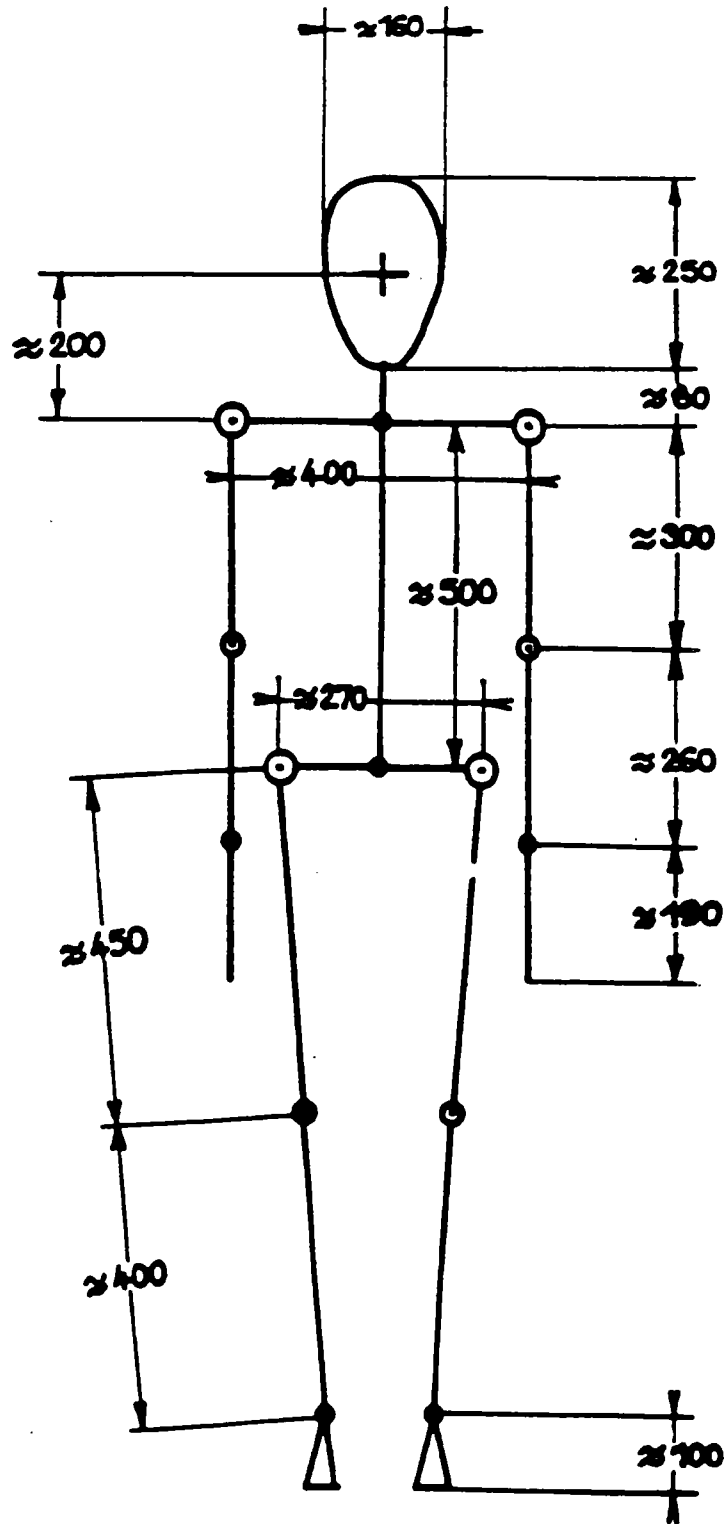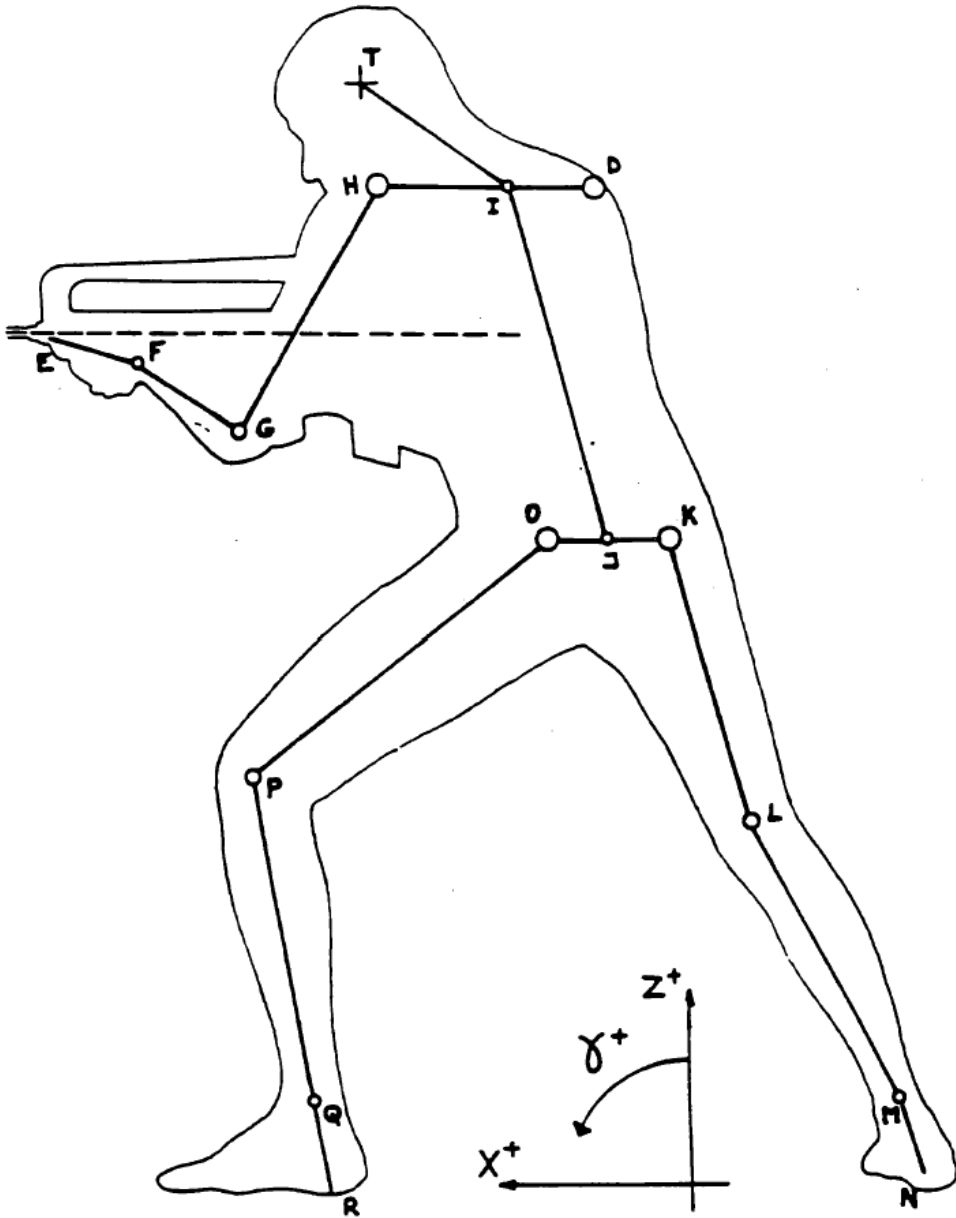
STANDING MAN
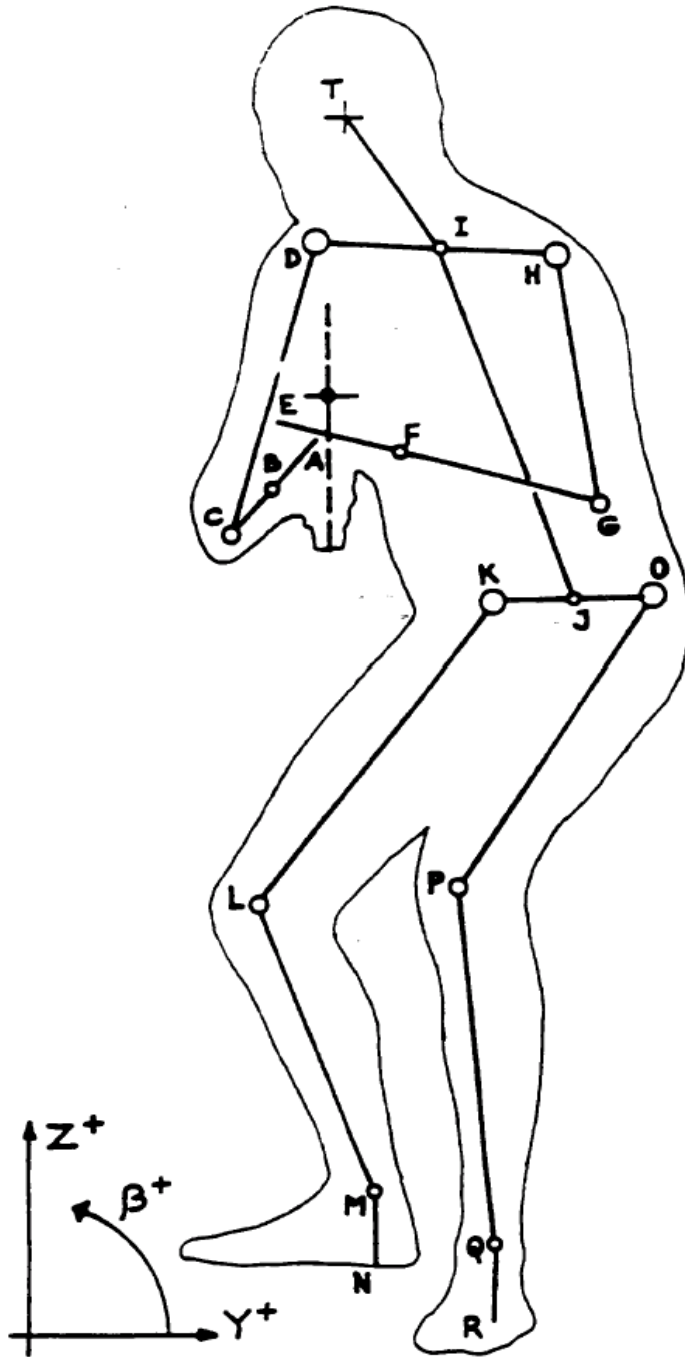Inverse XOZ projection (right side view)
Scale : 10/75 ; Height :140

STANDING MAN
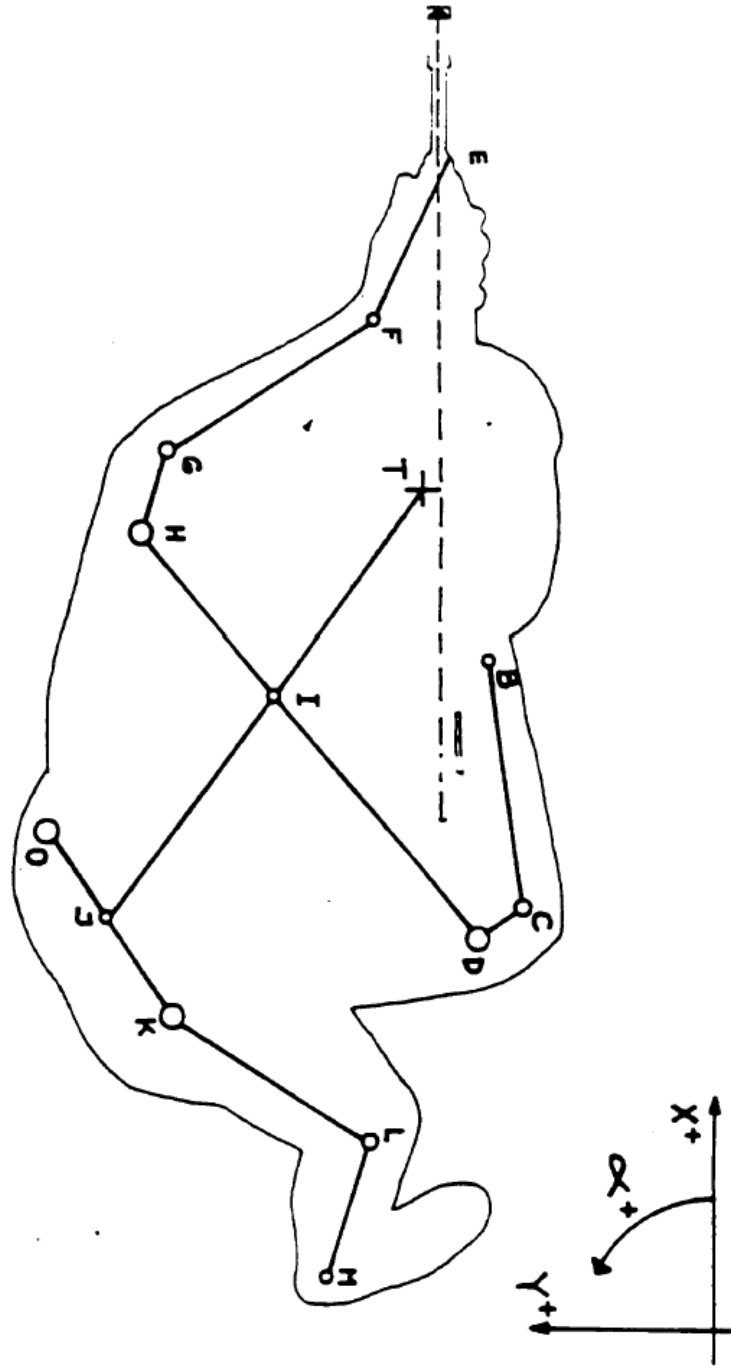XOZ projection (left side view)
Scale : 10/75 ; height : 140

STANDING MAN
YOZ projection (front view)
Scale : 10/73 ; Height : 140

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STANDING MAN
XOY projection (view from above)
Scale : 10/49 ; Height : 140

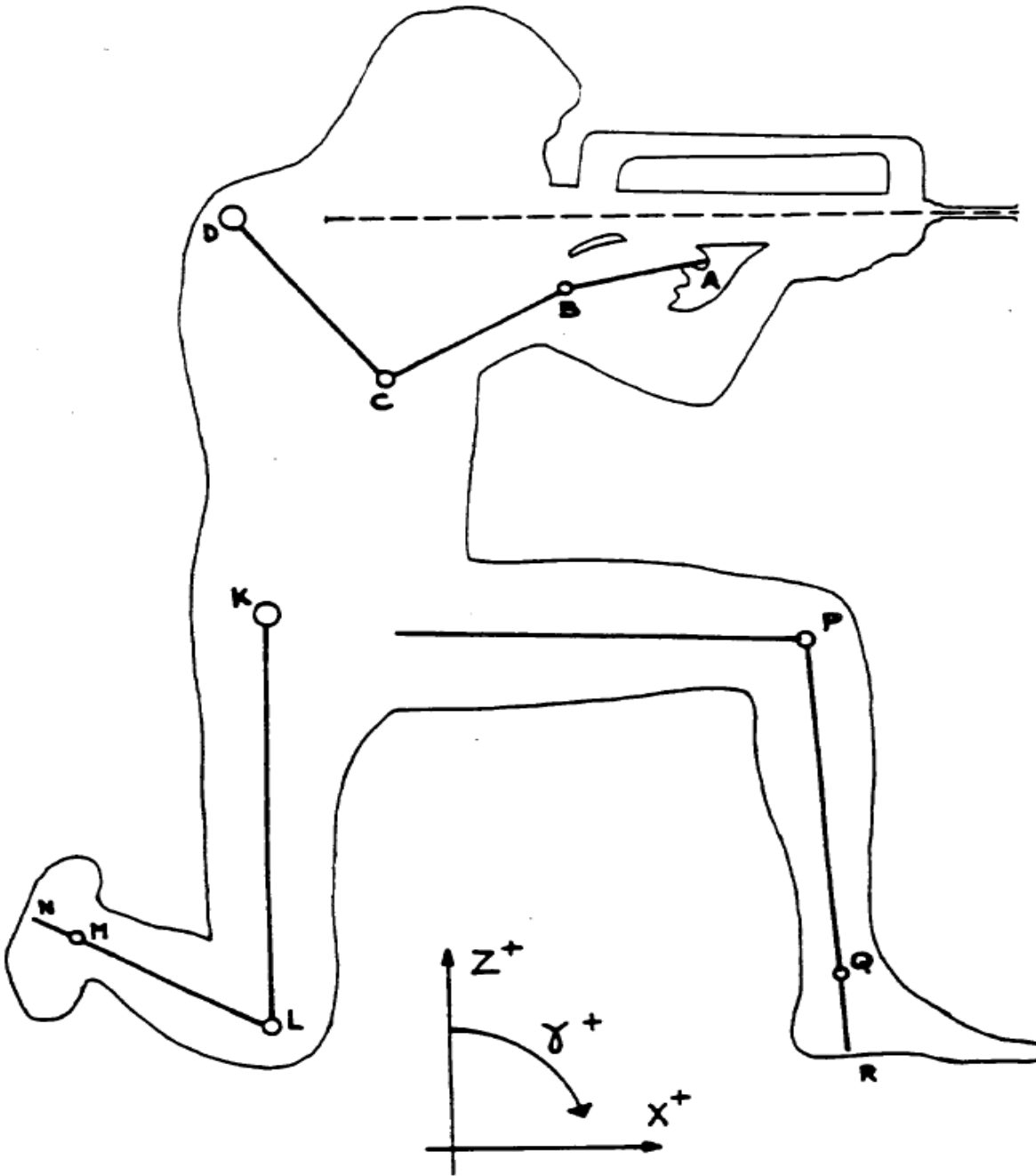**STANDING MAN**

| Designation of segment	Real modulus (tone length) A(cm)	XOY Projection		YOZ Projection		XOZ Projection	
		Apparent modulus B (cm)	Angle a(°)	Apparent modulus C (cm)	Angle OC)	Apparent modulus D (cm)	Angle (°)
AS	19			7	50	15	90
BC	26	22	8	7	50	26	80
CD	30	6	−55	30	75	30	−10
DH	40	40	40	26	−3	27	90
EF	19	.16	−25	13	−15	12	73
FG	26	23	−60	22	−15	15	55
GH	30	8	−18	27	−60	30	−30
HI	20	16	40	13	−3	16	90
ID	20	24	40	13	−3	11	90
JI	50	25	−37	41	−70	45	15
KL	45			41	55	35	15
LM	40			33	−70	37	30
MN	10			9	90	9	15
OP	45			38	57	45	−53
PQ	40			38	−85	40	10
OR	10			9	90	10	10
II	20			17	−55	20	1 55

(Edition 1)

KNEELING MAN, ARMS UNSUPPORTED
Inverse XOZ projection (right side view)
Scale : 10/70 ; Height : 122

KNEELING MAN, ARMS UNSUPPORTED
Inverse XOZ projection (left side view)
Scale : 10/77 ; Height : 122

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(Edition 1)
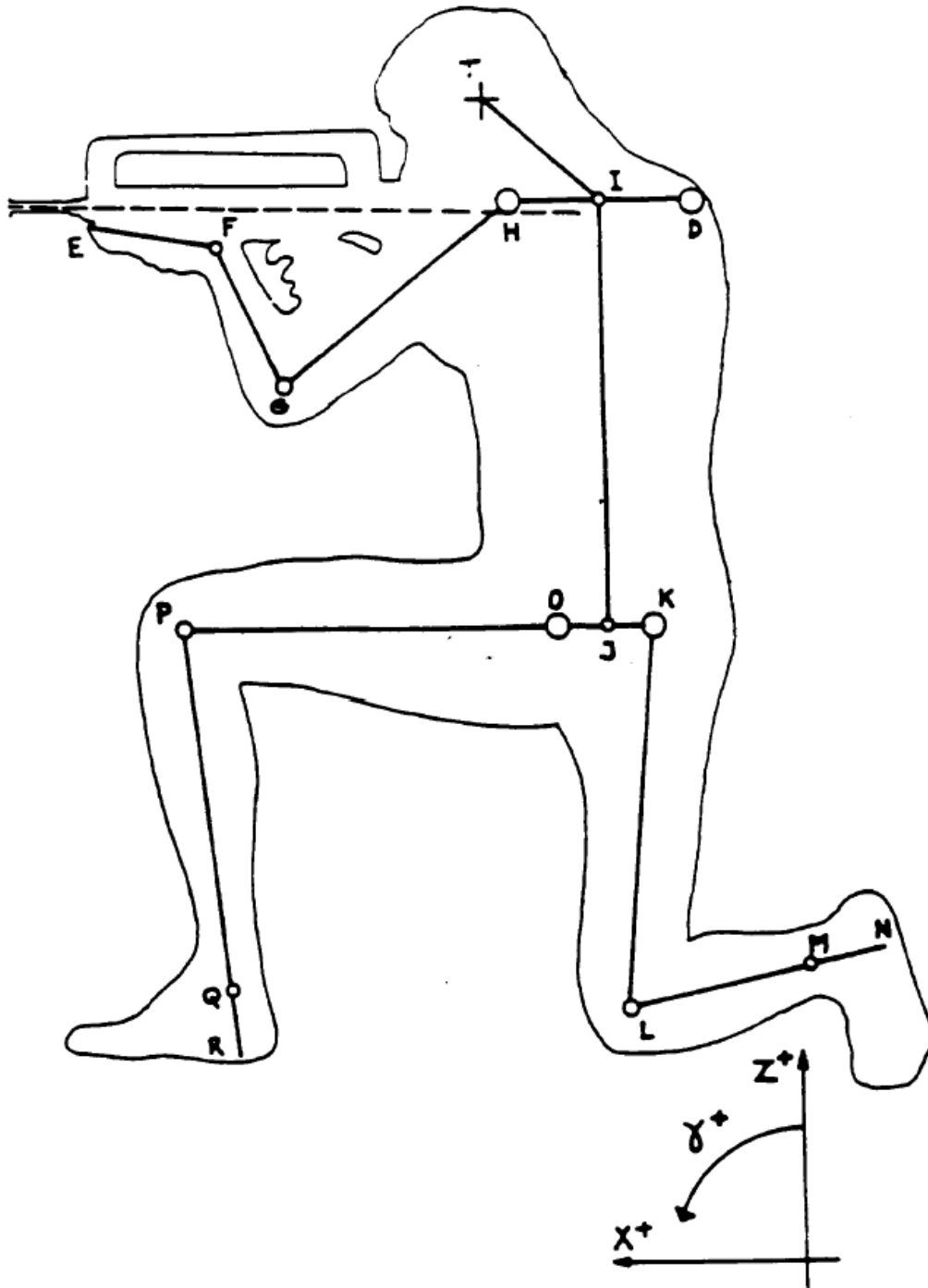
KNEELING MAN, ARMS UNSUPPORTED
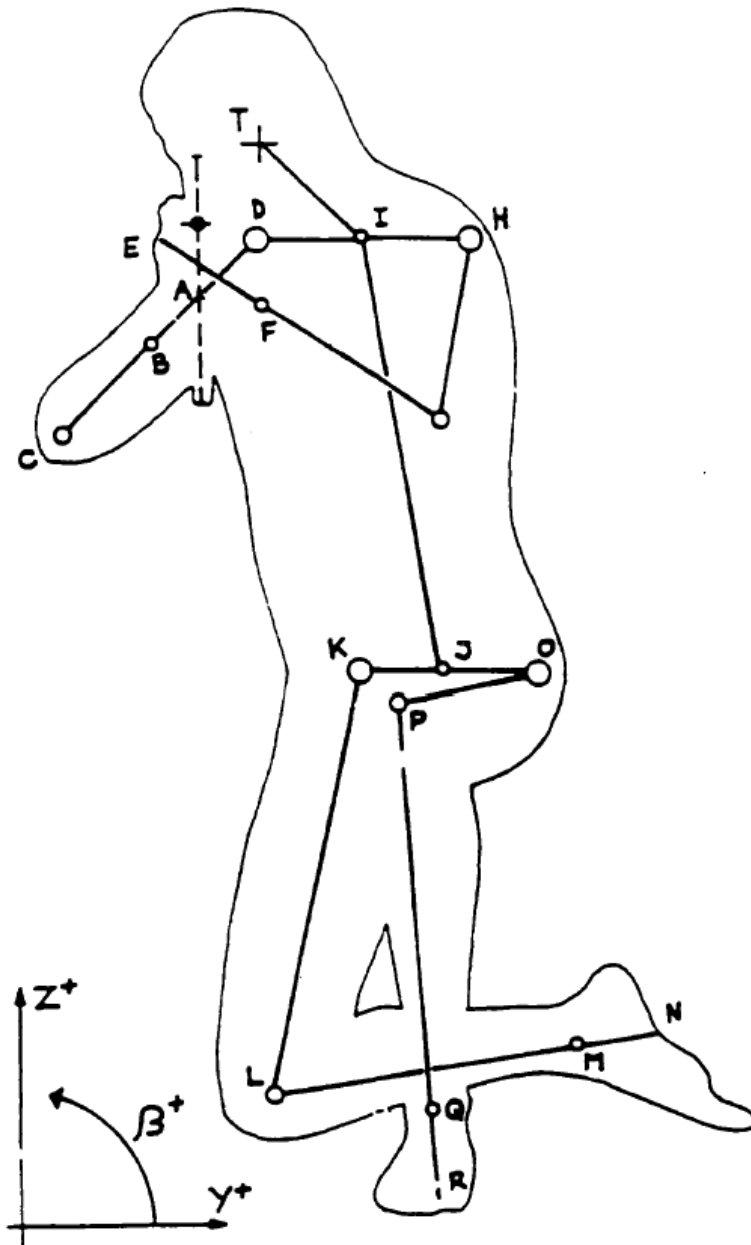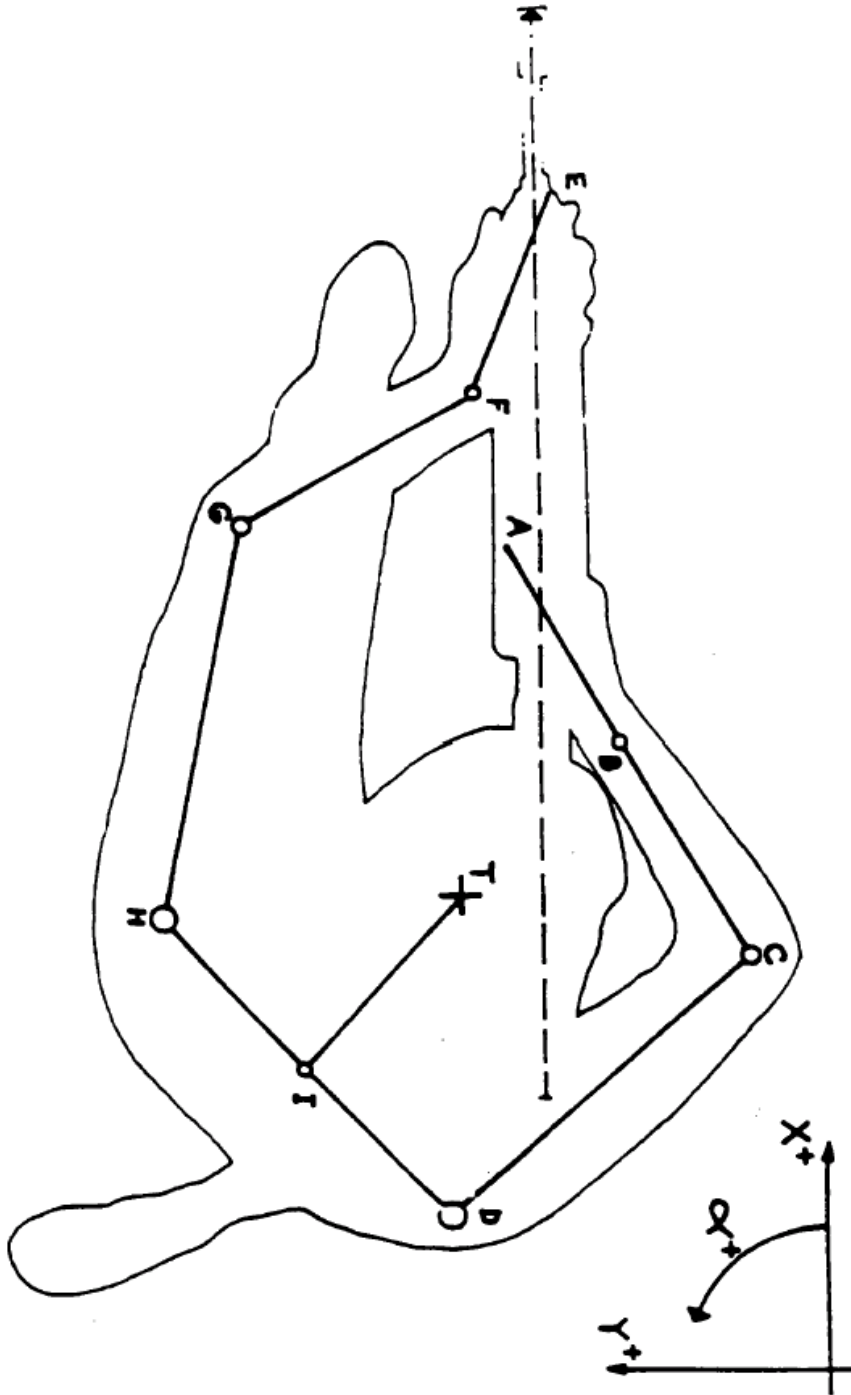## Inverse YOZ projection (front view)
Scale : 10/71 ; Height : 122

STANDING MAN
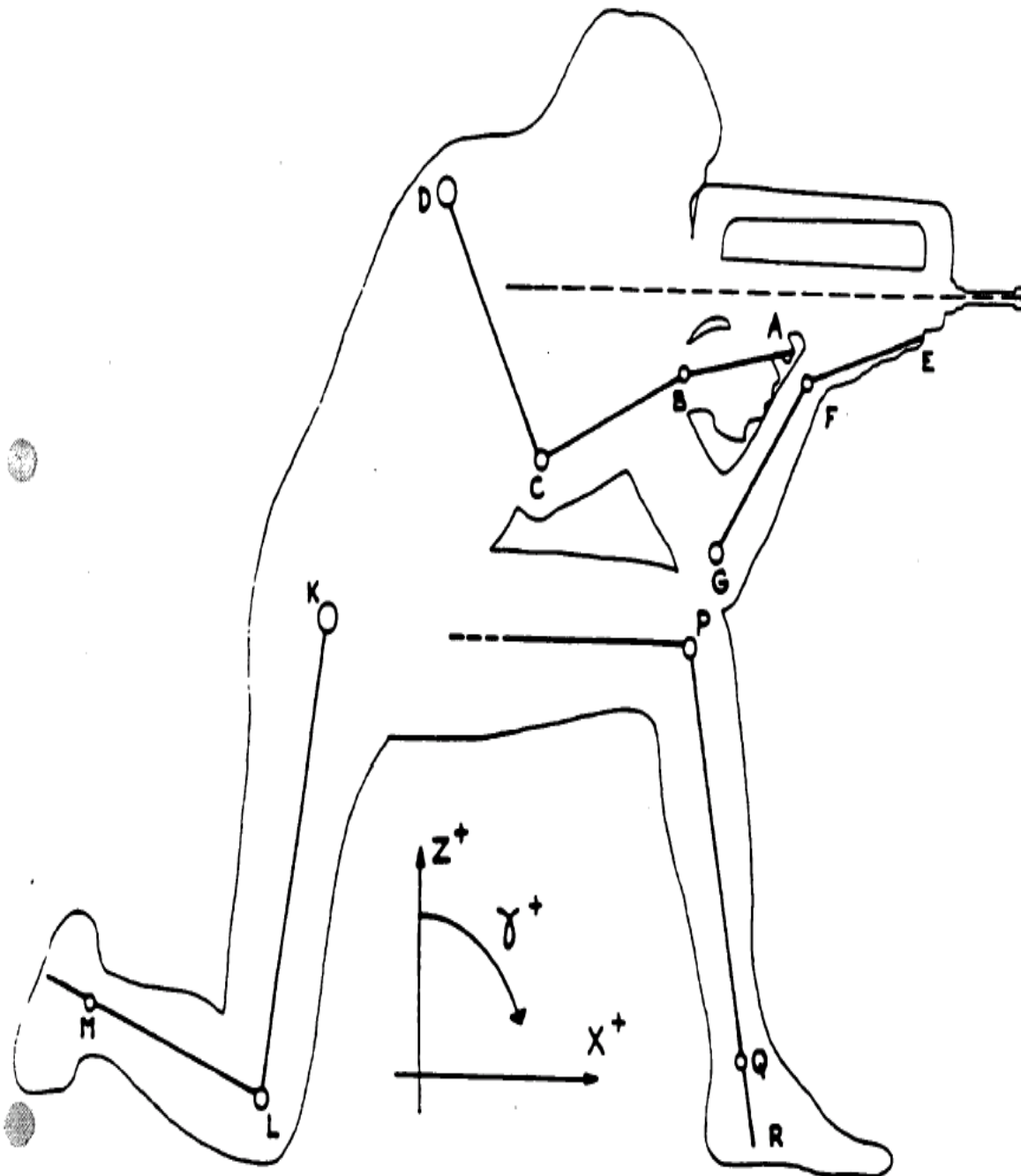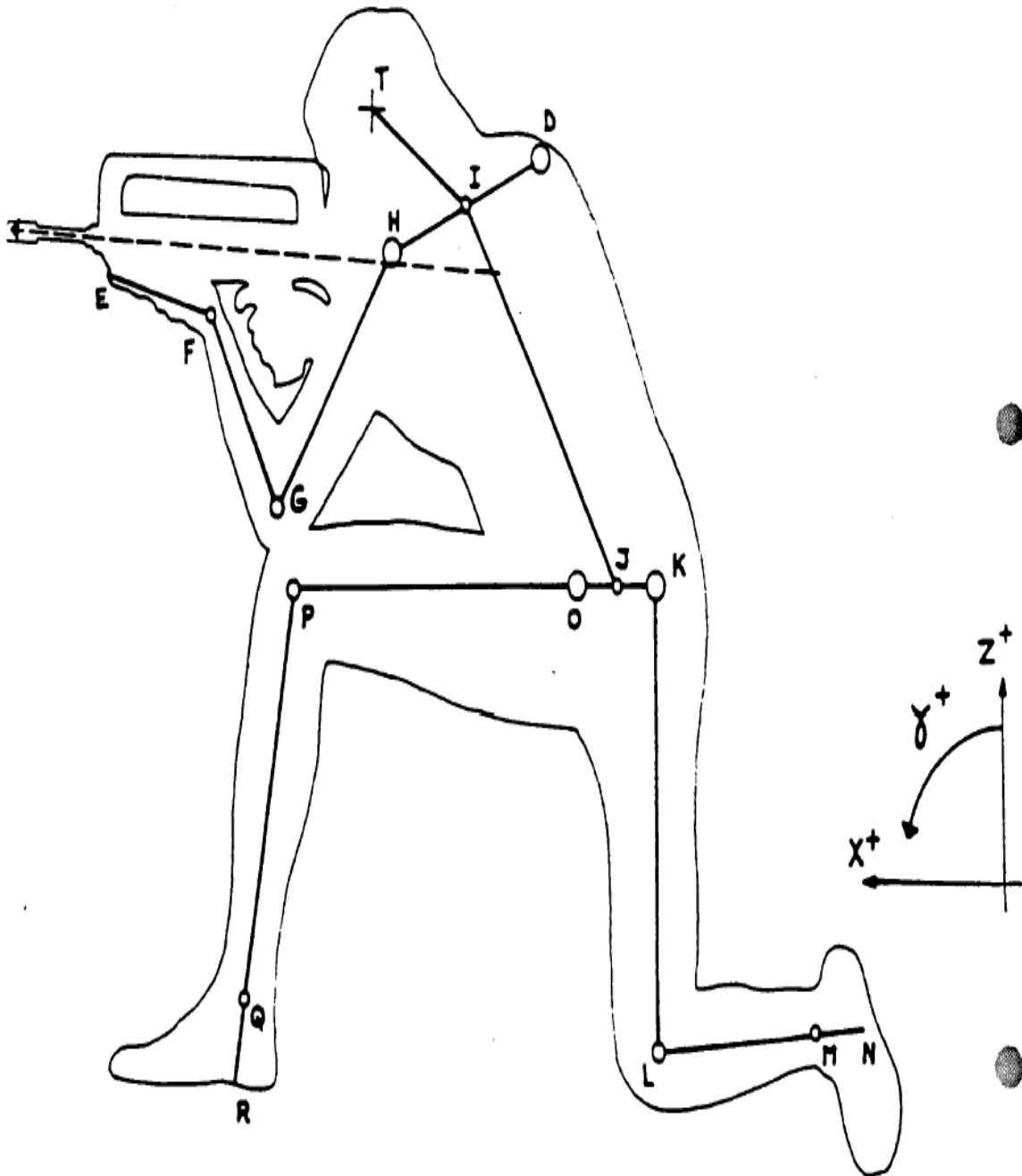XOY projection (view from above)
Scale : 10/49 ; Height : 140

STANDING MAN

KNEELING MAN UNSUPPORTED

GEOMETRIC DEFINITIONS

HT = 122

Designation of segment	Real modulus (tone length) A(cm)	XOY Projection		YOZ Projection		XOZ Projection	
		Apparent modulus B(cm)	Angle α(°)	Apparent modulus C(cm)	Angle β(°)	Apparent modulus D(cm)	Angle γ(°)
AB	19	17	30	9	45	15	80
BC	26	20	30	14	45	21	60
CD	30	29	-50	29	45	25	-40
DH	40	40	45	23	0	22	90
EF	19	17	-20	13	-30	16	80
FG	26	21	-60	23	-30	18	25
GH	30	29	-10	20	80	30	-50
HI	20	20	45	12	0	11	90
ID	20	20	45	12	0	11	90
JI	50			46	-80	50	0
KL	45			45	80	45	-5
LM	40			32	10	22	-15
MN	10			9	10	7	-15
OP	45			15	10	45	90
PQ	40			40	-85	40	10
QR	10			10	-85	9	10
IT	20	18	-40	14	-45	19	50

KNEELING MAN, ARMS SUPPORTED
Inverse XOZ projection (right side view)
Scale : 10/75 ; Height : 10

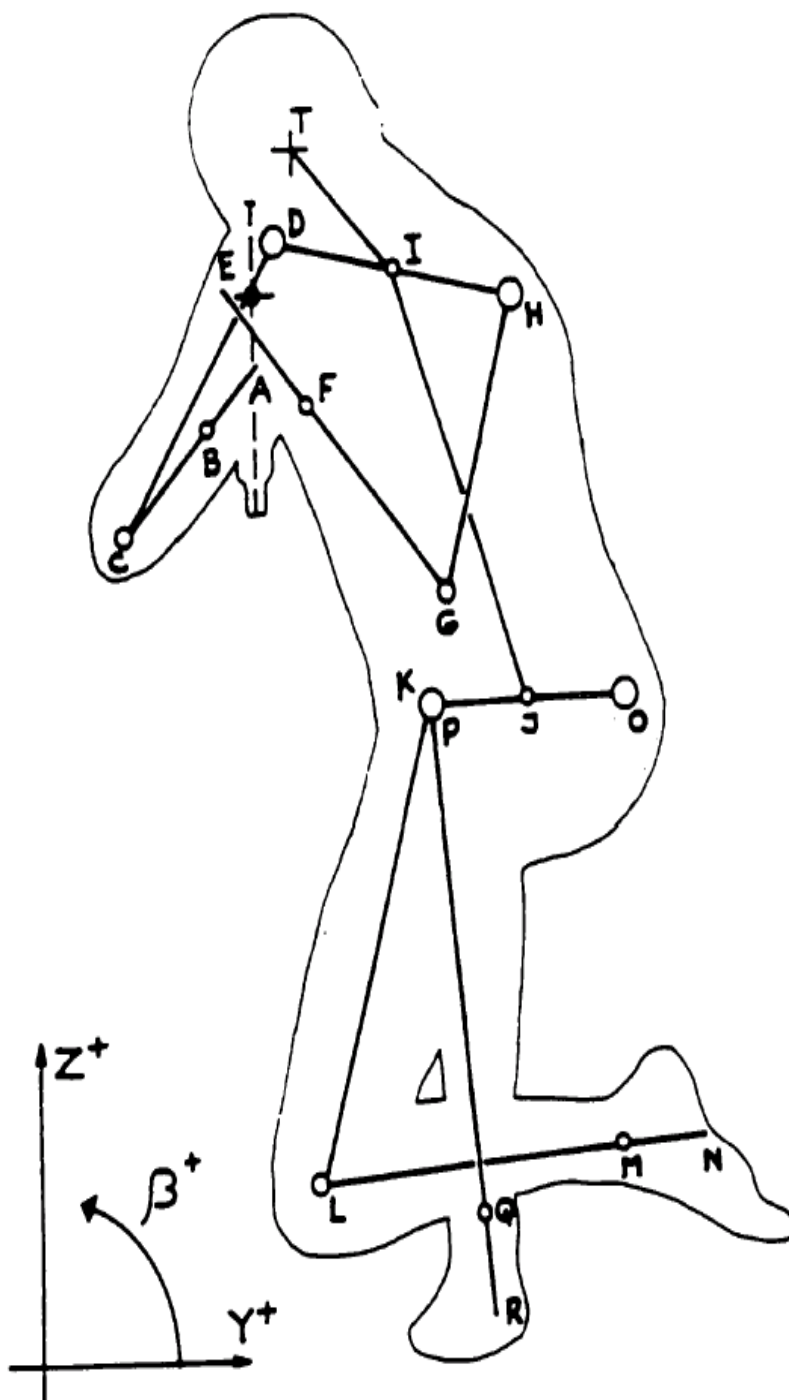STANAG 4512
(Edition 1)

KNEELING MAN, ARMS SUPPORTED
Inverse XOZ projection (left side)
Scale : 10/80 ; Height : 108

(Edition 1)

KNEELING MAN, ARMS SUPPORTED
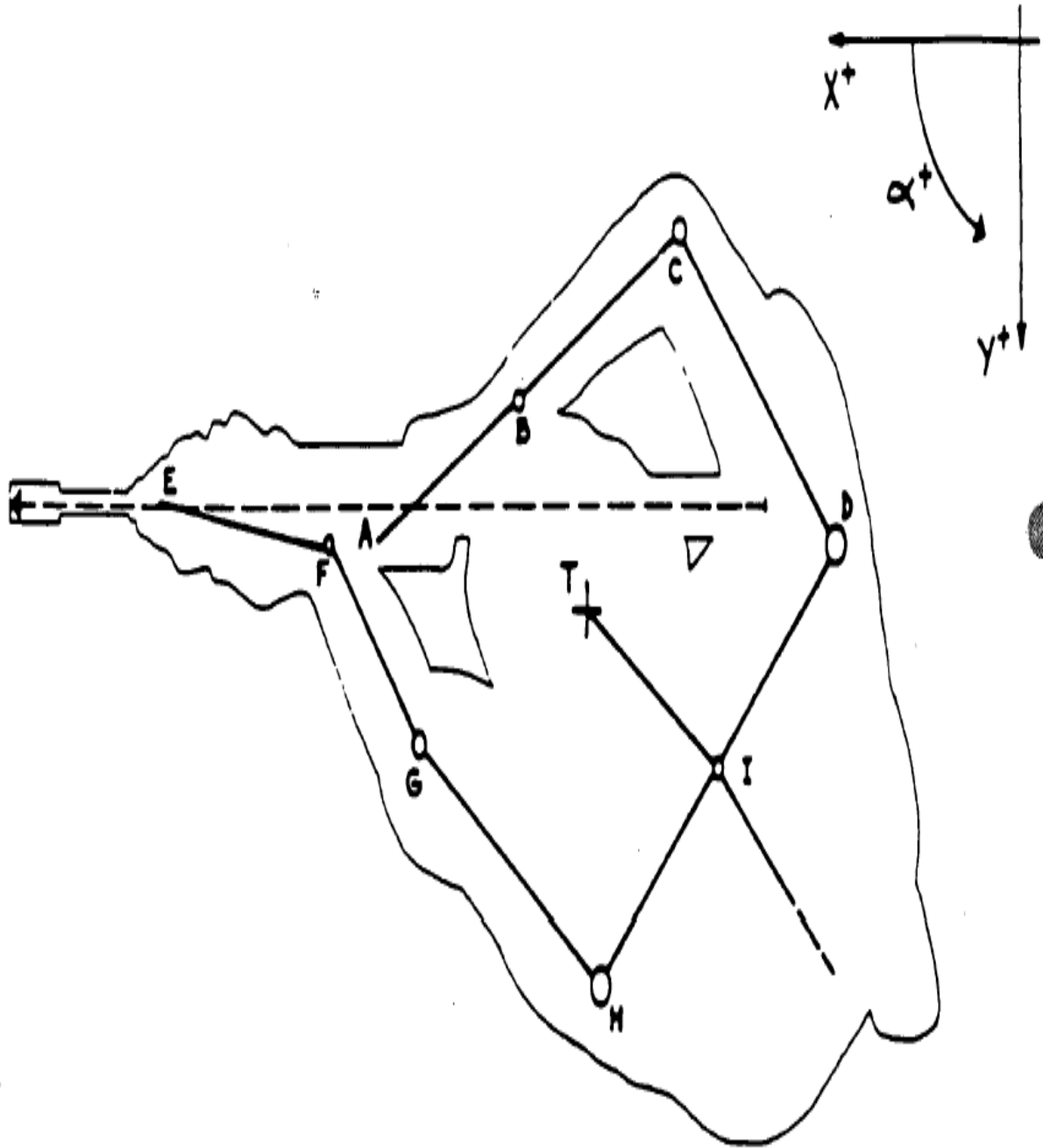Inverse YOZ projection (front view)
Scale : 10/67; Height: 108

(Edition 1)

KNEELING MAN, ARMS SUPPORTED
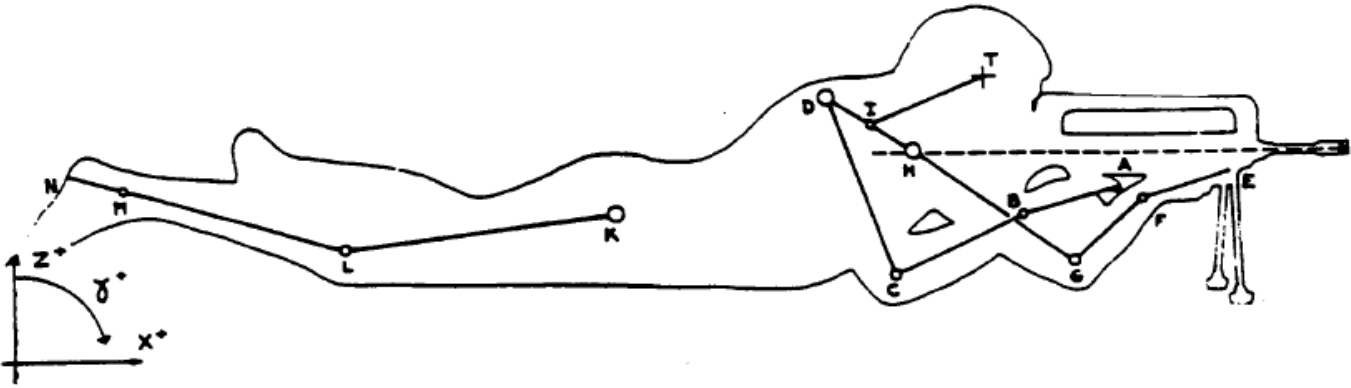Inverse XOY projection (view from above)
Scale : 10/65; Height : 108

KNEELING MAN, ARMS SUPPORTED

KNEELING MAN, SUPPORTED

GEOMETRIC DEFINITIONS

HT = 122

Designation of segment	Real modulus (tone length) A (cm)	XOY Projection		YOZ Projection		XOZ Projection	
		Apparent modulus B (cm)	Angle α (°)	Apparent modulus C (cm)	Angle β (°)	Apparent modulus D (cm)	Angle γ (°)
AB	19	17	30	8	45	16	80
BC	26	21	30	13	45	22	68
CD	30	27	-45	30	55	28	-30
DH	40	40	45	26	-10	26	-65
EF	19	18	-8	13	-47	17	75
FG	26	17	-50	22	-47	22	27
GH	30	26	-35	26	75	30	-35
HI	20	20	45	13	-10	13	-65
ID	20	20	45	13	-10	13	-65
JI	50			40	-70	46	30
KL	45			42	75	45	0
LM	40			32	7	24	-85
MN	10			9	7	7	-85
OP	45			21	0	45	90
PQ	40			40	-82	40	-10
QR	10			9	-82	10	-10
IT	20	19	-30	14	-45	18	55

PRONE MAN

Inverse XOZ projection (right side view)
Scale : 10/125; Height 48

PRONE MAN

XOZ projection (left side)
Scale : 10/27; Height: 48
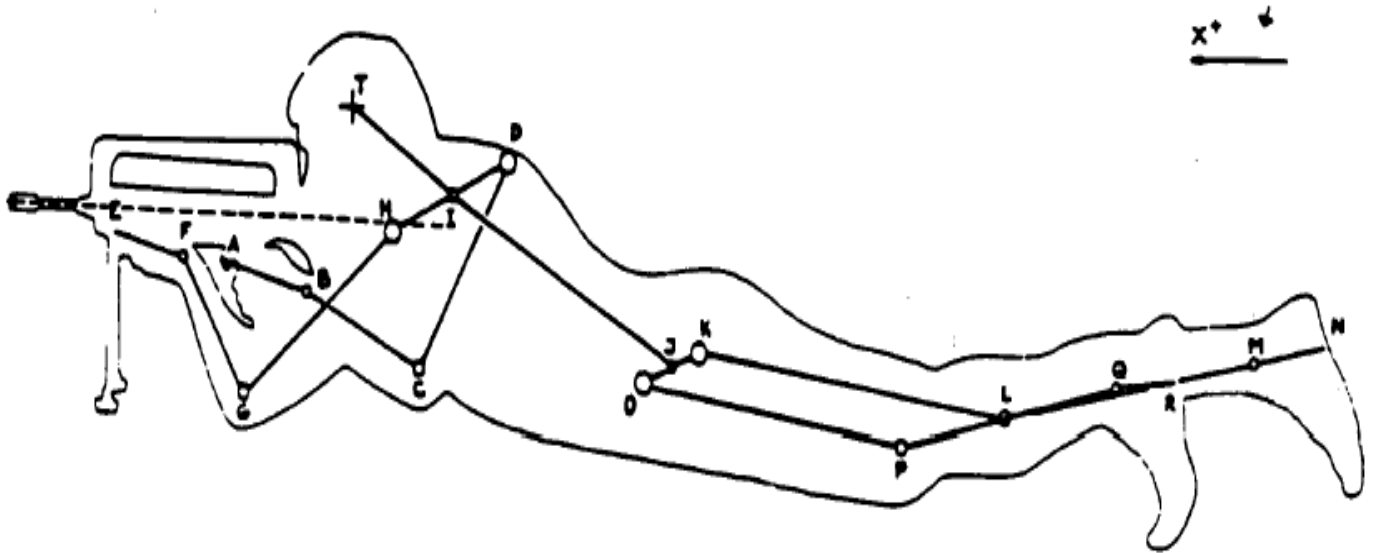
PRONE MAN
YOZ projection (front view)
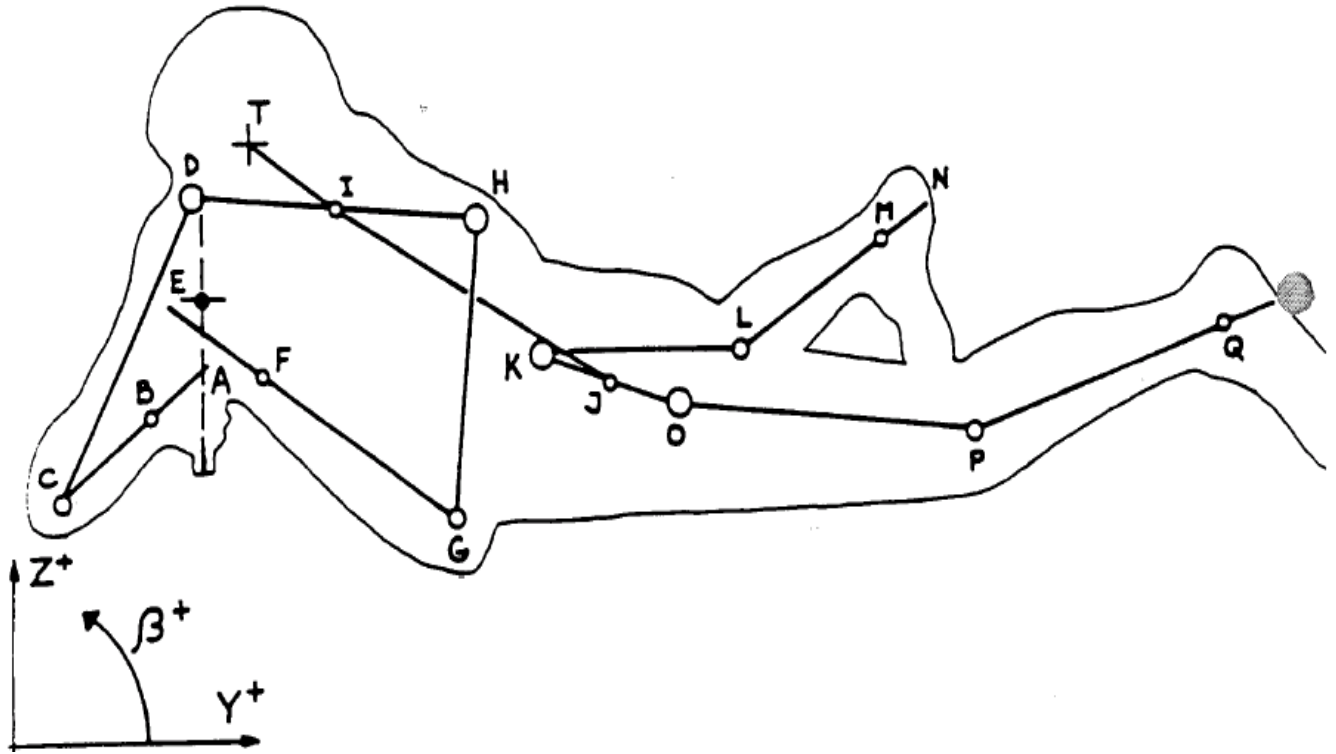
Scale : 10/67; Height: 48

PRONE MAN
XOY projection (view from above)
Scale : 10/95; Height: 48
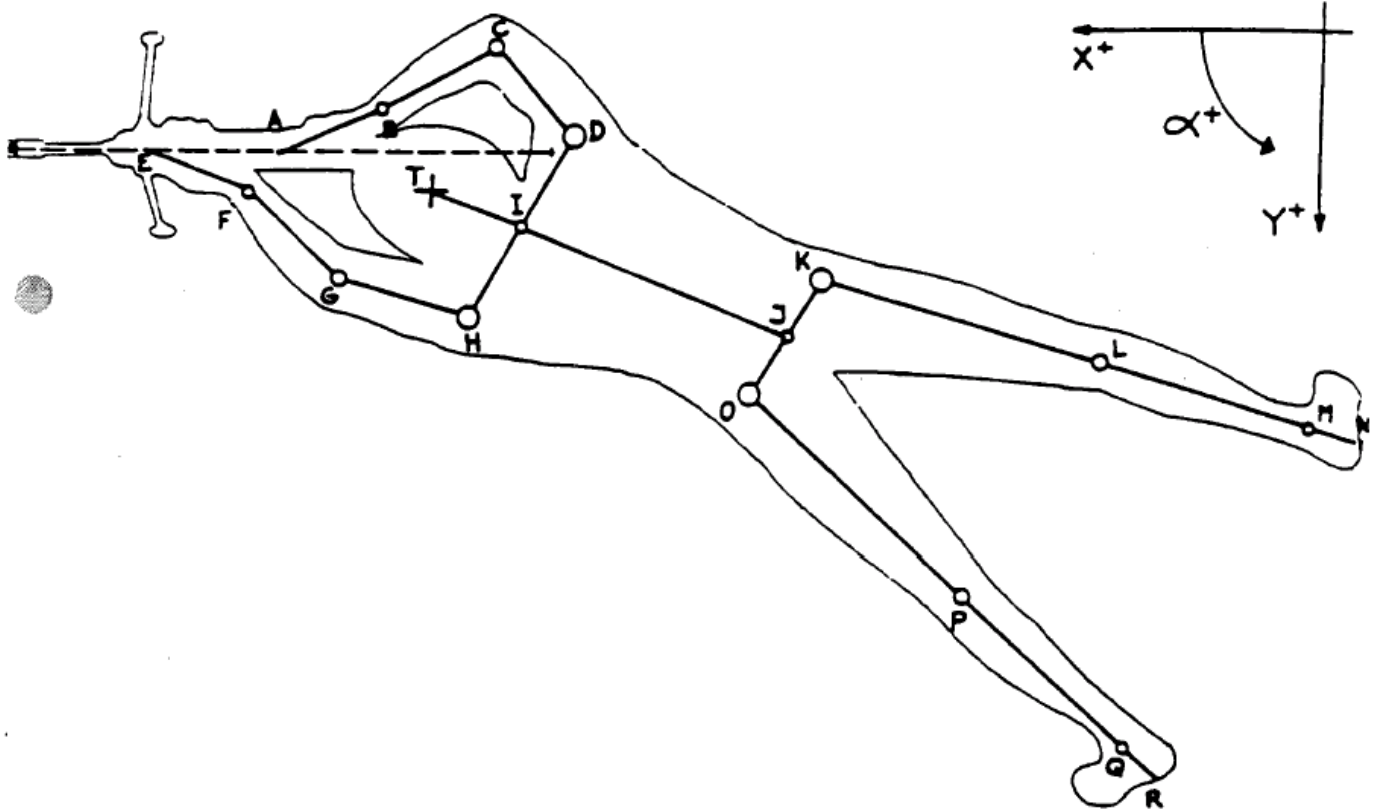
PRONE MAN

PRONE MAN   HT=48

TABLE OF GEOMETRIC DEFINITIONS

Designation of segment	Real Modules A (cm)	Projection plan XOY		Projection plan YOZ		Projection plan XOZ	
		Apparent Modules B (cm)	Angle α(°)	Apparent Modules C (cm)	Angle β(°)	Apparent Modules D (cm)	Angle γ(°)
AB	19	15	23	8	40	15	75
BC	26	18	30	12	40	21	65
CD	30	15	-47	30	63	29	-30
DH	40	30	60	30	-5	22	-65
EF	19	15	-20	11	-32	11	75
FG	26	17	-43	24	-32	20	33
GH	30	19	-15	26	85	30	-50
HI	20	15	60	15	-5	11	-65
ID	20	15	60	15	-5	11	-65
JI	50	40	-20	33	-30	42	60
KL	45	40	-15	21	0	45	82
LM	40	30	-15	17	35	40	-80
MN	10	7	-15	5	35	10	-80
OP	45	40	-43	30	-5	43	80
PQ	40	30	-43	27	20	37	-78
QR	10	6	-43	6	20	9	-87
IT	20	13	-20	11	-35	19	60

MAN IN FOXHOLE
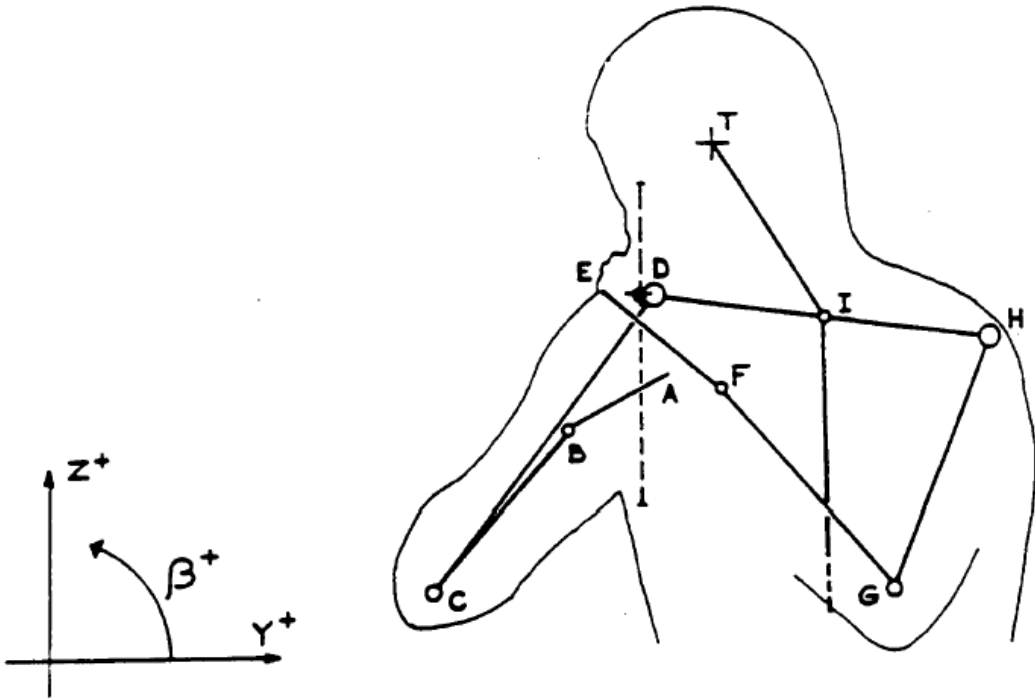Inverse XOZ projection (right side view)
Scale : 10/51; Height: 49
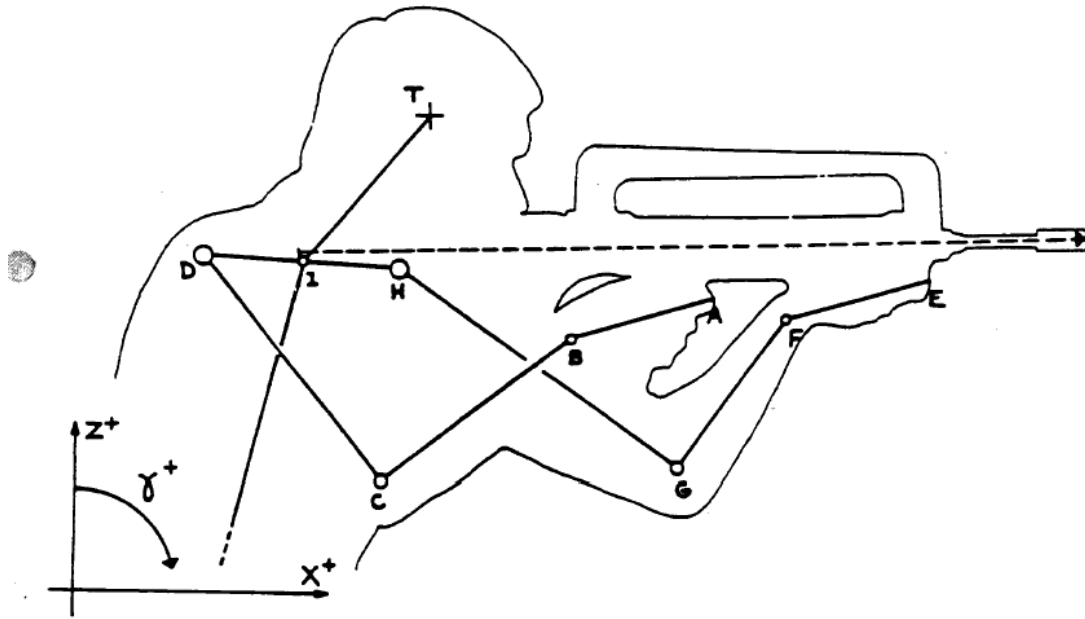
MAN IN FOXHOLE
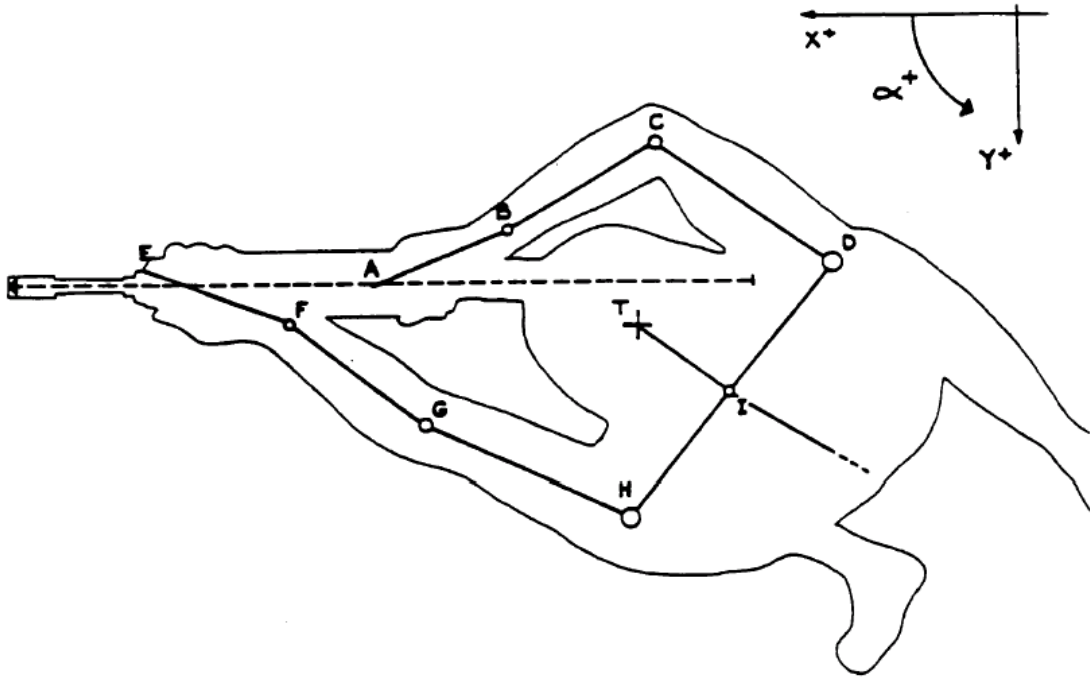XOZ projection (left side view)
Scale : 10/51; Height: 49
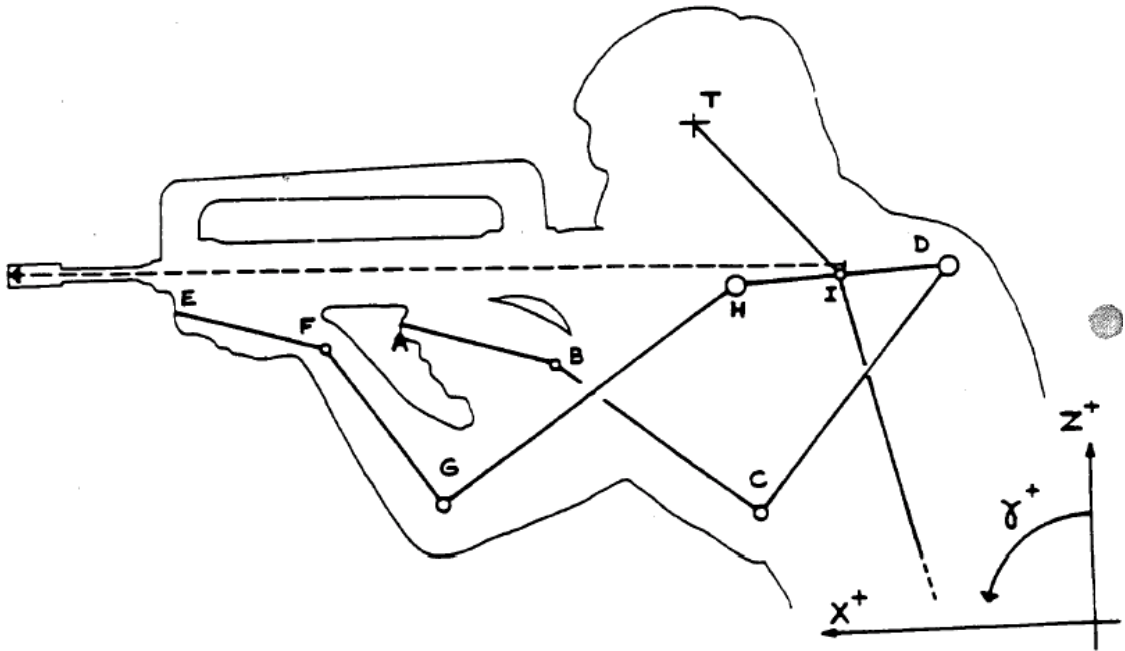
MAN IN FOXHOLE
YOZ projection (front view)
Scale : 10/58; Height: 49

MAN IN FOXHOLE
XOY projection (view from above)
Scale : 10/58; Height: 49

MAN IN FOXHOLE

MAN IN FOXHOLE — HT = 122

GEOMETRIC DEFINITIONS

Designation of segment	Real modulus (tone length) A(cm)	XOY Projection		YOZ Projection		XOZ Projection	
		Apparent modulus B(cm)	Angle α(°)	Apparent modulus C(cm)	Angle β(°)	Apparent modulus D(cm)	Angle γ(°)
AB	19	15	22	10	30	14	73
BC	26	18	30	17	50	23	53
CD	30	22	-35	30	53	28	-40
DH	40	34	50	28	-7	20	87
EF	19	16	-20	13	-40	14	75
FG	26	18	-35	22	-50	18	35
GH	30	23	-23	22	68	30	-55
HI	20	17	50	14	-7	10	87
ID	20	17	50	14	-7	10	87
JI	50						
KL	45						
LM	40						
MN	10						
OP	45						
PQ	40						
QR	10						
IT	20	12	-35	17	-57	18	40

SUMMARY TABLE

| POSTURE	Planimetric area of Target (m²) and circumscribing rectangle (m)		
	XOZ projection (side view)	YOZ projection (front view)	XOY position (view from above)
STANDING MAN	0.46 H=1.40 L=1.05	0.37 H=1.40 l=0.50	0.33 l=0.50 L=1.05
KNEELING MAN (unsupported)	0.47 H=1.22 L=1.00	0.37 H=1.22 l=0.75	0.34 l=0.75 L=1.00
KNEELING MAN (supported)	0.47 H=1.08 L=1.20	0.32 H=1.08 l=0.74	0.45 l=0.74 L=1.20
PRONE MAN	0.43 H=0.48 L=2.08	0.27 H=0.48 l=1.32	0.59 l=1.32 L=2.08
FOXHOLE	0.19 H=0.49 L=0.80	0.15 H=0.49 l=0.52	0.20 l=0.52 L=0.80

Protected Man Standing Erect
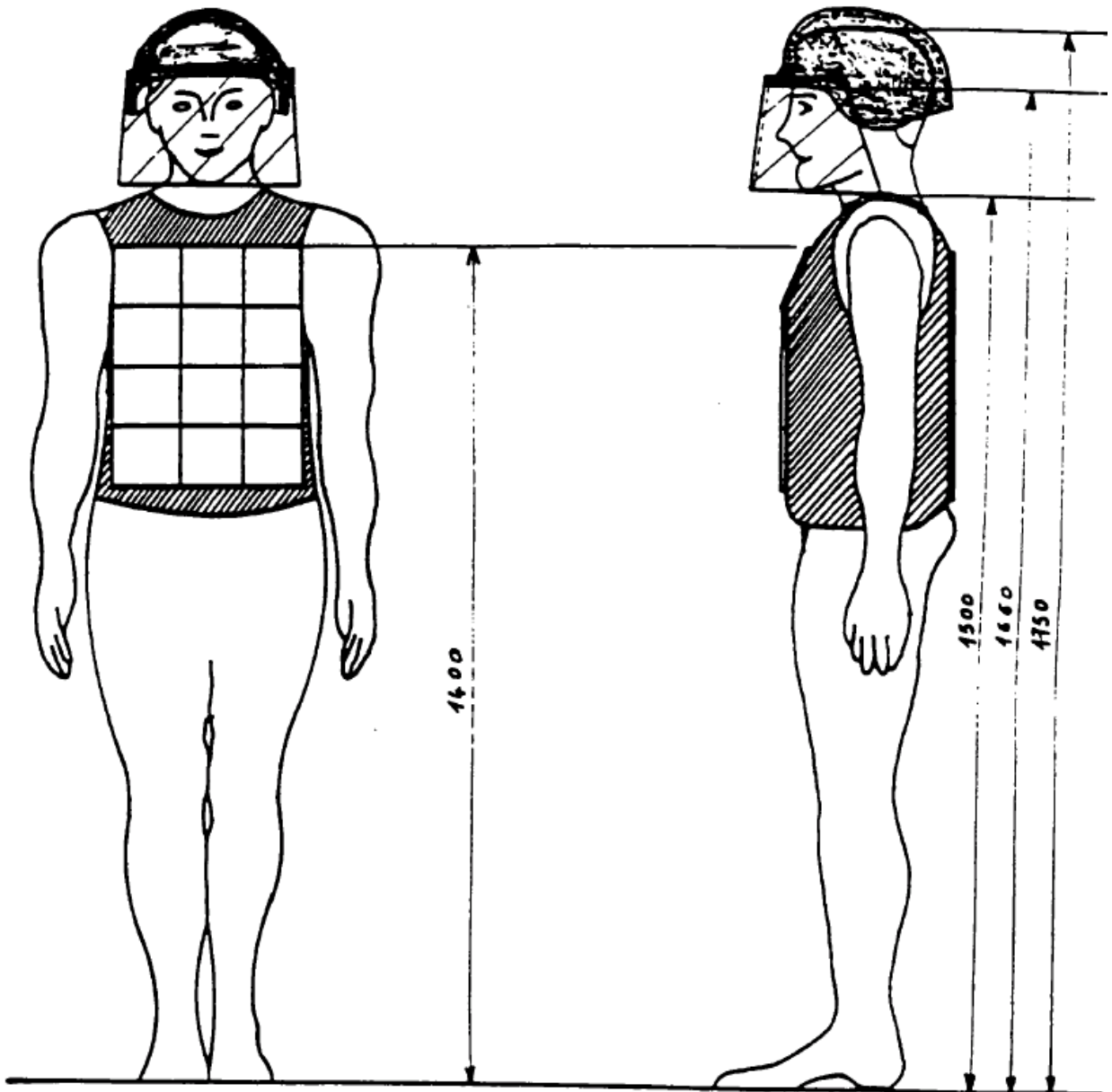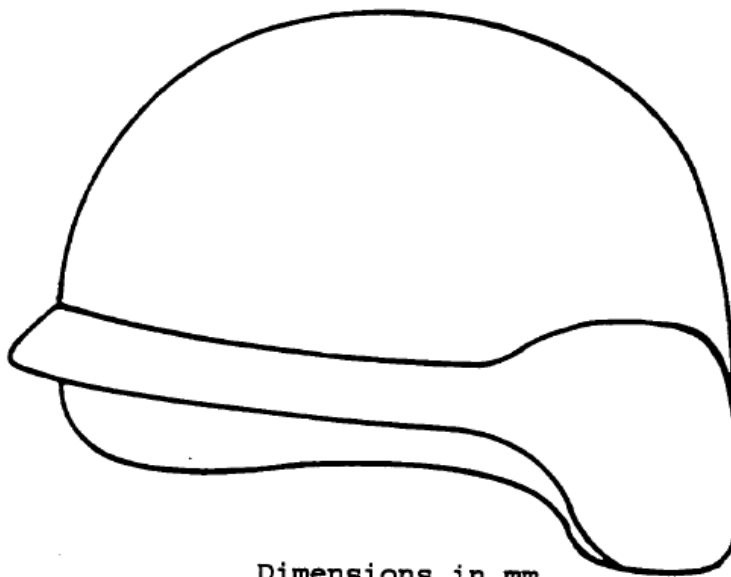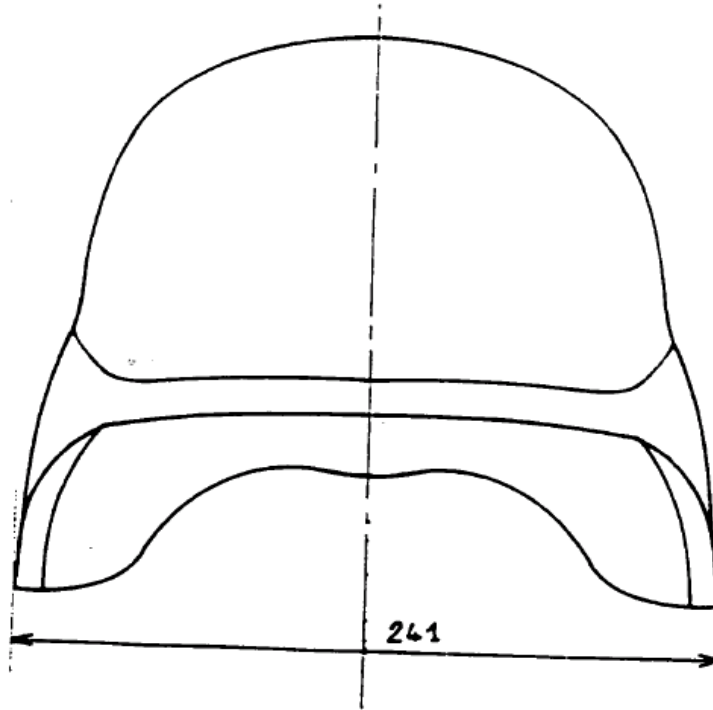
Dimensions in mm

Helmet
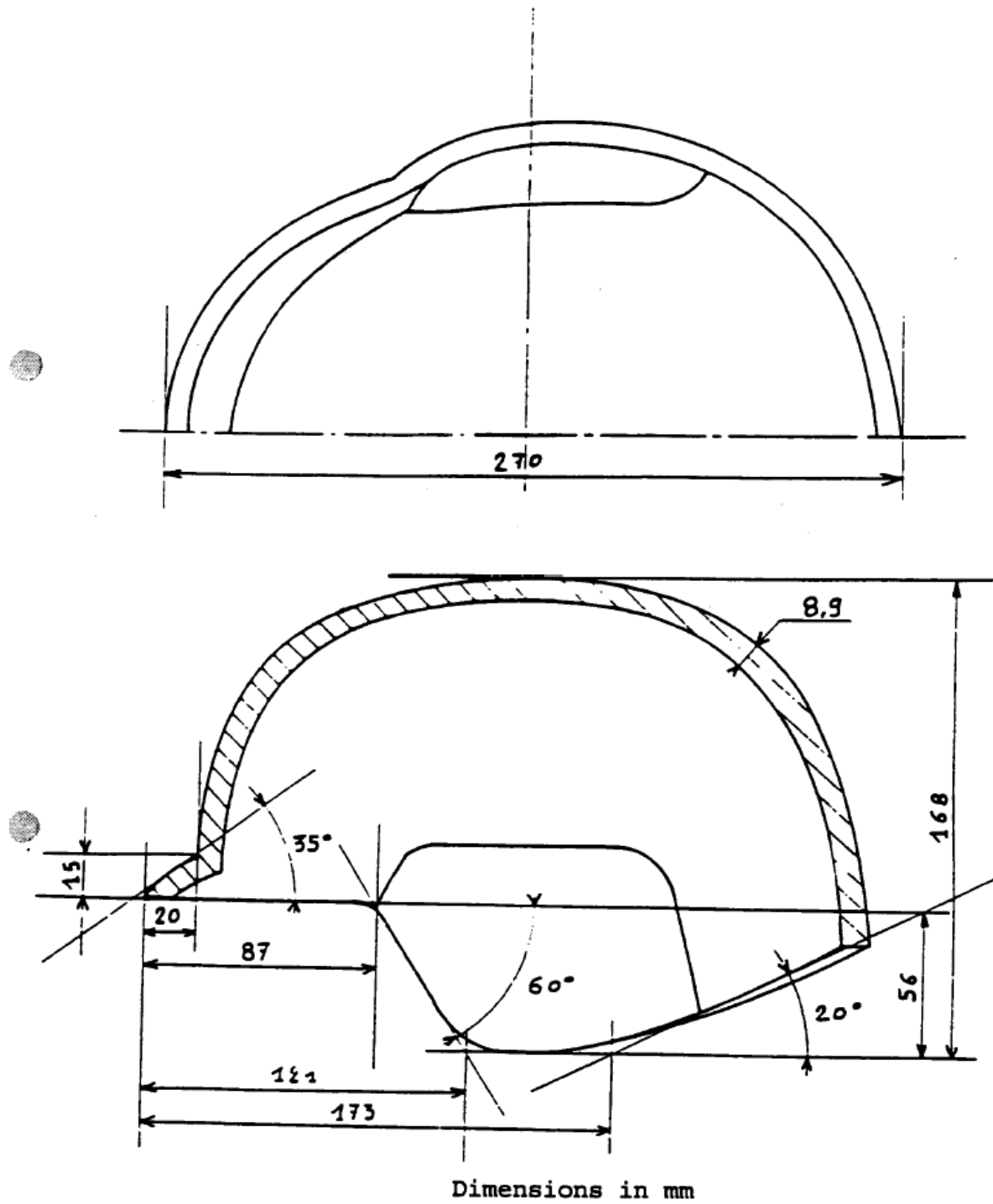
Dimensions in mm

241

Dimensions in mm

ANNEX E
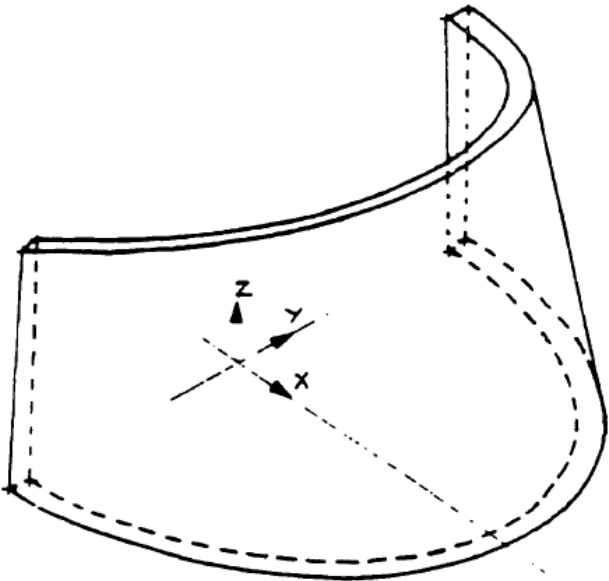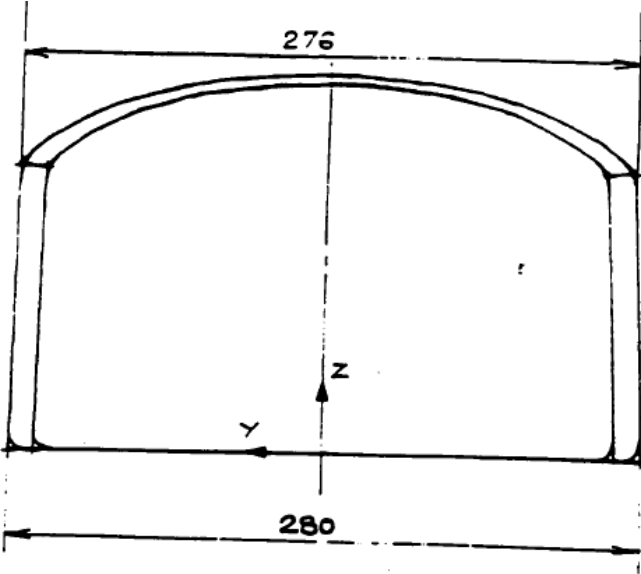
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Polycarbonate Visor
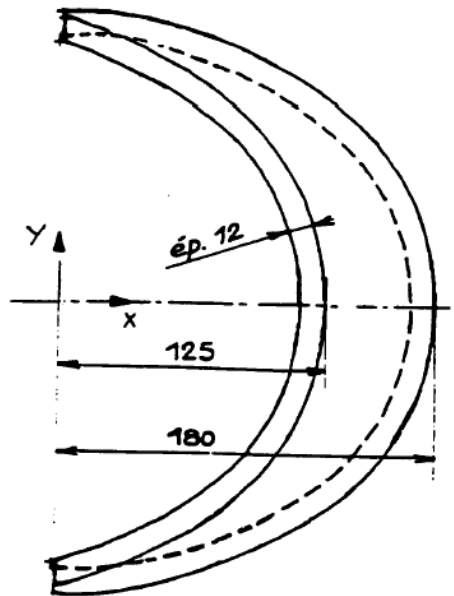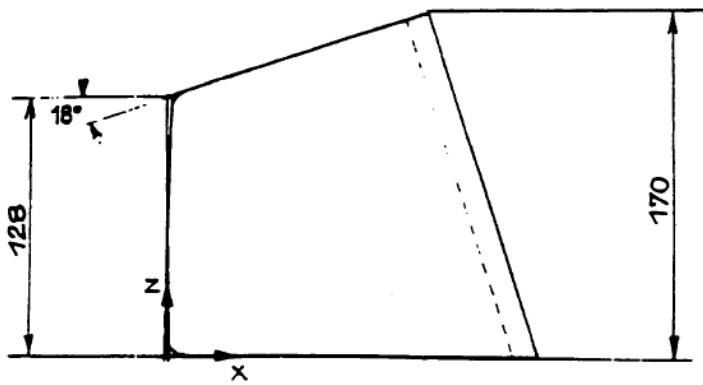
Dimensions in mm

Dimensions in mm

SPLINTER –PROOF JACKET

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SPLINTER –PROOF JACKET

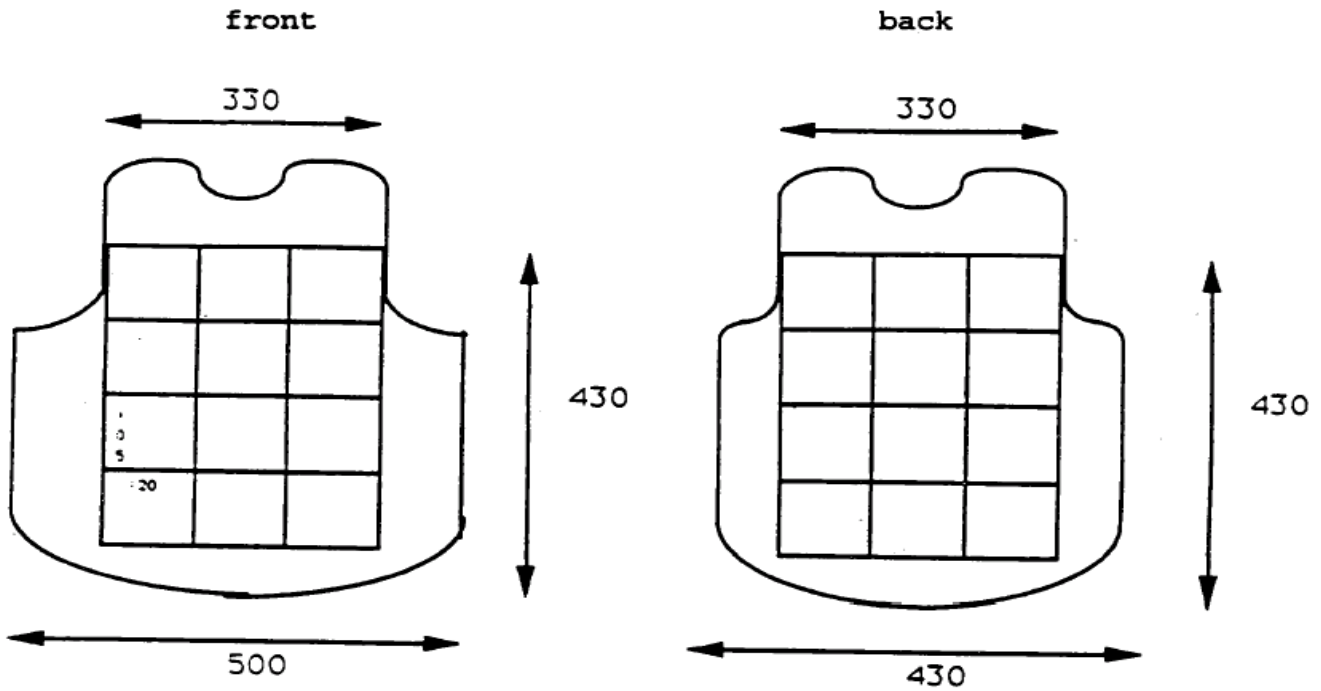**SPLINTER-PROOF JACKET OF ARAMID FIBRES WITH METAL PLATES**
(Total weight 3.9 kg)

front   back

330   330

430   430

500   430

plate overlap: horizontal 16 mm vertical 6 mm

DESCRIPTION   COMPOSITION

TOTAL COVERAGE OF TORSO   24 PLATES

                                     T1 equivalent
HEIGHT PROTECTED   (UK IMI TITANIUM 318
                                     F TA6V or equivalent)
BACK   FRONT
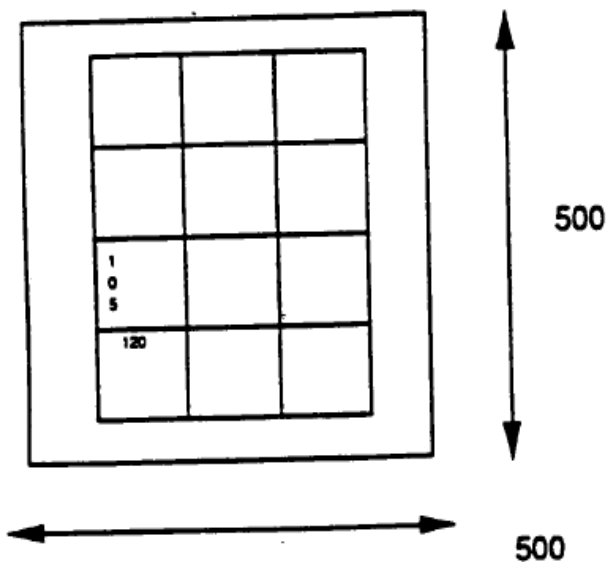430mm   430mm   120*105*1.6mm

                                     Aramid fabric
                                     20 LAYERS, corresponding with
                                     UK/SC/4468
                                     (for example KEVLAR 328)

SHOOTING RANGE TARGET

SPLINTER-PROOF JACKET OF ARAMID FIBRES AND METAL PLATES

500

500

COMPOSITION
PLATES

TI equivalent
(UK IMI TITANIUM 318
F TA 6 V
or equivalent)
120*105*1.6mm

FABRIC

20 ARAMID LAYERS
e.g. corresponding with
KEVLAR 328 (or UK/sc/4468)

Plate overlap:

horizontal 16mm
vertical 6mm