L'excellence depuis 1948

PRESSE PLIEUSE

JOUANEL industrie

JOUANEL industrie

Directeur Général
Emmanuel HALLÉ
E-mail : e.halle@jouanel.com

Directeur Commercial
Guylaine JUSTE
Tél. : +33 2 47 65 45 61
Mobile : +33 6 85 41 21 75
e-mail : g.juste@jouanel.com

Assistante Export
Lou BROCHARD
Tél. : +33 2 47 65 16 51
e-mail : export@jouanel.com

Commercial BENELUX/ESPAGNE/PORTUGAL
Arnaud MELEUX
Tél. : +33 6 08 48 98 50
e-mail : com-export@jouanel.com

Offres Commerciales France
Secteurs Nord-Est • IdF-Centre • Sud-Est
Elodie DAGUET
Tél. : +33 2 47 34 93 42
e-mail : contact@jouanel.com

Offres Commerciales France
Secteurs Ouest • Sud-Ouest
Anaïs CHARTIER
Tél. : +33 2 47 65 16 52
e-mail : com-st@jouanel.com

Informations techniques et commerciales
Sébastien PETIT
Tél. : +33 2 47 65 16 48
Mobile : +33 6 85 41 21 80
e-mail : s.petit@jouanel.com

Technico commercial Export
Kamil JURGIELEWICZ
Tél. : +33 2 47 34 93 44
Mobile : +48 6 68 47 13 27
e-mail : k.jurgielewicz@jouanel.com

Comptabilité
Agnès FOUCTEAU
Tél. : +33 2 47 65 46 32
e-mail : a.foucteau@jouanel.com

Commandes
& Suivi Transport France
Christiane SOREL
Tél. : +33 2 47 65 47 18
e-mail : c.sorel@jouanel.com

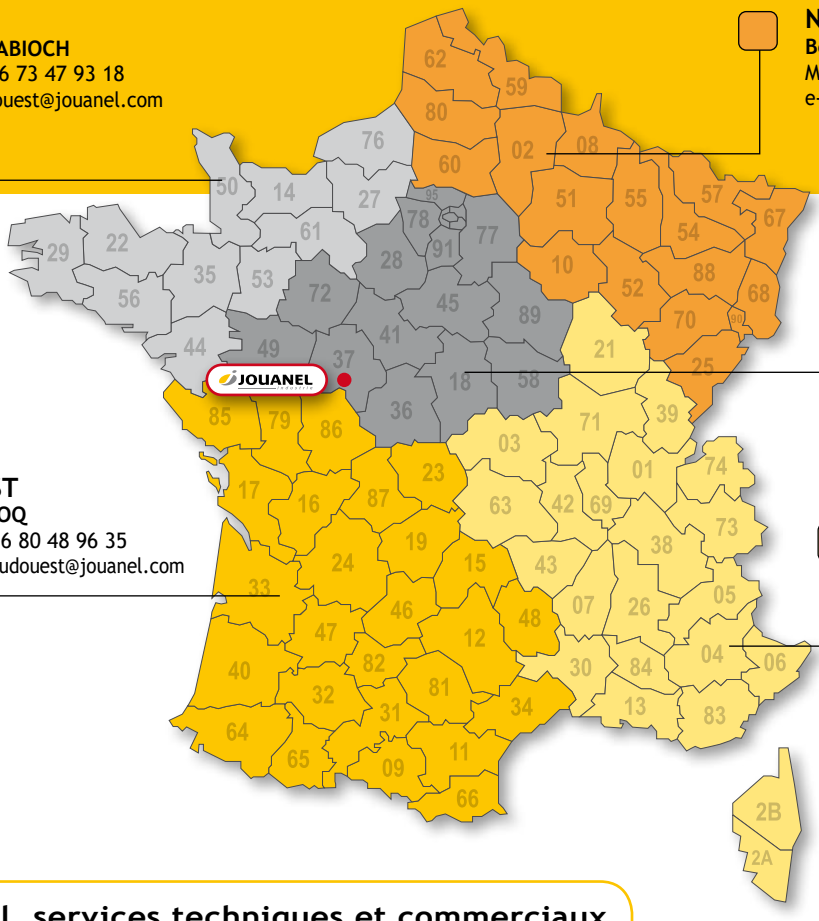
Marketing & Communication
Marc RICHARD
Mobile : +33 6 85 41 12 80
e-mail : marketing@jouanel.com

Service d'assistance technique
Yoann GOURBIER
Tél. : +33 2 47 65 16 49
e-mail : contactsat@jouanel.com

Une équipe commerciale & technique à votre service

OUEST
Guillaume CABIOCH
Mobile : +33 6 73 47 93 18
e-mail : com-ouest@jouanel.com

NORD-EST
Benoît PIERARD
Mobile : +33 6 75 69 70 85
e-mail : com-nordest@jouanel.com



IDF / CENTRE
Maxime PUY
Mobile : +33 6 07 53 49 40
e-mail : com-idfcentre@jouanel.com

SUD-OUEST
Jérôme LECOQ
Mobile : +33 6 80 48 96 35
e-mail : com-sudouest@jouanel.com

SUD-EST
Alain BOUCHET
Mobile : +33 6 85 41 12 79
Fax : +33 4 78 32 68 13
e-mail : a.bouchet@jouanel.com

Siège social, services techniques et commerciaux
Z.A. des Saulniers • 37800 Sainte-Maure-de-Touraine • France
e-mail : info@jouanel.com • STANDARD Tél. : +33 2 47 65 40 67 • Fax : +33 2 47 65 51 61

www.jouanel.com

Sommaire

Presse plieuse PPS

- Equipements standards ____ 1-3
- Options ____ 4
- Commandes numériques ____ 5
- Caractéristiques et abaque de pliage ____ 6

Outillage complémentaire

- Feuille de calcul ____ 7/19/40
- Poinçons ____ 8 - 17
- Poinçons gros gabarit ____ 18
- Matrices ____ 20 - 36
- Supports pour matrices étroites ____ 37
- Matrices étroites base 14 mm ____ 38
- Outils à écraser ____ 39

Dimensions exprimées en millimètre

JOUANEL industrie

Presse plieuse PPS

Descriptif

De conception robuste, la presse plieuse PPS est équipée d'une barre de torsion largement dimensionnée assurant un bon parallélisme du coulisseau mobile lors de la descente en pression.

PPS3120 équipée de la CNC PPS-DA41

- Bloc hydraulique équipé d'une double sécurité avec pression réglable selon besoin
- Table de travail rectifiée démontable et réajustable pour une grande précision et une bonne longévité 1
- Alimentation électrique en standard de 400 V triphasé + neutre
- Commande par pédales
- Fixation des poinçons type **PROMECAM** 2
- Barrières immatérielles de sécurité : avant classe 4 3

Equipements standards

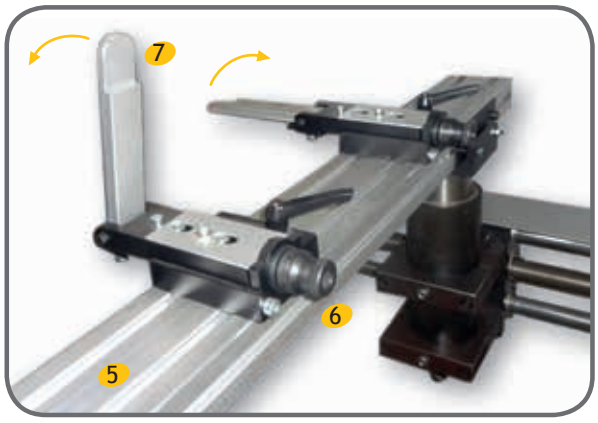
Programmateur

Programmateur 2 axes X Y, 19 programmes de 19 plis

- **Mode manuel :**
  Permet la réalisation rapide de plis ponctuels grâce au positionnement de la butée arrière et au réglage de la descente du coulisseau
- **Mode continu :**
  Permet l'enchaînement automatique des déplacements de la butée arrière et de la descente du coulisseau pour réaliser des profils de pliage de manière répétitive

Butée arrière

- Butée arrière montée sur glissière 5 pour les pièces de petite largeur. Possibilité de réglage de la hauteur par clé de chaque côté, course de 150 mm
- Profondeur ajustable par vis micrométrique 6 garantissant une grande précision
- Doigts de butée escamotables 7

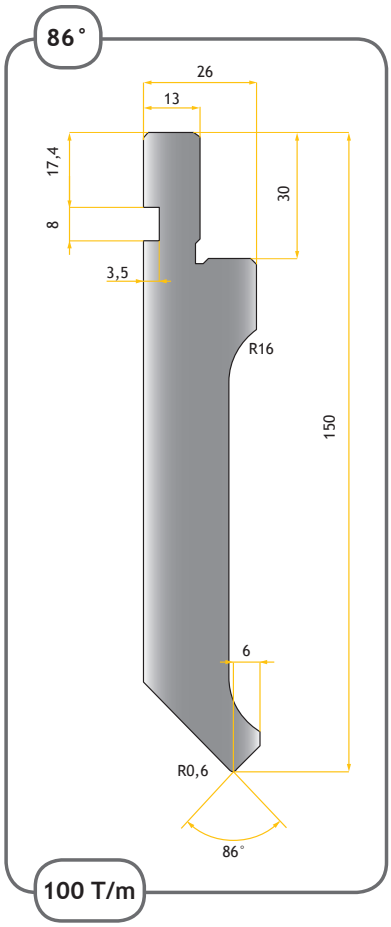


Support de tôle

Support de tôle avant 500 mm réglable pour plus de confort de travail, composé de deux bras 4

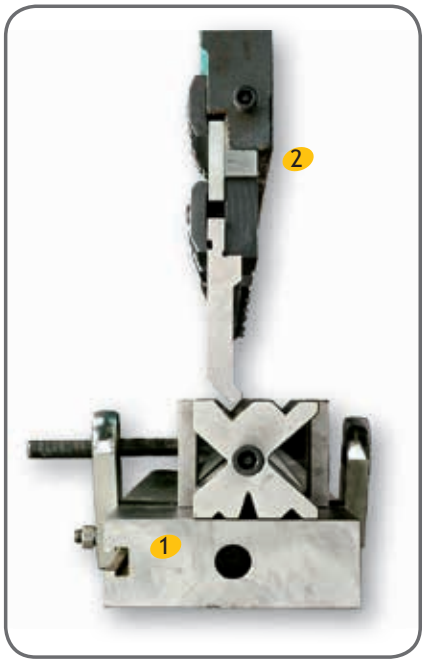
Poinçon

Poinçon 86° rayon 0,6 mm, longueur 550 et/ou 800 mm suivant modèle de presse plieuse. Existe en modèle fractionné (voir page 4)



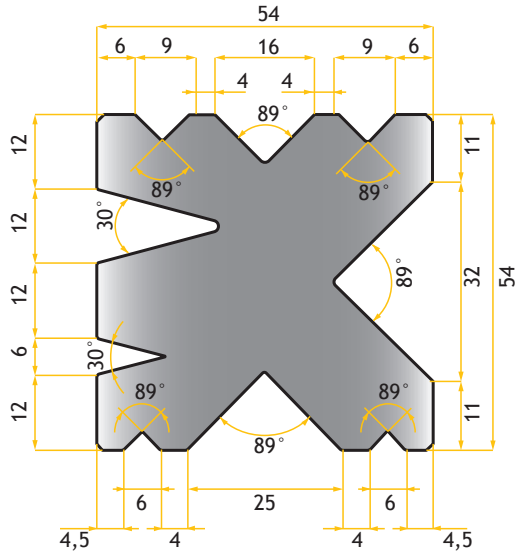
Matrice

- Bloc multi-vé différent selon le modèle de presse plieuse (voir détail page 3)
- Retournement rapide et sans effort des vé

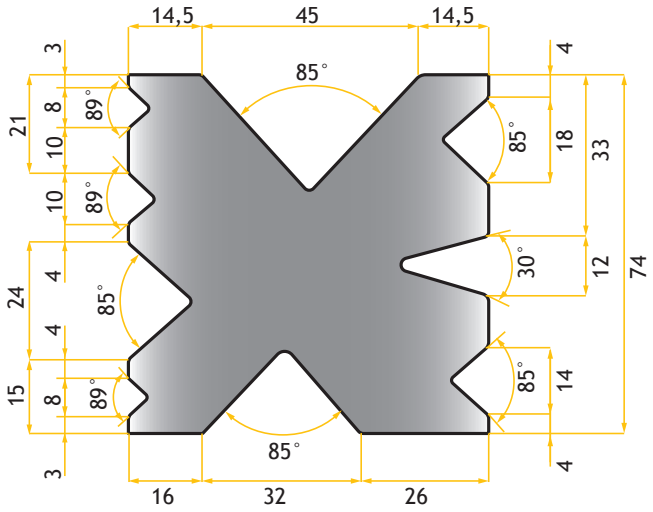


Détails des blocs multi-vé

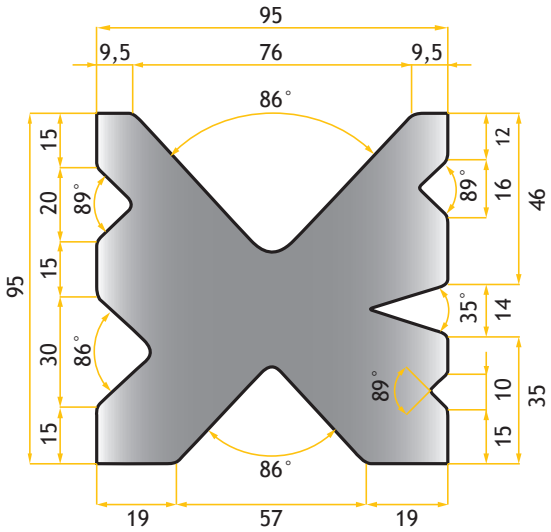
Exception : les machines équipées d'une table de bombage **PPS-BM** seront livrées avec une matrice 4 vé 60x60 mm au choix (voir page 23)



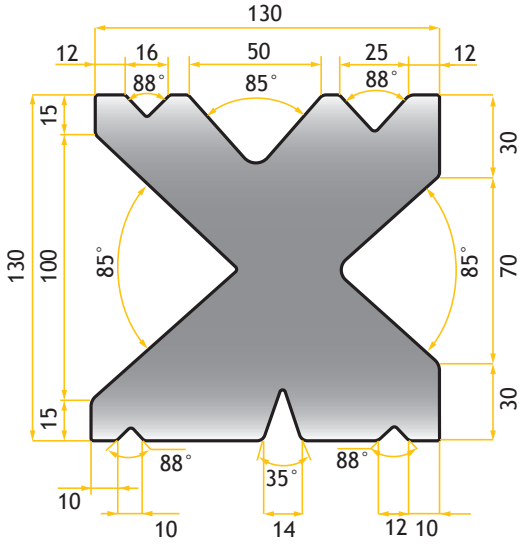
Bloc multi-vé livré avec presse plieuse de 30 et 50 tonnes



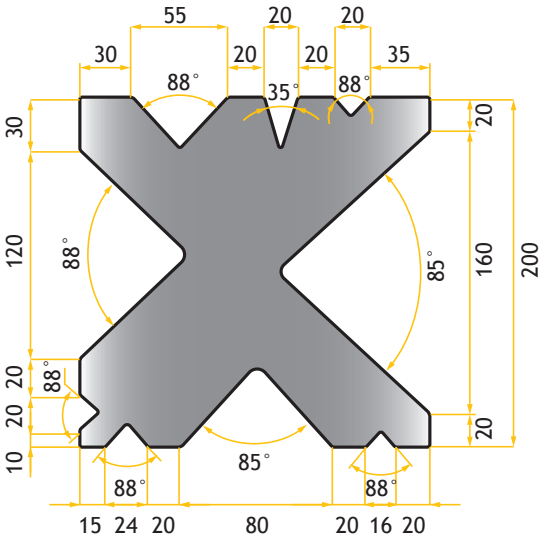
Bloc multi-vé livré avec presse plieuse de 80 tonnes



Bloc multi-vé livré avec presse plieuse de 120 tonnes



Bloc multi-vé livré avec presse plieuse de 160, 200 et 250 tonnes

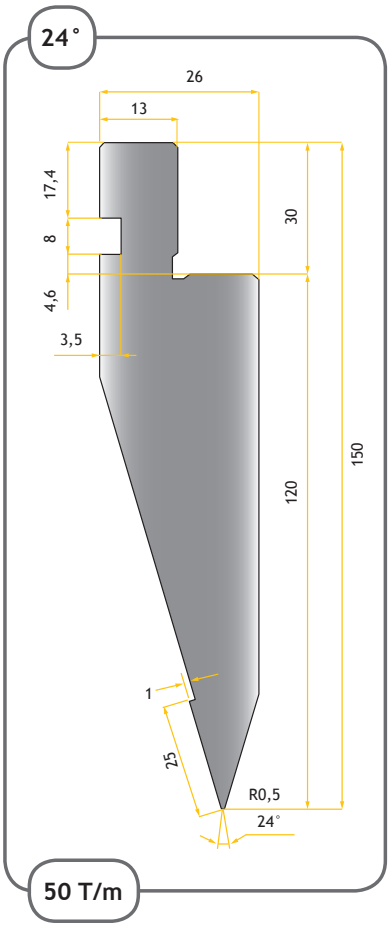


Bloc multi-vé livré avec presse plieuse de 300 tonnes et plus

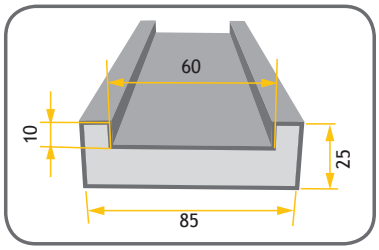
Options

- Poinçon 24° rayon 0,5 mm court 550 mm : **POIN-S24-0.5C**
  long 800 mm : **POIN-S24-0.5L**

- Poinçon fractionné avec bigornes longueur 800 mm :
  segments 100, 10, 15, 20, 40, 50, 200, 265, 100 mm
  POIN-S86-0.6F (voir page 2) ou **POIN-S24-0.5F** (ci-contre)



- Table adaptable pour matrices base 60 mm avec vé autocentrés
  Longueur 1 010 mm : **PPS-T1100B60**
  2 100 mm : **PPS-T2100B60**
  3 100 mm : **PPS-T3100B60**
  4 100 mm : **PPS-T4100B60**



- Table adaptable pour matrices base 60 et 90 mm avec bombage manuel et repère de position, longueur suivant modèle de presse plieuse **PPS-BM** (prévoir à la commande)

- Réglage rapide et précis de la hauteur de la butée arrière (axe R) : ajustement simultané des 2 côtés
  - Réglage manuel par volant situé à l'arrière de la machine **PPS-BRM**
  - Réglage électrique avec commande située à l'avant de la machine **PPS-BRE**
- Bras supplémentaire de support de tôle avant, longueur 500 mm **PPS-ST-SUP**
- Autres besoins, nous consulter

- Brides à serrage rapide manuel des outils **PPS-SR** pour faciliter le changement des outils

Commande numérique PPS-DA41

La CNC 2 axes **DELEM PPS-DA41** offre une configuration flexible et conviviale complète, comprenant la commande des axes pour le coulisseau et la butée arrière.

- Ecran 4,7″ monochrome
- Commande de butée arrière avec fonction recul
- Programmation directe de l'angle
- Correction d'angle possible suivant la matière utilisée
- Mémoire de 100 programmes de 25 plis
- Compteur de pièces
- Programmation des outils
- Fonction de travail manuelle ou automatique

Commande numérique à écran tactile PPS-TOUCH6P

La CNC 2 axes **CYBELEC PPS-TOUCH6P** bénéficie d'un affichage intuitif et d'une multitude de fonctionnalités : l'aide en ligne et le logiciel simplifié guident l'opérateur en permanence.

- Ecran tactile 5,7″ couleurs
- Calcul de la longueur de la fibre neutre : permet de renseigner les cotes intérieures ou extérieures au choix
- Calcul de la pression hydraulique nécessaire
- Programmation directe de l'angle
- Correction d'angle possible suivant la matière utilisée
- Programmation des outils : mémoire de 10 poinçons et 10 matrices
- Mémoire de 50 programmes de 12 séquences, extensible par clé USB
- Commande de butée arrière avec fonction recul
- Compteur de pièces
- Fonction de travail manuelle ou automatique

Options pour commandes numériques

- Ordinateur écran 15'' avec logiciel de pliage permettant de visualiser les vues 3D des pièces à réaliser (licence pour un poste de travail) **PPS-LOG**
- Licence supplémentaire pour logiciel PPS-LOG de pliage **PPS-LOG-SUP**
- Réglage automatique de la pression hydraulique de travail **PPS-TOUCH6P-RP** (uniquement pour CYBELC TOUCH6P)

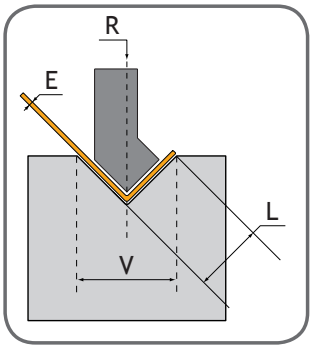
Caractéristisques techniques

Références	Longueur utile de pliage (mm)	Force Tonne machine	Passage entre montant (mm)	Profondeur du col de cygne (mm)	Course du coulisseau (mm)	Ouverture maxi (mm)	Hauteur de table (mm)	Course de butée arrière (mm)	Doigts de butée	Puissance moteur (kW)	Vitesse rapide (mm/s)	Vitesse de travail (mm/s)	Longueur (mm)	Largeur (mm)	Hauteur (mm)	Poids (kg)
PPS1030	1100	30	800	250	120	340	800	5-500	2	4,0	80	10	1500	1350	1650	1980
PPS2050	2200	50	1800	250	120	340	800	5-600	2	5,5	80	10	2700	1450	1950	3200
PPS3080	3200	80	2650	320	120	370	900	5-600	4	7,5	80	10	3700	1550	2210	5100
PPS3120	3200	120	2650	320	150	370	900	5-600	4	11,0	80	10	3700	1650	2350	7200
PPS3160	3200	160	2650	320	150	410	900	5-600	4	11,0	80	9	3700	1700	2450	8650
PPS3200	3200	200	2650	320	200	470	1050	5-600	4	15,0	80	9	3700	1850	2450	11200
PPS3250	3200	250	2650	320	200	470	1050	5-600	4	18,5	80	9	3700	1850	2800	12500
PPS3300	3200	300	2650	350	250	570	1150	5-800	4	25,0	80	9	3700	2050	3400	19500
PPS3400	3200	400	2650	350	250	570	1200	5-800	4	30,0	80	9	3700	2150	3450	21000
PPS4120	4100	120	3100	320	150	370	900	5-600	4	11,0	80	10	4600	1700	2450	9200
PPS4160	4100	160	3100	320	150	410	900	5-600	4	11,0	80	9	4600	1700	2500	10500
PPS4200	4100	200	3100	320	200	470	1050	5-600	4	15,0	80	9	4600	1850	2800	13500
PPS4250	4100	250	3100	320	200	470	1050	5-600	4	18,5	80	9	4600	1850	2850	14650
PPS4300	4100	300	3100	350	250	570	1150	5-800	4	25,0	80	9	4600	2050	3400	21250
PPS4400	4100	400	3100	350	250	570	1150	5-800	4	30,0	80	9	4600	2150	3450	24300
PPS4500	4100	500	3100	350	250	570	1000/700	5-800	4	30,0	80	9	4600	2300	3550	31000
PPS6160	6100	160	5100	320	200	450	1000	5-600	4	11,0	80	9	6600	1850	2950	15500
PPS6200	6100	200	5100	320	200	540	1100	5-800	4	15,0	80	9	6600	1950	3180	19520
PPS6250	6100	250	5100	320	200	540	1500	5-800	4	18,5	80	9	6600	1950	3250	22340
PPS6350	6100	350	5100	350	250	550	1000/700	5-800	4	30,0	80	9	6600	2150	3600	29200
PPS6450	6100	450	5100	350	250	630	1000/900	5-800	4	30,0	80	9	6600	2300	3650	39520
PPS6550	6100	550	5100	400	300	630	1100/1000	5-800	4	30,0	80	9	6600	2350	3900	48650

Abaque pour pliage en l'air

Force nécessaire en tonne/mètre pour de l'acier d'une dureté de 45 daN/mm²
V* : largeur du vé
(8 à 12 fois l'épaisseur de la tôle)
R* : rayon
L* : longueur de pli mini
E* : épaisseur de tôle

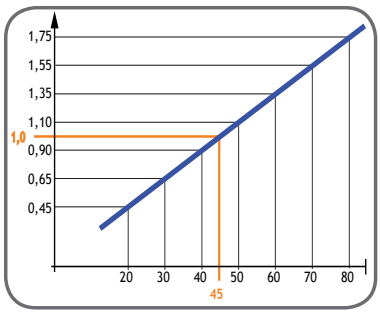
* valeur exprimée en mm



E \ V	6	9,5	13	16	19	25	38	52	76	100	150	200	250
R	1	1,5	2	2,5	3	4	5,5	7,5	10	15	25	35	45
L	4,5	6	8	10	12	16	22	32	40	64	100	140	190
0,75	6	3											
1	11	8	5										
1,25	16	12	9	6									
1,5		18	15	10	7								
2				18	15	10							
3				43	36	25	16						
4					62	44	30	22					
5						65	50	34	24				
6							72	50	34	24			
8								88	62	46	30		
10									96	67	42	31	
12									130	100	62	46	32
14										133	85	70	52
16										180	110	90	75
19											130	100	90
22											170	130	100
25											220	165	130
30											220	210	170

Calcul de correction de force suivant la dureté de la tôle

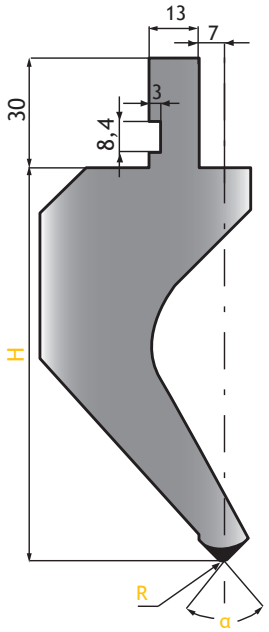
Exemple de correction à apporter : pour plier une tôle de 3 mm d'une dureté de 45 daN/mm² sur 1 m, la force nécessaire sera de 25 T/m.
Si la tôle est d'une dureté de 70 daN/mm², la force nécessaire sera de 38,75 T/m
(25 T/m x 1,55 = 38,75 T/m).



Outillage complémentaire

Feuille de calcul

Poinçons

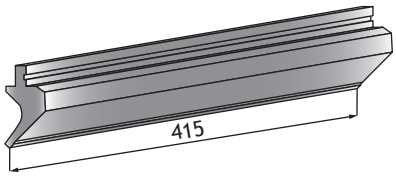


α α

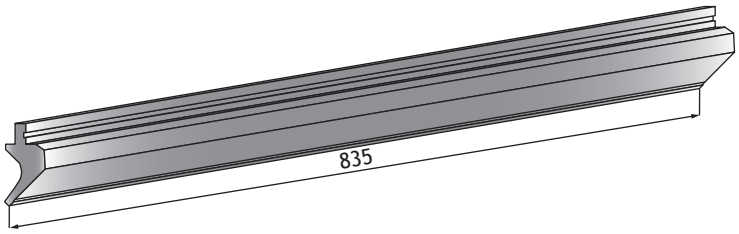
Réf.	α	R	H	T/m
REFERENCE	angle	rayon	hauteur	résistance tonne/mètre

Dimensions exprimées en millimètre

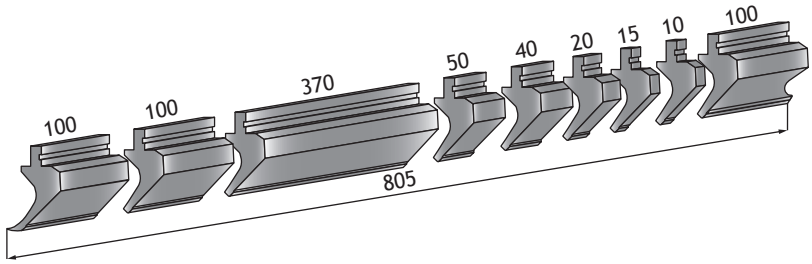
Poinçon court : référence + lettre C



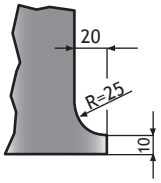
Poinçon long : référence + lettre L

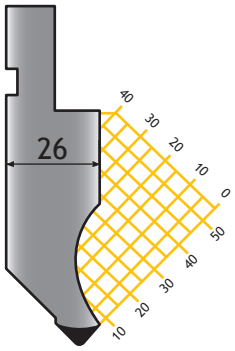


Poinçon fractionné : référence + lettre F



Bigorne sur poinçon fractionné

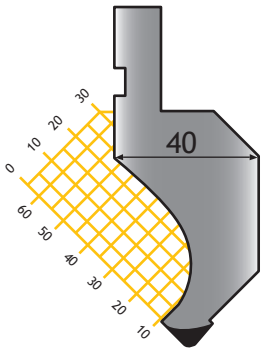




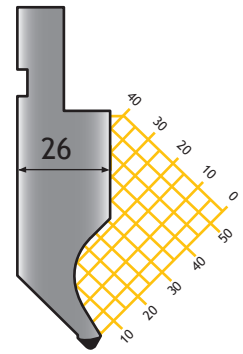
90° 88° 85°

Réf.	α	R	H	T/m
POIN10.100	90°	0,80	66,65	100
POIN10.110	88°	0,80	66,65	100
POIN10.120	88°	3,00	65,50	100
POIN10.640	90°	0,25	66,60	100
POIN10.650	88°	0,25	66,60	100
POIN11.770	85°	3,00	65,50	100
POIN12.600	85°	0,80	66,60	100
POIN10.101	85°	0,25	66,50	100

Réf.	α	R	H	T/m
POIN10.800	90°	0,80	66,65	60
POIN10.810	88°	0,80	66,65	60



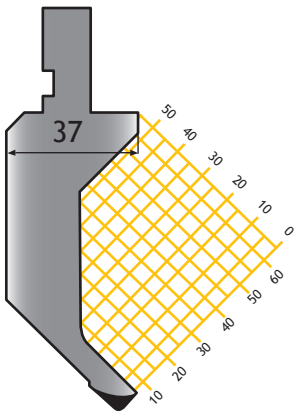
90° 88°



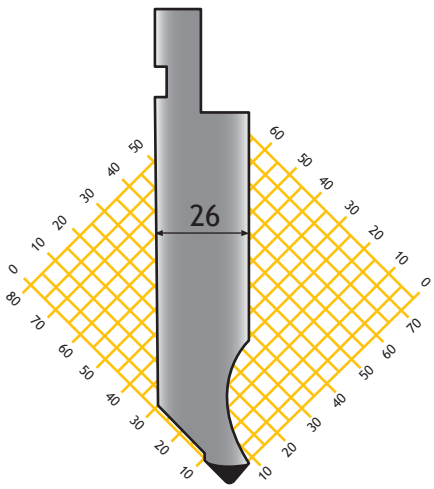
90° 88°

Réf.	α	R	H	T/m
POIN10.480	90°	0,60	66,40	35
POIN10.490	88°	0,60	66,40	35
POIN12.630	90°	0,25	66,35	35
POIN12.640	88°	0,25	66,35	35

Réf.	α	R	H	T/m
POIN10.190	90°	0,60	84,15	20
POIN10.200	88°	0,60	84,15	20



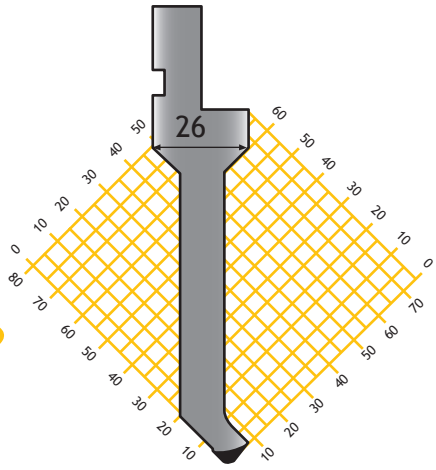
90° 88°



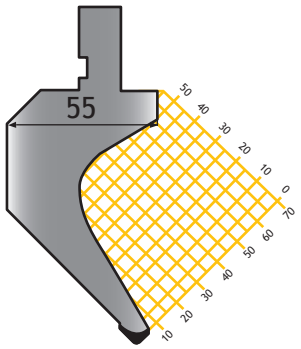
88° 85°

Réf.	α	R	H	T/m
POIN10.630	88°	0,80	104,65	100
POIN12.810	85°	0,80	104,65	100

Réf.	α	R	H	T/m
POIN10.280	90°	0,60	99,40	50
POIN10.290	88°	0,60	99,40	50
POIN12.610	90°	0,25	99,35	50
POIN12.620	88°	0,25	99,35	50



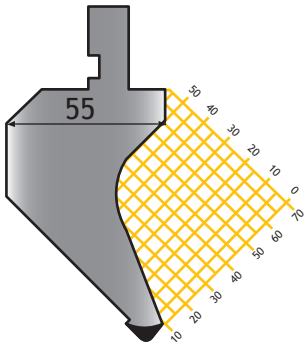
90° 88°



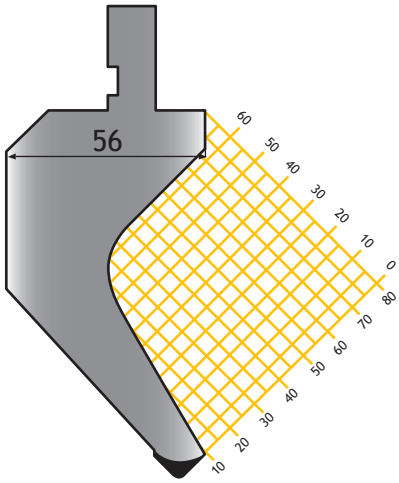
90° 88°

Réf.	α	R	H	T/m
POIN11.760	90°	0,25	89,88	50
POIN10.750	88°	0,80	89,65	50

Réf.	α	R	H	T/m
POIN10.130	90°	0,80	89,65	60
POIN10.140	88°	0,80	89,65	60
POIN10.150	88°	3,00	88,50	60
POIN12.650	90°	0,25	89,60	60
POIN12.660	88°	0,25	89,60	60



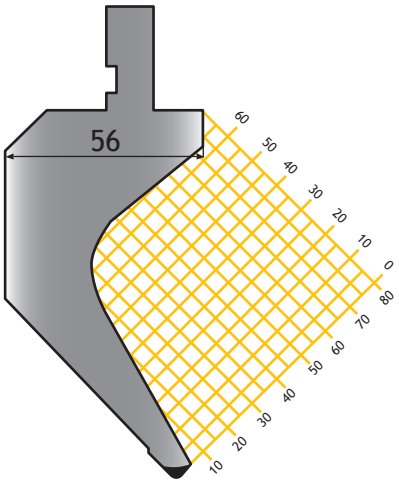
90° 88°



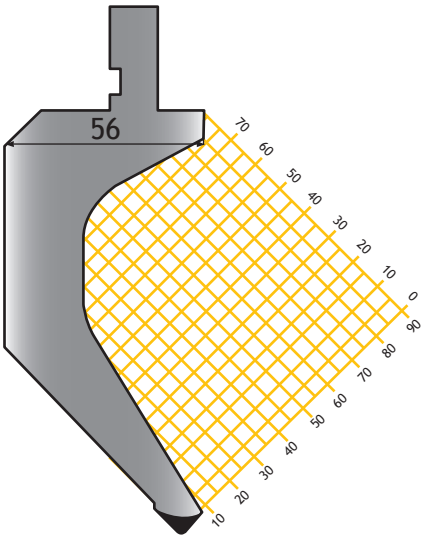
90° 88°

Réf.	α	R	H	T/m
POIN10.160	90°	0,80	104,65	50
POIN10.170	88°	0,80	104,65	50
POIN10.180	88°	3,00	103,50	50
POIN11.720	85°	0,80	104,60	50
POIN12.670	90°	0,25	104,60	50
POIN12.680	88°	0,25	104,60	50

Réf.	α	R	H	T/m
POIN11.740	90°	0,25	104,88	50
POIN11.730	88°	0,80	104,65	50



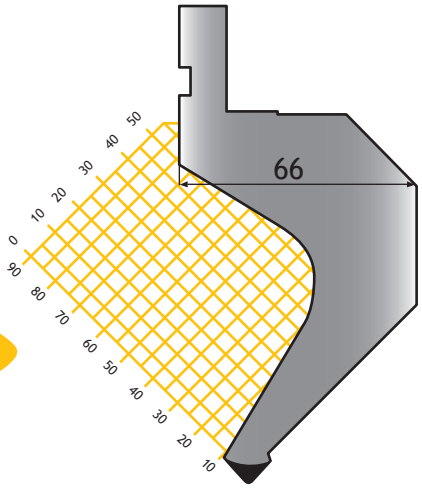
90° 88°



90° 88°

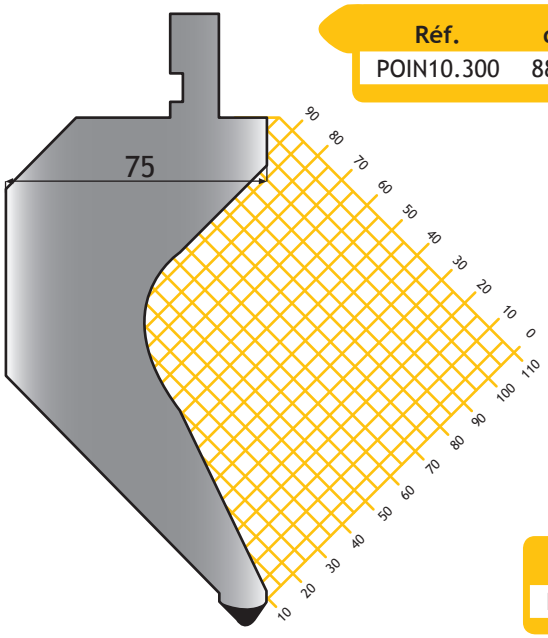
Réf.	α	R	H	T/m
POIN10.600	90°	0,80	120,00	50
POIN10.610	88°	0,80	120,00	50
POIN10.620	88°	3,00	119,00	50

Réf.	α	R	H	T/m
POIN10.820	88°	0,80	104,65	45



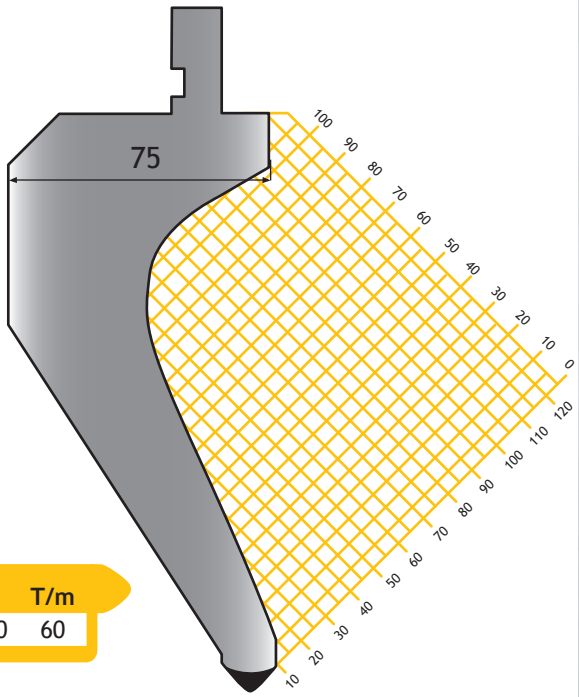
88°

Réf.	α	R	H	T/m
POIN10.300	88°	0,80	145,00	80



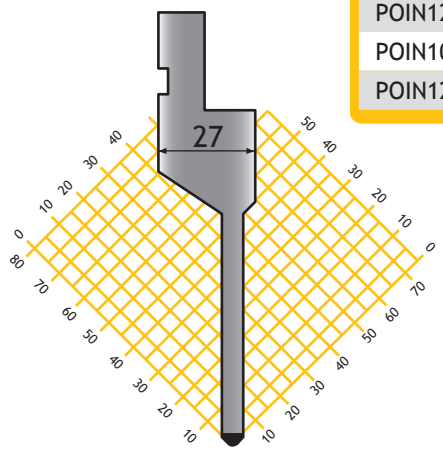
88°

Réf.	α	R	H	T/m
POIN10.310	88°	0,80	165,00	60



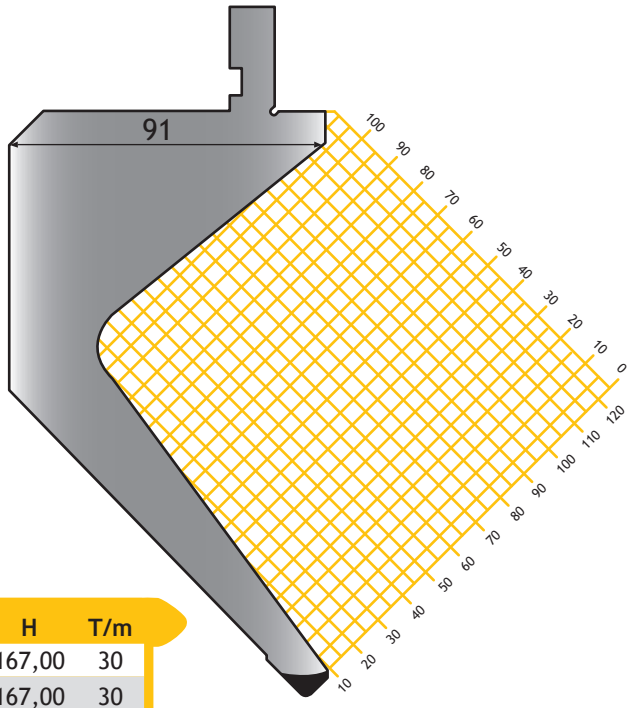
88°

Réf.	α	R	H	T/m
POIN10.830	90°	0,60	94,40	50
POIN12.690	90°	0,25	94,35	50
POIN10.840	88°	0,60	94,40	50
POIN12.700	88°	0,25	94,35	50



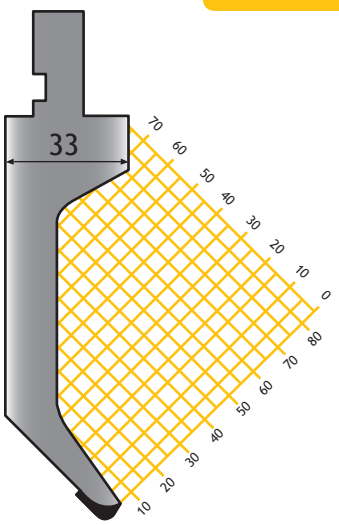
90° 88°

Réf.	α	R	H	T/m
POIN10.301	88°	0,60	167,00	30
POIN10.302	85°	0,80	167,00	30



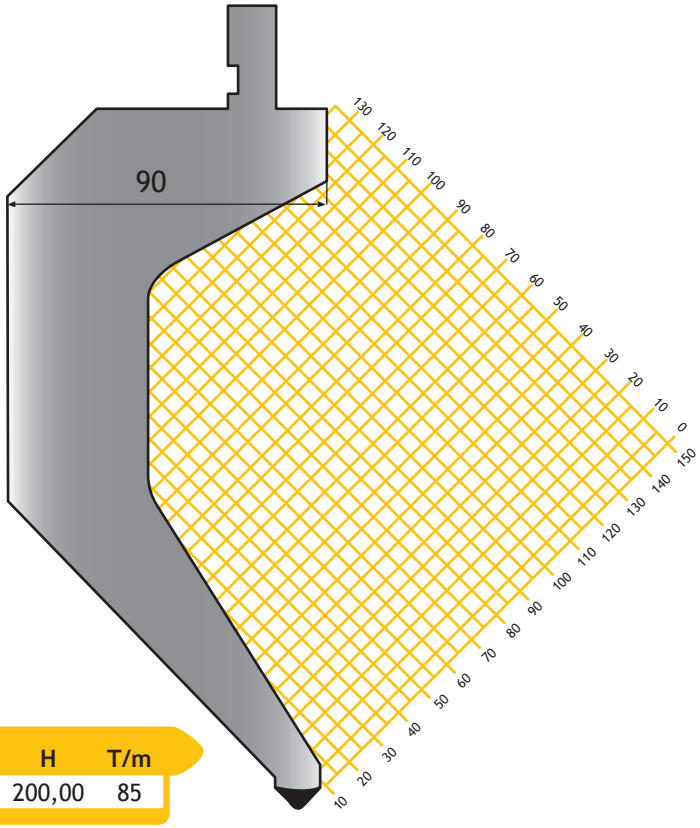
88° 85°

Réf.	α	R	H	T/m
POIN10.303	85°	0,60	115,00	20



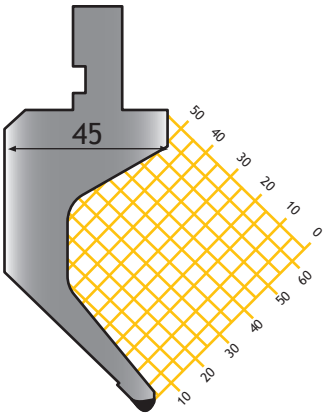
85°

Réf.	α	R	H	T/m
POIN12.910	88°	0,80	200,00	85



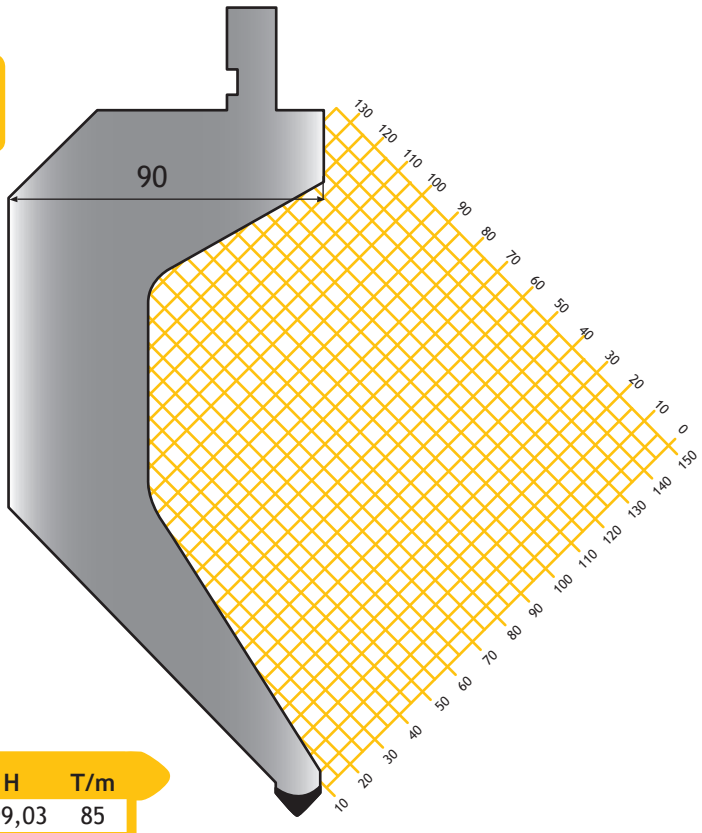
88°

Réf.	α	R	H	T/m
POIN10.304	88°	0,60	85,00	15

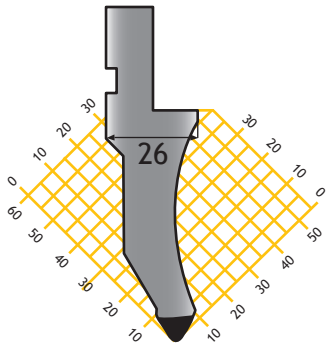


88°

Réf.	α	R	H	T/m
POIN13.010	88°	3,00	199,03	85



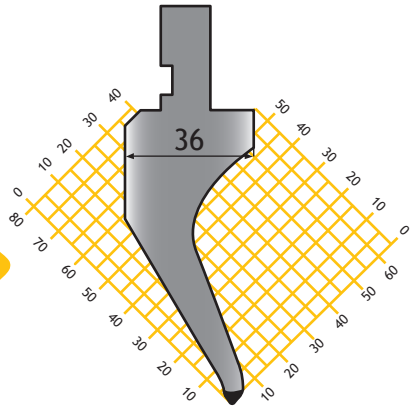
88°



60°

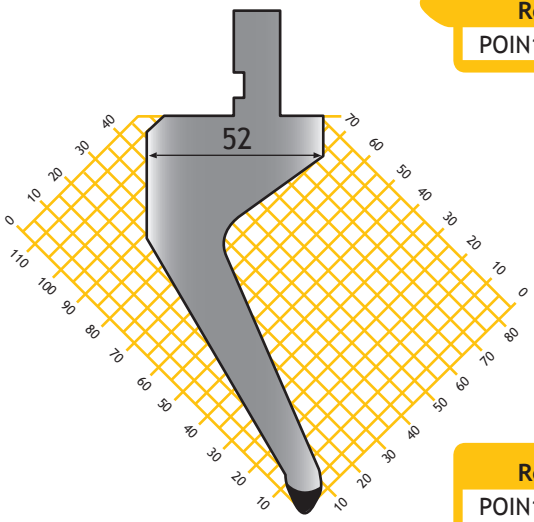
Réf.	α	R	H	T/m
POIN10.260	60°	0,80	67,00	80
POIN10.270	60°	2,00	67,00	80

Réf.	α	R	H	T/m
POIN12.620	60°	0,80	85,00	40



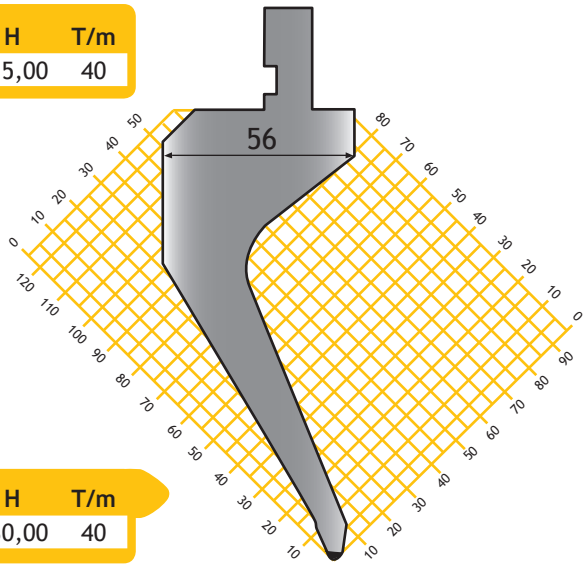
60°

Réf.	α	R	H	T/m
POIN12.720	60°	0,80	115,00	40



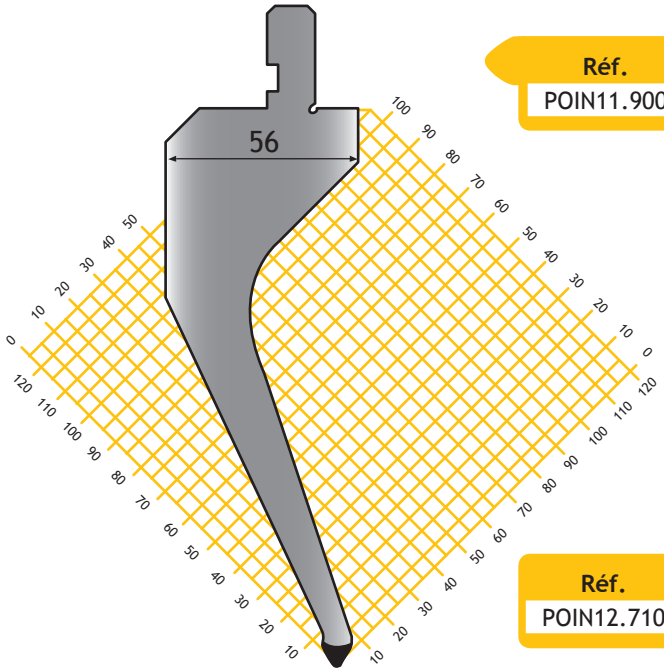
60°

Réf.	α	R	H	T/m
POIN11.630	60°	0,80	130,00	40



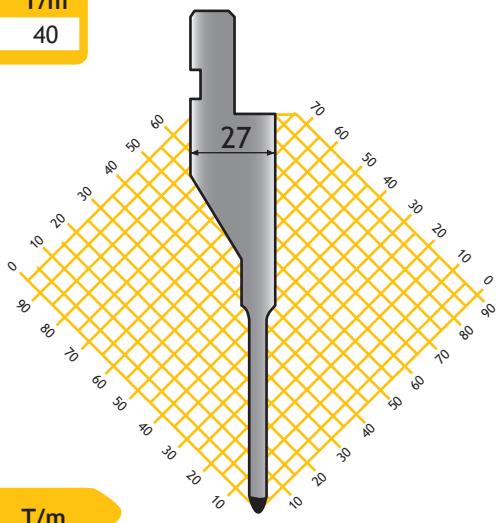
60°

Réf.	α	R	H	T/m
POIN11.900	60°	0,80	160,00	40

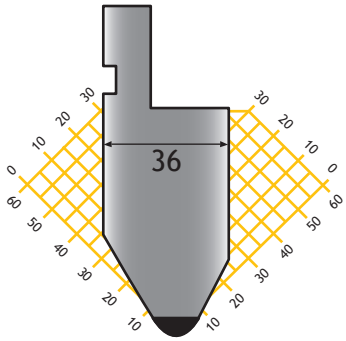


60°

Réf.	α	R	H	T/m
POIN12.710	60°	0,80	115,00	50



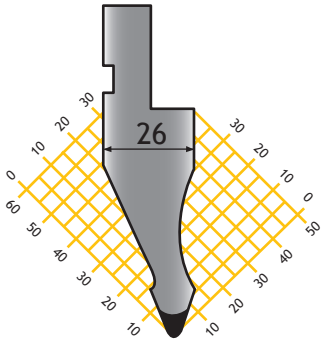
60°



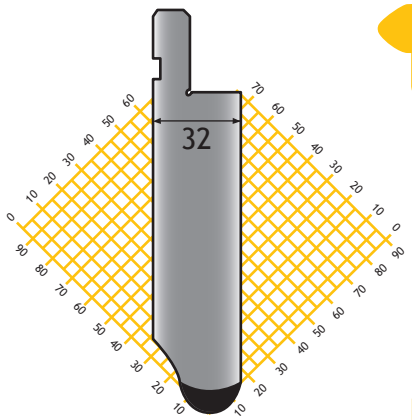
60°

Réf.	α	R	H	T/m
POIN10.320	60°	6,00	65,00	100

Réf.	α	R	H	T/m
POIN10.240	45°	0,50	64,40	80
POIN10.250	45°	1,50	65,20	80



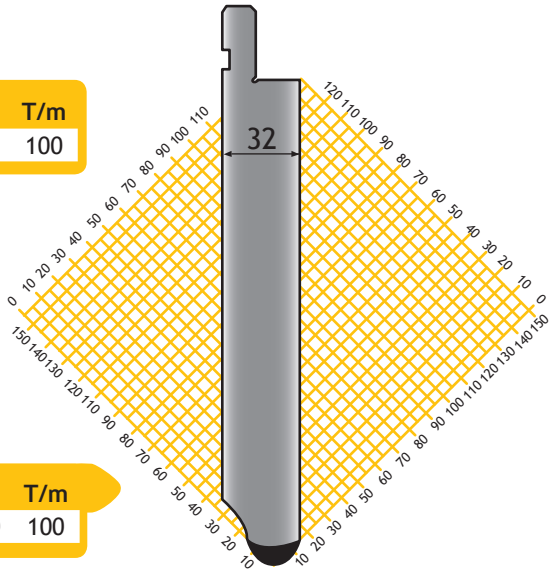
45°



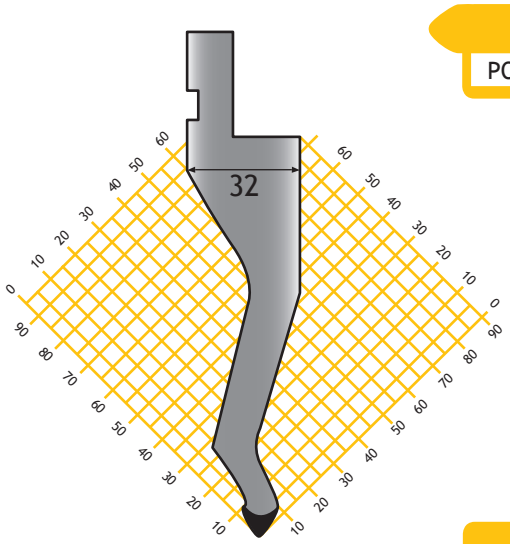
60°

Réf.	α	R	H	T/m
POIN12.830	60°	10,0	115,00	100

Réf.	α	R	H	T/m
POIN12.930	60°	8,00	200,00	100



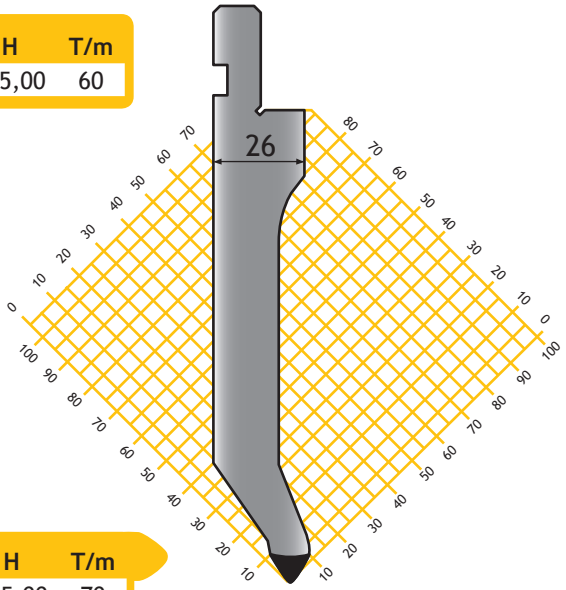
60°



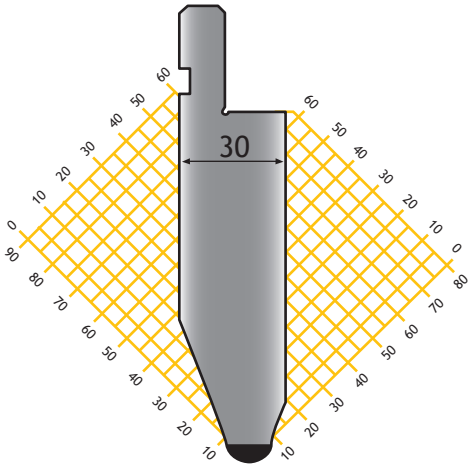
60°

Réf.	α	R	H	T/m
POIN11.910	60°	0,80	115,00	60

Réf.	α	R	H	T/m
POIN12.840	60°	0,80	135,00	70

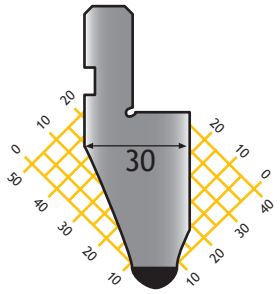


90°



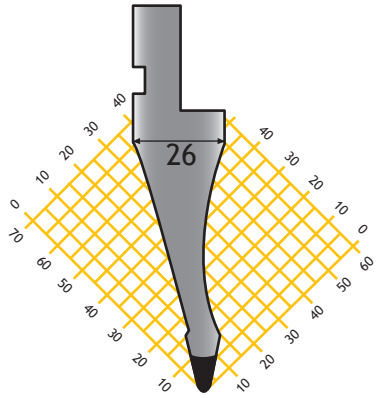
Réf.	α	R	H	T/m
POIN10.530	45°	6,00	100,00	100

Réf.	α	R	H	T/m
POIN10.540	45°	6,00	50,00	100



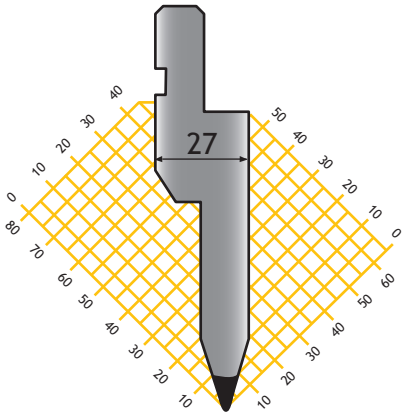
45°

45°



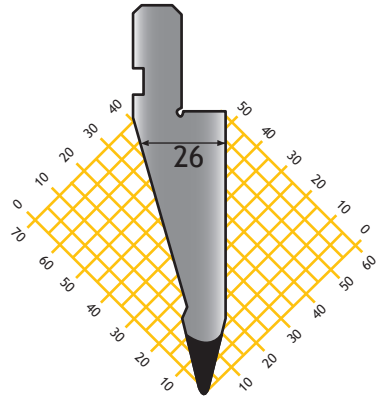
Réf.	α	R	H	T/m
POIN10.350	35°	0,50	80,00	70
POIN10.470	35°	0,80	90,00	70
POIN12.820	35°	1,50	90,00	70

Réf.	α	R	H	T/m
POIN10.340	35°	0,80	85,00	100



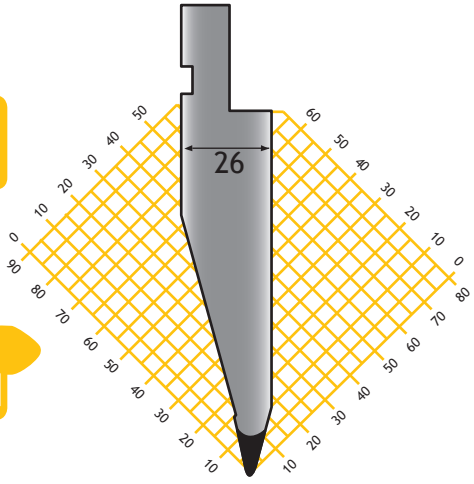
35°

35°



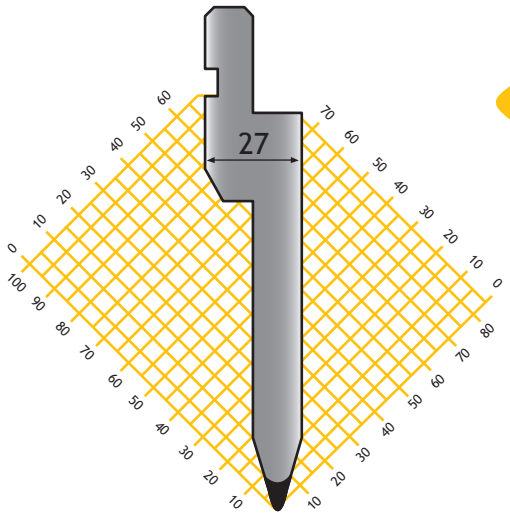
Réf.	α	R	H	T/m
POIN10.560	30°	0,50	80,00	100

Réf.	α	R	H	T/m
POIN11.930	30°	0,60	104,00	100



30°

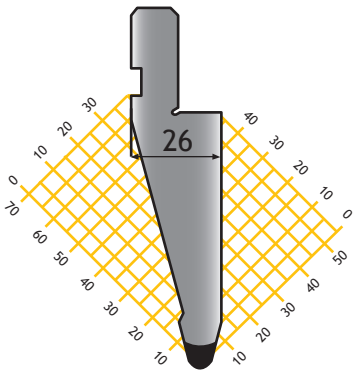
30°



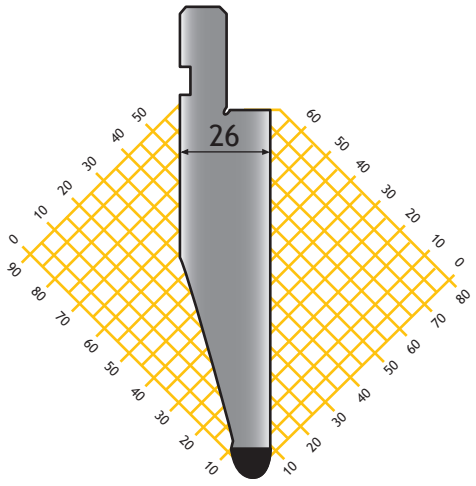
Réf.	α	R	H	T/m
POIN10.330	26°	0,80	117,00	100

26°

Cod.	α	R	H	T/m
POIN10.570	30°	3,00	80,00	100



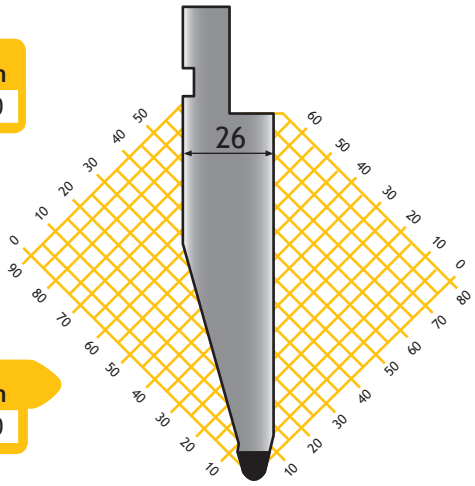
30°



Réf.	α	R	H	T/m
POIN11.940	30°	5,00	104,00	100

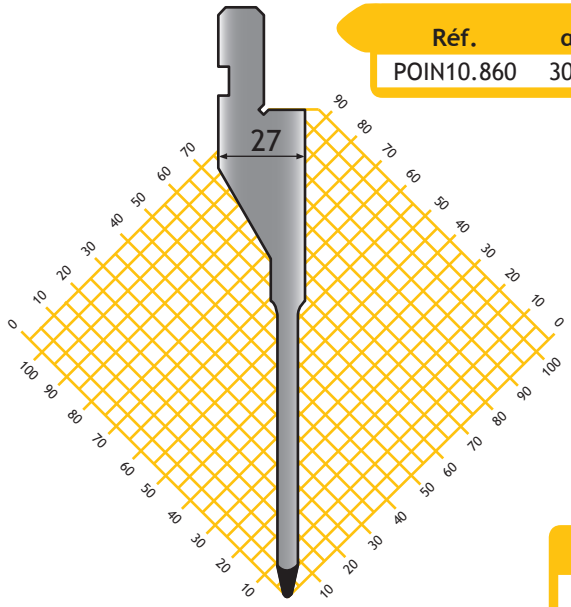
30°

Réf.	α	R	H	T/m
POIN12.890	30°	3,00	104,00	100



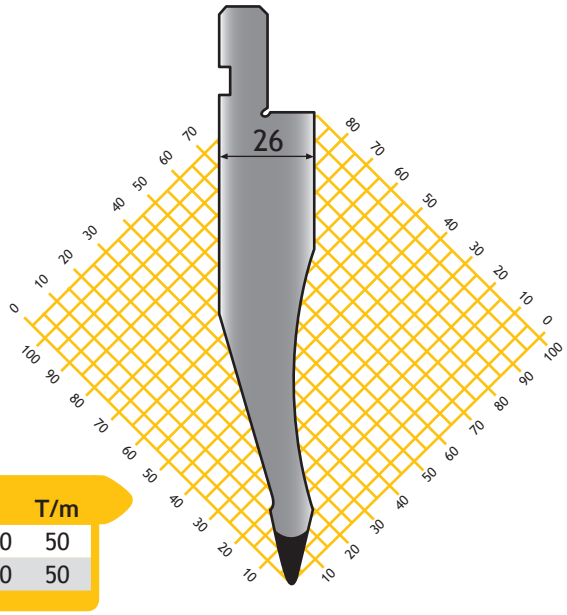
30°

Réf.	α	R	H	T/m
POIN10.860	30°	0,60	140,00	40



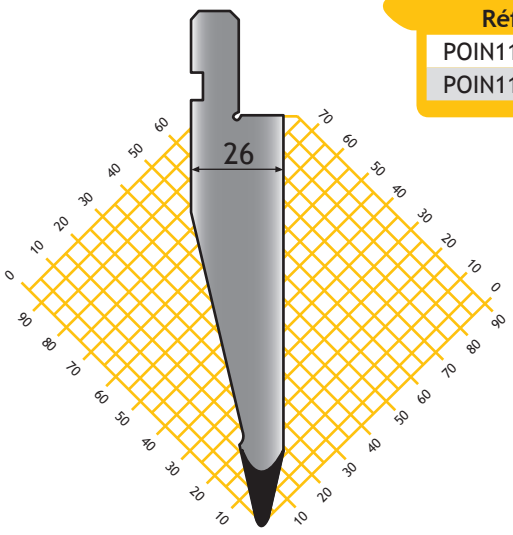
30°

Réf.	α	R	H	T/m
POIN10.520	30°	0,50	135,00	50
POIN10.550	30°	0,50	105,00	50

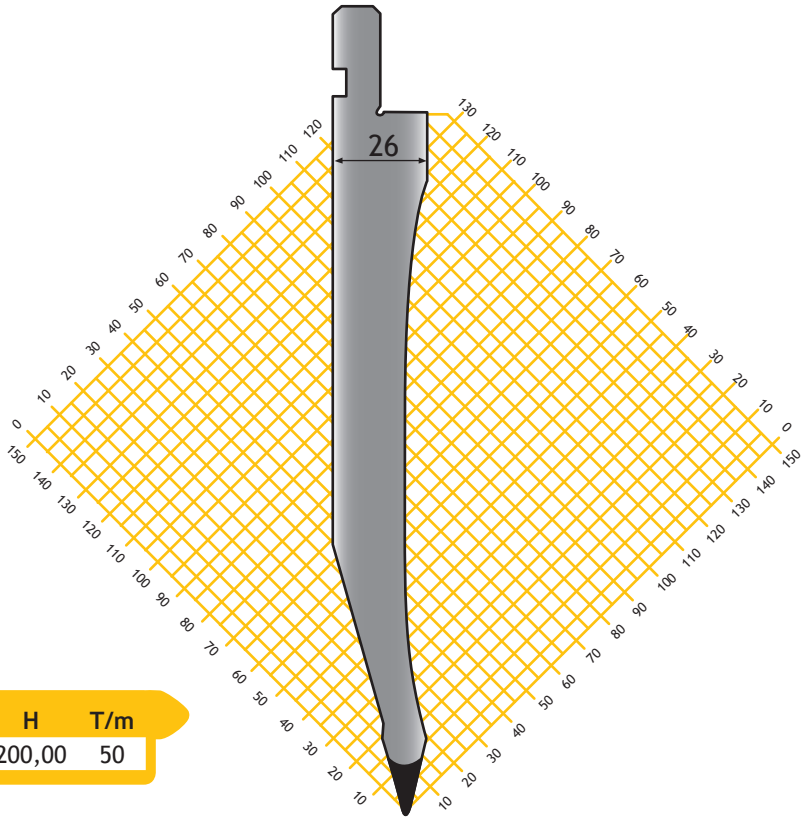


30°

Réf.	α	R	H	T/m
POIN11.780	26°	0,80	117,00	100
POIN11.920	26°	3,00	117,00	100



26°

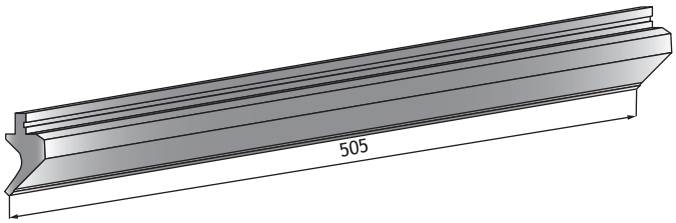


30°

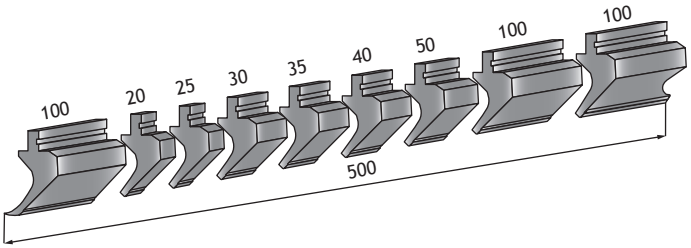
Réf.	α	R	H	T/m
POIN12.920	30°	0,50	200,00	50

Poinçons gros gabarit

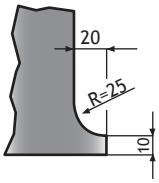
Poinçon court : référence + lettre C

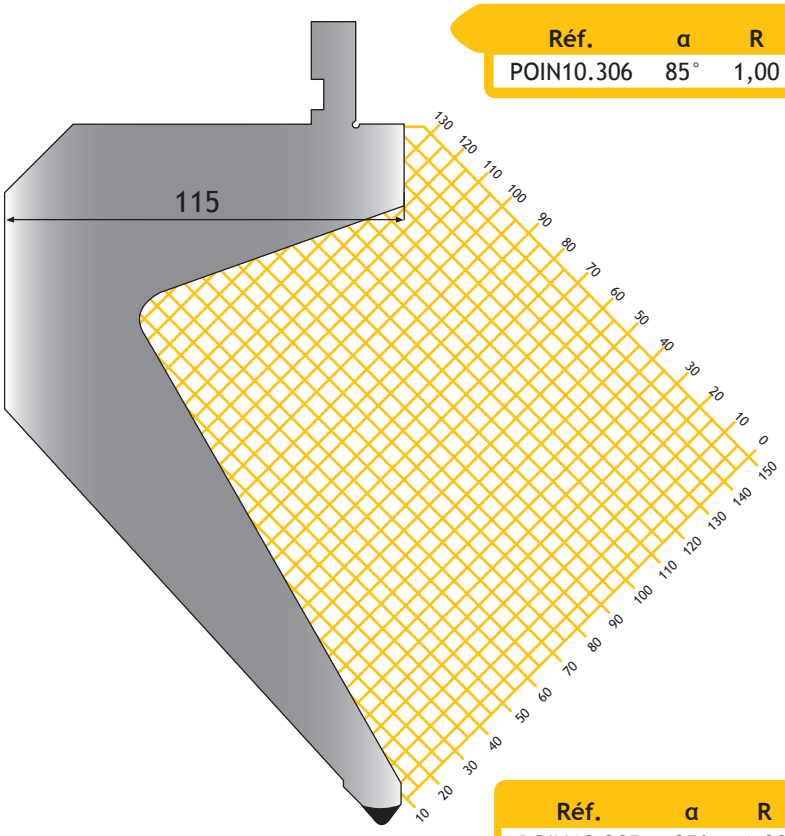


Poinçon fractionné : référence + lettre F



Bigorne du poinçon fractionné :

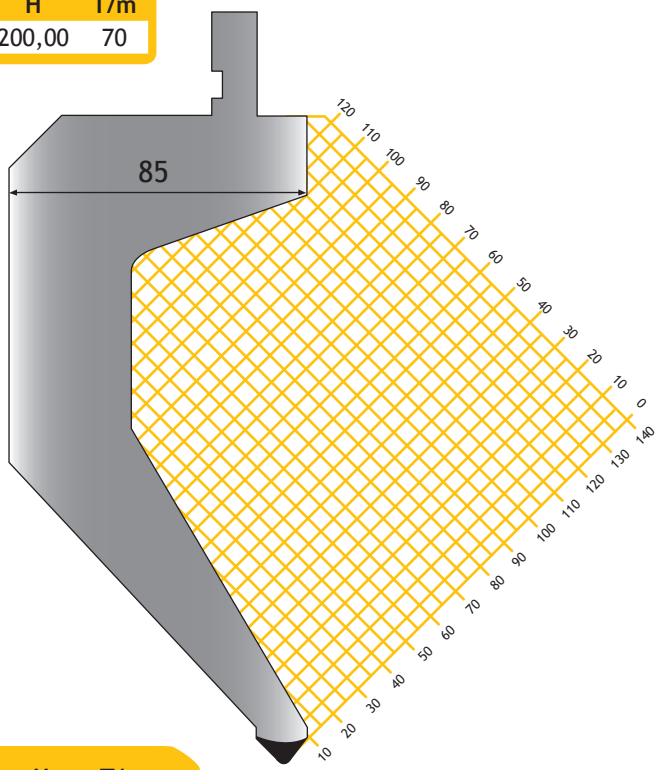




Réf.	α	R	H	T/m
POIN10.306	85°	1,00	200,00	70

Réf.	α	R	H	T/m
POIN10.305	85°	1,00	185,00	60

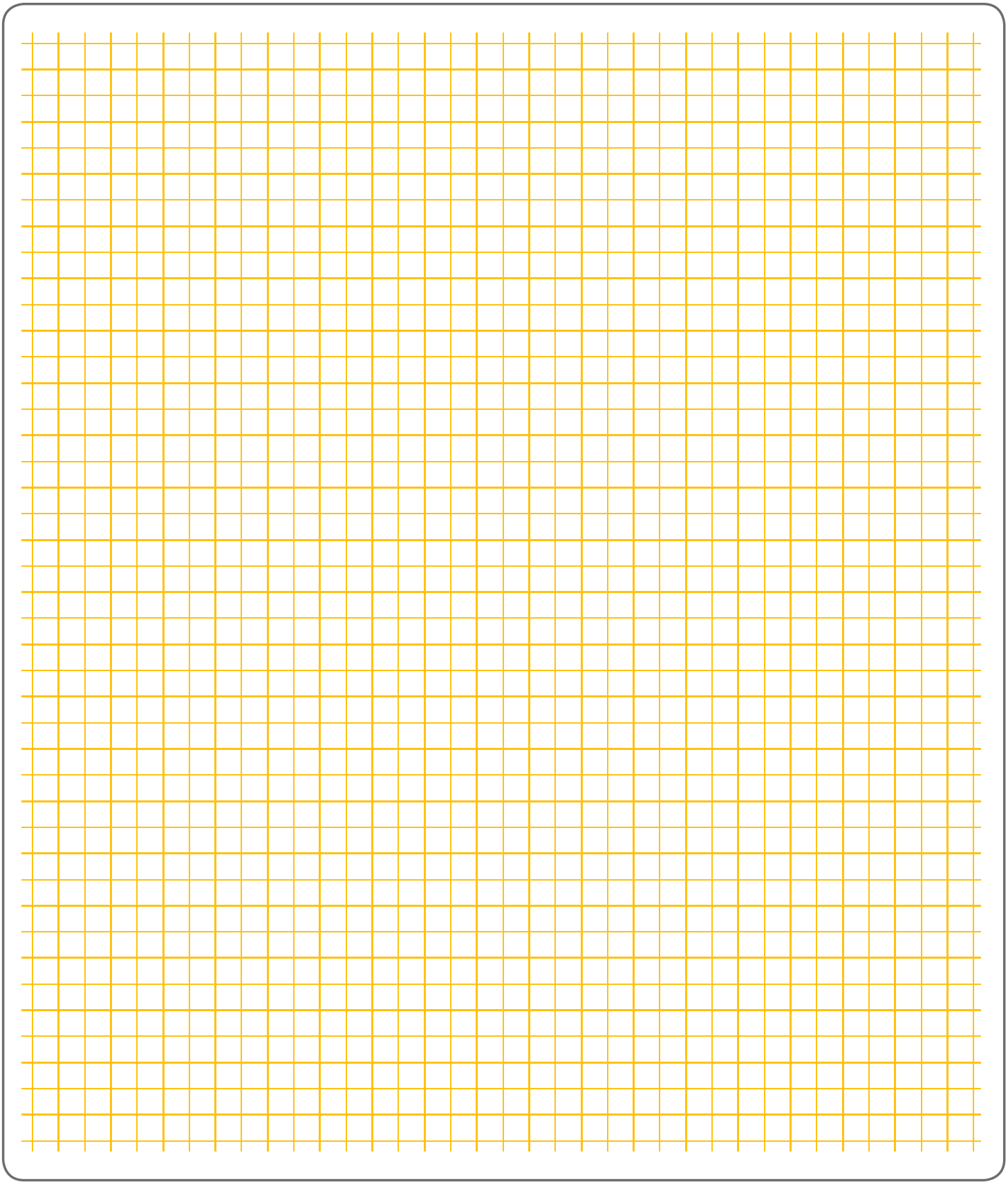
85°



85°

Outillage complémentaire

Feuille de calcul



Matrices

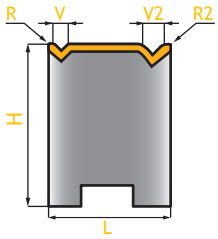
α	α

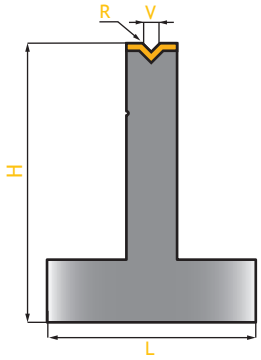
Réf.	T/m
RÉFÉRENCE	résistance tonne/mètre

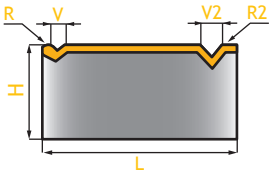
Dimensions exprimées en millimètre

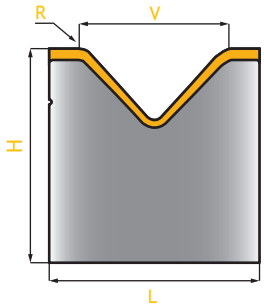
H = Hauteur
L = Largeur de la base
V = Largeur du Vé
R = Rayon

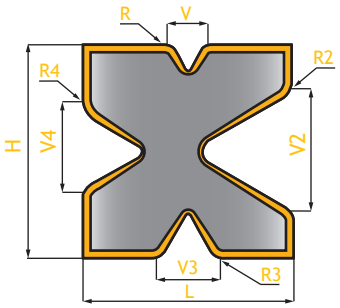
= Parties des matrices avec traitement de dureté



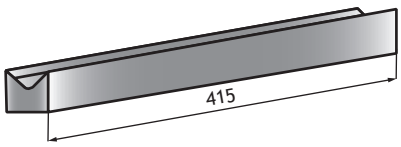




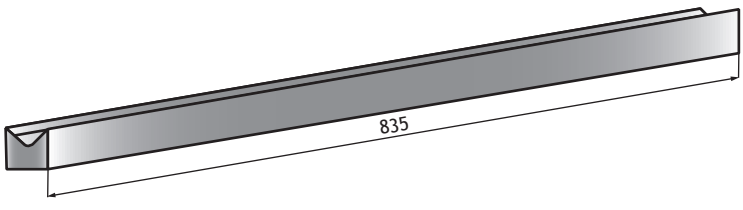




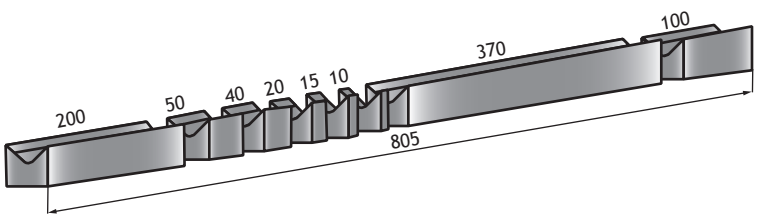
Matrice courte : référence + lettre C



Matrice longue : référence + lettre L

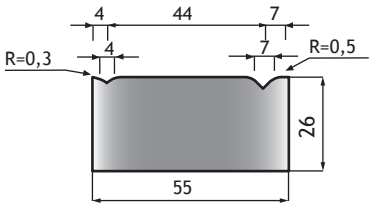


Matrice fractionnée : référence + lettre F



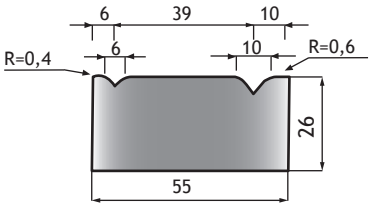
90°

Réf.	T/m
MAT20.100	100



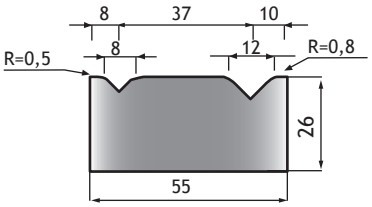
90°

Réf.	T/m
MAT20.110	100



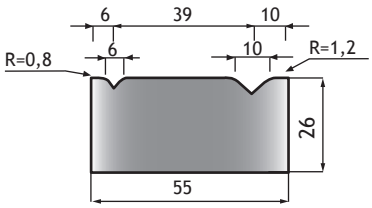
90°

Réf.	T/m
MAT20.120	100



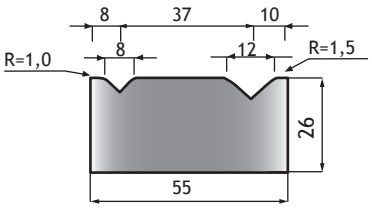
88°

Réf.	T/m
MAT20.460	100



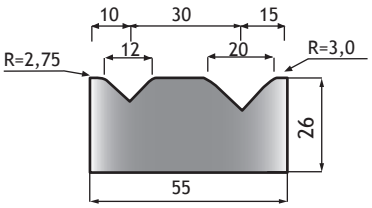
88°

Réf.	T/m
MAT20.410	100



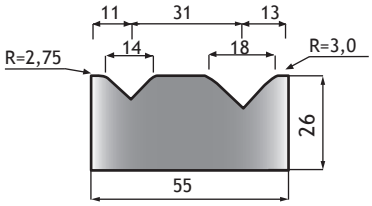
88°

Réf.	T/m
MAT20.130	100



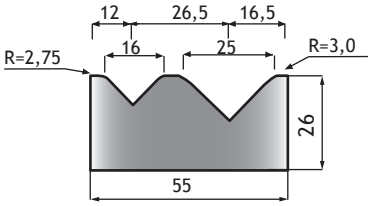
88°

Réf.	T/m
MAT20.320	100



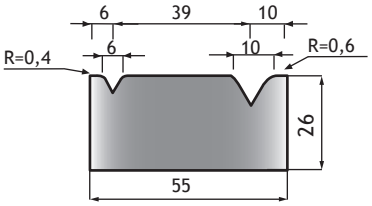
88°

Réf.	T/m
MAT20.140	100



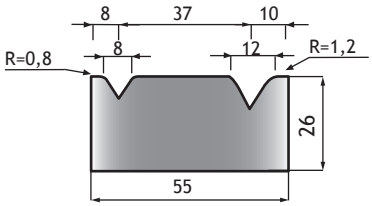
60°

Réf.	T/m
MAT20.150	100



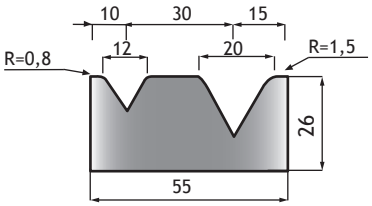
60°

Réf.	T/m
MAT20.160	100



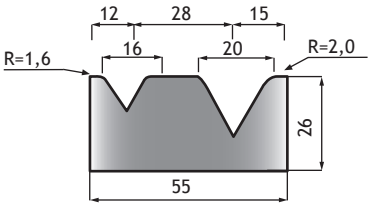
60°

Réf.	T/m
MAT20.330	100



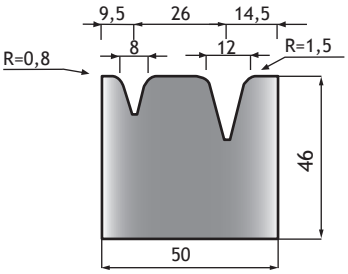
60°

Réf.	T/m
MAT20.170	100

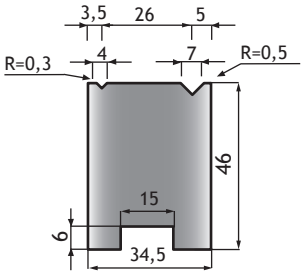


30°

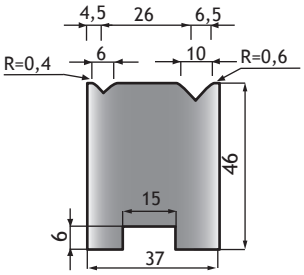
Réf.	T/m
MAT20.470	100



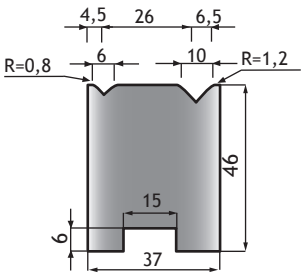
90°	Réf.	T/m
	MAT20.480	80



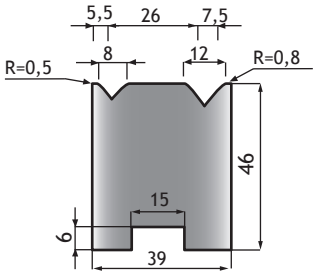
90°	Réf.	T/m
	MAT20.490	80



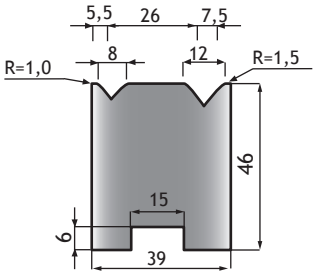
88°	Réf.	T/m
	MAT20.500	80



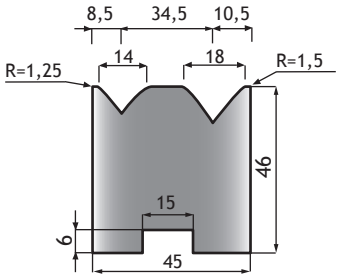
90°	Réf.	T/m
	MAT20.510	80



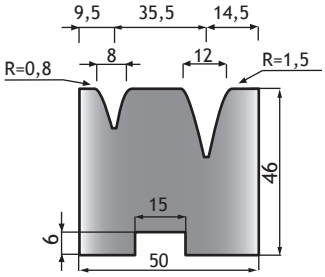
88°	Réf.	T/m
	MAT20.520	80



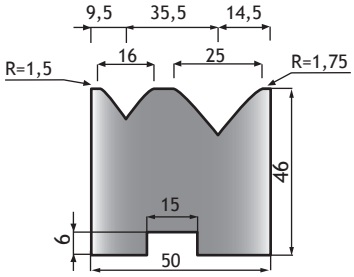
88°	Réf.	T/m
	MAT20.530	80



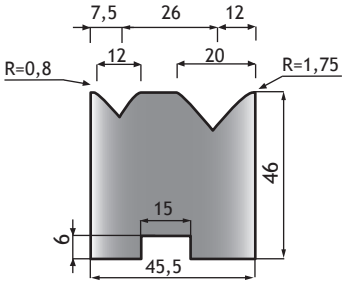
30°	Réf.	T/m
	MAT20.560	40



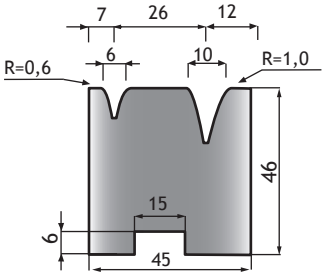
88°	Réf.	T/m
	MAT20.550	80



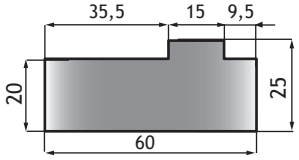
88°	Réf.	T/m
	MAT20.540	80



30°	Réf.	T/m
	MAT20.570	40



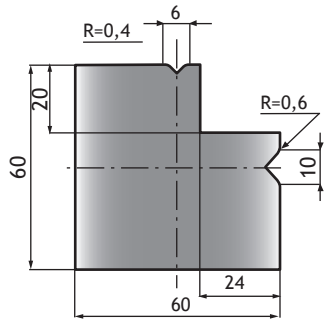
Réf.
MAT20.590



Support pour matrice de 15 mm

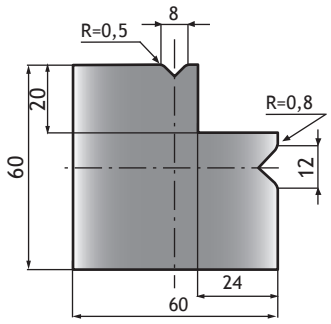
90°

Réf.	T/m
MAT20.280	80

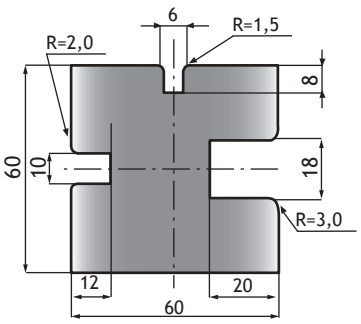


90°

Réf.	T/m
MAT20.290	80

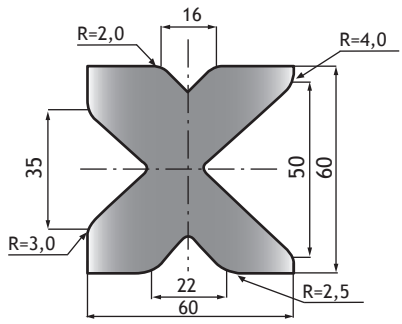


Réf.	T/m
MAT20.310	100



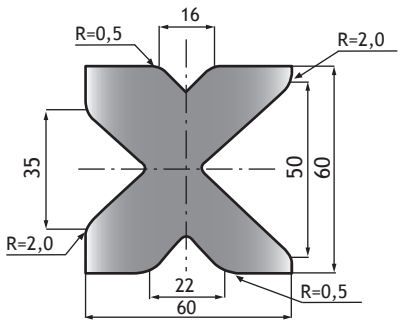
85°

Réf.	T/m
MAT20.670	80



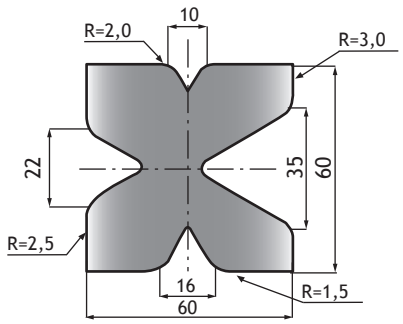
88° 85°

Réf.	T/m
MAT20.300	80



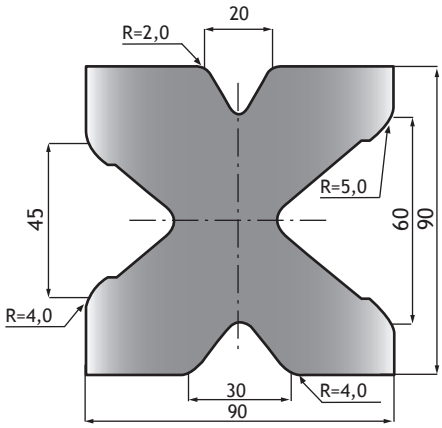
60°

Réf.	T/m
MAT20.340	60



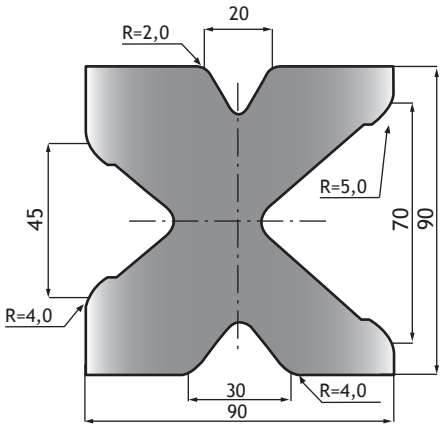
80° 60°

Réf.	T/m
MAT20.671	100



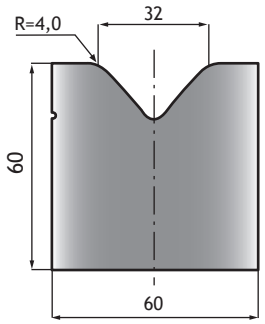
80° 60°

Réf.	T/m
MAT20.672	100



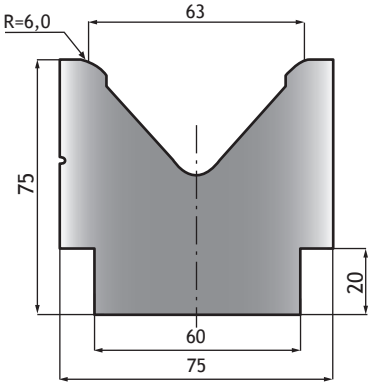
85°

Réf.	T/m
MAT20.200	100



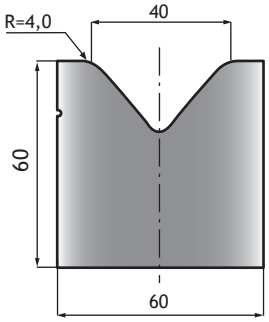
85°

Réf.	T/m
MAT20.210	100



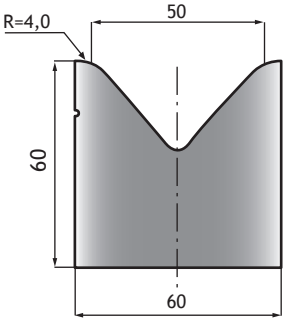
85°

Réf.	T/m
MAT20.220	100

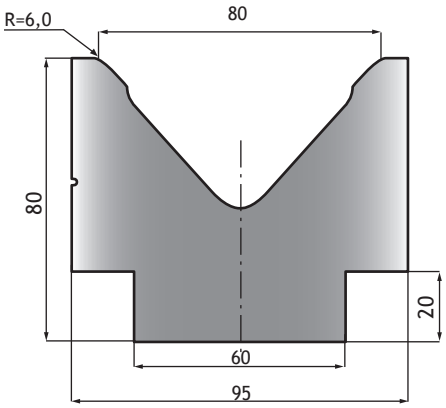


85°

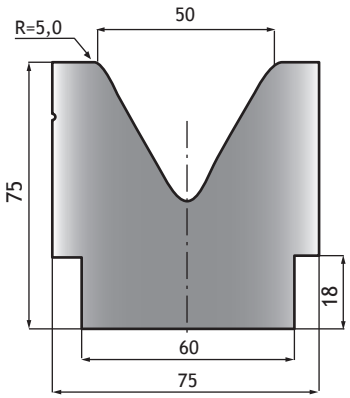
Réf.	T/m
MAT20.230	100



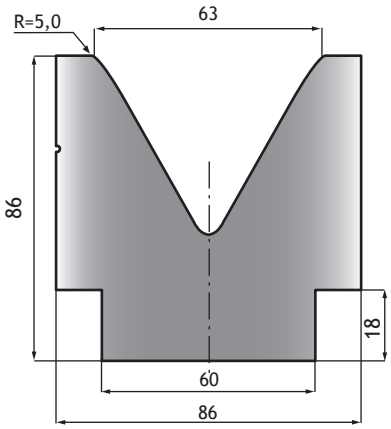
85°	Réf.	T/m
	MAT20.240	100



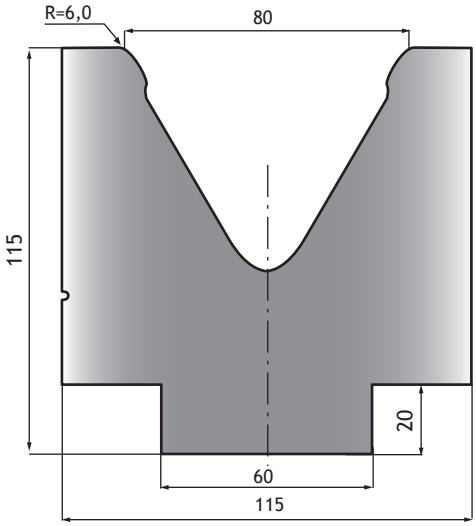
60°	Réf.	T/m
	MAT20.820	100



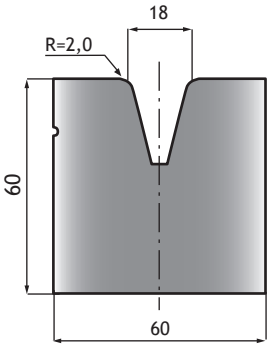
60°	Réf.	T/m
	MAT20.830	100



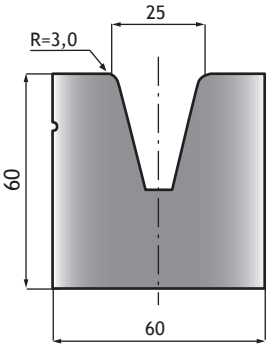
60°	Réf.	T/m
	MAT20.890	100



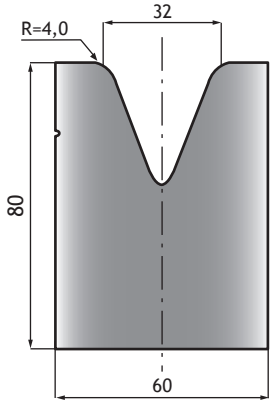
30°	Réf.	T/m
	MAT20.860	100



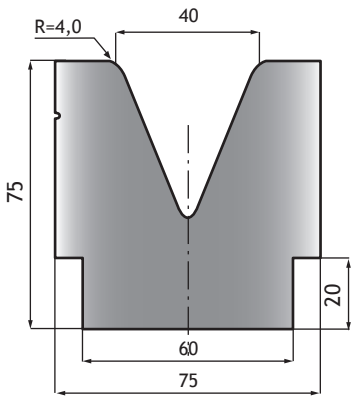
30°	Réf.	T/m
	MAT20.870	100



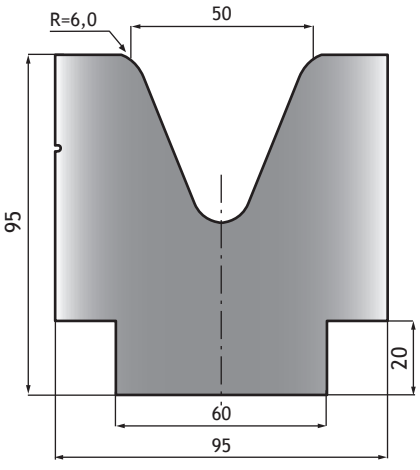
45°	Réf.	T/m
	MAT20.880	100



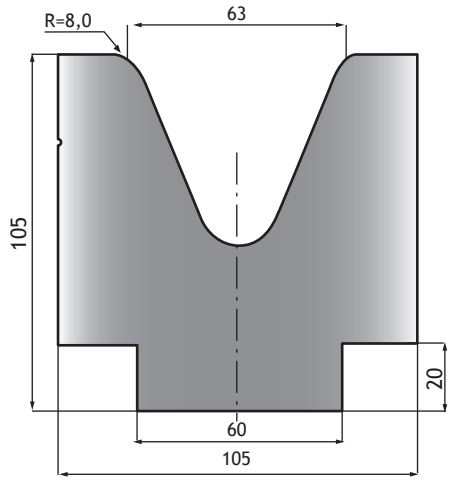
45°	Réf.	T/m
	MAT20.810	100



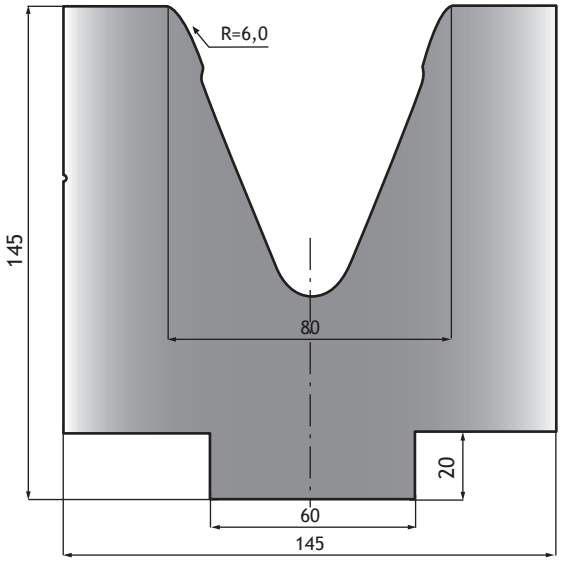
45°	Réf.	T/m
	MAT21.180	100



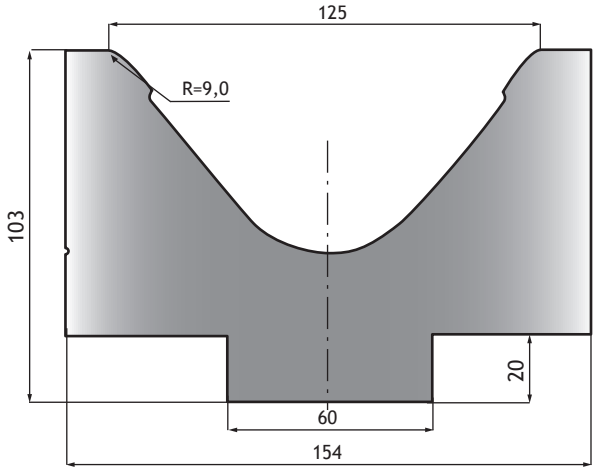
45°	Réf.	T/m
	MAT21.170	100



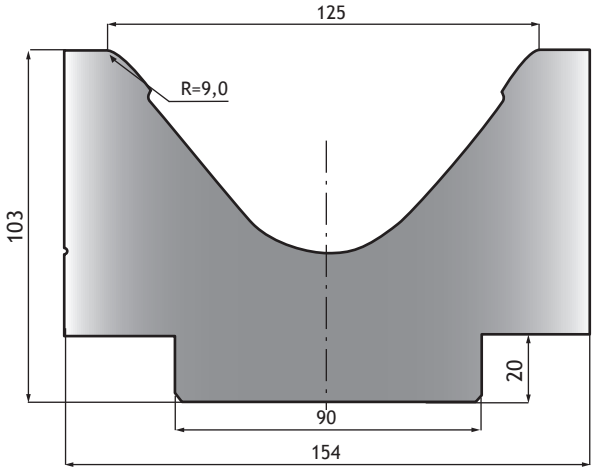
45°	Réf.	T/m
	MAT20.840	100



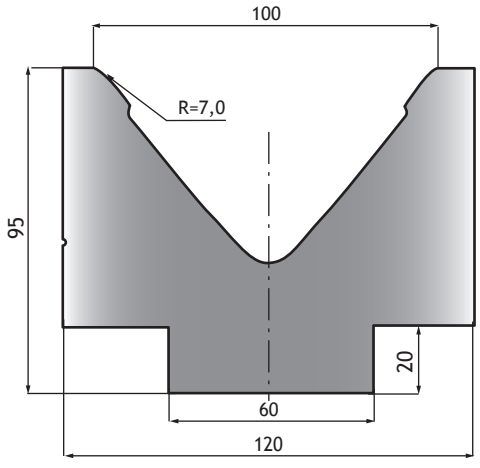
80°	Réf.	T/m
	MAT20.261	100



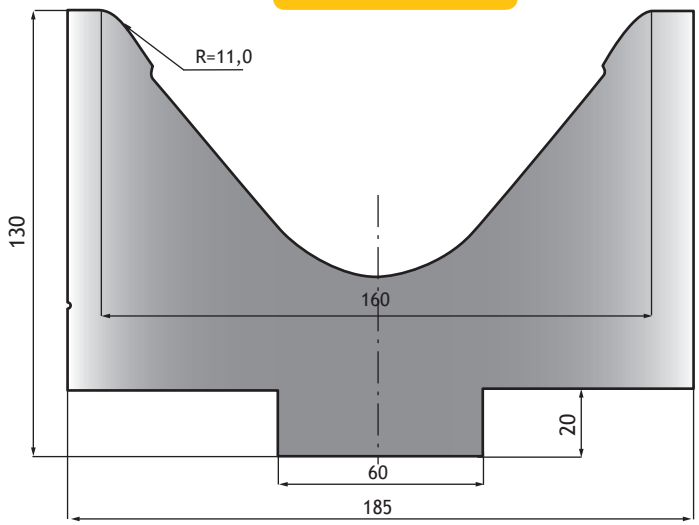
80°	Réf.	T/m
	MAT20.260	100



80°	Réf.	T/m
	MAT20.250	100

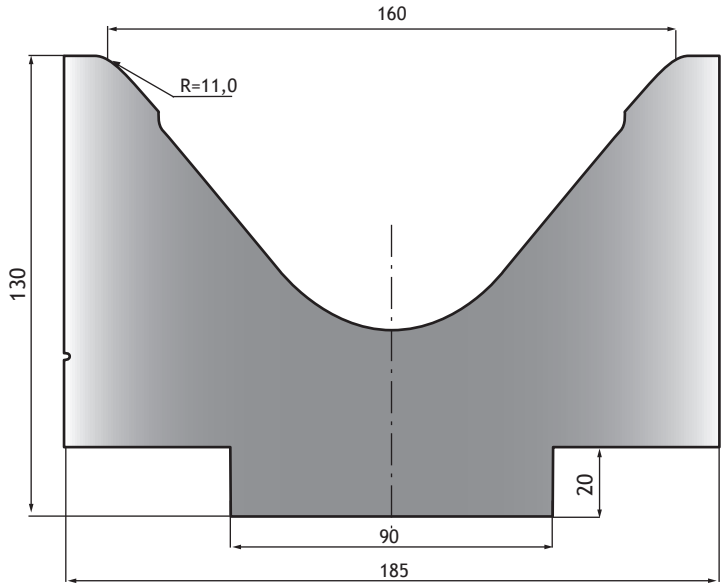


80°	Réf.	T/m
	MAT20.271	100



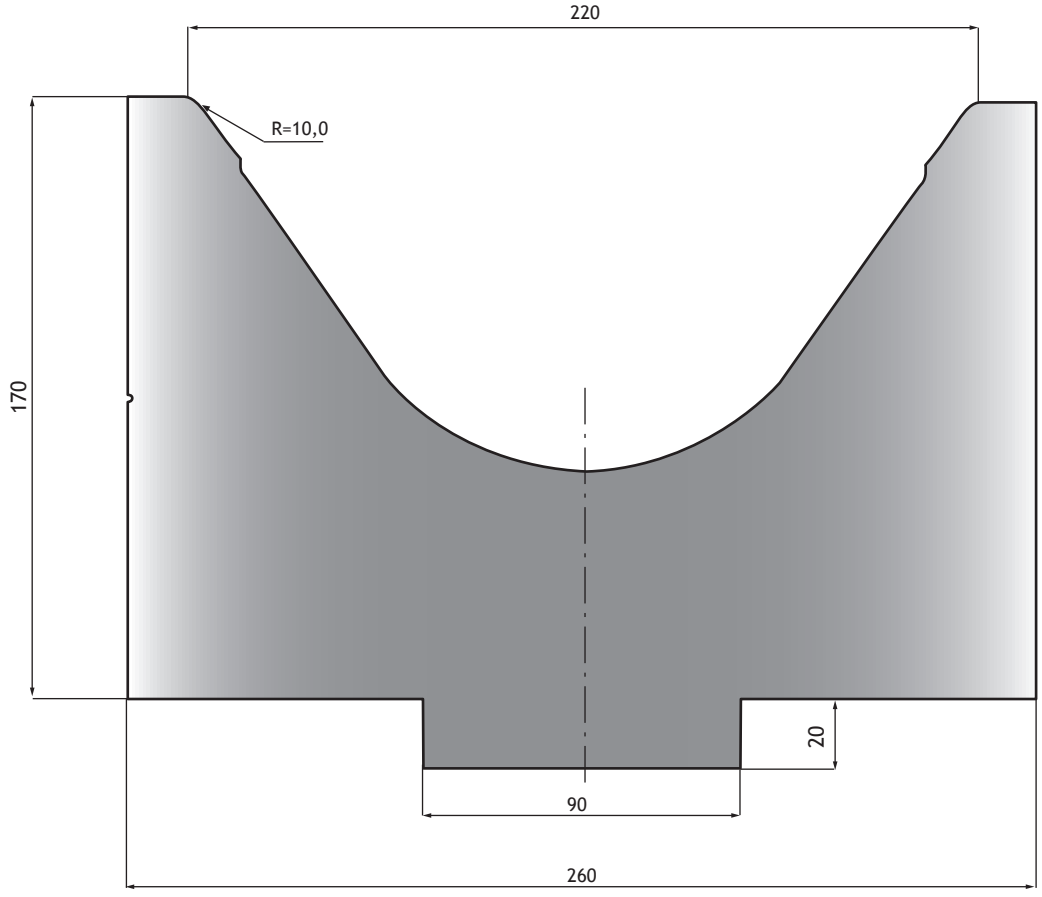
80°

Réf.	T/m
MAT20.270	100

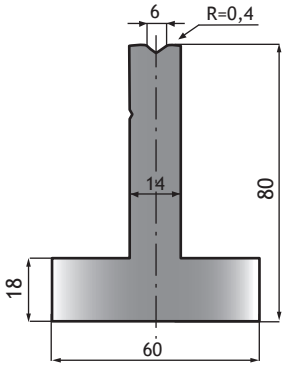


70°

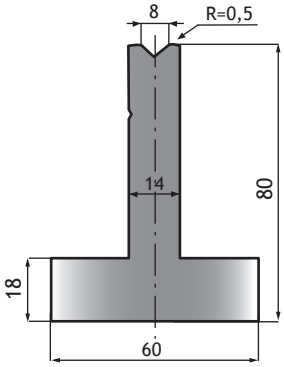
Réf.	T/m
MAT72.900	200



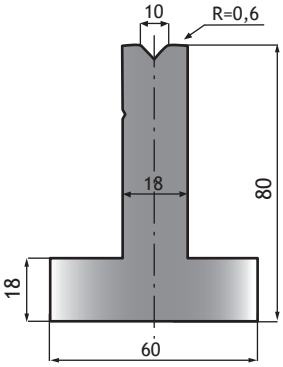
90°	Réf.	T/m
	MAT30.100	100



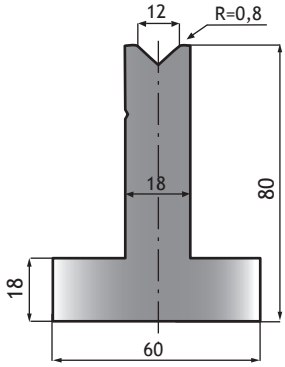
90°	Réf.	T/m
	MAT30.110	100



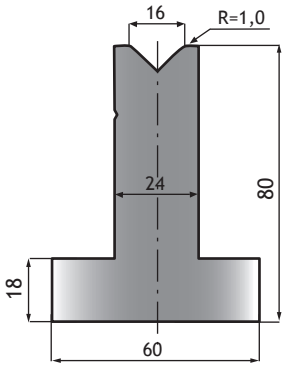
90°	Réf.	T/m
	MAT30.120	100



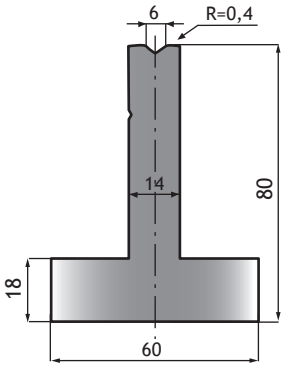
90°	Réf.	T/m
	MAT30.130	100



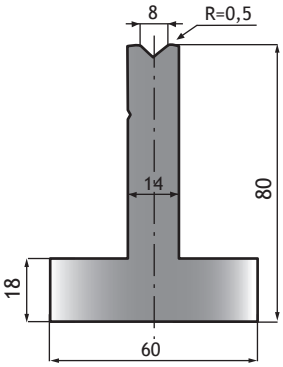
90°	Réf.	T/m
	MAT30.140	100



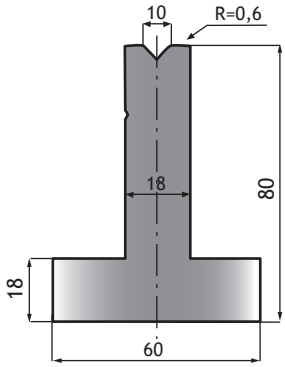
88°	Réf.	T/m
	MAT30.800	100



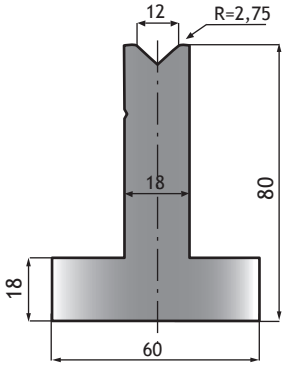
88°	Réf.	T/m
	MAT30.810	100



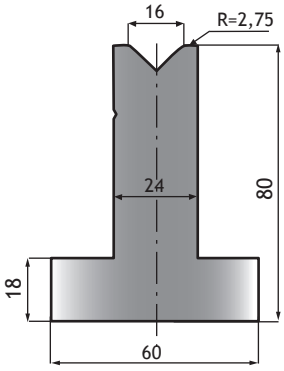
88°	Réf.	T/m
	MAT30.820	100



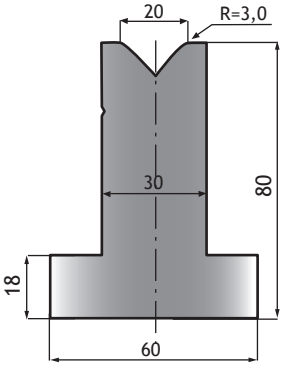
88°	Réf.	T/m
	MAT30.150	100



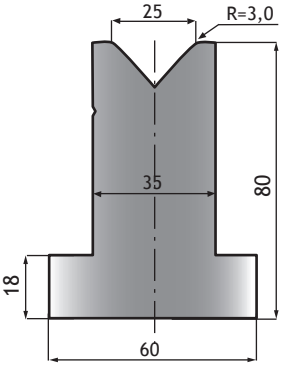
88°	Réf.	T/m
	MAT30.160	100



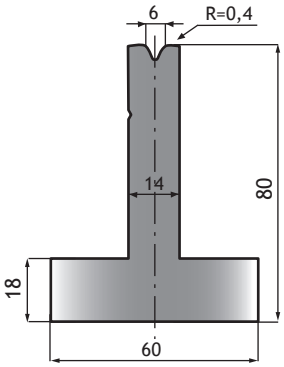
88°	Réf.	T/m
	MAT30.170	100



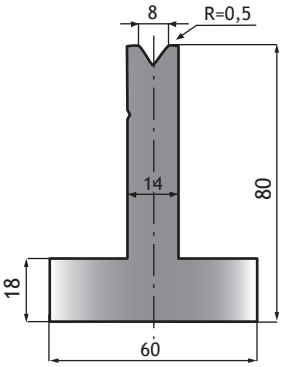
88°	Réf.	T/m
	MAT30.180	100



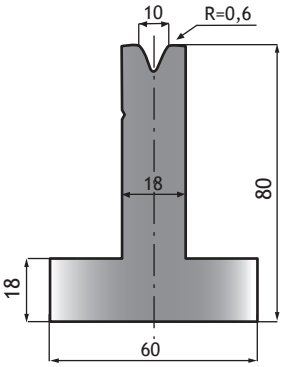
60°	Réf.	T/m
	MAT30.190	60



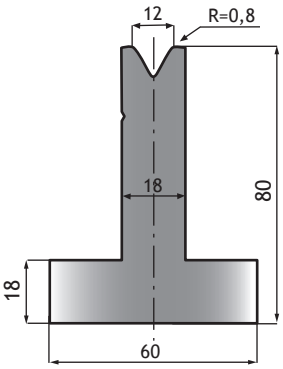
60°	Réf.	T/m
	MAT30.200	60



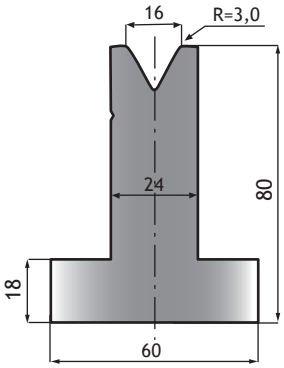
60°	Réf.	T/m
	MAT30.210	60



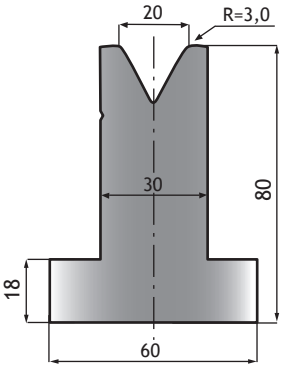
60°	Réf.	T/m
	MAT30.220	60



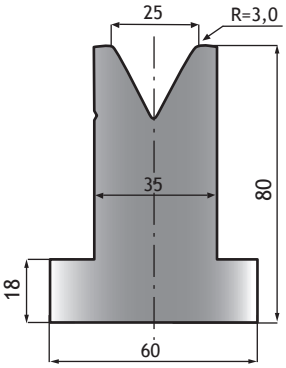
60°	Réf.	T/m
	MAT30.230	60



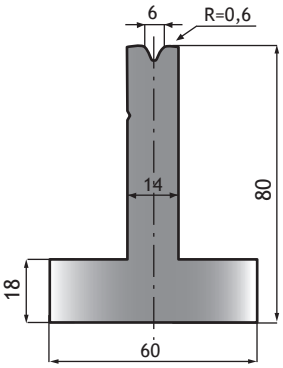
60°	Réf.	T/m
	MAT30.240	60



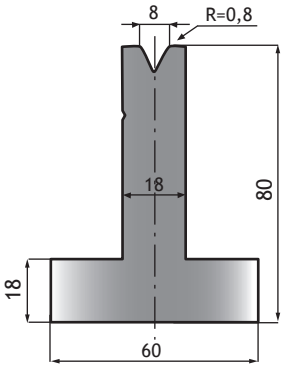
60°	Réf.	T/m
	MAT30.250	60



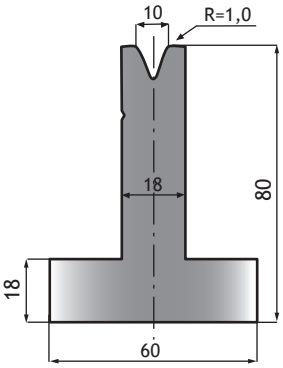
45°	Réf.	T/m
	MAT30.260	50



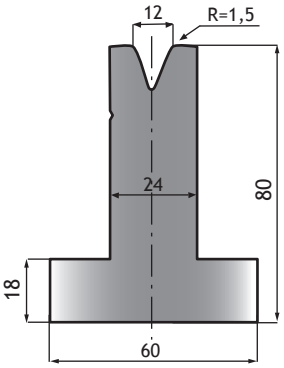
45°	Réf.	T/m
	MAT30.270	50



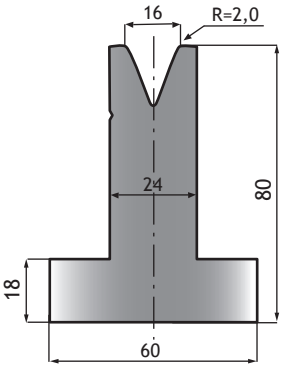
45°	Réf.	T/m
	MAT30.280	50



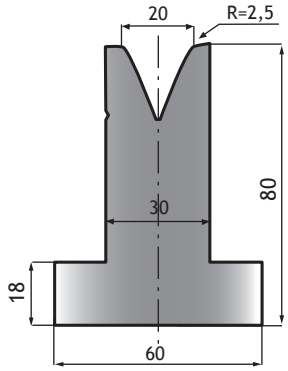
45°	Réf.	T/m
	MAT30.290	50



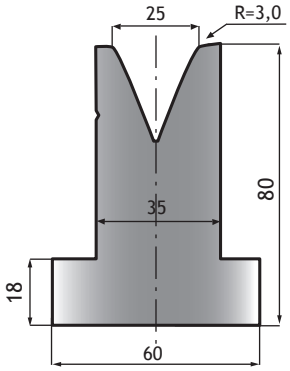
45°	Réf.	T/m
	MAT30.300	50



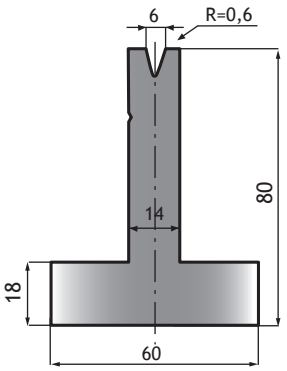
45°	Réf.	T/m
	MAT30.310	50



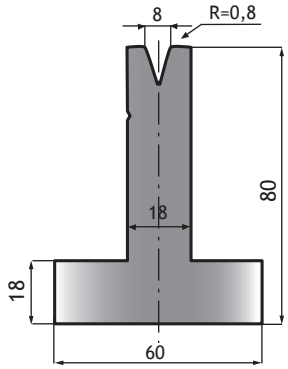
45°	Réf.	T/m
	MAT30.320	50



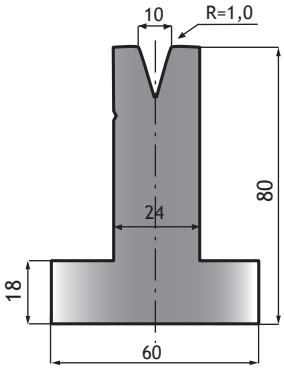
30°	Réf.	T/m
	MAT30.420	35



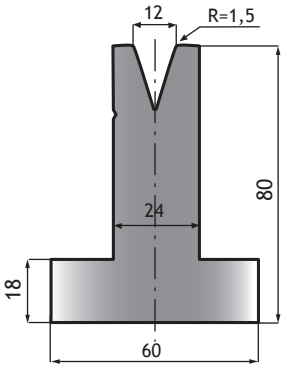
30°	Réf.	T/m
	MAT30.430	35



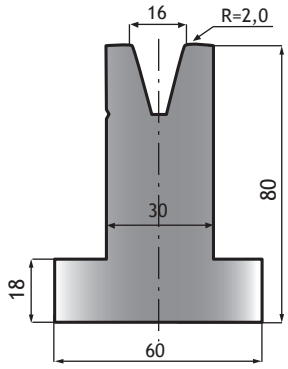
30°	Réf.	T/m
	MAT30.440	100



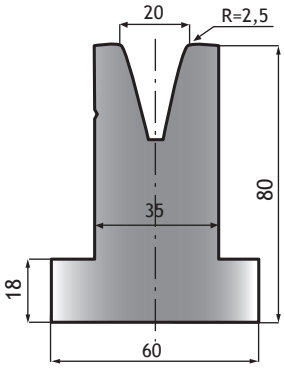
30°	Réf.	T/m
	MAT30.450	40



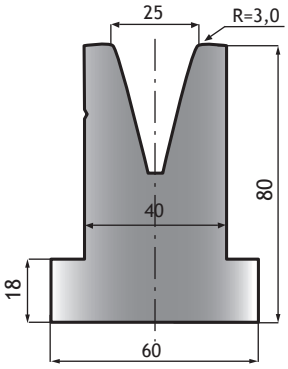
30°	Réf.	T/m
	MAT30.460	45



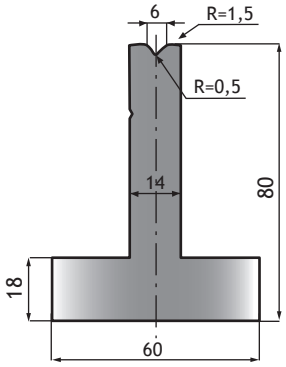
30°	Réf.	T/m
	MAT30.470	50



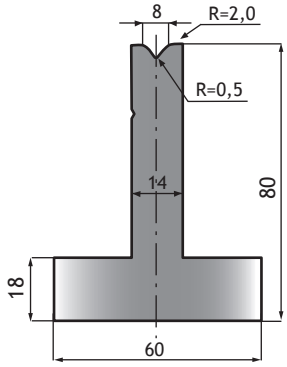
30°	Réf.	T/m
	MAT30.480	50



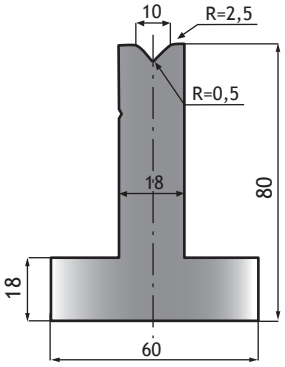
85°	Réf.	T/m
	MAT30.801	100



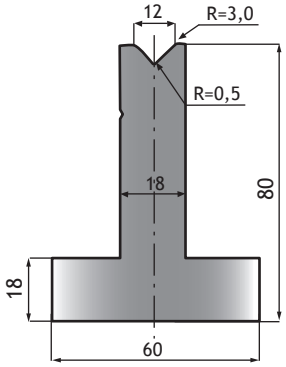
85°	Réf.	T/m
	MAT30.802	100



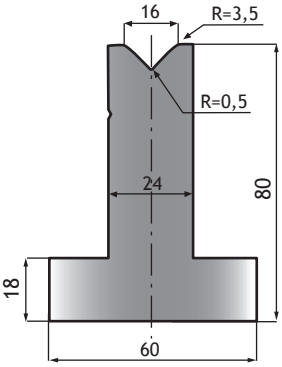
85°	Réf.	T/m
	MAT30.803	100



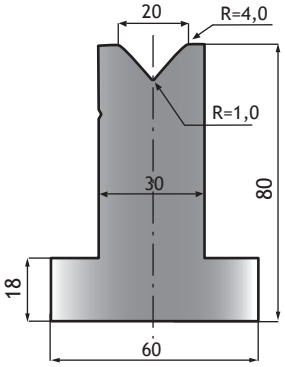
85°	Réf.	T/m
	MAT30.804	100



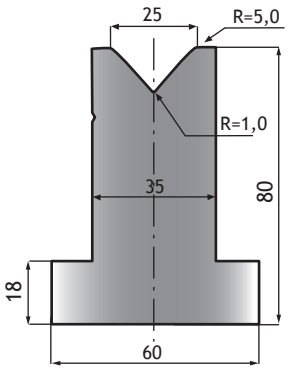
85°	Réf.	T/m
	MAT30.805	100



85°	Réf.	T/m
	MAT30.806	100

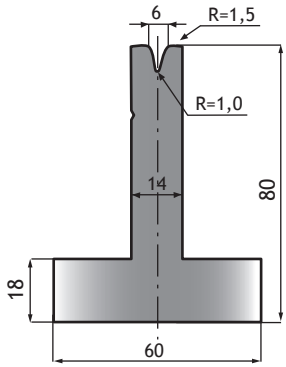


85°	Réf.	T/m
	MAT30.807	100



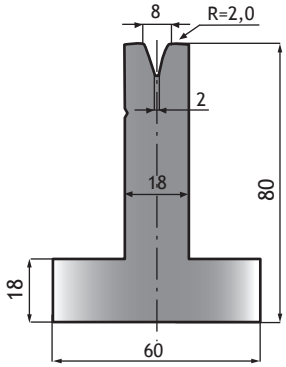
35°

Réf.	T/m
MAT30.421	100



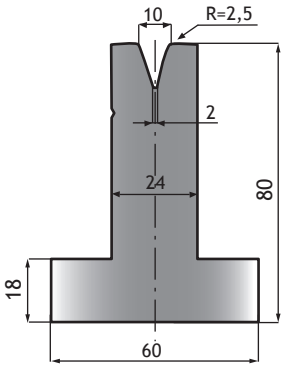
35°

Réf.	T/m
MAT30.422	100



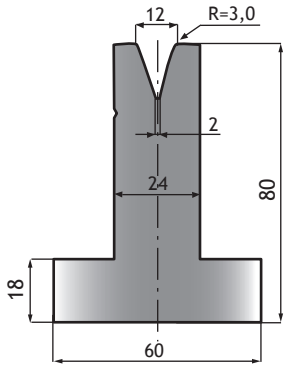
35°

Réf.	T/m
MAT30.423	100



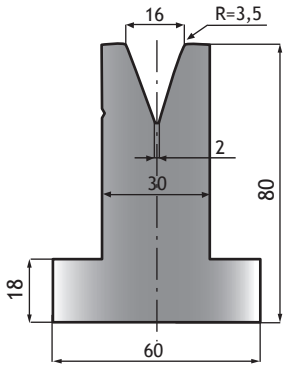
35°

Réf.	T/m
MAT30.424	100



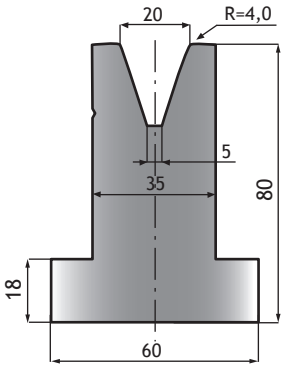
35°

Réf.	T/m
MAT30.425	100



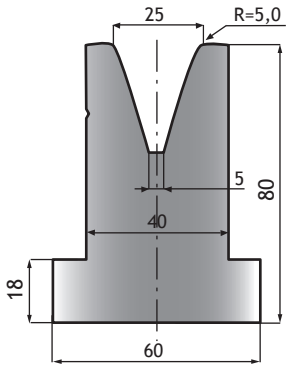
35°

Réf.	T/m
MAT30.426	100



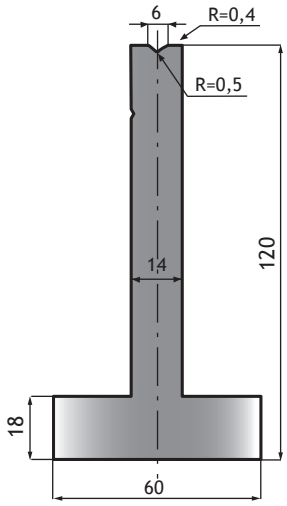
35°

Réf.	T/m
MAT30.427	100



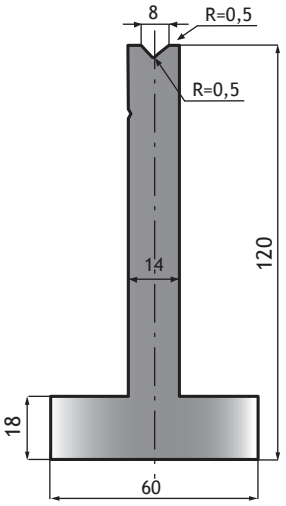
90°

Réf.	T/m
MAT30.500	100



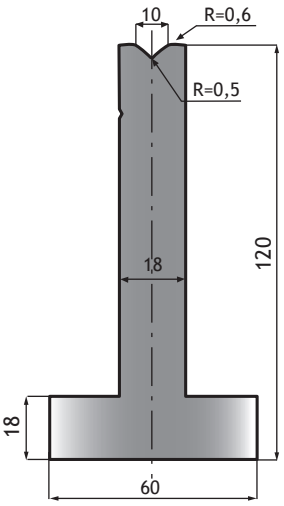
90°

Réf.	T/m
MAT30.510	100



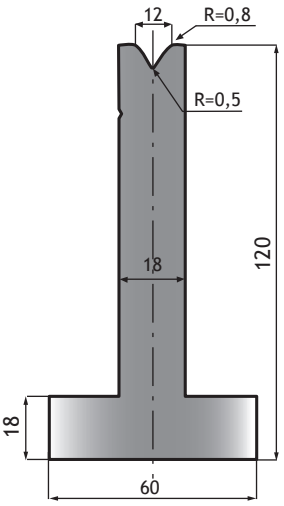
90°

Réf.	T/m
MAT30.520	100



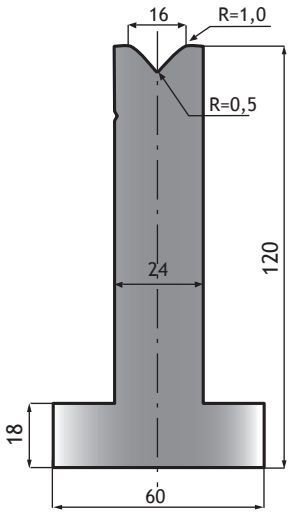
90°

Réf.	T/m
MAT30.530	100



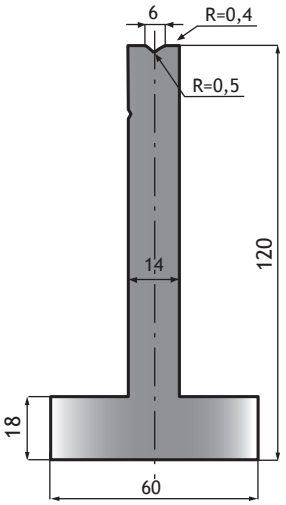
90°

Réf.	T/m
MAT30.540	100



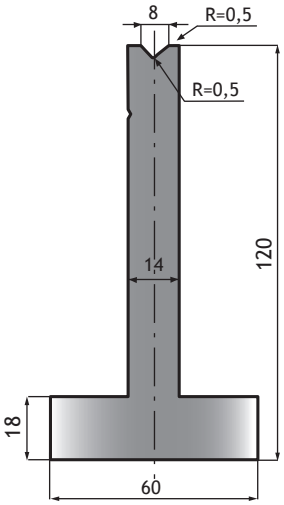
88°

Réf.	T/m
MAT30.830	100



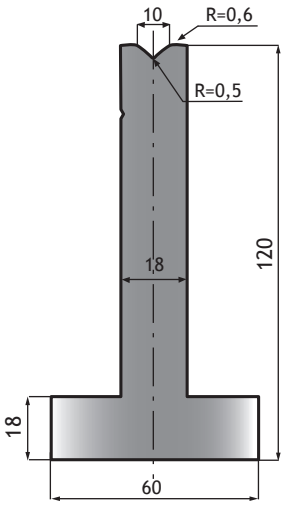
88°

Réf.	T/m
MAT30.840	100



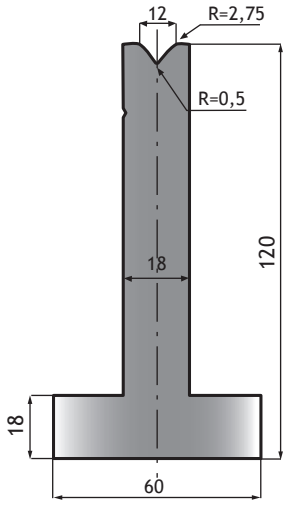
88°

Réf.	T/m
MAT30.850	100



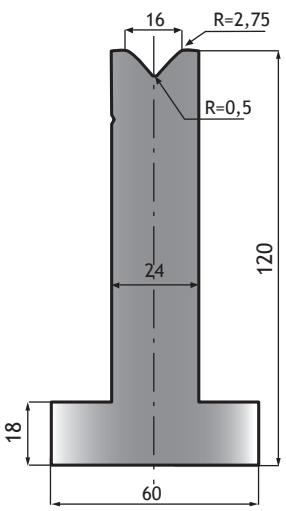
88°

Réf.	T/m
MAT30.550	100



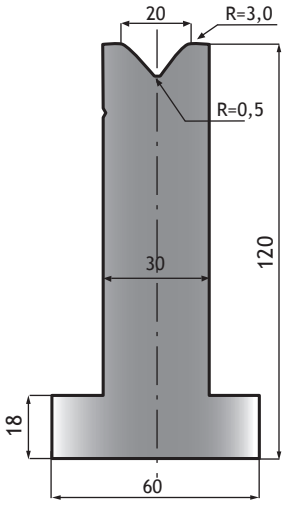
88°

Réf.	T/m
MAT30.560	100



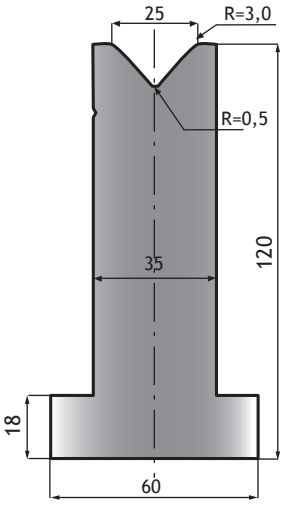
88°

Réf.	T/m
MAT30.570	100

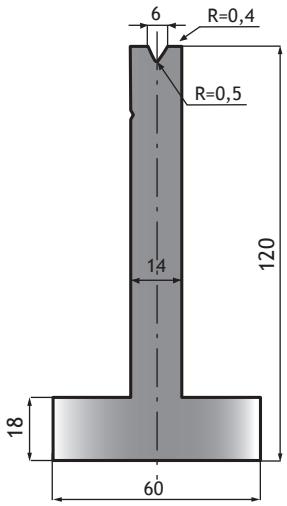


88°

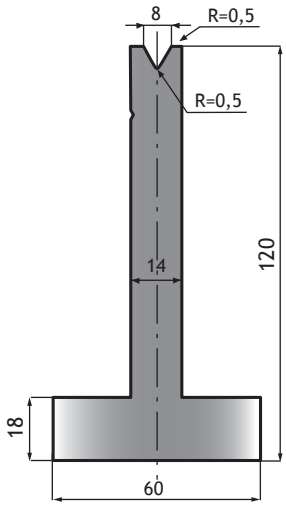
Réf.	T/m
MAT30.580	100



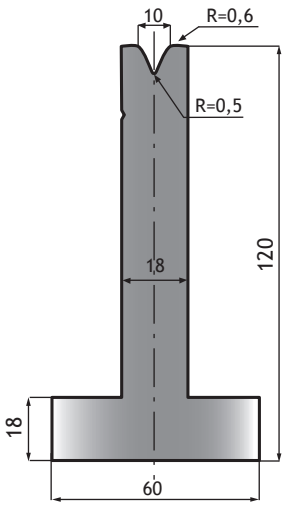
60°	Réf.	T/m
	MAT30.590	100



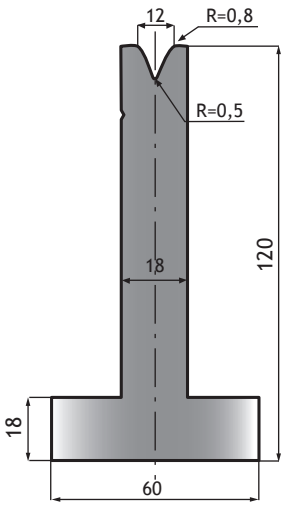
60°	Réf.	T/m
	MAT30.600	60



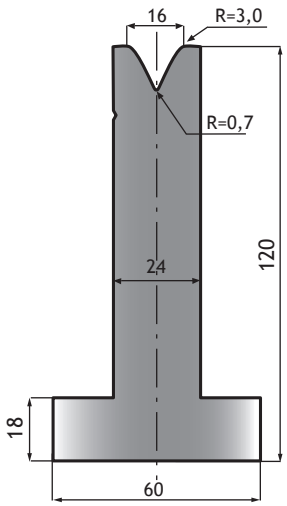
60°	Réf.	T/m
	MAT30.610	60



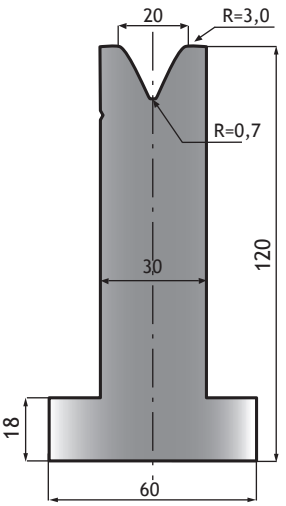
60°	Réf.	T/m
	MAT30.620	60



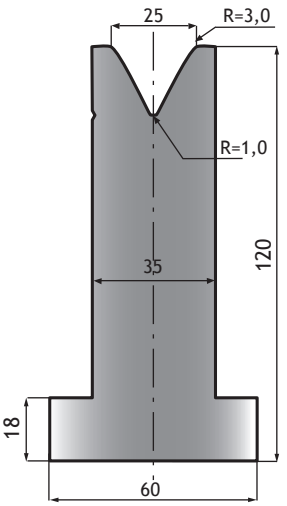
60°	Réf.	T/m
	MAT30.630	60



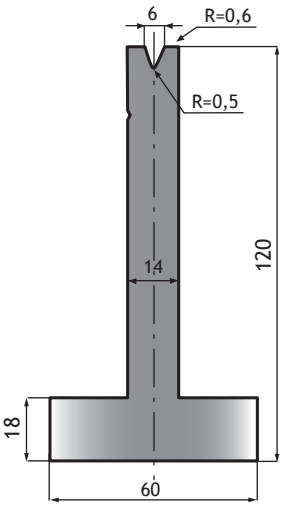
60°	Réf.	T/m
	MAT30.640	60



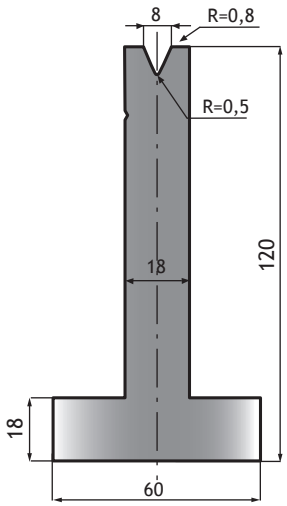
60°	Réf.	T/m
	MAT30.650	60



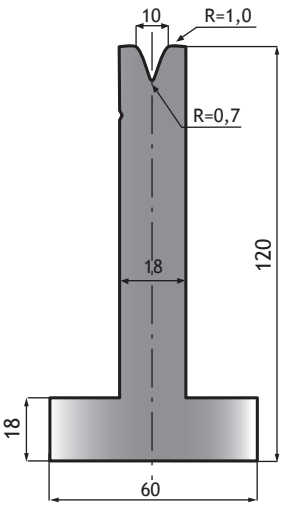
45°	Réf.	T/m
	MAT30.660	50



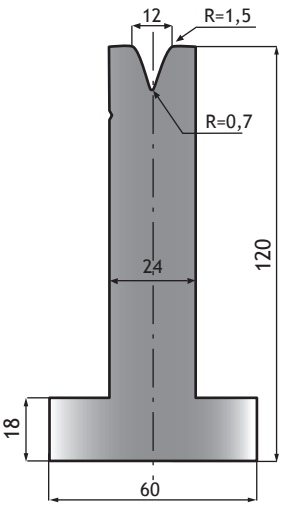
45°	Réf.	T/m
	MAT30.670	50



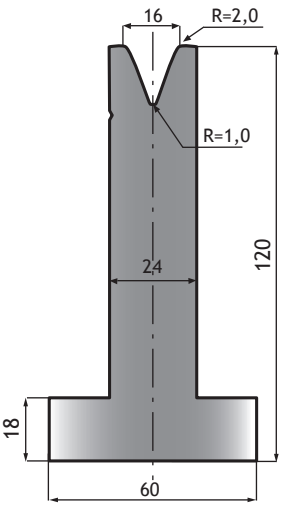
45°	Réf.	T/m
	MAT30.680	50



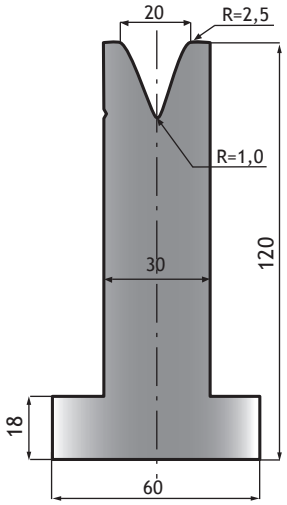
45°	Réf.	T/m
	MAT30.690	50



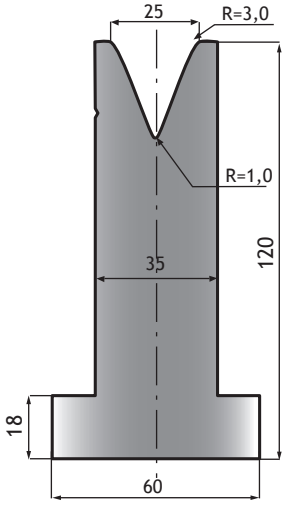
45°	Réf.	T/m
	MAT30.700	50



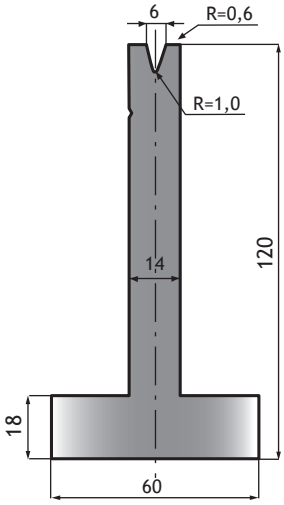
45°	Réf.	T/m
	MAT30.710	50



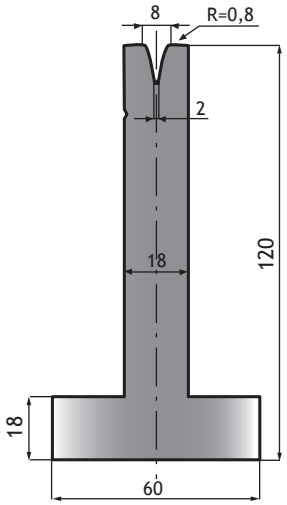
45°	Réf.	T/m
	MAT30.720	50



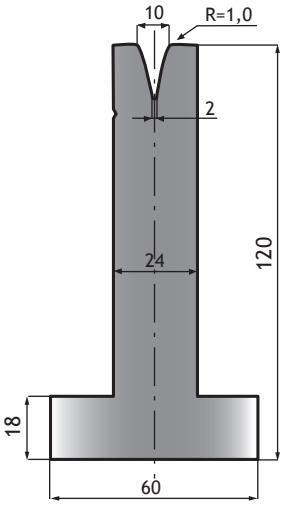
30°	Réf.	T/m
	MAT30.730	35



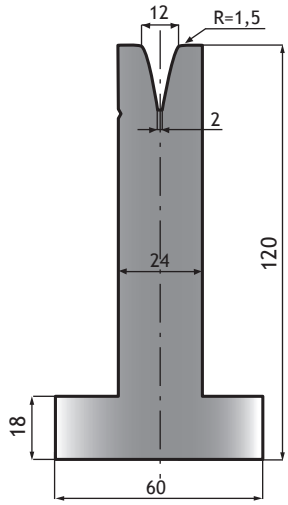
30°	Réf.	T/m
	MAT30.740	35



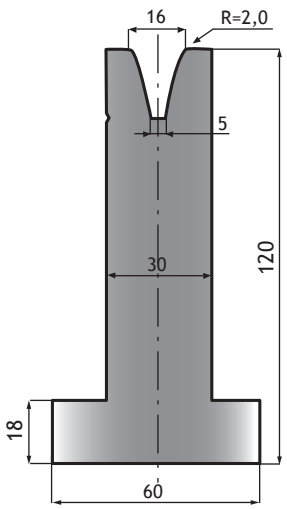
30°	Réf.	T/m
	MAT30.750	50



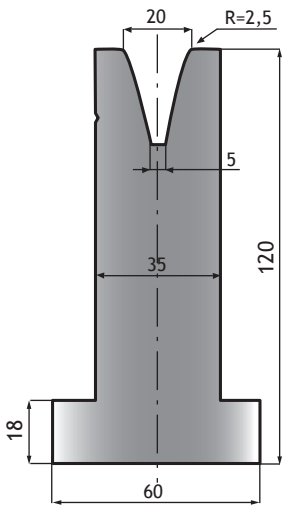
30°	Réf.	T/m
	MAT30.760	40



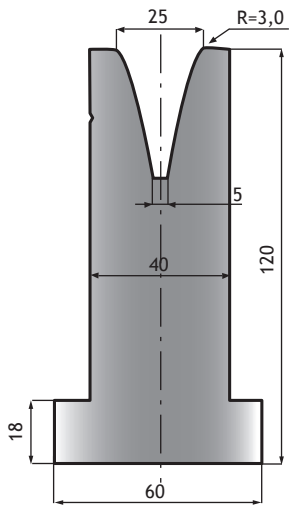
30°	Réf.	T/m
	MAT30.770	45



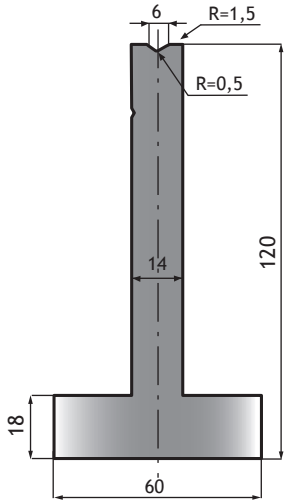
30°	Réf.	T/m
	MAT30.780	50



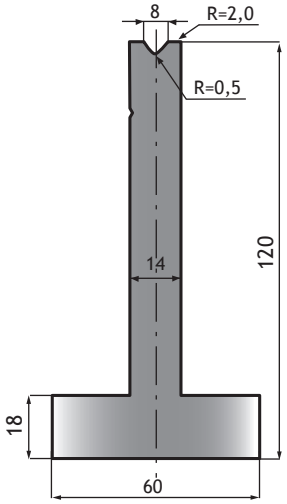
30°	Réf.	T/m
	MAT30.790	50



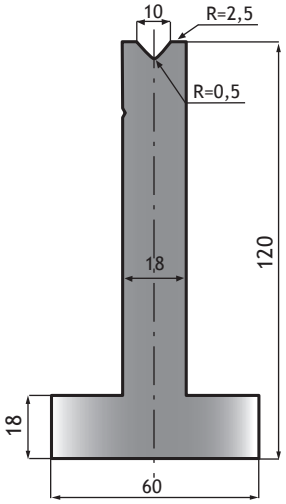
85°	Réf.	T/m
	MAT30.831	100



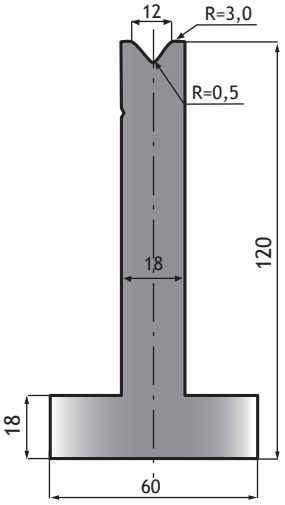
85°	Réf.	T/m
	MAT30.832	100



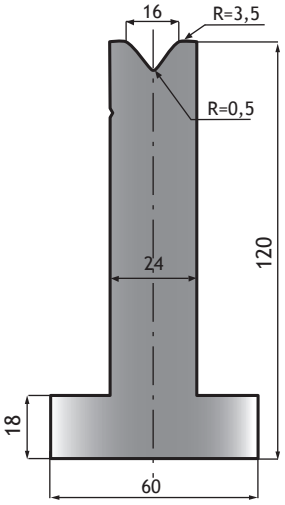
85°	Réf.	T/m
	MAT30.833	100



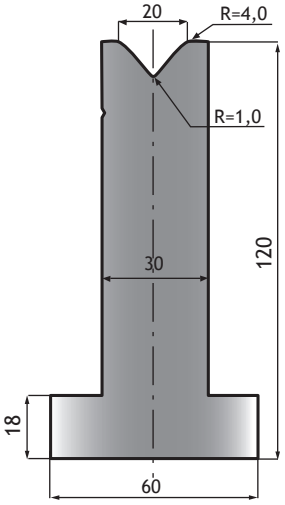
85°	Réf.	T/m
	MAT30.834	100



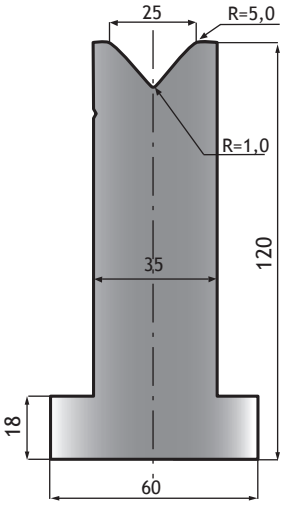
85°	Réf.	T/m
	MAT30.835	100



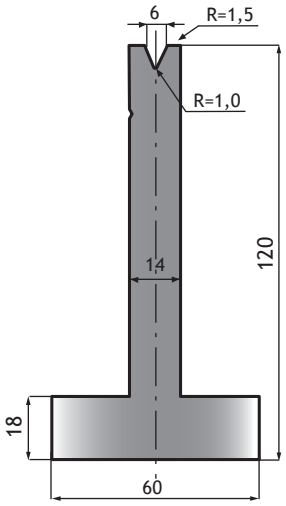
85°	Réf.	T/m
	MAT30.836	100



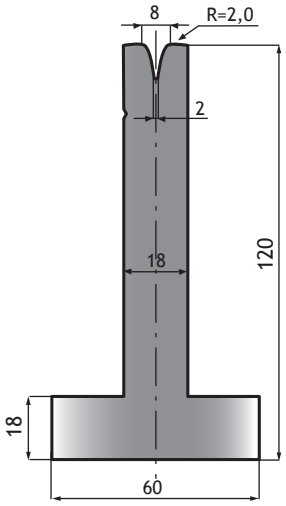
85°	Réf.	T/m
	MAT30.837	100



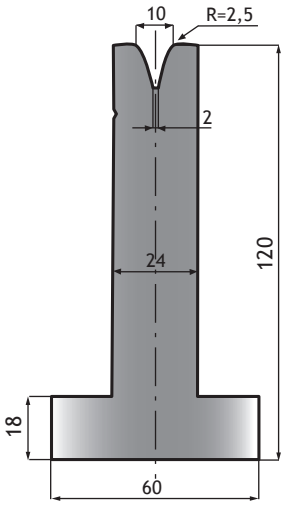
35°	Réf.	T/m
	MAT30.731	100



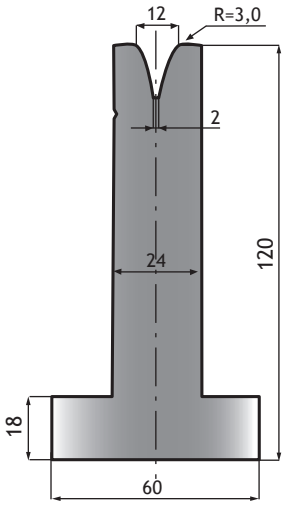
35°	Réf.	T/m
	MAT30.732	100



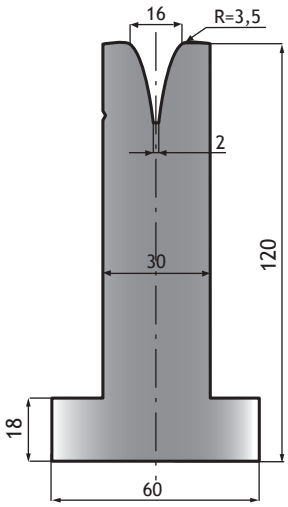
35°	Réf.	T/m
	MAT30.733	100



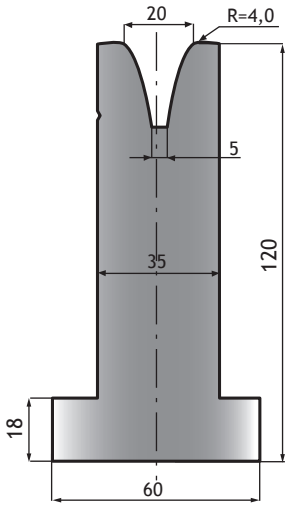
35°	Réf.	T/m
	MAT30.734	100



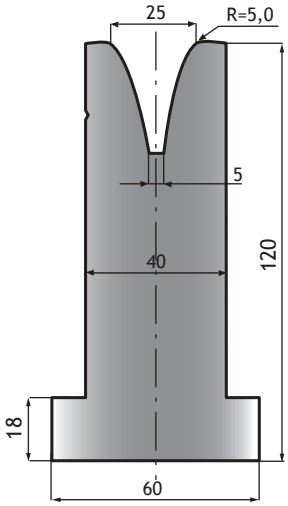
35°	Réf.	T/m
	MAT30.735	100



35°	Réf.	T/m
	MAT30.736	100

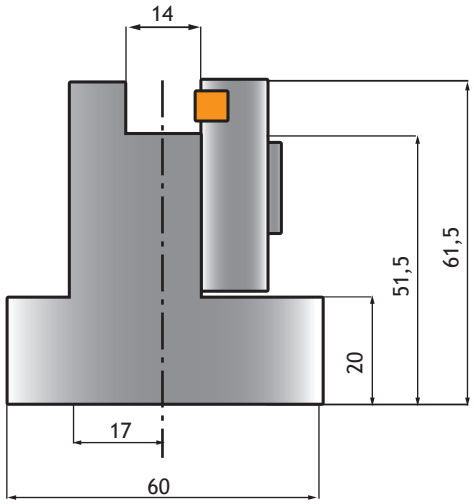


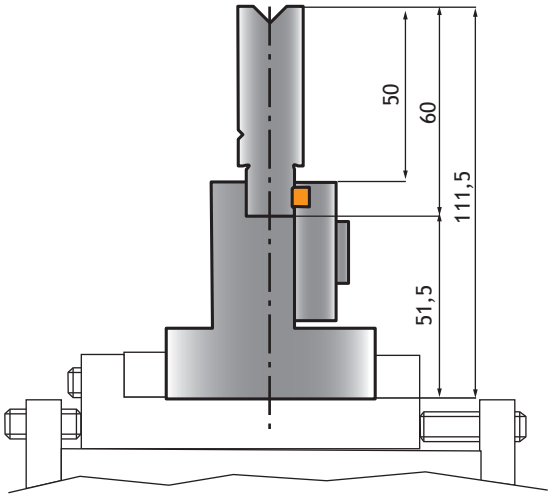
35°	Réf.	T/m
	MAT30.737	100



Supports pour matrices étroites base 14 mm

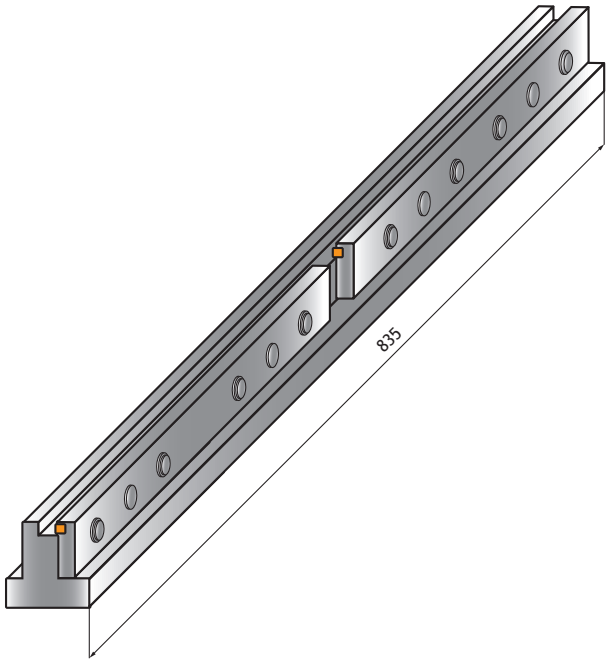
Réf.
MAT31.730

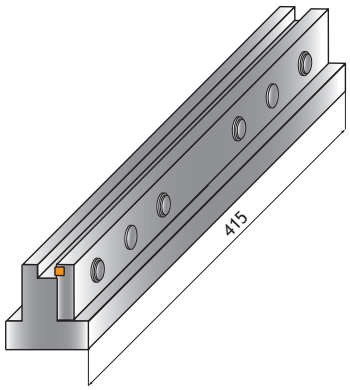




Support long : référence + lettre L

Support court : référence + lettre C

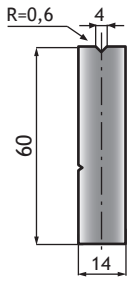




Matrices étroites base 14 mm

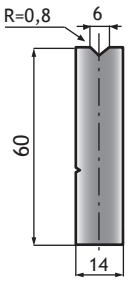
88°

Réf.	T/m
MATAM.804	100



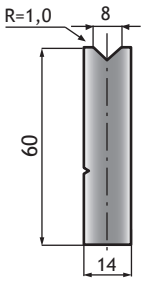
88°

Réf.	T/m
MATAM.806	100



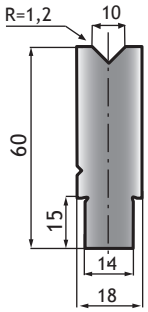
88°

Réf.	T/m
MATAM.808	100



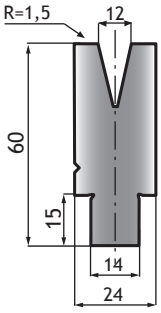
88°

Réf.	T/m
MATAM.810	100



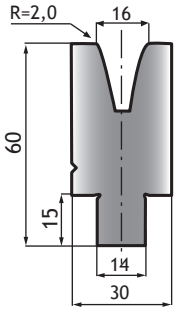
88°

Réf.	T/m
MATAM.812	100



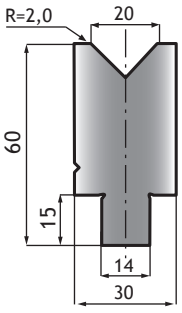
88°

Réf.	T/m
MATAM.816	100



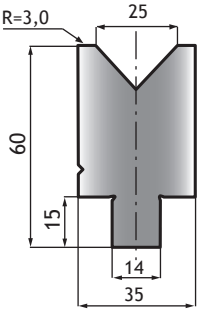
88°

Réf.	T/m
MATAM.820	100



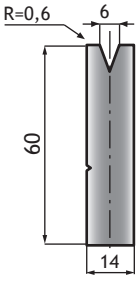
88°

Réf.	T/m
MATAM.825	100



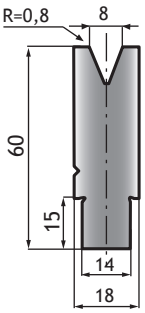
30°

Réf.	T/m
MATAM.306	35



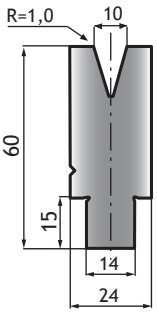
30°

Réf.	T/m
MATAM.308	35



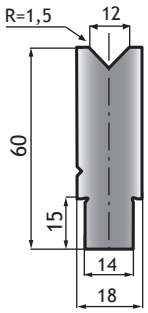
30°

Réf.	T/m
MATAM.310	50



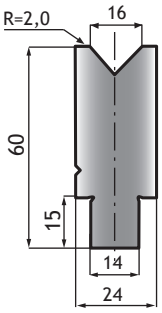
30°

Réf.	T/m
MATAM.312	40



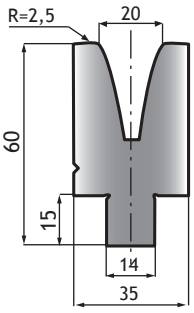
30°

Réf.	T/m
MATAM.316	45



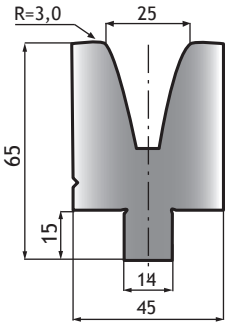
30°

Réf.	T/m
MATAM.320	50



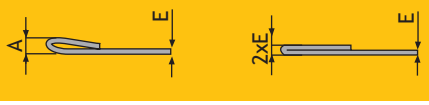
30°

Réf.	T/m
MATAM.325	50



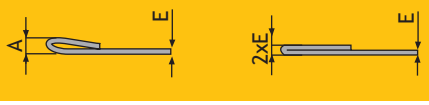
Outils à écraser

Dureté 40 daN/mm²



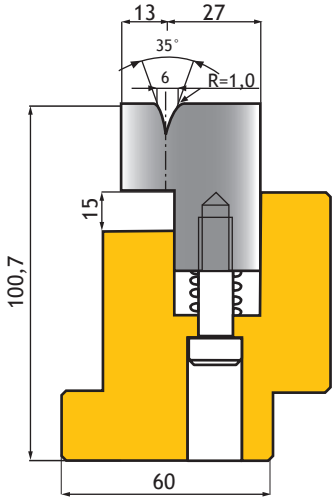
E (mm)	(T/m)	A (mm)	(T/m)	2E (mm)
0,6	9	3	23	1,2
0,8	12	3	32	1,6
1,0	15	3,5	40	2,0
1,25	17	3,5	50	2,5
1,5	22	4,6	63	3,0
2,0	30	5,5	80	4,0
2,5	55	6,5	90	5,0
3,0	70	8,0	100	6,0

Dureté 70 daN/mm²

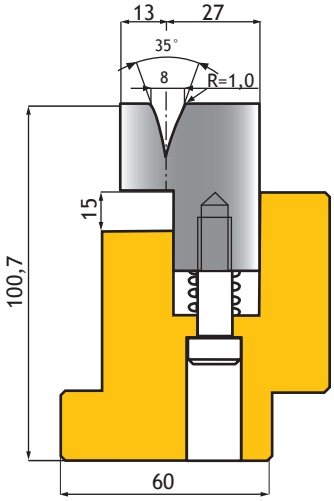


E (mm)	(T/m)	A (mm)	(T/m)	2E (mm)
0,6	15	3	35	1,2
0,8	20	3	50	1,6
1,0	25	3,5	60	2,0
1,25	26	3,5	80	2,5
1,5	38	4,6	95	3,0
2,0	50	5,5	100	4,0

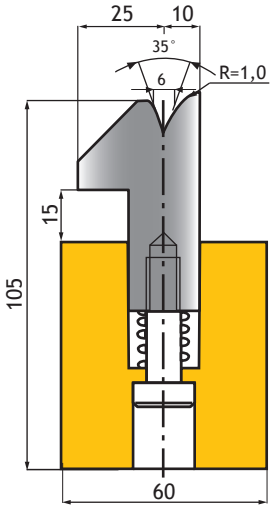
35° — Réf. MAT30.370/6 — T/m 60



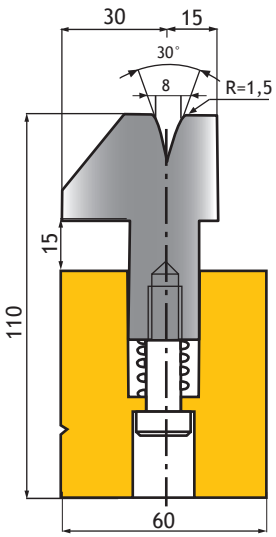
35° — Réf. MAT30.370/8 — T/m 60



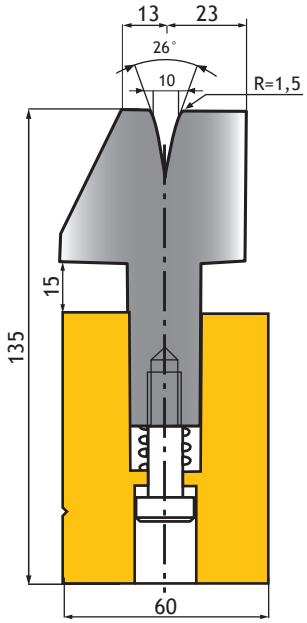
35° — Réf. MAT30.390 — T/m 80



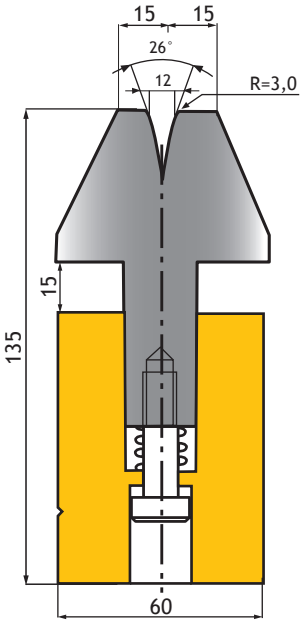
30° — Réf. MAT30.410 — T/m 80



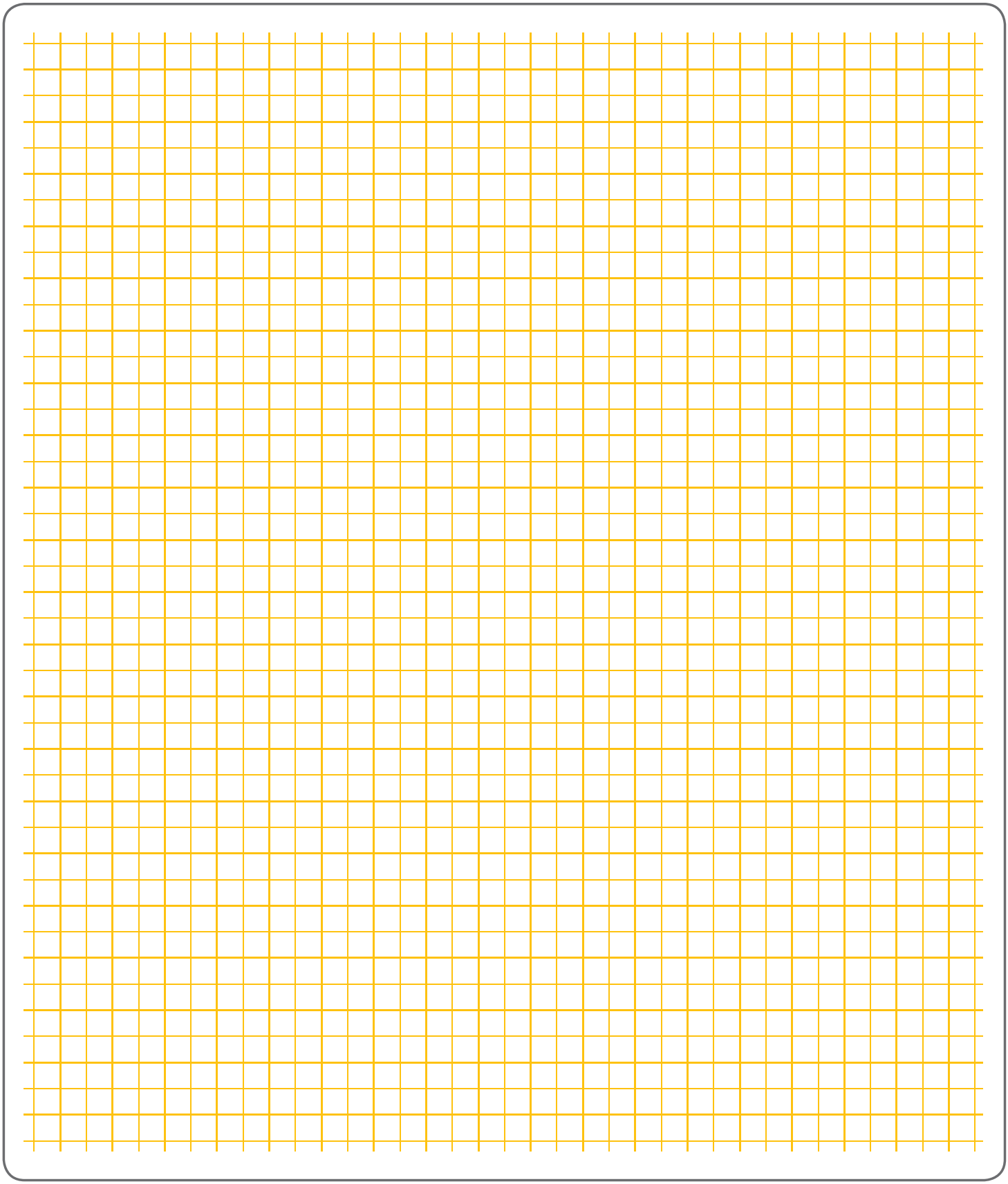
26° — Réf. MAT30.380 — T/m 100



26° — Réf. MAT30.400 — T/m 100



Feuille de calcul



Z.A. des Saulniers •37800 Sainte-Maure-de-Touraine • France • FR15331327072
Tél. : +33 2 47 65 40 67 • Fax : +33 2 47 65 51 61 • e-mail : info@jouanel.com • Site web : www.jouanel.com

Jouanel Industrie S. A.10-14