

PAFIX Tapping Heads CNC for internal and external threading



At a glance

- Extremely compact construction for critical length threads
- Thanks to disengaging clutch thread length is precisely controlled
- One single head for internal and external threads
- Integrated coolant supply (with coolant feed through centre on request)
- Available in
 - ANGST Flex or ESX (ER) Collets
 - Sizes 1, 2, 3, 4 and 6
 - All usual shanks e.g. cylindrical, cylindrical with flat (Weldon), DIN 69880 / VDI 3425, SK DIN 69871, BT (Japan Standard MAS 403), ISO Caterpillar and Morse taper
- Heavy-duty and durable Swiss quality products

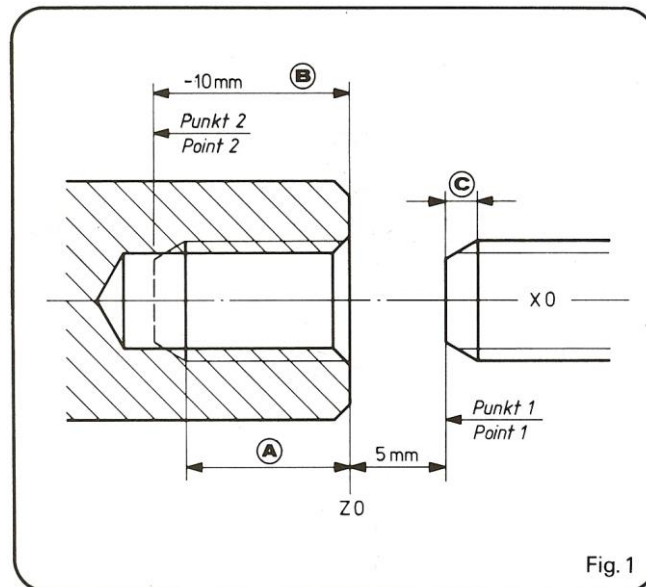
PAFIX Tapping Head for CNC machines

- The PAFIX CNC head has been designed especially for all machines with programmable forward and return feeds to the toolholder (turret, spindle, etc.). It is of extremely compact length and is fitted with a positive disengaging clutch which can be set to 3 different pull-out lengths if required, for example with head size 25-2..., 1,5/3/5 mm.
- The head can be set to two different programmed tapping cycles as follows. Both cycles ensure a certain amount of pitch compensation (float). In order to make sure of faultless thread cutting with precise starting point and depth or length of the thread, no spring take-up thread lead or friction clutch against overload has been provided. The PAFIX CNC is designed to permit a quick change over from tapping head to die head. Simply unscrew the collet nut and replace with the die housing.

Examples of Programs

Example 1 – Without disengaging clutch

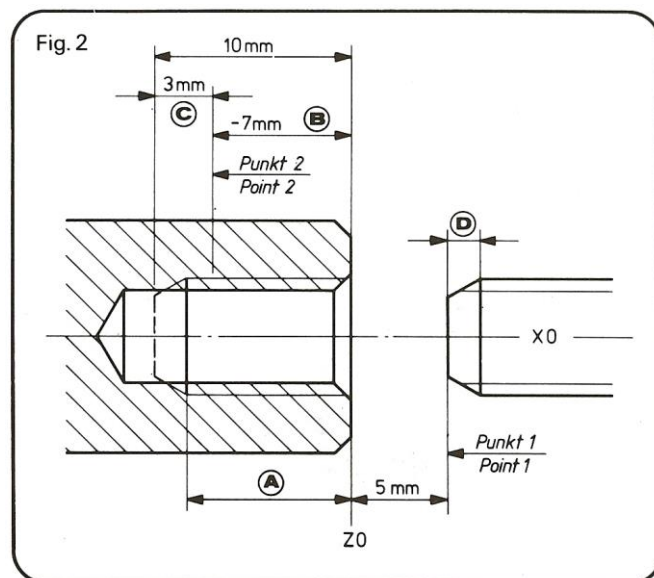
- N 10 Start
 XO Z5.(Point 1)
 N 20 Tapping cycle
 Z-10.F ≈ 98% (Point 2)
 N 30 Dwell time (for pull-out tapping head)
 N 40 Change spindle direction
 Z5. F = 100% (Point 1)
 N 50 Return feed
- The depth (length) of the tapped thread is made up as follows.
 - Programmed depth (length) under automatic control (-10mm). Feed ≈ 98% of the thread pitch.
 - Negative (-) lead of the tap.



For applications where thread length / depth is not critical and can be controlled by timing of spindle reversal. An in-feed of about ≈ 98 of the thread pitch is used for the total thread length / depth required. Machine spindle is then reversed and a return-feed at 100% of thread pitch to ensure the tap / die clears the workpiece.

Example 2 – With disengaging clutch

- N 10 Start
 XO Z5.(Point 1)
 N 20 Tapping cycle
 Z-7.F ≈ 98% (Point 2)
 N 30 Dwell time (for pull-out of tapping head)
 N 40 Change spindle direction
 N 50 Return feed
 Z5. F = 100% (Point 1)
 N 60 Dwell time (to ensure safe clearance of tap from workpiece)
- The depth (length) of the tapped thread is made up as follows.
 - Programmed depth (length) under automatic control (-7mm) Feed ≈ 98% of the thread pitch.
 - Positive (+) preset pull-out of the tapping head (3mm)
 - Negative (-) lead of the tap

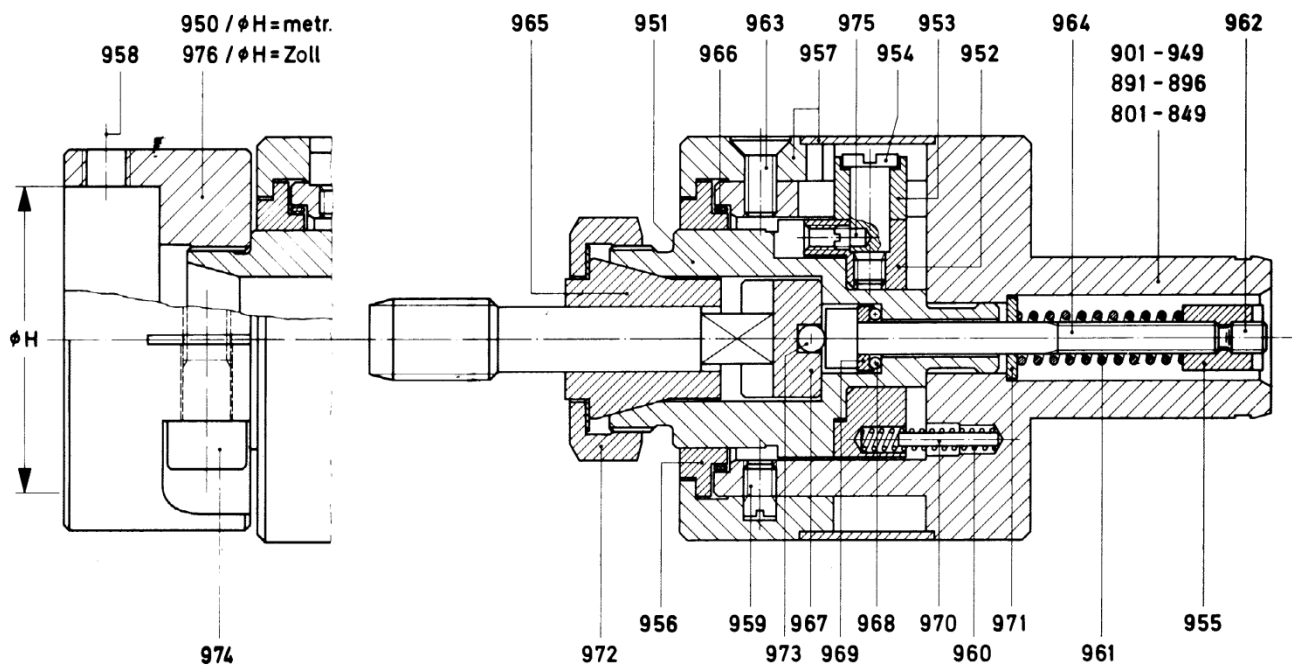


Examples of programs (continuation)

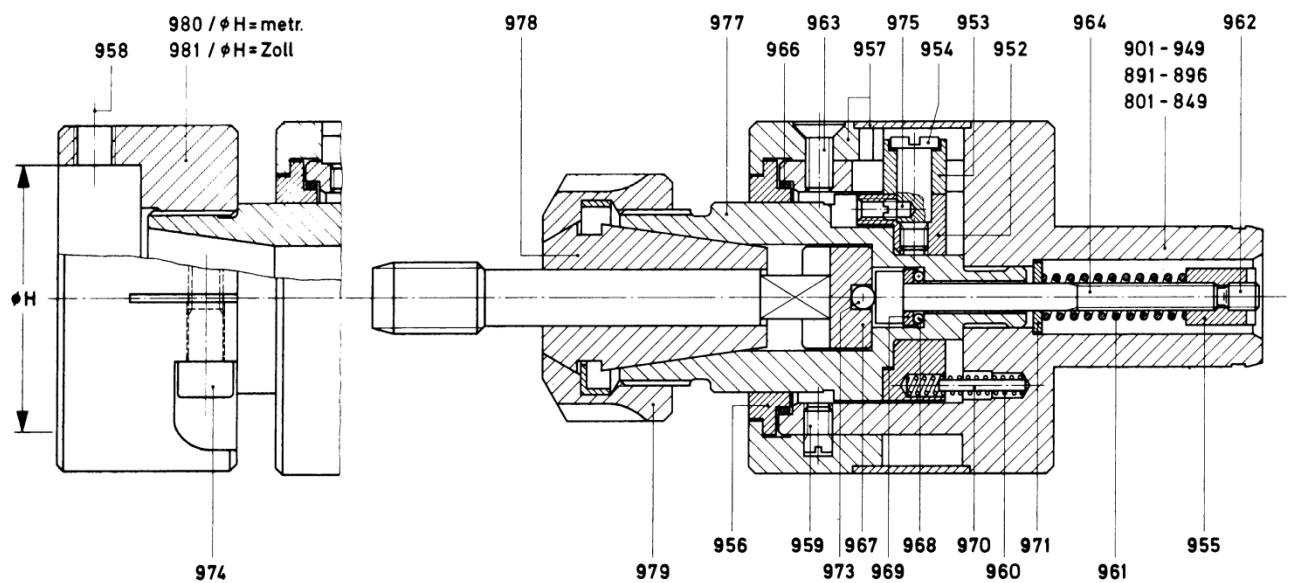
For applications where thread length / depth is critical (blind holes, etc.) precise limitation of thread length / depth is ensured by operation of the PAFIX clutch. In-feed of about $\approx 98\%$ of thread pitch is used to a length / depth shorter than the required amount by the pre-set pull-out distance. In-feed is then halted while the PAFIX clutch disengages and the front part of the Head is released (see programming example).

This threading cycle ensures accurate thread length / depth, even at high speeds, independent of spindle reserval. On spindle reserval the PAFIX clutch automatically re-engages and return-feed rate should be at 100% of thread pitch to ensure tap/die clears the workpiece.

Type ANGST-Flex



Type ESX (ER)



PAFIX with collets Type ANGST Flex 1 – Threading capacity $\varnothing G = 2-8$

Shanks	$\varnothing d \times l$	No.	$\varnothing A$	B
Cylindrical Fig. 3	14 x 25	35-1001	-	38
	$\frac{3}{8}$ " x 30	35-1002	-	28
	$\frac{3}{4}$ " x 30	35-1003	-	28
	$\frac{3}{4}$ " x 50	35-1004	-	28
	20 x 30	35-1005	-	28
	20 x 50	35-1006	-	28
	25 x 50	35-1007	-	28
	1" x 50	35-1008	-	28
	12 x 30	35-1428	-	38
VDI 3425 Fig. 4	16 x 32	35-1013	40	38
	20 x 40	35-1014	50	38
	30 x 55	35-1015	68	40
Cylindrical with Flat	16 x 50	35-1035	-	28
	20 x 50	35-1036	-	28
	25 x 50	35-1037	-	28
BT Fig. 5	BT 35	35-1215	53	48
	BT 40	35-1216	63	53
DIN 69 871 A Fig.5	SK 40	35-1236	63.5	45
	SK 45	35-1237	82.5	45
Morse Taper	MK 2	35-1402	-	28
	MK 3	35-1403	-	28

	No.	$\varnothing H$
Die Heads Fig. 6	35-1050	25
	35-1080	1"

	No.	Dimension
Reductions	35-1077	$\varnothing 25-20$
	35-1078	$\varnothing 25-16$
	35-1081	$\varnothing 1"-13/16"$
	35-1082	$\varnothing 1"-3/8"$
Spacer	35-1094	$\varnothing 20 \times 1 \text{ mm}$

Collets, drivers (Fig. A)	
Collets $\varnothing M$	Drivers Vk. #N
2.5-2	3-2.5
3-2.5	3-5-3
4-3.5	5-4
6-5	6-5-5.5

Fig. 3

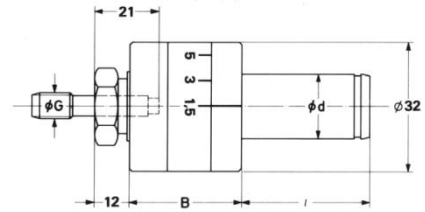


Fig. 4

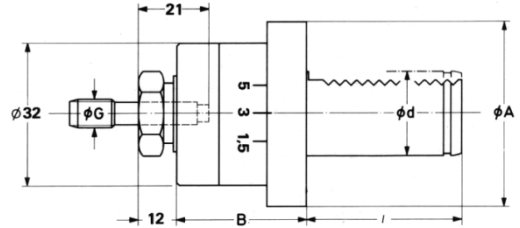


Fig. 5

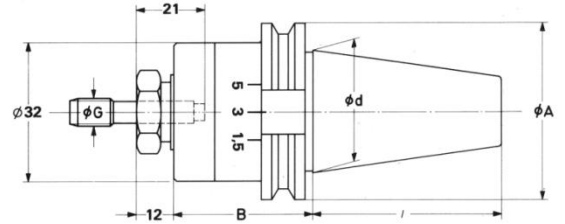


Fig. 6

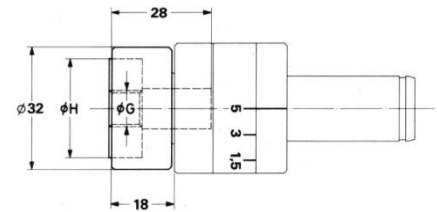
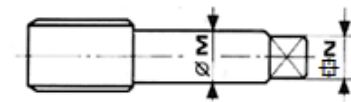


Fig. A



PAFIX with collets Typ ESX 12 (ER 11) – Threading capacity $\phi G = 2-8$

Shanks	$\phi d \times l$	No.	ϕA	B
Cylindrical Fig. 7	14 x 25	35-1051	-	38
	$\frac{5}{8}$ " x 30	35-1052	-	28
	$\frac{3}{4}$ " x 30	35-1053	-	28
	$\frac{3}{4}$ " x 50	35-1054	-	28
	20 x 30	35-1055	-	28
	20 x 50	35-1056	-	28
	25 x 50	35-1057	-	28
	1" x 50	35-1058	-	28
	16 x 30	35-1474	-	28
12 x 30	35-1478	-	38	
VDI 3425 Fig. 8	16 x 32	35-1063	40	38
	20 x 40	35-1064	50	38
	30 x 55	35-1065	68	40
Cylindrical with Flat Fig. 9	16 x 50	35-1085	-	28
	20 x 50	35-1086	-	28
	25 x 50	35-1087	-	28
BT Fig. 9	BT 35	35-1265	53	48
	BT 40	35-1266	63	53
DIN 69 871 A Fig. 9	SK 40	35-1286	63.5	45
	SK 45	35-1287	82.5	45
Morse Taper Fig. 9	MK 2	35-1452	-	28
	MK 3	35-1453	-	28

	No.	ϕH
Die Heads Fig. 10	35-1250	25
	35-1280	1"

	No.	Dimension
Reductions	35-1077	$\phi 25-20$
	35-1078	$\phi 25-16$
	35-1081	$\phi 1"-13/16"$
	35-1082	$\phi 1"-3/8"$
Spacer	35-1094	$\phi 20 \times 1 \text{ mm}$

Collets						
without drivers						
Collets ϕM Fig. B	2.5 - 2	3 - 2.5	4 - 3	5 - 4	6 - 5	7 - 6

Fig. 7

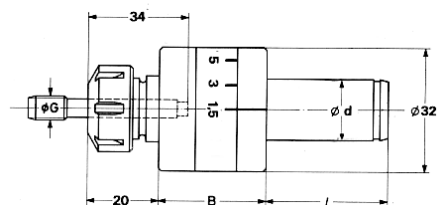


Fig. 8

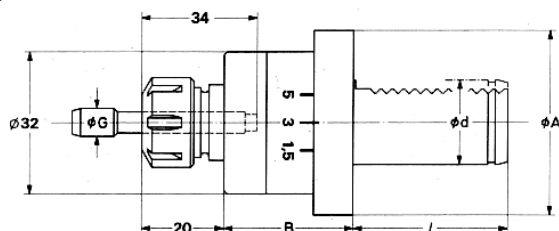


Fig. 9

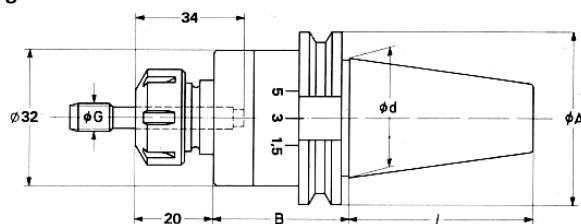


Fig. 10

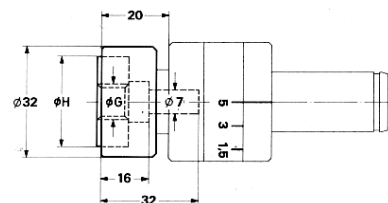
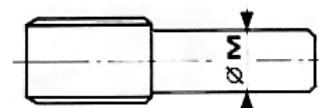


Fig. B



PAFIX with collets Type ANGST Flex 2 – threading capacity $\emptyset G = 4-14$

Shank	$\emptyset d \times l$	No.	$\emptyset A$	B
Cylindrical Fig. 11	$\frac{3}{8}'' \times 30$	35-2002	-	44
	$\frac{1}{2}'' \times 30$	35-2003	-	44
	$\frac{3}{4}'' \times 50$	35-2004	-	44
	20 x 30	35-2005	-	44
	20 x 50	35-2006	-	44
	25 x 50	35-2007	-	44
	1" x 50	35-2008	-	44
	30 x 60	35-2009	-	35
VDI 3425 Fig. 12	16 x 32	35-2013	50	44
	20 x 40	35-2014	50	44
	25 x 48	35-2020	58	46
	30 x 55	35-2015	68	46
Cylindrical with flat	16 x 50	35-2035	-	44
	20 x 50	35-2036	-	44
	25 x 50	35-2037	-	44
	32 x 60	35-2038	-	35
	40 x 70	35-2039	-	35
BT Fig. 13	BT 35	35-2215	53	66
	BT 40	35-2216	63	71
	BT 50	35-2218	100	73
DIN 69 871 A Fig. 13	SK 30	35-2234	50.0	80
	SK 40	35-2236	63.5	63
	SK 45	35-2237	82.5	63
Morse taper	MK 2	35-2402	-	44
	MK 3	35-2403	-	44

	No.	$\emptyset H$
Die Heads Fig. 14	35-2050	38
	35-2080	1 1/2"

	No.	Dimension
Reductions	35-2077	$\emptyset 38-30$
	35-2078	$\emptyset 38-25$
	35-2079	$\emptyset 38-20$
	35-2081	$\emptyset 1 \frac{1}{2}''-15/16''$
	35-2082	$\emptyset 1 \frac{1}{2}''-5/8''$
	35-2083	$\emptyset 1 \frac{1}{2}''-13/16''$
Spacer	35-1094	$\emptyset 20 \times 1 \text{ mm}$
	35-2094	$\emptyset 38 \times 2 \text{ mm}$

Collets, Drivers (Fig. A)	
Collets $\emptyset M$	Drivers Vk. #N
	3-5-3 4-3-5 5-4 6-5 7-6 8-7 9-8 11-10 12-11

Fig. 11

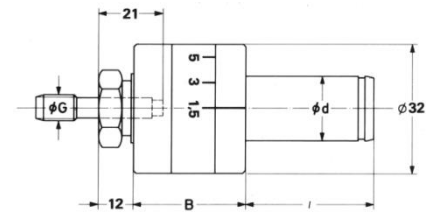


Fig. 12

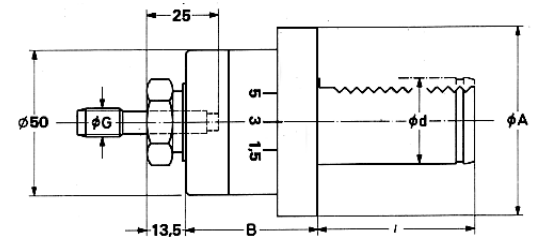


Fig. 13

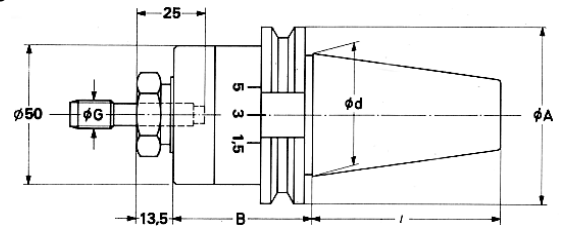


Fig. 14

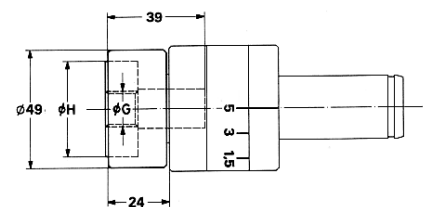
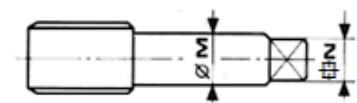


Fig. A



PAFIX with collets Type ESX 20 (ER 20) – Threading capacity $\varnothing G = 4-14$

Shank	$\varnothing d \times l$	No.	$\varnothing A$	B
Cylindrical Fig. 15	$\frac{3}{8}$ " x 30	35-2052	-	44
	$\frac{1}{2}$ " x 30	35-2053	-	44
	$\frac{3}{4}$ " x 50	35-2054	-	44
	20 x 30	35-2055	-	44
	20 x 50	35-2056	-	44
	25 x 50	35-2057	-	44
	1" x 50	35-2058	-	44
	30 x 60	35-2059	-	35
VDI 3425 Fig. 16	16 x 32	35-2063	50	44
	20 x 40	35-2064	50	44
	25 x 48	35-2070	58	46
	30 x 55	35-2065	68	46
Cylindrical with flat	16 x 50	35-2085	-	44
	20 x 50	35-2086	-	44
	25 x 50	35-2087	-	44
	32 x 60	35-2088	-	35
BT Fig. 17	BT 35	35-2265	53	66
	BT 40	35-2266	63	71
	BT 50	35-2268	100	73
DIN 69 871 A Fig. 17	SK 30	35-2284	50.0	80
	SK 40	35-2286	63.5	63
	SK 45	35-2287	82.5	63
Morse taper	MK 2	35-2452	-	44
	MK 3	35-2453	-	44

	No.	$\varnothing H$
Die Heads Fig. 18	35-2250	38
	35-2280	1 1/2"

	No.	Dimension
Reductions	35-2077	$\varnothing 38-30$
	35-2078	$\varnothing 38-25$
	35-2079	$\varnothing 38-20$
	35-2081	$\varnothing 1 \frac{1}{2}$ "-15/16"
	35-2082	$\varnothing 1 \frac{1}{2}$ "-5/8"
	35-2083	$\varnothing 1 \frac{1}{2}$ "-13/16"
Spacer	35-1094	$\varnothing 20 \times 1$ mm
	35-2094	$\varnothing 38 \times 2$ mm

Collets, Drivers (Fig. A)	
Collets $\varnothing M$	Drivers Vk. #N
	4-3
	5-4
	6-5
	7-6
	8-7
	9-8
	10-9
	11-10
	12-11

Fig. 15

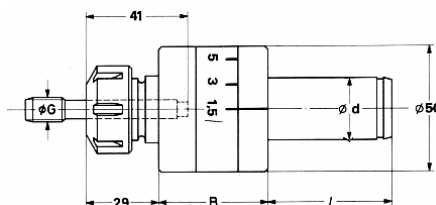


Fig. 16

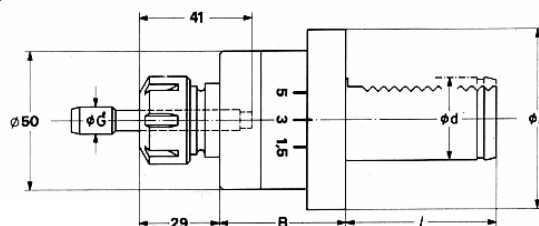


Fig. 17

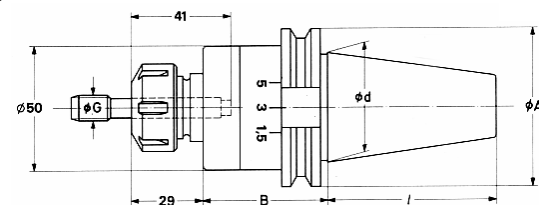


Fig. 18

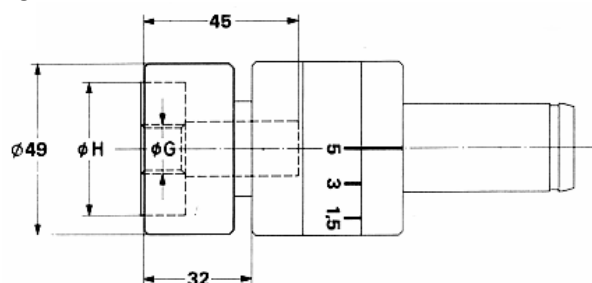
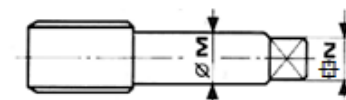


Fig. A



PAFIX with collets Type ANGST Flex 3 – Threading capacity $\varnothing G = 6-20$

Shank	$\varnothing d \times l$	No.	$\varnothing A$	B
Cylindrical Fig. 19	3/4" x 30	35-3003	-	50
	3/4" x 50	35-3004	-	50
	20 x 30	35-3005	-	50
	20 x 50	35-3006	-	50
	25 x 50	35-3007	-	50
	1" x 50	35-3008	-	50
	30 x 60	35-3009	-	50
	1 1/4" x 60	35-3010	-	50
VDI 3425 Fig. 20	25 x 48	35-3020	70	50
	30 x 55	35-3015	70	50
	40 x 63	35-3016	83	50
	50 x 78	35-3017	98	50
Cylindrical with flat	20 x 50	35-3036	-	50
	25 x 50	35-3037	-	50
	32 x 60	35-3038	-	50
	40 x 70	35-3039	-	50
	50 x 80	35-3040	-	42
BT Fig. 21	BT 35	35-3215	53	72
	BT 40	35-3216	63	77
	BT 50	35-3218	100	88
DIN 69 871 A Fig. 21	SK 30	35-3234	50.0	86
	SK 40	35-3236	63.5	86
	SK 45	35-3237	82.5	86
Morse taper	MK 3	35-3403	-	50
	MK 4	35-3404	-	50

	No.	$\varnothing H$
Die Heads Fig. 22	35-3050	45
	35-3080	2"

	No.	Dimension
Reductions	35-3077	$\varnothing 45-38$
	35-3078	$\varnothing 45-30$
	35-3079	$\varnothing 45-25$
	35-3081	$\varnothing 2"-1 1/2"$
	35-3082	$\varnothing 2"-1 5/16"$
	35-3083	$\varnothing 2"-1"$
Spacer	35-2094	$\varnothing 38 \times 2 \text{ mm}$
	35-3094	$\varnothing 45 \times 2 \text{ mm}$

Collets, Drivers (Fig. A)	
Collets $\varnothing M$	Drivers Vk. #N
	5-4 6-5 7-6 8-7 9-8 10-9 11.5-10 13-11.5 14.5-13 16-14.5

Fig. 19

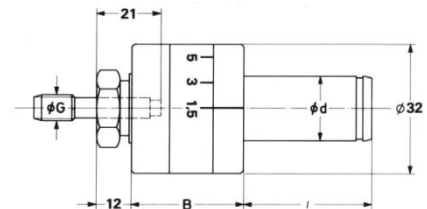


Fig. 20

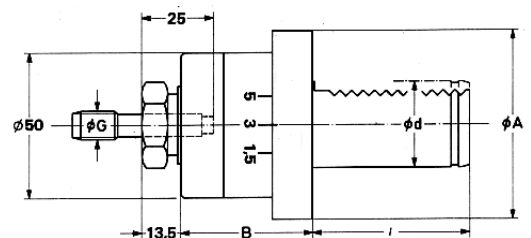


Fig. 21

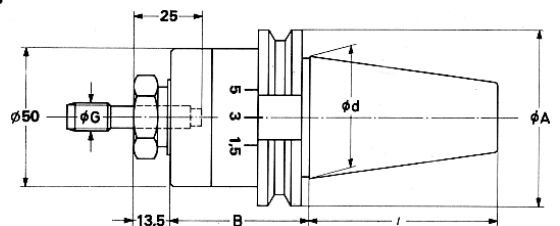


Fig. 22

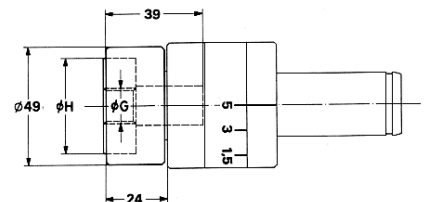
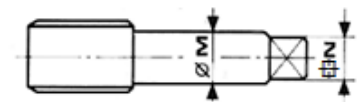


Fig. A



PAFIX with collets Type ESX 25 (ER 25) – Threading capacity $\phi G = 6-20$

Shank	$\phi d \times l$	No.	ϕA	B
Cylindrical Fig. 23	3/4" x 30	35-3053	-	50
	3/4" x 50	35-3054	-	50
	20 x 30	35-3055	-	50
	20 x 50	35-3056	-	50
	25 x 50	35-3057	-	50
	1" x 50	35-3058	-	50
	30 x 60	35-3059	-	50
	1 1/4" x 70	35-3061	-	50
VDI 3425 Fig. 24	25 x 48	35-3070	70	50
	30 x 55	35-3065	70	50
	40 x 63	35-3066	83	50
	50 x 78	35-3067	98	50
Cylindrical with flat	20 x 50	35-3086	-	50
	25 x 50	35-3087	-	50
	32 x 60	35-3088	-	50
	40 x 70	35-3089	-	50
	50 x 80	35-3090	-	42
BT Fig. 25	BT 35	35-3265	53	72
	BT 40	35-3266	63	77
	BT 50	35-3268	100	88
DIN 69 871 A Fig. 25	SK 30	35-3284	50.0	86
	SK 40	35-3286	63.5	86
	SK 45	35-3287	82.5	86
Morse taper	MK 3	35-3453	-	50
	MK 3	35-3454	-	50

	No.	ϕH
Die Heads Fig. 26	35-3250	45
	35-3280	2"

	No.	Dimension
Reductions	35-3077	$\phi 45-38$
	35-3078	$\phi 45-30$
	35-3079	$\phi 45-25$
	35-3081	$\phi 2"-1 1/2"$
	35-3082	$\phi 2"-1 5/16"$
	35-3083	$\phi 2"-1"$
Spacer	35-2094	$\phi 38 \times 2 \text{ mm}$
	35-3094	$\phi 45 \times 2 \text{ mm}$

Collets, Drivers (Fig. A)	
Collets ϕM	Drivers Vk. #N
	5-4 6-5 7-6 8-7 9-8 10-9 11-10 12-11 13-11.5 14-13 16-15

Fig. 23

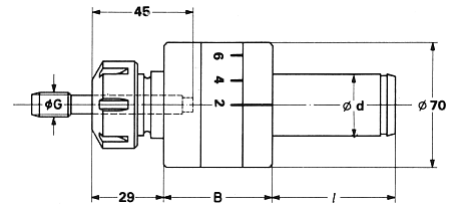


Fig. 24

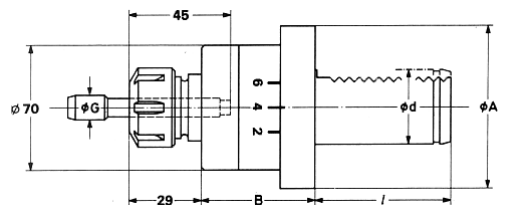


Fig. 25

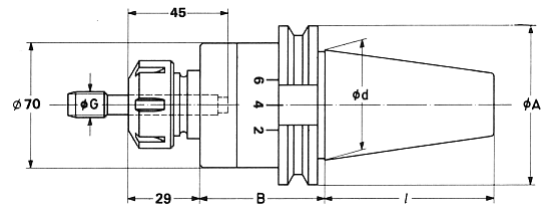


Fig. 26

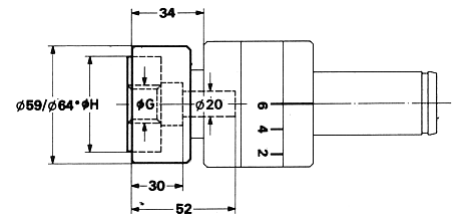
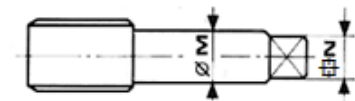


Fig. A



PAFIX with collets Type ANGST Flex 4 – Threading capacity $\phi G = 8-27$

Shank	$\phi d \times l$	No.	ϕA	B
Cylindrical Fig. 27	25 x 50	35-4007	-	53
	1" x 50	35-4008	-	53
	30 x 60	35-4009	-	53
	1 1/4" x 60	35-4010	-	53
	1 1/2" x 70	35-4011	-	53
	40 x 70	35-4012	-	53
VDI 3425 Fig. 28	30 x 55	35-4015	85	53
	40 x 63	35-4016	85	53
	50 x 78	35-4017	98	53
Cylindrical with flat	25 x 50	35-4037	-	53
	32 x 60	35-4038	-	53
	40 x 70	35-4039	-	53
BT Fig. 29	BT 40	35-4216	63	80
	BT 50	35-4218	100	91
DIN 69 871 A Fig. 29	SK 40	35-4236	63.5	89
	SK 45	35-4237	82.5	89
Morse taper	MK 4	35-4404	-	53

	No.	ϕH
Die Heads Fig. 30	35-4050	55
	35-4080	2 1/4"

	No.	Dimension
Reductions	35-4077	$\phi 55-45$
	35-4078	$\phi 55-38$
	35-4079	$\phi 55-30$
	35-4081	$\phi 2 1/4" - 2"$
	35-4082	$\phi 2 1/4" - 1 1/2"$
Spacer	35-2094	$\phi 38 \times 2 \text{ mm}$
	35-3094	$\phi 45 \times 2 \text{ mm}$
	35-4094	$\phi 55 \times 2 \text{ mm}$

Collets, Drivers (Fig. A)	
Collets ϕM	Drivers Vk. #N
	7-6 8-7 9-8 10-9 14-12 16-14 18-16 20-18

Fig. 27

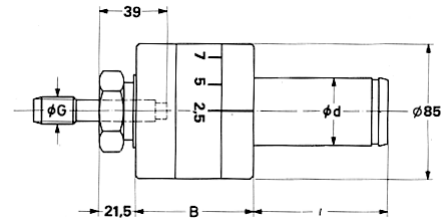


Fig. 28

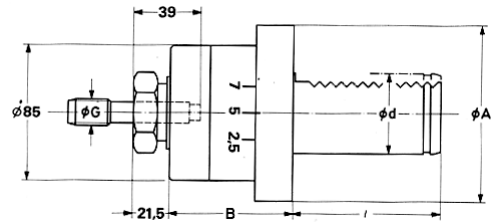


Fig. 29

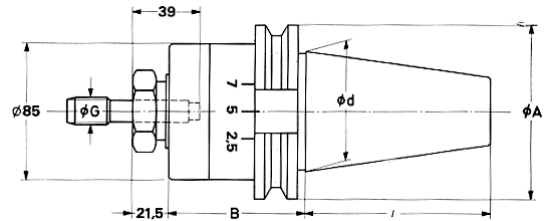


Fig. 30

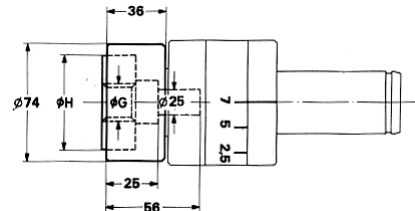
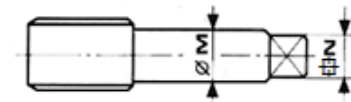


Fig. A



PAFIX with collets Type ESX 32 (ER 32) – Threading capacity $\phi G = 8-27$

Shank	$\phi d \times l$	No.	ϕA	B
Cylindrical Fig. 31	25 x 50	35-4057	-	53
	1" x 50	35-4058	-	53
	30 x 60	35-4059	-	53
	1 1/4" x 60	35-4060	-	53
	1 1/2" x 70	35-4061	-	53
	40 x 70	35-4062	-	53
VDI 3425 Fig. 32	30 x 55	35-4065	85	53
	40 x 63	35-4066	85	53
	50 x 78	35-4067	98	53
	60 x 94	35-4068	120	53
Cylindrical with flat	25 x 50	35-4087	-	53
	32 x 60	35-4088	-	53
	40 x 70	35-4089	-	53
BT Fig. 33	BT 40	35-4266	63	80
	BT 50	35-4268	100	91
DIN 69 871 A Fig. 33	SK 40	35-4286	63.5	89
	SK 45	35-4287	82.5	89
Morse taper	MK 4	35-4454	-	53

	No.	ϕH
Die Heads Fig. 34	35-4250	55
	35-4280	2 1/4"

	No.	Dimension
Reductions	35-4077	$\phi 55-45$
	35-4078	$\phi 55-38$
	35-4079	$\phi 55-30$
	35-4081	$\phi 2 1/4" - 2"$
	35-4082	$\phi 2 1/4" - 1 1/2"$
	35-4083	$\phi 2 1/4" - 1 5/16"$
Spacer	35-2094	$\phi 38 \times 2 \text{ mm}$
	35-3094	$\phi 45 \times 2 \text{ mm}$
	35-4094	$\phi 55 \times 2 \text{ mm}$

Collets, Drivers (Fig. A)	
	Drivers Vk. #N
Collets ϕM	7-6 8-7 9-8 10-9 11-10 12-11 13-12 14-13 15-14 16-15 17-16 18-17 20-19

Fig. 31

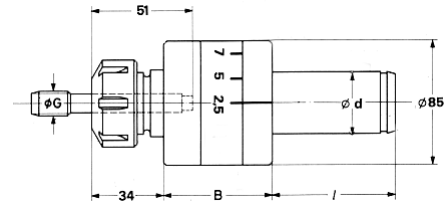


Fig. 32

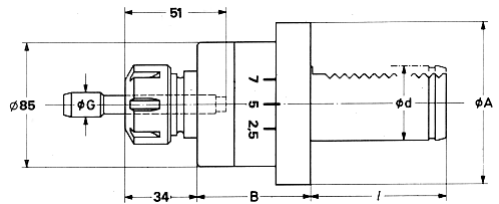


Fig. 33

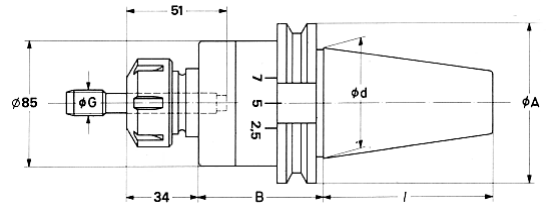


Fig. 34

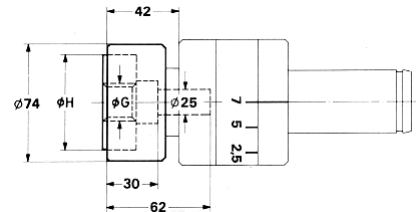
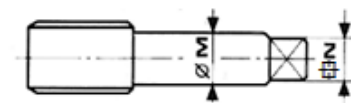


Fig. A



PAFIX with collets Type ANGST Flex 6 – Threading capacity $\varnothing G = 12-42$

Shank	$\varnothing d \times l$	No.	$\varnothing A$	B
VDI 3425 Fig. 44	40x63 / 20 NC	35-6016	120	67
	60x94 / 32 NC	35-6018	120	67
BT Fig. 45	BT 40	35-6216	63	89
	BT 45	35-6217	85	93
	BT 50	35-6218	100	98
DIN 69 871 A Fig. 45	SK 40	35-6236	63.5	102
	SK 45	35-6237	82.5	96
	SK 50	35-6238	97.5	96

Collets, Drivers (Fig. A)	
Collets $\varnothing M$	Drivers Vk. #N
	5.6
	6.3
	7.1
	8
	9
	10
	11.2
	12/12.5
	14/14.5
	16
	18
	20
	22.4
	24/25
	26
	9-8
	10-9
	12-10
	14-12
	16-14
	18-16
	20-18
	22-20
	24-22
	26-24
	28-26
	30-28
	32-30
	34-32

Fig. 44

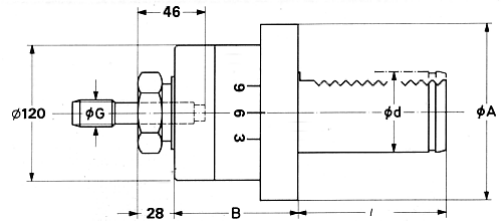


Fig. 45

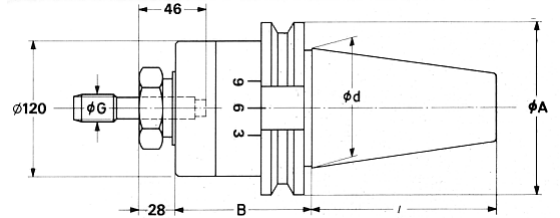
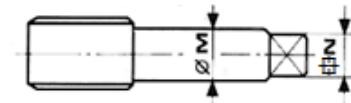


Fig. A



PAFIX with collets Type ESX 50 – Threading capacity $\emptyset G = 12-42$

Shank	$\emptyset d \times l$	No.	$\emptyset A$	B
VDI 3425 Fig. 44	40x63 / 20 NC	35-6066	120	67
	60x94 / 32 NC	35-6068	120	67
BT Fig. 45	BT 45	35-6267	85	93
	BT 50	35-6268	100	98
DIN 69 871 A Fig. 45	SK 40	35-6286	63.5	102
	SK 45	35-6287	82.5	96
	SK 50	35-6288	97.5	96

Collets, Drivers (Fig. A)	
Collets $\emptyset M$	Drivers Vk. #N
	5.6
	6.3
	7.1
	8
	9
	10
	11.2
	12/12.5
	14/14.5
	16
	18
	20
	22.4
	24/25
	26
	9-8
	10-9
	11-10
	12-11
	13-12
	14-13
	15-14
	16-15
	17-16
	18-17
	19-18
	20-19
	21-20
	22-21
	23-22
	24-23
	25-24
	26-25
	27-26
	28-27
	29-28
	30-29
	31-30
	32-31
	33-32
	34-33

Fig. 48

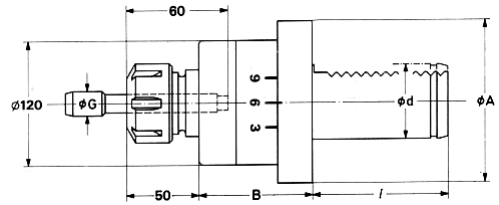


Fig. 49

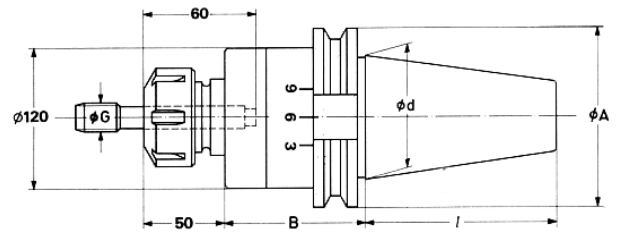


Fig. A

