

PAFIX – CNC TAP & DIE HEADS



Having problems tapping on your CNC machine?

- * Conventional tension/compression tapping heads offer neither accuracy or consistency when tapping. Variations in depth can easily occur. If a slipping clutch is incorporated, for blind holes, it can cause premature wear.
- * Self reversing heads are difficult to mount and cumbersome, due to the extreme length.
- * Rigid tapping cycles offer accuracy but at a high cost, the options can be expensive and operations slow i.e. the tap slows gradually in order to maintain accurate positioning. Furthermore, a machine tool is hardly delicate and can cause tap breakages, especially small diameters.
- * Your CNC machine reacts slowly to instructions, i.e. the spindle can take a considerable number of revolutions to stop, particularly when threading at high speed.
- * Worst of all you second op. your threads because of problems with tap breakage etc., experienced in the past.

The Pafix-CNC provides the solution.

Pafix-CNC tapping heads have been developed to overcome the above problems. The Pafix-CNC is a unique tapping head with no compression and a controlled tension. It is in use all over the world and has a reputation for high quality threading combined with reliability and efficiency.

Fast setting, simple programming and a precise depth facility takes the headache out of tapping and saves time and money in lost production

The advanced design of the Pafix-CNC models give a choice of three pull-out distances (clutch disengagement), one is pre-selected according to the thread/pitch/length required. When the clutch operation is utilized the last few threads are cut under self feed. Precise depths are produced accurately and consistently.

Where thread length isn't critical the Pafix-CNC can operate without clutch disengagement.

Unlike rigid tapping the Pafix-CNC can maintain speed, making it faster and more tap friendly.

There are five sizes in the range covering M2-M42, and the ultra compact construction allows threading in confined areas including mounting in driven tools. A button die adaptor converts to external threading. Shanks for most machines are available with adaptors for machining centre applications.

Servicing facility is available.

PROGRAMMING NOTES

GENERAL NOTES

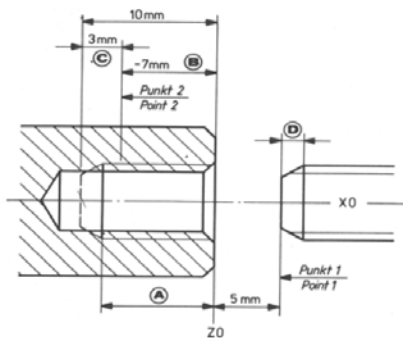
To achieve consistent and precise thread length control Pafix-CNC Heads have no spring loaded compression on thread entry. It is essential to programme an in-feed just below the pitch rate to ensure that the tap commences self feeding from the first thread. 98% is recommended. Some 'canned' cycles are inadvisable as the feed can be too slow causing disengagement before the required depth is reached. Always use the longest possible pull out distance for any given application.

The following notes are based on applications where the Pafix Head is mounted on a rotating spindle with a stationary workpiece. The same principles apply, with different terminology, on lathe applications where the Pafix Head is stationary.

PROGRAMME 1

With clutch disengagement, for critical length threads, including blind holes

Thread length is controlled by a combination of spindle in-feed and tap pull out. Three choices of pull out are available. When the preset pull out is reached the internal clutch disengages. Since the spindle is programmed to dwell whilst the in-feed occurs, thread length is precisely controlled by the Pafix. Spindle reversal can take place at any time, after disengagement, without affecting the thread length. Feed in at 98% and out at 100%.



Total thread length 'A' = Programmed feed 'B' + Self feed 'C' + Tap lead 'D' (say 2mm)

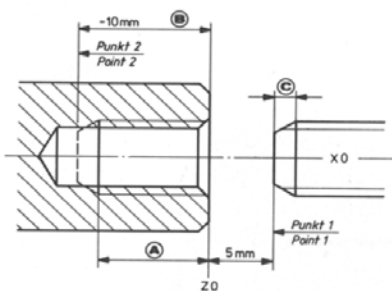
```

N10 Start X0 Z5 (Point 1)
N20 Feed Z-7 (Point 2) F98%
N30 Dwell Time (Pafix self feed after clutch disengagement)
N40 Reverse spindle
N50 Return feed Z5 (Point 1) F100%
N60 Dwell feed (to ensure safe tap clearance before rapid)
    
```

PROGRAMME 2

Without clutch disengagement, where thread lengths are not critical, including through holes

Always select to longest pull out setting on the Pafix when using this programme. If using the 'canned' cycle, check that this calls for a spindle in-feed of 95% to 98% and an out-feed of 100%. Some 'canned' cycles call for the same in and out-feed, this is not suitable. If a delay occurs in spindle retraction, after reverse is engaged, thread damage can result. If this is the case, use all or some of the following solutions; 1). Set the Pafix using the longest pull out. 2). Amend the programme to retract before spindle reversal. 3). In-feed at 95% instead of 98%. 4). Programme a slower spindle speed for tap withdrawal after reverse (100% must be maintained).



Total thread length 'A' = Programmed feed 'B' + Tap lead 'C' (say 2mm)

```

N10 Start X0 Z5 (Point 1)
N20 Feed Z-7 (Point 2) F98%
N30 Reverse spindle
N40 Return feed Z5 (Point 1) F100%
N50 Dwell feed (to ensure safe tap clearance before rapid)
    
```

PAFIX – CNC with cylindrical shanks



Threading Capacity	Shank Ø	Order Code Flex Collets	Flex Collet Size	Order Code ER Collets	ER Collet Size	Pull-off Settings	Length - Flex excl. shank	Length - ER excl. shank	Diameter
M2-8	14 x 25	3501001	1	3501051	11	5, 3, 1.5	40	48	32
	5/8" x 30	3501002		3501052					
	20 x 50	3501006		3501056					
	25 x 50	3501007		3501057					
	1" x 50	3501008		3501058					
	20 x 50*	3501036		3501086					
25 x 50*	3501037	3501087							
M4-14	5/8" x 30	3502002	2	3502052	20	5, 3, 1.5	58	73	50
	20 x 50	3502006		3502056					
	25 x 50	3502007		3502057					
	1" x 50	3502008		3502058					
	20 x 50*	3502036		3502086					
25 x 50*	3502037	3502087							
M6-20	20 x 50	3503006	3	3503056	25	6, 4, 2	67	79	70
	25 x 50	3503007		3503057					
	1" x 50	3503008		3503058					
	20 x 50*	3503036		3503086					
25 x 50*	3503037	3503087							
M8-27	25 x 50	3504007	4	3504057	32	7, 5, 2.5	75	87	85
	1" x 50	3504008		3504058					
	40 x 70	3504012		3504072					
	25 x 50*	3504037		3504087					
	32 x 60*	3504038		3504088					
40 x 70*	3504039	3504089							
M12-42	40 x 70*	3506039	6	3506089	50	9, 6, 3	95	117	120
	50 x 80*	3506040		3506090					

* With flat
Die Adaptors, page 5
Collets & Drivers, page 6 & 7

PAFIX – CNC with VDI shanks



Threading Capacity	Shank Ø	Order Code Flex Collets	Flex Collet Size	Order Code ER Collets	ER Collet Size	Pull-off Settings	Length - Flex excl. shank	Length - ER excl. shank	Diameter
M2-8	VDI 16	3501013	1	3501063	11	5, 3, 1.5	50	58	32
	VDI 20	3501014		3501064					
	VDI 30	3501015		3501065					
M4-14	VDI 16	3502013	2	3502063	20	5, 3, 1.5	58	73	50
	VDI 20	3502014		3502064					
	VDI 30	3502015		3502065					
	VDI 40	3502016		3502066					
M6-20	VDI 30	3503015	3	3503065	25	6, 4, 2	67	79	70
	VDI 40	3503016		3503066					
	VDI 50	3503017		3503067					
M8-27	VDI 30	3504015	4	3504065	32	7, 5, 2.5	75	87	85
	VDI 40	3504016		3504066					
	VDI 50	3504017		3504067					
	VDI 60	3504018		3504068					
M12-42	VDI 40	3506016	6	3506066	50	9, 6, 3	95	117	120
	VDI 50	3506017		3506067					
	VDI 30	3506018		3506068					

* With flat
 Die Adaptors, page 5
 Collets & Drivers, Flex page 6, ER page 7

PAFIX – CNC Die Adaptors



Illustration shows the Adaptor assembled to the Pafix CNC

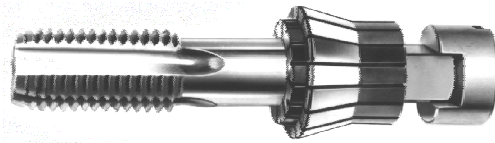
Threading Capacity	Die O.D.	Order Code Flex Version	Flex Collet Size	Order Code ER Version	ER Collet Size	Thread Length Flex*	Thread Length ER*
M2-8	25mm	3501050	1	3501250	11	28	32
	1"	3501080		3501280			
M4-14	38mm	3502050	2	3502250	20	39	45
	1 1/2"	3502080		3502280			
M6-20	45mm	3503050	3	3503250	25	49	52
	2"	3503080		3503280			
M8-27	55mm	3504050	4	3504250	32	56	62
	2 1/4"	3504080		3504280			

Not available for Size6/ER50 version

Accessories

Threading Capacity	Order Code Reduction	Reduction O.D. - I.D.	Order Code Spacer	Spacer Ø x Thickness
M2-8	3501077	25-20	3501094	20 x 1mm
	3501078	25-16		
	3501081	1 – 1 13/16"		
	3501082	1 – 5/8"		
M4-14	3502077	38-30	3501094	20 x 1mm
	3502078	38-25	3502094	38 x 2mm
	3502079	38-20		
	3502081	1 1/2 - 15/16"		
	3502082	1 1/2 - 1"		
M6-20	3502083	1 1/2 - 13/16"		
	3503077	45-38	3502094	38 x 2mm
	3503078	45-30	3503094	45 x 2mm
	3503079	45-25		
	3503081	2 – 1 1/2"		
M8-27	3503082	2 – 15/16"		
	3503083	2 – 1"		
	3504077	55-45	3502094	38 x 2mm
	3504078	55-38	3503094	45 x 2mm
	3504079	55-30	3504094	55 x 2mm
	3504081	2 1/4 - 2"		
	3504082	2 1/4 - 1 1/2"		
3504083	2 1/4 - 1 5/16"			

Flex - Collets & Drivers



Collet & Driver Sets									
Size 1	C & D	Size 2	C & D	Size 3	C & D	Size 4	C & D	Size 6	C & D
3300391	7 & 8	3300392	8 & 10	3300393	8 & 10	3300394	7 & 11	3300396	12 & 15
Collet Sets									
Size 1	C	Size 2	C	Size 3	C	Size 4	C	Size 6	C
3301600	7	3302600	10	3303600	10	3304600	9	3306600	14
Collets – individual									
Size 1	Dia	Size 2	Dia	Size 3	Dia	Size 4	Dia	Size 6	Dia
3301625	2.5-2	3302635	3.5-3*	3303650	5-4*	3304670	7-6*	3306690	9-8*
3301630	3-2.5	3302640	4-3.5*	3303660	6-5*	3304680	8-7*	3306700	10-9*
3301635	3.5-3	3302650	5-4	3303670	7-6	3304690	9-8	3306720	12-10
3301640	4-3.5	3302670	6-5	3303680	8-7	3304700	10-9	3306740	14-12
3301650	5-4	3302680	7-6	3303690	9-8	3304720	12-10	3306760	16-14
3301660	6-5	3302680	8-7	3303700	10-9	3304740	14-12	3306780	18-16
3301665	6.5-5.5	3302690	9-8	3303715	11.5-10	3304760	16-14	3306800	20-18
		3302700	10-9	3303730	13-11.5	3304780	18-16	3306820	22-20
		3302710	11-10	3303745	14.5-13	3304800	20-18	3306840	24-22
		3302720	12-11	3303760	16-14.5			3306860	26-24
								3306880	28-26
								3306900	30-28
								3306920	32-30
								3306940	34-32
Drivers – individual									
Size 1	Slot	Size 2	Slot	Size 3	Slot	Size 4	Slot	Size 6	Slot
3911224	2.24	3912025	2.5*	3913315	3.15*	3914050	5*	3916063	6.3*
3911025	2.5	3912028	2.8*	3913355	3.55*	3914056	5.6*	3916071	7.1*
3911028	2.8	3912315	3.15	3913040	4*	3914063	6.3*	3916080	8
3911315	3.15	3912355	3.55	3913045	4.5*	3914071	7.1*	3916090	9
3911355	3.55	3912040	4	3913050	5	3914080	8	3916100	10
3911040	4	3912045	4.5	3913056	5.6	3914090	9	3916112	11.2
3911050	5	3912050	5	3913063	6.3	3914100	10	3916120	12
		3912056	5.6	3913071	7.1	3914112	11.2	3916125	12.5
		3912063	6.3	3913080	8	3914120	12	3916140	14
		3912071	7.1	3913090	9	3914125	12.5	3916145	14.5
		3912080	8	3913100	10	3914140	14	3916160	16
		3912090	9	3913112	11.2	3914145	14.5	3916180	18
				3913120	12	3914160	16	3916200	20
				3913125	12.5			3916224	22.4
								3916240	24
								3916250	25
								3916060	26

* Drive not in Collet & Driver set

ER - Collets & Drivers



Collet & Driver Sets									
ER11	C & D	ER20	C & D	ER25	C & D	ER32	C & D	ER50	C & D
3800391	6 & 8	3800392	9 & 10	3300393	10 & 10	3300394	12 & 11	3300396	12 & 15
Collet Sets									
ER11	C	ER20	C	ER25	C	ER32	C	ER50	C
3801600	6	3802600	10	3803600	12	3304600	14	3306600	12
3801000	9	3802000	13	3803000	15	3804000	18	3806000	15
Collets – individual									
ER11	Dia	ER20	Dia	ER25	Dia	ER32	Dia	ER50	Dia
3801610	1-0.5*	3802610	1-0.5*	3803620	2-1*	3804630	3-2*	3806660	6-4*
3801615	1.5-1*	3802620	2-1*	3803630	3-2*	3804640	4-3*	3806680	8-6*
3801620	2-1.5*	3802630	3-2*	3803640	4-3*	3804650	5-4*	3306700	10-8*
3801625	2.5-2	3802640	4-3*	3803650	5-4*	3804660	6-5*	3806720	12-10
3801630	3-2.5	3802650	5-4	3803660	6-5*	3804670	7-6*	3806740	14-12
3801640	4-3	3802660	6-5	3803670	7-6	3804680	8-7*	3806760	16-14
3801650	5-4	3802670	7-6	3803680	8-7	3804690	9-8	3806780	18-16
3801660	6-5	3802680	8-7	3803690	9-8	3804700	10-9	3806800	20-18
3801670	7-6	3802690	9-8	3803700	10-9	3804710	11-10	3806820	22-20
		3802700	10-9	3803710	11-10	3804720	12-11	3806840	24-22
		3802710	11-10	3803720	12-11	3804730	13-12	3806860	26-24
		3802720	12-11	3803730	13-12	3804740	14-13	3806880	28-26
		3802730	13-12	3803740	14-13	3804750	15-14	3806900	30-28
				3803750	15-14	3804760	16-15	3806920	32-30
				3803760	16-15	3804770	17-16	3806940	34-32
						3804780	18-17		
						3804790	19-18		
						3804800	20-19		

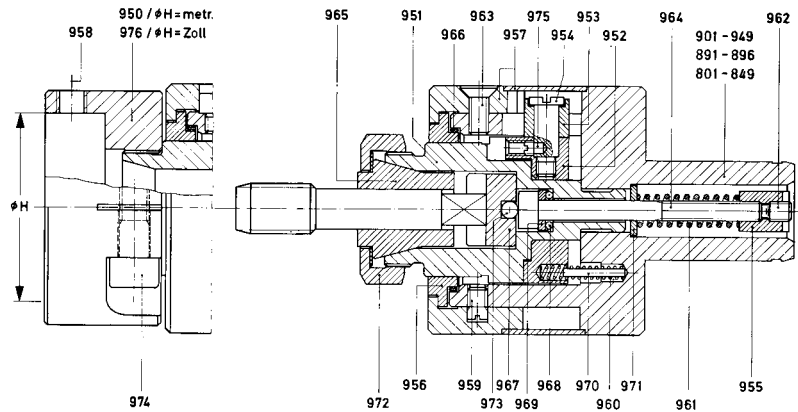
* Drive not in Collet & Driver set
Individual drivers can be found on the previous page. Note; the ER11 version does not require drivers

Collet Nut – Wrench Sizes

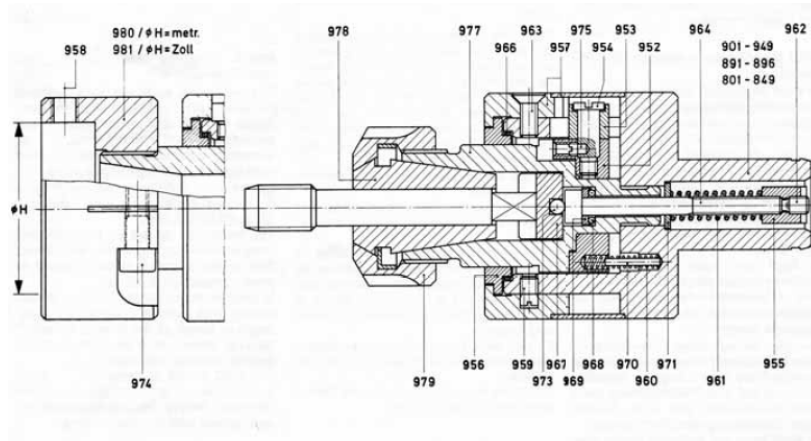
Description	Flex Collets	Description	ER Collets
AF17	1	AF17	ER11
AF27	2	WHH020	ER20
AF36	3	WHH025	ER25
AF40	4	WHH032	ER32
AF60	6	WHH050	ER50

SPARES

Angst Collet Version



ER Collet Version



NOTE

965 Collets and 967 Drivers can be found on the relevant Tapping Head pages

ORDERING SPARES

The above numbers are generic. For example **972** (Collet Nut) describes the spare part but not the size of holder it fits.

The spares part numbering system works, as follows;

