



WOODWORKING

Product Catalogue



More than 30 years of world leading precision

After more than 30 years of constant development and refinement ETP HYDRO-GRIP maintains its position as the unquestioned leader among hydraulic tool holders.

This catalog covers our standard products for the woodworking industry and all types of wood machining.

As you can see our range is larger than ever, but the truth is, our most exciting and interesting ideas and products aren't in this catalog. Working in close co-operation with our customers we regularly develop unique, customer specific products with equally unique characteristics. Of course, we strive to deliver the best solutions to the challenges our

customers bring us and we do not hesitate in sharing our knowledge and experience.



Since the introduction of HYDRO-GRIP back in 1977 ETP has grown rapidly, thanks in no small part to the consistent quality of our products. Now we are a global company and our customers are the leaders within their respective segments. This is the way we like it, working with people that demand the absolute best from us means we are constantly developing and improving ourselves and our products. It is your challenges that drive us forward.





Get a grip

- quick, easy and precise

Everyone strives to achieve the same goals. Maximum productivity. The best possible surface finish. Super high feed speeds. We have the solution. The secret lies in a perfectly centered and balanced toolset. The easiest way to achieve this is HYDRO-GRIP, the world class hydraulic sleeve. HYDRO-GRIP makes the route to perfection so much easier.

Great results from higher feed and cutter speeds

Get a grip and fit your tools quickly, simply and precisely. The only thing you need is an allen T- wrench. It takes just a few seconds to get perfect centering and fastening of your tools. Thanks to the double walled construction the HYDRO-GRIP expands uniformly against the tool and around the machine spindle. The tool and HYDRO-GRIP then form a perfectly centered unit, mounted and ready to go on the machine. This saves you a considerable amount of adjustment time. And saving time saves you money.

Higher speeds and great results

The extremely high precision achieved by using HYDRO-GRIP results in minimal runout and unrivalled repeatability. Simply put, HYDRO-GRIP means you transport the grinder's precision to your production machine. With all the blades on the tool cutting evenly you can increase feed speeds, machine speeds and still achieve the perfect surface finish you demand.

Our customers and our customers' customers can confirm what this means in terms of dramatically improved cost-effectiveness.





Contents

Choose pressurizing method	8
Symbols	8
Pressurizing	9
Assembly	9
HYDRO-GRIP CIR	10, 11
Sleeves for general woodworking	12
HYDRO-GRIP CI	13
HYDRO-GRIP BI	14
HYDRO-GRIP C	15
HYDRO-GRIP B	16, 17
HYDRO-GRIP AI	18, 31
HYDRO-GRIP A	19
HYDRO-GRIP AAH	20
HYDRO-GRIP AH	20
HYDRO-GRIP BL	21
HYDRO-GRIP AL	22
HYDRO-GRIP AIL	22
Sleeves for large spindle diameters	23
HYDRO-GRIP DI	24
HYDRO-GRIP D	25
Sleeves for floor manufacturing and profiling	26
HYDRO-GRIP EI, EIS	27, 29, 30
HYDRO-GRIP EIF	28
HYDRO-GRIP AEI	30, 31
CNC Products	32
HYDRO-GRIP G2	33
HYDRO-GRIP G3	34
HYDRO-GRIP GE	35
Accessories	36
HYDRO-GRIP High pressure pump M-08	37
Technical Specification	38, 39

Choose pressurizing method: allen T-wrench or high pressure pump

HYDRO-GRIP is self-centered and clamped in just a few seconds. You can choose between two different methods to center and clamp HYDRO-GRIP. Either with an allen T-wrench or a high pressure grease pump. You choose the method that best suits your needs.

Allen T-wrench: simple and easy

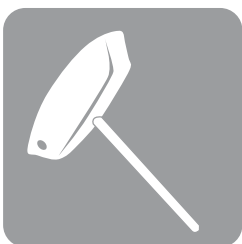
Pressurizing with the allen T-wrench means that HYDRO-GRIP is filled and adjusted when it leaves our production facility. Thanks to the permanently sealed construction HYDRO-GRIP is ready for a service free lifetime of use when you receive it. By simply turning the allen T-wrench a few turns the HYDRO-GRIP is centered and fastened in just a few seconds – without the risk of grease marks.

High pressure pump, ideal for large sleeves

Pressurizing with a high pressure pump is perfect when you are using long or large diameter sleeves. The pump is connected to the sleeve's grease nipple and the correct pressure is read from the pump's manometer. To disassemble the sleeve and tool you simply loosen the nipple, the pressure drops and the sleeve can be moved or adjusted on the machine spindle.

Symbols

The symbols below are used throughout the catalog to give you a quick guide as to which pressurizing method each sleeve uses. The symbols will also help you to see if the sleeve is for permanent or interchangeable tool assembly.



Pressurizing with the allen T-wrench



Pressurizing with the high pressure pump

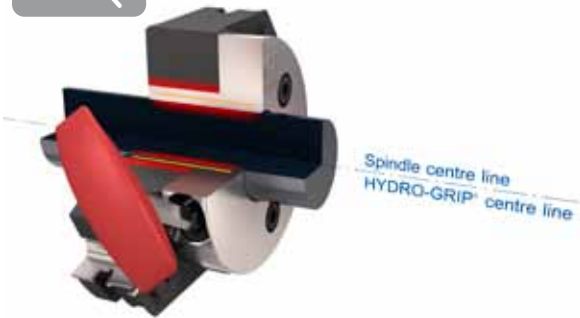


Permanent assembly



Interchangeable assembly

Pressurizing



Set the pressure with the allen T-wrench

Place the tool and HYDRO-GRIP on the machine spindle. Turn the allen T-wrench a couple of turns and the tool is automatically centered and fastened. The whole process takes literally just a few seconds.



Set the pressure with the high pressure pump

Connect the pump to the HYDRO-GRIP, pressurize and check that the correct pressure of 400-450 bar has been reached. We strongly recommend the grease Blasotop 301, please see part Technical Specification.

Assembly



Permanent assembly

Permanent assembly means that the sleeve only expands against the machine spindle. Made in short versions to allow for a light press fit. The tool and HYDRO-GRIP should be bolted together.



Interchangeable assembly

Interchangeable assembly means that the sleeve expands, is centered and fixed in place in a matter of seconds, both against the tool and the machine spindle. The sleeve can easily be used with different tools.

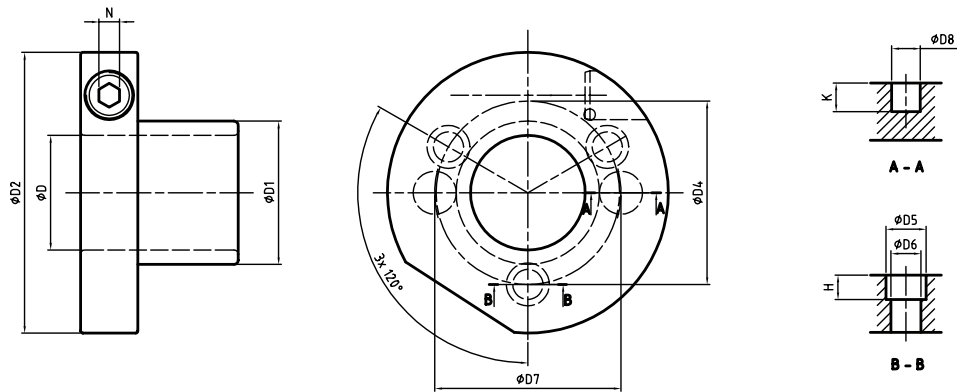


HYDRO-GRIP CIR Stainless steel

**Can be cleaned ultrasonically
- saves time in demanding environments**

The new HYDRO-GRIP CIR Stainless is manufactured from stainless steel and is perfect for use in demanding environments. The use of stainless steel for the sleeve and the new seals around the pressurizing screw mean that the sleeve and the tool can be ultrasonically cleaned as one unit, saving you both time and money.

The special shape with a flat balance surface makes handling your HYDRO-GRIP even easier and more stable. This new HYDRO-GRIP naturally gives you all the usual benefits of our products, quick, easy and precise assembly, perfect centering and maximum repeatability.



HYDRO-GRIP CIR Stainless steel

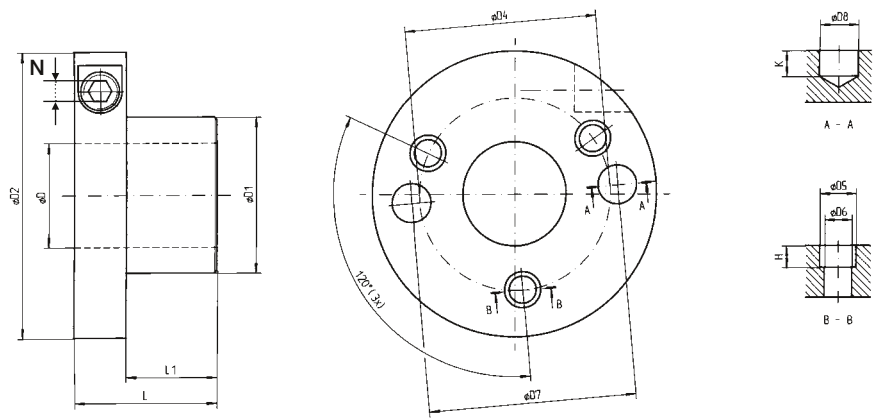
Sleeve for **interchangeable tool assembly** that can be used with different tools. The tool should be bolted to the sleeve's collar. Several tools can be mounted simultaneously. Pressurizing is carried out with an allen T-wrench.



Type	D	D1	D2	D4	D5	D6	D7	D8	H	K	L	L1	N
CIR-40/50-75	40	50	100	64	14	10.5	65	15	8.5	10	75	55	8
CIR-40/60-55	40	60	104	74	14	10.5	75	15	8.5	10	55	35	8
CIR-40/60-75	40	60	104	74	14	10.5	75	15	8.5	10	75	55	8
CIR-40/60-95	40	60	108	74	14	10.5	75	15	8.5	10	95	75	8
CIR-40/60-115	40	60	112	74	14	10.5	75	15	8.5	10	115	95	8
CIR-50/60-55*	50	60	104	74	14	10.5	75	15	8.5	10	55	35	8
CIR-50/60-75*	50	60	104	74	14	10.5	75	15	8.5	10	75	55	8
CIR-50/60-95*	50	60	108	74	14	10.5	75	15	8.5	10	95	75	8
CIR-50/60-115*	50	60	112	74	14	10.5	75	15	8.5	10	115	95	8
CIR 1 13/16"/60-75	1 13/16"	60	104	74	14	10.5	75	15	8.5	10	75	55	8

*) The CIR Ø50 has two, threaded M5-holes for carrier pegs, on a 70 mm pitch diameter. See page 39 for more information.





HYDRO-GRIP CI

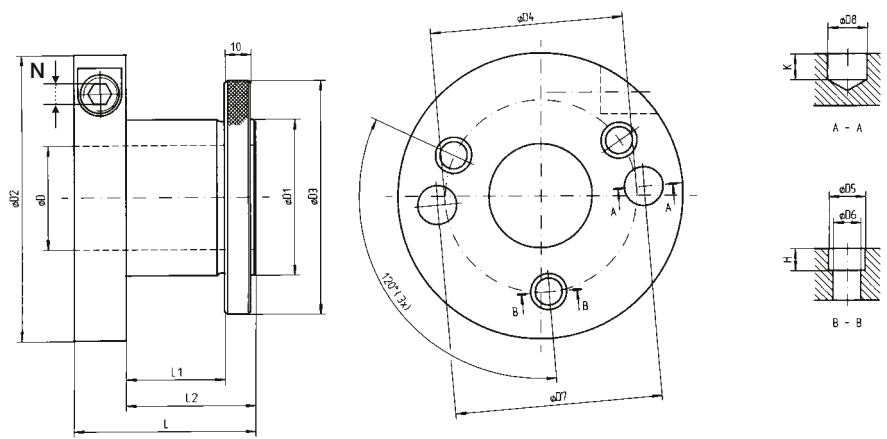
Sleeve for **interchangeable tool assembly** that can be used with different tools. The tool should be bolted to the sleeve's collar. Several tools can be mounted simultaneously. Pressurizing is carried out with an allen T-wrench.



Type	D	D1	D2	D4	D5	D6	D7	D8	H	K	L	L1	N
CI-40/50-75	40	50	100	64	15	10,5	65	15	8,5	10	75	55	8
CI-40/60-75	40	60	102	74	15	10,5	75	15	8,5	10	75	55	8
CI-40/60-95	40	60	108	74	15	10,5	75	15	8,5	10	95	75	8
CI-40/60-115	40	60	108	74	15	10,5	75	15	8,5	10	115	95	8
CI-40/60-140	40	60	114	74	15	10,5	75	15	8,5	10	140	115	10
CI-45/60-95*	45	60	108	74	15	10,5	70	M5	8,5		95	75	8
CI-45/60-140*	45	60	114	74	15	10,5	70	M5	8,5		140	115	10
CI-50/60-75**	50	60	102	74	15	10,5	75	15	8,5	10	75	55	8
CI-50/60-95**	50	60	108	74	15	10,5	75	15	8,5	10	95	75	8
CI-50/60-115**	50	60	108	74	15	10,5	75	15	8,5	10	115	95	8
CI-50/60-140**	50	60	114	74	15	10,5	75	15	8,5	10	140	115	10
CI-1 1/2"/50-135	1 1/2"	50	106	64	15	10,5	65	15	8,5	10	135	115	8
CI-1 13/16"/60-115	1 13/16"	60	108	74	15	10,5	75	15	8,5	10	115	95	8
CI-2 1/8"/65-135	2 1/8"	65	117	80	15	10,5	80	15	8,5	10	135	110	10

*) The CI Ø45 sleeve has two carrier pegs, 8,5 x 5 mm.

**) The CI Ø50 has two, threaded M5-holes for carrier pegs, on a 70 mm pitch diameter. See page 39 for more information.



HYDRO-GRIP BI

Sleeve for **interchangeable tool assembly**, the same basic construction as the CI but also has a thread and locking nut. This means the sleeve can be easily switched between different tools. Several tools can be mounted to the same sleeve. Pressurizing is carried out with an allen T-wrench.

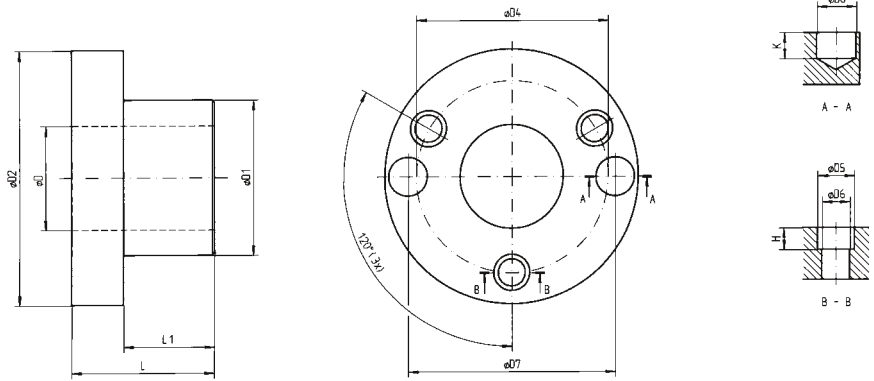


Type	D	D1	D2	D3	D4	D5	D6	D7	D8	H	K	L	L1	L2	N
BI-40/50-75	40	50	100	83	64	15	10.5	65	15	8.5	10	75	40	55	8
BI-40/60-75	40	60	102	90	74	15	10.5	75	15	8.5	10	75	40	55	8
BI-40/60-95	40	60	108	90	74	15	10.5	75	15	8.5	10	95	60	75	8
BI-40/60-115	40	60	108	90	74	15	10.5	75	15	8.5	10	115	80	95	8
BI-40/60-140	40	60	114	90	74	15	10.5	75	15	8.5	10	140	100	115	10
BI-45/60-75*	45	60	102	90	74	15	10.5	70	M5	8.5		75	40	55	8
BI-45/60-115*	45	60	108	90	74	15	10.5	70	M5	8.5		115	80	95	8
BI-50/60-75**	50	60	102	90	74	15	10.5	75	15	8.5	10	75	40	55	8
BI-50/60-95**	50	60	108	90	74	15	10.5	75	15	8.5	10	95	60	75	8
BI-50/60-115**	50	60	108	90	74	15	10.5	75	15	8.5	10	115	80	95	8
BI-50/60-140**	50	60	114	90	74	15	10.5	75	15	8.5	10	140	100	115	10

BI-1 1/2"/50-135	1 1/2"	50	106	83	64	15	10.5	65	15	8.5	10	135	100	115	8
BI-1 13/16"/60-75	1 13/16"	60	102	90	74	15	10.5	75	15	8.5	10	75	40	55	8
BI-1 13/16"/60-115	1 13/16"	60	108	90	74	15	10.5	75	15	8.5	10	115	80	95	8
BI-1 13/16"/65-85	1 13/16"	65	108	98	80	15	10.5	80	15	8.5	10	85	50	65	8
BI-1 13/16"/65-135	1 13/16"	65	117	98	80	15	10.5	80	15	8.5	10	135	95	110	10
BI-2 1/8"/65-85	2 1/8"	65	108	98	80	15	10.5	80	15	8.5	10	85	50	65	8
BI-2 1/8"/65-135	2 1/8"	65	117	98	80	15	10.5	80	15	8.5	10	135	95	110	10

*) The BI Ø45 sleeve has two carrier pegs, 8,5 x 5 mm.

**) The BI Ø50 has two, threaded M5-holes for carrier pegs, on a 70 mm pitch diameter. See page 39 for more information.



HYDRO-GRIP C

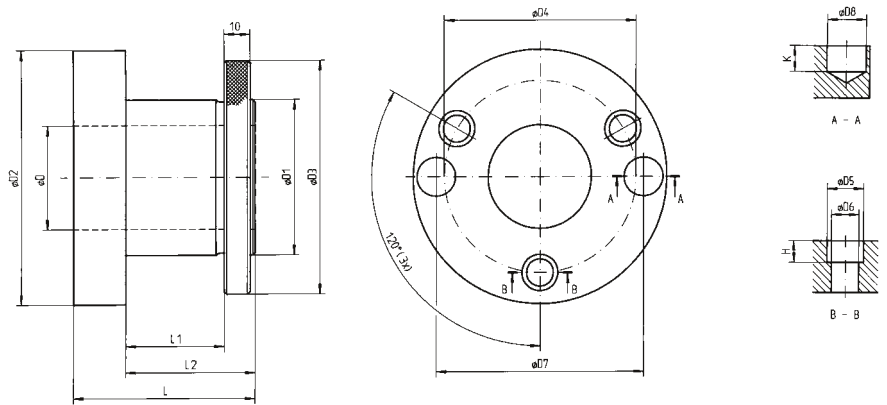
Sleeve for **interchangeable tool assembly** which can easily be switched between different tools. The tool is fastened to the sleeve by bolts through the collar. Several tools can be mounted simultaneously on the same sleeve. Pressurizing is carried out with a high pressure grease pump. This allows the use of longer sleeves.



Type	D	D1	D2	D4	D5	D6	D7	D8	H	K	L	L1
C-40/50-115	40	50	83	64	10	6	65	15	5,5	10	115	95
C-40/60-75	40	60	93	74	15	10,5	75	15	8,5	10	75	55
C-40/60-95	40	60	93	74	15	10,5	75	15	8,5	10	95	75
C-40/60-115	40	60	93	74	15	10,5	75	15	8,5	10	115	95
C-40/60-140	40	60	93	74	15	10,5	75	15	8,5	10	140	120
C-40/60-215	40	60	93	74	15	10,5	75	15	8,5	10	215	195
C-45/60-75*	45	60	93	74	15	10,5	70	M5	8,5		75	55
C-45/60-95*	40	60	93	74	15	10,5	70	M5	8,5		95	75
C-45/60-115*	45	60	93	74	15	10,5	70	M5	8,5		115	95
C-45/60-140*	45	60	93	74	15	10,5	70	M5	8,5		140	120
C-45/60-240*	45	60	93	74	15	10,5	70	M5	8,5		240	220
C-50/60-75**	50	60	93	74	15	10,5	75	15	8,5	10	75	55
C-50/60-95**	50	60	93	74	15	10,5	75	15	8,5	10	95	75
C-50/60-115**	50	60	93	74	15	10,5	75	15	8,5	10	115	95
C-50/60-140**	50	60	93	74	15	10,5	75	15	8,5	10	140	120
C-50/60-190**	50	60	93	74	15	10,5	75	15	8,5	10	190	170
C-50/60-230**	50	60	93	74	15	10,5	75	15	8,5	10	230	210
C-60/70-233	60	70	105	86	15	9	85	15	9	10	233	213
C-1 1/2"/50-85	1 1/2"	50	83	64	15	10,5	65	15	10	10	85	65
C-1 1/2"/50-135	1 1/2"	50	83	64	15	10,5	65	15	10	10	135	115
C-1 13/16"/60-75	1 13/16"	60	93	74	15	10,5	75	15	10	10	75	55
C-1 13/16"/65-85	1 13/16"	65	98	80	15	10,5	80	15	10	10	85	65
C-1 13/16"/65-135	1 13/16"	65	98	80	15	10,5	80	15	10	10	135	115
C-1 13/16"/65-185	1 13/16"	65	98	80	15	10,5	80	15	10	10	185	165
C-2 1/8"/65-85	2 1/8"	65	98	80	15	10,5	80	15	10	10	85	65
C-2 1/8"/65-135	2 1/8"	65	98	80	15	10,5	80	15	10	10	135	115

*) The C Ø45 sleeve has two carrier pegs, 8,5 x 5 mm.

**) The C Ø50 has two, threaded M5-holes for carrier pegs, on a 70 mm pitch diameter. See page 39 for more information.



HYDRO-GRIP B

Sleeve for **interchangeable tool assembly**, the same basic construction as the BI with a thread and locking nut. This means the sleeve can be easily switched between different tools. Several tools can be mounted to the same sleeve. Pressurizing is carried out with a high pressure grease pump. This allows the use of longer sleeves.



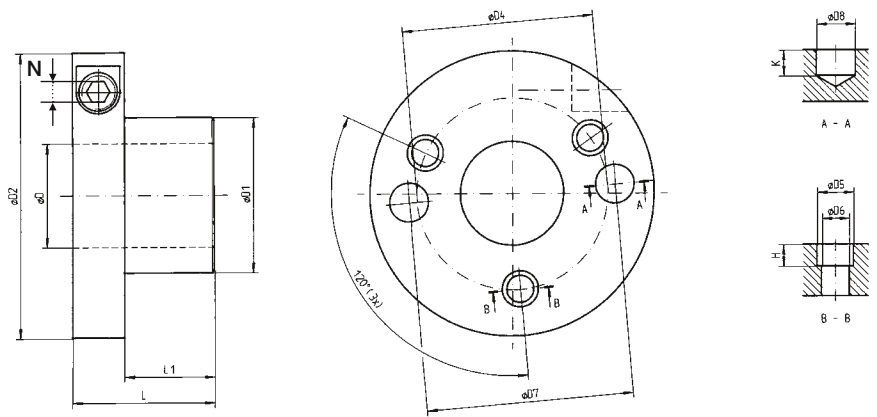
Type	D	D1	D2	D3	D4	D5	D6	D7	D8	H	K	L	L1	L2
B-40/50-75	40	50	83	83	64	10	6.0	65	15	5.5	10	75	40	55
B-40/50-115	40	50	83	83	64	10	6.0	65	15	5.5	10	115	80	95
B-40/60-75	40	60	93	90	74	15	10.5	75	15	8.5	10	75	40	55
B-40/60-95	40	60	93	90	74	15	10.5	75	15	8.5	10	95	60	75
B-40/60-115	40	60	93	90	74	15	10.5	75	15	8.5	10	115	80	95
B-40/60-140	40	60	93	90	74	15	10.5	75	15	8.5	10	140	105	120
B-40/60-165	40	60	93	90	74	15	10.5	75	15	8.5	10	165	130	145
B-40/60-215	40	60	93	90	74	15	10.5	75	15	8.5	10	215	180	195
B-45/60-75*	45	60	93	90	74	15	10.5	70	M5	8.5		75	40	55
B-45/60-95*	45	60	93	90	74	15	10.5	70	M5	8.5		95	60	75
B-45/60-115*	45	60	93	90	74	15	10.5	70	M5	8.5		115	80	95
B-45/60-140*	45	60	93	90	74	15	10.5	70	M5	8.5		140	105	120
B-45/60-190*	45	60	93	90	74	15	10.5	70	M5	8.5		190	155	170
B-45/60-240*	45	60	93	90	74	15	10.5	70	M5	8.5		240	205	220
B-50/60-75**	50	60	93	90	74	15	10.5	75	15	8.5	10	75	40	55
B-50/60-95**	50	60	93	90	74	15	10.5	75	15	8.5	10	95	60	75
B-50/60-115**	50	60	93	90	74	15	10.5	75	15	8.5	10	115	80	95
B-50/60-140**	50	60	93	90	74	15	10.5	75	15	8.5	10	140	105	120
B-50/60-190**	50	60	93	90	74	15	10.5	75	15	8.5	10	190	155	170
B-50/60-230**	50	60	93	90	74	15	10.5	75	15	8.5	10	230	195	210
B-50/60-240**	50	60	93	90	74	15	10.5	75	15	8.5	10	240	205	220
B-60/70-75	60	70	105	105	86	15	10.5	85	15	9	10	75	40	55
B-60/70-190	60	70	105	105	86	15	10.5	85	15	9	10	190	155	170

*) The B Ø45 sleeve has two carrier pegs, 8,5 x 5 mm.

**) The B Ø50 has two, threaded M5-holes for carrier pegs, on a 70 mm pitch diameter. See page 39 for more information.

Type	D	D1	D2	D3	D4	D5	D6	D7	D8	H	K	L	L1	L2
B-1 1/4"/40-85*	1 1/4"	40	75	75	55	15	10.5	55	15	9	10	85	50	65
B-1 1/2"/50-85	1 1/2"	50	83	83	64	15	10.5	64	15	9	10	85	50	65
B-1 1/2"/50-135	1 1/2"	50	83	83	64	15	10.5	64	15	9	10	135	100	115
B-1 1/2"/50-185	1 1/2"	50	83	83	64	15	10.5	64	15	9	10	185	150	165
B-1 13/16"/60-75	1 13/16"	60	93	90	74	15	10.5	75	15	8,5	10	75	40	55
B-1 13/16"/60-115	1 13/16"	60	93	90	74	15	10.5	75	15	8,5	10	115	80	95
B-1 13/16"/60-190	1 13/16"	60	93	90	74	15	10.5	75	15	8,5	10	190	155	170
B-1 13/16"/65-85	1 13/16"	65	98	98	80	15	10.5	80	15	9	10	85	50	65
B-1 13/16"/65-135	1 13/16"	65	98	98	80	15	10.5	80	15	9	10	135	100	115
B-1 13/16"/65-185	1 13/16"	65	98	98	80	15	10.5	80	15	9	10	185	150	165
B-2 1/8"/65-85	2 1/8"	65	98	98	80	15	10.5	80	15	9	10	85	50	65
B-2 1/8"/65-135	2 1/8"	65	98	98	80	15	10.5	80	15	9	10	135	100	115
B-2 1/8"/65-185	2 1/8"	65	98	98	80	15	10.5	80	15	9	10	185	150	165

*) The B-1 1/4"/40 has two tool fastening holes.



HYDRO-GRIP AI

Sleeve for **permanent tool assembly**. Made in short lengths to allow for a light press fit. The tool and HYDRO-GRIP should be bolted together. Pressurizing is carried out with an allen T-wrench.

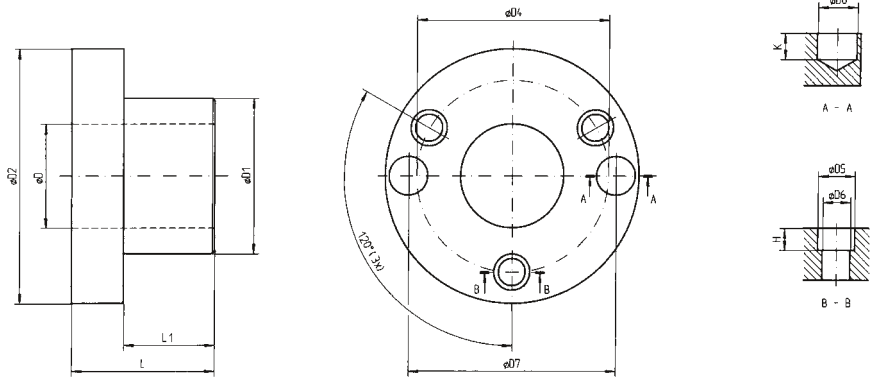


Type	D	D1	D2	D4	D5	D6	D7	D8	H	K	L	L1	N
AI-40/50-55	40	50	83	64	10	6	65	15	5.5	10	55	35	6
AI-40/60-55	40	60	93	74	15	10.5	75	15	8.5	10	55	35	6
AI-50/60-55*	50	60	93	74	15	10.5	75	15	8.5	10	55	35	6
AI-50/60-75*	50	60	93	74	14	10.5	75	15	8.5	10	75	55	6
AI-50/65-75*	50	65	98	80	15	10.5	80	15	8.5	10	75	55	6

Type	D	D1	D2	D4	D5	D6	D7	D8	H	K	L	L1	N
AI-1 1/4"/40-55**	1 1/4"	40	83	55	15	10.5	55	15	9	10	55	35	6
AI-1 1/2"/50-55	1 1/2"	50	93	64	15	10.5	65	15	8.5	10	55	35	6
AI-1 13/16"/60-55	1 13/16"	60	93	74	15	10.5	75	15	8.5	10	55	35	6
AI-2 1/8"/65-55	2 1/8"	65	98	80	15	10.5	80	15	8.5	10	55	35	6

*) The AI Ø50 has two, threaded M5-holes for carrier pegs, on a 70 mm pitch diameter. See page 39 for more information.

**) The AI-1 1/4"/40 has two tool fastening holes.



HYDRO-GRIP A

Sleeve for **permanent tool assembly**. Made in short lengths to allow for a light press fit. The tool and sleeve should be bolted together. Pressurizing is carried out with a high pressure grease pump.



Type	D	D1	D2	D4	D5	D6	D7	D8	H	K	L	L1
A-40/60-55	40	60	93	74	14	10.5	75	15	8.5	10	55	35
A-45/60-55*	45	60	93	74	14	10.5	70		8.5		55	35
A-50/60-55**	50	60	93	74	14	10.5	75	15	8.5	10	55	35
A-45/60-75*	45	60	93	74	14	10.5	75		8.5		75	55
A-50/60-75**	50	60	93	74	14	10.5	75	15	8.5	10	75	55
A-60/70-55	60	70	105	86	15	10.5	85	15	9	10	55	35
A-60/70-75	60	70	105	86	15	10.5	85	15	9	10	75	55

Type	D	D1	D2	D4	D5	D6	D7	D8	H	K	L	L1
A-1 1/4"/40-55***	1 1/4"	40	75	55	15	10.5	55	15	9	10	55	35
A-1 13/16"/60-55	1 13/16"	60	93	74	15	10.5	75	15	8.5	10	55	35
A-1 13/16"/65-55	1 13/16"	65	98	80	15	10.5	80	15	9	10	55	35
A-2 1/8"/65-55	2 1/8"	65	98	80	15	10.5	80	15	9	10	55	35

*) The A Ø45 sleeve has two carrier pegs, 8,5 x 5 mm.

**) The A Ø50 has two, threaded M5-holes for carrier pegs, on a 70 mm pitch diameter. See page 39 for more information.

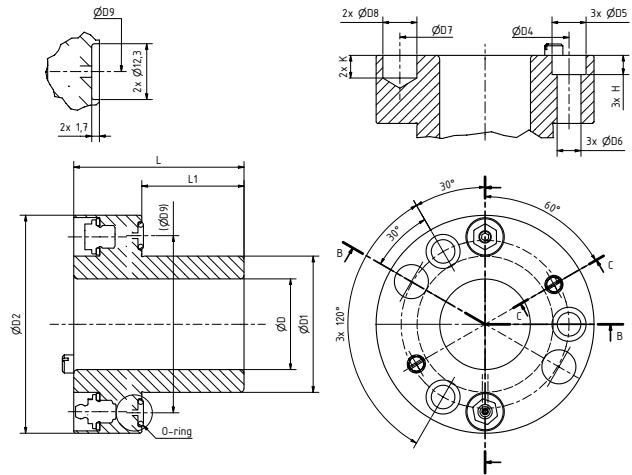
***) The A-1 1/4"/40 has two tool fastening holes.

A complete and totally sealed system for existing or new cutter tools. Two hydraulic sleeves, type AAH or type AH with an easy press fit in each end of the tool are connected by a small channel in the body of the cutter. Pressurization of the entire unit can be carried out either axially or radially using a high pressure grease pump.



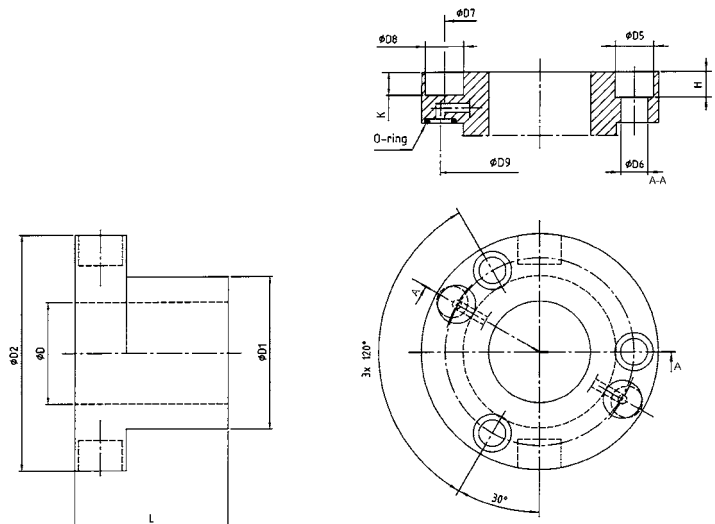
HYDRO-GRIP AAH

Type	D	D1	D2	D4	D5	D6	D7	D8	D9	H	K	L	L1
AAH-40/60-75	40	60	96	74	15	10,5	75	15	78	8,5	10	75	45
AAH-50/60-75	50	60	96	74	15	10,5	75	15	78	8,5	10	75	45
AAH-1 13/16"/60-75	1 13/16"	60	96	74	15	10,5	75	15	78	8,5	10	75	45



HYDRO-GRIP AH

Type	D	D1	D2	D4	D5	D6	D7	D8	D9	H	K	L	L1
AH-40/60-55	40	60	93	74	15	10,5	75	15	78	8,5	9	55	35
AH-50/60-55	50	60	93	74	15	10,5	75	15	78	8,5	9	55	35
AH-1 13/16"/60-55	1 13/16"	60	93	74	15	10,5	75	15	78	8,5	9	55	35



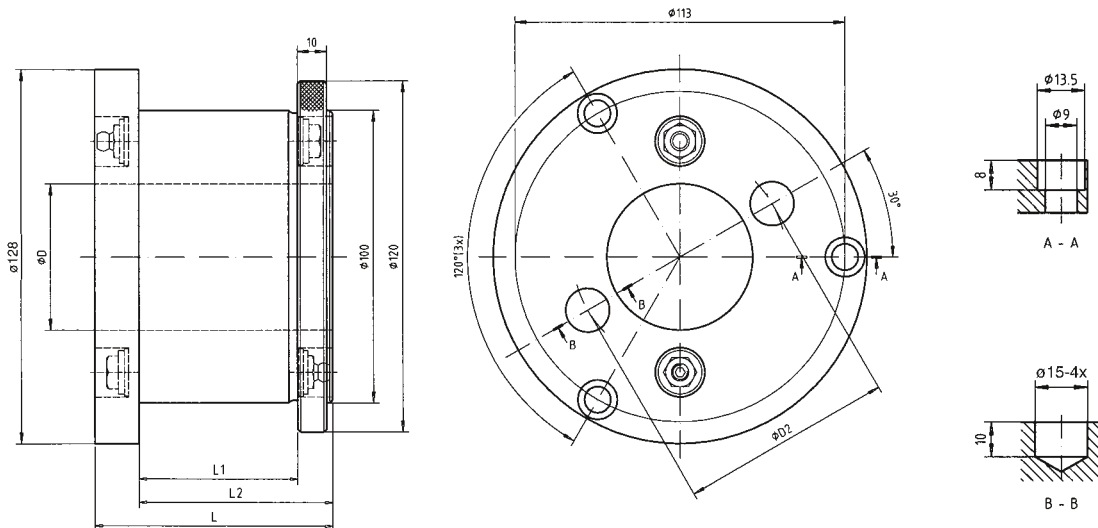


HYDRO-GRIP BL

Sleeve for **interchangeable tool assembly**. Has a thread and locking nut. This means the sleeve can be easily switched between different tools. Pressurizing is carried out with a high pressure grease pump, axially in the sleeve's flange. This type can also be ordered as a CL sleeve, without threads and ring nut.



Type	D	D2	L	L1	L2
BL-45/100-75*	45	70	75	45	60
BL-50/100-75**	50	75	75	45	60
BL-45/100-115*	45	70	115	85	100
BL-50/100-115**	50	75	115	85	100



*) The BL-45 sleeve has two carrier pegs, 8,5 x 5 mm.

**) The BL Ø50 has two, threaded M5-holes for carrier pegs, on a 70 mm pitch diameter. See page 39 for more information.



HYDRO-GRIP AL

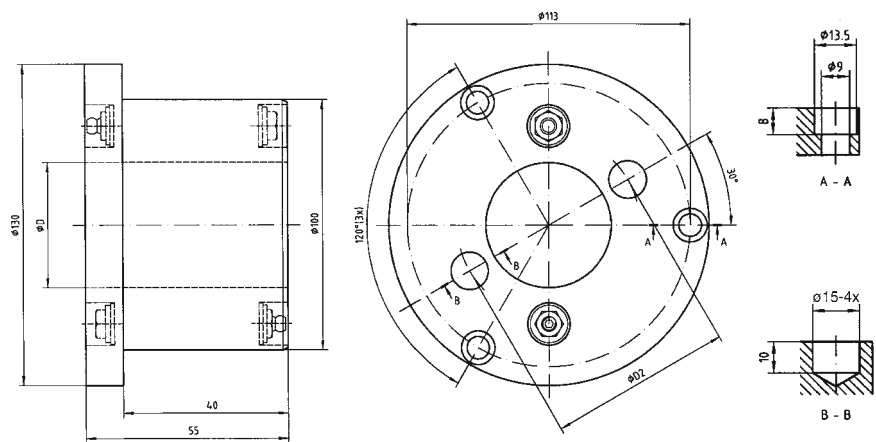
AL and AIL are for **permanent tool assembly**. Made to allow for a light press fit. The tool and HYDRO-GRIP should be bolted together. Pressurizing is carried out with a high pressure grease pump, axially in the sleeve's flange.



Type	D	D2
AL-45/100-55*	45	70
AL-50/100-55**	50	75

*) The AL-45 sleeve has two carrier pegs, 8,5 x 5 mm.

**) The AL-50 has two, threaded M5-holes for carrier pegs, on a 70 mm pitch diameter. See page 39 for more information.

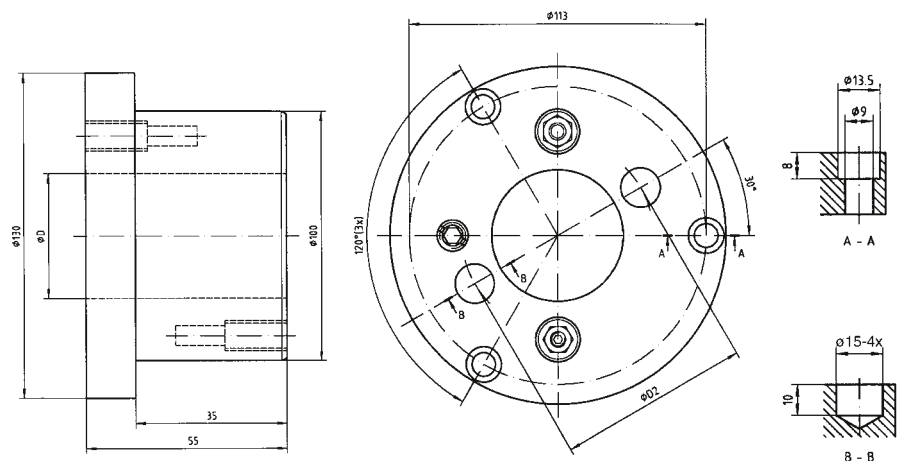


HYDRO-GRIP AIL

Type	D	D2	N
AIL-40/100-55	40	75	6
AIL-45/100-55*	45	75	6



*) The AIL-45 sleeve has two carrier pegs, 8,5 x 5 mm. See page 39 for more information.





HYDRO-GRIP 60-80 mm

A range of sleeves for **permanent or interchangeable tool assembly** for large machine spindle diameters. Naturally, with the same excellent precision as all other HYDRO-GRIP sleeves but in a new larger size range, for 60 or 80 mm machine spindle diameters. For more detailed information refer to the main section for each sleeve type.

Type	D	D2	L	L1
A-60/70-55	60	70	55	35
A-60/70-75	60	70	75	55



Type	D	D2	L	L1
B-60/70-75	60	70	75	40
B-60/70-190	60	70	190	170



Type	D	D2	L	L1
C-60/70-233	60	70	233	213



Type	D	D2	L	L1
AI-60/70-55	60	70	55	35
AI-60/70-75	60	70	75	55



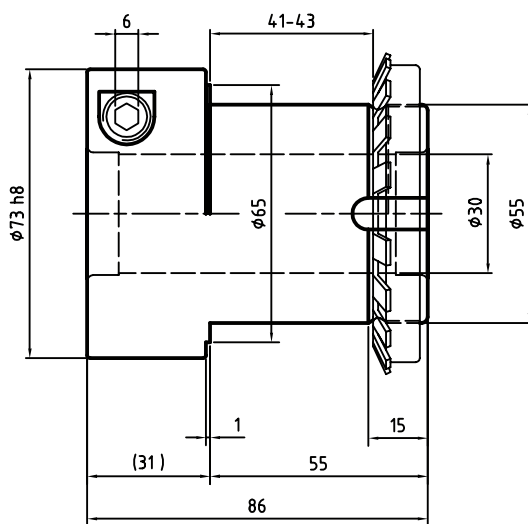
Type	D	D2	L	L1
BI-60/70-75	60	70	75	40





HYDRO-GRIP DI-30/55-86

Sleeves for quick and precise assembly of support bearings for machines with bearings at both ends of the spindle. Pressurizing is carried out with an allen T-wrench.

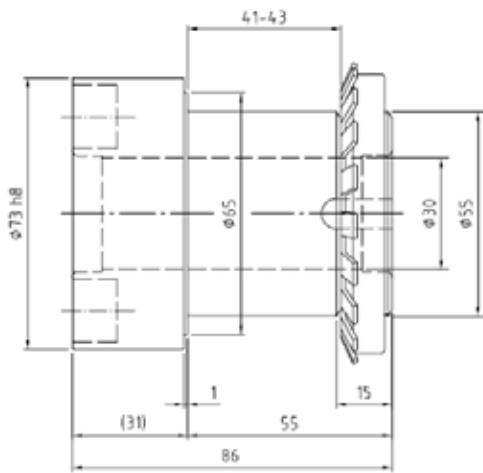


DI-30/55-86

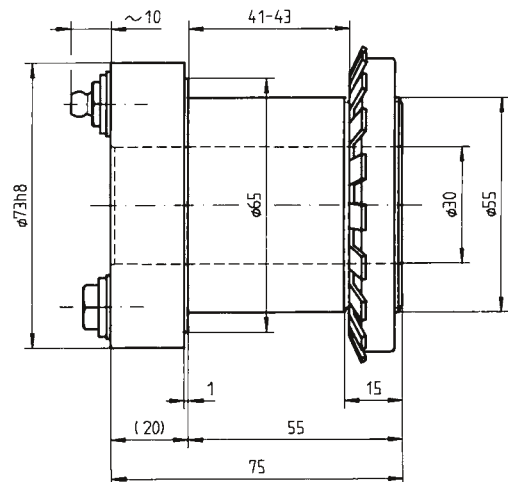
HYDRO-GRIP D



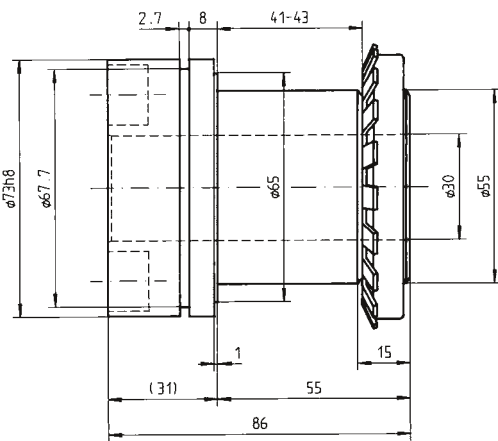
Sleeves for quick and precise assembly of support bearings for machines with bearings at both ends of the spindle.



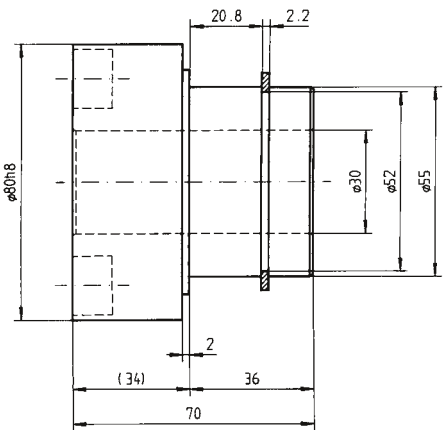
D-30/55-86



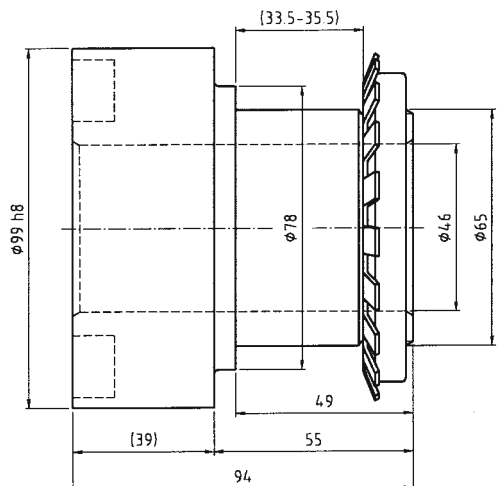
D-30/55-75



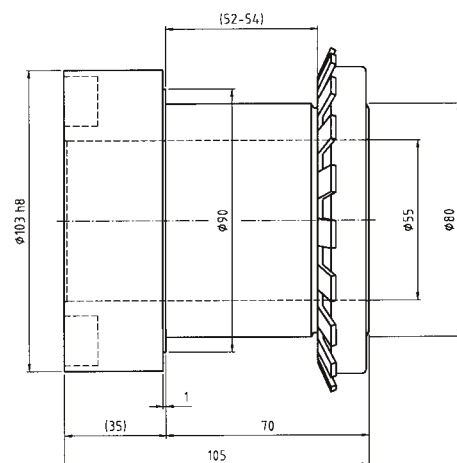
D-30/55-86, special



D-30/55-70

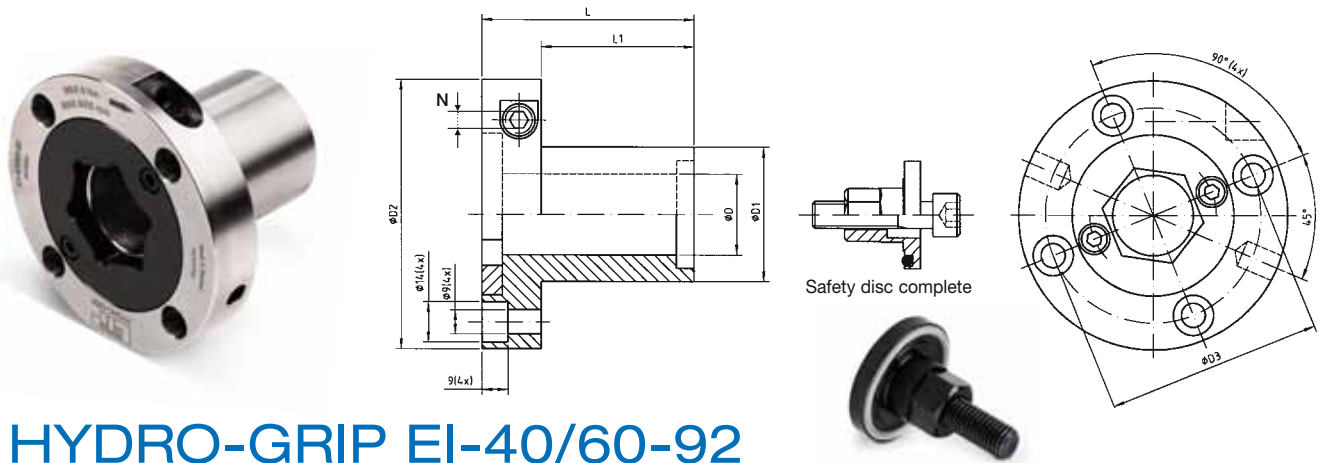


D-46/65-94



D-55/80-105



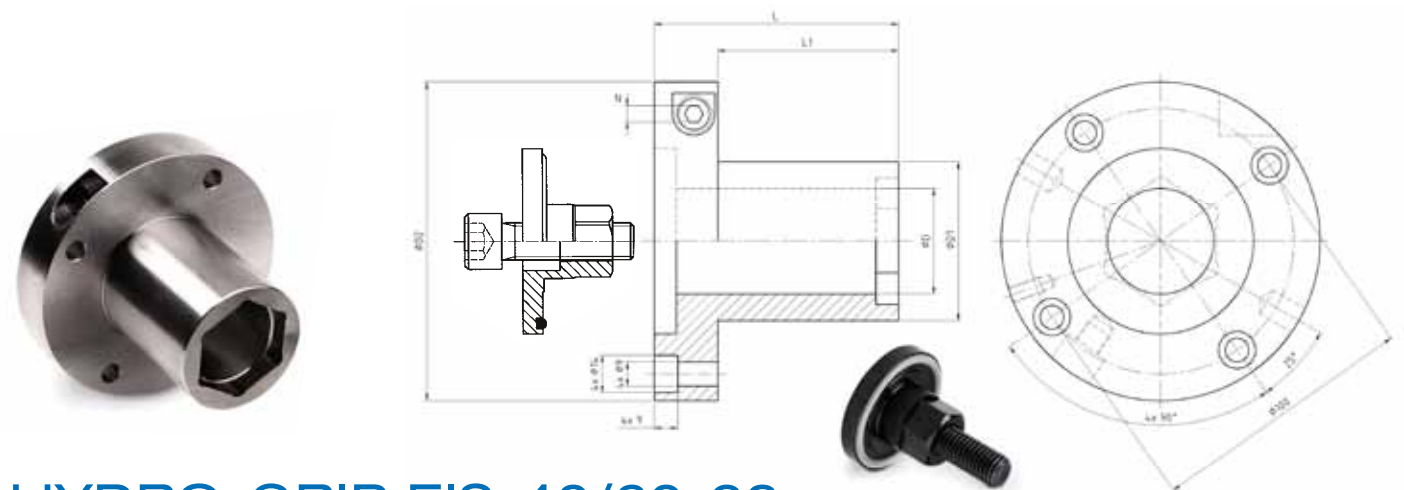


HYDRO-GRIP EI-40/60-92

Sleeve for **interchangeable tool assembly** and machines with hexagonal spindle profile. The sleeve is supplied with an internal hexagonal insert in the collar of the sleeve. See photo above. Safety disc is not included.



Type	D	D1	D2	D3	L1	L	N
EI-40/60-92	40	60	120	100	68	92	6



HYDRO-GRIP EIS-40/60-92

Similar to the EI sleeve above but with an internal hexagonal profile in its open side. Safety disc is not included.

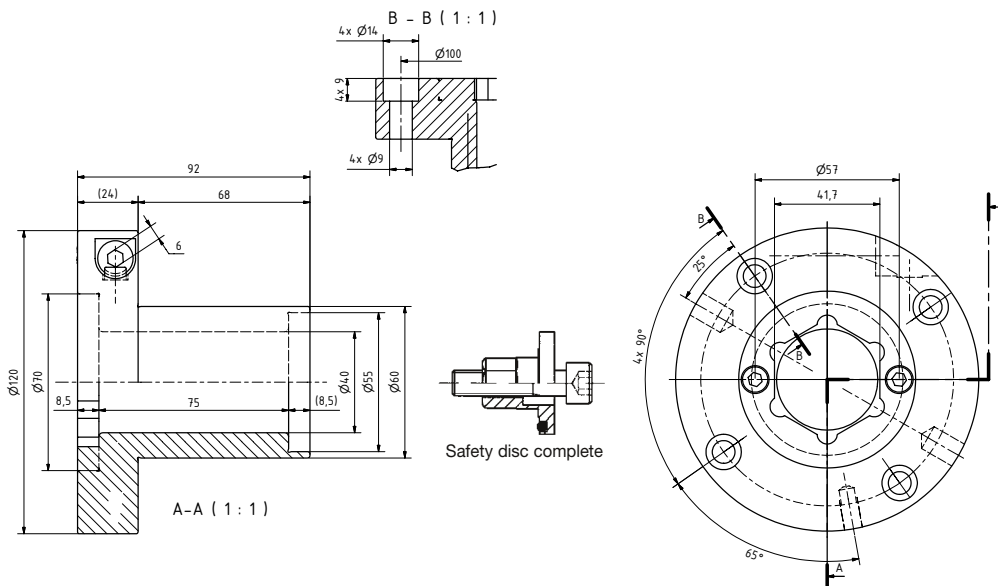


NEW
 for fixed tools



HYDRO-GRIP EIF-40/60-92

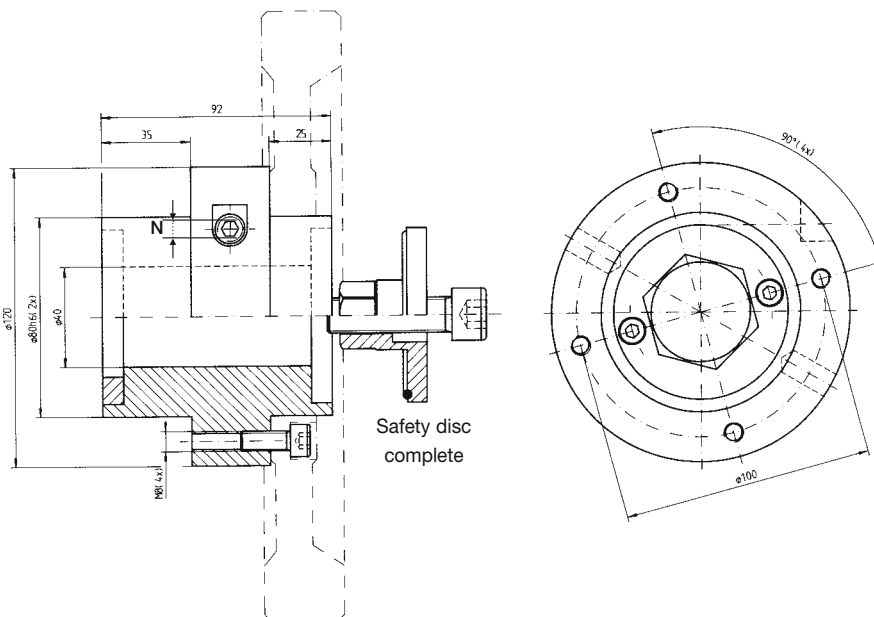
The new EIF type is specially designed for fixed tools. The sleeve is supplied with an internal hexagonal insert in the collar of the sleeve. It is intended for tools with a hole tolerance of H7, that gives a light press fit on the type EIF.

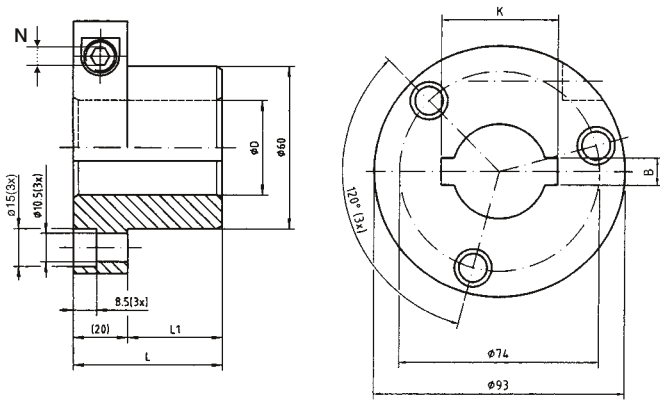




HYDRO-GRIP EI-40/80-92

Sleeve for **permanent tool assembly** and machines with hexagonal spindle profile. The sleeve is supplied with an internal hexagonal insert that can be used in either end of the sleeve. Safety disc is not included.



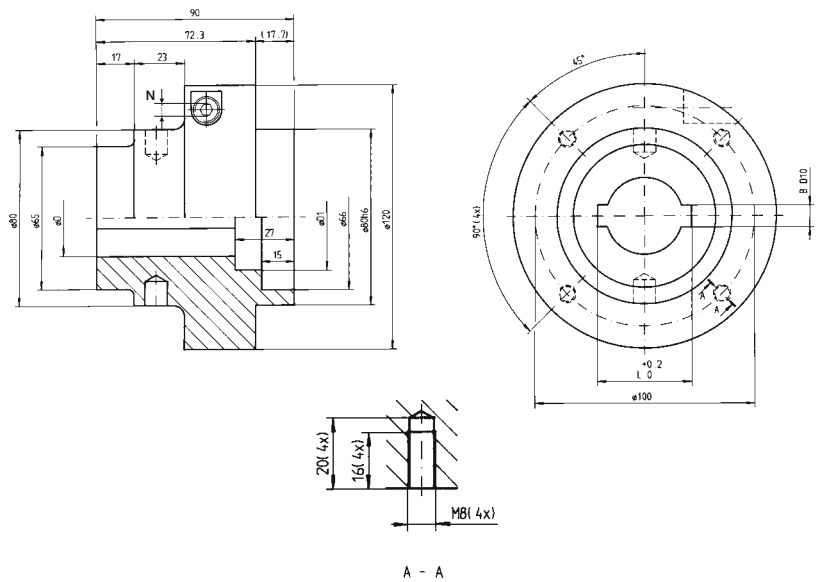


HYDRO-GRIP AEI

Sleeve for **permanent tool assembly** and spindles with keys.



Type	D	L	L1	B	K	N
AEI-35/60-55	35	55	35	10	43	6
AEI-35/60-70	35	70	50	10	43	6
AEI-40/60-55	40	55	35	12	47	6
AEI-40/60-70	40	70	50	12	47	6



HYDRO-GRIP EI

Sleeve for **permanent tool assembly** and spindles with keys.



Type	D	D1	B	L	N
EI-35/80-90	35	48	10	43	6
EI-40/80-90	40	53	12	47	6

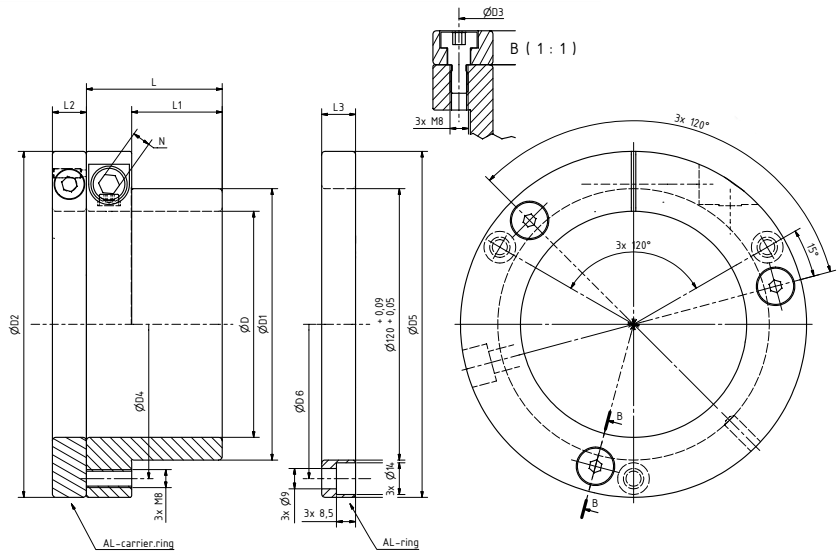


HYDRO-GRIP AI 100/120-60

Sleeve for **permanent tool assembly**.
Supplied with safety ring and tool ring
in aluminum.



Typ	D	D1	D2	D3	D4	D5	D6	L	L1	L2	N
AI-100/120-60	100 g6	120 H6	153	130	136,5	153	136,5	60	40	15	8



For machines with keys

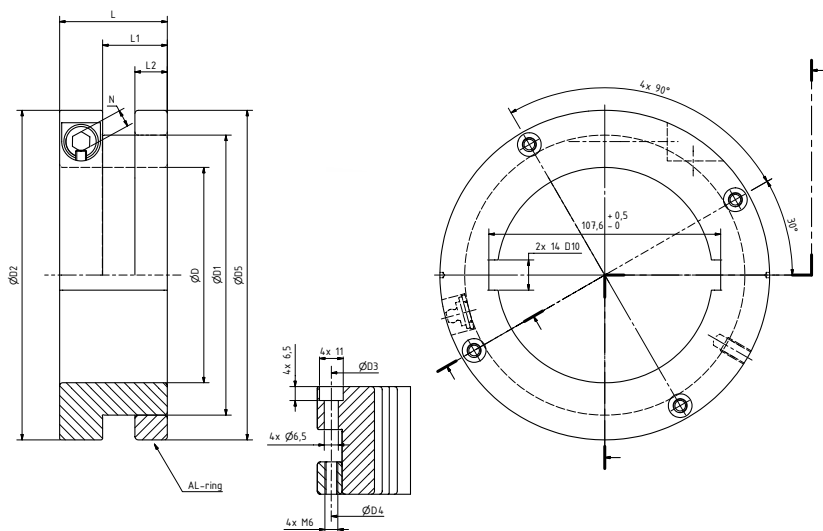


HYDRO-GRIP AEI 100/130-50

Sleeve for **permanent tool assembly**
and spindles with keys. Supplied with an
aluminum tool ring.



Typ	D	D1	D2	D3	D4	D5	L	L1	L2	N
AEI-100/130-50	100 g6	130 H6	153	140	140	153	50	30	15	8





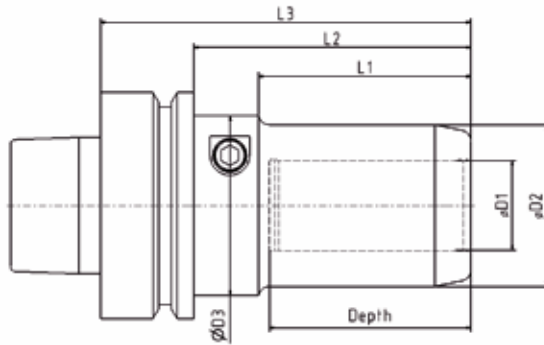
HYDRO-GRIP type G2 and type G3

Tough and compact design

Our new generation of the popular hydraulic chucks ETP HYDRO-GRIP type G2 and G3 gives the ultimate runout and repeatability. Get a type G2 or G3 and change your tools in a few seconds without any need of special fixtures or other accessories.

We can guarantee great results due to higher feed and cutter speed!

Place the tool in the chuck, turn the allen T-wrench until it stops and you are done.



Shaft:
HSK 63F – standard

Upon request:
SK30
SK40
BT30
BT35
BT40
SCM 30
CMS 30

HYDRO-GRIP G2

HYDRO-GRIP type G2 is extremely user friendly which means quick and easy tool changes. It has a tough and compact design and it is the most slender chuck in our range. A safety feature prevents the tool from falling out when the chuck is not pressurized. The tool shank must be equipped with a thread corresponding to the safety screw size. Pressurizing is carried out with an allen T-wrench and the chuck can be pressurized without any tool.



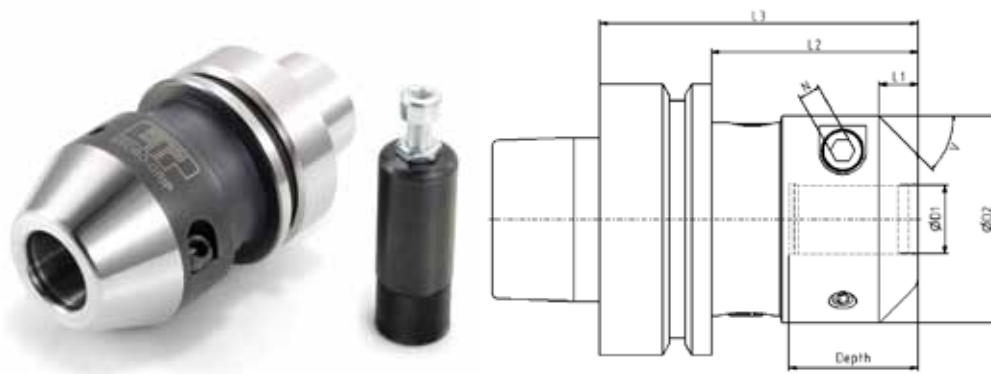
Type	D1	D2	D3	L1	L2	L3	Depth	N	Max rpm
G2-12	12	32	40	43	61	87	40	5	25000
G2-16	16	38	40	43	61	87	40	5	25000
G2-20	20	40	50	55	73	99	52	5	25000
G2-25	25	45	50	59	77	103	56	5	25000
G2-1/2"	1/2"	32	40	43	61	87	40	5	25000
G2-5/8"	5/8"	38	40	43	61	87	40	5	25000
G2-3/4"	3/4"	40	50	55	73	99	52	5	25000
G2-1"	1"	45	50	59	77	103	56	5	25000

Tolerances

The type G2 chuck is designed and manufactured for a router bit shank with the tolerance g6 (h7). Transmittable torque for tools with tolerances:

D	h6 Nm	h7 Nm	g6 Nm	Safety screw ISO 4762
12	60	30	30	M6x40
16	100	75	75	M6x40
20	260	175	175	M8x45
25	480	350	350	M8x45
1/2"	60	30	30	M6x40
5/8"	100	75	75	M6x40
3/4"	260	175	175	M8x45
1"	480	350	350	M8x45

The type G2 chuck is balanced to G2,5 at 25000 rpm.
The runout is measured at 3xD and the max runout is 0,006 mm.
A normally balanced chuck and tool can be used up to a max. speed of 25000 rpm.



Shaft:
HSK 63F – standard

Upon request:
SK30
SK40
BT30
BT35
BT40
SCM 30
CMS 30

HYDRO-GRIP G3

HYDRO-GRIP type G3 is historically very tough but the new generation has an even more compact design. The Hydro chuck is equipped with our well known built in safety device. The safety device prevents the tool from falling out when the chuck is not pressurized. Pressurizing is carried out with an allen T-wrench. The G3 chuck allows quick, safe and easy tool changes and perfect runout and repeatability. The new generation G3 and its design allows you to pressurize it without any tool!



Type	D1	D2	L1	L2	L3	V	Depth *	N	Max rpm
G3-12/HSK63F	12	45	3	42	68	70	24	5	25000
G3-16/HSK63F	16	48	9	48	74	45	30	5	25000
G3-20/HSK63F	20	52	15	54	80	30	36	5	25000
G3-25/HSK63F	25	59	22,5	61,5	87,5	25	43,5	5	25000
G3-1/2"/HSK63F	12,7	45	4,5	43,5	69,5	65	25,5	5	25000
G3-5/8"/HSK63F	15,875	48	9	48	74	45	30	5	25000
G3-3/4"/HSK63F	19,05	52	13,5	52,5	78,5	35	34,5	5	25000
G3-1"/HSK63F	25,4	59	22,5	61,5	87,5	25	43,5	5	25000

*) = clamping length.

The chucks are delivered without pull studs.

Tolerances

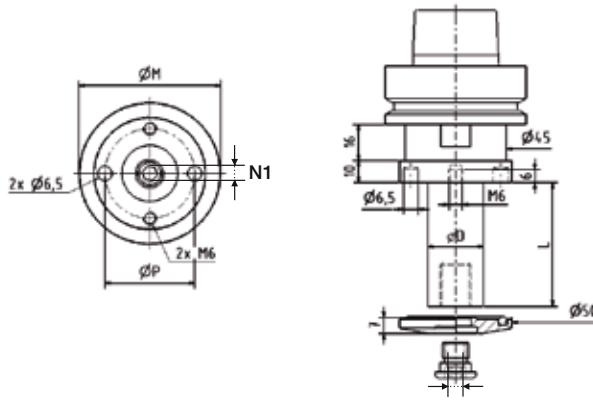
The type G3 chuck is designed and manufactured for a router bit shank with the tolerance g6 (h7).
Transmittable torque for tools with tolerances:

	h6	h7	g6
D	Nm	Nm	Nm
12	25	15	15
16	80	60	60
20	185	125	125
25	400	300	300
1/2"	25	15	15
5/8"	80	60	60
3/4"	185	125	125
1"	400	300	300

The type G3 chuck is balanced to G2,5 at 25000 rpm.

The runout is measured at 4xD and the max runout is 0,010 mm.

A normally balanced chuck and tool can be used up to a max. speed of 25000 rpm.



Shaft:

HSK 63F – standard

Upon request:

- SK30
- SK40
- BT30
- BT35
- BT40
- SCM 30
- CMS 30

HYDRO-GRIP GE

Hydraulic precision arbor which gives perfect balance and runout for the tool. It can even be used in vertical mills, both with and without tool changers. The arbor allows quick and precise tool assembly and a high degree of flexibility. The arbor is equipped as standard with a safety ring but can also be used without, though then the supplied safety screws must be used.



Type	D	L	M	P	N1	N2
GE-20x40/HSK 63F	20	40	45	32	6	8
GE-20x55/HSK 63F	20	55	45	32	6	8
GE-25x40/HSK 63F	25	40	50	40	6	8
GE-25x55/HSK 63F	25	55	50	40	6	8
GE-30x40/HSK 63F	30	40	58	48	6	8
GE-30x55/HSK 63F	30	55	58	48	6	8
GE-30x80/HSK 63F	30	80	58	48	6	8
GE-30x100/HSK 63F	30	100	58	48	6	8

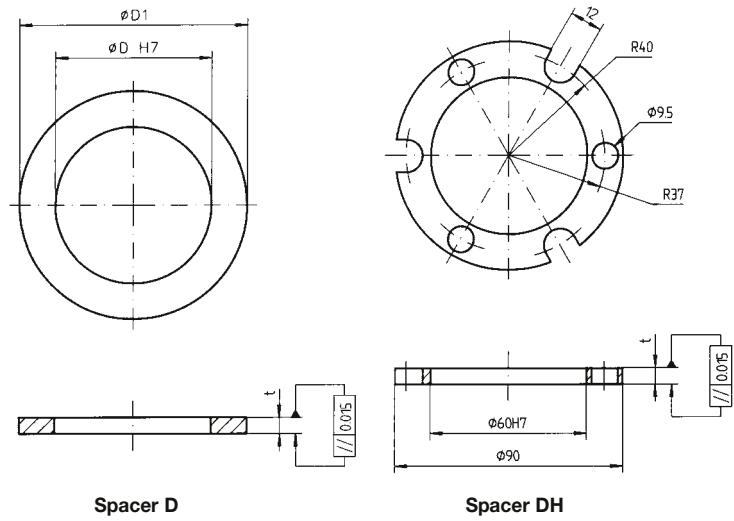
Type	D	L	M	P	N1	N2
GE-3/4"x40/HSK 63F	3/4"	40	45	32	6	8
GE-3/4"x55/HSK 63F	3/4"	55	45	32	6	8
GE-1"x40/HSK 63F	1"	40	50	40	6	8
GE-1"x55/HSK 63F	1"	55	50	40	6	8
GE-1"x80/HSK 63F	1"	80	50	40	6	8
GE-1 1/4"x40/HSK 63F	1 1/4"	40	58	48	6	8
GE-1 1/4"x55/HSK 63F	1 1/4"	55	58	48	6	8

The arbors are delivered without pull studs.



HYDRO-GRIP Spacers

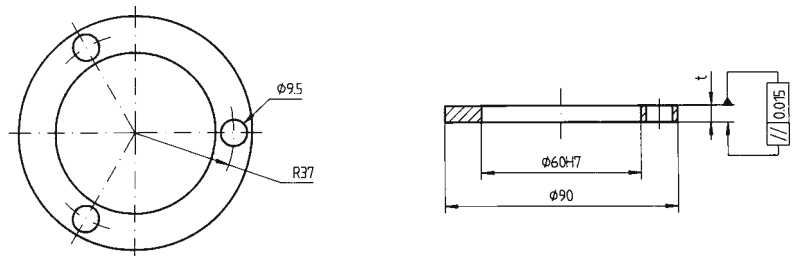
Type	D	D1	t
D-60/90-5	60	90	5
D-60/90-10	60	90	10
D-60/90-20	60	90	20
DH-60/90-3	60	90	3
DH-60/90-5	60	90	5
DH-60/90-10	60	90	10



HYDRO-GRIP Complete spacer set

The set includes 5 spacers with three holes in the following thicknesses, mm:

- 0.1
- 0.2
- 0.3
- 0.5
- 1.0



HYDRO-GRIP Grease nipples

Filler nipple and release nipple with steel rubber washer.



HYDRO-GRIP High pressure pump M-08

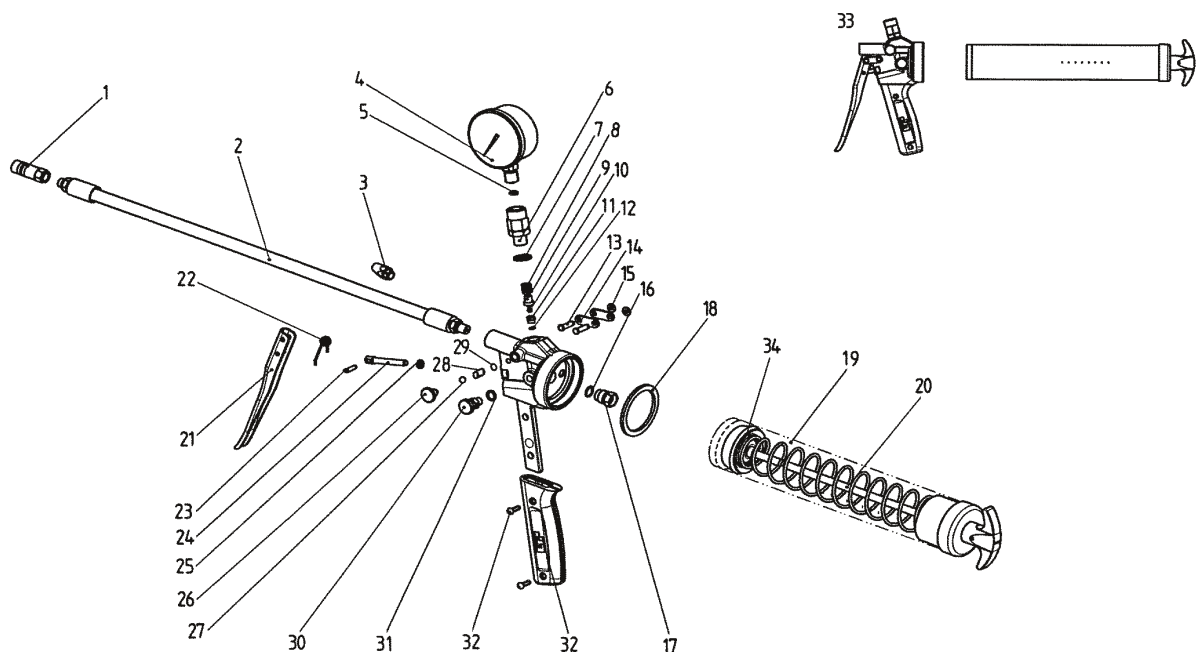


Grease pump M-08, manual art. nr. 59800
 including 1 of Spare parts set art. nr 59860
 2 of Grease cartridges F-01 art. nr 49810

Grease cartridges can be ordered separately.
We strongly recommend Blasotop 301. Please see Technical information, page 39, Pressurizing medium.

Spare parts list

Item	Description	Art. no.	Item	Description	Art. no.	Item	Description	Art. no.
Pos 1	Hydraulic connector	49828	Pos 18	Barrel seal	49836	Spare parts set M-08 containing		59860
Pos 2	High pressure hose	49861	Pos 19	Cylinder	49843	Pos 1	Hydraulic connector	
Pos 3	Filler cap	49845	Pos 20	Piston rod complete incl. also pos. 32	49801	Pos 10	Steel ball 4,8 mm	
Pos 4	Gauge, 0-600 bar, glycerin	49832	Pos 21	Lever	49870	Pos 18	Barrel seal	
Pos 5	Washer	49830	Pos 22	Torsion spring	49871	Pos 25	X-ring	
Pos 6	Rotary Coupling	49829	Pos 23	Spiral pin	49872	Pos 7	Washer	
Pos 7	Washer	49827	Pos 24	Piston	49823	Pressure release valve set containing		49875
Pos 8	Spring	49863	Pos 25	X-ring	49824	Pos 26	Pressure release screw	
Pos 9	Valve pin	49864	Pos 26	Pressure release screw	498492	Pos 27	Steel ball 4,0 mm	
Pos 10	Steel ball 4,8 mm	49848	Pos 27	Steel ball 4,0 mm	49859	Pos 28	Valve seat	
Pos 11	Valve seat	49857	Pos 28	Valve seat	49874	Pos 29	O-ring	
Pos 12	O-ring	49858	Pos 29	O-ring	49856			
Pos 13	Bolt, 2 pcs	49865	Pos 30	Air release valve	498471			
Pos 14	Link plate, 2 pcs	49866	Pos 31	Seal	49846			
Pos 15	Snap ring, 2 pcs	49867	Pos 32	Handle complete with 2 screws	59861			
Pos 16	Copper seal	49862	Pos 33	Gun head complete	49860			
Pos 17	Non-return valve	49868	Pos 34	Piston	498401			



Quicker tool changes

By pre-assembling HYDRO-GRIP and the tool in the tool-room you minimize the adjustment time at the processing machine.

Advice for tool assembly

It is vital that HYDRO-GRIP is never pressurized without being assembled with a tool on a machine spindle.

NB! Both the tool and the machine spindle must cover the length of the sleeve. To achieve optimal stability you must ensure an even contact surface throughout the entire sleeve. More detailed instructions for HYDRO-GRIP are included in the assembly instructions which are included with every product.

Temperature

Thanks to the small volume of pressurizing medium used, HYDRO-GRIP is only minimally sensitive to temperature changes. Only if the temperature varies by as much as +/- 30°C do you need to adjust the pressure of the sleeve.

Repeatability

The incredible repeatability that HYDRO-GRIP gives you, within 0.002 mm, allows you to achieve the same precision even on your production machine as you achieve on your grinding machine. The same repeatability is attained when using a G2, G3 or GE type hydraulic chuck/arbor.

Power transfer

The tables indicate the guidelines for the power in Kw (hp) that can be transferred.

When using type A and AI sleeves the tool should always be bolted to the flange. The bolts have the same function as the ring nut on the B and BI type sleeves.

Referring to the table below we get the multiplication factor of 2.3. Multiplying the tool width 22 by 2.3 gives us the transferable power of approximately 50 kW.

Example	
Tool width	22 (7/8")
Tool internal diameter	60 H7
ETP HYDRO-GRIP	B-50/60-75
RPM	4500 rpm

ETP HYDRO-GRIP type C, CI, BI and B

Maximum transferable power (kW) per mm of contact surface length between HYDRO-GRIP and tool

Tool hole diameter tolerance H7	kW per mm	
	4500 rpm	6000 rpm
50	0.9	1.2
60	2.3	3.2
65	3.3	4.9

ETP HYDRO-GRIP type A and type AI

Maximum transferable power (kW)

Spindle mm	Speed (rpm)	
	4500	6000
1 1/4"	35	50
40 and 1 1/2"	58	75
1 13/16"	85	115
50 and 2 1/8"	122	165

Use of screws in the ring nut

(Type B, BI and BL). The knurled ring nut only needs to be lightly tightened so the tools are in contact with each other. Tightening the three screws in the ring nut ensures that the tools are safely and accurately fixed into position. This allows you to maintain the accuracy achieved on the grinding machine when you move the sleeve and tool assembly to the spindle on your production machine.

Tolerances

ETP HYDRO-GRIP is intended for machine spindle tolerance **g6** and tool tolerance **H7**. (See tables to right)

Permanent assembly

A tool with a hole tolerance of **H7** gives a light press fit on the sleeves meant for permanent assembly, type A and AI. When pressurized the sleeve expands against the spindle, thus eliminating any play between the sleeve and spindle.

Interchangeable assembly

A tool with a hole tolerance of **H7** gives a an easy slip fit on sleeves meant for interchangeable tool assembly, type CIR, CI, C, BI and B. When pressurized the sleeve expands against the spindle, thus eliminating any play between the tool and spindle.

Pressurizing medium

HYDRO-GRIP works at a relatively high pressure of (approx. 450 bar) and is pressurized with a small amount of grease. It is therefore very important that the correct type of pressurizing grease is used. **We strongly recommend Blasotop 301**. Tests have shown that use of other types of non-recommended soap based grease can cause deformation of the sleeve (similar to a permanent plastic deformation) when the pressure is reduced.

Spindle, g6	
Ø 30	-0.007 to -0.020 mm
Ø 1 1/4"	
Ø 1 1/2"	
Ø 40	
Ø 45	-0.009 to -0.025 mm
Ø 50	
Ø 1 3/4"	
Ø 1 13/16"	
Ø 2 1/8"	-0.010 to -0.029 mm
Ø 2 3/16"	

Tool fastening hole, H7	
Ø 20	
Ø 25	
Ø 30	0 to +0.021 mm
Ø 3/4"	
Ø 1"	
Ø 1 1/4"	
Ø 38	0 to +0.025 mm
Ø 40	
Ø 50	
Ø 60	
Ø 65	0 to +0.030 mm
Ø 80	
Ø 100	0 to +0.035 mm

Router bit shank g6 (h7)	
Ø 12	
Ø 16	
Ø 1/2"	0 to -0.018 mm
Ø 5/8"	
Ø 20	
Ø 25	
Ø 3/4"	0 to -0.021 mm
Ø 1"	

The Ø45 and Ø50 sleeves



The Ø45 sleeve has two carrier pegs, 8,5 x 5 mm.



The Ø50 has two, threaded M5-holes for carrier pegs, on a 70 mm pitch diameter.



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