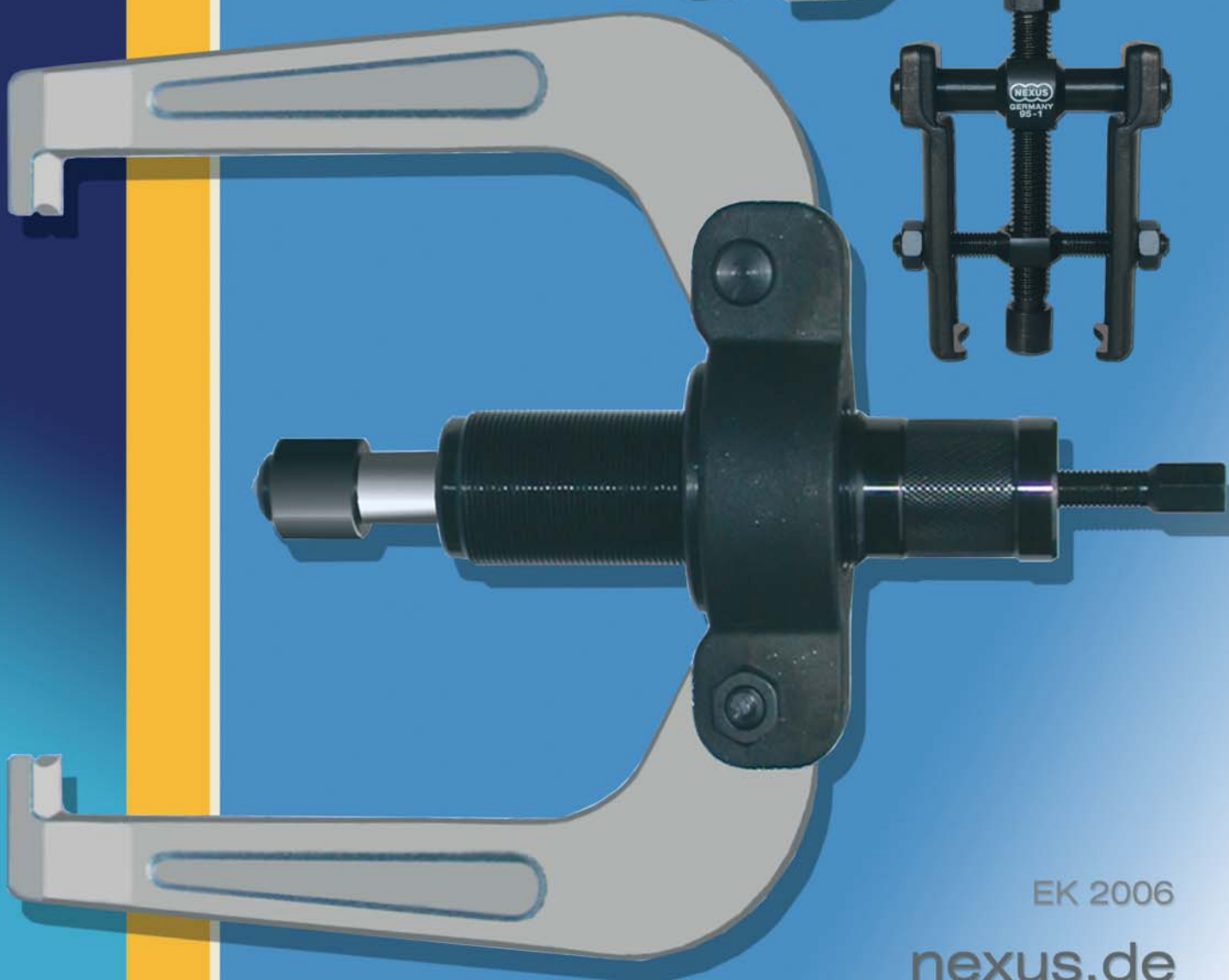




EK 2006

nexus.de

Mechanical Pullers



Special:
Pullers with
Quick-Action-
Nut "EXTRA"



Krallex® - Legs



Decision criterias for the identification of a suitable puller:

- gripping possibility determine, whether outside or inside
- application-causes whether two or three-armed
- dimensions and relative sizes compare with table data and select the right suitable puller

Always use a larger and stronger puller in the case of doubt.

Keep spindle clean and oiled,

Set pullers reliably,

Tighten firmly all bolt connections at the puller,

if necessary use a fastening clamp against slipping of hooks.

Keep danger zone shielded to exclude all risks.

For your own security and for durability of the puller do not exceed:

- table statements
- max. torque (Nm)
- max. capacity (t / KN)

The capacity data and torque are determined with new pullers and are in accordance of valid safety regulations and are average values.

Practice-conditioned wear and unfavourable circumstances may reduce these values.

Please consider legal regulations for technical products.

Grease-Hydraulic-Spindles



Impact screwdriver prohibited.

Accident risk by uncontrolled operation of pressure screws.

For safety reasons turn always the pressure screws with a torque wrench pivot in accordance to table data.

Tighten firmly all bolt connections at the puller.

Oil-Hydraulic



- control your work always with manometer
- 10 t-pullers use with 10 t-hydraulics only
- do never exceed the max. operating pressure of 700 bar for the complete hydraulic system (1 bar = 1 Kg/cm² = 10 N/cm²)

Secure carefully the danger zone and keep it shielded.

Tighten firmly all bolt connections at the puller.

Details of dimensions and weights correspond with the present technical standard and are average values. Due to advancement we must subject to change.

Qualität ISO 9001

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100-0	20	142-SN3		F2-300M	54					H 150 000	72
		143	33	F3-200 - F3-SP	55					H 160 000	72
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multiple slots

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great spread

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3-arm

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2-arm

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with **Quick-Action-Nut "EXTRA"**



3-arm

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also for Battery Terminals,
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with Side Clamp

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2-arm

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'Fork' Type

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General view

NEW



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with Quick-Action-Nut "EXTRA"

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Pullers
self centering

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Passenger Car-V-Belt-Pulley Puller-Set with Groovehooks

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Ball Joint Extractor, adjustable
for vans and medium trucks

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Ball Joint Extractor, adjustable
for heavy trucks, busses,
low floor busses

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Ball Joint Extractors, adjustable
with Grease-Hydraulic or Oil-Hydraulic

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Release + Push Out Set
Four-guide-rod-front-axle
for cars: Audi, VW, Quattros

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Scissor-Action Arms

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NEW



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General view

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Grease-Hydraulic-Spindle
8 t / 80 KN
12 t / 120 KN
UN 1 1/2" x 16
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Grease-Hydraulic-Spindle
12 t / 120 KN
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Grease-Hydraulic-Spindle
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Universal-Pullers,
Beam-arms are
radially adjustable
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Ball Joint Extractor, adjustable for
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Ball Joint Extractor, adjustable for
heavy trucks, busses, low floor busses
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Oil-Hydraulic - Program

General view



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Hydraulic Hollow
Piston Cylinder



Hydraulic Cylinder
with Spindle



Flat-Cylinders



Ball Joint Extractor, adjustable for
vans, medium / heavy trucks,
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Universal-Pullers with Oil-Hydraulic,
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Beam-arms are radially
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Pullers, 3- / 4-arm
Beam-arms are
radially adjustable
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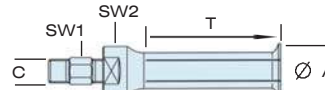




No. 51 - E
Internal Extractors, 3-arm
with great spread
sturdy design



with No. 51 - E 3, 51 - E 7, 51 - E 8
spread 25 - 115 mm



No.	Ø A mm min. - max.	T mm	suitable for		adapter- thread C	SW 1 mm	SW 2 mm	max. torque with Counter Stay Device		kg
			Counter Stay Device	Slide Hammer				Nm	No.	
51 - 0 A	5 - 7	30	Counter Stay Device No. 52 - 1 + - 1A	Slide Hammer No. 52 - 01	M10	10	13	3	52 - 1	0,05
51 - 0 A 1	6 - 8	30			M10	10	13	3	52 - 1	0,05
51 - 0 B	7 - 9	30			M10	10	13	7	52 - 1	0,05
51 - 0 B 1	8 - 10	30			M10	10	13	7	52 - 1	0,05
51 - 0 C	9 - 12	30			M10	10	13	12	52 - 1	0,06
51 - 1 A	10 - 13	30			M10	10	13	15	52 - 1	0,05
51 - 1 A 1	12 - 15	30			M10	10	13	15	52 - 1	0,05
51 - 1 B	13 - 17	50			M10	10	13	24	52 - 1	0,07
51 - 2 A	14 - 19	60			M10	10	13	28	52 - 1	0,09
51 - 2 A 1	15 - 20	60			M10	10	13	28	52 - 1	0,09
51 - 2 B	16 - 21	60	Counter Stay Device No. 52 - 1,5	Slide Hammer No. 52 - 02	M10	10	13	32	52 - 1	0,09
51 - 2 C	18 - 23	60			M10	10	17	40	52 - 1	0,11
51 - 3 A	20 - 25	60			M10	10	17	40	52 - 1	0,11
51 - 3 B	22 - 27	60			M10	10	17	40	52 - 1	0,11
51 - 4 A	25 - 30	60			M10	10	17	40	52 - 1	0,12
51 - E 3	25 - 40	45			M10	13	19	45	52 - 1	0,26
51 - 4 B	28 - 35	60			M10	10	17	45	52 - 1	0,28
51 - 5 A	30 - 37	70			M10	17	22	45	52 - 1	0,28
51 - 5 B	35 - 42	70			M10	17	22	45	52 - 1	0,28
51 - 6 A	38 - 45	70			M10	17	22	45	52 - 1	0,29
51 - 6 A 1	40 - 47	70	52 - 2	Slide Hammer No. 52 - 02A	M10	17	22	45	52 - 1	0,30
51 - 6 B	43 - 50	70			M10	17	22	45	52 - 1	0,31
51 - E 7	40 - 75	100			G 3/8"	17	27	45	52 - 2	0,76
51 - 7 A	45 - 55	100			G 3/8"	19	27	45	52 - 2	0,65
51 - 7 B	50 - 60	100			G 3/8"	19	27	45	52 - 2	0,68
51 - E 8	70-115	130			G 3/8"	19	27	45	52 - 2	1,40

51 - E

Internal Extractors, 3-arm
with great spread
sturdy design



with No.
51-E3,-E7,-E8
spread
25 - 115 mm



No.	$\varnothing$ A mm min. - max.	T mm	suitable for		adapter- thread C	SW 1 mm	SW 2 mm	max. torque with Counter Stay Device Nm	No.	kg
			Counter Stay Device	Slide Hammer						
51 - E 3	25 - 40	45	52-1,-1A,-1,5	52-01,-01A,-02,-02A	M10	13	19	45	52 - 1	0,26
51 - E 7	40 - 75	100	52-1,5, -2,-3,-4	52-02A, -03	G 3/8"	17	27	45	52 - 2	0,76
51 - E 8	70-115	130	52-3, -4	52-02A, -03	G 3/8"	19	27	45	52 - 2	1,40

52

Counter Stay Devices for Internal Extractors



No. 52-1
No. 52-1,5
No. 52-2
No. 52-3



No. 52-1A



No. 52-4



No.	suitable for Internal Extractors No.	adapter- thread C	$\longleftrightarrow$ mm min. - max.	spindles mm thread x-length	SW	max. torque	kg
52 - 1	51- 0A to - 6B + 51- E3	M10	35 - 75	M16 x 1,5 x 136	12	30 Nm	0,7
52 - 1 A	51- 0A to - 6B + 51- E3	M10	40 - 150	M16 x 1,5 x 136	12	40 Nm	1,0
52 - 1,5	51- 4B to - 7B + 51- E3, - E7	M10 + G 3/8"	60 - 130	M24 x 1,5 x 160	19	60 Nm	1,6
52 - 2	51- 7A to - 7B + 51- E7	G 3/8"	60 - 130	M24 x 1,5 x 160	19	60 Nm	1,5
52 - 3	51- 7A to - 7B + 51- E7, - E8	G 3/8"	60 - 210	M24 x 1,5 x 160	19	70 Nm	3,7
52 - 4	51- 7A to - 7B + 51- E7, - E8	G 3/8"	55 - 205	G1/2" x 14 x 210	22	100 Nm	3,8

52 - 0

Slide Hammers for Internal Extractors



No. 52-01A



No. 52-02

No.	suitable for Internal Extractors No.	adapter- thread C	Slide Hammer mm	weight of Hammer kg	measurements of rod mm	kg
52 - 01	51- 0A to - 2B + 51- E3	M10	$\varnothing$ 30 x 40	0,2 kg	$\varnothing$ 10 x 170	0,4
52 - 01 A	51- 0A to - 6B + 51- E3	M10	$\varnothing$ 50 x 80	0,7 kg	$\varnothing$ 10 x 170	0,9
52 - 02	51- 2C to - 6B + 51- E3	M10	$\varnothing$ 45 x 100	0,7 kg	$\varnothing$ 16 x 250	1,3
52 - 02 A	51- 2C to - 7B + 51- E3,-E7,-E8	M10 + G 3/8"	$\varnothing$ 45 x 100	0,7 kg	$\varnothing$ 16 x 250	1,4
52 - 03	51- 7A to - 7B + 51- E7, - E8	G 3/8"	$\varnothing$ 60 x 100	1,7 kg	$\varnothing$ 16 x 250	2,6



Internal Extractor Sets: page 9 and 49

51 - N

No.51-N SK

Needle Bearing Extractor Sets

in box

also for ball bearings and bushings

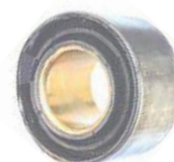


No. 51-N SK

for bores: dia. 12, 15, 18 mm Ø

for cars:

Audi, BMW, Citroen, Fiat, Ford, DB, Opel, Peugeot, Porsche, Renault, Rover, Saab, Volvo, VW, Nissan, Datsun, Toyota ...

No.51-NS
Slide Hammer with HolderNo. 51-N
Pair of legs with distance wedgefor example:
Bushing**Needle Bearing Extractor Sets**

No.	Ø mm	contents	kg
51 - N SK	for bores: dia. 12, 15, 18 mm	pair of legs, 3 distance wedges, 1 slide hammer with holder	1,80
51 - N SG	for bores: dia. 11 - 20 mm	pair of legs, 10 distance wedges, 1 slide hammer with holder	2,00

Pair of legs with distance wedge (No. = pair of legs with 1 distance wedge)

51 - N 11	for bores: dia. 11 mm		kg
51 - N 12	12	for BMW, Opel	0,11
51 - N 13	13		0,12
51 - N 14	14		0,13
51 - N 15	15	for Audi, DB, Ford, Opel, Porsche, VW	0,13
51 - N 16	16		0,13
51 - N 17	17		0,14
51 - N 18	18	for Audi	0,16
51 - N 19	19		0,16
51 - N 20	20		0,16

Holder, loose

51 - N 0	adapter-thread M10	for all legs	kg
			0,22

Slide Hammer with Holder

51 - N S	adapter-thread M10	for all legs	kg
			1,30

59**Taper Roller Bearing Pullers**

for inner rings of taper roller bearings

Detailed table of use with bearing-numbers on request



Instructions for use:

Place the gripping edge of the two segments carefully behind the rolls of inner ring of taper roller bearing.

Clamp both segments with collar firmly.

Use a suitable two or three leg puller for pulling off the integrated whole.

**55
400**

Internal Extractor- / Puller - Sets



No. 55-A



No. 55-S



No. 55-K



No. 400-N



No. 55-B



No. 400-G

Internal Extractor- / Puller- Sets in metal box

No.	$\varnothing$ mm		contents	kg
	min.	max.		
55 - A	10	45	7 pieces: 51-1A, -2A, -3A, -4A, -5A, -6A, 52-1	3,20
55 - B	10	75	9 pieces: 51-1A, -2A, -3A, -4A, -5A, -6A, -E7, 52-1, -2	6,80
55 - C	10	115	10 pieces: 51-1A, -2A, -3A, -4A, -5A, -6A, -E7, -E8, 52-1, -4	12,00
55 - K	10	37	7 pieces: 51-1A, -2A, -3A, -4A, -5A, 52-01, -1	3,30
55 - S	15	75	5 pieces: 51-2A1, -3A, -E3, -E7, 52-1,5	4,50
400 - G	10	115	14 pieces: 51-1A, -2A, -3A, -4A, -5A, -6A, -E7, -E8, 52-1, -4, 100-1, -2, 141-1, 200	20,00
400 - K	10	45	10 pieces: 51-1A, -2A, -3A, -4A, -5A, -6A, 52-1, 100-1, 141-1, 200	7,30
400 - N	10	75	13 pieces: 51-1A, -2A, -3A, -4A, -5A, -6A, -E7, 52-1, -2, 100-1, -2, 141-1, 200	15,40

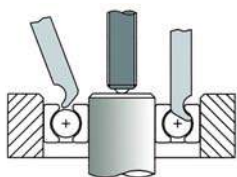
Ball Bearing Extractors

for easy removal of ball bearings seated on a shaft or in a housing

Instructions for use:

Insert the pulling legs between the balls in the outer bearing race.

Apply tension to the legs by turning spindle.



Examples of use



Extractor = Beam with spindle and grip

No.			kg
60 - 1	Extractor without legs	corresponding legs see table below	0,3
60 - 2	Extractor without legs		0,4
60 - 3	Extractor without legs		0,5
60 - 4	Extractor without legs		0,9
60 - 5	Extractor without legs		1,2

Legs (No. = 4 pieces)

No.	for extractor	mm	kg
61 - 1	60 - 1	120	0,1
61 - 2	60 - 1	120	0,1
61 - 3	60 - 2	130	0,2
61 - 4	60 - 2, -3	130	0,2
61 - 5	60 - 2, -3, -4, -5	150	0,3
61 - 6	60 - 3, -5	150	0,4
61 - 7	60 - 4	190	0,6
61 - 8	60 - 5	190	0,8

Table of Ball Bearing Extractors No. 60 / 61

extractor No.	leg No.	for ISO Ball Bearings No.			
60 - 1	61 - 1	6000	6200		
		6001			
		6002			
		6003			
60 - 2	61 - 2	6004	6201		
		6005	6202		
	61 - 3	6006	6203	6300	
		6007	6204	6301	
60 - 3	61 - 4	6008	6205	6302	
				6303	
	61 - 5			6304	
60 - 4	61 - 6		6206		
			6207	6305	
60 - 5	61 - 8	6009	6208	6306	
		6010			
		6011			
		6012			
60 - 6	61 - 7		6209	6307	6403
			6210	6308*	6404*
			6211*	6309*	6405*
			6212*	6310*	6406*
					6410*

Ball Bearings with (*) are removed by means of bracing parts to be fixed on leg-tip (No. 61-8)

Non-listed bearings on request

Ball Bearing Extractor Set in metal box

No.	contents	for ISO Ball Bearing No.				kg
60 - G	13 pieces: 60-1 to -5, 61-1 to -8	6000-6012	6200-6212	6300-6310	6403-6410	8,00

Ball Bearing Extractor Sets



62 - 1

Ball Bearing Extractor Sets, 3-arm
with radially adjustable arms, in box

for ISO - Ball Bearings No.

6004 - 6015

6200 - 6211

6300 - 6307

6403 - 6404



Capable of removing bearings from blind housings without dismantling machinery of removing running shaft.
Also capable of removing bearings from running shaft, when not enough space for outside gripping.

e.g.: SKF, FAG, Timken, NTN
and comparable bearings from other bearing manufacturers

Mechanical Pullers

No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	Leg No. (= 3 pieces) Leg-tip: dia. mm $\varnothing$						spindle mm thread x-length	SW	max. torque Nm	max. capacity To KN	kg
62 - 1 Contents 31 pieces: 1 beam 3-arm 6 leg sets (3 pieces each) 3 leg extensions 6 screw pins 1 spindle 2 spindle extensions	18 - 130	90 + 95	62-H1 $\varnothing$ 5,5	62-H2 $\varnothing$ 6	62-H3 $\varnothing$ 8	62-H4 $\varnothing$ 9	62-H5 $\varnothing$ 11	62-H6 $\varnothing$ 12,5	M14 x 1,5 x 130	17	60	5	50 2,8
62 - 1K Contents 22 pieces: 1 beam 3-arm 3 leg sets (3 pieces each) 3 leg extensions 6 screw pins 1 spindle 2 spindle extensions	18 - 130	90 + 95	62-H1 $\varnothing$ 5,5	62-H2 $\varnothing$ 6	62-H3 $\varnothing$ 8				M14 x 1,5 x 130	17	60	5	50 2,0

Instructions for use:

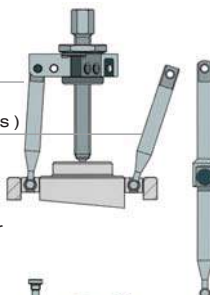
Between the balls drill a hole into the cage.
Put the legs into this hole and turn them by 90°.

- Firstly fit right size of one leg with the rigid arm of beam
 - Fit this leg into the hole
 - Fit spindle in middle of running shaft with light tension
- Following fit the remaining two legs into the hole and into the beam arms.
- Fix the radially adjustable arms of the beam in right position
 - with round nut on top of the beam fix the arms at the beam to form an integrated whole



rigid connection:
one arm with beam

two radially adjustable arms
(screw pins for fasten of legs)

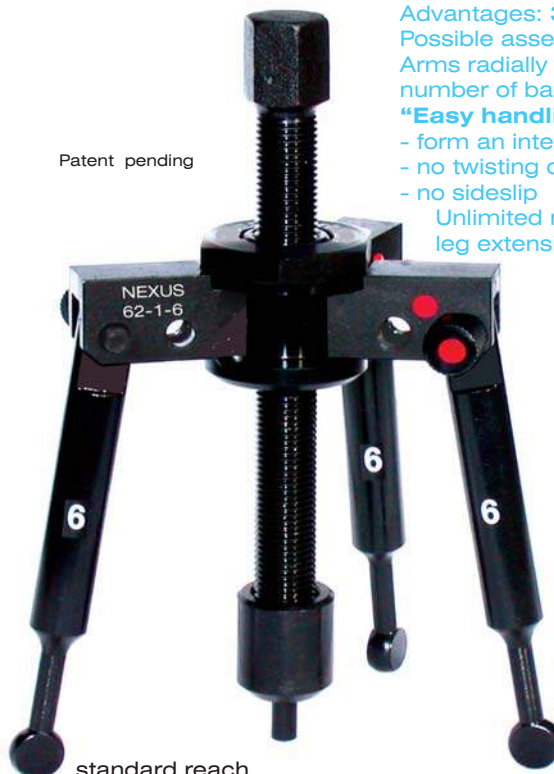


red points are references for assembling

Start with rigid arm and fit spindle in middle of running shaft with light tension.
Keep your hands free for assembling of remaining legs.



Patent pending



standard reach
90 mm

Advantages: 3-arm working!

Possible assembling upto 4-arm working.
Arms radially adjustable depending to number of balls.

"Easy handling by one worker"

- form an integrated whole for safe pulling
- no twisting of legs
- no sideslip
- Unlimited reach by optional additional leg extensions.

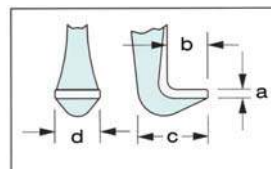


leg extension:
plus 95 mm
for unlimited reach

90



Pullers, 2-arm
Inside and outside use



No.	Ø mm min. - max.	mm ↓	inside Ø mm min. - max.	max. torque Nm	max. capacity t KN	spindles mm thread x -length	SW	legs mm a b c d	kg
90 - 1	15 - 80	100	70 - 130	60	3,5 35	M14 x 1,5 x 130	17	3 12 22 22	0,9
90 - 2	15 - 120	100	80 - 170	60	3,5 35	M14 x 1,5 x 130	17	3 12 22 22	1,0
90 - 2,5	20 - 160	150	110 - 210	120	6 60	G 1/2" x 14 x 210	22	4 16 30 29	2,7
90 - 3	20 - 200	150	120 - 250	120	6 60	G 1/2" x 14 x 210	22	4 16 30 29	3,0
90 - 4	40 - 250	200	170 - 300	150	8 80	G 3/4" x 14 x 280	27	6,5 23 43 38	6,5
90 - 5	40 - 350	200	190 - 400	150	8 80	G 3/4" x 14 x 280	27	6,5 23 43 38	7,6

Legs (No. = 1 pair)		for No.		kg
90 - 110	100	90-1, 90-2	3 12 22 22	0,4
90 - 315	150	90-2,5 + 90-3	4 16 30 29	1,1
90 - 420	200	90-4, 90-5	6,5 23 43 38	2,7

95



Puller, 2-arm
with **Krallex-Legs**
with **integrated Leg-Clamp**

Patent pending

Advantage of Krallex-Legs:

for extreme narrow spaces

Advantage of Leg-Clamp:

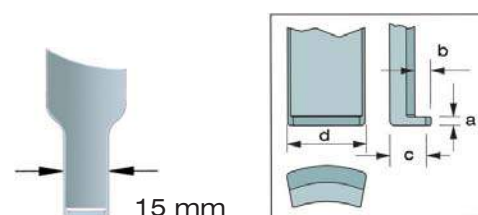
to prevent slipping out of position

No.	Ø mm min. - max.	mm ↓	max. torque Nm	max. capacity t KN	spindle mm thread x -length	SW	leg mm a b c d	kg
95 - 1	0 - 60	50	40	2,5 25	M12 x 90	13	2,5 5 8 26,5	0,4

Leg (No. = 1 pair)		for No.		kg
951 - 50	50	95 - 1	2,5 5 8 26,5	0,2



Puller, 2-arm
with **Special-Krallex-Legs**
with **integrated Leg-Clamp**
for extreme narrow spaces



No.	Ø mm min. - max.	mm ↓	Nm	t KN	spindle mm thread x -length	SW	leg mm a b c d	kg
95 - 1 SP	0 - 60	50	25	1,5 15	M12 x 90	13	2,5 3 6 15	0,4

Special-Leg (No. = 1 pair)		for No.		kg
951 SP - 50	50	95 - 1SP	2,5 3 6 15	0,2

Universal-Pullers

	$\varnothing$ - 90 mm 100 120 200 250 No. 100-1 page 14	$\varnothing$ - 130 mm 100 120 200 250 No. 100-1,5 page 14	$\varnothing$ - 160 mm 150 220 300 No. 100-2 page 14	$\varnothing$ - 200 mm 150 220 300 No. 100-2,5 page 14	$\varnothing$ - 250 mm 200 300 400 500 300/500 No. 100-3 page 14	$\varnothing$ - 350 mm 200 300 400 500 300/500 No. 100-3,5 page 14	$\varnothing$ - 520 mm 200 300 400 500 300/500 No. 100-4 page 14	$\varnothing$ - 640 mm 225 325 425 525 400/700 No. 100-5 page 14
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	$\varnothing$ - 90 mm 100 120 200 250 No. 113-1 page 16	$\varnothing$ - 130 mm 100 120 200 250 No. 113-1,5 page 16	$\varnothing$ - 160 mm 150 220 300 No. 113-2 page 16	$\varnothing$ - 200 mm 150 220 300 No. 113-2,5 page 16
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Universal-Pullers with Quick-Action-Nut "EXTRA"

	$\varnothing$ - 90 mm 100 120 200 250 No. E100-1 page 15	$\varnothing$ - 130 mm 100 120 200 250 No. E100-1,5 page 15	$\varnothing$ - 160 mm 150 220 300 No. E100-2 page 15	$\varnothing$ - 200 mm 150 220 300 No. E100-2,5 page 15
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	$\varnothing$ - 90 mm 100 120 200 250 No. E113-1 page 17	$\varnothing$ - 130 mm 100 120 200 250 No. E113-1,5 page 17	$\varnothing$ - 160 mm 150 220 300 No. E113-2 page 17	$\varnothing$ - 200 mm 150 220 300 No. E113-2,5 page 17
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Krallex-Pullers

	$\varnothing$ -90 mm 100 120 200 250 No. 100-10 page 18	$\varnothing$ -130 mm 100 120 200 250 No. 100-14 page 18	$\varnothing$ -160 mm 150 220 300 No. 100-20 page 18	$\varnothing$ -200 mm 150 220 300 No. 100-24 page 18
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	$\varnothing$ -90 mm 100 120 200 250 No. 113-10 page 22	$\varnothing$ -130 mm 100 120 200 250 No. 113-14 page 22	$\varnothing$ -160 mm 150 220 300 No. 113-20 page 22	$\varnothing$ -200 mm 150 220 300 No. 113-24 page 22
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Krallex-Pullers with Quick-Action-Nut "EXTRA"

	$\varnothing$ -90 mm 100 120 200 250 No. E100-10 page 19	$\varnothing$ -130 mm 100 120 200 250 No. E100-14 page 19	$\varnothing$ -160 mm 150 220 300 No. E100-20 page 19	$\varnothing$ -200 mm 150 220 300 No. E100-24 page 19
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	$\varnothing$ -90 mm 100 120 200 250 No. E113-10 page 23	$\varnothing$ -130 mm 100 120 200 250 No. E113-14 page 23	$\varnothing$ -160 mm 150 220 300 No. E113-20 page 23	$\varnothing$ -200 mm 150 220 300 No. E113-24 page 23
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Puller-Set with Special-Legs



page 50

	$\varnothing$ -90 / -130 mm 100 120 200 250 No. 100, E100 No. 113, E113 page 20 - 23
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	$\varnothing$ -90 / -130 mm 100 120 200 250 No.100-S,E100-S No.113-S,E113-S page 20 - 23
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Pullers for heavy work

	$\varnothing$ -650 mm 200 300 400 500 300/500 No. 100-M page 25
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	$\varnothing$ -700 mm 200 300 400 500 375/675 No. 160-M page 25
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	$\varnothing$ -700 mm 175 275 375 260/560 No. 160-H page 57
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	$\varnothing$ -640 mm 225 325 425 525 No. HY100 page 66
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Universal-Pullers, 2-arm

Inside and outside use
parallel gripping
with legs for standard reach

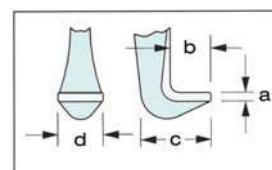
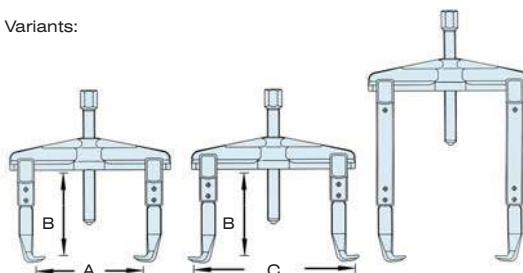


See table for extended legs,
if more reach is necessary

more power with
Hydraulics



Variants:



No.	$\varnothing$ A mm min. - max.	B mm	inside C mm min. - max.	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a b c d	kg
100 - 1	20 - 90	100	70 - 130	80	4,5	45	M14 x 1,5 x 130	17	3 13 25 20	1,0
100 - 1,5	25 - 130	100	80 - 180	80	4,5	45	M14 x 1,5 x 130	17	3 13 25 20	1,2
100 - 2	50 - 160	150	105 - 220	150	6,5	65	G 1/2" x 14 x 210	22	4 16 35 25	3,0
100 - 2,5	60 - 200	150	120 - 270	150	6,5	65	G 1/2" x 14 x 210	22	4 16 35 25	3,3
100 - 3	80 - 250	200	160 - 330	320	11	110	G 3/4" x 14 x 280	27	5 25 54 35	7,4
100 - 3,5	80 - 350	200	160 - 420	320	11	110	G 3/4" x 14 x 280	27	5 25 54 35	8,5
100 - 4	110 - 520	200	195 - 600	360	13	130	G 3/4" x 14 x 280	27	5 25 54 35	13,0
100 - 5	170 - 640	225	260 - 715	400	18	180	G 1" x 11 x 310	36	10 33 55 50	23,7



Legs (No. = 1 pair)	mm	for No.	kg
1 - 90	100	100-1, 100-1.5	0,5
1 - 120	120	100-1, 100-1.5	0,6
1 - 200	200	100-1, 100-1.5	1,0
1 - 250	250	100-1, 100-1.5	1,2
2 - 150	150	100-2, 100-2.5	1,3
2 - 220	220	100-2, 100-2.5	1,8
2 - 300	300	100-2, 100-2.5	2,3
3 - 200	200	100-3, 100-3.5, 100-4	3,3
3 - 300	300	100-3, 100-3.5, 100-4	5,1
3 - 400	400	100-3, 100-3.5, 100-4	6,4
3 - 500	500	100-3, 100-3.5, 100-4	7,8
3 - SP	300 to 500 adjustable	100-3, 100-3.5, 100-4	8,4
5 - 225	225	100-5	4,3
5 - 300	325	100-5	6,0
5 - 400	425	100-5	7,4
5 - 500	525	100-5	8,8
5 - SP	400 to 700 adjustable	100-5	22,0

E100



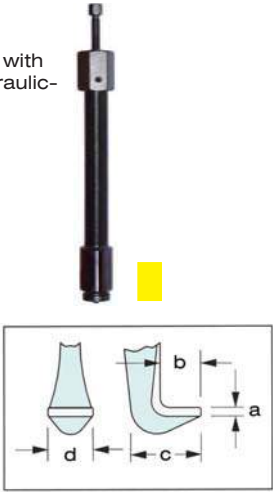
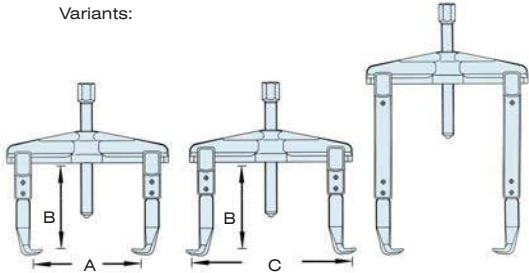
Universal-Pullers, 2-arm
with **Quick-Action-Nut "EXTRA"**
Inside and outside use
parallel gripping
with legs for standard reach



See table for extended legs,
if more reach is necessary

more power with
Grease-Hydraulic-
Spindle

Variants:



No.			inside C mm min. - max.	max. torque Nm	max. capacity		spindles mm thread x -length	SW	legs mm				kg
	A mm min. - max.	B mm			t	KN			a	b	c	d	
E 100 - 1	20 - 90	100	70 - 130	80	4,5	45	M14 x 1,5 x 130	17	3	13	25	20	1,0
E 100 - 1,5	25 - 130	100	80 - 180	80	4,5	45	M14 x 1,5 x 130	17	3	13	25	20	1,2
E 100 - 2	50 - 160	150	105 - 220	150	6,5	65	G 1/2" x 14 x 210	22	4	16	35	25	3,0
E 100 - 2,5	60 - 200	150	120 - 270	150	6,5	65	G 1/2" x 14 x 210	22	4	16	35	25	3,3



Legs (No. = 1 pair)	mm	for No.					kg
E 1 - 90	100	E100-1, E100-1.5	3	13	25	20	0,5
E 1 - 120	120	E100-1, E100-1.5	3	13	25	20	0,6
E 1 - 200	200	E100-1, E100-1.5	3	13	25	20	1,0
E 1 - 250	250	E100-1, E100-1.5	3	13	25	20	1,2
E 2 - 150	150	E100-2, E100-2.5	4	16	35	25	1,3
E 2 - 220	220	E100-2, E100-2.5	4	16	35	25	1,8
E 2 - 300	300	E100-2, E100-2.5	4	16	35	25	2,3

113

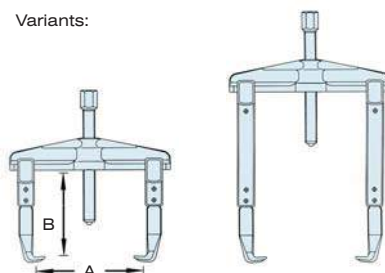


Universal-Pullers, 3-arm
Inside and outside use
parallel gripping
with legs for standard reach

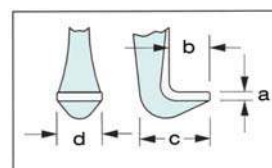


See table for extended legs,
if more reach is necessary

Variants:



more power with
Grease-Hydraulic-
Spindle



No.	$\varnothing$ A mm min. - max.	$\downarrow$ B mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a b c d	kg
113 - 1	20 - 90	100	90	5,5	55	M14 x 1,5 x 130	17	3 13 25 20	1,3
113 - 1,5	25 - 130	100	90	5,5	55	M14 x 1,5 x 130	17	3 13 25 20	1,5
113 - 2	50 - 160	150	180	7	70	G 1/2" x 14 x 210	22	4 16 35 25	3,5
113 - 2,5	60 - 200	150	180	7	70	G 1/2" x 14 x 210	22	4 16 35 25	4,0

Legs (No. = 3 pieces)	$\downarrow$ mm	for No.	kg
1 - 100 M	100	113-1, 113-1.5	0,7
1 - 120 M	120	113-1, 113-1.5	0,9
1 - 200 M	200	113-1, 113-1.5	1,5
1 - 250 M	250	113-1, 113-1.5	1,8
2 - 150 M	150	113-2, 113-2,5	1,9
2 - 220 M	220	113-2, 113-2,5	2,6
2 - 300 M	300	113-2, 113-2,5	3,3



100 - ST
S100 - ST

Sales-Display and Workshop-Stand
Universal-Pullers, 2-arm

No.	$\varnothing$ A mm min. - max.	$\downarrow$ B mm	contents	kg
100 - ST	20 - 250	200	5 pieces: 100-1, 100-1.5, 100-2, 100-2.5, 100-3	17,8
S100 - ST	10 - 200	150	5 pieces: 141-2, 100-1, 100-1.5, 100-2, 100-2,5	10,5
S100 - ST 1	20 - 200	150	5 pieces: 100-1, 2x 100-1.5, 100-2, 100-2,5	11,5
S100 - ST 2	10 - 200	150	5 pieces: 141-3, 100-1, 100-1.5, 100-2, 100-2,5	10,7
S100 - ST 3	20 - 200	150	4 pieces: 100-1, 100-1.5, 100-2, 100-2,5	10,3

E113



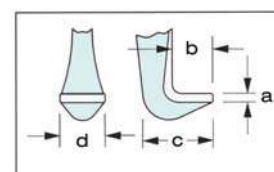
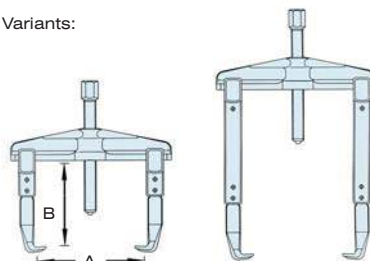
Universal-Pullers, 3-arm
with **Quick-Action-Nut "EXTRA"**
Inside and outside use
parallel gripping
with legs for standard reach

See table for extended legs,
if more reach is necessary



more power with
Grease-Hydraulic-
Spindle

Variants:



No.	$\varnothing$ A mm min. - max.	B mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a b c d	kg
E113 - 1	20 - 90	100	90	5,5	55	M14 x 1,5 x 130	17	3 13 25 20	1,3
E113 - 1,5	25 - 130	100	90	5,5	55	M14 x 1,5 x 130	17	3 13 25 20	1,5
E113 - 2	50 - 160	150	180	7	70	G 1/2" x 14 x 210	22	4 16 35 25	3,5
E113 - 2,5	60 - 200	150	180	7	70	G 1/2" x 14 x 210	22	4 16 35 25	4,0



Legs (No. = 3 pieces)

	mm	for No.	kg
E1 - 100 M	100	E113-1, E113-1.5	0,7
E1 - 120 M	120	E113-1, E113-1.5	1,0
E1 - 200 M	200	E113-1, E113-1.5	1,5
E1 - 250 M	250	E113-1, E113-1.5	1,8
E2 - 150 M	150	E113-2, E113-2.5	2,0
E2 - 220 M	220	E113-2, E113-2.5	2,6
E2 - 300 M	300	E113-2, E113-2.5	3,3



E 100 - ST
ES100 - ST

Sales-Display and Workshop-Stand
Universal-Pullers, 2-arm
with **Quick-Action-Nut "EXTRA"**



No.	$\varnothing$ mm min. - max.	mm	contents	kg
E 100 - ST	20 - 250	200	5 pieces: E100-1, E100-1.5, E100-2, E100-2.5, 100-3	17,8
ES100 - ST	10 - 200	150	5 pieces: 141-2, E100-1, E100-1.5, E100-2, E100-2,5	10,5
ES100 - ST 1	20 - 200	150	5 pieces: E100-1, 2x E100-1.5, E100-2, E100-2,5	11,5
ES100 - ST 2	10 - 200	150	5 pieces: E141-3, E100-1, E100-1.5, E100-2, E100-2,5	10,7
ES100 - ST 3	20 - 200	150	4 pieces: E100-1, E100-1.5, E100-2, E100-2,5	10,3

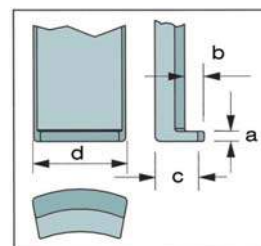
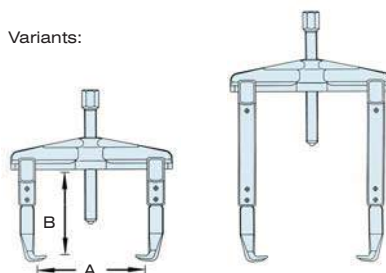
100 - 10



Krallex-Pullers, 2-arm
 Leg-tip **flat**
 Leg-body **narrow**
 parallel gripping
 with legs for standard reach

See table for extended legs,
 if more reach is necessary

Variants:



No.	$\varnothing$ A mm min. - max.	B mm	max. torque Nm	max. capacity t KN	spindles mm thread x -length	SW	legs mm a b c d	kg
100 - 10	20 - 90	100	80	4,5 45	M14 x 1,5 x 130	17	3,6 6 13 27	1,0
100 - 14	25 - 130	100	80	4,5 45	M14 x 1,5 x 130	17	3,6 6 13 27	1,2
100 - 20	50 - 160	150	150	6,5 65	G 1/2" x 14 x 210	22	5 8 17 40	3,0
100 - 24	60 - 200	150	150	6,5 65	G 1/2" x 14 x 210	22	5 8 17 40	3,3

Legs (No. = 1 pair)

for No.

kg

10 - 100	100	100-10, 100-14	3,6 6 13 27	0,5
10 - 120	120	100-10, 100-14	3,6 6 13 27	0,6
10 - 200	200	100-10, 100-14	3,6 6 13 27	1,0
10 - 250	250	100-10, 100-14	3,6 6 13 27	1,2
20 - 150	150	100-20, 100-24	5 8 17 40	1,3
20 - 220	220	100-20, 100-24	5 8 17 40	1,8
20 - 300	300	100-20, 100-24	5 8 17 40	2,3

S100 S113

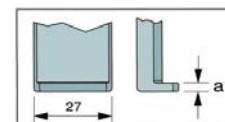


No.S100-0,5



No.S113-14

Krallex-Puller-Sets, 2- and 3-arm
 Leg-tip **flat**
 Leg-body **narrow**
 various reach



	$\varnothing$ mm min. - max.	mm	a	kg
2-arm				
S100 - 0	20 - 90	100 / 200	2,0	2,0
S100 - 0,5	25 - 130	100 / 200 / 250	2,0	3,2
S100 - 10	20 - 90	100 / 200	3,6	2,0
S100 - 14	25 - 130	100 / 200 / 250	3,6	3,2

3-arm

S113 - 0	20 - 90	100 / 200	2,0	2,7
S113 - 0,5	25 - 130	100 / 200 / 250	2,0	4,8
S113 - 10	20 - 90	100 / 200	3,6	2,7
S113 - 14	25 - 130	100 / 200 / 250	3,6	4,8



Info:
S100-DIV
 - One for all purposes -
 page 50

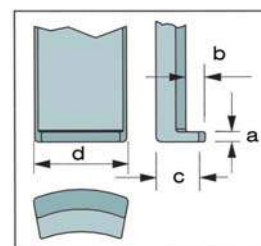
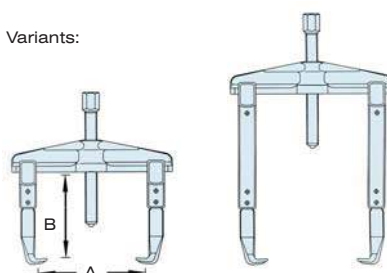
E100 - 10



Krallex-Pullers, 2-arm
with **Quick-Action-Nut "EXTRA"**
Leg-tip **flat**
Leg-body **narrow**
parallel gripping
with legs for standard reach

See table for extended legs,
if more reach is necessary

Variants:



No.	$\varnothing$ A mm min. - max.	B mm	max. torque Nm	max. capacity t	max. capacity kN	spindles mm thread x -length	SW	legs mm a	b	c	d	kg
E100 - 10	20 - 90	100	80	4,5	45	M14 x 1,5 x 130	17	3,6	6	13	27	1,0
E100 - 14	25 - 130	100	80	4,5	45	M14 x 1,5 x 130	17	3,6	6	13	27	1,2
E100 - 20	50 - 160	150	150	6,5	65	G 1/2" x 14 x 210	22	5	8	17	40	3,0
E100 - 24	60 - 200	150	150	6,5	65	G 1/2" x 14 x 210	22	5	8	17	40	3,3

Legs (No. = 1 pair)

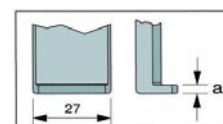
for No.

kg

E10 - 100	100	E100-10, E100-14	3,6	6	13	27	0,5
E10 - 120	120	E100-10, E100-14	3,6	6	13	27	0,6
E10 - 200	200	E100-10, E100-14	3,6	6	13	27	1,0
E10 - 250	250	E100-10, E100-14	3,6	6	13	27	1,2
E20 - 150	150	E100-20, E100-24	5	8	17	40	1,3
E20 - 220	220	E100-20, E100-24	5	8	17	40	1,8
E20 - 300	300	E100-20, E100-24	5	8	17	40	2,3

ES100 ES113

Krallex-Puller-Sets, 2- and 3-arm
with **Quick-Action-Nut "EXTRA"**
Leg-tip **flat**
Leg-body **narrow**
various reach



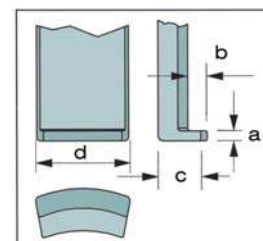
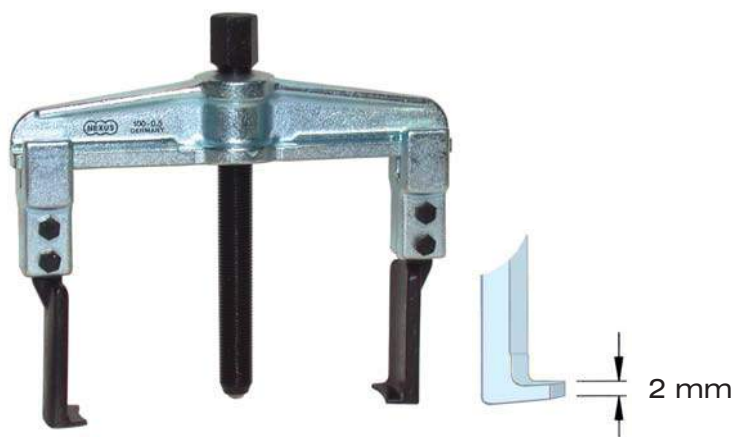
No.ES100-0,5

No.ES113-14

	$\varnothing$ mm min. - max.	mm	a	kg
2-arm				
ES100 - 0	20 - 90	100 / 200	2,0	2,0
ES100 - 0,5	25 - 130	100 / 200 / 250	2,0	3,2
ES100 - 10	20 - 90	100 / 200	3,6	2,0
ES100 - 14	25 - 130	100 / 200 / 250	3,6	3,2
3-arm				
ES113 - 0	20 - 90	100 / 200	2,0	2,7
ES113 - 0,5	25 - 130	100 / 200 / 250	2,0	4,8
ES113 - 10	20 - 90	100 / 200	3,6	2,7
ES113 - 14	25 - 130	100 / 200 / 250	3,6	4,8

100 - 0 - FUSS -

Krallex-Pullers, 2-arm
Leg-tip **extreme flat**
Leg-body narrow



No.	mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a b c d	kg
100 - 0	20 - 90	100	60	3,5	35	M14 x 1,5 x 130	17	2 6 13 27	1,0
100 - 0,5	25 - 130	100	60	3,5	35	M14 x 1,5 x 130	17	2 6 13 27	1,2

Krallex-Legs - FUSS - (No. = 1 pair)

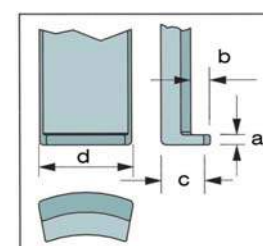
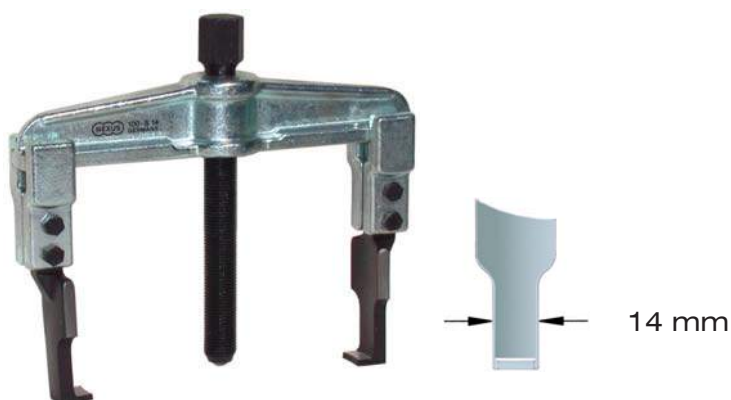
for No.

kg

0 - F 100	100	100-0, 100-0,5	2 6 13 27	0,5
0 - F 120	120	100-0, 100-0,5	2 6 13 27	0,6
0 - F 200	200	100-0, 100-0,5	2 6 13 27	1,0
0 - F 250	250	100-0, 100-0,5	2 6 13 27	1,2

100 - S - SCHAFT -

Krallex-Pullers, 2-arm
Leg-body **extreme narrow**
Leg-tip flat



No.	mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a b c d	kg
100 - S 10	20 - 90	100	40	2,5	25	M14x1,5 x 130	17	3,6 6 13 14	1,0
100 - S 14	25 - 130	100	40	2,5	25	M14x1,5 x 130	17	3,6 6 13 14	1,2

Krallex-Legs - SCHAFT - (No. = 1 pair)

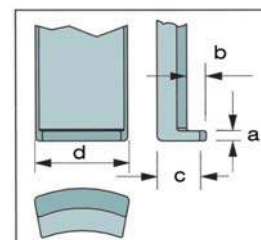
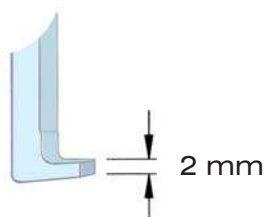
for No.

kg

10 - S 100	100	100-S10, 100-S14	3,6 6 13 14	0,5
10 - S 120	120	100-S10, 100-S14	3,6 6 13 14	0,6
10 - S 200	200	100-S10, 100-S14	3,6 6 13 14	1,0
10 - S 250	250	100-S10, 100-S14	3,6 6 13 14	1,3

E100 - 0 - FUSS -

Krallex-Pullers, 2-arm
with **Quick-Action-Nut "EXTRA"**
Leg-tip **extreme flat**
Leg-body **narrow**



No.	mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a	b	c	d	kg
E100 - 0	20 - 90	100	60	3,5	35	M14 x 1,5 x 130	17	2	6	13	27	1,0
E100 - 0,5	25 - 130	100	60	3,5	35	M14 x 1,5 x 130	17	2	6	13	27	1,2

Krallex-Legs - FUSS - (No. = 1 pair)

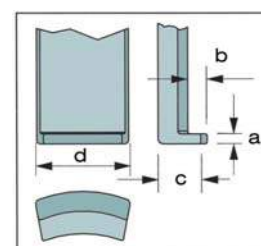
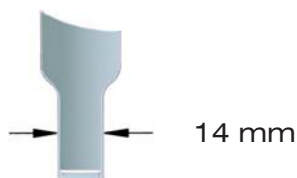
for No.

kg

E0 - F 100	100	E100-0, E100-0,5	2	6	13	27	0,5
E0 - F 120	120	E100-0, E100-0,5	2	6	13	27	0,6
E0 - F 200	200	E100-0, E100-0,5	2	6	13	27	1,0
E0 - F 250	250	E100-0, E100-0,5	2	6	13	27	1,2

E100 - S - SCHAFT -

Krallex-Pullers, 2-arm
with **Quick-Action-Nut "EXTRA"**
Leg-body **extreme narrow**
Leg-tip **flat**



No.	mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a	b	c	d	kg
E100 - S 10	20 - 90	100	40	2,5	25	M14x1,5 x 130	17	3,6	6	13	14	1,0
E100 - S 14	25 - 130	100	40	2,5	25	M14x1,5 x 130	17	3,6	6	13	14	1,2

Krallex-Legs - SCHAFT - (No. = 1 pair)

for No.

kg

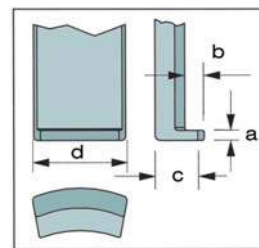
E10 - S 100	100	E100-S10, E100-S14	3,6	6	13	14	0,5
E10 - S 120	120	E100-S10, E100-S14	3,6	6	13	14	0,6
E10 - S 200	200	E100-S10, E100-S14	3,6	6	13	14	1,0
E10 - S 250	250	E100-S10, E100-S14	3,6	6	13	14	1,3

113 - 10



Krallex-Pullers, 3-arm
 Leg-tip **flat**
 Leg-body **narrow**
 parallel gripping
 with legs for standard reach

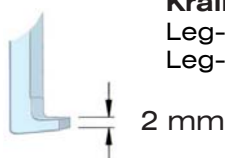
See table for extended legs,
 if more reach is necessary



No.	mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a b c d	kg
113 - 10	20 - 90	100	90	5,0	50	M14 x 1,5 x 130	17	3,6 6 13 27	1,3
113 - 14	25 - 130	100	90	5,0	50	M14 x 1,5 x 130	17	3,6 6 13 27	1,5
113 - 20	50 - 160	150	150	6,5	65	G 1/2" x 14 x 210	22	5 8 17 40	3,5
113 - 24	60 - 200	150	150	6,5	65	G 1/2" x 14 x 210	22	5 8 17 40	4,0

Krallex-Legs (No. = 3 pieces)	for No.	kg
10 - 100 M	113-10, 113-14	0,7
10 - 120 M	113-10, 113-14	0,9
10 - 200 M	113-10, 113-14	1,5
10 - 250 M	113-10, 113-14	1,8
20 - 150 M	113-20, 113-24	1,9
20 - 220 M	113-20, 113-24	2,6
20 - 300 M	113-20, 113-24	3,3

113 - 0 - FUSS -



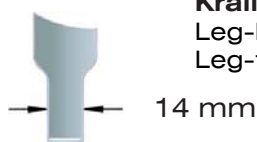
Krallex-Pullers, 3-arm
 Leg-tip **extreme flat**
 Leg-body narrow



No.	mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a b c d	kg
113 - 0	20 - 90	100	70	4	40	M14 x 1,5 x 130	17	2 6 13 27	1,3
113 - 0,5	25 - 130	100	70	4	40	M14 x 1,5 x 130	17	2 6 13 27	1,5

Krallex-Legs - FUSS - (No. = 3 pieces)	for No.	kg
0 - F 100 M	113-0, 113-0,5	0,7
0 - F 120 M	113-0, 113-0,5	0,9
0 - F 200 M	113-0, 113-0,5	1,5
0 - F 250 M	113-0, 113-0,5	1,8

113 - S - SCHAFT -



Krallex-Pullers, 3-arm
 Leg-body **extreme narrow**
 Leg-tip flat



No.	mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a b c d	kg
113 - S 10	20 - 90	100	45	3	30	M14 x 1,5 x 130	17	3,6 6 13 14	1,3
113 - S 14	25 - 130	100	45	3	30	M14 x 1,5 x 130	17	3,6 6 13 14	1,5

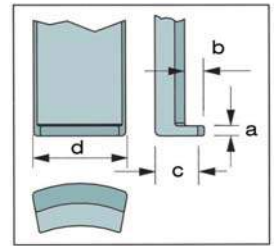
Krallex-Legs - SCHAFT - (No. = 3 pieces)	for No.	kg
10 - S 100 M	113-S10, 113-S14	0,7
10 - S 120 M	113-S10, 113-S14	0,9
10 - S 200 M	113-S10, 113-S14	1,5
10 - S 250 M	113-S10, 113-S14	1,8

E113 - 10



Krallex-Pullers, 3-arm
with **Quick-Action-Nut "EXTRA"**
Leg-tip **flat**
Leg-body **narrow**
parallel gripping
with legs for standard reach

See table for extended legs,
if more reach is necessary



No.	mm min. - max.	mm	max. torque Nm	max. capacity t KN	spindles mm thread x -length	SW	legs mm a b c d	kg
E113 - 10	20 - 90	100	90	5,0 50	M14 x 1,5 x 130	17	3,6 6 13 27	1,3
E113 - 14	25 - 130	100	90	5,0 50	M14 x 1,5 x 130	17	3,6 6 13 27	1,5
E113 - 20	50 - 160	150	150	6,5 65	G 1/2" x 14 x 210	22	5 8 17 40	3,5
E113 - 24	60 - 200	150	150	6,5 65	G 1/2" x 14 x 210	22	5 8 17 40	4,0

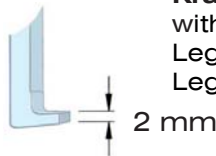
Krallex-Legs (No. = 3 pieces)

for No.

kg

E10 - 100 M	100	E113-10, E113-14	3,6 6 13 27	0,7
E10 - 120 M	120	E113-10, E113-14	3,6 6 13 27	0,9
E10 - 200 M	200	E113-10, E113-14	3,6 6 13 27	1,5
E10 - 250 M	250	E113-10, E113-14	3,6 6 13 27	1,8
E20 - 150 M	150	E113-20, E113-24	5 8 17 40	1,9
E20 - 220 M	220	E113-20, E113-24	5 8 17 40	2,6
E20 - 300 M	300	E113-20, E113-24	5 8 17 40	3,3

E113 - 0 - FUSS -



Krallex-Pullers, 3-arm
with **Quick-Action-Nut "EXTRA"**
Leg-tip **extreme flat**
Leg-body narrow



No.	mm min. - max.	mm	max. torque Nm	max. capacity t KN	spindles mm thread x -length	SW	legs mm a b c d	kg
E113 - 0	20 - 90	100	70	4 40	M14 x 1,5 x 130	17	2 6 13 27	1,3
E113 - 0,5	25 - 130	100	70	4 40	M14 x 1,5 x 130	17	2 6 13 27	1,5

Krallex-Legs - FUSS - (No. = 3 pieces)

for No.

kg

E0 - F 100 M	100	E113-0, E113-0,5	2 6 13 27	0,7
E0 - F 120 M	120	E113-0, E113-0,5	2 6 13 27	0,9
E0 - F 200 M	200	E113-0, E113-0,5	2 6 13 27	1,5
E0 - F 250 M	250	E113-0, E113-0,5	2 6 13 27	1,8

E113 - S - SCHAFT -



Krallex-Pullers, 3-arm
with **Quick-Action-Nut "EXTRA"**
Leg-body **extreme narrow**
Leg-tip flat



No.	mm min. - max.	mm	max. torque Nm	max. capacity t KN	spindles mm thread x -length	SW	legs mm a b c d	kg
E113 - S 10	20 - 90	100	45	3 30	M14 x 1,5 x 130	17	3,6 6 13 14	1,3
E113 - S 14	25 - 130	100	45	3 30	M14 x 1,5 x 130	17	3,6 6 13 14	1,5

Krallex-Legs - SCHAFT - (No. = 3 pieces)

for No.

kg

E10 - S 100 M	100	E113-S10, E113-S14	3,6 6 13 14	0,7
E10 - S 120 M	120	E113-S10, E113-S14	3,6 6 13 14	0,9
E10 - S 200 M	200	E113-S10, E113-S14	3,6 6 13 14	1,5
E10 - S 250 M	250	E113-S10, E113-S14	3,6 6 13 14	1,8

100 - 0BUE

Side Clamp
for 2-arm Universal-Pullers



Examples of use



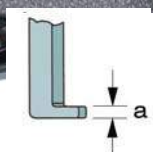
No.	Ø	kg
100 - 0BUE	for pullers with max. 130 mm spread	0,8

S113

Krallex-Puller-Sets, 2- and 3-arm
in box



No.S113-11



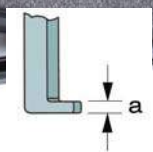
No.	Ø mm min. - max.	mm	leg- tip mm a	kg
S113 - 11	20 - 90	100	3,6	2,0
S113 - 12	20 - 90	100	2,0	2,0
S113 - 15	25 - 130	100	3,6	2,2
S113 - 16	25 - 130	100	2,0	2,2

ES113

Krallex-Puller-Sets, 2- and 3-arm
with Quick-Action-Nut "EXTRA"
in box



No.ES113-11



No.	Ø mm min. - max.	mm	leg- tip mm a	kg
ES113 - 11	20 - 90	100	3,6	2,0
ES113 - 12	20 - 90	100	2,0	2,0
ES113 - 15	25 - 130	100	3,6	2,2
ES113 - 16	25 - 130	100	2,0	2,2

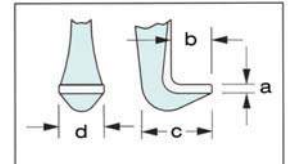
100 - M



Universal-Pullers, 3-arm
sturdy design for heavy duty work,
exchangeable legs for more reach,
legs are always parallel gripping



more power with
Hydraulics



No.	$\varnothing$ mm min. - max.	mm	max. torque Nm	max. capacity t	KN	spindles mm thread x -length	SW	legs mm a b c d	kg
100 - M 1	100 - 380	200	400	15	150	G 1"x 11 x 310	36	5 25 54 35	21
100 - M 2	120 - 520	200	400	15	150	G 1"x 11 x 310	36	5 25 54 35	25
100 - M 3	120 - 650	200	400	15	150	G 1"x 11 x 310	36	5 25 54 35	27

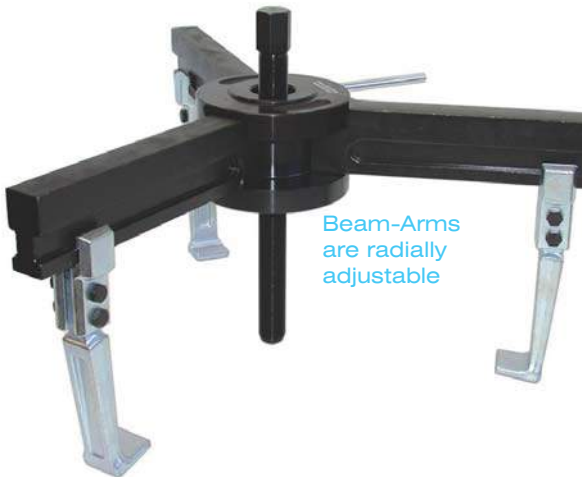
Legs (No. = 3 pieces)

for No.

kg

3 - 200 M	200	100-M1, 100-M2, 100-M3	5 25 54 35	5,0
3 - 300 M	300	100-M1, 100-M2, 100-M3	5 25 54 35	7,5
3 - 400 M	400	100-M1, 100-M2, 100-M3	5 25 54 35	9,6
3 - 500 M	500	100-M1, 100-M2, 100-M3	5 25 54 35	11,7
3 - SP M	adjustable 300 to 500	100-M1, 100-M2, 100-M3	5 25 54 35	12,7

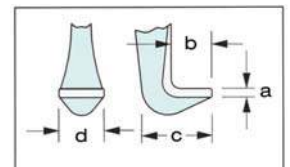
160 - M



Beam-Arms
are radially
adjustable

Universal-Puller, 3-arm
sturdy design for heavy duty work,
exchangeable legs for more reach,
legs are always parallel gripping

more power with
Hydraulics



No.	$\varnothing$ mm min. - max.	mm	max. torque Nm	max. capacity t	KN	spindles mm thread x -length	SW	legs mm a b c d	kg
160 - M	150 - 700	200	400	15	150	G 1"x 11 x 370	36	10 33 55 50	42,5

Legs (No. = 3 pieces)

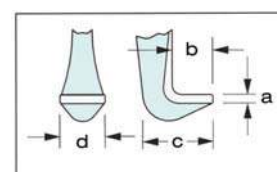
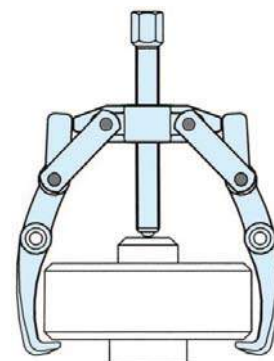
for No.

kg

5 - 200 M	200	160-M	10 33 55 50	6,5
5 - 300 M	300	160-M	10 33 55 50	9,0
5 - 400 M	400	160-M	10 33 55 50	11,0
5 - 500 M	500	160-M	10 33 55 50	13,3
5 - SP M	adjustable 375 to 675	160-M	10 33 55 50	33,0

115

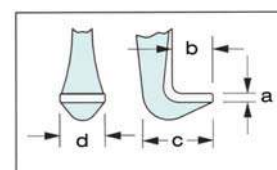
Pullers, 2-arm
adjustable legs,
during lever action legs press closely
under the parts to be removed



No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	max. torque Nm		max. capacity t KN		spindles mm thread x -length mm	SW	legs mm				kg
									a	b	c	d	
115 - 1	20 - 170	130	50		3,5	35	M14 x 1,5 x 130	17	2	11	23	16	1,0
115 - 2	20 - 230	200	60		4,0	40	M18 x 1,5 x 240	19	4,5	16	33	20	2,3

116

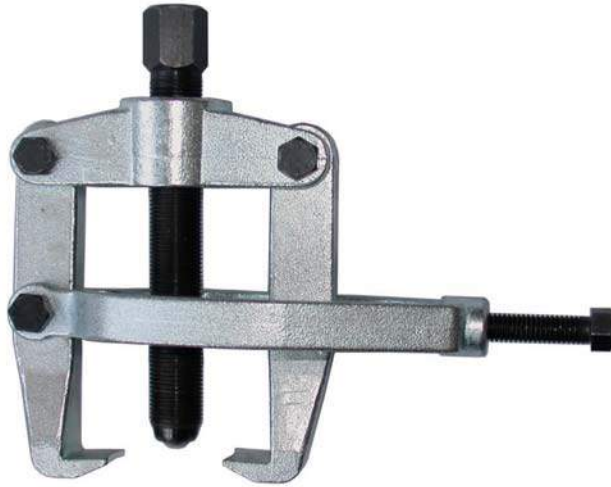
Pullers, 3-arm
adjustable legs,
during lever action legs press closely
under the parts to be removed



No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	max. torque Nm		max. capacity t KN		spindles mm thread x -length	SW	legs mm				kg
									a	b	c	d	
116 - 1	20 - 170	130	60		4,0	40	M14 x 1,5 x 130	17	2	11	23	16	1,3
116 - 2	20 - 230	200	70		4,5	45	M18 x 1,5 x 240	19	4,5	16	33	20	3,1

**118
340**

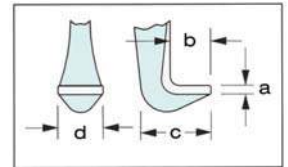
**Pullers, 2-arm
with Side Clamp**



Puller for Inner Races of
front wheel hubs



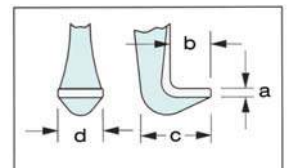
No. 340 page 48



No.	$\varnothing$ mm	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm				kg
								a	b	c	d	
118 - 1	80	90	120	5	50	M18 x 1,5 x 130	19	3	12	26	24	1,7
118 - 2	100	110	120	6	60	G 1/2" x 14 x 210	22	3	14	25	24	2,6
118 - 3	150	150	150	8	80	G 1/2" x 14 x 210	22	3	14	25	24	3,4
340	40 - 50	70	35	1,2	12	M18 x 1,5 x 110	19	2,5	3	20	26	1,9

119

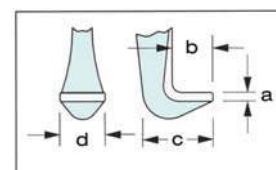
**Separator Pullers, 2-arm
with Side Clamp**
double ended / reversible legs



No.	$\varnothing$ mm	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm				kg
								a	b	c	d	
119 - 1	110	170	120	5	50	M18 x 1,5 x 240	19	3	12	25	24	2,3
119 - 2	150	270	120	6	60	G 1/2" x 14 x 270	22	3	14	25	24	4,1
119 - 3	150	330	150	8	80	G 1/2" x 14 x 270	22	3	14	25	24	4,5

131
132

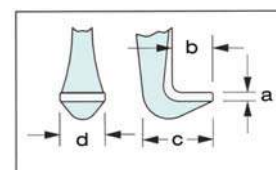
Pullers, 2-arm
double ended / reversible legs,
one end broad, other end narrow,
during lever action legs press closely
under the part to be removed



No.	 mm min. - max.	 mm	max. torque Nm	max. capacity		spindles mm thread x -length	SW	legs mm				kg
	t	KN		a	b			c	d			
131	20 - 150	85	50	3,5	35	M14 x 1,5 x 130	17	2	9	21	12	0,9
132	40 - 220	130	60	4,0	40	M18 x 1,5 x 240	19	4	11	25	21	2,2

133
134

Pullers, 3-arm
double ended / reversible legs,
one end broad, other end narrow,
during lever action legs press closely
under the part to be removed



No.	 mm min. - max.	 mm	max. torque Nm	max. capacity t KN	spindles mm thread x -length	SW	legs mm				kg
	a	b	c	d							
133	20 - 150	85	60	4,0 40	M14 x 1,5 x 130	17	2	9	21	12	1,2
134	40 - 220	130	70	4,5 45	M18 x 1,5 x 240	19	4	11	25	21	2,9

135
136

Pullers, 2- and 3-arm
sturdy design,
adjustable legs,
during lever action legs press closely
under the part to be removed



No.135



No.136

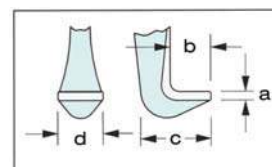
Puller with
Grease-
Hydraulic-
Spindle



No. 136-H

page 60

more power with
Grease-
Hydraulic-
Spindle



2-arm

No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a	b	c	d	kg
135 - 0	18 - 100	85	20	2,5	25	M10 x 105	12	2	10	20	14	0,4
135 - 1	20 - 200	150	50	3,5	35	M14 x 1,5 x 130	17	3	14	25	18	1,2
135 - 2	35 - 250	220	60	4,0	45	M18 x 1,5 x 240	19	4	20	36	25	2,8
135 - 3	50 - 300	250	120	6	60	G 1/2" x 14 x 270	22	5	25	48	30	5,4
135 - 4	50 - 350	350	120	6	60	G 1/2" x 14 x 270	22	5	25	48	30	6,1
135 - 5	50 - 400	400	120	6	60	G 1/2" x 14 x 270	22	5	25	48	30	6,4
135 - 6	50 - 450	450	120	6	60	G 1/2" x 14 x 270	22	5	25	48	30	6,9
135 - 7	50 - 500	500	120	6	60	G 1/2" x 14 x 270	22	5	25	48	30	7,0
135 - 10	50 - 500	650	120	6	60	G 1/2" x 14 x 270	22	5	25	48	30	8,4
135 - 17	50 - 500	1000	120	6	60	G 1/2" x 14 x 270	22	5	25	48	30	11,0

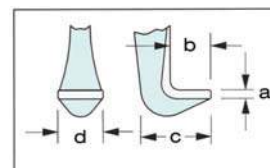
3-arm

No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a	b	c	d	kg
136 - 0	18 - 100	85	25	3,0	30	M10 x 105	12	2	10	20	14	0,5
136 - 1	20 - 200	150	60	4,0	40	M14 x 1,5 x 130	17	3	14	25	18	1,7
136 - 2	35 - 250	220	70	4,5	45	M18 x 1,5 x 240	19	4	20	36	25	3,9
136 - 3	50 - 300	250	220	12	120	G 1/2" x 14 x 270	22	5	25	48	30	7,3
136 - 4	50 - 350	350	220	12	120	G 1/2" x 14 x 270	22	5	25	48	30	8,3
136 - 5	50 - 400	400	220	12	120	G 1/2" x 14 x 270	22	5	25	48	30	8,8
136 - 6	50 - 450	450	220	12	120	G 1/2" x 14 x 270	22	5	25	48	30	9,4
136 - 7	50 - 500	500	220	12	120	G 1/2" x 14 x 270	22	5	25	48	30	10,0
136 - 10	50 - 500	650	220	12	120	G 1/2" x 14 x 270	22	5	25	48	30	11,6
136 - 17	50 - 500	1000	220	12	120	G 1/2" x 14 x 270	22	5	25	48	30	16,0

140



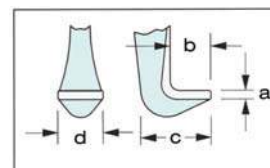
Mini-Pullers, 2-arm
sturdy design,
adjustable legs,
during lever action legs press closely
under the part to be removed,
also for windscreen-wiper-arms
for medium trucks and heavy trucks



No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a b c d	kg
140	10 - 50	40	18	1	10	M8 x 85	10	1,5 6,5 15 8,5	0,2
140 - T	10 - 50	40	18	1	10	M8 x 85	10	2,2 7 12 12	0,2

140 - B

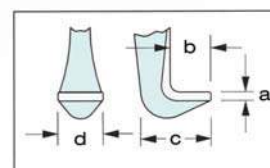
Pullers, 3-arm
with Spread-Adjuster
self centering



No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a b c d	kg
140 - B 10	10 - 60	45	25	2,5	25	M10 x 105	12	1 5 12 8	0,4
140 - B 20	15 - 70	65	35	3,0	30	M10 x 105	12	1 5 12 8	0,5
140 - B 30	20 - 100	80	45	3,5	35	M10 x 150	12	1,8 10 20 12	0,8

140 - S

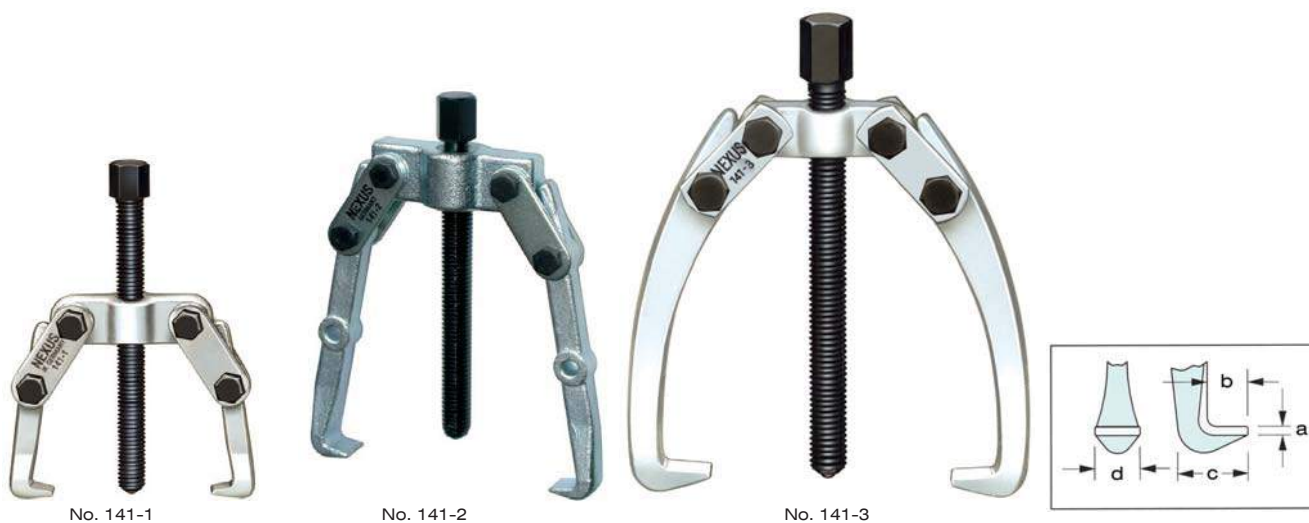
Pullers, 3-arm
with Slide Hammer
with Spread-Adjuster
self centering



No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	max. torque Nm	max. capacity t	max. capacity KN	legs mm a b c d	kg
140 - S 10	10 - 60	45	25	2,5	25	1 5 12 8	1,3
140 - S 20	15 - 70	65	35	3,0	30	1 5 12 8	1,7
140 - S 30	20 - 100	80	45	3,5	35	1,8 10 20 12	2,0

141 - 1

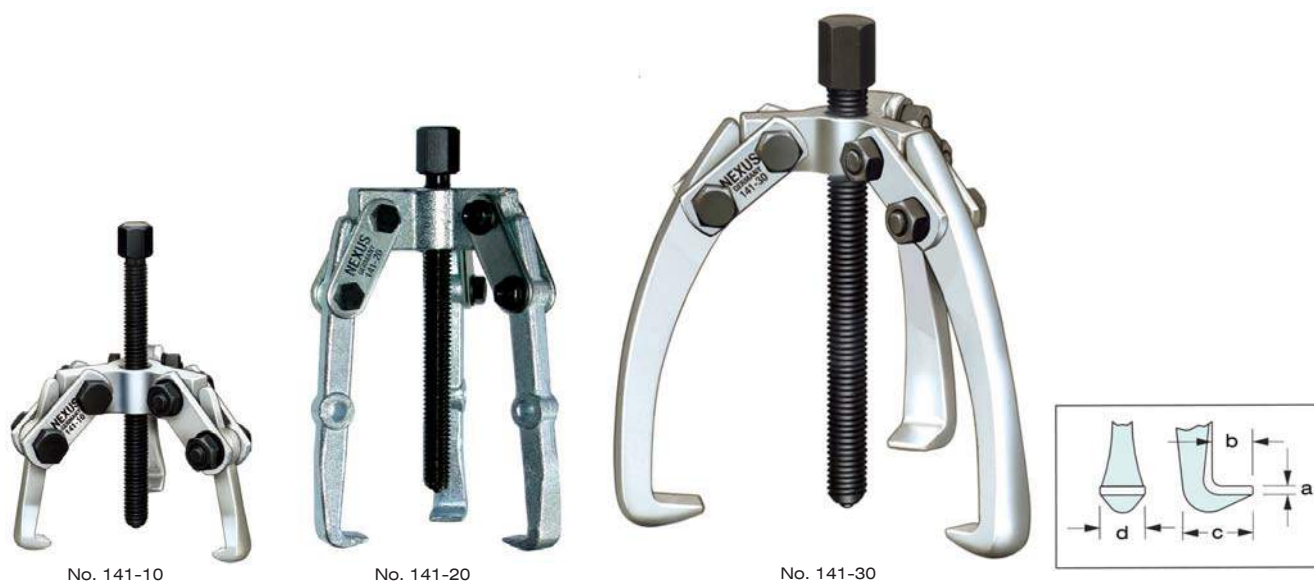
Mini-Pullers, 2-arm
self centering,
during lever action legs press closely
under the part to be removed



No.	$\varnothing$ mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity kN	spindles mm thread x -length	SW	legs mm a	b	c	d	kg
141 - 1	10 - 60	40	18	1,0	10	M8 x 85	10	1	5	12	8	0,16
141 - 2	10 - 70	44 / 74	20	1,2	12	M8 x 85	10	1	5	12	8	0,2
141 - 3	10 - 90	84	24	2,0	20	M10 x 105	12	1,8	10	20	12	0,3

141 - 10

Mini-Pullers, 3-arm
self centering,
during lever action legs press closely
under the part to be removed



No.	$\varnothing$ mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity kN	spindles mm thread x -length	SW	legs mm a	b	c	d	kg
141 - 10	10 - 60	40	20	1,2	12	M8 x 85	10	1	5	12	8	0,2
141 - 20	10 - 70	44 / 74	21	1,3	13	M8 x 85	10	1	5	12	8	0,3
141 - 30	10 - 90	84	40	2,5	25	M10 x 105	12	1,8	10	20	12	0,5

142 - SN 3

Universal-Windscreen-Wiper-Arm-Puller-Set in box

for approx. 450 wipers, 300 cars, 30 make of cars

for **cars** and **trucks**

Contents:

- 8 grippers No. 142-G1 to -G8
- 1 drive - B - (beam, spindle) No. 142-B
- 1 spindle-cap No. 142-D1
- 1 hollow-cap No. 142-D2 for wipers with water-nozzle in centre of the hub
- 1 spindle-extension No. 142-D3
- 1 puller No. 142-U1 with Krallex-legs and leg-spanner
- 2 special-legs No.142U1SP-50



No.	kg
142 - SN 3	2,2

Cars:

Audi, Alfa-Romeo, BMW, Chrysler-Jeep, Citroen, Chevrolet-Daewoo, Daihatsu, Fiat, Ford, Honda, Hyundai, Jaguar, KIA, Land Rover, Mazda, MG-Rover, MB, Mitsubishi, Nissan, Opel, Peugeot, Porsche, Renault, Saab, Seat, Skoda, Smart, Suzuki, Toyota, Volvo, VW ...

Trucks:

MAN, MB, Scania ...



Application-table for No. 142 - SN 3 **on request**

Puller-Sets for any make of cars and types available

Component parts for individual combinations

- for make of cars and types
 - for wipers front (right / left) and back
- Application-table on request

Grippers



No. 142-G1



No. 142-G2



No. 142-G3



No. 142-G4



No. 142-G5



No. 142-G6



No. 142-G7



No. 142-G8



drive - H -
No. 142-H
body with
slide hammer



drive - B -
No. 142-B
body with spindle



No. 142-D1
spindle-cap



No. 142-D2
hollow-cap for wiper
with
water-nozzle in the
centre



No. 142-D3
spindle-
extension



No. 142-U1
puller with
Krallex-legs and
leg-spanner



No. 142U1SP-50
special-legs
narrow body

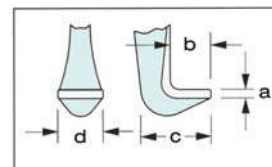
143

Pullers, 2- and 3-arm
self centering

No.143-1



No.143-10



2-arm

No.	$\varnothing$ mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm				kg
								a	b	c	d	
143 - 1	10 - 60	45	25	2,5	25	M10 x 1 x 90	12	2	9	18	10	0,27
143 - 2	10 - 70	65	35	3,0	30	M10 x 1 x 110	12	2	9	18	10	0,30
143 - 3	10 - 100	80	45	3,5	35	M12 x 1,25 x 140	14	2,3	12	25	13	0,61

3-arm

No.	$\varnothing$ mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm				kg
								a	b	c	d	
143 - 10	10 - 60	45	25	2,5	25	M10 x 1 x 90	12	2	9	18	10	0,34
143 - 20	10 - 70	65	35	3,0	30	M10 x 1 x 110	12	2	9	18	10	0,38
143 - 30	10 - 100	80	45	3,5	35	M12 x 1,25 x 140	14	2,3	12	25	13	0,80

144

Pullers, 2- and 3-arm
self centering

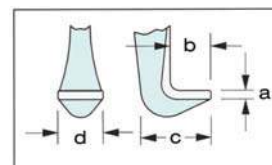
No.144-1



No.144-10

Pullers, 3-arm with
Spread-Adjuster
self centering

No.140-B page 30



2-arm

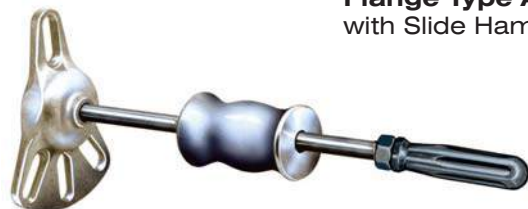
No.	$\varnothing$ mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm				kg
								a	b	c	d	
144 - 1	10 - 100	80	25	2,5	25	M12 x 1,25 x 162	14	4	12	26	13	0,68
144 - 2	10 - 120	120	35	3,0	30	M14 x 1,5 x 193	17	5	14	30	16	1,14
144 - 3	20 - 160	160	45	3,5	35	M18 x 1,5 x 243	19	6	18	36	20	2,00
144 - 4	20 - 200	200	50	4,0	40	M22 x 2 x 293	24	7	22	40	24	3,50

3-arm

No.	$\varnothing$ mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm				kg
								a	b	c	d	
144 - 10	10 - 100	80	25	2,5	25	M12 x 1,25 x 162	14	4	12	26	13	0,91
144 - 20	10 - 120	120	35	3,0	30	M14 x 1,5 x 193	17	5	14	30	16	1,49
144 - 30	20 - 160	160	45	3,5	35	M18 x 1,5 x 243	19	6	18	36	20	2,50
144 - 40	20 - 200	200	50	4,0	40	M22 x 2 x 293	24	7	22	40	24	4,20

146

Flange Type Axle Puller with Slide Hammer



No.	$\varnothing$ mm	for bolt mm $\varnothing$	hammer mm	hammer weight	rod mm	adapter- thread mm	kg
146	100 - 150	to 14	$\varnothing$ 60 x 100	1,7 kg	$\varnothing$ 16 x 330	M16 x 1,5	3,7

150
155

Universal-Wheel-Hub-Pullers



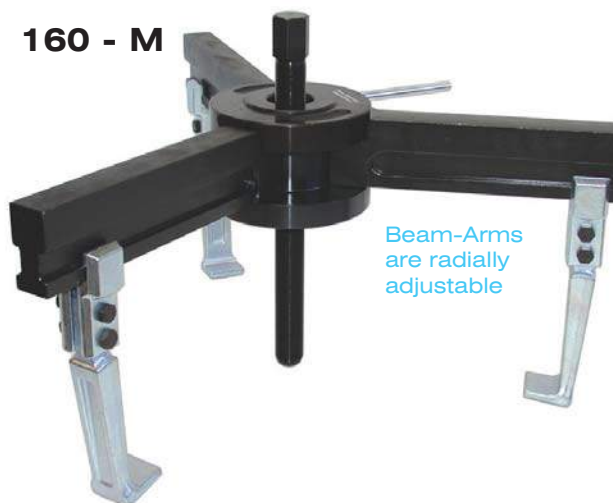
No.150-5



No.155-5

No.	$\varnothing$ mm	$\downarrow$ mm		max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	leg-tip hole for bolt mm	kg
150 - 3	to 225	140	3 legs	280	14	140	G 3/4" x 14 x 210	27	18	3,8
150 - 4	to 225	140	4 legs	280	14	140	G 3/4" x 14 x 210	27	18	4,3
150 - 5	to 225	140	5 legs	280	14	140	G 3/4" x 14 x 210	27	18	4,9
155 - 3	to 250	140	3 legs	280	14	140	G 3/4" x 14 x 210	27	14-18-22	3,6
155 - 4	to 250	140	4 legs	280	14	140	G 3/4" x 14 x 210	27	14-18-22	4,1
155 - 5	to 250	140	5 legs	280	14	140	G 3/4" x 14 x 210	27	14-18-22	4,6

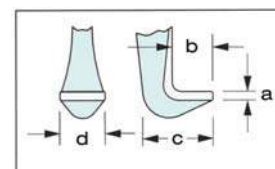
160 - M



Beam-Arms
are radially
adjustable

Universal-Puller, 3-arm
sturdy design for heavy duty work,
exchangeable legs for more reach,
legs are always parallel gripping

more power with
Hydraulics



No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	legs mm a b c d	kg
160 - M	150 - 700	200	400	15	150	G 1" x 11 x 370	36	10 33 55 50	42,5

Legs (No. = 3 pieces)

		for No.		kg
5 - 200 M	200	160-M	10 33 55 50	6,5
5 - 300 M	300	160-M	10 33 55 50	9,0
5 - 400 M	400	160-M	10 33 55 50	11,0
5 - 500 M	500	160-M	10 33 55 50	13,3
5 - SP M	adjustable 375 to 675	160-M	10 33 55 50	33,0

Universal-Spring-Compressors, also for "MacPherson"
with safety guard, (as per SZGI PfG 893/10.92)



for spring- Ø
110-180
↑
240 mm
No. 164-P /-PK
page 36



for spring - Ø
110-180
↑
200 mm
300 mm
400 mm
No. 164-S0/-
S2
page 36

Release + Push Out Set
for Four-guide-rod front axle: Audi, VW, Quattros



opening
SW 16 mm
↑
110 mm
No. 165-S1
page 38

opening
Ø 12 mm
↑
90 mm
No. 165-S2
page 38

Ball Joint Separators " Fork" Type



opening
Ø 18 mm
No. 166-1
page 38

opening
Ø 23 mm
No. 166-2
page 38

opening
Ø 31 mm
No. 166-3
page 38

opening
Ø 35 mm
No. 166-4
page 38

opening
Ø 45 mm
No. 166-5
page 38

Ball Joint Extractors



opening
Ø 18 mm
↑
40 mm
No. 167-1
page 38

opening
Ø 25 mm
↑
50 mm
No. 167-2
page 38

opening
Ø 29 mm
↑
60 mm
No. 167-3
page 38

opening
Ø 40 mm
↑
80 mm
No. 167-4
page 38

opening
Ø 58-80
↑
80 mm
No. 167-T4
page 38

opening
Ø 45 mm
↑
100 mm
No. 167-5
page 38

Universal Ball Joint Extractors
for
cars
medium trucks



opening
Ø 18 - 22
↑
max.
50 mm
No. 168-1
page 39



opening
Ø 24
↑
max.
50 mm
No. 169-1P
page 39

Ball Joint Extractors / - Sets
for
cars
medium trucks



opening
Ø 23/28/34
↑
mm 55
55
63
No. 165-K3
page 37



opening
Ø 24
↑
60 - 80
mm
No. 169-2P
page 39

Ball Joint Extractors
for
vans
medium trucks
capacity max. 10 t / 100 KN

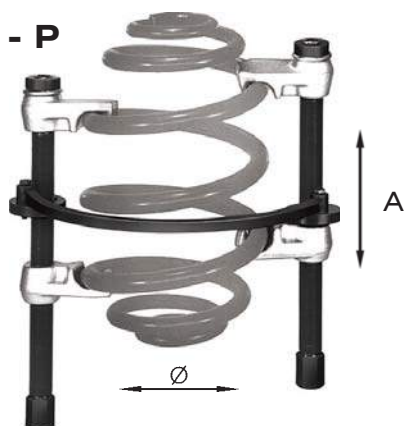


opening
Ø 36
↑
max.
90 mm
No. 169-4
page 40

Ball Joint Extractors
for
heavy trucks
busses
low floor busses
capacity max. 20 t / 200 KN



opening
Ø 45
↑
max.
115 mm
No. 169-5
page 41

164 - P**Universal-Spring-Compressor**

with safety guard

- to remove coil springs quickly and safe

Instructions for use:

Hook the spring tensions into position on opposite sides of the spring to cover as many turns as possible.

Using a spanner or impact wrench, tighten the 19 mm spindle driver heads alternately.

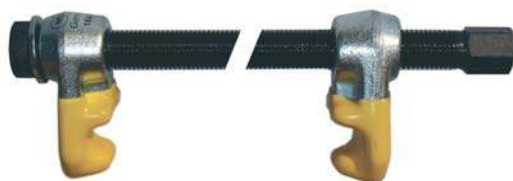
Install the new coil spring.

Using the drive heads alternately, release the tension on the spring evenly.



The spring-compressor meets the requirements of the
" Safety regulations " for vehicle maintenance
(SZGI Pfg 893/10.93)

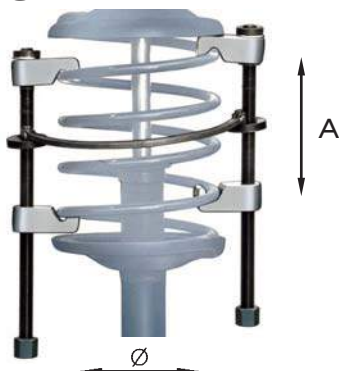
No.	Ø mm min. - max.	A mm	vehicles with unladen weight of max.	working range max. mm	max. capacity t KN	spindles mm thread x -length	SW	kg
164 - P	110 - 180	240	2.000 kg	200	3,5 35	M18 x 2 x 280	19	2,4

**Universal-Spring-Compressor**

with Plastic-Coated Hooks

with safety guard

164 - PK	110 - 180	240	2.000 kg	200	3,5 35	M18 x 2 x 280	19	2,5
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164 - S**Universal-Spring-Compressors**

with safety guard

- to remove coil springs quickly and safe

Instructions for use:

Hook the spring tensions into position on opposite sides of the spring to cover as many turns as possible.

Using a spanner or impact wrench, tighten the 19 mm spindle driver heads alternately.

Install the new coil spring.

Using the drive heads alternately, release the tension on the spring evenly.



The spring-compressor meets the requirements of the
" Safety regulations " for vehicle maintenance
(SZGI Pfg 893/10.93)

No.	Ø mm min. - max.	A mm	vehicles with unladen weight of max.	working range max. mm	max. capacity t KN	spindles mm thread x -length	SW	kg
164 - S0	110 - 180	200	2.000 kg	200	1,8 18	M16 x 280	17	2,4
164 - S1	110 - 180	300	2.000 kg	300	1,8 18	M16 x 380	17	2,8
164 - S2	110 - 180	400	2.000 kg	400	1,8 18	M16 x 480	17	2,9

**Universal-Spring-Compressors**

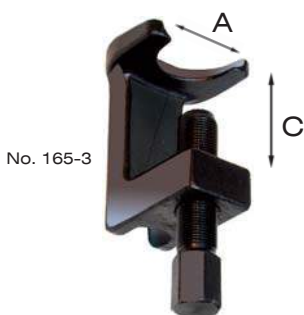
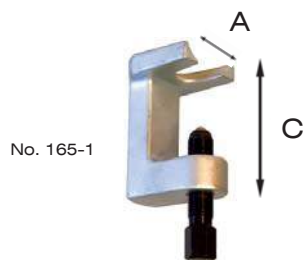
with Plastic-Coated Hooks

with safety guard

164 - SK 0	110 - 180	200	2.000 kg	200	1,8 18	M16 x 280	17	2,5
164 - SK 1	110 - 180	300	2.000 kg	300	1,8 18	M16 x 380	17	2,9
164 - SK 2	110 - 180	400	2.000 kg	400	1,8 18	M16 x 480	17	3,0

165

Ball Joint Extractors



No.165-1
for
Audi, Alfa-Romeo, BMW, Citroen, Fiat, Ford, Honda,
MB, Opel, Peugeot, Renault, Saab, Seat, Skoda, Volvo,
VW ...

No.165-2
for
Audi-A4, -A6, -A8,
VW-Passat,
Opel-Movano ...

No.165-3
for
Ducato from 1994,
MB-Sprinter,
VW-LT from 1998 ...

No.	$\varnothing$ A mm opening	C mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	kg
165 - 1	23	55	60	4	40	M16 x 1,5 x 60	17	0,8
165 - 2	28	55	60	4	40	M16 x 1,5 x 60	17	0,8
165 - 3	34	63	80	4	40	M18 x 1,5 x 70	19	0,9

165 - K3

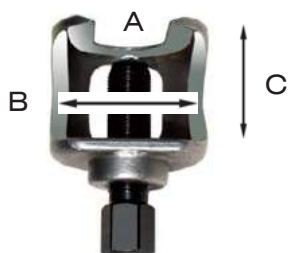


Ball Joint Extractor Set in box

for
cars and medium trucks

No.	$\varnothing$ A mm opening	C mm	contents	kg
165 - K3	23 / 28 / 34	55 / 55 / 63	No.165-1, 165-2, 165-3	2,9

165 - N1

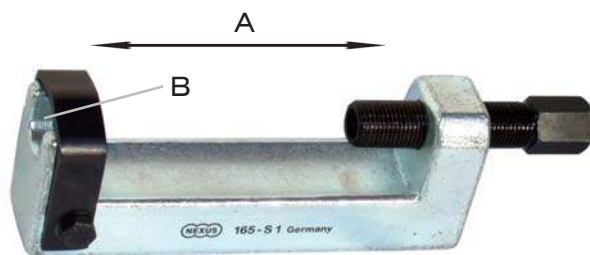


Ball Joint Extractor

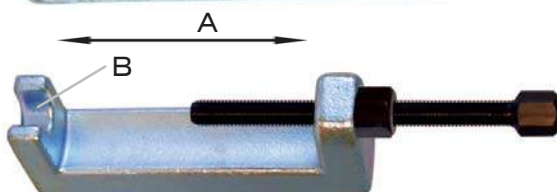
No.	$\varnothing$ A mm opening	C mm	B mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	kg
165 - N1	24	45	43	80	4	40	M14 x 1,5 x 60	17	0,5

165 - S

Release tool
No.165-S1



Push out tool
No.165-S2



Release + Push Out Set

to release and remove the linkage-stub attachment screw from the wheel-bearing shell of **Four-guide-rod front axle** of:

Audi-A4, -A6, -A8,
all types of Quattros,
VW-Passat,
Skoda-Superb

Release + Push Out Set

No.	contents	A mm	B mm opening	spindles mm thread x -length	SW	kg
165 - S	Release tool No. 165-S1	110	SW 16	M14 x 1,5 x 60	17	1,7
	Push out tool No. 165-S2	90	Ø 12	M9 x 1,25 x 114	12	

Spare parts

165 - S1	Release tool	110	SW 16	M14 x 1,5 x 60	17	1,1
165 - S2	Push out tool	90	Ø 12	M9 x 1,25 x 114	12	0,6

166

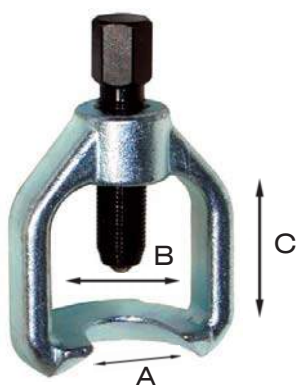
Ball Joint Separators "Fork" Type



No.	A mm opening	L mm length	kg
166 - 1	18	330	0,9
166 - 2	23	330	0,9
166 - 3	31	330	1,1
166 - 4	35	350	1,3
166 - 5	45	350	1,5

167

Ball Joint Extractors

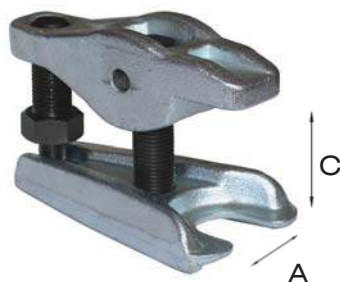


No.	A mm opening	C mm	B mm	max. torque Nm	spindles mm thread x -length	SW	kg
167 - 1	18	40	40	50	M14 x 1,5 x 60	17	0,3
167 - 2	25	50	50	120	M16 x 1,5 x 60	17	0,7
167 - 3	29	60	60	160	M18 x 1,5 x 75	19	1,0
167 - 4	40	80	80	280	G 1/2" x 14 x 110	22	2,1
167 - 5	45	100	90	400	G 3/4" x 14 x 125	27	2,8

for VW-Bus T4 (Ball joint at top cross steorage)

167 - T4	58 - 80	80	80	280	G 1/2" x 14 x 110	22	2,1
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168 - 1



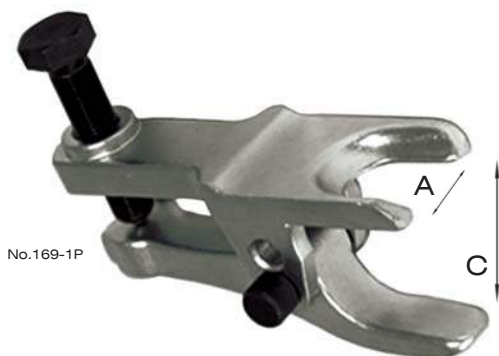
Universal Ball Joint Extractor adjustable

for cars:

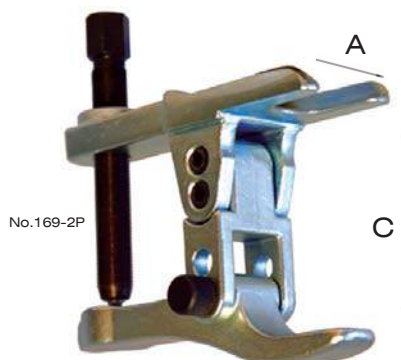
Audi, Alfa-Romeo, BMW, Citroen, Fiat, Ford, Honda, MB, Opel, Peugeot, Renault, Saab, Seat, Skoda, Volvo, VW

No.	$\varnothing$ A mm opening	C mm height	max. torque Nm	max. capacity t	KN	pin mm	adjustable spindle thread x -length mm	pressure spindle thread x -length mm	SW	kg
168 - 1	18 - 22	max. 50	70	3,5	35	8	M14 x 1,5 x 48	M14 x 1,5 x 35	19	0,9

169 - 1P 169 - 2P



No.169-1P



No.169-2P

Universal Ball Joint Extractors adjustable

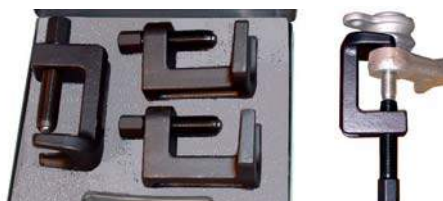
for cars, medium trucks:

Audi, Alfa-Romeo, BMW, Citroen, Fiat, Ford, Honda, MB, Opel, Peugeot, Renault, Saab, Seat, Skoda, Volvo, VW

also for

Aluminium - undercarriage at Audi, BMW, Porsche

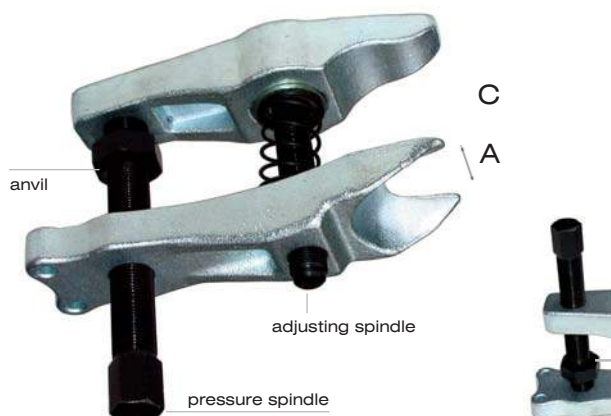
No.	$\varnothing$ A mm opening	C mm height	max. torque Nm	max. capacity t	KN	pressure spindle mm thread x -length	SW	kg
169 - 1P	24	max. 50	40	3,5	35	M16 x 1,5 x 70	17	1,4
169 - 2P	24	60 - 80	40	3,5	35	M16 x 1,5 x 90	17	1,8



Info:
Ball Joint Extractor Set 165-K3
in box

for cars, vans and medium trucks
page 37

169 - 4



Ball Joint Extractor adjustable, mechanical tested by truck workshops for heavy duty work

for vans and medium trucks:

MB Atego up to 17 t

MAN M2000

Iveco

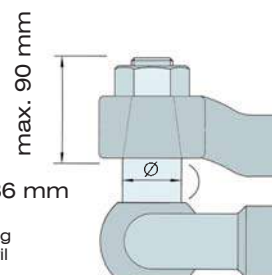
Renault

Scania

Volvo

DAF

Spindle / anvil for reversible use
Anvil adjustable and for tightening



for bolts 27 - 36 mm

Instructions for use:

Insert the extractor between the ball cup and steering arm, adjust lever parallel to the fork, tighten with anvil and turn the spindle or activate hydraulic to remove.

No.	A mm opening	C mm height	max. torque Nm	max. capacity t	max. capacity KN	adjusting spindle thread x -length mm	pressure spindle thread x -length mm	SW	kg
169 - 4	36	max. 90	200	10	100	M18 x 1,5 x 120	G1/2" x 14 x 110	22	3,7

169 - 4H

max. capacity
10 t (100 KN)



Ball Joint Extractor adjustable with Grease-Hydraulic-Spindle

for bolts 27 - 36 mm

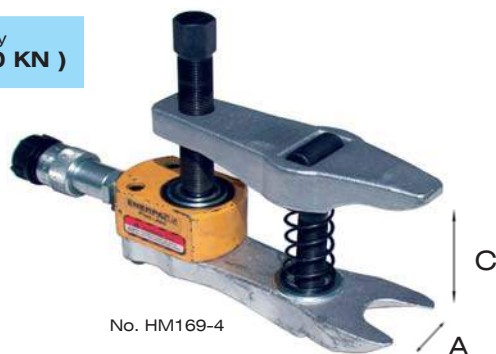
thread **UN-1 1/2" x 16**

No.	A mm opening	C mm height	kg
169 - 4H	36	max. 90	4,7

Grease-Hydraulic-Spindle page 53

HO169 - 4

max. capacity
10 t (100 KN)



Ball Joint Extractor adjustable without or with Oil-Hydraulic-Cylinder

for bolts 27 - 36 mm

No.	A mm opening	C mm height	kg
HO 169 - 4	36	max. 90	3,5
HM169 - 4	36	max. 90	5,1
HZ - 10	10 t / 100 KN cylinder for handpumps		1,6

Extractor - **WITHOUT** - Hydraulic-Cylinder

Extractor - **WITH** - Hydraulic-Cylinder No. HZ - 10

stroke 11 mm, height: 45 mm, thread 3/8" - 18 NPT

Ball Joint Extractor for heavy trucks, busses



169 - 5



Ball Joint Extractor adjustable, mechanical tested by truck workshops for heavy duty work

for heavy trucks, busses, low floor busses:

MB ACTROS, Atego from 18 t, SK, O405, -N, -GN (Nflb.)

MAN F2000, TG, A23, low floor busses

Iveco Euro-Star, -Tech, Turbo-Star

Renault

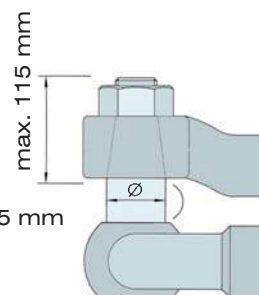
Scania 3 and 4, Icarus

Volvo

DAF



Spindle / anvil for reversible use
Anvil adjustable and for tightening



for bolts 35 - 45 mm

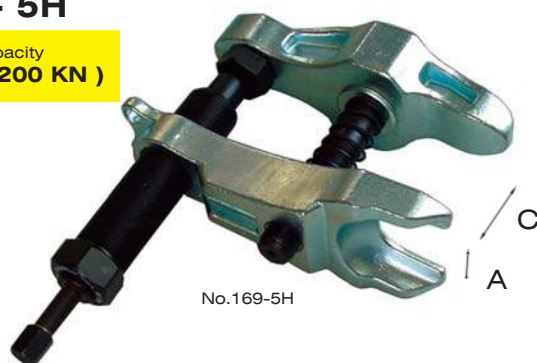
Instructions for use:

Insert the extractor between the ball cup and steering arm, adjust lever parallel to the fork, tighten with anvil and turn the spindle or activate hydraulic to remove.

No.	$\varnothing$ A mm opening	C mm height	max. torque Nm	max. capacity t	max. capacity kN	adjusting spindle thread x -length mm	pressure spindle thread x -length mm	SW	kg
169 - 5	45	max. 115	200	20	200	M24 x 1,5 x 150	G3/4" x 14 x 125	27	6,4

169 - 5H

max. capacity
20 t (200 kN)



Ball Joint Extractor adjustable with Grease-Hydraulic-Spindle

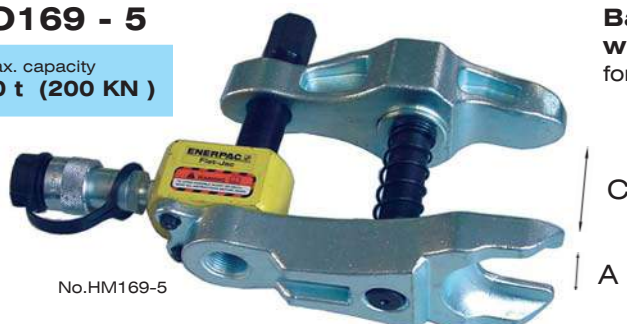
for bolts 35 - 45 mm

thread **UN-1 1/2" x 16**

No.	A mm opening	C mm height		kg
169 - 5H	45	max. 115	Grease-Hydraulic-Spindle page 53	7,0

HO169 - 5

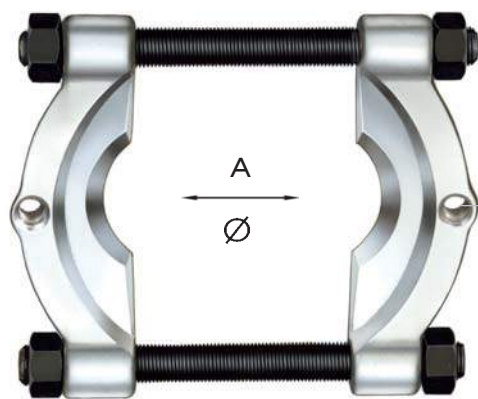
max. capacity
20 t (200 kN)



Ball Joint Extractor adjustable without or with Oil-Hydraulic-Cylinder

for bolts 35 - 45 mm

No.	$\varnothing$ A mm opening	C mm height		kg
HO 169 - 5	45	max. 115	Extractor - WITHOUT - Hydraulic-Cylinder	6,0
HM169 - 5	45	max. 115	Extractor - WITH - Hydraulic-Cylinder No. HZ - 10	7,6
HZ - 10	10 t / 100 kN cylinder for handpumps		stroke 11 mm, height 45 mm, thread 3/8" - 18 NPT	1,6
HZ - 20	20 t / 200 kN cylinder for handpumps		stroke 11 mm, height 51 mm, thread 3/8" - 18 NPT	2,8



G
adapter-thread
for puller



Instructions for use:
1. Tapered knife edges of separator No. 170 fit behind bearing and remove by tightening both nuts in turn
2. Turn tie rods of device No. 172 into adapter-thread of separator No. 170
3. Pull with centre spindle of device No. 172

No.	$\overleftrightarrow{\varnothing}$ A mm	for pullers	G adapter- thread mm zu No. 172	slide rods thread x -length mm	SW	capacity / torque in combination with puller	kg
170 - 0	5 - 60	172 - 0 + -1	M 12	M10 x 120	17	No. 172-0	0,4
170 - 1	12 - 75	172 - 1	M 12	M12 x 140	19	No. 172-1	0,7
170 - 2	22 - 115	172 - 2	M 16	M16 x 1,5 x 180	24	No. 172-2	1,9
170 - 3	25 - 155	172 - 3	M 20 x 1,5	M20 x 1,5 x 250	30	No. 172-3	4,2
170 - 4	30 - 220	172 - 4	M 20 x 1,5	M24 x 1,5 x 410	36	No. 172-4	12,0
170 - 5	40 - 280	172 - 5	M 24 x 1,5	M28 x 1,5 x 410	41	No. 172-5	15,8

172

Pullers for Separators



tie rod

G adapter-thread

more power with
Hydraulics



No.	$\overleftrightarrow{\varnothing}$ mm	mm	for separators	G adapter- thread mm zu No.170	max. torque Nm	max. capacity t	KN	spindles mm thread x -length	SW	tie rod mm	kg
172 - 0	40 - 115	150	170 - 0	M 12	30	2	20	M14 x 1,5 x 130	17	M12 x 200	0,8
172 - 1	45 - 140	150	170 - 1 + -0	M 12	40	2,5	25	M14 x 1,5 x 130	17	M12 x 200	1,1
172 - 2	55 - 205	210	170 - 2	M 16	70	4	40	G 1/2" x 14 x 210	22	M16 x 280	2,7
172 - 3	90 - 260	315	170 - 3	M 20 x 1,5	90	5	50	G 1/2" x 14 x 210	22	M20 x 1,5 x 370	5,2
172 - 4	100 - 360	305	170 - 4	M 20 x 1,5	140	7	70	G 3/4" x 14 x 280	27	M20 x 1,5 x 370	8,8
172 - 5	140 - 435	320	170 - 5	M 24 x 1,5	150	13	130	G 1" x 11 x 370	36	M24 x 1,5 x 460	16,7

Extensions for Tie Rods for Pullers No. 172 (No. = 1 pair)

No.	extension plus	mm	for pullers	G adapter-thread mm for No. 170	extension- measures mm	kg
172 - 00		100	172-0 + -1	M 12	M12 x 100 lg	0,2
172 - 10		100	172-1 + -0	M 12	M12 x 100 lg	0,2
172 - 20		100	172-2	M 16	M16 x 100 lg	0,4
172 - 30		100	172-3 + -4	M 20 x 1,5	M20 x 1,5 x 100 lg	0,7
172 - 40		100	172-4 + -3	M 20 x 1,5	M20 x 1,5 x 100 lg	0,7
172 - 50		200	172-5	M 24 x 1,5	M24 x 1,5 x 200 lg	2,7

173
S173
174

Separator- / Puller Sets

in box



No.173-2



No.174

No.	$\varnothing$ mm	mm	contents	kg
173 - 0	5 - 60	150	3 pieces: 170-0, 172-0, 172-00	2,5
173 - 1	12 - 75	150	3 pieces: 170-1, 172-1, 172-10	3,0
173 - 2	22 - 115	210	3 pieces: 170-2, 172-2, 172-20	7,6
173 - 3	25 - 155	315	3 pieces: 170-3, 172-3, 172-30	13,3
173 - 4	30 - 220	305	3 pieces: 170-4, 172-4, 172-40	29,0
S173 - 1	5 - 75	150	4 pieces: 170-0, 170-1, 172-1, 172-10	2,5
174	20-160 / 22-115	300	6 pieces: 100-1, 100-2, 1-200, 2-300, 105-1, 170-2	16,0

400

Internal Extractor- / Puller Sets

in box



No.400-N



No.400-G

No.	$\varnothing$ mm min. - max.	mm	contents	kg
400 - G	10 - 160		14 pieces: 51-1A, -2A, -3A, -4A, -5A, -6A, -E7, -E8, 52-1, -4, 100-1, -2, 141-1, 200	20,0
400 - K	10 - 80		10 pieces: 51-1A, -2A, -3A, -4A, -5A, -6A, 52-1, 100-1, 141-1, 200	7,3
400 - N	10 - 160		13 pieces: 51-1A, -2A, -3A, -4A, -5A, -6A, -E7, 52-1, -2, 100-1, -2, 141-1, 200	15,4

182



Steering Wheel Puller, 3-arm
with ring

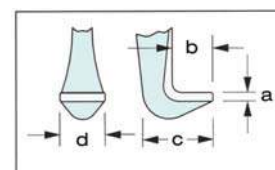


No.	mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindle mm thread x -length	SW	kg
182	160	120	70	4	40	M14 x 1,5 x 130	17	1,9

185 - 40



Steering Wheel Puller, 2-arm
with short and long legs
and spindle cap



No.	mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindle mm thread x -length	SW	leg mm a b c d	kg
185 - 40	max. 90	135	30	2,5	25	M14 x 1,5 x 130	17	5 3,5 11 7,5	0,9

184 - N1

for Audi, VW
Dieselmotors TDI-4, -6, -8
Petrolmotors V6, V8 from '98



Puller Set for Cam Shaft Wheels
with **2 standard-legs** and
2 special-legs

Leg-combinations for:

wheels with 6 spokes



standard-leg



standard-leg

wheels with 5 spokes
4 - Cylinder-Motors
6 - Cylinder-Motors



standard-leg



special-leg with
opening: 17 mm

wheels with 5 spokes
8 - Cylinder-Motors



standard-leg



special-leg with
opening: 23 mm

Complete set

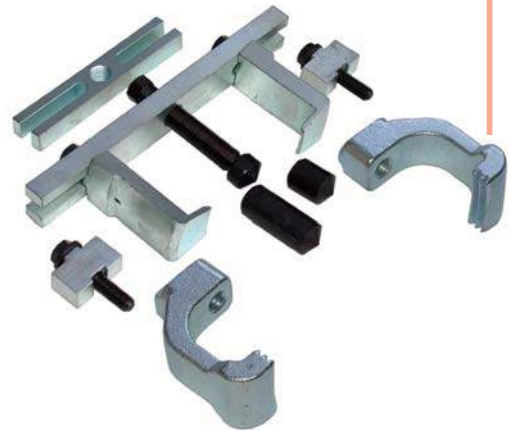
No.	mm min. - max.	mm	max. torque Nm	max. capacity t	max. capacity KN	spindles mm thread x -length	SW	kg
184 - N1	130	44	40	2,5	25	M14 x 1,5 x 55	17	0,9

200



Puller Chuck
for inner rings of ball bearings

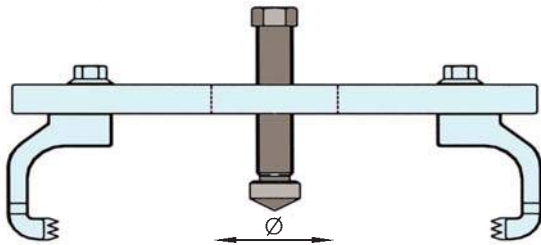
No.	mm min. - max.	mm	max. torque Nm	spindle tip mm	spindle mm thread x -length	SW	kg
200	5 - 32	135	60	Ø 6 x 30	M14 x 1,5 x 130	17	1,4



Combination-variants:

variant Z : with Groovehooks

short or long beam with groovehooks



with short beam: 80 to 140 mm
with long beam: 135 to 235 mm

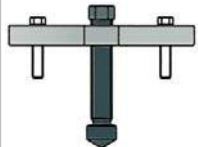


NEW
Groovehooks
suit into the
grooves of
V-Belt Pulley

variant A : for V-Belt Pulleys with thread holes

short or long beam with screws

min. 43 - max. 120 mm / min. 95 - max. 210 mm

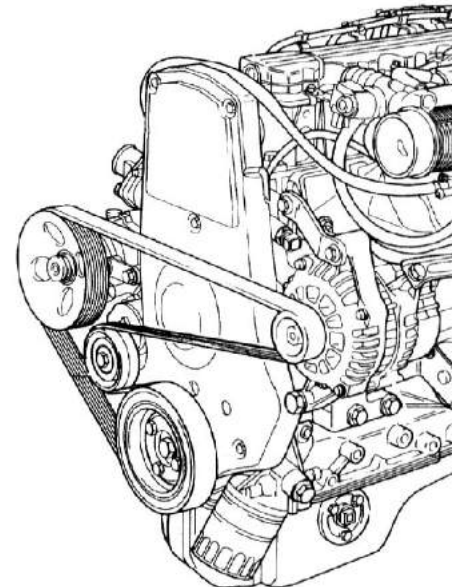


pressure plate
short

exchangeable
spindle extensions

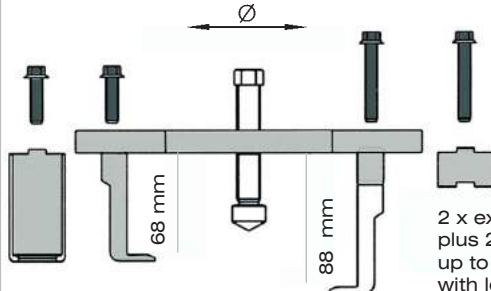
pressure plate
medium + 12 mm

pressure plate
long + 37 mm



variant B : for V-Belt Pulleys without thread holes
short or long beam with standard-legs
and / or extensions

min. 23 - max. 100 mm / min. 85 - max. 195 mm



2 x standard-legs,
reach max. 68 mm
with short screws

2 x extensions
plus 20 mm =
up to 88 mm reach
with long screws



184 - SN

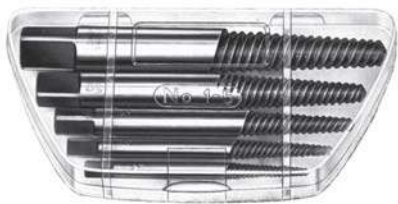
Contents:

- 1 long beam
- 1 short beam
- 1 spindle
- 3 pressure plates: short, medium, long
- 2 standard-legs
- 2 extensions
- 2 short screws
- 2 long screws
- 2 groovehooks

2,7 kg

295 - S

Bolt Extractor Sets in plastic box



No.	$\varnothing$ mm	contents	kg
295 - S5	3 - 18	5 pieces	0,11
295 - S6	3 - 24	6 pieces	0,24

300

Stud Pullers right- / left drive



No.	$\varnothing$ mm	drive SW mm	max. torque Nm	kg
300 - 1	5 - 15	19	120	0,36
300 - 2	10 - 19	19	120	0,40
300 - 3	18 - 28	19	120	0,45

301

Stud Puller right- / left drive large reach



No.	$\varnothing$ mm	drive SW mm	max. torque Nm	kg
301	5 - 20	19	120	0,4

303

Stud Puller Set in metal box



No.	$\varnothing$ mm	drive SW mm / "	max. torque Nm	kg
303 - G	1 piece puller for 6, 8, 10, 12	21 u. 1/2"	100	1,2
Individual Parts				
303 - 6	6	21 + 1/2"	100	0,16
303 - 8	8	21 + 1/2"	100	0,16
303 - 10	10	21 + 1/2"	100	0,23
303 - 12	12	21 + 1/2"	100	0,23

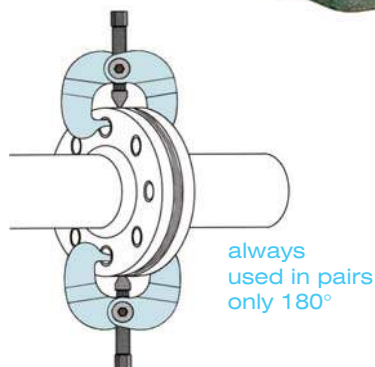
306 - S1

Flange Spreader Set

for spreading of pipe connecting DIN-flanges
for renewal of gaskets and other maintenance work



Instructions for use:
Apply the spreaders diametrically.
Place spreader jaws into the free bolt holes and tighten screws until spreader is in position.
Tighten both screws simultan to wide gap evenly, permitting easy work between the flanges.
Back off screws to allow flanges to rejoin accurately.



Flange Spreader Set (No. = 1 pair) see illustration

No.	Ø mm	for screws mm	spindle mm thread x -length	SW	kg
306 - S1	80 - 250	M16 to M24	M24 x 1,5 x 110	24	5,6

Individual Parts

		kg
306 - 1	1 piece flange spreader	2,8
306 - 1H	1 pair jaws	0,9
306 - 1SP	1 spindle M24 x1,5 with wedge	0,6

310

5 t

310-1

13 t

310-2



Nut Splitters Grease-Hydraulic

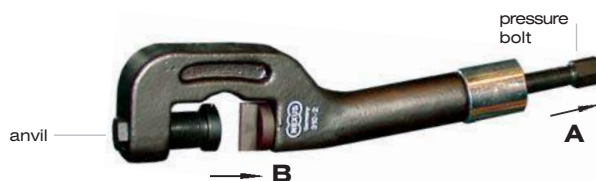
for nuts in quality class up to 10

- additional inductive hardening of the cutting edge
- rolled channel walls

Instructions for use:

1. Place the cutting edge of chisel 90° to the flat of the nut and in line with the bolt shaft. Clamp it into position with the adjustable anvil.
2. Slowly, with interruptions, turn the pressure bolt into the splitter body to allow the hydraulic force to build up and take effect. A light tap with a hammer on the anvil when under tension will increase the splitting effect. If stroke of the chisel is insufficient turn out the pressure bolt to its limit, readjust the anvil and retighten the pressure bolt.
3. After splitting the nut turn the pressure bolt back to its initial position (**A**).

The chisel does not retract automatically, it must be pushed back (**B**).



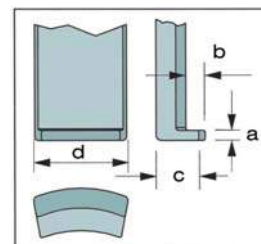
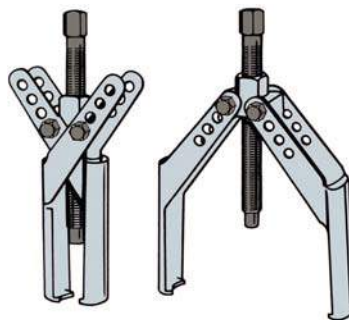
No.	mm min. - max.	for nuts with thread mm	max. torque Nm	pressure bolt mm thread x -length	SW	anvil mm thread x -length	SW	kg
310 - 1	SW 7 - 22	M 4 to M14	45	M10 x 40	14	M14 x 1,5 x 30	8	0,8
310 - 2	SW 22 - 36	M14 to M24	80	M14 x 1,5 x 60	17	M20 x 1,5 x 60	13	2,5

311

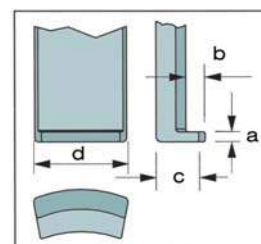
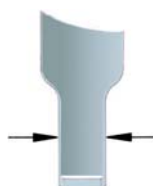
Nut Splitters, mechanical
for nuts in quality class up to 6



No.	mm min. - max.	for nuts with thread mm	max. torque Nm	spindles mm thread x -length	SW	kg
311 - 0	SW 4 - 10	to M6	10	M10 x 25	14	0,10
311 - 1	SW 4 - 17	to M10	40	M14 x 1,5 x 40	17	0,28
311 - 2	SW 8 - 24	to M16	60	M16 x 1,5 x 40	17	0,44
311 - 3	SW 19 - 36	to M24	80	M18 x 1,5 x 50	27	0,61



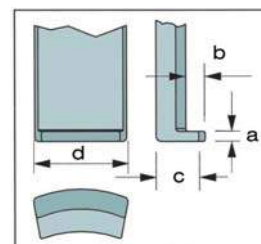
No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	max. torque Nm	max. capacity t KN	spindles mm thread x -length	SW	legs mm a b c d	kg
314 - 1	6 - 100	70 / 85	25	1,5 15	M10 x 105	12	2,5 4,5 8,5 23	0,4
314 - 2	10 - 140	85 / 120	60	3,5 35	M14 x 1,5 x 130	17	3,5 5 10 31	0,9
314 - 3	15 - 140	125 / 155	80	4,5 45	M14 x 1,5 x 200	17	3,5 5 10 31	1,1

314 - 1 SPPullers with Scissor-Action Arms
and with
Special-Legs

No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	max. torque Nm	max. capacity t KN	spindles mm thread x -length	SW	legs mm a b c d	kg
314 - 1 SP	6 - 100	70 / 85	18	1,0 10	M10 x 105	12	2,5 4,5 8,5 11	0,4
314 - 3 SP1	15 - 140	125 / 155	35	2,0 20	M14 x 1,5 x 200	17	3,5 5 11 12	1,0

Spindle Extensions

			for No.	kg
314 - D1	plus	+ 20 mm	314-1, 314-1SP	0,03
314 - D3	plus	+ 30 mm	314-2, -3, -3SP1	0,06

340Puller
with
Krallex-Legs
Side Clamp
Spindle cap
for inner races of front wheel hubs

No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	max. torque Nm	max. capacity t KN	spindle mm thread x -length	SW	leg mm a b c d	kg
340	40 - 50	70	35	1,2 12	M18 x 1,5 x 110	19	2,5 3 20 25	1,9



55 - S
Internal Extractor Sets
page 9



400
Puller- and
Internal Extractor Sets
page 9



60/61
Ball Bearing Extractor
Set
page 10



62-1
Ball Bearing Extractor
Sets
page 11



ES113-11
Krallex-Puller-Sets
with Quick-Action-Nut
"EXTRA"
page 24



Workshop-Displays
for
automotive
and
industry
Assortments on request



184-SN
Passenger
Car-V-Belt-Pulley
Puller-Set
page 45



142-SN 3
Universal-Windscreen-
Wiper-Arm-Puller-Set
page 32



173
Separator- / Puller-
Sets
page 43



173
Separator- / Puller
Sets
page 43

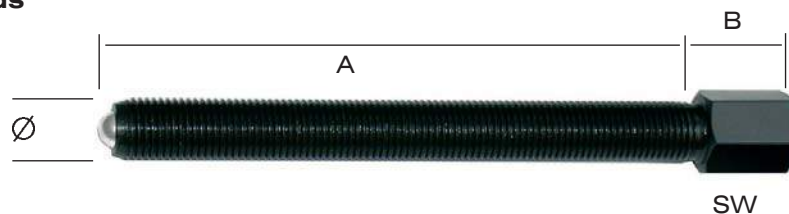


100-ST
Sales-Display
Workshop-Stand
page 16, 17



Workshop-Stands
for
automotive
and
industry
Assortments on request

Spindles, Tie Rods



No.	Ø mm	A mm	B mm	SW mm	kg
-----	---------	---------	---------	----------	----

Spindle

100 - 1 S	14	130	21	17	0,2
100 - 2 S	21	210	23	22	0,6
100 - 3 S	26	280	35	27	1,3
100 - 5 S	33	310	45	36	2,2

Spindle **M 8**

G 140	8	85	10	10	0,03
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Spindle **M 10**

G 141 - 3	10	105	15	12	0,06
G 60 - 1	10	150	15	12	0,1

Spindle **M 12**

G 60 - 2	12	190	20	14	0,2
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Spindle **M 14 x 1,5**

G 167 - 1	14	60	21	17	0,1
G 100 - HS	14	100	21	17	0,2
G 100 - 1	14	130	21	17	0,2
G 60 - 3	14	200	21	17	0,3
GS100-1S	14	250	35	17	0,55

Spindle **M 16 x 1,5**

G 167 - 2	16	60	20	17	0,1
G 169 - 1	16	70	20	17	0,1
G 169 - 2	16	90	20	17	0,2

No.	Ø mm	A mm	B mm	SW mm	kg
-----	---------	---------	---------	----------	----

Spindle **M 18 x 1,5**

G 167 - 3	18	70	20	19	0,2
G 118 - 1	18	130	20	19	0,3
G 132	18	240	22	19	0,5

Spindle **G 1/2" x 14**

G 167 - 4	21	110	23	22	0,3
G 100 - 2	21	210	23	22	0,6
G 60 - 5	21	230	23	22	0,6
G 135 - 3	21	270	23	22	0,8

Spindle **G 3/4" x 14**

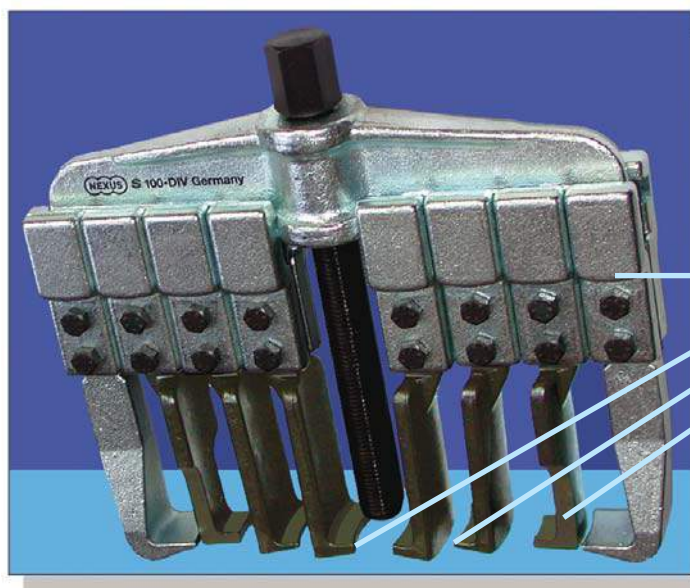
G 150	26	180	35	27	1,0
G 100 - 3	26	280	35	27	1,3
G 100 - 3L	26	360	35	27	1,7

Spindle **G 1" x 11**

G 100 - 5	33	310	45	36	2,2
G 172 - 5	33	370	45	36	2,6

Tie Rods

G 172 - 1	12	200	M 12	0,2
G 172 - 2	16	280	M 16	0,5
G 172 - 3	20	370	M 20 x 1,5	1,0



Universal-Puller-Set, 2-arm

- One for all purposes -
with 4 different Leg-Sets

- 2 Standard-Legs
- 2 Krallex-Legs (3,6 mm)
- 2 Krallex-Legs special - FUSS - (2 mm)
- 2 Krallex-Legs special - SCHAFT - (14 mm)

No.	Ø mm min. - max.	↓ mm	kg
S100-DIV	25 - 130	100	2,4

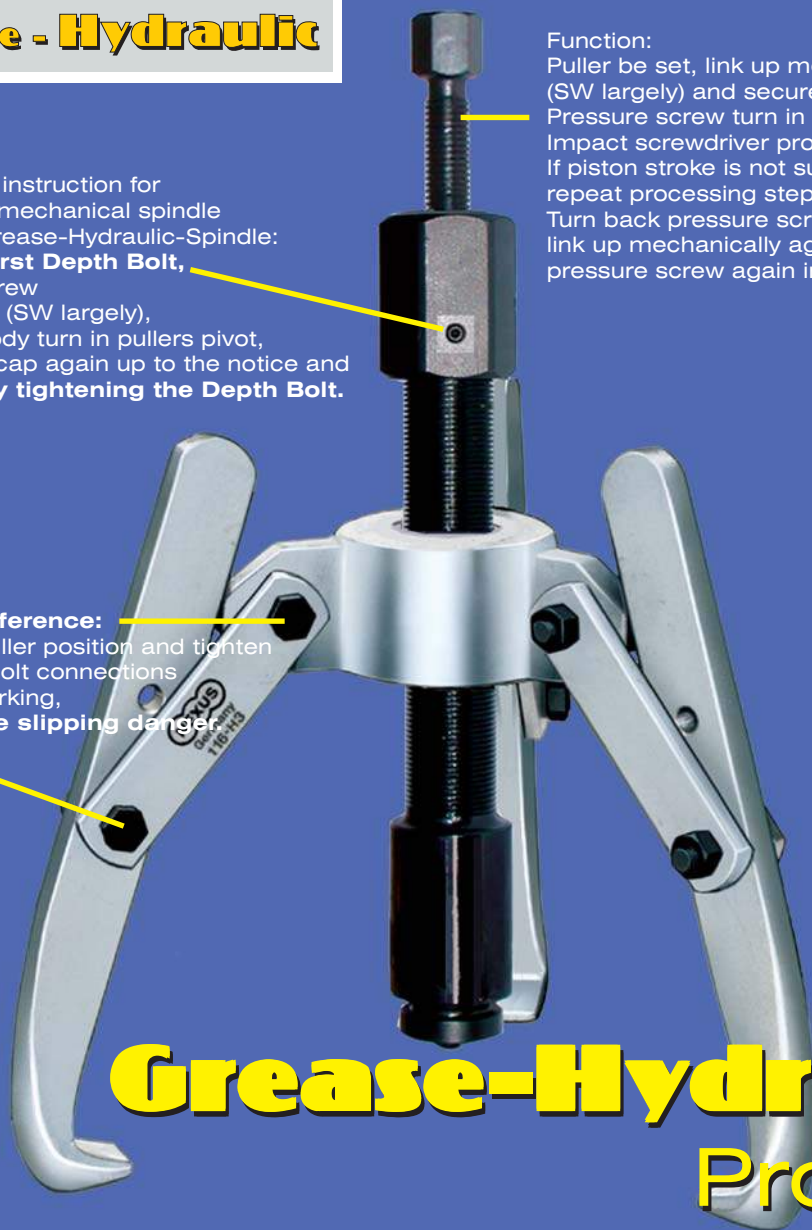


Grease - Hydraulic

Assembly instruction for replacing mechanical spindle against Grease-Hydraulic-Spindle: **Loosen first Depth Bolt**, then unscrew entire cap (SW largely), spindle body turn in pullers pivot, screw on cap again up to the notice and **secure by tightening the Depth Bolt**.

Safety reference: Secure puller position and tighten firmly all bolt connections before working, **otherwise slipping danger**.

Function:
Puller be set, link up mechanically (SW largely) and secure puller position. Pressure screw turn in press pivot. Impact screwdriver prohibited. If piston stroke is not sufficient for release, repeat processing steps: Turn back pressure screw, link up mechanically again and turn pressure screw again in press pivot.



Grease-Hydraulic Program

Hydraulic Rams

8 t / 80 KN
15 t / 150 KN



8t / 80 KN
stroke:
8 mm
No. 105-0
page 57

15t / 150 KN
stroke:
12 mm
No. 105-1
page 57

Nut Splitters, Grease-Hydraulic



SW 7 - 22
M4 - M14
No. 310-1
page 47

SW 22 - 36
M14 - M24
No. 310-2
page 47



Grease-Hydraulic-Spindles with
Thread UN 1 1/2" x 16
8 t / 80 KN
12 t / 120 KN
page 53 and 58-59



Puller-System, 2-arm

Ø 50-100
mm 100
No. 110-A1
page 58, 59

Ø 70-170
mm 150
No. 110-A2
page 58, 59

Ø 70-190
mm 250
No. 110-A3
page 58, 59

Ø 100-210
mm 200
No. 110-A4
page 58, 59

Ø 130-260
mm 250
No. 110-A5
page 58, 59

Ball Joint Extractor, adjustable for medium trucks



opening
Ø 36 mm
max.
90 mm
No. 169-4H
page 40



Puller-System, 3-arm

Ø 50-100
mm 100
No. 110-A10
page 58, 59

Ø 70-170
mm 150
No. 110-A20
page 58, 59

Ø 70-190
mm 250
No. 110-A30
page 58, 59

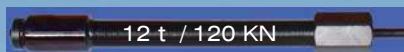
Ø 100-210
mm 200
No. 110-A40
page 58, 59

Ø 130-260
mm 250
No. 110-A50
page 58, 59

heavy trucks, low floor busses



opening
Ø 45 mm
max.
115 mm
No. 169-5H
page 41



No. 100-HS2
Thread G 1/2" x 14
page 53



Ø 50-160
mm 145
225
No. F100-2
page 54

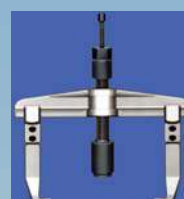
Ø 50-200
mm 145
225
No. F100-2,5
page 54



Ø 50-160
mm 145
225
No. F113-2
page 54

Ø 50-200
mm 145
225
No. F113-2,5
page 54

No. 100-HS3
Thread G 3/4" x 14
page 53



Ø 80-250
mm 125
225
325
425
225/425
No. F100-3
page 55

Ø 80-350
mm 125
225
325
425
225/425
No. F100-3,5
page 55

Ø 110-520
mm 125
225
325
425
225/425
No. F100-4
page 55



No. 100-HS
Thread G 1" x 11
page 53



Ø 50-350
mm 135
235
285
335
385
No. 136-H3/H7
page 60



Ø 170-640
mm 200
300
400
185/585
No. 100-5H
page 56



Ø 100-650
mm 185
285
385
185/385
No. 100-H1/H3
page 56



Ø 150-700
mm 175
275
375
260/560
No. 160-H
page 57

110 - 8

8 t / 80 KN

Thread
UN 1 1/2" x 16

Grease-Hydraulic-Spindle



Info:
Puller-System
No. 110
page 58, 59

No.	max.capacity t	KN	max. torque pressure-spindle	stroke mm	total length mm	SW	pressure-spindle thread mm	SW	kg
110 - 8	8	80	60 Nm	10	280	--	M10 x 90	13	1,4

110

12 t / 120 KN

Thread
UN 1 1/2" x 16

Grease-Hydraulic-Spindle



Info:
Puller-System
No. 110
page 58, 59

No.	max.capacity t	KN	max. torque pressure-spindle	stroke mm	total length mm	SW	pressure-spindle thread mm	SW	kg
110	12	120	60 Nm	10	260	41	M14 x 1,5 x 50	17	1,6

Spindle Extensions

for No.

				kg
110 - V 50	plus + 50 mm	110-8, 110		0,15
110 - V 100	plus + 100 mm	110-8, 110		0,35
110 - V 150	plus + 150 mm	110-8, 110		0,55

100 - HS 2

12 t / 120 KN

Thread
G 1/2" x 14

Grease-Hydraulic-Spindle



Depth Bolt

No.	max.capacity t	KN	max. torque pressure-spindle	stroke mm	total length mm	SW	pressure-spindle thread mm	SW	kg
100 - HS 2	12	120	60 Nm	12	410	32	M10 x 90	13	1,1

100 - HS 3

12 t / 120 KN

Thread
G 3/4" x 14

Grease-Hydraulic-Spindle



Depth Bolt

No.	max.capacity t	KN	max. torque pressure-spindle	stroke mm	total length mm	SW	pressure-spindle thread mm	SW	kg
100 - HS 3	12	120	60 Nm	12	410	36	M10 x 90	13	1,6

100 - HS

15 t / 150 KN

Thread
G 1" x 11

Grease-Hydraulic-Spindle



Depth Bolt

No.	max.capacity t	KN	max. torque pressure-spindle	stroke mm	total length mm	SW	pressure-spindle thread mm	SW	kg
100 - HS	15	150	70 Nm	12	460	41	M14 x 1,5 x 100	17	3,5

Spindle Extensions

100 - HD 1	plus + 50 mm		0,6
100 - HD 2	plus + 100 mm		1,3
100 - HD 3	plus + 150 mm		1,8



Assembly instruction for replacing mechanical spindle against Grease-Hydraulic-Spindle:

Loosen first Depth Bolt, then unscrew entire cap (SW largely), spindle body turn in pullers pivot, screw on cap again up to the notice and **secure by tightening the Depth Bolt**.

Function:

Puller be set, link up mechanically (SW largely) and secure puller position.

Pressure screw turn in press pivot.

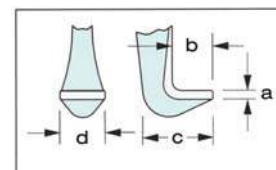
Impact screwdriver prohibited. If piston stroke is not sufficient for release, repeat processing steps: Turn back pressure screw, link up mechanically again and turn pressure screw again in press pivot.

Safety reference: Tighten firmly all bolt connections before working, otherwise slipping danger.

F100 - 2
F100 - 2,5



**Universal-Pullers, 2-arm
with Grease-Hydraulic-Spindle
No.100-HS2
Thread G 1/2" x 14**
Legs are parallel gripping
and fixed on beam



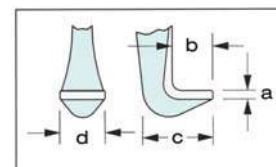
12 t / 120 KN

No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	max. torque pressure-spindle	pressure-spindle thread mm	SW	legs mm				kg
						a	b	c	d	
F100 - 2	50 - 160	145	60 Nm	M10 x 90	13	4	16	35	25	3,4
F100 - 2,5	50 - 200	145	60 Nm	M10 x 90	13	4	16	35	25	3,8
Legs (No. = 1 pair)			for No.							kg
F2 - 220		145	F100-2							1,8
F2 - 300		225	F100-2,5							2,3

F113 - 2
F113 - 2,5



**Universal-Pullers, 3-arm
with Grease-Hydraulic-Spindle
No.100-HS2
Thread G 1/2" x 14**
Legs are parallel gripping
and fixed on beam



12 t / 120 KN

No.	$\varnothing$ mm min. - max.	$\downarrow$ mm	max. torque pressure-spindle	pressure-spindle thread mm	SW	legs mm				kg
						a	b	c	d	
F113 - 2	50 - 160	145	60 Nm	M10 x 90	13	4	16	35	25	4,0
F113 - 2,5	50 - 200	145	60 Nm	M10 x 90	13	4	16	35	25	4,4
Legs (No. = 3 pieces)			for No.							kg
F2 - 220 M		145	F113-2							2,6
F2 - 300 M		225	F113-2,5							3,3



Assembly instruction for replacing mechanical spindle against Grease-Hydraulic-Spindle:
Loosen first Depth Bolt, then unscrew entire cap (SW largely), spindle body turn in pullers pivot,
screw on cap again up to the notice and **secure by tightening the Depth Bolt**.

Function:

Puller be set, link up mechanically (SW largely) and secure puller position.

Pressure screw turn in press pivot.

Impact screwdriver prohibited. If piston stroke is not sufficient for release, repeat processing steps:
Turn back pressure screw, link up mechanically again and turn pressure screw again in press pivot.

Safety reference: Tighten firmly all bolt connections before working, otherwise slipping danger.

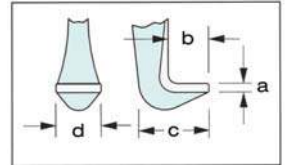
F100 - 3
F100 - 3,5
F100 - 4



**Universal-Pullers, 2-arm
with Grease-Hydraulic-Spindle
No.100-HS3**
Thread G 3/4" x 14
Legs are parallel gripping
and fixed on beam



12 t / 120 KN



No.	$\varnothing$ mm min. - max.	mm	max. torque pressure-spindle	pressure-spindle thread mm	SW	legs mm				kg
						a	b	c	d	
F100 - 3	80 - 250	125	60 Nm	M10 x 90	13	5	25	54	35	8,0
F100 - 3,5	80 - 350	125	60 Nm	M10 x 90	13	5	25	54	35	9,0
F100 - 4	110 - 520	125	60 Nm	M10 x 90	13	5	25	54	35	13,5

Legs (No. = 1 pair)		for No.				kg			
F3 - 200	125	F100-3, -3,5 + -4	5	25	54	35	3,3		
F3 - 300	225	F100-3, -3,5 + -4	5	25	54	35	5,1		
F3 - 400	325	F100-3, -3,5 + -4	5	25	54	35	6,4		
F3 - 500	425	F100-3, -3,5 + -4	5	25	54	35	7,8		
F3 - SP	adjustable 225 to 425	F100-3, -3,5 + -4	5	25	54	35	8,4		



Assembly instruction for replacing mechanical spindle against Grease-Hydraulic-Spindle:

Loosen first Depth Bolt, then unscrew entire cap (SW largely), spindle body turn in pullers pivot, screw on cap again up to the notice and **secure by tightening the Depth Bolt**.

Function:

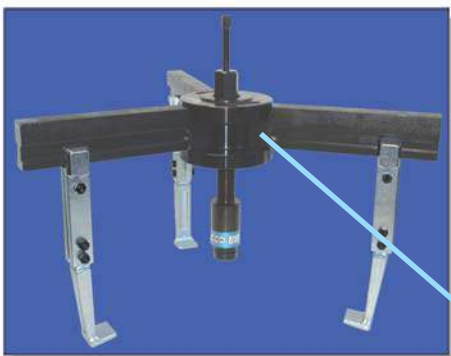
Puller be set, link up mechanically (SW largely) and secure puller position.

Pressure screw turn in press pivot.

Impact screwdriver prohibited. If piston stroke is not sufficient for release, repeat processing steps: Turn back pressure screw, link up mechanically again and turn pressure screw again in press pivot.

Safety reference: Tighten firmly all bolt connections before working, otherwise slipping danger.

15 t / 150 KN



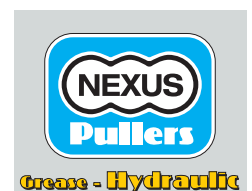
Info:

**Universal-Puller, 3-arm +
160 - H**

with Grease-Hydraulic-Spindle No.100-HS
Thread G 1" x 11
heavy execution
Legs are parallel gripping
and fixed on beam

Beam-Arms are radially adjustable

page 57



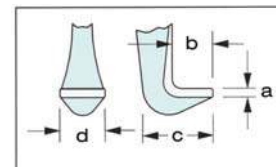
100 - 5 H



**Universal-Puller, 2-arm
with Grease-Hydraulic-Spindle
No.100-HS
Thread G 1" x 11**
Legs are parallel gripping
and fixed on beam



15 t / 150 KN



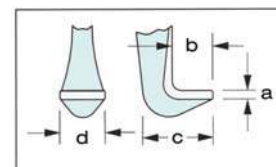
No.	mm min. - max.	mm	max. capacity t KN	max. torque pressure-spindle	pressure-spindle thread mm	SW	leg mm a b c d	kg
100 - 5 H	170 - 640	210	15 150	70 Nm	M14 x 1,5 x 100	17	10 33 55 50	27,0
Legs (No. = 1 pair)			for No.					kg
5 - 300 P		210	100-5H					6,0
5 - 400 P		310	100-5H					7,4
5 - 500 P		410	100-5H					8,8
5 - SP P	adjustable	285 to 585	100-5H					21,8

100 - H



**Universal-Pullers, 3-arm
with Grease-Hydraulic-Spindle
No.100-HS
Thread G 1" x 11**
Legs are parallel gripping
and fixed on beam

15 t / 150 KN



No.	mm min. - max.	mm	max. capacity t KN	max. torque pressure-spindle	pressure-spindle thread mm	SW	legs mm a b c d	kg
100 - H 1	100 - 380	185	15 150	70 Nm	M14 x 1,5 x 100	17	5 25 54 35	22,0
100 - H 2	120 - 520	185	15 150	70 Nm	M14 x 1,5 x 100	17	5 25 54 35	26,3
100 - H 3	120 - 650	185	15 150	70 Nm	M14 x 1,5 x 100	17	5 25 54 35	28,0
Legs (No. = 3 pieces)			for No.					kg
3 - 300 H		185	100-H1, -H2, -H3					7,5
3 - 400 H		285	100-H1, -H2, -H3					9,6
3 - 500 H		385	100-H1, -H2, -H3					11,7
3 - SP H	adjustable	185 to 385	100-H1, -H2, -H3					12,7



Assembly instruction for replacing mechanical spindle against Grease-Hydraulic-Spindle:
Loosen first Depth Bolt, then unscrew entire cap (SW largely), spindle body turn in pullers pivot,
screw on cap again up to the notice and **secure by tightening the Depth Bolt**.

Function:

Puller be set, link up mechanically (SW largely) and secure puller position.

Pressure screw turn in press pivot.

Impact screwdriver prohibited. If piston stroke is not sufficient for release, repeat processing steps:
Turn back pressure screw, link up mechanically again and turn pressure screw again in press pivot.

Safety reference: Tighten firmly all bolt connections before working, otherwise slipping danger.

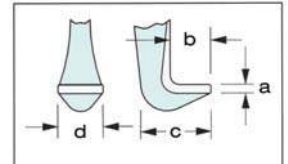
160 - H

**Universal-Puller, 3-arm +
with Grease-Hydraulic-Spindle
No.100-HS**
Thread G 1" x 11
heavy execution
Legs are parallel gripping
and fixed on beam



Special feature:
Beam-arms are
radially adjustable,
exchangeable,
4-arm usable

15 t / 150 KN



No.	Ø mm min. - max.	mm	max. capacity t KN		max. torque pressure-spindle	pressure-spindle thread mm	SW	legs mm				
								a	b	c	d	kg
160 - H	150 - 700	185	15	150	70 Nm	M14 x 1,5 x 100	17	10	25	54	35	47,6
Legs (No. = 3 pieces)			for No.									kg
5 - 300 H		185	160-H					10	33	55	50	9,0
5 - 400 H		285	160-H					10	33	55	50	11,0
5 - 500 H		385	160-H					10	33	55	50	13,3
5 - SP H	adjustable 260 to 560		160-H					10	33	55	50	33,0



Assembly instruction for replacing mechanical spindle against Grease-Hydraulic-Spindle:
Loosen first Depth Bolt, then unscrew entire cap (SW largely), spindle body turn in pullers pivot,
screw on cap again up to the notice and **secure by tightening the Depth Bolt**.

Function:

Puller be set, link up mechanically (SW largely) and secure puller position.

Pressure screw turn in press pivot.

Impact screwdriver prohibited. If piston stroke is not sufficient for release, repeat processing steps:
Turn back pressure screw, link up mechanically again and turn pressure screw again in press pivot.

Safety reference: Tighten firmly all bolt connections before working, otherwise slipping danger.

105



8 t / 80 KN

No.105-0

15 t / 150 KN

No.105-1

Ram Grease-Hydraulic for mechanical pullers



Function:

Puller be set together with Ram, link up mechanically and secure puller position.

Pressure spindle turn in Ram pivot.

Impact screwdriver prohibited.

If piston stroke is not sufficient for release, repeat processing steps:

Turn back pressure spindle, link up mechanically again and turn pressure spindle again in Ram pivot.

No.	stroke	max. torque pressure-spindle	pressure-spindle thread mm	SW	kg
105 - 0	8 mm	60 Nm	M14 x 1,5 x 60	17	0,8
105 - 1	12 mm	70 Nm	M14 x 1,5 x 85	17	1,8

Grease-Hydraulic-Spindles for Puller-System No. 110



110 - 8

Thread UN 1 1/2" x 16

8 t / 80 KN



No.	max. capacity t KN		max. torque pressure-spindle	stroke mm	thread	pressure-spindle thread mm	SW	kg
110 - 8	8	80	60 Nm	10	UN 1 1/2" x 16	M10 x 90	13	1,4

110

Thread UN 1 1/2" x 16

12 t / 120 KN



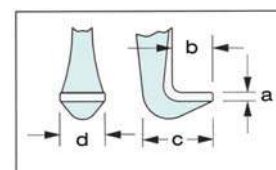
No.	max. capacity t KN		max. torque pressure-spindle	stroke mm	thread	pressure-spindle thread mm	SW	kg
110	12	120	60 Nm	10	UN 1 1/2" x 16	M14 x 1,5 x 50	17	1,6

Spindle Extensions		for No.		kg
110 - V 50	plus + 50 mm	110-8, 110		0,15
110 - V 100	plus + 100 mm	110-8, 110		0,35
110 - V 150	plus + 150 mm	110-8, 110		0,55

Function: Puller be set, link up mechanically (SW largely) and secure puller position. Pressure screw turn in press pivot. **Impact screwdriver prohibited.** If piston stroke is not sufficient for release, repeat processing steps: Turn back pressure screw, link up mechanically again and turn pressure screw again in press pivot.

110 - A

**Puller-System, 2-arm
with Grease-Hydraulic-Spindle No.110-8
self-centering**



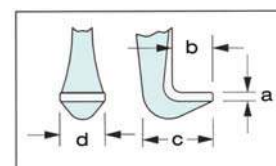
12 t / 120 KN

2-arm

No.	∅ mm min. - max.	mm	max. capacity t KN		max. torque pressure spindle	thread grease-hydraulik spindle	legs mm a b c d				kg
110 - A 1	50 - 100	100	12	120	60 Nm	UN 1 1/2" x 16	5	8	36	25	3,3
110 - A 2	70 - 170	150	12	120	60 Nm	UN 1 1/2" x 16	5	8	36	25	3,5
110 - A 3	70 - 190	250	12	120	60 Nm	UN 1 1/2" x 16	5	8	36	25	4,1
110 - A 4	100 - 210	200	12	120	60 Nm	UN 1 1/2" x 16	5	8	36	25	4,0
110 - A 5	130 - 260	250	12	120	60 Nm	UN 1 1/2" x 16	5	8	36	25	4,3



**Puller-System, 3-arm
with Grease-Hydraulic-Spindle No.110-8
self-centering**



12 t / 120 KN

3-arm

No.	∅ mm min. - max.	mm	max. capacity t KN		max. torque pressure spindle	thread grease-hydraulik spindle	legs mm a b c d				kg
110 - A 10	50 - 100	100	12	120	60 Nm	UN 1 1/2" x 16	5	8	36	25	3,8
110 - A 20	70 - 170	150	12	120	60 Nm	UN 1 1/2" x 16	5	8	36	25	4,1
110 - A 30	70 - 190	250	12	120	60 Nm	UN 1 1/2" x 16	5	8	36	25	5,1
110 - A 40	100 - 210	200	12	120	60 Nm	UN 1 1/2" x 16	5	8	36	25	5,0
110 - A 50	130 - 260	250	12	120	60 Nm	UN 1 1/2" x 16	5	8	36	25	5,4

Grease-Hydraulic-Spindle for Puller-System No.110



110-8

8 t / 80 KN



110

12 t / 120 KN



Thread
UN 1 1/2" x 16

No.	Individual Parts		kg	
110-A 11	Leg 100 mm	1 piece for to 100 mm suitable for pullers No.110-A1, 110-A10	0,5	
110-A 22	Leg 150 mm	1 piece for to 170 mm suitable for pullers No.110-A2, 110-A20	0,6	
110-A 33	Leg 250 mm	1 piece for to 190 mm suitable for pullers No.110-A3, 110-A30	0,9	
110-A 44	Leg 200 mm	1 piece for to 210 mm suitable for pullers No.110-A4, 110-A40	0,9	
110-A 55	Leg 250 mm	1 piece for to 260 mm suitable for pullers No.110-A5, 110-A50	1,0	
110-A 60	Puller, 2-arm	50 - 215 mm $\varnothing$ 225 mm plus extension piece No. 110-V150	6,5	
110-A 62	Leg 225 mm	1 piece with nut and washer suitable for puller No.110-A60	0,8	
110-A 70	Puller, 2-arm with tie rods plus extension piece No. 110-V150	100 - 250 mm $\varnothing$ 280 mm	6,8	
110-A 72	Tie Rods 280 mm	1 pair with protection nut suitable for puller No.110-A70	2,1	
110-A 75	Extensions plus 250 mm	1 pair suitable for puller No.110-A70	1,7	
110-A 80	Internal Extractor	30 - 180 mm $\varnothing$ 140 mm	2,8	
110-B 1	2-arm Beam	without thread part, with bolts and nuts suitable for pullers No.110-A1 to 110-A5	0,4	
110-B 10	3-arm Beam	without thread part, with bolts and nuts suitable for pullers No.110-A10 to 110-A50	0,6	
110-B 11	Thread Part	for beam No.110-B1, 110-B10	0,3	
110-T	Beam, 2-arm	for pullers No.110-A60, 110-A70	3,1	
110-V 50	Extension plus 50 mm	for spindle No.110	0,15	
110-V 100	Extension plus 100 mm	for spindle No.110	0,4	
110-V 150	Extension plus 150 mm	for spindle No.110	0,6	
170-2	Separator 22 - 115 mm $\varnothing$	for use with puller No.110-A70	1,9	
170-3	Separator 25 - 155 mm $\varnothing$	for use with puller No.110-A70	4,2	

Sets on request

Grease-Hydraulic

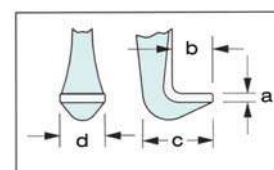
136 - H



**Pullers, 3-arm
with Grease-Hydraulic-Spindle
No.100-HS
Thread G 1" x 11**
heavy execution
Legs are vertically adjustable
During lever action legs press closely
under the part to be removed



15 t / 150 KN



No.	Ø mm min. - max.	mm	max. capacity t	max. torque pressure- spindle KN	max. torque pressure- spindle Nm	pressure-spindle thread mm	SW	legs mm a b c d	kg
136 - H 3	50 - 350	135	15	150	70	M14 x 1,5 x 100	17	5 25 48 30	12,5
136 - H 4	50 - 350	235	15	150	70	M14 x 1,5 x 100	17	5 25 48 30	13,5
136 - H 5	50 - 350	285	15	150	70	M14 x 1,5 x 100	17	5 25 48 30	14,0
136 - H 6	50 - 350	335	15	150	70	M14 x 1,5 x 100	17	5 25 48 30	14,5
136 - H 7	50 - 350	385	15	150	70	M14 x 1,5 x 100	17	5 25 48 30	15,0
Legs (No. = 3 pieces)									
			for No.						kg
136 - LH 3		135	136-H3, -H4, -H5, -H6, -H7						3,7
136 - LH 4		235	136-H3, -H4, -H5, -H6, -H7						5,0
136 - LH 5		285	136-H3, -H4, -H5, -H6, -H7						5,5
136 - LH 6		335	136-H3, -H4, -H5, -H6, -H7						6,0
136 - LH 7		385	136-H3, -H4, -H5, -H6, -H7						6,5



Assembly instruction for replacing mechanical spindle against Grease-Hydraulic-Spindle:
Loosen first Depth Bolt, then unscrew entire cap (SW largely), spindle body turn in pullers pivot,
screw on cap again up to the notice and **secure by tightening the Depth Bolt**.

Function:

Puller be set, link up mechanically (SW largely) and secure puller position.

Pressure screw turn in press pivot.

Impact screwdriver prohibited. If piston stroke is not sufficient for release, repeat processing steps:
Turn back pressure screw, link up mechanically again and turn pressure screw in press pivot.

Safety reference: Tighten firmly all bolt connections before working, otherwise slipping danger.



15 t / 150 KN

Info:

Universal-Puller, 3-arm +

160 - H

with Grease-Hydraulic-Spindle No.100-HS

Thread G 1" x 11

heavy execution

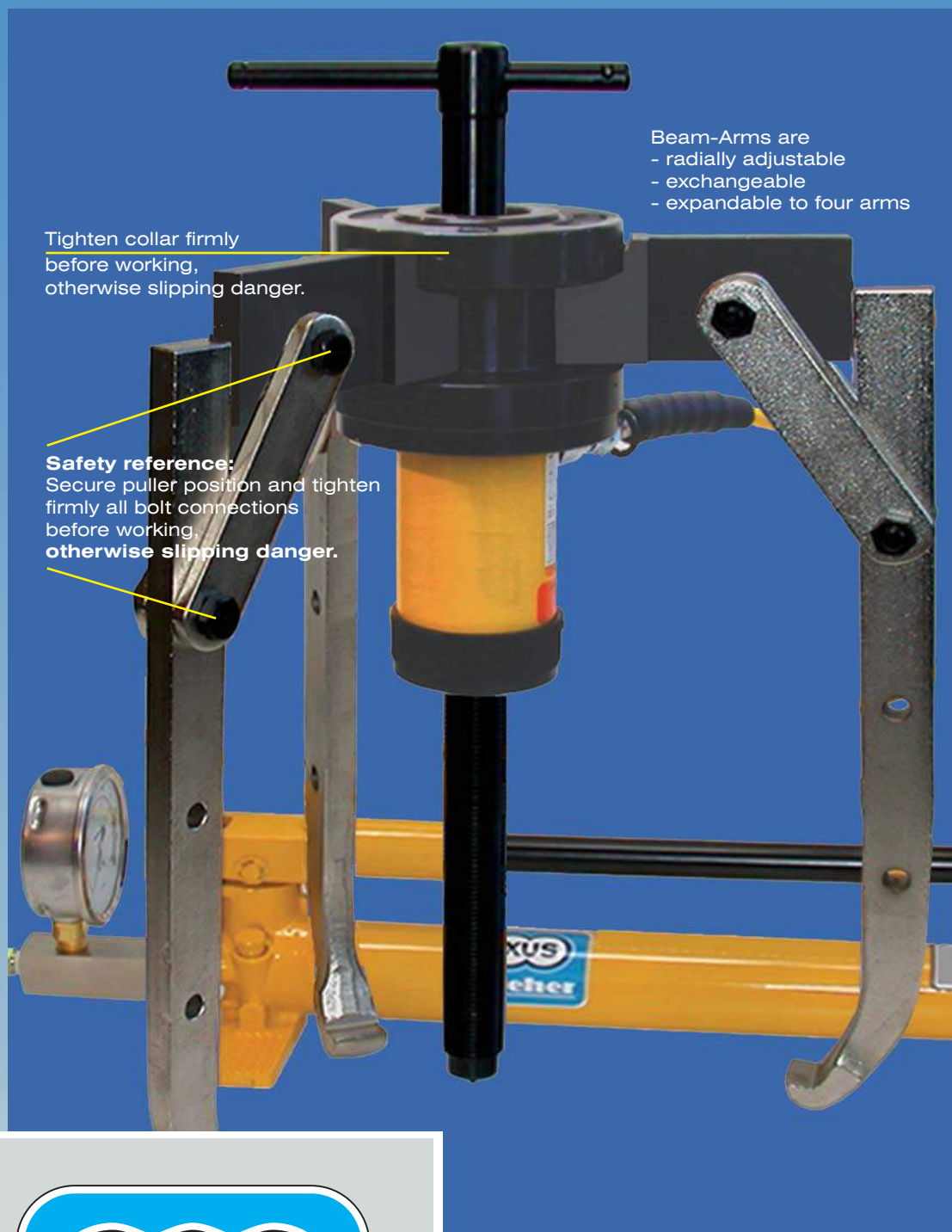
Legs are parallel gripping
and fixed on beam

Beam-Arms are radially adjustable

page 57



Oil-Hydraulic Program



Oil-Hydraulic



pressure
max.700 bar

No. HP-1
No. HP-2
No. HP-3
(manometer
1,8 m hose
couplings)
page 63



pressure
max.700 bar

No. HZ-0 10t / 100 KN
No. HZ-1 15t / 150KN
No. HZ-10 10t / 100KN
No. HZ-20 20t / 200KN

page 64



pressure
max.700 bar

No. HZ-11 17t / 170KN

page 64



pressure
max.700 bar

No. HZ-2 20t / 200 KN
No. HZ-3 30t / 300KN
No. HZ-4 50t / 500KN

page 65



2-arm

Ø - 640
mm 225
to
525

10 t / 100 KN
No. HY 100-10

15 t / 150 KN
No. HY 100-15

17 t / 170 KN
No. HY 100-17

pressure
max.700 bar

page 66



3-arm

Ø - 350
mm 250
to
500

10 t / 100 KN
No. HY 116-10

15 t / 150 KN
No. HY 116-15

17 t / 170 KN
No. HY 116-17

pressure
max.700 bar

page 67



2-arm

Ø - 420 mm 290	Ø - 700 mm 400	Ø - 1000 mm 700
20 t / 200 KN pressure max. 700 bar No. HY 135-20 page 68	30 t / 300 KN pressure max. 700 bar No. HY 135-30 page 68	50 t / 500 KN pressure max. 700 bar No. HY 135-50 page 68

3-arm

Ø - 420 mm 290	Ø - 900 mm 400	Ø - 1000 mm 700
20 t / 200 KN pressure max. 700 bar No. HY 136-20 page 69	30 t / 300 KN pressure max. 700 bar No. HY 136-30 page 69	50 t / 500 KN pressure max. 700 bar No. HY 136-50 page 69



3-arm +

Ø - 700 mm 200 to 500	Ø - 700 mm 200 to 500
15 t / 150 KN pressure max. 700 bar No. HY 160-15 page 70	17 t / 170 KN pressure max. 700 bar No. HY 160-17 page 70



3-arm +

Ø - 500 mm 440	Ø - 500 mm 440
15 t / 150 KN pressure max. 700 bar No. HY 162-15 page 71	17 t / 170 KN pressure max. 700 bar No. HY 162-17 page 71

Ball Joint Extractor, adjustable
for medium trucks



Opening
Ø 36 mm
max.
90 mm

10 t / 100 KN
pressure
max. 700 bar

No. HM169-4
page 40



3-arm +

Ø - 500 mm 270	Ø - 750 mm 310	Ø - 1000 mm 660
20 t / 200 KN pressure max. 700 bar No. HY 163-20 page 72	30 t / 300 KN pressure max. 700 bar No. HY 163-30 page 72	50 t / 500 KN pressure max. 700 bar No. HY 163-50 page 72

heavy trucks, low floor busses



Opening
Ø 45 mm
max.
115 mm

20 t / 200 KN
pressure
max. 700 bar

No. HM169-5
page 41

HP - 1



Hydraulic Hand Pump

single speed pump for use with single acting cylinders, features a finger tip control valve for instant release or pumping action, with internal relief to protect circuit components, usable reservoir capacity: 655 cm³ = 0,655 litre, max. handle effort approx: 50 kp with manometer
1,8 m **high pressure hose** with couplings



pressure: max. 700 bar

No.	connecting thread	volume per stroke	measurements mm	fitting cylinders No.	kg
HP - 1	3/8-18 NPT	2,62 cm ³	L 585 B 133 H 119	HZ-0, HZ-1, HZ-2, HZ-3, HZ-4, HZ-10, HZ-11, HZ-20	with oil 9,0

HP - 2



Hydraulic Pump, pneumatic

operates on 1,7 to 8,6 bar shop air, for use with single acting cylinders, with internal relief to protect circuit components, usable reservoir capacity: 2081 cm³ = 2,081 litre with manometer
1,8 m **high pressure hose** with couplings

pressure: max. 700 bar

No.	connecting thread	volume per stroke	measurements mm	fitting cylinders No.	kg
HP - 2	3/8-18 NPT	0,8 at 200 bar 0,1 at 700 bar	L 255 B 130 H 200	HZ-0, HZ-1, HZ-2, HZ-3, HZ-4, HZ-10, HZ-11, HZ-20	with oil 11,0

HP - 3



Hydraulic Pump, electrical

double speed pump for use with single acting cylinders, usable reservoir capacity: 1900 cm³ = 1,9 litre
motor: 0,37 kW - 220/230 Volt, 50/60 Hertz, single phase (3,2 Ampere)
3 / 2 way valve (push, stop and back)
with 3 m remote control
first step max. 13 bar
second step max. 700 bar
with manometer
1,8 m **high pressure hose** with couplings

pressure: max. 700 bar

No.	connecting thread	volume litre / minute	measurements mm	fitting cylinders No.	kg
HP - 3	3/8-18 NPT	1. step: 3,31 2. step: 0,32	L 244 B 244 H 362	HZ-0, HZ-1, HZ-2, HZ-3, HZ-4, HZ-10, HZ-11, HZ-20	with oil 11,0

HZ - 0**Hydraulic Cylinder**

single acting with spring return
high quality alloyed steel
exchangeable piston cap
necessary min. oil volume:
226 cm³ = 0,226 litre

**10 t / 100 KN**

pressure: max. 700 bar

No.	stroke mm	G thread	hose / coupling connecting thread	measurements mm cylinder / max. length	fitting pumps No.	kg
HZ - 0	156	UNC 2 1/4" x 14	3/8 -18 NPT	247 / 403	HP-1, HP-2, HP-3	4,5

HZ - 1**Hydraulic Cylinder**

single acting with spring return
high quality alloyed steel
exchangeable piston cap
necessary min. oil volume:
308 cm³ = 0,308 litre

15 t / 150 KN

pressure: max. 700 bar

No.	stroke mm	G thread	hose / coupling connecting thread	measurements mm cylinder / max. length	fitting pumps No.	kg
HZ - 1	152	M 68 x 2	3/8 -18 NPT	271 / 423	HP-1, HP-2, HP-3	7,0

HZ - 11**Spindle Hydraulic Cylinder**

single acting with spring return
necessary min. oil volume:
120 cm³ = 0,12 litre

**17 t / 170 KN**

pressure: max. 700 bar

No.	stroke mm	G thread	hose / coupling connecting thread	measurements mm length	fitting pumps No.	kg
HZ - 11	50	G 1" x 11	3/8 -18 NPT	380	HP-1, HP-2, HP-3	4,5

HZ - 10
HZ - 20**Flat-Cylinders**

single acting with spring return

**10 t / 100 KN****20 t / 200 KN**

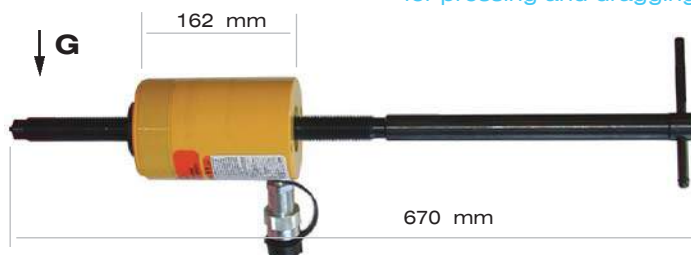
pressure: max. 700 bar

No.	stroke mm	capacity	hose / coupling thread	min. oil volume: cm ³ / litre	measurements mm cylinder	fitting pumps No.	kg
HZ - 10	12	10 t / 100 KN	3/8 -18 NPT	18 / 0,018	42	HP-1, HP-2, HP-3	1,6
HZ - 20	11	20 t / 200 KN	3/8 -18 NPT	32 / 0,032	51	HP-1, HP-2, HP-3	2,8

HZ - 2

Hydraulic Hollow Piston Cylinder with Spindle

single acting with spring return
the nickelplated middle tube for a long life
necessary min. oil volume: 150 cm³ = 0,150 litre
for pressing and dragging



20 t / 200 KN

pressure: max. 700 bar

No.	stroke mm	G spindle-thread	hose / coupling connecting thread	measurements mm		fitting pumps No.	kg
				cylinder	spindle		
HZ - 2	49	UNC 1" - 8	3/8 - 18 NPT	162	670	HP-1, HP-2, HP-3	10,6

HZ - 3

Hydraulic Hollow Piston Cylinder with Spindle

single acting with spring return
the nickelplated middle tube for a long life
necessary min. oil volume: 298 cm³ = 0,298 litre
for pressing and dragging



30 t / 300 KN

pressure: max. 700 bar

No.	stroke mm	G spindle-thread	hose / coupling connecting thread	measurements mm		fitting pumps No.	kg
				cylinder	spindle		
HZ - 3	64	UNC 1 1/4" -7	3/8 - 18 NPT	178	790	HP-1, HP-2, HP-3	15,2

HZ - 4

Hydraulic Hollow Piston Cylinder with Spindle

single acting with spring return
the nickelplated middle tube for a long life
necessary min. oil volume: 626 cm³ = 0,626 litre
for pressing and dragging



50 t / 500 KN

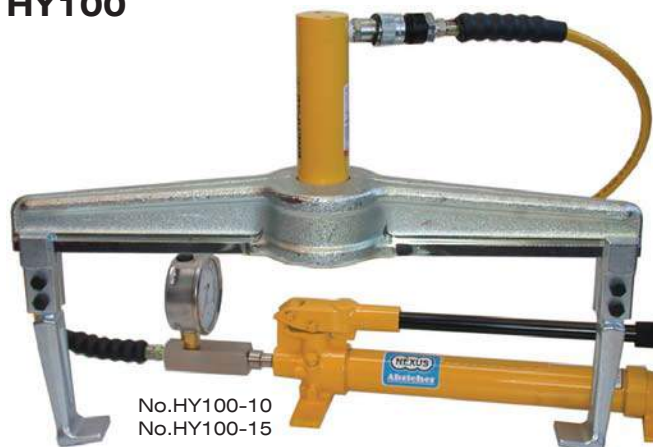
pressure: max. 700 bar

No.	stroke mm	G spindle-thread	hose / coupling connecting thread	measurements mm		fitting pumps No.	kg
				cylinder	spindle		
HZ - 4	76	UNS 1 5/8" - 51/2	3/8 - 18 NPT	247	975	HP-1, HP-2, HP-3	40,5

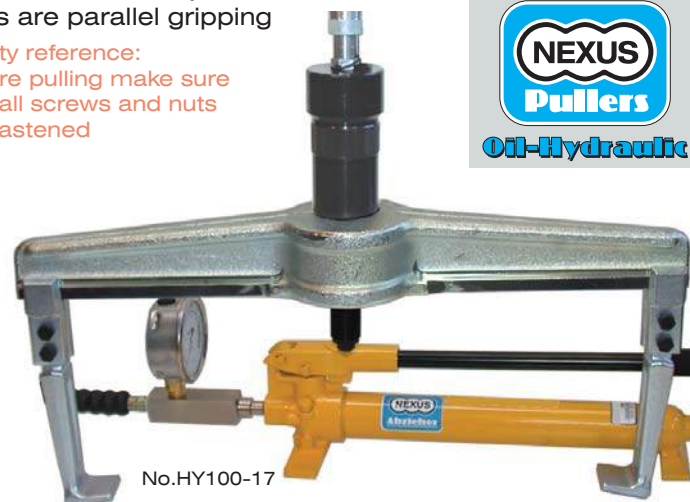
HY100

Universal-Pullers, 2-arm
Legs are parallel gripping

Safety reference:
Before pulling make sure
that all screws and nuts
are fastened



No.HY100-10
No.HY100-15



No.HY100-17

10 t / 100 KN

pressure: max. 700 bar

No.	Ø mm	↓ mm	Puller	stroke mm	kg
HY100 - 10	640	225	with Hydraulic Cylinder HZ-0 UNC 2 1/4"x14 (page 64) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	156	34,0
HM100 - 10	640	225	with Hydraulic Cylinder HZ-0 UNC 2 1/4"x14 (page 64)		25,0
HO 100 - 10	640	225	without hydraulic parts		20,0
Individual Part					kg
H 240 000			1 beam for HY100-10, HM100-10, HO100-10		16,0
Legs see below					

15 t / 150 KN

pressure: max. 700 bar

No.	Ø mm	↓ mm	Puller	stroke mm	kg
HY100 - 15	640	225	with Hydraulic Cylinder HZ-1 M68x2 (page 64) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	152	35,0
HM100 - 15	640	225	with Hydraulic Cylinder HZ-1 M68x2 (page 64)		26,0
HO 100 - 15	640	225	without hydraulic parts		19,0
Individual Part					kg
H 010 000			1 beam for HY100-15, HM100-15, HO100-15		15,0
Legs see below					

17 t / 170 KN

pressure: max. 700 bar

No.	Ø mm	↓ mm	Puller	stroke mm	kg
HY100 - 17	640	225	with Hydraulic Cylinder HZ-11 G1"x11 (page 64) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	50	35,0
HM100 - 17	640	225	with Hydraulic Cylinder HZ-11 G1"x11 (page 64)		26,0
HO 100 - 17	640	225	without hydraulic parts		21,5
Individual Part					kg
H 250 000			1 beam for HY100-17, HM100-17, HO100-17		16,0

Legs (No. = 1 pair)

for No.

kg

5 - 225	225	HY100-10, -15, -17 , HM100-10, -15, -17, HO100-10, -15, -17	4,3
5 - 300	325	HY100-10, -15, -17 , HM100-10, -15, -17, HO100-10, -15, -17	6,0
5 - 400	425	HY100-10, -15, -17 , HM100-10, -15, -17, HO100-10, -15, -17	7,4
5 - 500	525	HY100-10, -15, -17 , HM100-10, -15, -17, HO100-10, -15, -17	8,8

HY116



No. HY116-10
No. HY116-15

Pullers, 3-arm
Legs are vertically adjustable

Safety reference:
Before pulling make sure
that all screws and nuts
are fastened



No. HY116-17



10 t / 100 KN

pressure: max. 700 bar

No.	Ø mm	↓ mm	Puller	stroke mm	kg
HY116 - 10	350	250	with Hydraulic Cylinder HZ-0 UNC 2 1/4"x14 (page 64) Hand Pump HP-1 (page 63) with manometer, 1,8m hose with couplings	156	23,0
HM116 - 10	350	250	with Hydraulic Cylinder HZ-0 UNC 2 1/4"x14 (page 64)		14,0
HO 116 - 10	350	250	without hydraulic parts		9,5

Individual Part

H 280 000	1 beam with plates a. screws for HY116-10, HM116-10, HO116-10	kg
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Legs see below

15 t / 150 KN

pressure: max. 700 bar

No.	Ø mm	↓ mm	Puller	stroke mm	kg
HY116 - 15	350	250	with Hydraulic Cylinder HZ-1 M68x2 (page 64) Hand Pump HP-1 (page 63) with manometer, 1,8m hose with couplings	152	23,5
HM116 - 15	350	250	with Hydraulic Cylinder HZ-1 M68x2 (page 64)		14,5
HO 116 - 15	350	250	without hydraulic parts		7,5

Individual Part

H 170 000	1 beam with plates a. screws for HY116-15, HM116-15, HO116-15	kg
-----------	---	----

Legs see below

17 t / 170 KN

pressure: max. 700 bar

No.	Ø mm	↓ mm	Puller	stroke mm	kg
HY116 - 17	350	250	with Hydraulic Cylinder HZ-11 G1"x11 (page 64) Hand Pump HP-1 (page 63) with manometer, 1,8m hose with couplings	50	22,0
HM116 - 17	350	250	with Hydraulic Cylinder HZ-11 G1"x11 (page 64)		13,0
HO 116 - 17	350	250	without hydraulic parts		8,5

Individual Part

H 290 000	1 beam with plates a. screws for HY116-17, HM116-17, HO116-17	kg
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Legs (No. = 3 pieces)

for No.

				kg
H 170 002	250	HY116-10, -15, -17 , HM116-10, -15, -17, HO116-10, -15, -17		5,0
H 170 003	350	HY116-10, -15, -17 , HM116-10, -15, -17, HO116-10, -15, -17		5,5
H 170 004	400	HY116-10, -15, -17 , HM116-10, -15, -17, HO116-10, -15, -17		6,0
H 170 006	500	HY116-10, -15, -17 , HM116-10, -15, -17, HO116-10, -15, -17		6,5

HY135

Pullers, 2-arm
Legs are vertically adjustable

Safety reference:
Before pulling make sure
that all screws and nuts
are fastened



No.HY135-20

20 t / 200 KN

pressure: max. 700 bar

No.	$\varnothing$ mm	↓ mm	Puller	stroke mm	kg
HY135 - 20	420	290	with Hollow Piston Cyl. HZ-2 UNC 1"- 8 (page 65) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	49	31,1
HM135 - 20	420	290	with Hollow Piston Cyl. HZ-2 UNC 1"- 8 (page 65)		22,1
HO 135 - 20	420	290	without hydraulic parts		11,5

Individual Parts

				kg
H 180 000			1 beam with plates a. screws for HY135-20, HM135-20, HO135-20	5,0
H 180 001		290	1 leg for HY135-20, HM135-20, HO135-20	3,3

30 t / 300 KN

pressure: max. 700 bar

No.	$\varnothing$ mm	↓ mm	Puller	stroke mm	kg
HY135 - 30	700	400	with Hollow Piston Cyl. HZ-3 UNC 1 1/4"- 7 (page 65) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	64	44,0
HM135 - 30	700	400	with Hollow Piston Cyl. HZ-3 UNC 1 1/4"- 7 (page 65)		35,0
HO 135 - 30	700	400	without hydraulic parts		20,0

Individual Parts

				kg
H 190 000			1 beam with plates a. screws for HY135-30, HM135-30, HO135-30	8,0
H 190 001		400	1 leg for HY135-30, HM135-30, HO135-30	6,5

50 t / 500 KN

pressure: max. 700 bar

No.	$\varnothing$ mm	↓ mm	Puller	stroke mm	kg
HY135 - 50	1000	700	with Hollow Piston Cyl. HZ-4 UNS 1 5/8"- 51/2 (page 65) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	76	100,0
HM135 - 50	1000	700	with Hollow Piston Cyl. HZ-4 UNS 1 5/8"- 51/2 (page 65)		90,5
HO 135 - 50	1000	700	without hydraulic parts		50,0

Individual Parts

				kg
H 200 000			1 beam with plates a. screws for HY135-50, HM135-50, HO135-50	16,0
H 200 001		700	1 leg for HY135-50, HM135-50, HO135-50	17,0

HY136

Pullers, 3-arm
Legs are vertically adjustable

Safety reference:
Before pulling make sure
that all screws and nuts
are fastened



20 t / 200 KN

pressure: max. 700 bar

No.	$\varnothing$ mm	$\downarrow$ mm	Puller	stroke mm	kg
HY136 - 20	420	290	with Hollow Piston Cyl. HZ-2 UNC 1"- 8 (page 65) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	49	36,6
HM136 - 20	420	290	with Hollow Piston Cyl. HZ-2 UNC 1"- 8 (page 65)		27,6
HO 136 - 20	420	290	without hydraulic parts		17,0

Individual Parts					kg
H 210 000			1 beam with plates a. screws for HY136-20, HM136-20, HO136-20		7,0
H 210 001		290	1 leg for HY136-20, HM136-20, HO136-20		3,3

30 t / 300 KN

pressure: max. 700 bar

No.	$\varnothing$ mm	$\downarrow$ mm	Puller	stroke mm	kg
HY136 - 30	900	400	with Hollow Piston Cyl. HZ-3 UNC 1 1/4"- 7 (page 65) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	64	54,0
HM136 - 30	900	400	with Hollow Piston Cyl. HZ-3 UNC 1 1/4"- 7 (page 65)		45,0
HO 136 - 30	900	400	without hydraulic parts		30,0

Individual Parts					kg
H 220 000			1 beam with plates a. screws for HY136-30, HM136-30, HO136-30		11,5
H 220 001		400	1 leg for HY136-30, HM136-30, HO136-30		6,5

50 t / 500 KN

pressure: max. 700 bar

No.	$\varnothing$ mm	$\downarrow$ mm	Puller	stroke mm	kg
HY136 - 50	1000	700	with Hollow Piston Cyl. HZ-4 UNS 1 5/8"- 51/2 (page 65) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	76	120,0
HM136 - 50	1000	700	with Hollow Piston Cyl. HZ-4 UNS 1 5/8"- 51/2 (page 65)		110,5
HO 136 - 50	1000	700	without hydraulic parts		70,0

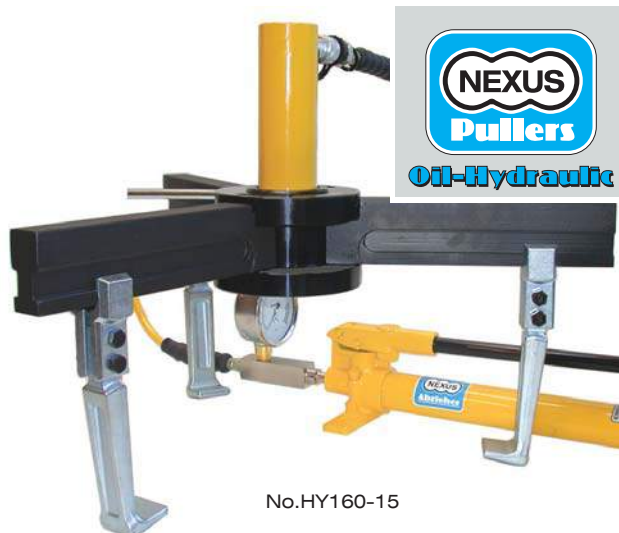
Individual Parts					kg
H 230 000			1 beam with plates a. screws for HY136-50, HM136-50, HO136-50		20,0
H 230 001		700	1 leg for HY136-50, HM136-50, HO136-50		17,0

HY160 - 15

Pullers, 3-arm +
Legs are parallel gripping

Special feature:
Beam-arms are
radially adjustable,
exchangeable,
4-arm usable

Safety reference:
Before pulling make sure
that all screws and nuts
are fastened



No.HY160-15

15 t / 150 KN

pressure: max. 700 bar

No.	$\varnothing$ mm	$\downarrow$ mm	Puller	stroke mm	kg
HY160 - 15	150 - 700	200	with Hydraulic Cylinder HZ-1 M68x2 (page 64) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	156	54,0
HM160 - 15	150 - 700	200	with Hydraulic Cylinder HZ-1 M68x2 (page 64)		45,0
HO 160 - 15	150 - 700	200	without hydraulic parts		38,0

Individual Parts

				kg
H 030 000			1 beam with brace ring for HY160-15, HM160-15, HO160-15	10,0
H 030 001			1 beam-arm for HY160-15, HM160-15, HO160-15	7,0
5 - 200 M		200	3 legs for HY160-15, HM160-15, HO160-15	6,5
5 - 300 M		300	3 legs for HY160-15, HM160-15, HO160-15	9,0
5 - 400 M		400	3 legs for HY160-15, HM160-15, HO160-15	11,0
5 - 500 M		500	3 legs for HY160-15, HM160-15, HO160-15	13,3

HY160 - 17

Pullers, 3-arm +
Legs are parallel gripping

Special feature:
Beam-arms are
radially adjustable,
exchangeable,
4-arm usable

Safety reference:
Before pulling make sure
that all screws and nuts
are fastened



No.HY160-17

17 t / 170 KN

pressure: max. 700 bar

No.	$\varnothing$ mm	$\downarrow$ mm	Puller	stroke mm	kg
HY160 - 17	150 - 700	200	with Hydraulic Cylinder HZ-11 G1"x11 (page 64) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	50	56,0
HM160 - 17	150 - 700	200	with Hydraulic Cylinder HZ-11 G1"x11 (page 64)		47,0
HO 160 - 17	150 - 700	200	without hydraulic parts		40,0

Individual Parts

				kg
H 260 000			1 beam with brace ring for HY160-17, HM160-17, HO160-17	12,5
H 030 001			1 beam-arm for HY160-17, HM160-17, HO160-17	7,0
5 - 200 M		200	3 legs for HY160-17, HM160-17, HO160-17	6,5
5 - 300 M		300	3 legs for HY160-17, HM160-17, HO160-17	9,0
5 - 400 M		400	3 legs for HY160-17, HM160-17, HO160-17	11,0
5 - 500 M		500	3 legs for HY160-17, HM160-17, HO160-17	13,3

HY162 - 15

Puller, 3-arm +
Legs are vertically adjustable

Special feature:
Beam-arms are
radially adjustable,
exchangeable,
4-arm usable

Safety reference:
Before pulling make sure
that all screws and nuts
are fastened



No.HY162-15

15 t / 150 KN

pressure: max. 700 bar

No.	$\varnothing$ mm	$\downarrow$ mm	Puller	stroke mm	kg
HY162 - 15	500	440	with Hydraulic Cylinder HZ-1 M68x2 (page 64) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	156	38,0
HM162 - 15	500	440	with Hydraulic Cylinder HZ-1 M68x2 (page 64)		29,0
HO 162 - 15	500	440	without hydraulic parts		22,0

Individual Parts

No.	$\varnothing$ mm	$\downarrow$ mm	Part	kg
H 100 000			1 beam with brace ring for HY162-15, HM162-15, HO162-15	10,0
H 100 001			1 beam-arm with plates a. screws for HY162-15, HM162-15, HO162-15	4,0
H 100 002		440	1 leg for HY162-15, HM162-15, HO162-15	3,3

HY162 - 17

Pullers, 3-arm +
Legs are vertically adjustable

Special feature:
Beam-arms are
radially adjustable,
exchangeable,
4-arm usable

Safety reference:
Before pulling make sure
that all screws and nuts
are fastened



No.HY162-17

17 t / 170 KN

pressure: max. 700 bar

No.	$\varnothing$ mm	$\downarrow$ mm	Puller	stroke mm	kg
HY162 - 17	500	440	with Hydraulic Cylinder HZ-11 G1"x11 (page 64) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	50	37,5
HM162 - 17	500	440	with Hydraulic Cylinder HZ-11 G1"x11 (page 64)		28,5
HO 162 - 17	500	440	without hydraulic parts		24,0

Individual Parts

No.	$\varnothing$ mm	$\downarrow$ mm	Part	kg
H 270 000			1 beam with brace ring for HY162-17, HM162-17, HO162-17	12,5
H 100 001			1 beam-arm with plates a. screws for HY162-17, HM162-17, HO162-17	4,0
H 100 002		440	1 leg for HY162-17, HM162-17, HO162-17	3,3

HY163

Pullers, 3-arm +
Legs are vertically adjustable

Special feature:
Beam-arms are
radially adjustable,
exchangeable,
4-arm usable

Safety reference:
Before pulling make sure
that all screws and nuts
are fastened



No.HY163-30

20 t / 200 KN

pressure: max. 700 bar

No.	$\varnothing$ mm	↓ mm	Puller	stroke mm	kg
HY163 - 20	500	270	with Hollow Piston Cyl. HZ-2 UNC 1"- 8 (page 65) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	49	47,0
HM163 - 20	500	270	with Hollow Piston Cyl. HZ-2 UNC 1"- 8 (page 65)		38,0
HO 163 - 20	500	270	without hydraulic parts		27,0

Individual Parts

H 140 000			1 beam with brace ring and flange for HY163-20, HM163-20, HO163-20	15,0
H 140 001			1 beam-arm with plates and screws for HY163-20, HM163-20, HO163-20	4,0
H 140 002		270	1 Leg for HY163-20, HM163-20, HO163-20	3,3

30 t / 300 KN

pressure: max. 700 bar

No.	$\varnothing$ mm	↓ mm	Puller	stroke mm	kg
HY163 - 30	750	310	with Hollow Piston Cyl. HZ-3 UNC 1 1/4"- 7 (page 65) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	64	76,0
HM163 - 30	750	310	with Hollow Piston Cyl. HZ-3 UNC 1 1/4"- 7 (page 65)		67,0
HO 163 - 30	750	310	without hydraulic parts		62,0

Individual Parts

H 150 000			1 beam with brace ring and flange for HY163-30, HM163-30, HO163-30	27,0
H 150 001			1 beam-arm with plates and screws for HY163-30, HM163-30, HO163-30	5,0
H 150 002		310	1 leg for HY163-30, HM163-30, HO163-30	6,5

50 t / 500 KN

pressure: max. 700 bar

No.	$\varnothing$ mm	↓ mm	Puller	stroke mm	kg
HY163 - 50	1000	660	with Hollow Piston Cyl. HZ-4 UNS 1 5/8"- 51/2 (page 65) Hand Pump HP-1 (page 63) with manometer, 1,8 m hose with couplings	76	156,0
HM163 - 50	1000	660	with Hollow Piston Cyl. HZ-4 UNS 1 5/8"- 51/2 (page 65)		147,0
HO 163 - 50	1000	660	without hydraulic parts		106,0

Individual Parts

No.	$\varnothing$ mm	↓ mm	kg	
H 160 000			1 beam with brace ring and flange for HY163-50, HM163-50, HO163-50	27,0
H 160 001			1 beam-arm with plates and screws for HY163-50, HM163-50, HO163-50	10,0
H 160 002		660	1 leg for HY163-50, HM163-50, HO163-50	17,0



Oil-Hydraulic



Special: Beam-Arms radially adjustable





Automotive

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