HYDRAULIC PULLERS

MODELS:
FU0500 - FU1000 - FU2000 - FU3000 - FU5000 COMPLETE
FV0500-1000-2000-3000-5000 3 JAWS PULLER
FX0500-1000-2000-3000-5000 2 JAWS PULLER
FT0500-1000-2000-3000-5000 GROSS BEARING PULLER, SIMPLE
FZ0500-1000-2000-3000-5000 GROSS BEARING PULLER, COMPLETE

LARZEP, S.A.
Avenida Urtiaga, 6
48269 MALLABIA, SPAIN
Tel. +34 943 171200
Fax. +34 943 174166
e-mail: sales@larzep.com
www.larzep.com

LARZEP AUSTRALIA PTY. LTD.
104 Wedgewood Road,
HALLAM, VIC. 3803 AUSTRALIA
Tel. +61 (3) 9796 3744
Fax. +61 (3) 9796 5964
e-mail: sales@larzep.com.au
www.larzep.com.au

LARZEP GB LTD.
3 Commerce Way - Leighton Buzzard
BEDS LU7 4RW UNITED KINGDOM
Tel. +44 1525 377819
Fax. +44 1525 851990
e-mail: sales@larzep.co.uk
www.larzep.co.uk

INDEX

1. ESSENTIAL SAFETY REQUIREMENTS.

The LARZEP hydraulic pullers has been designed and manufactured in compliance to our quality standards and under the supervision and control that the ISO 9001 rules forces.

An inadequate use of the equipment could cause hard physical damages to the operator, as well as the machine or the treated material.

The use of the machine must be done in perfect technical conditions and in accordance to the considerations described in the present manual. The operator must know the inherent risk to the use of high pressure hydraulic elements and must be perfectly trained in the machine working.
This equipment has been designed only for the applications described in this manual, other kind of uses are not foreseen and so, LARZEP, S.A. will not be responsible in any case of the damages caused by an inadequate use.
The instructions must be always available for the operator. In addition to the instruction manual, the operator must be trained in the use of the machine, the rules and standards corresponding to this kind of applications; such as: Accident prevention, environmental protection, etc.
The exposed personnel must use protective devices such as: Boots, Goggles, Gloves, Clothes, etc. depending on the application.

 Boots  Goggles  Gloves  Clothes

In every new use of the equipment, follow the START UP chapter of the present manual.
Never modify the equipment or add elements that could affect to the security without the manufacturer authorization.
The repairs, maintenance operations, etc. only will be done by specialist personnel and with original LARZEP spare parts.
Replace periodically the hydraulic hoses if they are part of the installation although they do not seem damaged.
Make the maintenance operations regularly as we explain in the manual, all this operation must be done with depressurized and disconnected equipments.
Once the operation is done, disconnect the equipment, clean and store it in a clean and safety place.

In case of see a bad function of the machine or any of the components of the installation, stop the application immediately, block the system and if it is possible, solve the problem.

Before start the operation assure that there is not anybody exposed in the dangerous zone. Check that the machine and the accessories has not suffered damages during the transport or installation. Always use the equipment in well-lit areas.
All the material of the installation must be in stable zone and the operator must foresee the movements of the application.

Choose the most suitable model for the application from the wide range available, and make sure that it will not exceed 80% of its nominal capacity during normal operation.

Do not exposure the equipment to intense heat sources (welding).

Include control elements (pressure gauges) in the installation in order to enable the operator to monitor the pressure in the system and ensure that the equipment's nominal capacity is never exceeded. Be prepared to use safety valves and accessories if the safety criteria so demand.
The pump controls should be activated manually, as should the connections between elements equipped with quick plugs.
Clean the quick plugs before connecting and make sure the connections are perfect (first insert as far as the plug will go and then screw in by hand). **A bad connection may result in improper functioning and may even generate a safety hazard.**
Install the device in such a way as to ensure that the hoses are not subjected to sharp or forced bends or thrust actions that may cause them to break.
Do not modify the device (welded parts, lengthening drive levers, etc.) without consulting the manufacturer.
Do not use the hoses for transporting the device. Use the handles on the cylinders (when appropriate) and set the pump lever to the transportation position.
When filling the pump with oil, always use **LARZEP** hydraulic oil or another oil of similar characteristics. Fill only to the indicated level and remember that the cylinder piston should be retracted.

BREAK PREVENTION:
Check for perfectly tightened extenders, nuts and guillotine. Keep spindle greased and extenders centred.
When the pieces to be pulled are forced to work in bad conditions, we must reduce the maximum load applied to the puller. As standard, we'll reduce to half of the load.
The break will never be dangerous because there's no risk of element projection. (Puller's parts). This danger is fictitious; it always seems to be dangerous due to the noise and the commotion that a big puller provokes when broken.
The unique risk when broken; and this case is improbably, is the falling down of the puller due to the lost of the supporting point. (It doesn't happen because generally an extender and the spindle are enough to support it.)

2. WARRANTY.

LARZEP, S.A. guarantees its products against all design and manufacturing defects for the durations of two years from the date of purchase. This guarantee does not include the ordinary wear of both metal and non-metal parts, abuse, using the equipment beyond its rated capacity and any wear or damage incurred as a result of using a hydraulic fluid which is not recommended by **LARZEP, S.A.**

Please note that if the equipment is disassembled or serviced by anyone other than an authorized service dealer or by **LARZEP, S.A.**, this guarantee is rendered null and void.

In the event of a warranty claim, return the equipment, to **LARZEP, S.A**. or the authorized dealer which sold you the hydraulic equipment, **LARZEP, S.A**. will repair or replace the faulty equipment, whichever is deemed most appropriate. **LARZEP, S.A.** shall not be held liable for any consequential damages or losses, which may occur as a result of faulty equipment

3. TECHNICAL FEATURES.

Full equip	**FU0500**	**FU1000**	**FU2000**	**FU3000**	**FU5000**
Hydraulic Part	JH00518/1	JH01204/1	JH02205/1	JH03005/1	JH06008/1
Mechanic Part	FU0500/M	FU1000/M	FU2000/M	FU3000/M	FU5000/M
Packing	CU1000	CU1000	CU2000	CU3000	CU5000

	PART	**FU0500**	**FU1000**	**FU2000**	**FU3000**	**FU5000**	**FV**	**FX**	**FZ**	**FT**
Hydraulic Part	**Cylinder**	SM00518	SH01204	SH02205	SH03005	SH06008	*	*	*	*
	Pump	W00307	W00307	W10707	W22307	W22307	*	*	*	*
	Hose	AP2015	AP2015	AP2015	AP2015	AP2020	*	*	*	*
	Gauge adaptor	AZ1501	AZ1501	AZ1501	AZ1501	AZ1501	*	*	*	*
	Gauge	AV10008	AV10008	AV10008	AV10008	AV10008	*	*	*	*
	Male coupling	AZ3120	AZ3120	AZ3120	AZ3120	AZ3120	*	*	*	*
		FU0500/M	FU1000/M	FU2000/M	FU3000/M	FU5000/M				
Mechanic Part	**Jaws**	FU0507 (3)	FU1007 (3)	FU2007 (3)	FU3007 (3)	FU5007 (3)	**3**	**2**		
	3 Jaw crosshead	_	_	FU2008	FU3008	FU5008	**(*)**	**(*)**		
	2 Jaw crosshead	_	_	FU2009	FU3009	FU5009	**(*)**			
	2 and 3 jaw crosshead	FU0508	FU1008	_	_	_	**(*)**	**(*)**		
	Arms	FU0510 (6)	FU1010 (6)	FU2010 (6)	FU3010 (6)	FU5010 (6)	**6**	**4**		
	Jaw bolts + nuts	FU0511 (6)	FU1011 (6)	FU2011 (6)	FU3011 (6)	FU5011 (6)	**6**	**4**		
	Spindle + Handle	_	FU1012	FU2012	FU3012	FU5012	*	*	*	*
	Short bolts	_	14A0330 (2)	14A0074 (2)	14A0075 (2)	14A0076 (2)	*	*		
	Hollow saddle	_	AZ0551	AZ0552	AZ0553	AZ0556	*	*	*	*
	Bearing puller	FR0500	FR1000	FR2000	FR3000	FR5000			*	
	Gross crosshead	FU0517	FU1017	FU2017	FU3017	FU5017			*	*
	Blank nuts	FU0518 (2)	FU1018 (2)	FU2018 (2)	FU3018 (2)	FU5018 (2)			*	*
	Washer	FU0519 (2)	FU1019 (2)	FU2019 (2)	FU3019 (2)	FU5019 (2)			*	*
	Slides	FU0520 (2)	FU1020 (2)	FU2020 (2)	FU3020 (2)	FU5020 (2)			*	*
	Fixing nuts	FU0521 (2)	FU1021 (2)	FU2021 (2)	FU3021 (2)	FU5021 (2)			*	*
	Large extenders	FU0522 (2)	FU1022 (2)	FU2022 (2)	FU3022 (2)	FU5022 (2)			*	*
	Short extenders	FU0523 (2)	FU1023 (2)	FU2023 (2)	FU3023 (2)	FU5023 (2)			*	*
	Bearing cup puller	_	FI1000	FI2000	FI3000	FI5000			*	
	Point protector	FU0525	FU1025	FU2025	FU3025	FU5025	*	*	*	*
	Connection nuts	14B0030 (2)	14B0051 (2)	14B0029 (2)	14B0030 (2)	14B0031 (2)			*	*
	Long bolts	_	14A0331 (2)	14A0098 (2)	14A0099 (2)	14A0100 (2)			*	*
	Wooden case	CU1000	CU1000	CU2000	CU3000	CU5000	*	*	*	*

*** Part included in set**
*** Part included depending on the size: 2 and 3 jaw body for 5 and 10 ton, and different bodies for 2 and 3 jaws for 20, 30 and 50 ton**

4. START UP.

All models

Keep the spindle greased and cleaned.

1. Check the safety hole of the axle, if it hasn't the hole, use the shaft protector as supporting point.
2. Hold jaws slightly by tightening clamps bolts.
3. Place jaws in the lowest hole and centred respect the spindle.
4. Apply hydraulic force. Do not exceed the 80% of the nominal capacity of the equipment.
5. When using the Bearing Cup puller, do not exceed the 70% of the nominal capacity of the equipment.
6. When using the Bearing puller, do not exceed the 50% of the nominal capacity of the equipment.
7. Never hit the spindle.

The pullers can break due to:

- Changed parts (emery stone...)
- Blowlamp used whilst pulling.
- Strikes.
- Overload.

1. The whole set delivered in a strong wooden box to protect the equipment from damages during the transport. Once the application is finished clean the equipment and store it in the box until the next use.
2. Unpack the equipment checking that all the pieces described in the spare part sheet are in; and that have not suffered damages.
3. Connect the hose and the quick coupler, assure a perfect connection.
4. Pump several times with the lever; check the screw is slightly opened (turn left) to purge the circuit.
5. Close manually the screw (turn right). When we pump, the piston will advance. If we open the screw again, the piston returns thanks to the spring.

Models FV: 2 and 3 Jaw Puller:
Supplied with common 2 and 3 jaw body for 5 and 10 ton models.
Supplied with two different bodies for 2 jaws and 3 jaws in 20, 30 and 50 ton models.

- Keep the spindle greased and cleaned.
- Check the safety hole of the axle, if it hasn't the hole, use the shaft protector as supporting point.
- Hold jaws slightly by tightening clamps bolts.
- Place jaws in the lowest hole and centred respect the spindle.
- The Jaws works perfectly whit a maximum angle of 10º
- Set the puller correctly, adjust better the first alignment.
- Tighten the spindle turning it.
- The jaws have to be supported completely.
- Tighten the screws of the links.
- Pump several times to pull the piece.

Models FX: 2 Jaw Puller:
As same as FV series, but with only 2 jaws.

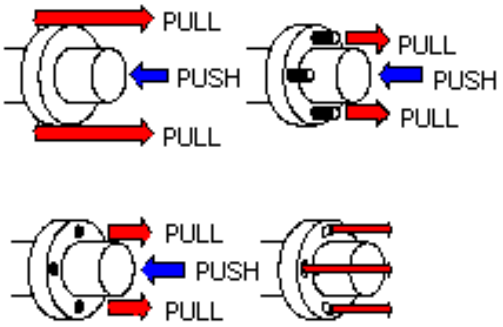
Models FZ: Gross Bearing Complete Puller:
Gross Bearing Complete Puller includes: 2 sets of extenders of different lengths and joining nuts. The complete set also includes bearing puller (FR) and Bearing Cup puller (FI). For constructive reasons, the 5 ton model doesn't include the FI bearing cup puller accessory.

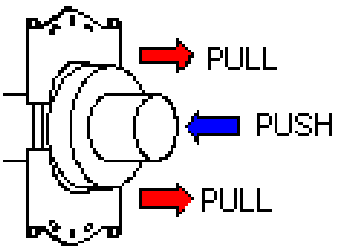
- Keep the spindle greased and cleaned.
- Check the safety hole of the axle, if it hasn't the hole, use the shaft protector as supporting point.
- Keep extenders centred and the crosshead fully horizontal.
- Use hydraulic pump to get pulling power.
- The Bearing Puller must be used always placing the piece to be pulled, in the flat face of the puller. NEVER THE OTHER WAY ROUND.

Models FT Gross Bearing Simple Puller:
Extender puller: supplied with two different lengths and joining nuts. Used for mounting and dismantling
As same as models FZ. It DOESN'T include Bearing and Bearing Cup Pullers.

OPERATION

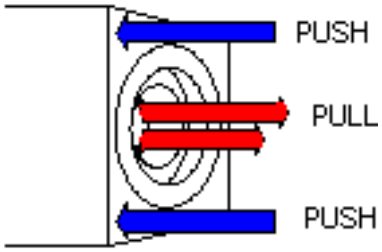
To grip and pull a gear, bearing, wheel, pulley, etc. from a shaft:





In order to perform a proper pull, make sure you firmly grip the gear, bearing, wheel, etc. and apply force to shaft.
Depending on the job we offer a complete range of hydraulic pullers.

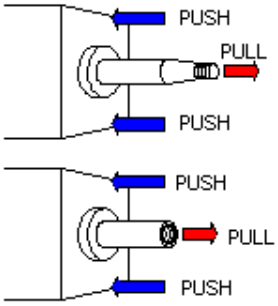
To grip and pull an internal bearing:



Place the (FI) Bearing Cup Puller inside the bearing to be pulled, check the puller is centred.

Use the internal puller FI in combination with the FZ o FT models.

To grip and pull a shaft from housing:

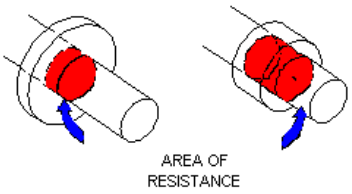


Fasten to the threaded male end of the shaft to pull while pushing against the housing.
Use the thread of the shaft to tighten the puller and this way pull while pushing against the housing.

How to choose the capacity of a puller

For hydraulic pullers, the maximum **force exerted in tons should be 7 times the diameter of the shaft in inches.**

Shaft diam. in inches	Shaft diam. in mm	Cap. Puller in Tons
0" - 2"	0 - 50	20
2" - 3 1/2"	50 - 87	30
3 1/2" - 5 1/2"	87 - 136	50



5. MAINTENANCE.

- All the maintenance operations must be done with depressurized equipment and disconnected hydraulic and electrically.
- Always use **LARZEP** original spare parts.
- In every use of the equipment make a visual inspection; check the oil level, damages in hydraulic part (scratched piston, thread, leaks, etc.), the condition of the accessories.(hoses, couplers, etc.)
- Clean the equipment after each use and keep grease critical areas: threads, shafts, inside the roller, piston, etc. before store the equipment in the box.
- In case of frequent use, replace periodically the hoses and couplers although they do not seem damaged.
- Periodically (at least once to the year), replace the hydraulic oil of the tank by clean oil.
- The oil filling it's made through the plug. Check the level with the dipstick placing the pump head down in vertical position. Use L**ARZEP AZ8901 oil.**
- The maintenance operations or repairs that suppose the dismantling of the mechanical parts of the equipment (jack, cylinder or pump) must be done by specialist personnel.

	PROBLEM		**DIAGNOSIS**		**SOLUTION**
1	The piston of the cylinder does not advance.	1.1	Excess or lack of oil in the tank.	1.1	Check the level and refill.
		1.2	Clogged filter.	1.2	Dismantle the pump and clean it.
		1.3	**Oil leak by the admission ball of the pump.**	**1.3**	**Repair the ball seat and replace the ball.**
		1.4	Pressure collar of the cylinder damaged.	1.4	Replace the detent.
		1.5	Cup of the pump damaged.	1.5	Replace the collar.
		1.6	**Pressure relief valve of the pump unrated.**	**1.6**	**Rate the valve.**
		1.7	A bad connection of the hose.	1.7	Check the connection.
2	The cylinder does not reach pressure.	2.1	Pressure collar of the cylinder damaged.	2.1	Replace the detent.
		2.2	Leak by the ball of the action screw.	**2.2**	**Repair the ball seat and replace the ball.**
		2.3	**Oil leak by the admission ball of the pump.**	**2.3**	**Repair the ball seat and replace the ball.**
3	The piston does not return.	3.1	Ball of the action screw pasted.	3.1	Release the screw and move the ball.
		3.2	Jamming or twisted piston in the cylinder.	3.2	Repair or replace the piston.
		3.3	Damaged spring in the cylinder.	3.3	Replace the spring.
		3.4	Excess of oil in the tank.	3.4	Check the level.

The solutions in black must be carried out by specialist personnel.

6. DECLARATION OF CONFORMITY.

DECLARACION DE CONFORMIDAD

LARZEP, S.A.
Dirección: Avda. Urtiaga, 6
48269 Mallabia ESPAÑA
Declaramos bajo nuestra exclusiva responsabilidad la conformidad de los productos a los que refiere esta declaración, con las disposiciones de la directiva:
E
89/392/CEE, 91/368/CEE, 93/44/CEE, 93/68/CEE, 98/37/CEE

DECLARATION DE CONFORMITE

Nous, LARZEP, S.A.
Adresse: Avda. Urtiaga, 6
48269 Mallabia SPAIN
Déclarons sous notre seule responsabilité que les produits auxqueis se réfère cette déclration sont conformes aux dispositions des Directives:
F
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

DECLARAÇÁO DE CONFORMIDADE

Nós, LARZEP, S.A.
Endereço: Avda. Urtiaga, 6
48269 Mallabia SPAIN
Declaramos, sob nossa única responsabilidade, que os seguintes produtos, incluídos nesta declaração estão em conformidade com o disposto na Directiva:
P
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

ÖVERENSSTEMMELSESERKLÆRING

Vi, LARZEP, S.A.
Adresse: Avda. Urtiaga, 6
48269 Mallabia SPAIN
Erklærer på eget ansvar, at følgende produkter som er omfattet af denne erklæringen, er i overensstemmelse med bestemmelsene i Direktiv:
DK
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

ERKLÆRINGOM OVERENSSTEMMELSE

Vi, LARZEP, S.A.
Adresse: Avda. Urtiaga, 6
48269 Mallabia SPAIN
Erklærer på eget ansvar, at følgende produkter som dekkes av denne erklæringen, er i overensstemmelse med bestemmelsene i Direktiv:
N
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

ÜBEREINSTIMMUNGSERKLÄRUNG

Wir, LARZEP, S.A.
Anschrift: Avda. Urtiaga, 6
48269 Mallabia SPAIN
Erklären aufeigene Verantwortung, , daß folgende Produkte, auf die sich diese Erklärung bezieht, mit den Bedingungen der Direktiven 89/392/EEC,
D
91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC übereinstimmen.

DECLARATION OF CONFORMITY

We, LARZEP, S.A.
Address: Avda. Urtiaga, 6
48269 Mallabia SPAIN
Declare under our sole responsability that the following products to which this declaration relates conform with the provisions of Directives:
GB
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

DICHIARAZIONE DI CONFORMITÀ

Noi, LARZEP, S.A.
Indirizzo: Avda. Urtiaga, 6
48269 Mallabia SPAIN
Dichiariamo sotto la nostra esclusiva responsabilità che i prodotti ai quali questa dichiarazione si riferisce sono conformi quanto previsto dalle Direttive:
I
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

VAATIMUSTENMUKAISUUSVAKUUTUS.

Me, LARZEP, S.A.
Osoite: Avda. Urtiaga, 6
48269 Mallabia SPAIN
Vakuutamme yksinomaan omalla vastuullamme, että seuraavat tuotteet, joihin tämä vakuutus liittyy, ovat seuraavien Direktiivien vaatimusten mukaisia:
FIN
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

VERKLARINGVAN OVEREENKOMST.

Wij, LARZEP, S.A.
Adres: Avda. Urtiaga, 6
48269 Mallabia SPAIN
Verklaren geheel onder eigen verantwoordelijkheid dat de volgende produkten, waarop deze verklaring heeft in overeenstemming zijn met de bepalingen van Richtlijn:
NL
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

FÖRSÄKRAN OM ÖVERESSTÄMMELSE

Vi, LARZEP, S.A.
Adress: Avda. Urtiaga, 6
48269 Mallabia SPAIN
Försäkrar under eget ansvar att följande produkter som omfattas av denna försäkran är i överensstämmelsemed villkoren i Direktiv:
S
89/392/EEC, 91/368/EEC, 93/44/EEC, 93/68/EEC, 98/37/EEC

Tipo, Type, Typ, Tyyppi.

SM / SH / SP / SMP/ SX / SMX / ST / STX / SL / SMA / SHA / SSR / T / TE/ TD / D / DH / DDR / Z / ZR / W / X / YA / YG / YZ / HM / HE / HG / HZ / HS/ WI / CK / CC / CN / FU / FV / FZ / FA / CY / AA / AU / CT / C / KC

A / AB / AC / BL / B / AF / F / HN / DLG / DL / DP / VA / VB / VC / VZ / EC / EE / EG / EM / EZ / CA / CS

Mallabia, ESPAÑA 2005 / 04 / 27

Lugar y fecha, place and date, lieu et date, plats och datum, paikka ja päivämäärä, udstedelsessted og-dato, ort und datum, plaats en datum, local e data, luogo e data.

LARZEP, S.A.

Nombre y firma, name and signature, nom et signature, namn och underskrift, nimi ja nimikirjoitus, navn og underskrift, name und unterskrift, naäm en handtekening, nome e assinatura, nome e firma.

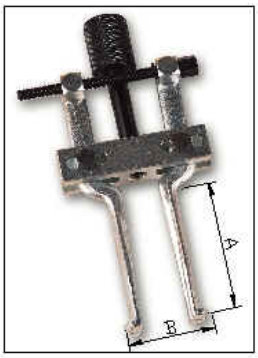
DRAWINGS, PARTS AND DIMENSIONS.

FZ & FT

Extender Puller			
Capacity (Tn)	**A max. mm**	**A min. mm**	**B max. mm**
5	185	40	170
10	240	35	230
20	250	135	330
30	270	180	440
50	400	230	580

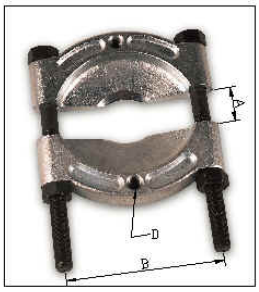
FV & FX

Jaw puller		
Capacity (Tn)	**A max. mm**	**B max. mm**
5	230	240
10	350	305
20	480	350
30	580	393
50	920	690



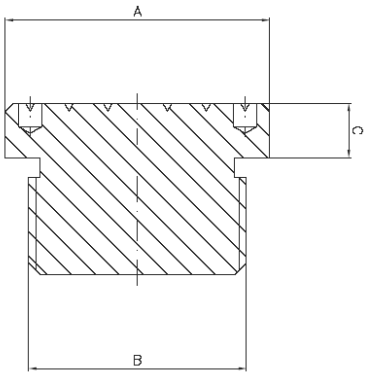
FI

Bearing cup puller			
Capacity (Tn)	**A max. mm**	**B max. mm**	**B min. mm**
10	115	145	40
20	115	145	40
30	150	240	60
50	150	240	60

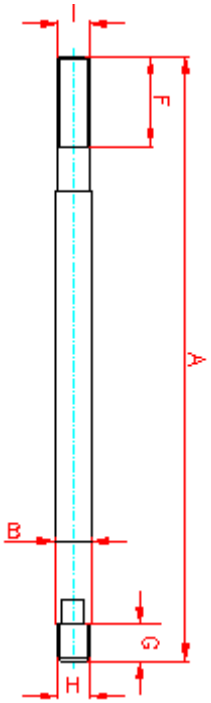


FR

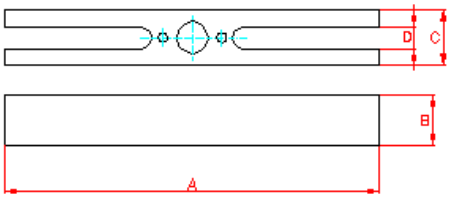
Bearing puller				
Capacity (Tn)	**A max. mm**	**A min. mm**	**B mm**	**D**
5	110	10	130	5/8" UNF - 18
10	110	10	130	5/8" UNF - 18
20	130	25	150	5/8" UNF - 18
30	250	35	260	1" UNF - 14
50	330	50	300	1 1/4 " UNF - 12



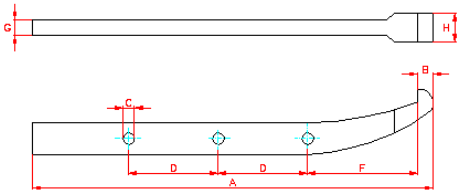
Optional blank heads (mm)				
LARZEP	**A**	**B**	**C**	**Tn**
AZ0571	34	M28x1,5	7	**10**
AZ0572	48	1 9/16" - 16	8	**20**
AZ0573	55	1 13/16"-16	9	**30**
AZ0575	80	2 3/4"-16	12	**50**



Extenders							
Capacity (Tn)	**LARZEP**	**A**	**B**	**F**	**G**	**H**	**I**
5	**FU0522**	230	16	25	20	1/2" UNF-20	5/8" UNF-18
5	**FU0523**	180	16	25	20	1/2" UNF-20	5/8" UNF-18
10	**FU1022**	460	19,5	27	25	5/8" UNF-18	3/4" UNF-18
10	**FU1023**	210	19,5	27	25	5/8" UNF-18	3/4" UNF-18
20	**FU2022**	515	19,5	30	25	5/8" UNF-18	3/4" UNF-16
20	**FU2023**	336	19,5	30	25	5/8" UNF-18	3/4" UNF-16
30	**FU3022**	592	25,4	35	40	1" UNF-14	1" UNF-14
30	**FU3023**	328	25,4	35	40	1" UNF-14	1" UNF-14
50	**FU5022**	820	31,6	43	45	1 1/4" UNF-12	1 1/4" UNF-12
50	**FU5023**	504	31,6	43	45	1 1/4" UNF-12	1 1/4" UNF-12



	Gross crosshead				
LARZEP	**Capacity (ton)**	**A**	**B**	**C**	**D**
FU0517	5	210	35	35	15
FU1017	10	280	40	40	20
FU2017	20	370	57	57	20
FU3017	30	480	77,5	77,5	26
FU5017	50	615	97	97	32,5



	Jaws							
LARZEP	**Capacity (ton)**	**A**	**B**	**C**	**D**	**F**	**G**	**H**
FU0507	5	261	9	10,5	44,5	107	13	25
FU1007	10	438	14	10,5	83	156	16	26
FU2007	20	535	21	14,5	115	150	20	32
FU3007	30	680	27	18,5	125	215,5	25	42
FU5007	50	1055	34	24,5	150	500	32	51