

EIS 56.102-1 07/'98

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1 IMPORTANT RECEIVING INSTRUCTIONS

Visually inspect all components for shipping damage. Shipping damage is not covered by warranty. If shipping damage is found notify carrier at once. The carrier is responsible for all repair and replacement costs resulting from damage in shipment.

SAFETY FIRST

Read all INSTRUCTIONS, WARNINGS and CAUTIONS carefully. Follow all SAFETY PRECAUTIONS to avoid personal injury or property damage during system operation. ENERPAC cannot be responsible for damage or injury resulting from unsafe product use, lack of maintenance or incorrect product and/or system operation. Contact ENERPAC when in doubt as to the safety precautions and applications.

TO PROTECT YOUR WARRANTY, USE ONLY ENERPAC HYDRAULIC OIL.

2 ATTENTION

You have purchased a single-acting, spring return T-Slot Pull Cylinder. Carefully read all the instructions and precautions regarding their operation.

3 GENERAL SAFETY ISSUES

Failure to comply with following cautions and warnings could cause equipment damage or personal injury.



WARNING: To avoid personal injury and possible equipment damage make sure all hydraulic components withstand the maximum pressure of 350 bar.



WARNING: DO NOT OVERLOAD the cylinder. NEVER EXCEED the nominal clamping capacity. Overloading may cause personal injury and equipment damage.



IMPORTANT: Use hydraulic gauges in each hydraulic system to indicate safe operating loads.



SAFETY FIRST: Circuit pressure should not exceed the maximum tolerance value of the lowest pressure component.



For fast operating cycles, use only high-pressure hoses and connections.



Do not exceed piston stroke limits.



Using the piston at end stroke under maximum pressure, puts the cylinder under unnecessary and dangerous strain.



WARNING: Make sure that all system components are protected from external sources of damage, such as excessive heat, flame, moving machine parts, sharp edges and corrosive chemicals.



CAUTION: Avoid sharp bends and kinks in the hose which may cause damage. Also, bends and kinks lead to premature hose failure.

4 PRODUCT DESCRIPTION

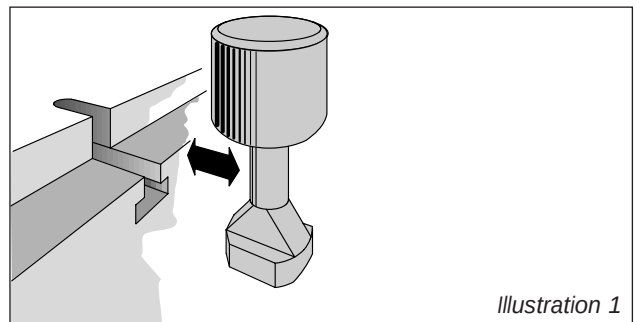


Illustration 1

MHC-50, MHC-70 and MHC-110 T-Slot Pull Cylinders are single-acting, spring return. They have been designed to fit onto dies with T-slots for standard securing with screws.

They may be easily mounted along the T-slots on the die shoes. Depending on the model, these cylinders have a capacity of 44 kN - 68 kN or 110 kN. The dimensions are provided in illustration 2 on page 13. The oil connections are 1/4" BSP. These cylinders have swivel plates that accurately align the rod.

5 APPLICATIONS



ATTENTION: Clamping should occur only during the piston stroke, never at the end of the stroke.

5.1 Make sure that when clamping occurs the piston still has a few millimeters of stroke.

5.2 Comply with the recommended torque values for the assembly screws.

5.3 Check the pressure and capacity of the hydraulic circuit. NEVER exceed the recommended values.

6 INSTALLATION



IMPORTANT: It is mandatory that the operator has a full understanding of all instructions, safety regulations, cautions and warnings, before starting to operate any of this high force tool equipment. In case of doubt, contact ENERPAC.

6.1 The ENERPAC cylinders are hydraulically powered. Check your particular circuit's characteristic features and pay close attention to the oil pressure and capacity.

6.2 **ATTENTION:** An excessive load can damage the cylinder stem or the clamping surface.

6.3 Make sure the diameter of the hydraulic system hosing is proportionate to its length to prevent loss of system capacity, hampering piston reversal. MHC-cylinders are spring return. 10 x 1.5 dia. steel tubing is recommended.

IMPORTANT: Purge the hydraulic system before starting the machine. Air in the circuit causes operational problems. Advance and retract the cylinder several times avoiding pressure build-up. Air removal is complete when the cylinder motion is smooth.

7 MAINTENANCE AND SERVICE

Maintenance is required when wear or leakage is noticed. Periodically inspect all components to detect any problem requiring service and maintenance. ENERPAC offers ready-to-use spare parts kits for repair and/or replacements. See page 14-15 for spare parts list.

- Regularly inspect all components to detect any problem requiring maintenance and service. Replace damaged parts immediately.
- Do not exceed oil temperature above 60 °C.
- Keep all hydraulic components clean.
- Periodically check the hydraulic system for loose connections and leaks.

- Change hydraulic oil in your system as recommended in the pump instruction sheet.



IMPORTANT: Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the Authorized ENERPAC Service Center in your area.

8 TROUBLESHOOTING

Only qualified hydraulic technicians should service the pump and system components. The trouble-shooting table 8.1 is intended to be used as an aid in determining if a problem exists.

8.1 Troubleshooting diagnosis

PROBLEM	POSSIBLE CAUSE
1. Cylinder doesn't move forward	A. Pump release valve open B. No oil in pump reservoir C. Air in the system D. Poorly screwed joint E. Hydraulic circuit blocked
2. Cylinder moves only partially forward	A. Oil level in pump reservoir too low B. Piston cylinder seized up
3. Cylinder jerks forward	A. Air in the circuit B. Piston cylinder seized up
4. Cylinder advances slowly	A. Leaky connections B. Kinked circuit hosing C. Loose joints or connections
5. Cylinder advances but loses pressure	A. Leaky gaskets B. Leaky connections C. Pump malfunction
6. Cylinder leaks oils	A. Worn or damaged piston B. Leaky connections C. Internal grooving
7. Cylinder returns slowly or not at all	A. Pump release valve closed B. Poorly screwed joint C. Blocked circuit D. Oil pump reservoir overfilled E. Cylinder internally or externally damaged F. Diameter of circuit tubing too small for the length

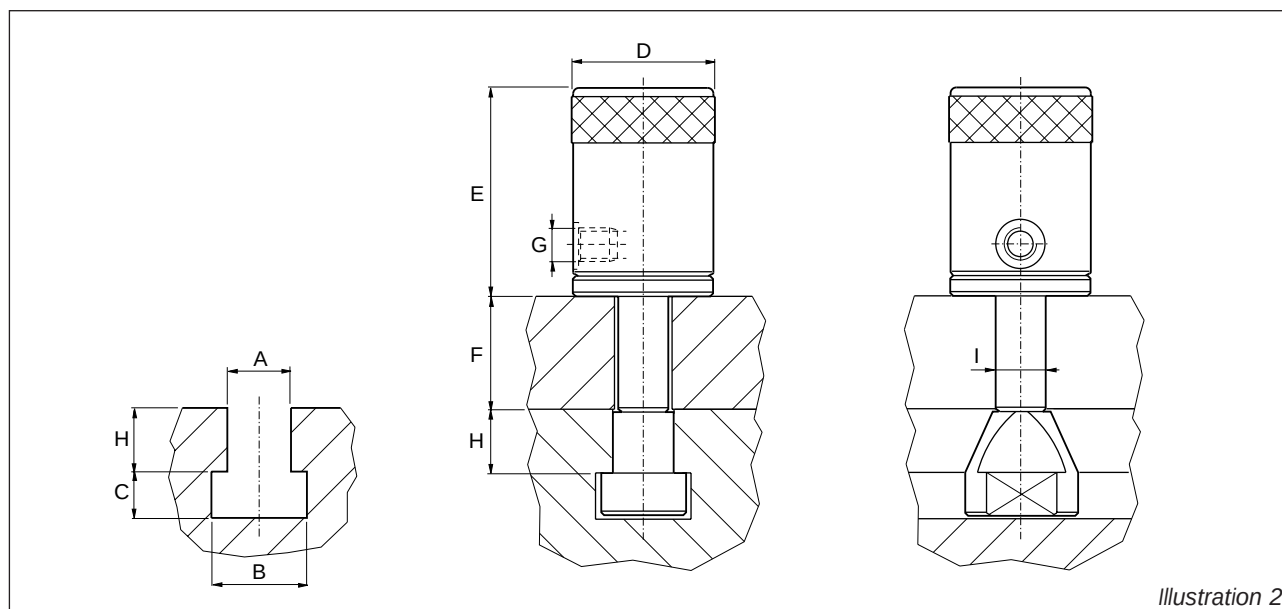


Illustration 2

Model Number Modèle Modell Nr. Modello Modelo Modelnummer	Clamp capacity at 350 bar Force de bridage à 350 bar Spannkraft bei 350 bar Forza di bloccaggio a 350 bar Fuerza de amarre a 350 bar Klemkracht bij 350 bar	Stroke Course Hub Corsa Carrera Slag	Clamp effective area Surface effective Wirksame Kolbenfläche Area efectiva Superficie efetiva de amarre Effectieve oppervlakte	Oil capacity Capacité d'huile Ölvolumen Capacità olio max Capacidad de aceite Maximaal olievolume
	kN	mm	cm ²	cm ³
MHC-50/.../18	44.0	12	12.56	15.0
MHC-50/.../22	44.0	12	12.56	15.0
MHC-70/.../22	68.7	12	19.62	23.5
MHC-70/.../28	68.7	12	19.62	23.5
MHC-110/.../28	116.1	12	33.16	39.8
MHC-110/.../36	116.1	12	33.16	39.8

Model Number Modèle Modell Nr. Modello Modelo Modelnummer	Dimensions in mm Dimensions en millimètres Abmessungen in mm Dimensioni mm Dimensiones en mm Afmetingen in mm									Weight Poids Gewicht Peso Peso Gewicht
	A	B	C	D	E	F	G	H	I	kg
MHC-50/.../18	18	30	12	57	73.5	*	G ¹ / ₄ "	*	17.5	1.5
MHC-50/.../22	22	37	16	57	73.5	*	G ¹ / ₄ "	*	17.5	1.6
MHC-70/.../22	22	37	16	66	77.0	*	G ¹ / ₄ "	*	21.5	2.2
MHC-70/.../28	28	46	20	66	77.0	*	G ¹ / ₄ "	*	21.5	2.3
MHC-110/.../28	28	46	20	81	85.0	*	G ¹ / ₄ "	*	27.0	3.5
MHC-110/.../36	36	56	25	81	85.0	*	G ¹ / ₄ "	*	27.0	3.6

* To be specified per application.

* A préciser à la commande.

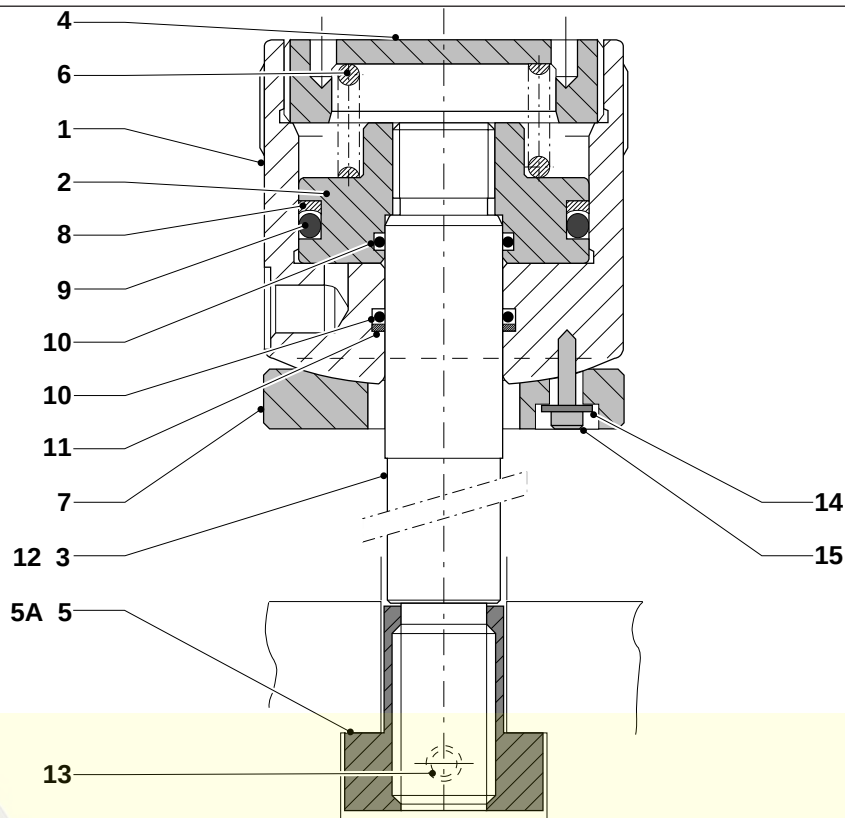
* Mit der Bestellung angeben.

* Da specificare in ordinazione.

* A determinar para cada aplicación.

* Bij de bestelling aangeven.

Repair Parts Sheet
Liste de pièces de rechange
Ersatzteilliste
Tavola Parti di Ricambio
Hoja de despiece
Reparatie-onderdelenlijst



Item No.	Partnumber MHC-50/.../18 MHC-50/.../22	Qty	Description	Désignation	Bezeichnung
*	MHC 5018.K		REPAIR KIT Contains parts marked with *	KIT PIÈCES DE RECHANGE Contient les pièces marquées *	ERSATZTEILPAKET Enthält Teile bezeichnet mit *
13	YVB 3.010.G	2X	M3x10 SCREW	VIS M3x10	SCHRAUBEN M3x10
12	YFW 6592.3	2X	SWIVEL PLATE Ø 3x7x0.5	RONDELLE DIAM. 3x7x0,5	SCHEIBE Ø 3x7x0,5
5A	MHC 50.018	1X	NUT FOR T-SLOT 18	ÉCROU POUR RAINURES EN "T" 18	MUTTER+"T"-NUT 18
11	*	1X	BACK-UP RING	BAGUE ANTI-EXTRUSION	STÜTZRING
10	*	2X	GASKET	JOINT	DICHTUNG
9	*	1X	GASKET	JOINT	DICHTUNG
8	*	1X	ANTI-EXTRUSION	BAGUE ANTI-EXTRUSION	DRUCKLAGER
7	MHC 50.108	1X	WASHER	RONDELLE	UNTERLEGSCHIEBE
6	MHC 50.110	1X	SPRING	RESSORT	FEDER
5	MHC 50.022	1X	NUT FOR T-SLOT 22	ÉCROU POUR RAINURES EN "T" 22	MUTTER+ "T"-NUT 22
4	MHC 50.044	1X	BOTTOM	FOND	BODENSCHIEBE
3	MHC 50.***	1X	STEM	TIGE	SCHAFT
2	MHC 50.040	1X	PISTON	PISTON	KÖLBEN
1	MHC 50.005	1X	CYLINDER BODY	CORPS VÉRIN	ZYLINDERKÖRPER

Item No.	Partnumber MHC-50/.../18 MHC-50/.../22	Qty	Descrizione	Descripcieon	Beschrijving
*	MHC 5018.K		KIT RICAMBI Contiene tutte le voci contadidistinte dall' *	JUEGO DE RECAMBIOS Contiene las partes marcadas con *	SET ONDERDELEN Bevat de onderdelen gemerkt met *
13	YVB 3.010.G	2X	VITE M3x10	TORNILLO M3x10	SCHROEF M3x10
12	YFW 6592.3	2X	ROSETTA Ø 3x7x0,5	ARANDELA Ø 3x7x0,5	ONDERLEGRING Ø 3x7x0,5
5A	MHC 50.018	1X	DADO X CAVA A "T" 18	TUERCA P/RANURA EN "T" 18	MOER X T-SLEUF 18
11	*	1X	ANTIESTRUSIONE	ANTIEXTRUSIÓN	STEUNRING
10	*	2X	GUARNIZIONE	JUNTA	PAKKING
9	*	1X	GUARNIZIONE	JUNTA	PAKKING
8	*	1X	ANTIESTRUSIONE	ANTIEXTRUSIÓN	ANTI-EXTRUSIE
7	MHC 50.108	1X	RONDELLA	ARANDELA	ONDERLEGRING
6	MHC 50.110	1X	MOLLA	MUELLE	VEER
5	MHC 50.022	1X	DADO X CAVA A "T" 22	TUERCA P/RANURA EN "T" 22	MOER X T-SLEUF 22
4	MHC 50.044	1X	FONDELLO	FONDO	SLUITRING
3	MHC 50.***	1X	STELO	VÁSTAGO	PLUNJERSTANG
2	MHC 50.040	1X	PISTONE	PISTÓN	PLUNJER
1	MHC 50.005	1X	CORPO CILINDRO	CUERPO DEL CILINDRO	CILINDER

Item No.	Partnumber MHC-70/.../22 MHC-70/.../28	Qty	Description	Désignation	Bezeichnung
*	MHC 70.22.K		REPAIR KIT Contains parts marked with *	KIT PIÈCES DE RECHANGE Contient les pièces marquées *	ERSATZTEILPAKET Enthält Teile bezeichnet mit *
13	YVG 6.012.P	1X	DOWEL M6x12	VIS SANS TÊTE M6x12	ZAPFEN M6x12
12	MHC 70.028	1X	NUT FOR T-SLOT 28	ÉCROU POUR RAINURES EN "T" 28	MUTTER+"T"-NUT 28
11	*	1X	BACK-UP RING	BAGUE ANTI-EXTRUSION	STÜTZRING
10	*	2X	GASKET	JOINT	DICHTUNG
9	*	1X	GASKET	JOINT	DICHTUNG
8	*	1X	ANTI-EXTRUSION	BAGUE ANTI-EXTRUSION	DRUCKLAGER
7	MHC 70.108	1X	WASHER	RONDELLE	UNTERLEGSCHIEBE
6	MHC 70.110	1X	SPRING	RESSORT	FEDER
5	MHC 70.022.B	1X	NUT FOR T-SLOT 22	ÉCROU POUR RAINURES EN "T" 22	MUTTER+ "T"-NUT 22
4	MHC 70.044	1X	BOTTOM	FOND	BODENSCHIEBE
3	MHC 70.***.20	1X	STEM M20	TIGE M20	SCHAFT M20
2	MHC 70.040	1X	PISTON	PISTON	KOLBEN
1	MHC 70.005	1X	CYLINDER BODY	CORPS VÉRIN	ZYLINDERKÖRPER

Item No.	Partnumber MHC-70/.../22 MHC-70/.../28	Qty	Descrizione	Descripción	Beschrijving
*	MHC 70.22.K		KIT RICAMBI Contiene tutte le voci contaddistinte dall' *	JUEGO DE RECAMBIOS Contiene las partes marcadas con *	SET ONDERDELEN Bevat de onderdelen gemarct met *
13	YVG 6.012.P	1X	GRANO M6x12	TORNILLO SIN CABEZA M6x12	STELSCHROEF M6x12
12	MHC 70.028	1X	DADO X CAVA A "T" 28	TUERCA P/RANURA EN "T" 28	MOER X T-SLEUF 28
11	*	1X	ANTIESTRUSIONE	ANTIEXTRUSIÓN	STEUNRING
10	*	2X	GUARNIZIONE	JUNTA	PAKKING
9	*	1X	GUARNIZIONE	JUNTA	PAKKING
8	*	1X	ANTIESTRUSIONE	ANTIEXTRUSIÓN	ANTI-EXTRUSIE
7	MHC 70.108	1X	RONDELLA	ARANDELA	ONDERLEGRING
6	MHC 70.110	1X	MOLLA	MUELLE	VEER
5	MHC 70.022.B	1X	DADO X CAVA A "T" 22	TUERCA P/RANURA EN "T" 22	MOER X T-SLEUF 22
4	MHC 70.044	1X	FONDELLO	FONDO	SLUITRING
3	MHC 70.***.20	1X	STELO M20	VÁSTAGO M20	PLUNJERSTANG M20
2	MHC 70.040	1X	PISTONE	PISTÓN	PLUNJER
1	MHC 70.005	1X	CORPO CILINDRO	CUERPO DEL CILINDRO	CILINDER

Item No.	Partnumber MHC-110/.../28 MHC-110/.../36	Qty	Description	Désignation	Bezeichnung
*	MHC 110.27.K		REPAIR KIT Contains parts marked with *	KIT PIÈCES DE RECHANGE Contient les pièces marquées *	ERSATZTEILPAKET Enthält Teile bezeichnet mit *
14	YVG 8.016.P	1X	DOWEL M8x16	VIS SANS TÊTE M8x16	ZAPFEN M8x16
13	MHC 110.***.27	1X	STEM M27	TIGE M27	SCHAFT M27
12	MHC 110.036	1X	NUT FOR T-SLOT 36	ÉCROU POUR RAINURES EN "T" 36	MUTTER+"T"-NUT 36
11	*	1X	BACK-UP RING	BAGUE ANTI-EXTRUSION	STÜTZRING
10	*	2X	GASKET	JOINT	DICHTUNG
9	*	1X	GASKET	JOINT	DICHTUNG
8	*	1X	ANTI-EXTRUSION	BAGUE ANTI-EXTRUSION	DRUCKLAGER
7	MHC 110.108	1X	WASHER	RONDELLE	UNTERLEGSCHIEBE
6	MHC 110.110	1X	SPRING	RESSORT	FEDER
5	MHC 110.028	1X	NUT FOR T-SLOT 28	ÉCROU POUR RAINURES EN "T" 28	MUTTER+ "T"-NUT 28
4	MHC 110.044	1X	BOTTOM	FOND	BODENSCHIEBE
3	MHC 110.***.24	1X	STEM M24	TIGE M24	SCHAFT M24
2	MHC 110.040	1X	PISTON	PISTON	KOLBEN
1	MHC 110.005	1X	CYLINDER BODY	CORPS VÉRIN	ZYLINDERKÖRPER