

OPERATION AND MAINTENANCE MANUAL

Model: M700C

Equipment S/N: M700C00320 / M700C00420

Document Date / Rev.: 15 july 2021 / 00

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2-SPECIFICATIONS

3-INSTALLATION

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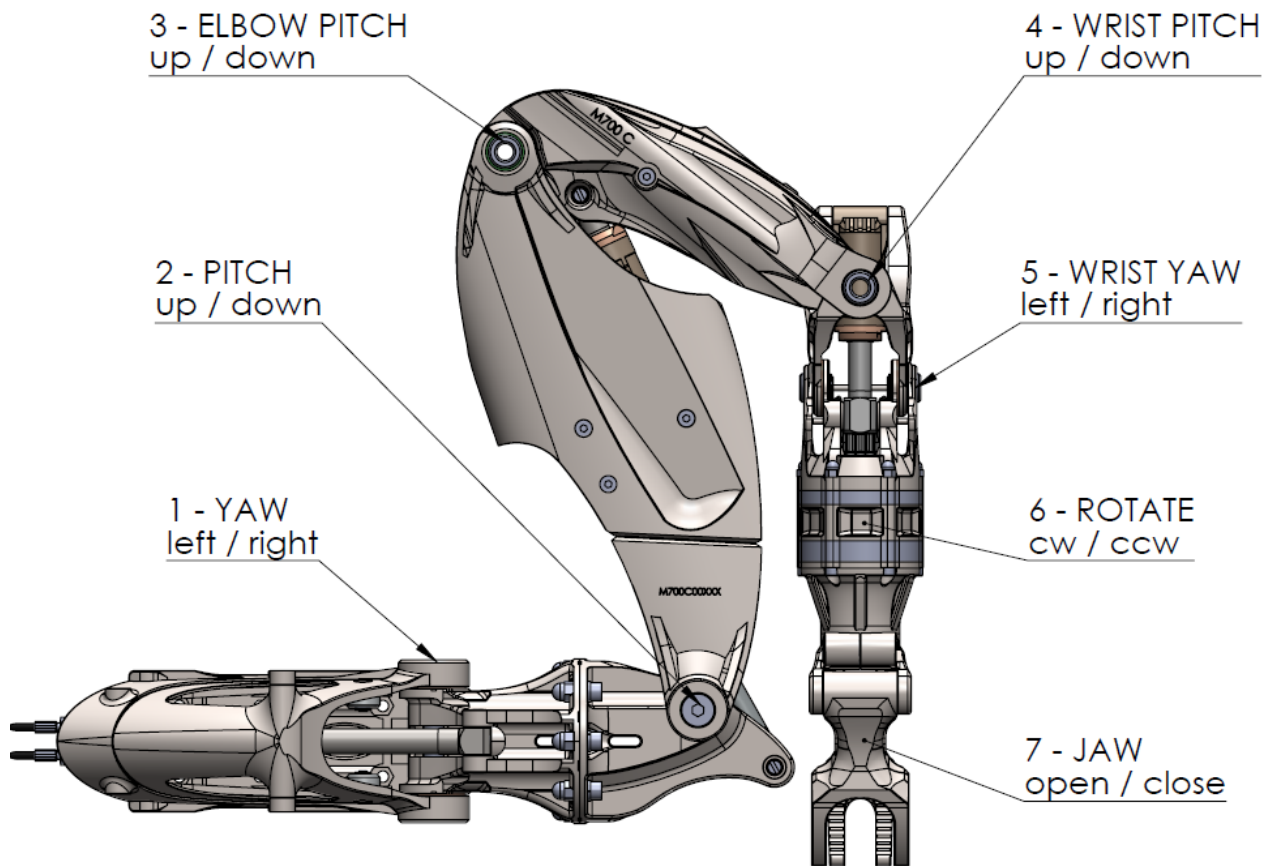
1-INTRODUCTION

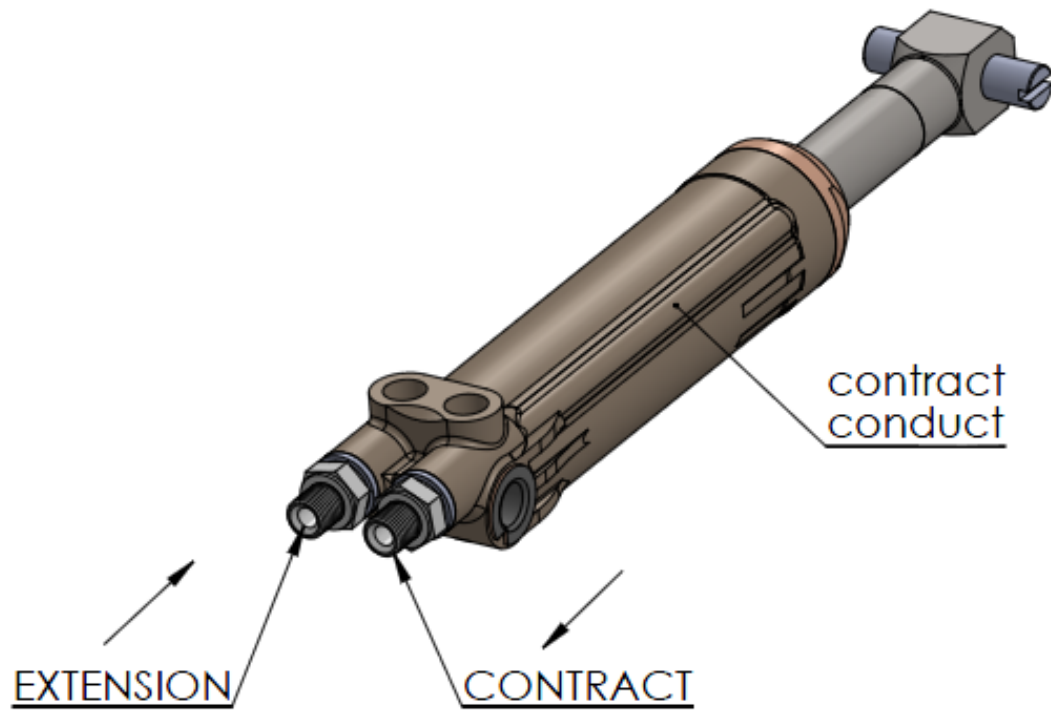
The TITANROB is a titanium built hydraulic manipulator designed for heavy duty subsea applications on ROV (Remote Operated Vehicle) submarine operations. It is a manipulator with enhanced characteristics on weight/power ration and capabilities: By using titanium as main material, lower weight and more mechanical characteristics are achieved, allowing improved dimensioning.

By using the same hydraulic power supply, the ROV vehicle has a more powerful and rugged tool, with lower weight and dimensions allowing lower buoyancy needs, and thus improving the ROV vehicle overall capabilities.

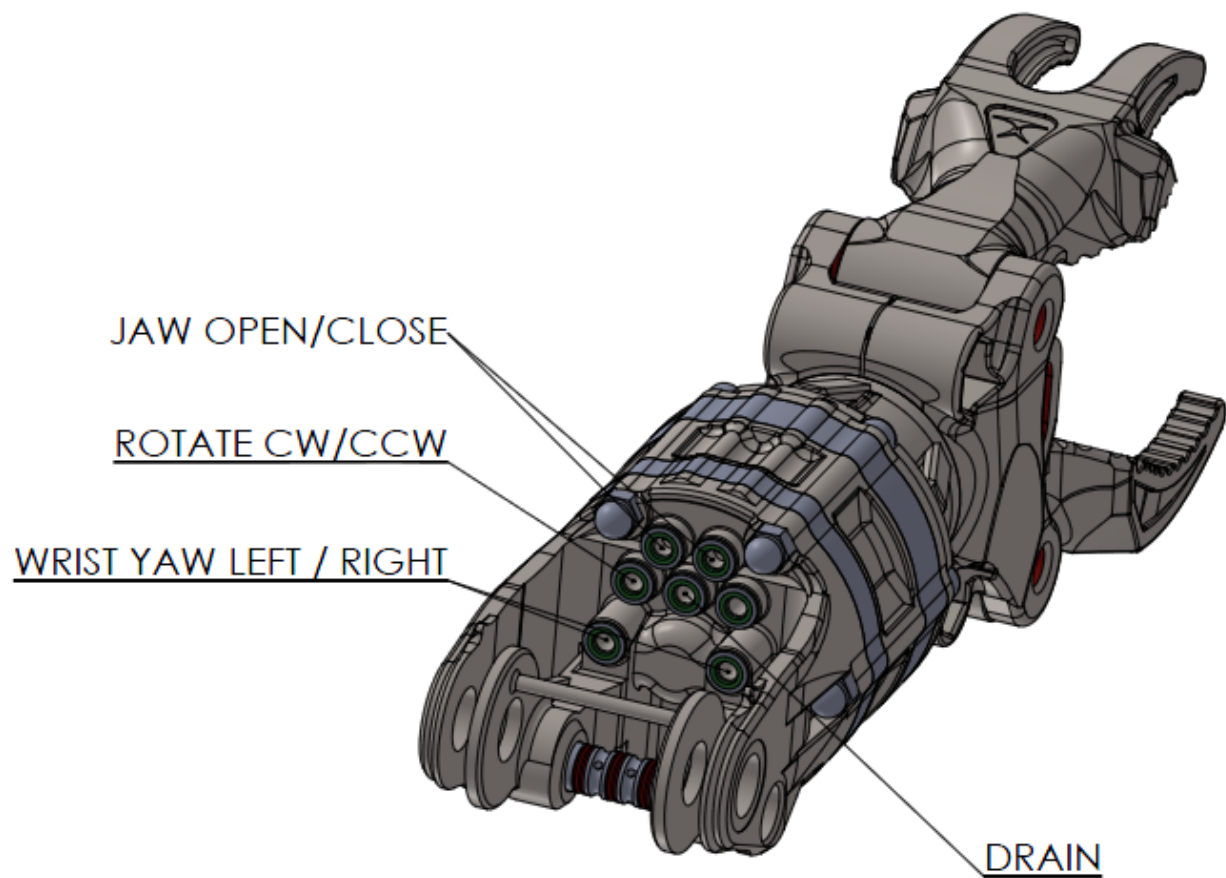
The M700C is a seven function hydraulic manipulator developed for Light Work Class ROVs. Resistant, lightweight and reliable, it's designed for heavy duty ROV works improving performance and operation. It could be rate operated by any low power (1kW) hydraulic power unit and a five function with drain/comp line valve pack fitted in the ROV vehicle.



**M700C Functions**



CYLINDER CONDUCTS



MOTOR CONDUCTS

2-SPECIFICATIONS

GENERAL SPECIFICATIONS

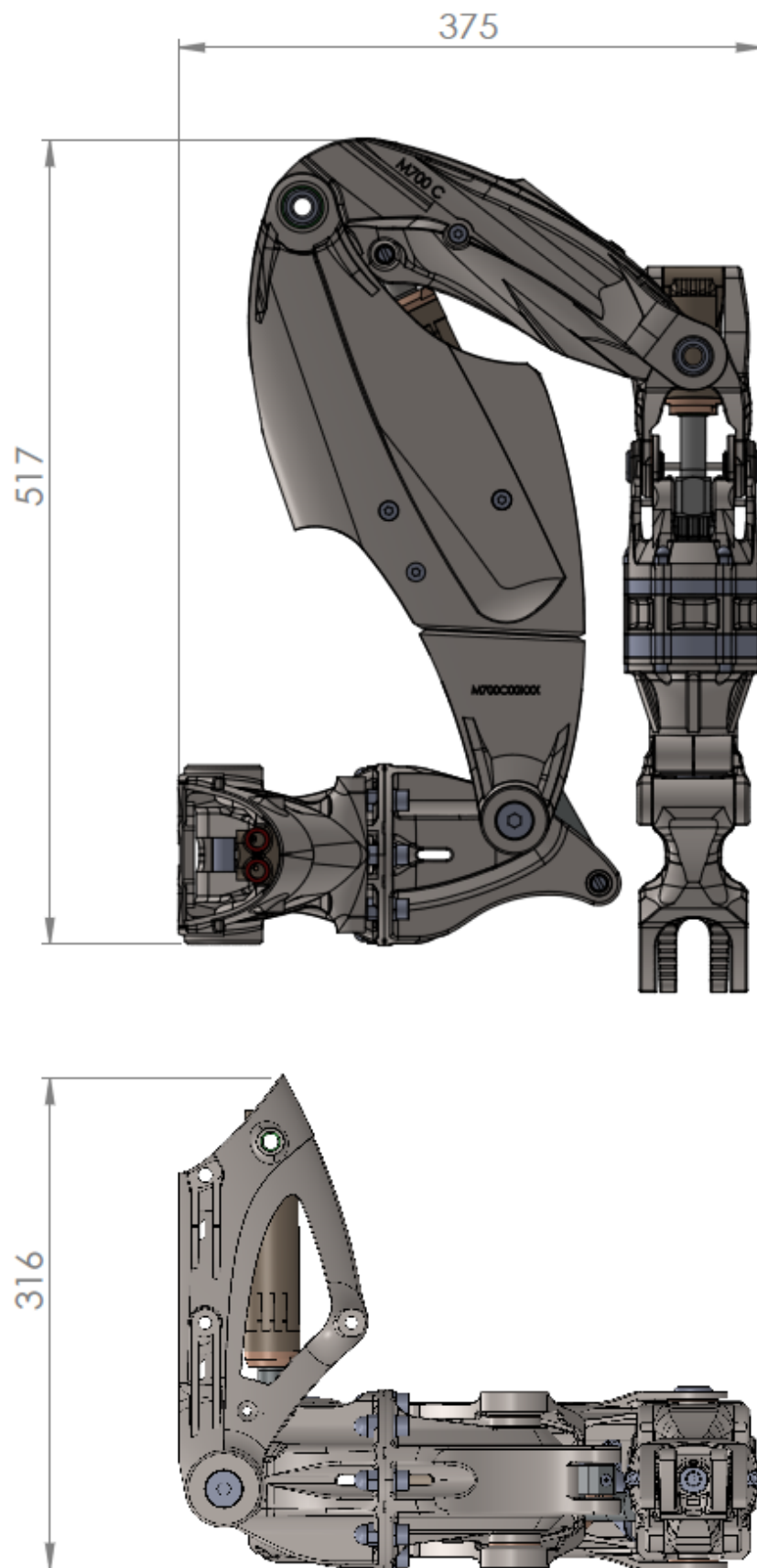
Depth rating (m)	3000
Weight in air (kg)	16,5 Kg
Weight in water (kg)	12,5 Kg
Maximum reach (mm)	1195 mm
Lift at full extension (kg)	40 @ 140 bar
Maximum lift (kg)	50 @ 140 bar
Jaw Grip (kgf)	250 Kgf
Yaw Torque (Nm)	30 Nm
Dimensions stowed LxWxH (mm)	300 x 512 x 450 mm
Operating temperature (°C), limited by hyd. Oil specs	-5 / +55 °C
Construction Main Materials	Ti6Al4V Titanium AISI 316 SS

FUNCTIONS

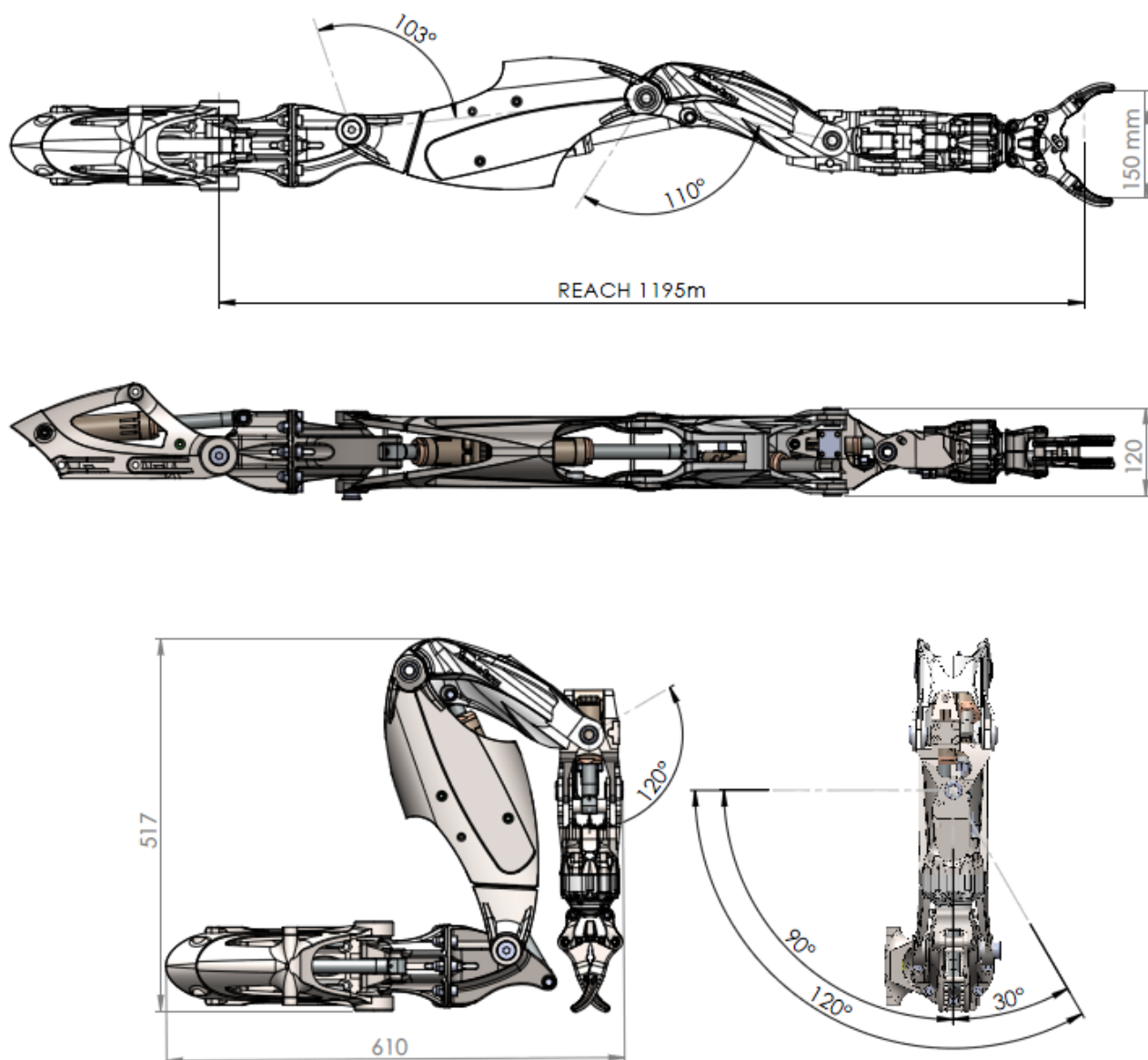
SHOULDER Azimuth (Yaw) (deg)	120° (+90 / -30)
SHOULDER Pitch (deg)	103°
ELBOW Pitch (deg)	110°
WRIST Pitch	120°
WRIST Yaw	120°
JAW Rotate (deg)	360°
JAW Opening (mm)	150 mm

HYDRAULIC REQUERIMENTS

Standard Hydraulic Oil	ISO 32
Operating pressure (bar)	Up to 180
Operating Flow Rate (lpm)	Min 1.5
Test Pressure (bar)	210
Max. Oil Temp. (C)	55



M700C Stowed dimensions



M700C reach dimensions

3-INSTALLATION

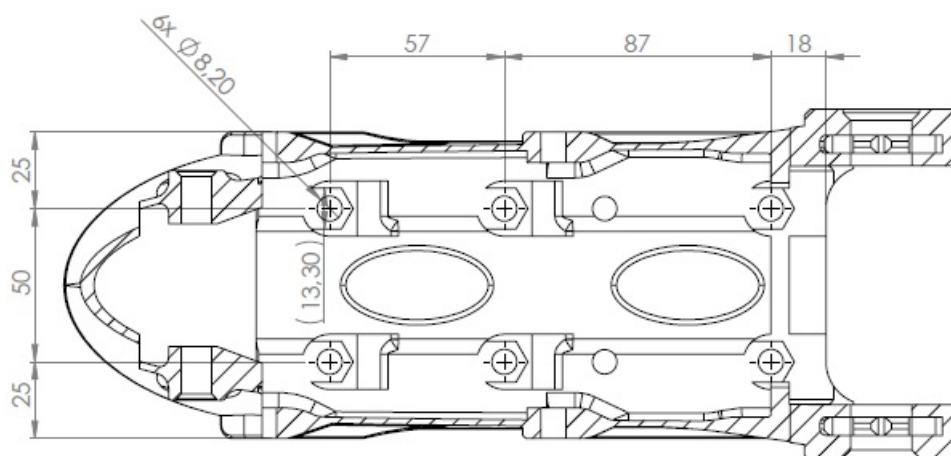
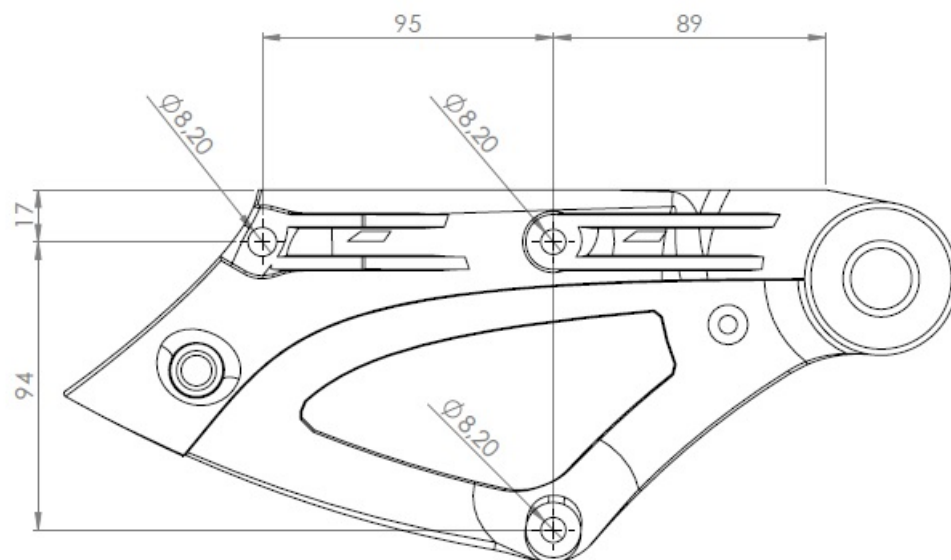
The 7 function hydraulic manipulator M700C has 15 hoses to be straight connected to the solenoid valve pack of the ROV hydraulic closed circuit; ten hoses for functions from A1/B1 to A7/B7 and a drain/compensation hose (TT). See annexed list of hoses/functions

- **SAFETY NOTICE:** This is a hydraulic powered equipment, all personnel must wear protective clothing and goggles. Keep a safe area around the equipment when in operation. Ensure that all power is OFF and without pressure when disassembling any of this equipment or carrying out maintenance work. Any maintenance work must be carried out in accordance with standard safety procedures for hydraulic equipment

- **TECHNICAL NOTE:** Shoulder YAW Right / Left (cylinder Extend/Retract) function should be connected to A1 or B1 port depending on Starboard or Port side position of the manipulator. See annexed list of hoses/functions

- Oil supply should be of 140 bar (180 bar maximum), with an average flow of 1,5 l/min. Recommended oil ISO32 (as Shell Tellus T32) with preferable filter rating of 10µm
- Manip valve pack should be supplied with pilot operated solenoid valves with cross piloted check valves, and flow control valves for each function. Equipment must be pressure compensated at all times through the drain (TT) port
- The manip must be bolted and secured to the ROV frame, all hoses fitted and secured, avoiding twists and sharp bends. Check that the Manipulator does not interfere with other vehicle equipment
- All personnel must stand clear of the equipment. Power up HPU and carry out full movements in all its functions. Check oil pressure. Check for leaks
- With the elbow positioned fully up, carefully bleed air by loosening the drain (TT) hose fitting on valve pack end, continuously operating the Yaw rotating function for both directions, and other functions up to their end positions. Also bleed the main oil reservoir/compensator
- Carry out several movement test up to maximum extension and bleed until there isn't any air in the system
- Test the system performance and adjust each flow rate valve to the requested movement speed
- Carry out pre and Post-Dive checks for every dive: fixing bolts tight condition, hydraulic fittings condition and if there is any oil leak, bleed air, oil reservoir level, hydraulic pressure, check movements and adjust flow control, etc.

SUPPORTING BASE HOLE PATTERN



4-OPERATION & MAINTENANCE

The system will be operated as a ROV ancillary hydraulic equipment operated by the vehicle valve pack.

Please stand clear of the equipment when carrying out pre-dive deck checks.

Follow up above point 3 recommended instructions.

Manipulator movements (speed) could be adjusted by the regulation of the valve pack flow control valves.

The Maintenance routine would be as follows:

- The equipment should be washed down with fresh water after ROV recovery on deck, removing any rest of sand from the inner sides of the shoulder flange
 - Inspect the equipment for wear or damage after work
 - The cutter blades are specifically dimensioned to fit each manipulator, therefore blades can't be exchanged
 - Inspect all hoses and fittings condition after work
 - Apply Litium LP2 grease on exposed shafts and hydraulic cylinder rod
 - Use underwater lubricant as "Aqua shield" or "Aqualube" grease on fixing bolts and fitting threads
 - When any ROV Pre-Dive check, confirm functionality and if any oil leakage
 - Bleed for air in the Hyd. Circuit and check oil condition regularly
 - Hydraulic cylinders can be field maintained replacing relevant seals and O-Rings:
 - *Use Molikote 55 grease for O-Rings
 - *Use Loctite 243 mid sealant for the piston rod thread inside the piston
 - *An special tool, a 14 mm spanner, is used to tight the motor end cover fittings, items 29 and 50 on drawing 3053.14.000-000
 - *Use hydraulic oil when replacing cylinder seals
- (see annexed Main Cylinder and Jaw Cylinder drawings)

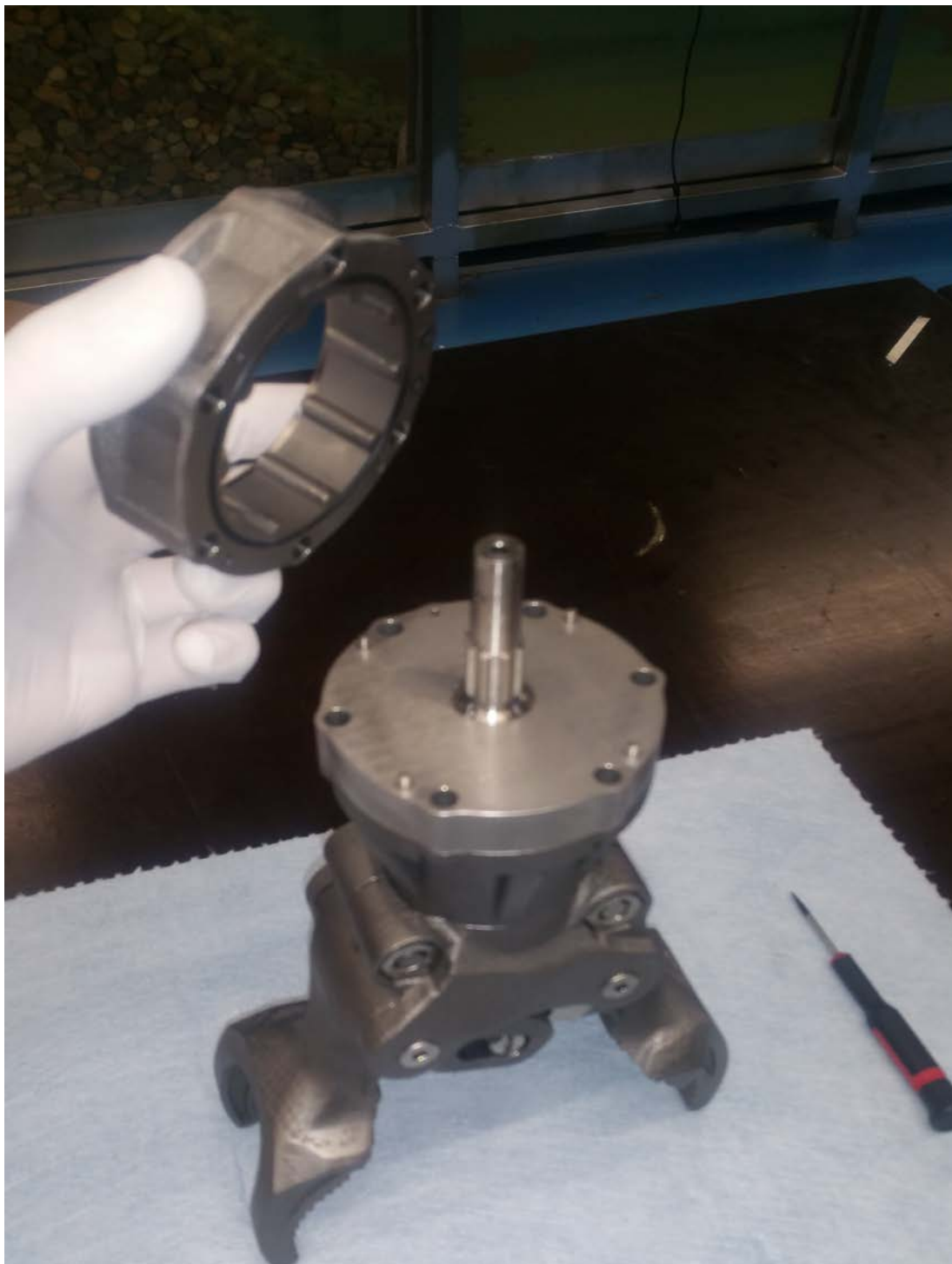
MAINTENANCE - MOTOR ASSEMBLING



Motor mounting – Step 1



Motor mounting – Step 2



Motor mounting – Step 3



Motor mounting – Step 4



Motor mounting – Step 5

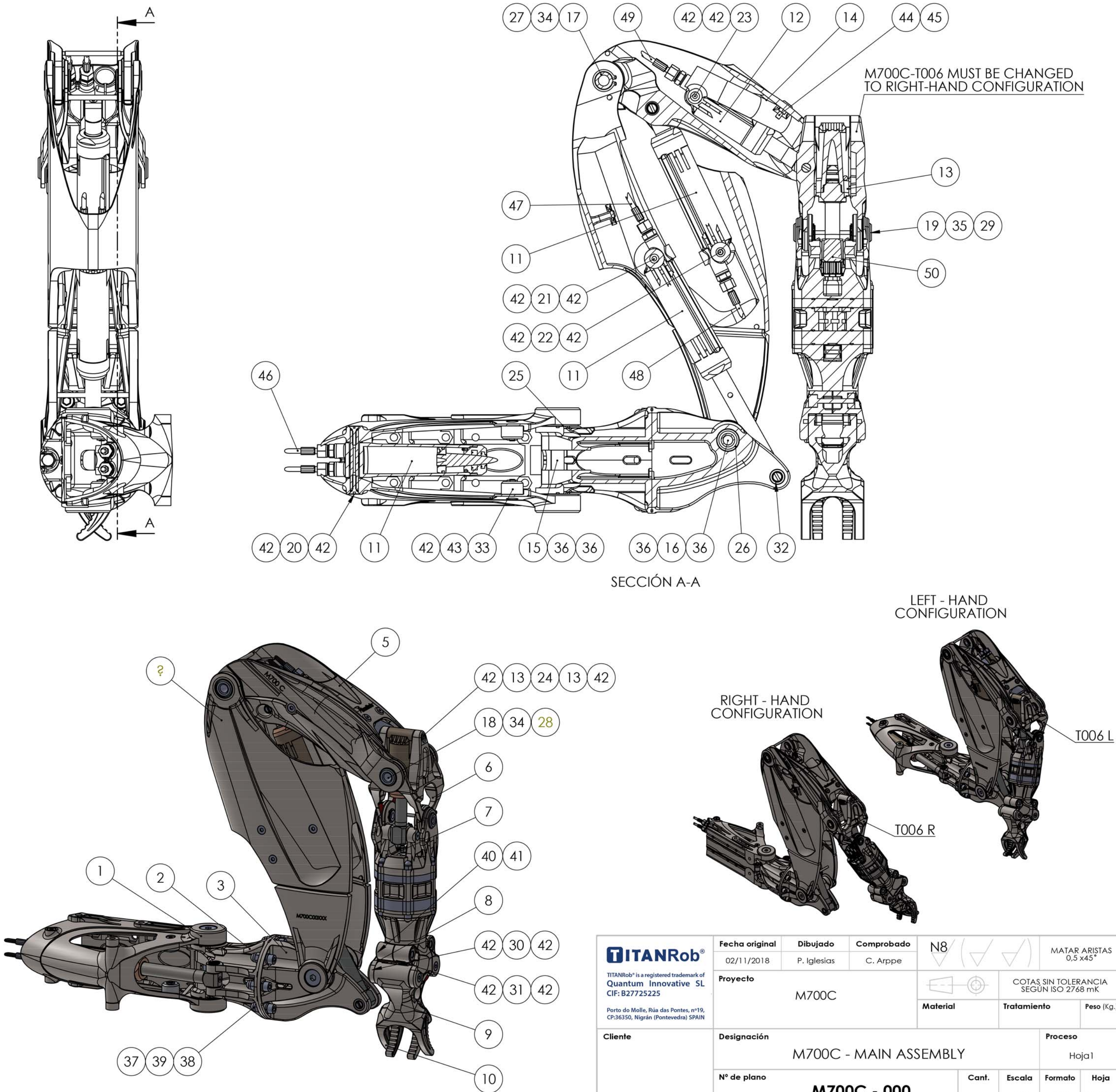


Motor mounting – Step 6

5.-DOCUMENTS & DRAWINGS:

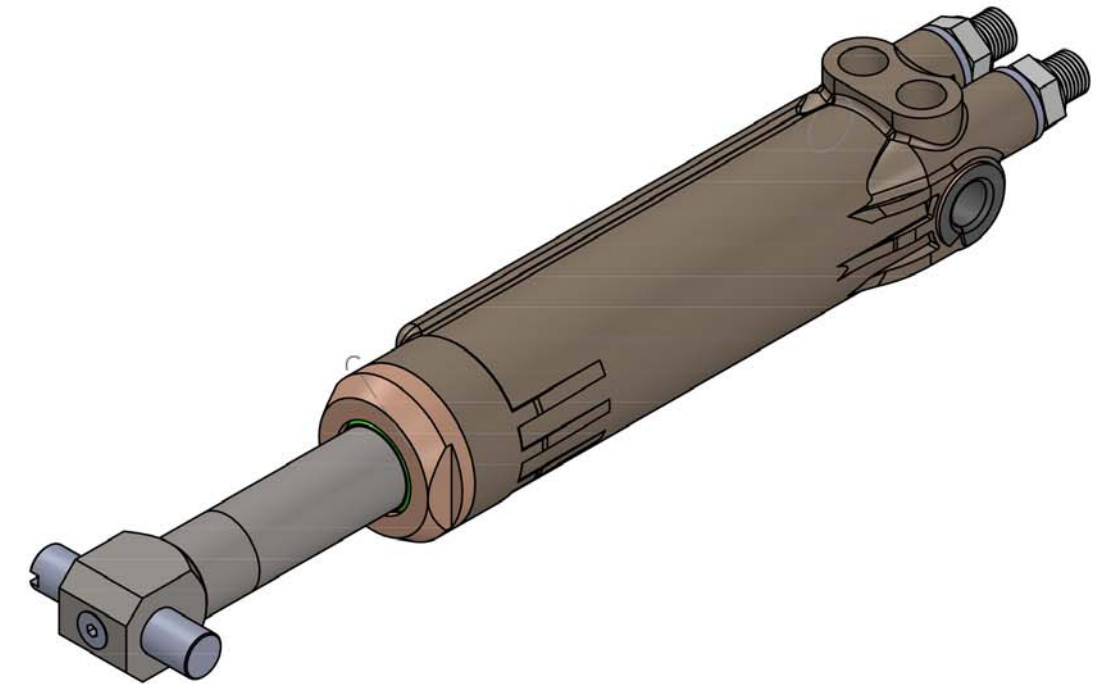
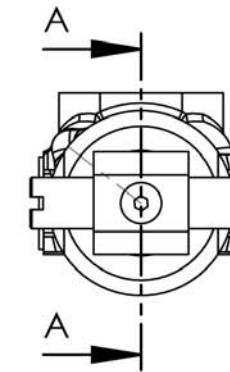
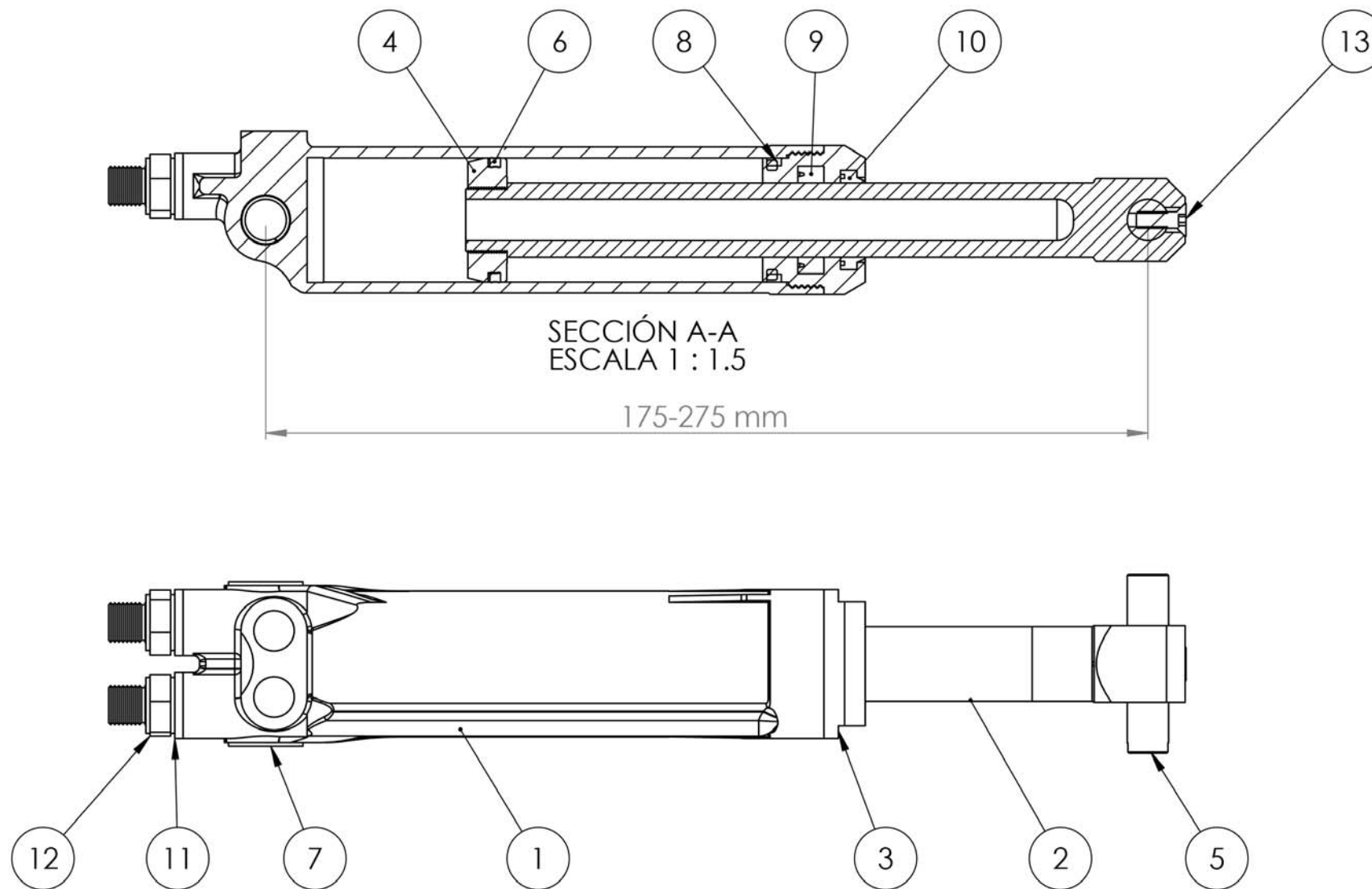
- M700C 7F MANIPULATOR MAIN ASSEMBLY DRAWING
- CYLINDER MAIN ASSEMBLY DRAWING (Ø30x100 mm)
- WRIST PITCH CYLINDER DRAWING (Ø30x100 mm)
- WRIST YAW CYLINDER DRAWING (Ø20x200 mm)
- JAW ACTUATOR DRAWING (Ø36x32 mm)
- HYDRAULIC HOSE LIST
- SPARE PARTS KIT (5 DRAWINGS)

ITEM	REF.	DESCRIPTION	QTY.
1	3053.14.000-001-R01	SUPPORTING BASE	1
2	M700C - T002	YAW FLANGE	1
3	M700C - T003	PITCH FLANGE	1
4	M700C - T004	UPPER ARM	1
5	M700C - T005	FOREARM	1
6	M700C - T006 L	WRIST PITCH FLANGE - LEFT CONFIGURATION	1
7	M700C - 400	JAW ACTUATOR ASSEMBLY	1
8	M700C - T011	JAW BODY	1
9	M700C - T012	INT JAW	1
10	M700C - T013	EXT JAW	1
11	3053.14.000-100	CYLINDER MAIN ASSY.	3
12	M700C - 200	WRIST PITCH CYLINDER	1
13	M700C - 300	WRIST YAW CYLINDER	1
14	M700C - P002	HOSE GUIDE	1
15	3053.14.000-206-R02	YAW SHAFT	1
16	M700C - SS002	SHOULDER PITCH SHAFT	1
17	M700C - SS003	ELBOW PITCH PIVOT SHAFT	2
18	M700C - SS004	WRIST PITCH SHAFT	2
19	M700C - SS005	WRIST YAW SHAFT	2
20	3053.14.000-203	SHAFT CYL. N°1	1
21	M700C - SS006	SHAFT CYL. N° 2	1
22	M700C - SS007	SAFT CYL. N°3	1
23	M700C - T017	SHAFT CYL. N°4	1
24	M700C - SS008	SHAFT CYL. N°5	1
25	M700C - B001	BRONZE BUSH N°1	2
26	M700C - B002	BRONZE BUSH N°2	2
27	M700C - B003	BRONZE BUSH N°3	2
28	M700C - B004	BRONZE BUSH N°4	2
29	M700C - B005	BRONZE BUSH N°5	2
30	3054.14.000-203	WIDE JAW SHAFT	1
31	3054.14.000-202	NARROW JAW SHAFT	1
32	673.152	CUSHION DUB 10-12-18-12	6
33	3053.14.000-304	ANODE Ø24	4
34	DIN 471 D20	CIRCLIP Ø20 INOX	4
35	DIN 471 D16	CIRCLIP Ø16 INOX	2
36	DIN 7991 M12x20	COUNTERSUNK BOLT M12x20	4
37	DIN 912 M8x20	BOLT M8x20	8
38	DIN 1587 M8	ACORN NUT M8	8
39	DIN 127 M8	LOCK WASHER M8	8
40	DIN 912 M10x40	BOLT M10x40	2
41	DIN 934 M10	NUT DIN 934 M10	2
42	DIN 7991 M6x20	COUNTERSUNK BOLT M6x20	18
43	DIN 934 M6	NUT DIN 934 M6	4
44	DIN 7991 M5X20	COUNTERSUNK BOLT M5x12	2
45	DIN 934 M5	NUT DIN 934 M6	2
46	HOSE 1160 mm GAS - JIC	M700C YAW HOSE	2
47	HOSE 2000 mm GAS - JIC	M700C PITCH HOSE	2
48	HOSE 1750 mm - GAS - JIC	M700C FOREARM PITCH HOSE	2
49	HOSE 2150 mm GAS - JIC	M700C WRIST PITCH HOSE	2
50	HOSE 2520 mm M6 - JIC	M700C WRIST END HOSE	7



TITANRob® TITANRob® is a registered trademark of Quantum Innovative SL CIF: B27725225 Porto do Mollo, Rúa das Pontes, nº19, CP:36350, Nigrán (Pontevedra) SPAIN	Fecha original	Dibujado	Comprobado	N8	MATAR ARISTAS 0,5 x45°				
	02/11/2018	P. Iglesias	C. Arppe						
	Proyecto					COTAS SIN TOLERANCIA SEGÚN ISO 2768 mK			
	M700C								
Material				Tratamiento		Peso (Kg.)			
Cliente	Designación					Proceso			
	M700C - MAIN ASSEMBLY					Hoja1			
	Nº de plano					Cant.	Escala	Formato	Hoja
M700C - 000						1:5	A2	1 de 1	

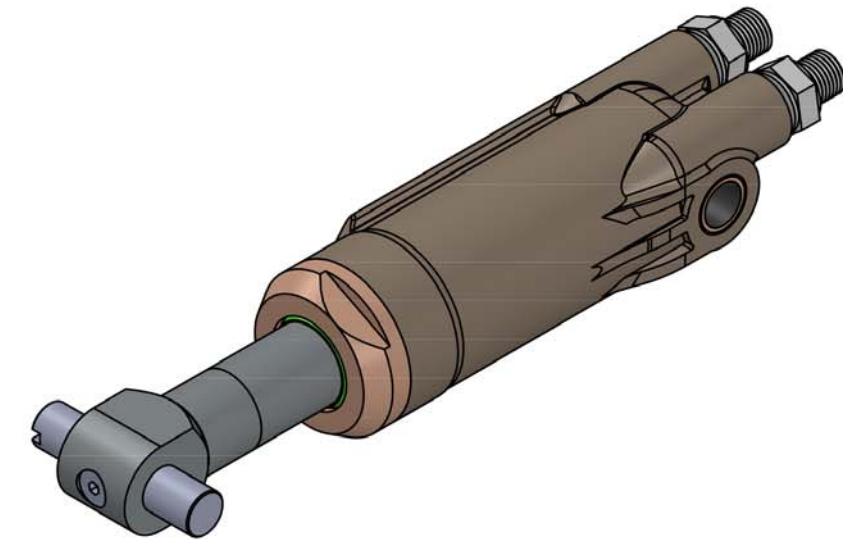
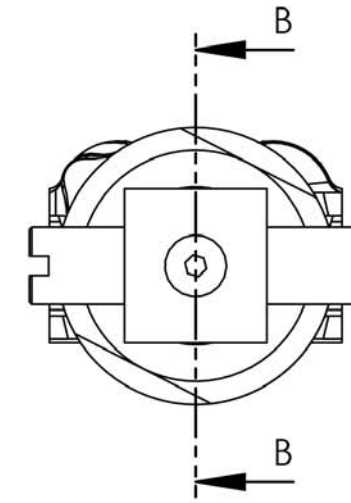
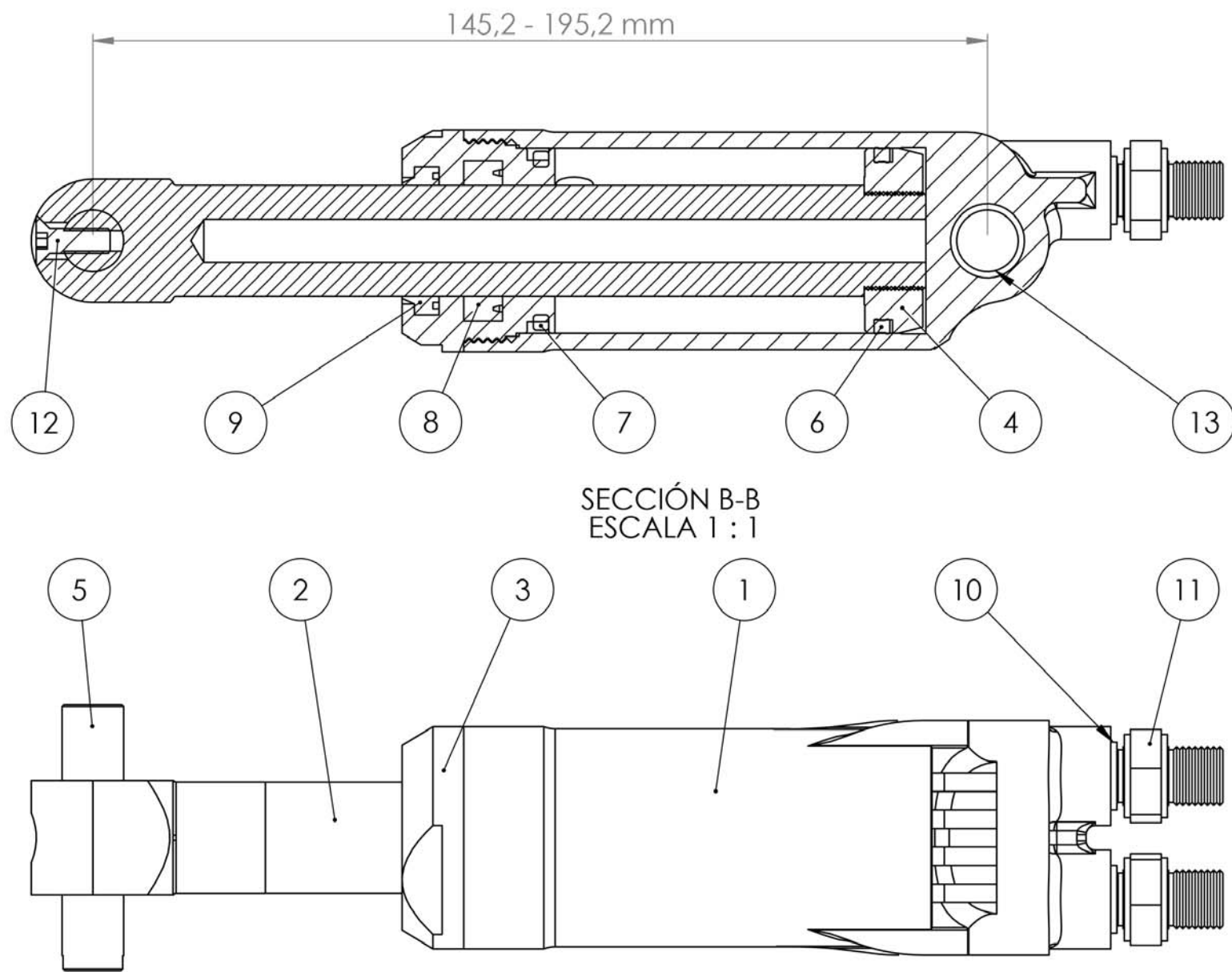
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ITEM	REF.	DESCRIPTION	QTY.
1	3053.14.000-010-R01	CYLINDER BODY Ø30X100	1
2	M700C - T018	PISTON ROD	1
3	3053.14.000-107-R01	CYLINDER HEAD	1
4	3053.14.000-108-R02	PISTON	1
5	3053.14.000-202-R02	ROD PIN	1
6	3053.14.000-310	SEAL PU88 Ø30	1
7	673.152	CUSHION DUB 10-12-18-12	2
8	472.147	O-RING 24x2,5	1
9	640.300	ROD SEAL Ø18	1
10	337.847	WIPER SEAL PU11 18x24x4	1
11	C-XAM480002	BONDED WASHER G1/8" INOX	2
12	C-XRC60180202	FITTING BSPP 1/8" M-M INOX	2
13	DIN 7991 M4x12 A4	COUNTERSUNK BOLT M4X12	1

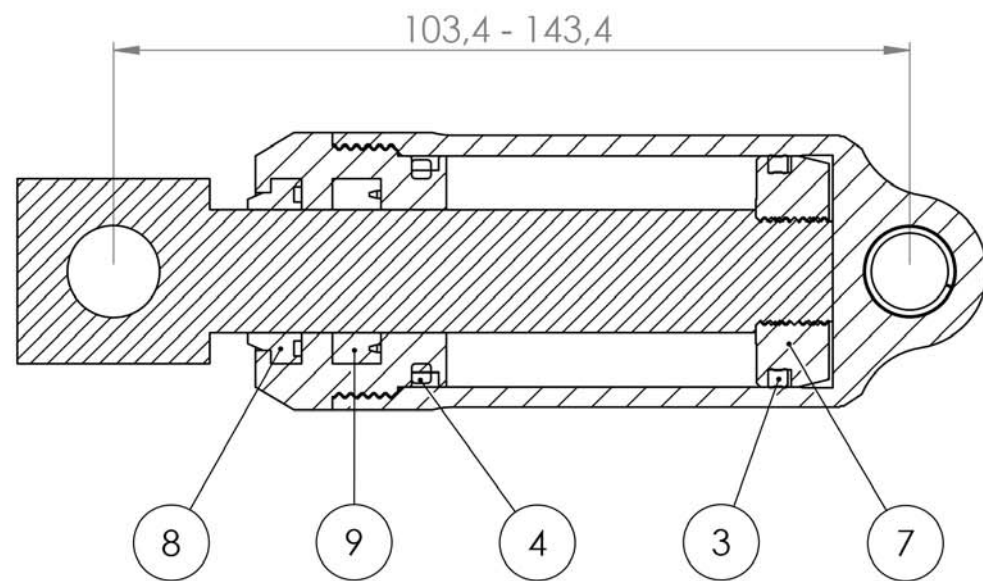
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	04/01/2019	P. Iglesias					
	Proyecto			M700C		COTAS SIN TOLERANCIA SEGUN ISO 2768 mK	
				Material	Tratamiento	Peso (Kg.)	
				Titanium 64		0.50	
Cliente	Designación					Proceso	
	CYLINDER MAIN ASSY.					Hoja1	
	Nº de plano			Cant.	Escala	Formato	Hoja
	M700C - 100			-	1:2	A3	1 de 1

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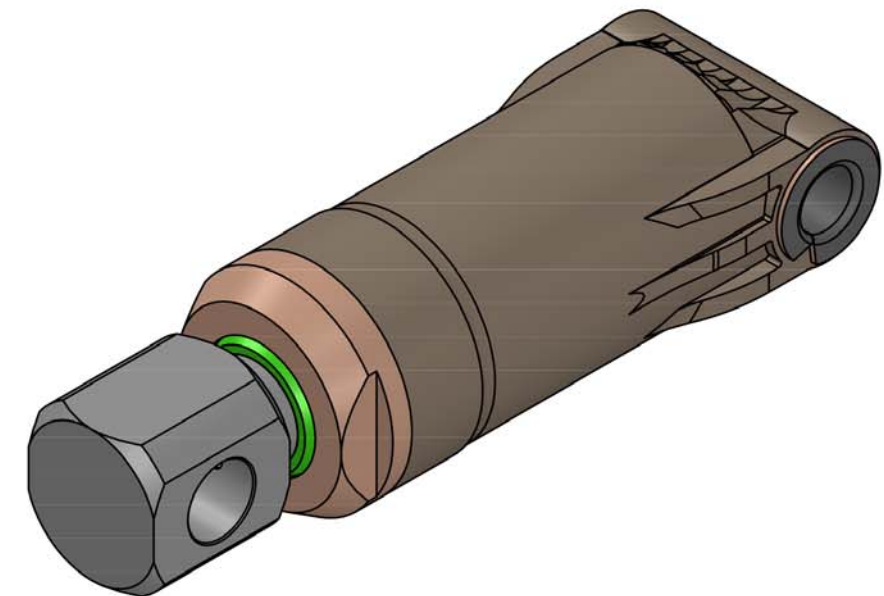
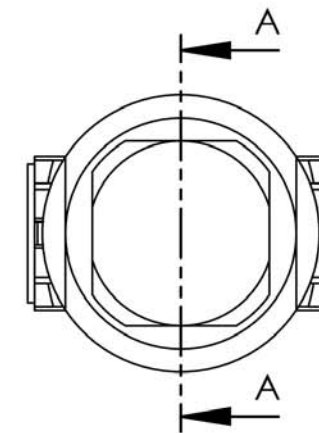
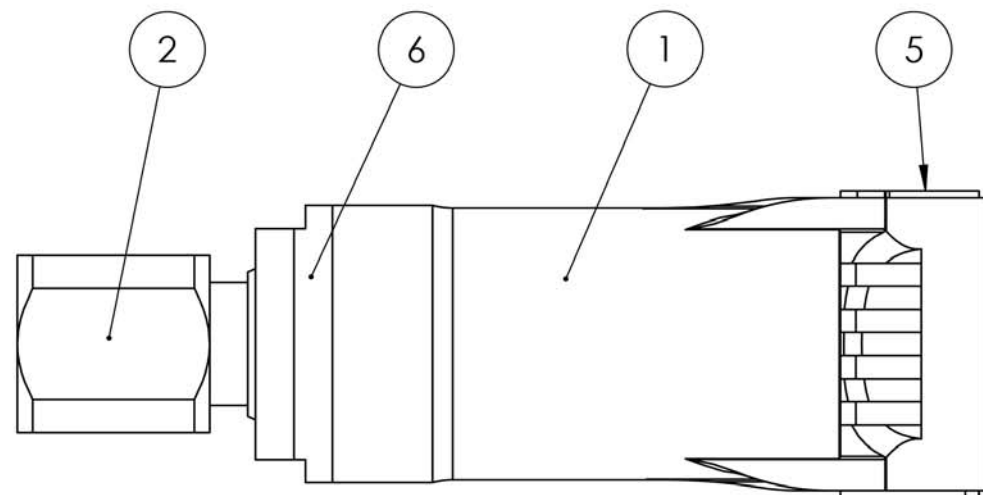


ITEM	REF.	DESCRIPTION	QTY.
1	M700C - T014	CYLINDER BODY Ø30X50	1
2	M700C - SS012	PISTON ROD	1
3	3053.14.000-107-R01	CYLINDER HEAD	1
4	3053.14.000-108-R02	PISTON	1
5	3053.14.000-202-R02	ROD PIN	1
6	3053.14.000-310	SEAL PU88 Ø30	1
7	472.147	O-RING 24x2,5	1
8	640.300	ROD SEAL Ø18	1
9	337.847	WIPER SEAL PU11 18x24x4	1
10	203MBM6I	BONDED WASHER M6 INOX	2
11	C-XRC60180202	FITTING BSPP 1/8" M-M INOX	2
12	DIN 7991 M4x12 A4	COUNTERSUNK BOLT M4X12	1
13	594.341	CUSHION DUB 10-12-10	2

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	Proyecto M700C					COTAS SIN TOLERANCIA SEGUN ISO 2768 mK	
				Material Titanium 64	Tratamiento	Peso (Kg.) 0.47	
	Cliente	Designación WRIST PITCH CYLINDER					Proceso Hoja1
Nº de plano M700C - 200		Cant. -	Escala 1:2	Formato A3	Hoja 1 de 1		

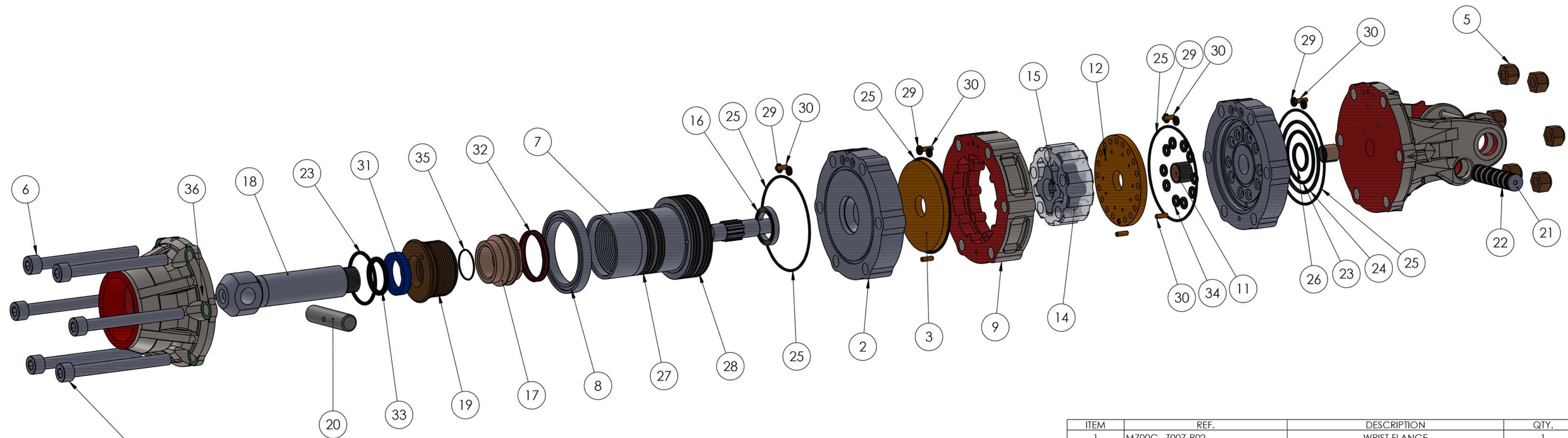


SECCIÓN A-A
ESCALA 1 : 1

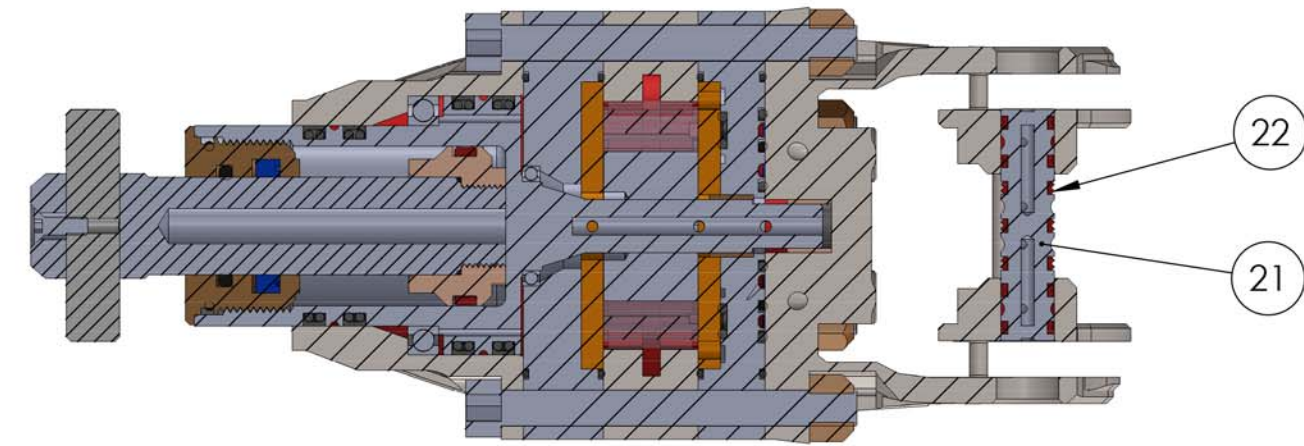


ITEM	REF	DESCRIPTION	QTY.
1	M700C - T015	CYLINDER BODY Ø30X100	1
2	M700C - T016	WRIST YAW PISTON ROD	1
3	3053.14.000-310	SEAL PU88 Ø30	1
4	472.147	O-RING 24x2,5	1
5	673.152	CUSHION DUB 10-12-18-12	2
6	M700C - B006	CYLINDER HEAD	1
7	M700C - B007	PISTON Ø30 M14	1
8	647.935	WIPER SEAL PU11 16x22x4	1
9	504.050	ROD SEAL Ø16	1

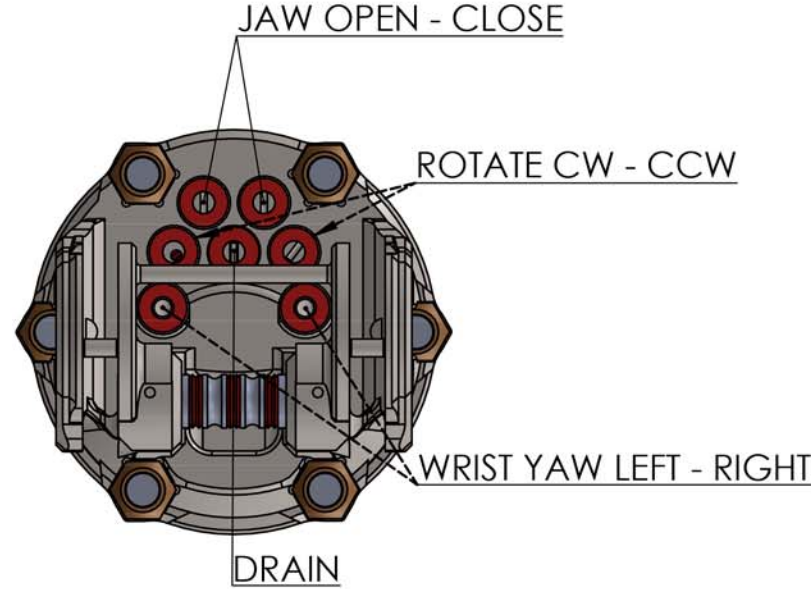
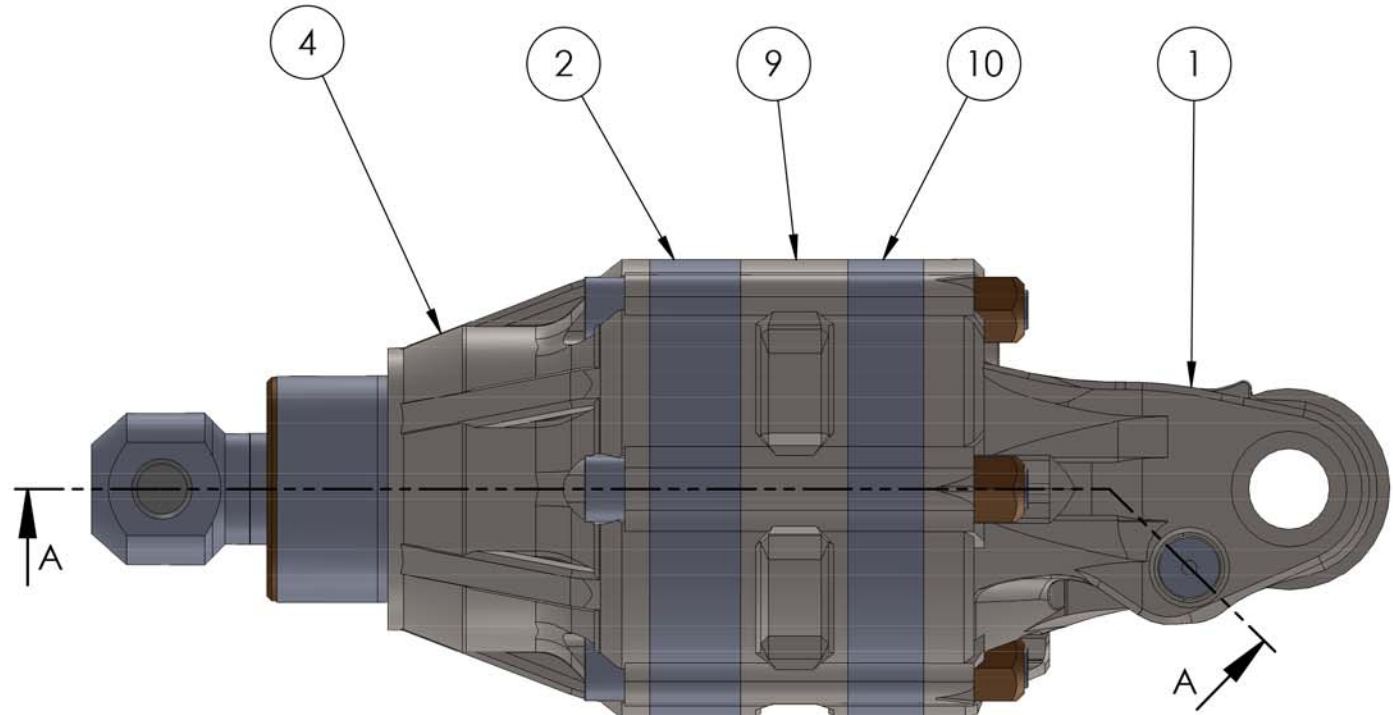
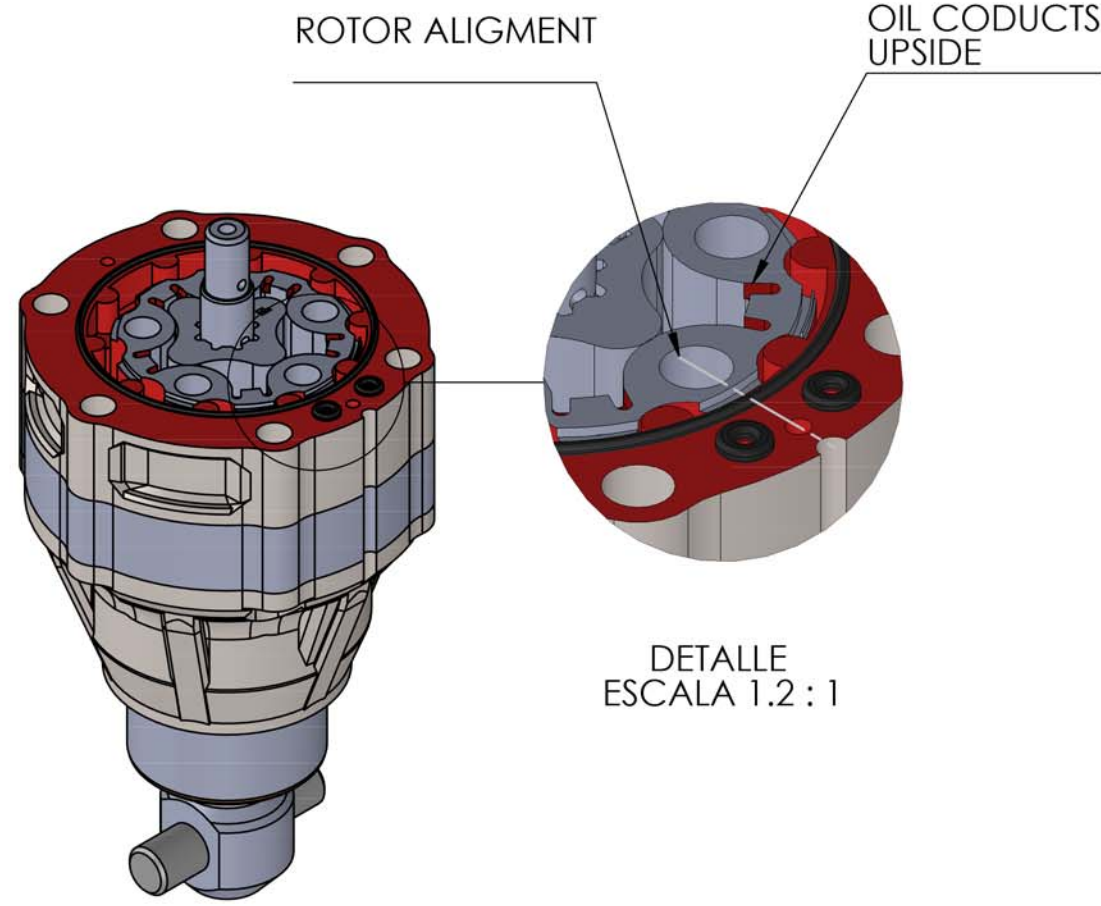
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	08/11/2018	P. Iglesias					
	Proyecto					COTAS SIN TOLERANCIA SEGÚN ISO 2768 mK	
	M700C			Material Titanium 64		Tratamiento	Peso (Kg.)
Cliente	Designación					Proceso	
	WRIST YAW CYLINDER					Hoja1	
	Nº de plano			Cant.	Escala	Formato	Hoja
	M700C - 300			-	1:2	A3	1 de 1



Torque 30 Nm (22 Ft Lbs.)



SECCIÓN A-A
ESCALA 1 : 1.7



ITEM	REF.	DESCRIPTION	QTY.
1	M700C - T007-R02	WRIST FLANGE	1
2	M700C - SS019 R03	MOTOR FRONT COVER	1
3	M700C - HS002	PLATE GUIDE	1
4	M700C - T010 - R01	WRIST COVER	1
5	M8 NUT CUNIAL	M8 NUT	6
6	DIN912 M8x80 TITANIO	BOLT M8x20	6
7	M700C - SS011-R03	CYLINDER JAW BODY	1
8	ISB 45-58-7	BEARING 45-58-7	1
9	M700C - T008-R02	GEROTOR COVER	1
10	M700C - SS023 R02	REAR MOTOR COVER	1
11	672.915	CUSHION DUB 12-14-10	1
12	M700C - HS001	OIL PLATE GUIDE	1
13	541.276	CUSHION DUB 10-12-10	1
14	M700C - SS013-R03	GEROTOR BODY	1
15	M700C - SS014	GEROTOR ROTOR	1
16	ISB 20-27- 4	BEARING 20-27-4	1
17	M700C - B008	PISTON	1
18	M700C - SS010	ROD	1
19	3054.14.000-105	JAW CYLINDER HEAD	1
20	3054.14.000-201	ROD PIN	1
21	M700C - SS009	WRIST YAW PIN	1
22	M700C - PU002	CYLINDER PIN ROT SEAL	7
23	342.415	O-RING 34 x 2	2
24	504.421	O-RING 48x2	1
25	430.919	O-RING 65x1,5	4
26	346.207	O-RING 16x2	1
27	CUVID - F343	PTFE ROT SEAL Ø45	2
28	CUVID - F342	PTFE ROT SEAL Ø58	2
29	340.653	O-RING 2,5x2	8
30	DIN 7 3x9	PIN Ø3X9	7
31	640.326	ROD SEAL Ø22	1
32	3054.14.000-307	PISTON SEAL PU88 Ø36	1
33	424.339	O-RING 21x3	1
34	437.959	O-RING 4.5X2	10
35	345.023	O-RING 20 x 1	1
36	DIN 7991 M4x12 A4	COUNTERSUNK BOLT M4X12	1

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	Proyecto M700C				COTAS SIN TOLERANCIA SEGUN ISO 2768 mK
	Material Titanium 64			Tratamiento	Peso (Kg.)
	Cliente			Proceso	
Designación M700C - JAW ACTUATOR ASSEMBLY			Hoja1		
Nº de plano M700C - 400 R01			Cant. -	Escala 1:5	Formato A2
			Hoja 1 de 1		



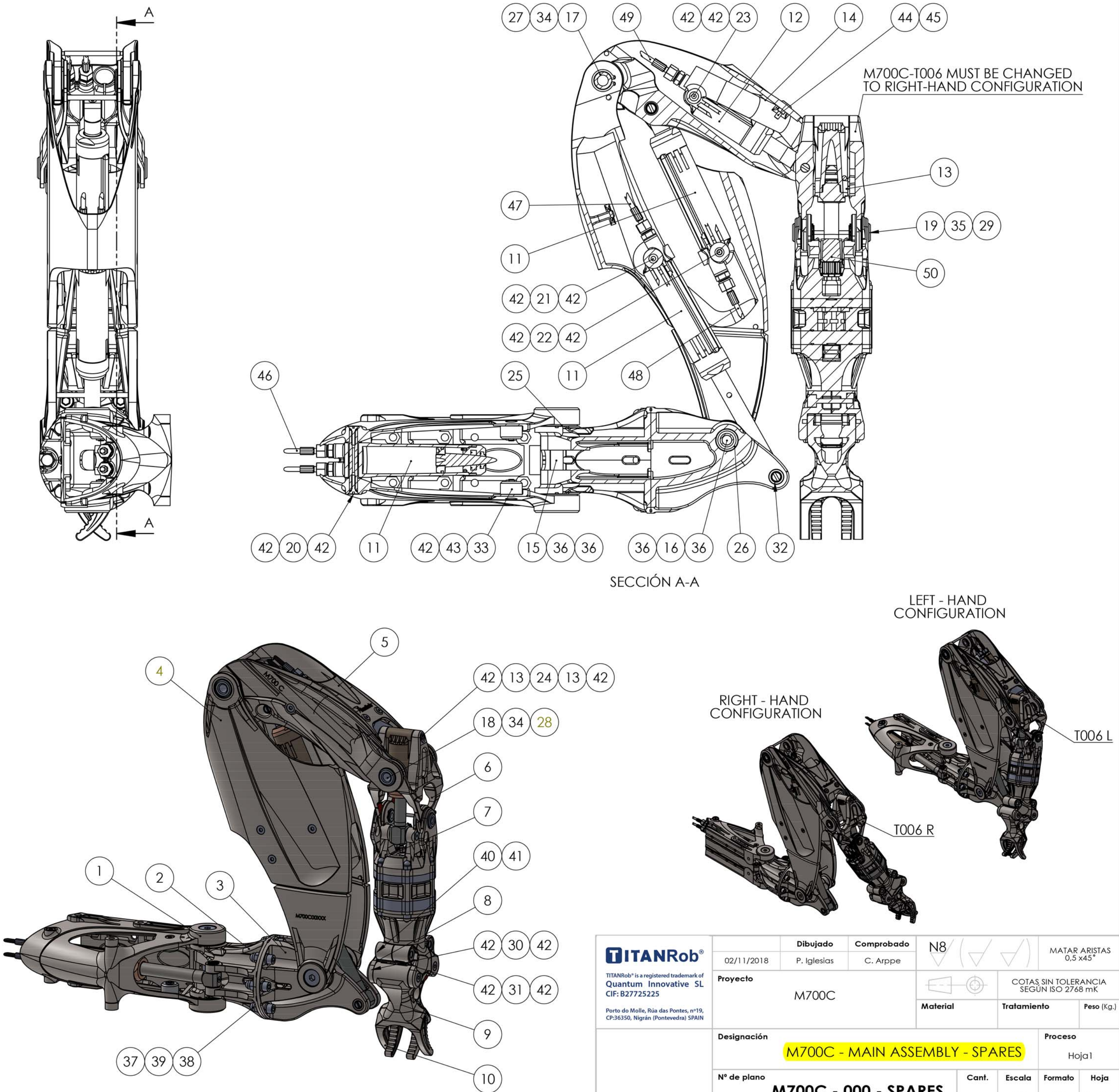
TITANROB MANIPULATOR HYDRAULIC HOSE LIST

Equipment	M700C Manipulator	Ref.	M700C
S/N	003 & 004	Date	15feb2021
Assembly	HYDRAULIC HOSES	Revised by	PIN

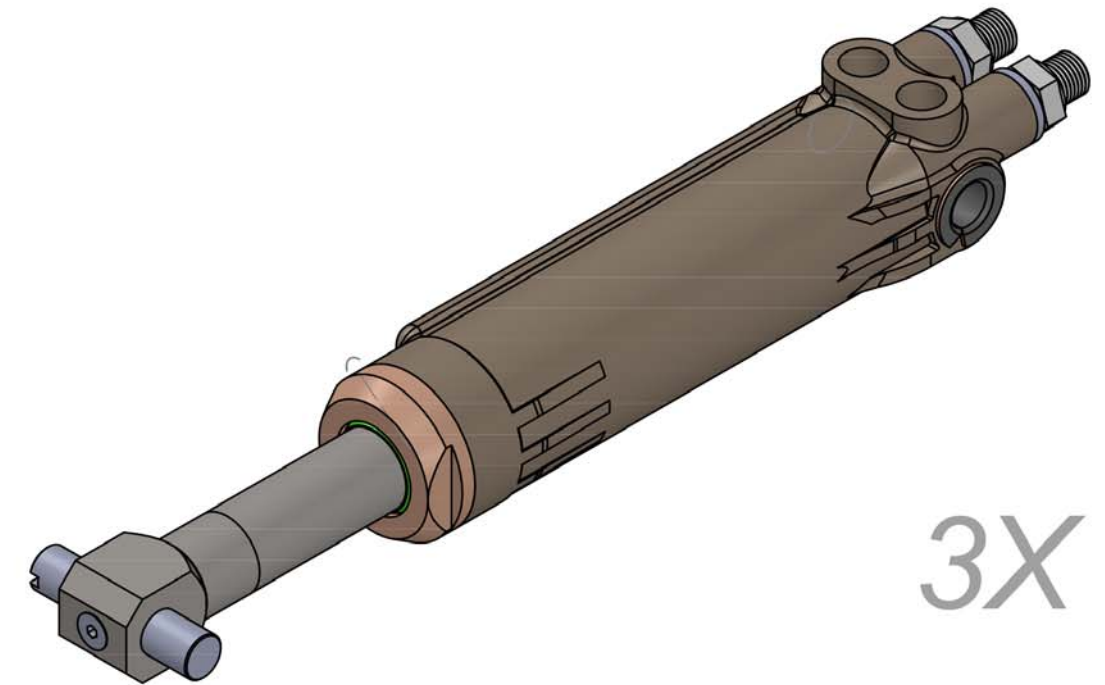
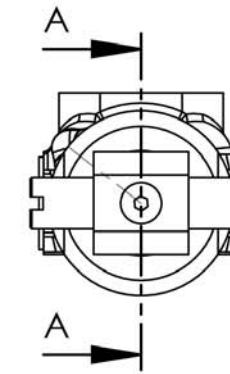
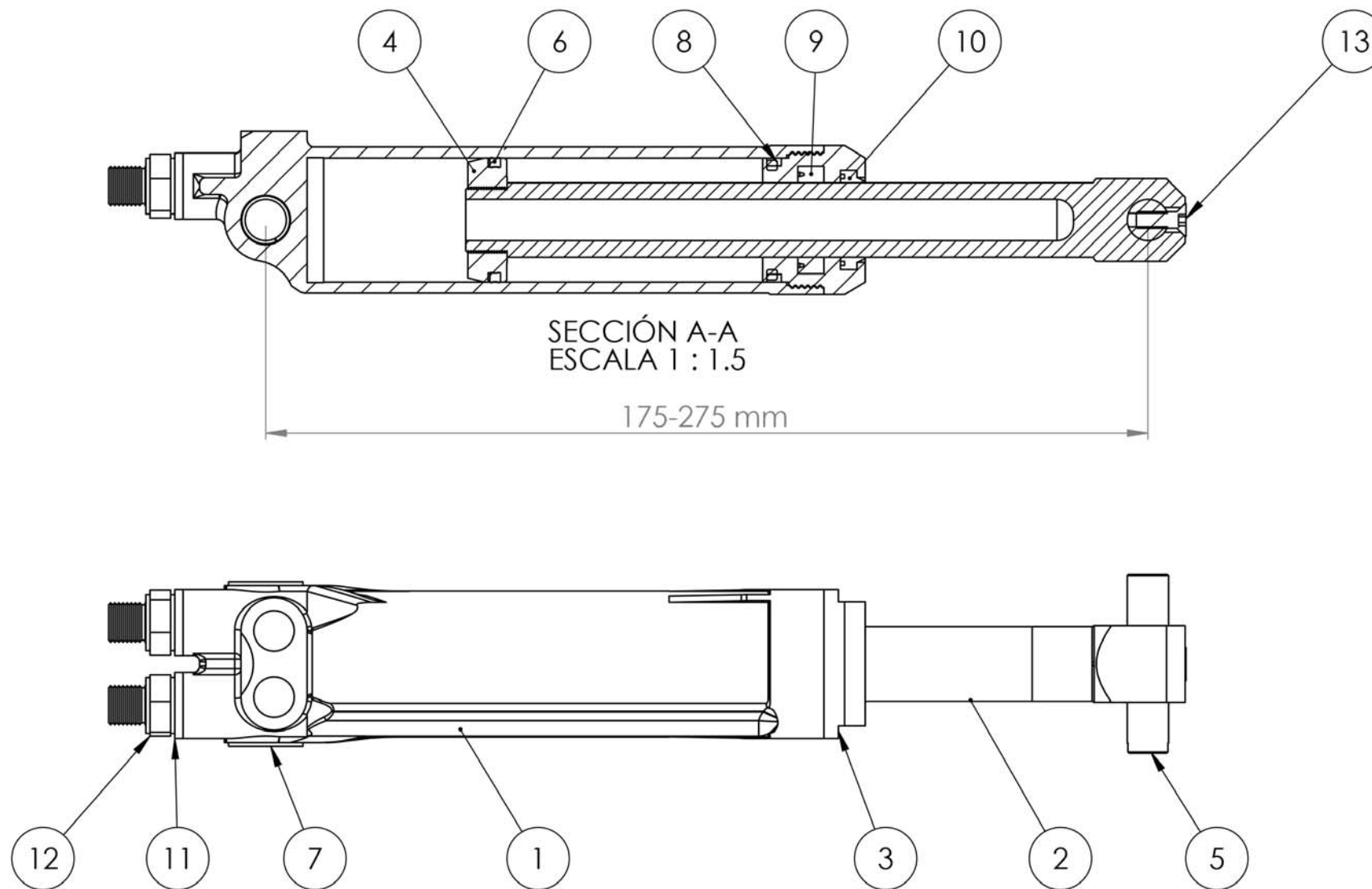
No.	FUNCTION	Actuator (LEFT CONFIG)	Valve Pack Port No.	Hose Length (mm)	Manip end Fitting	V Pack end Fitting	Hose Type
1	SHOULDER / ARM Azimuth (Yaw) RIGHT	Retract (LH)	A1	1160	BSPP 1/8" F. Swivel	JIC 7/16 F. Swivel	DN2 - TS8552101 00
2	SHOULDER / ARM Azimuth (Yaw) LEFT	Extend (LH)	B1	1160	BSPP 1/8" F. Swivel	JIC 7/16 F. Swivel	DN2 - TS8552101 00
3	SHOULDER / ARM Pitch UP	Extend	A2	2000	BSPP 1/8" F. Swivel	JIC 7/16 F. Swivel	DN2 - TS8552101 00
4	SHOULDER / ARM Pitch DOWN	Retract	B2	2000	BSPP 1/8" F. Swivel	JIC 7/16 F. Swivel	DN2 - TS8552101 00
5	ELBOW / FOREARM Pitch UP	Extend	A3	1750	BSPP 1/8" F. Swivel	JIC 7/16 F. Swivel	DN2 - TS8552101 00
6	ELBOW / FOREARM Pitch DOWN	Retract	B3	1750	BSPP 1/8" F. Swivel	JIC 7/16 F. Swivel	DN2 - TS8552101 00
7	WRIST / HAND Pitch UP	Extend	A4	2150	BSPP 1/8" F. Swivel	JIC 7/16 F. Swivel	DN2 - TS8552101 00
8	WRIST / HAND Pitch DOWN	Retract	B4	2150	BSPP 1/8" F. Swivel	JIC 7/16 F. Swivel	DN2 - TS8552101 00
9	WRIST / HAND RIGHT	Retract	A5	2520	M6x1 Male.	JIC 7/16 F. Swivel	DN2 - TS8552101 00
10	WRIST / HAND LEFT	Extend	B5	2520	M6x1 Male.	JIC 7/16 F. Swivel	DN2 - TS8552101 00
11	JAW Rotate CW	Rotate CCW	A6	2520	M6x1 Male.	JIC 7/16 F. Swivel	DN2 - TS8552101 00
12	JAW Rotate CCW	Rotate CW	B6	2520	M6x1 Male.	JIC 7/16 F. Swivel	DN2 - TS8552101 00
13	JAW Rotate DRAIN	N/A	TT	2520	M6x1 Male.	JIC 7/16 F. Swivel	DN2 - TS8552101 00
14	JAW CLOSE	Retract	A7	2520	M6x1 Male.	JIC 7/16 F. Swivel	DN2 - TS8552101 00
15	JAW OPEN	Extend	B7	2520	M6x1 Male.	JIC 7/16 F. Swivel	DN2 - TS8552101 00

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ITEM	REF.	DESCRIPTION	QTY.
1	3053.14.000-001-R01	SUPPORTING BASE	
2	M700C - T002	YAW FLANGE	
3	M700C - T003	PITCH FLANGE	
4	M700C - T004	UPPER ARM	
5	M700C - T005	FOREARM	
6	M700C - T006 L	WRIST PITCH FLANGE - LEFT CONFIGURATION	
7	M700C - 400	JAW ACTUATOR ASSEMBLY	
8	M700C - T011	JAW BODY	
9	M700C - T012	INT JAW	
10	M700C - T013	EXT JAW	
11	3053.14.000-100	CYLINDER MAIN ASSY.	
12	M700C - 200	WRIST PITCH CYLINDER	
13	M700C - 300	WRIST YAW CYLINDER	
14	M700C - P002	HOSE GUIDE	
15	3053.14.000-206-R02	YAW SHAFT	
16	M700C - SS002	SHOULDER PITCH SHAFT	
17	M700C - SS003	ELBOW PITCH PIVOT SHAFT	
18	M700C - SS004	WRIST PITCH SHAFT	
19	M700C - SS005	WRIST YAW SHAFT	
20	3053.14.000-203	SHAFT CYL. N°1	
21	M700C - SS006	SHAFT CYL. N° 2	
22	M700C - SS007	SAFT CYL. N°3	
23	M700C - T017	SHAFT CYL. N°4	
24	M700C - SS008	SHAFT CYL. N°5	
25	M700C - B001	BRONZE BUSH N°1	
26	M700C - B002	BRONZE BUSH N°2	
27	M700C - B003	BRONZE BUSH N°3	
28	M700C - B004	BRONZE BUSH N°4	
29	M700C - B005	BRONZE BUSH N°5	
30	3054.14.000-203	WIDE JAW SHAFT	
31	3054.14.000-202	NARROW JAW SHAFT	
32	673.152	CUSHION DUB 10-12-18-12	6
33	3053.14.000-304	ANODE Ø24	4
34	DIN 471 D20	CIRCLIP Ø20 INOX	2
35	DIN 471 D16	CIRCLIP Ø16 INOX	2
36	DIN 7991 M12x20	COUNTERSUNK BOLT M12x20	
37	DIN 912 M8x20	BOLT M8x20	
38	DIN 1587 M8	ACORN NUT M8	
39	DIN 127 M8	LOCK WASHER M8	
40	DIN 912 M10x40	BOLT M10x40	
41	DIN 934 M10	NUT DIN 934 M10	
42	DIN 7991 M6x20	COUNTERSUNK BOLT M6x20	
43	DIN 934 M6	NUT DIN 934 M6	
44	DIN 7991 M5X16	COUNTERSUNK BOLT M5x16	
45	DIN 934 M5	NUT DIN 934 M5	
46	HOSE 1160 mm GAS - JIC	M700C YAW HOSE	
47	HOSE 2000 mm GAS - JIC	M700C PITCH HOSE	
48	HOSE 1750 mm - GAS - JIC	M700C FOREARM PITCH HOSE	
49	HOSE 2150 mm GAS - JIC	M700C WRIST PITCH HOSE	1
50	HOSE 2520 mm M6 - JIC	M700C WRIST END HOSE	1

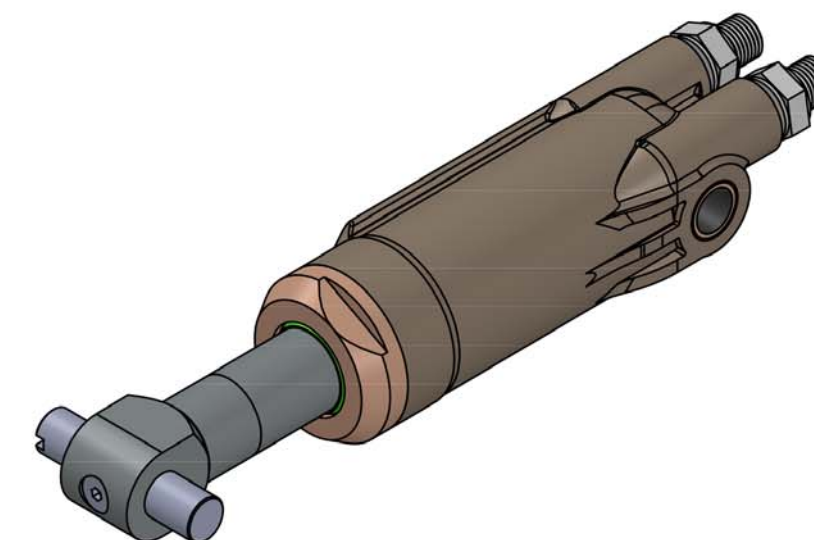
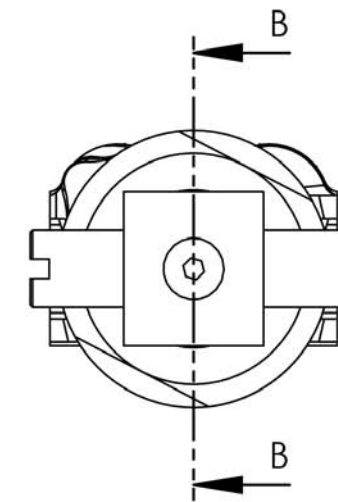
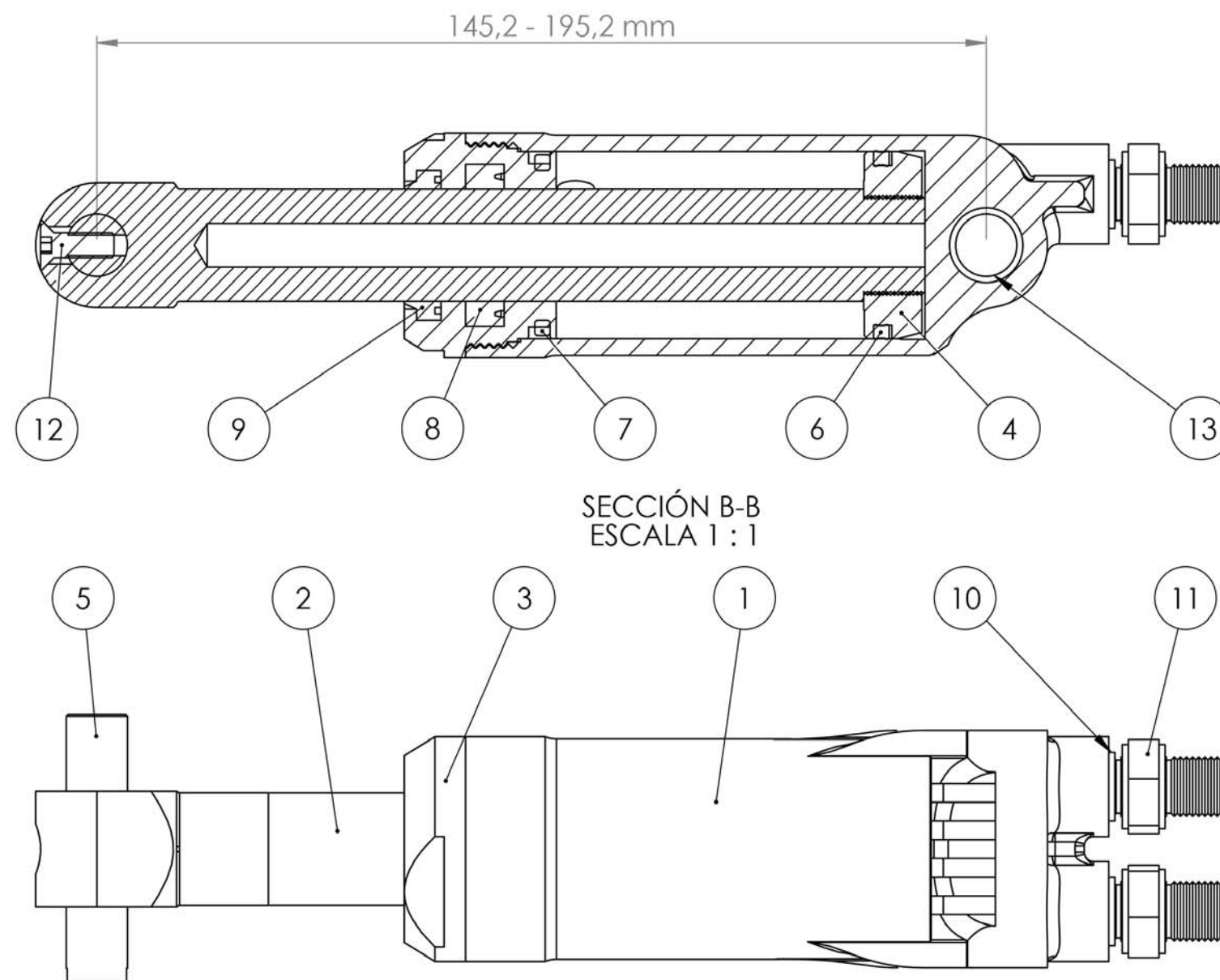


TITANRob® TITANRob® is a registered trademark of Quantum Innovative SL CIF: B27725225 Porto do Mello, Rua das Pontes, nº19, CP:36350, Nigrán (Pontevedra) SPAIN	Dibujado 02/11/2018 P. Iglesias	Comprobado C. Arppe	N8	MATAR ARISTAS 0,5 x45°
	Proyecto M700C			COTAS SIN TOLERANCIA SEGUN ISO 2768 mK
			Material	Tratamiento
				Peso (Kg.)
Designación M700C - MAIN ASSEMBLY - SPARES	Proceso Hoja1			
Nº de plano M700C - 000 - SPARES	Cant.	Escala 1:5	Formato A2	Hoja 1 de 1



ITEM	REF.	DESCRIPTION	QTY.
1	3053.14.000-010-R01	CYLINDER BODY Ø30X100	
2	M700C - T018	PISTON ROD	
3	3053.14.000-107-R01	CYLINDER HEAD	
4	3053.14.000-108-R02	PISTON	
5	3053.14.000-202-R02	ROD PIN	
6	3053.14.000-310	SEAL PU88 Ø30 GREEN	3
7	673.152	CUSHION DUB 10-12-18-12	6
8	472.147	RING 24x2,5 RED	3
9	640.300	ROD SEAL Ø18	3
10	337.847	WIPER SEAL PU11 18x24x4	3
11	C-XAM480002	BONDED WASHER G1/8" INOX	6
12	C-XRC60180202	FITTING BSPP 1/8" M-M INOX	3
13	DIN 7991 M4x12 A4	COUNTERSUNK BOLT M4X12	3

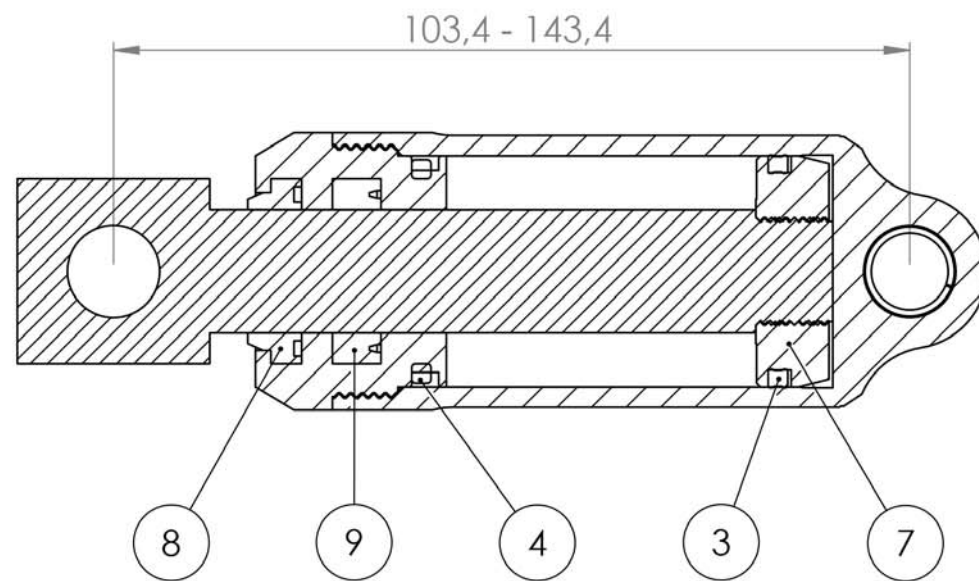
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	04/01/2019	P. Iglesias			
	Proyecto	M700C			COTAS SIN TOLERANCIA SEGÚN ISO 2768 mK
		Material	Tratamiento	Peso (Kg.)	
Cliente		Titanium 64		0.50	
	Designación	CYLINDER MAIN ASSY. - SPARES			Proceso
					Hoja1
	Nº de plano	Cant.	Escala	Formato	Hoja
	M700C - 100 - SPARES	-	1:2	A3	1 de 1



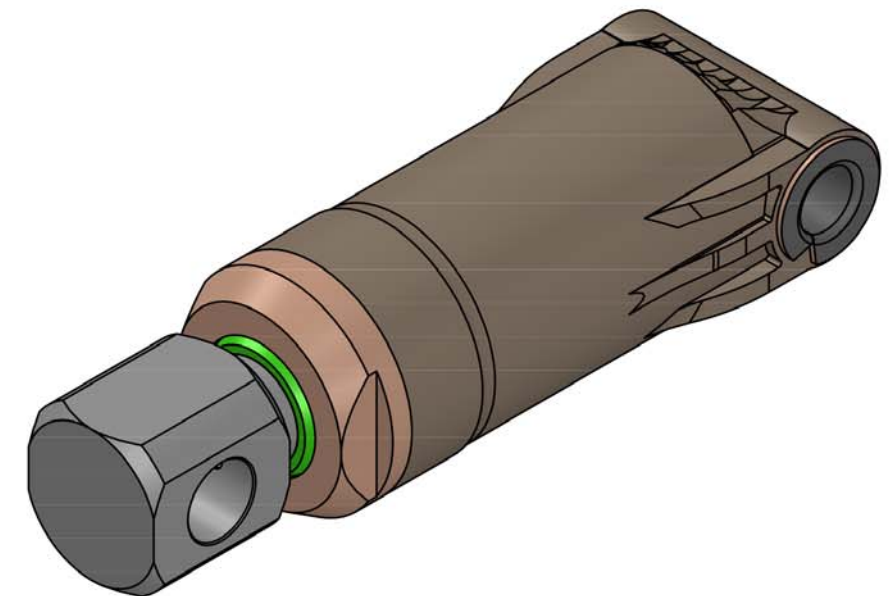
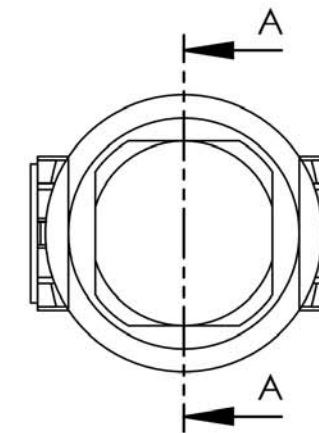
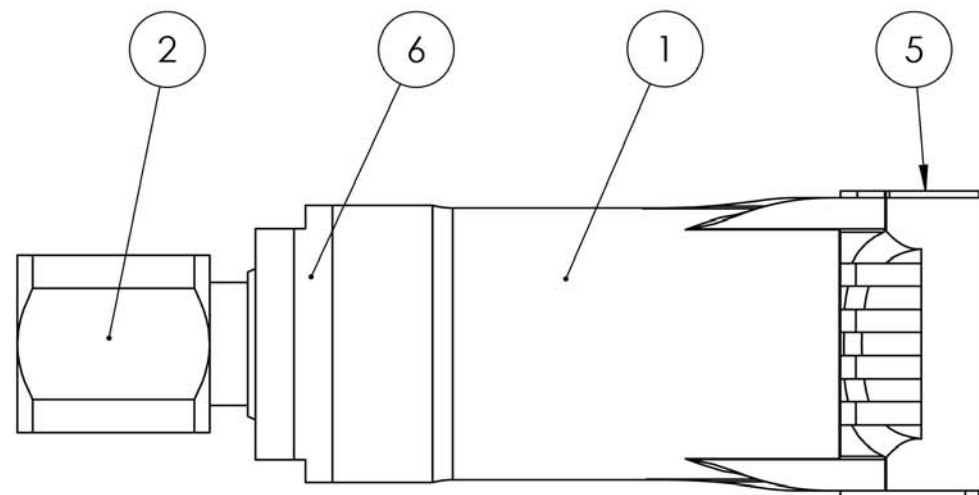
ITEM	REF.	DESCRIPTION	QTY.
1	M700C - T014	CYLINDER BODY Ø30X50	
2	M700C - SS012	PISTON ROD	
3	3053.14.000-107-R01	CYLINDER HEAD	
4	3053.14.000-108-R02	PISTON	
5	3053.14.000-202-R02	ROD PIN	
6	3053.14.000-310	SEAL PU88 Ø30 GREEN	1
7	472.147	RING 24x2,5 RED	1
8	640.300	ROD SEAL Ø18	1
9	337.847	WIPER SEAL PU11 18x24x4	1
10	CXAM480002	BONDED WASHER 1/8" INOX	1
11	C-XRC60180202	FITTING BSPP 1/8" M-M INOX	1
12	DIN 7991 M4x12 A4	COUNTERSUNK BOLT M4X12	1
13	594.341	CUSHION DUB 10-12-10	2

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	08/11/2018	P. Iglesias			
	Proyecto				
	M700C				
Cliente	Designación			Material	Tratamiento
	WRIST PITCH CYLINDER - SPARES			Titanium 64	
	Proceso			Peso (Kg.)	
Nº de plano			Cant.	Escala	Formato
M700C - 200 - SPARES			-	1:2	A3
					Hoja
					1 de 1

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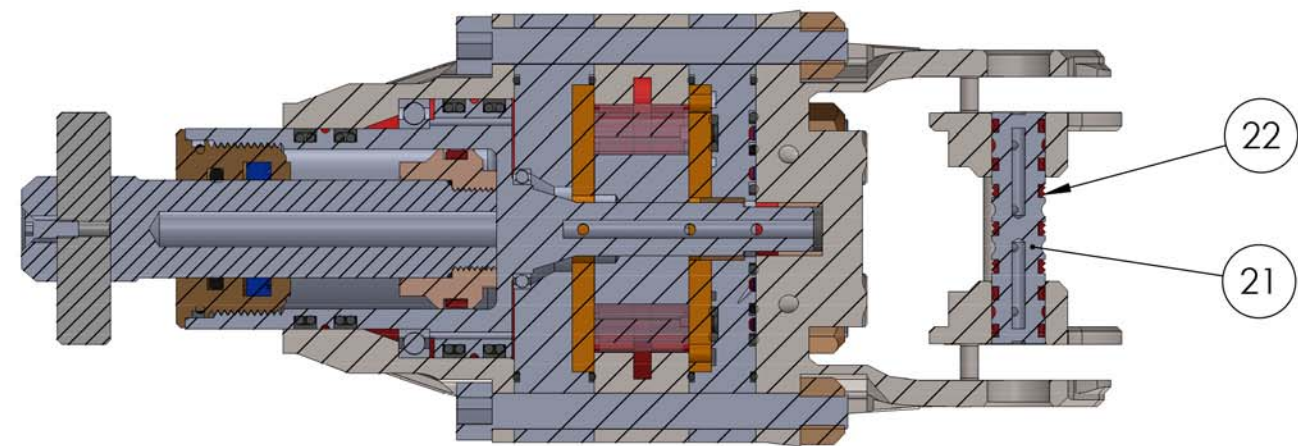
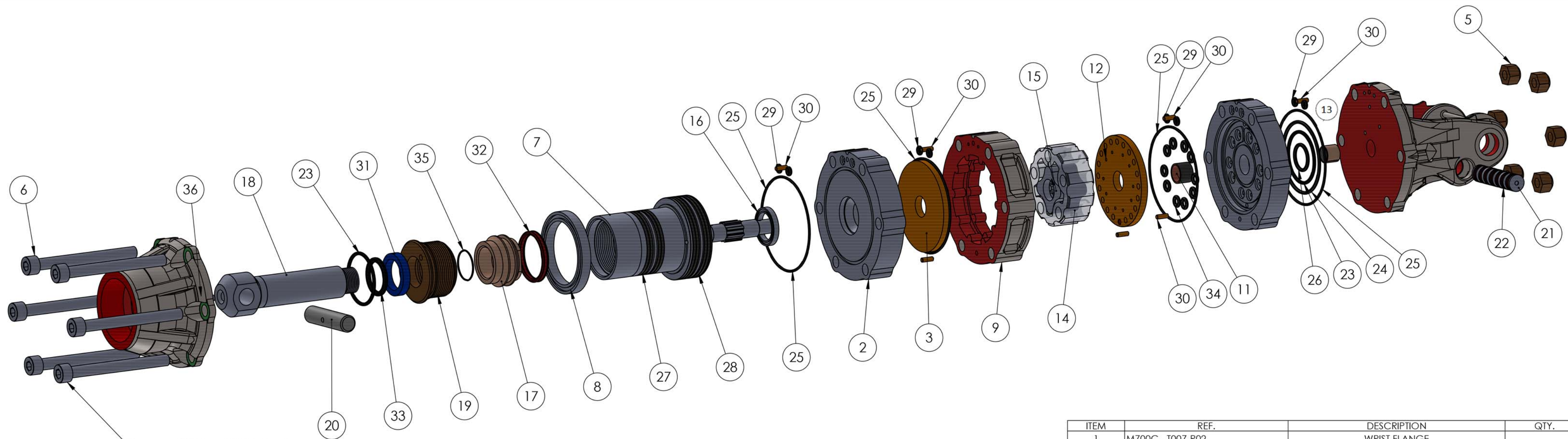
SECCIÓN A-A
ESCALA 1 : 1



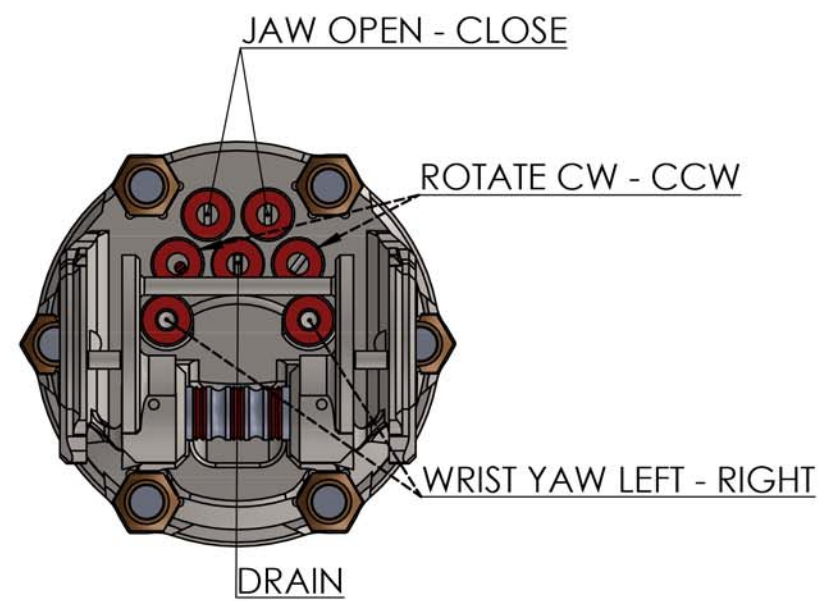
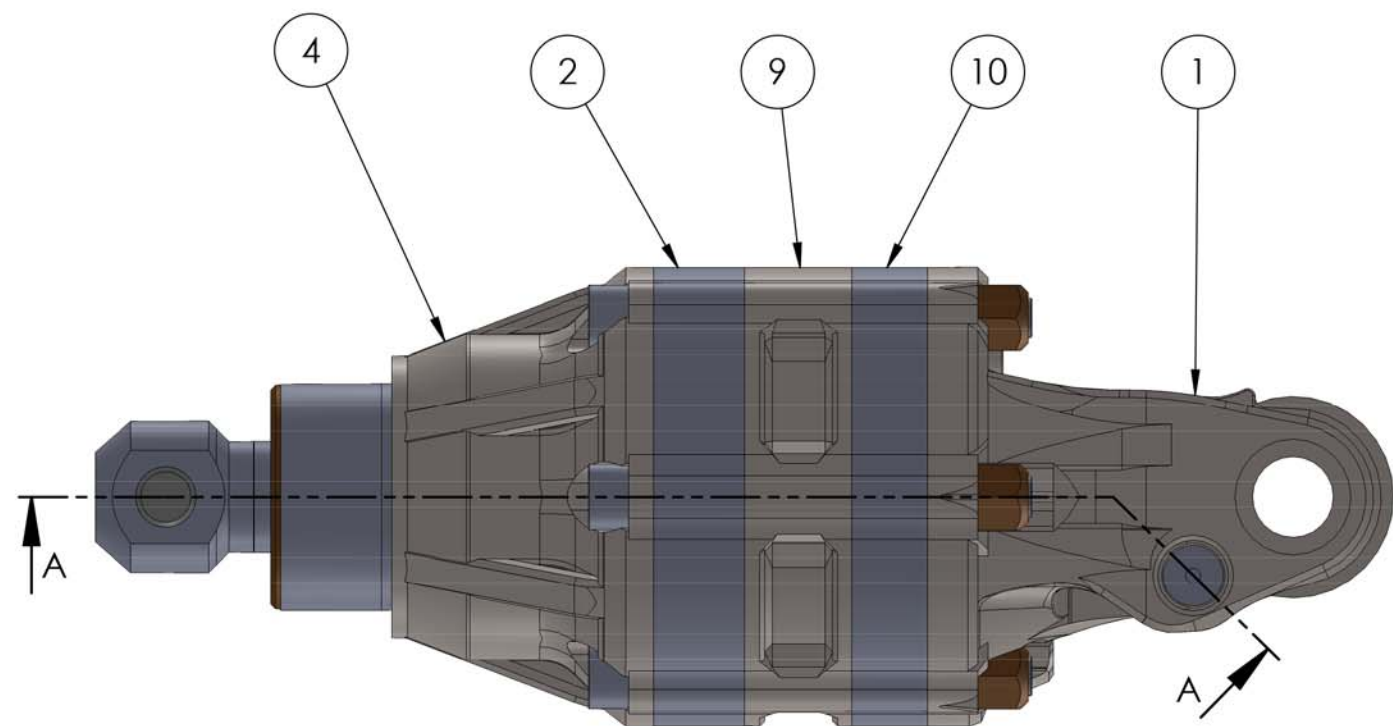
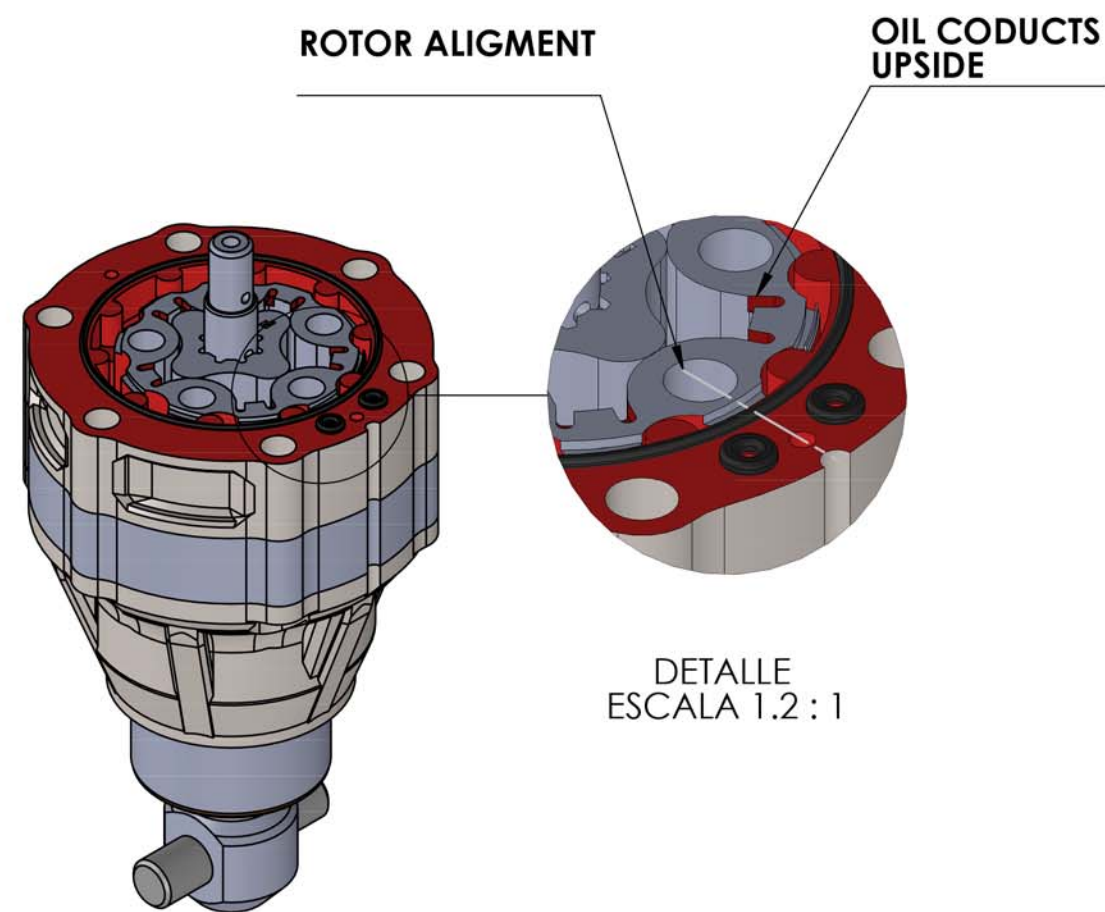
ITEM	REF	DESCRIPTION	QTY.
1	M700C - T015	CYLINDER BODY Ø30X100	
2	M700C - T016	WRIST YAW PISTON ROD	
3	3053.14.000-310	SEAL PU88 Ø30 GREEN	1
4	472.147	RING 24x2,5 RED	1
5	673.152	CUSHION DUB	2
6	M700C - B006	10-12-18-12 CYLINDER HEAD	
7	M700C - B007	PISTON Ø30 M14	
8	647.935	WIPER SEAL PU11 16x22x4	1
9	504.050	ROD SEAL Ø16	1

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	08/11/2018	P. Iglesias			
	Proyecto			M700C	COTAS SIN TOLERANCIA SEGÚN ISO 2768 mK
	Material			Titanium 64	Tratamiento
Cliente	Designación				Proceso
	WRIST YAW CYLINDER - SPARES				Hoja1
	Nº de plano				Formato
M700C - 300 - SPARES				Cant.	Hoja
				-	1 de 1
				Escala	
				1:2	
				Formato	
				A3	

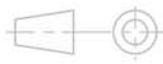
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SECCIÓN A-A
ESCALA 1 : 1.7



ITEM	REF.	DESCRIPTION	QTY.
1	M700C - T007-R02	WRIST FLANGE	
2	M700C - SS019 R03	MOTOR FRONT COVER	
3	M700C - HS002	PLATE GUIDE	
4	M700C - T010 - R01	WRIST COVER	
5	M8 NUT CUNIAL	M8 NUT	
6	DIN912 M8x80 TITANIO	BOLT M8x20	
7	M700C - SS011-R03	CYLINDER JAW BODY	
8	ISB 45-58-7	BEARING 45-58-7	1
9	M700C - T008-R02	GEROTOR COVER	
10	M700C - SS023 R02	REAR MOTOR COVER	
11	672.915	CUSHION DUB 12-14-10	1
12	M700C - HS001	OIL PLATE GUIDE	
13	541.276	CUSHION DUB 10-12-10	1
14	M700C - SS013-R03	GEROTOR BODY	
15	M700C - SS014	GEROTOR ROTOR	
16	ISB 20-27- 4	BEARING 20-27-4	1
17	M700C - B008	PISTON	
18	M700C - SS010	ROD	
19	3054.14.000-105	JAW CYLINDER HEAD	
20	3054.14.000-201	ROD PIN	
21	M700C - SS009	WRIST YAW PIN	
22	M700C - PU002	CYLINDER PIN ROT SEAL	7
23	342.415	O-RING 34 x 2	2
24	504.421	O-RING 48x2	1
25	430.919	O-RING 65x1,5	4
26	346.207	O-RING 16x2	1
27	CUVID - F343	PTFE ROT SEAL Ø45	2
28	CUVID - F342	PTFE ROT SEAL Ø58	2
29	340.653	O-RING 2,5x2	8
30	DIN 7 3x9	PIN Ø3X9	2
31	640.326	ROD SEAL Ø22	1
32	3054.14.000-307	PISTON SEAL PU88 Ø36	1
33	424.339	O-RING 21x3	1
34	437.959	O-RING 4.5X2	10
35	345.023	O-RING 20 x 1	1
36	DIN 7991 M4x12 A4	COUNTERSUNK BOLT M4X12	1

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	26/07/2019					
	Proyecto				COTAS SIN TOLERANCIA SEGUN ISO 2768 mK	
	M700C			Material	Tratamiento	Peso (Kg.)
Cliente				Titanium 64		
	Designación			Proceso		
	M700C - JAW ACTUATOR ASSEMBLY - SPARE KIT			Hoja1		
	Nº de plano			Cant.	Escala	Formato Hoja
	M700C - 400 R01			-	1:5	A2 1 de 1