
	<b>TECHNICAL UNIT</b>			
	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No:	<b>0545330010</b>
Rev. No.:			<b>A</b>	
Product Des:	<b>MAPSET</b>		Date:	<b>20 MAY 2020</b>
Product Cat.:			Approved By:	<b>S. YANG</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By:	<b>V. CHAUHAN</b>	

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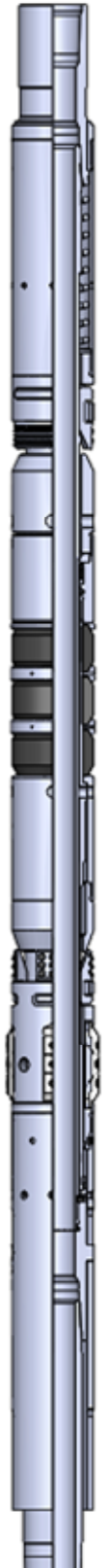
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**1. PRODUCT DESCRIPTION:**

The Model MAPSET Mechanical Production Packers is a retrievable, double-grip compression or tension-set production packer that can be left in tension, compression, or in a neutral position, and will hold pressure from above or below. A large internal bypass reduces the swabbing effect during run-in and retrieval and closes when the packer is set. When the packer is released, the bypass opens first, allowing the pressure to equalize before the upper slips are released. The Model MAPSET also features a upper-slip releasing system that reduces the force required to release the packer. A non-directional slip is released first, making it easier to release the other slips.

**FEATURES / BENEFITS**

- Holds high pressure differentials from above or below.
- Can be set using tension or compression.
- Only one-quarter right rotation is required to set and release.
- Tubing string can be held in tension, compression, or neutral set while the packer remains engaged.
- Field-proven releasing system.
- Optional safety-release features available upon request.
- Elastomer options available for hostile environments.
- Bypass valve is below upper slips, so the debris is washed from slips when the valve is opened



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### 2. PRE-INSTALLATION INSPECTION PROCEDURES:

#### CAUTION:

MAP Oil Tools ships tools with connections made up **HAND TIGHT**. Tighten/Torque all connections properly before operating tool.

Recommendations of General Thread Connection Torque			
Stub Acme / Acme Threads	Internal Tapered Tubing Threads		Premium Threads
	Up to 2 3/8"	Greater Than 2 3/8"	
600-800 ft-lbs.	600-800 ft-lbs.	800-1200 ft-lbs.	Consult thread manufacturer's recommendations

Before starting work, ensure that all personal protection equipment is available and being used. Evaluate job site to ensure that the work can be completed safely, all safety Procedures are to be observed.

Before using the tool, MAP recommends disassembly and inspection of tool. Clean parts and ensure that parts are in good working condition. Replace worn or damaged parts with MAP replacement Part.

Recommendations of General screw Torque									
Screw Size (in)	# 6	# 8	# 10	1/4	5/16	3/8	7/16	1/2	5/8 & Larger
Torque Range (in-pound)	5 - 8	10 - 15	18-25	25-40	50-80	90-135	160-210	250-330	450-650

When redressing tools, MAP recommends replacement of all seals, elements, O-rings, shear screws, etc. Contact MAP sales for redress kit and other replacement part information.

### 3. PRECAUTIONS AND HANDLING:


- Do not lift tool at the Spring, Slip/Slip Cage, or Packing Element locations.
- When running this tool with packer, make sure that J-slots in the plug, running and retrieving tool, and the packer are all compatible.
- Most of the component parts are manufactured from heat-treated alloy steel. Therefore, extended exposure to corrosives can be detrimental to the metallurgy. Care in cleaning the tool soon after removal from the well can help extend the life of component parts. The visual inspection of the parts is necessary after removal, to identify any parts which require replacement.
- Lubricate O-rings and O-ring grooves and all mating threads before assembly.

<b>MAP</b> OIL TOOLS		<b>TECHNICAL UNIT</b>			
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**4. TECHNICAL SPECIFICATIONS:**

**Specifications Table**

Part Numbers	Carbide Option Part Numbers	Casing		Packer Bore (in)	Preferred Range of Casing ID'S		Gage Ring OD (in)	Absolute Travel Limits				Thread Box Up x Pin Down			
		OD	T & C Weight (lbs/ft)		Min (in)	Max (in)		Slips OD		Drag Block OD					
								Min (in)	Max. (in)	Min. (in)	Max. (in)				
0545330002	0545330012	4 1/2"	9.5-13.5	1.938	3.920	4.090	3.750	3.650	4.170	3.750	4.250	2 3/8" EU 8RD			
0545330003	0545330013		13.5-15.1		3.826	3.920				3.650	3.610		4.110		
0545330006	0545330016	5"	18.0-20.8	2.000	4.156	4.276	4.000	4.000	4.700	3.992	4.446				
0545330007	0545330017		11.5-15.0		4.408	4.560				4.125	4.229		4.658		
0545331001	0545331011	5 1/2"	20.0-23.0	2.375	4.670	4.778	4.500	4.500	5.062	4.500	5.000		2 7/8" EU 8RD		
0545331002	0545331012		14.0-20.0		4.778	5.012				4.625	4.688			5.219	4.625
0545331006	0545331016	7"	20.0-23.0	2.500	4.670	4.778	4.500	4.500	4.937	4.500	5.000				
0545331007	0545331017		15.5-20.0		4.892	4.950				4.625	4.625			5.187	4.750
0545331008	0545331018		13.0-14.0		5.012	5.044				4.775					5.265
0545332001	0545332011	6 5/8"	24.0-32.0	2.500	5.675	5.921	5.583	5.486	6.292	5.540	6.160	3 1/2" EU 8RD			
0545332003	0545332013		17.0-24.0		5.921	6.135				5.750	5.560			5.769	6.350
0545332004	0545332014	7"	26.0-32.0	3.000	6.094	6.276	5.875	5.850	6.670	5.875	6.625				
0545332005	0545332015		17.0-26.0		6.276	6.538				6.000	6.062			6.812	
0545332006	0545332016		26.0-32.0		6.094	6.276				5.875	5.875			6.625	
0545332007	0545332017		17.0-26.0		6.276	6.538	6.000			6.062	6.812				
0545333001	0545333011	7 5/8"	33.7-39.0	2.500	6.625	6.765	6.437	6.375	7.187	6.125	6.875		2 7/8" EU 8RD		
0545333002	0545333012			3.000										6.875	7.025
0545333003	0545333013			2.500	6.875	7.025	6.672			6.510	7.245		2 7/8" EU 8RD		
0545333004	0545333014														
0545335001	0545335011	9 5/8"	43.5-53.5	4.000	8.535	8.755	8.250	8.190	9.230	8.250	9.656	4 1/2" EU 8RD			
0545335002	0545335012		32.3-43.5		8.755	9.001							8.500		

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**5. ENGINEERING TABLE:**


**Setting Force:**

<b>Setting Force Guide</b>	
<b>Packer Size (in)</b>	<b>Minimum Force Required Packer (lbs.)</b>
4 1/2" ~ 5 1/2"	10,000
6 5/8" ~ 7 5/8"	15,000
9 5/8"	25,000

<b>Required To Pack-Off Packing Elements Systems</b>				
Classification	Temp. Range	Element Duro		
		End	Middle	End
Low Temperature	60-125	80	60	80
Standard Tool	125-225	90	70	90
Moderate Temp.	225-275	90	80	90
High Temperature	275-Up	Contact Tech. Sales		

**Packer Rating:**

<b>Casing O.D.</b>	<b>Max. Differential Pressure (psi)</b>
4 1/2" ~ 7 5/8"	7,500
9 5/8"	5,000

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**Pressure Affected Areas Guide**

The pressure affected areas guide is a calculation of the end area affect on the packer mandrel based on the tubing size used. This effect should be considered in conjunction with the other factors, which elongate or shrink the tubing.


PACKER SIZE	CASING WEIGHT (LB/FT)	TOOL ID (IN.)	TUBING SIZE (IN.)	PRESSURE ABOVE (IN <sup>2</sup> )	PRESSURE BELOW (IN <sup>2</sup> )	
4 1/2"	9.5-13.5	1.938	2.375	0.120 UP	1.189 UP	
	13.5-15.1		2.375	0.120 UP	1.189 UP	
5"	18.0-20.8	1.938	2.375	0.120 UP	1.189 UP	
			2.875	2.177 UP	0.365 DOWN	
	11.5-15.0		2.375	0.120 UP	1.189 UP	
			2.875	2.177 UP	0.365 DOWN	
5 1/2"	20-23	1.938	2.375	0.916 UP	2.220 UP	
			2.875	1.146 UP	0.666 UP	
	14-20		2.375	0.916 UP	2.220 UP	
			2.875	1.146 UP	0.666 UP	
	20-23	2.375	2.375	2.062 DOWN	3.366 UP	
			2.875	0.00 DOWN	1.812 UP	
			15.5-17	2.375	2.062 DOWN	3.366 UP
				2.875	0.00 DOWN	1.812 UP
6 5/8"	24-28	2.500	2.375	3.87 DOWN	5.17 UP	
			2.875	1.80 DOWN	3.62 UP	
			3.500	1.33 UP	1.26 UP	
	17-24		2.375	3.87 DOWN	5.17 UP	
			2.875	1.80 DOWN	3.62 UP	
			3.500	1.33 UP	1.26 UP	
7"	38"	2.375	3.87 DOWN	5.17 UP		
		2.875	1.80 DOWN	3.62 UP		
		3.500	1.33 UP	1.26 UP		
		26-32	2.375	3.87 DOWN	5.17 UP	



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	17-26		2.875	1.80 DOWN	3.62 UP
			3.500	1.33 UP	1.26 UP
			2.375	3.87 DOWN	5.17 UP
			2.875	1.80 DOWN	3.62 UP
			3.500	1.33 UP	1.26 UP
7 5/8"	33.7-39	2.500	2.375	3.87 DOWN	5.17 UP
			2.875	1.80 DOWN	3.62 UP
			3.500	1.33 UP	1.26 UP
	24-29.7		2.375	3.87 DOWN	5.17 UP
			2.875	1.80 DOWN	3.62 UP
			3.500	1.33 UP	1.26 UP
	33.7-39	3.000	2.375	3.87 DOWN	5.17 UP
			2.875	1.80 DOWN	3.62 UP
			3.500	1.33 UP	1.26 UP
			24-29.7	2.375	3.87 DOWN
2.875				1.80 DOWN	3.62 UP
		3.500	1.33 UP	1.26 UP	
9 5/8"	43.5-53.5	4.000	2.875	11.11 DOWN	12.92 UP
			3.500	7.98 DOWN	10.57 UP
	32.3-43.5		4.000	5.03 DOWN	8.11 UP
			4.500	1.70 DOWN	5.30 UP

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**6. OPERATING PROCEDURE:**

**Running:**

Run packer to setting depth. Pick-up on the tubing and rotate 1/4 turn to the right at the packer depth. Lower tubing to engage slips, release right-hand torque while moving tubing downward. (Tubing must be able to rotate back to the left at packer to lock into set position.) Continue to set weight on packer to pack-off elements. After setting weight on packer, pick-up on tubing and pull tension in packer to engage upper slips and complete element pack-off. Repeat setting weight and pulling tension two to three times before landing tubing. Packer may be landed in compression, tension, or neutral position.

**Retrieving:**


The releasing procedures are the same whether the packer has been tension or compression set. Set-down weight (normally 1,000-2000 lbs. is sufficient) on the packer and rotate the tubing 1/4 turn right at the packer depth, holding the right-hand torque then pick-up. The internal by-pass will open, allowing pressure to equalize. Further pick-up releases the releasing sequential slip system, relaxing the elements, allowing the packer to be removed from the well. The packer can be moved and reset without tripping the pipe if the elastomers have not been permanently altered from the well

In the event the packer will not release in the normal manner, there is a safety release incorporated into the J-mechanism. Rotate the tubing hard to the right, thus breaking the tack weld on the J-pin ring. Rotate the tubing approximately 15 additional turns to the right, releasing the J-pin ring from the tool which should aid in releasing the packer.

**7. STORAGE RECOMMENDATION:**

Optimally, equipment should be stored indoors in a climate-controlled facility. The minimum recommendation is that equipment be stored in a covered storage facility for any extended period depending on storage conditions and self-life of elastomer. At locations where these recommendations are not practical, equipment stored outdoors should be kept from contacting the ground and further packaging/protection recommendations should be store the equipment in a cool, dry place, out of the direct sunlight., Wrap the Packing element with bubble wrap or cardboard and tape in place to protect from damage.


For details please refer to our storage and preservation guidelines Doc. No. 0660000004.

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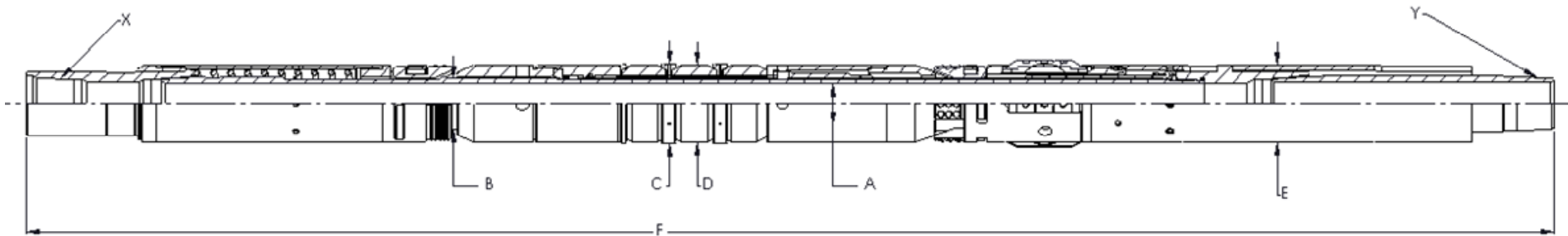
**8. DIMENSIOAL DATA & DRAWING LAYOUT:**


**Dimensional Table**

Part Numbers	Bore ID A (in)	Body OD B (in)	Guide Ring OD C (in)	Packing Element OD D (in)	J-Body OD E (in)	OAL F (in)	Threads Box Up (X) Pin Down (Y)
0545330002	1.938	2.342	3.750	3.610	3.740	75.936	2 3/8" EU 8RD
0545330003			3.650	3.585	3.650		
0545330006			4.000	3.890	3.750	75.796	
0545330007			4.125	4.000			
0545331001	2.000	2.610	4.500	4.485	4.500	88.400	
0545331002			4.625	4.500			
0545331006	2.375	2.875	4.500	4.485	4.500	85.375	
0545331007			4.625				
0545331008			4.775				
0545332001	2.500	3.250	5.583	5.375	5.000	91.630	
0545332003			5.750	5.480			
0545332004	2.500	3.250	5.875	5.820	5.000	90.940	2 7/8" EU 8RD

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0545332005			6.000	5.970			
0545332006	3.000	3.720	5.875	5.840	5.500	96.970	3 1/2" EU 8RD
0545332007			6.000	5.970			
0545333001	2.500	3.520	6.437	6.300	5.000	90.940	2 7/8" EU 8RD
0545333002	3.000	3.720			6.525	5.500	96.970
0545333003			2.500	3.250	6.672	6.625	5.000
0545333004	4.000	4.735			8.250	8.000	7.000
0545335001			8.500	8.420			
0545335002							

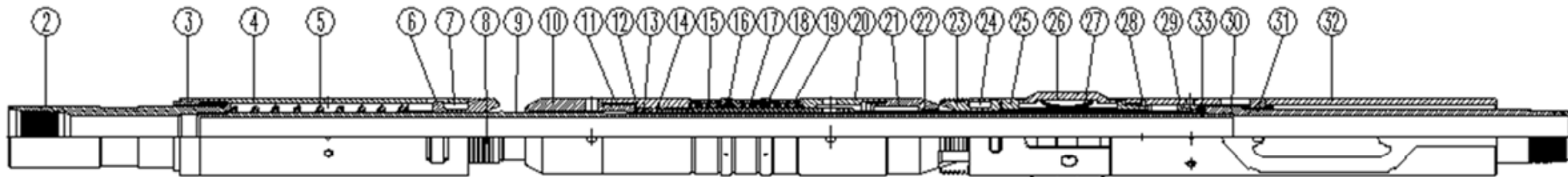


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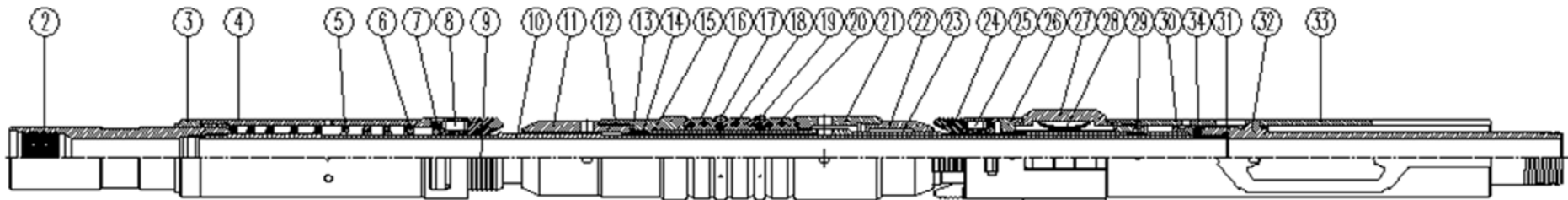
**9. ASSEMBLY & DISASSEMBLY INSTRUCTIONS:**


**Assembly Schematics**

**SIZE: 4 1/2"**

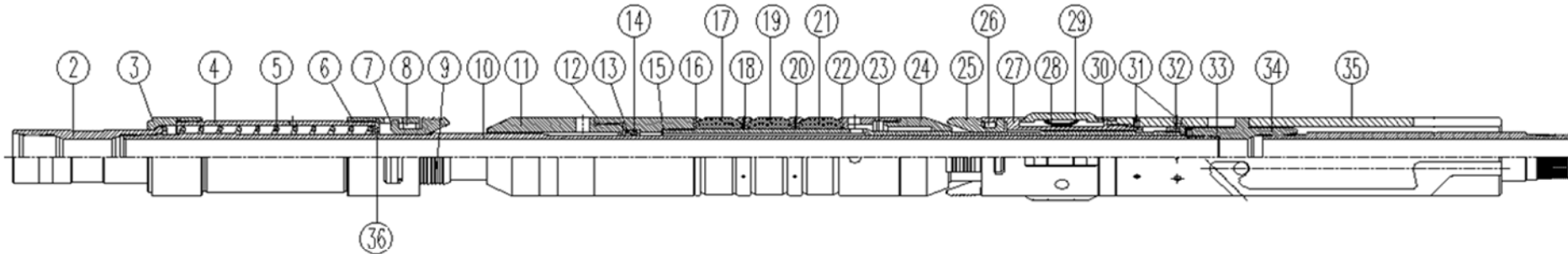


**SIZE: 5"**

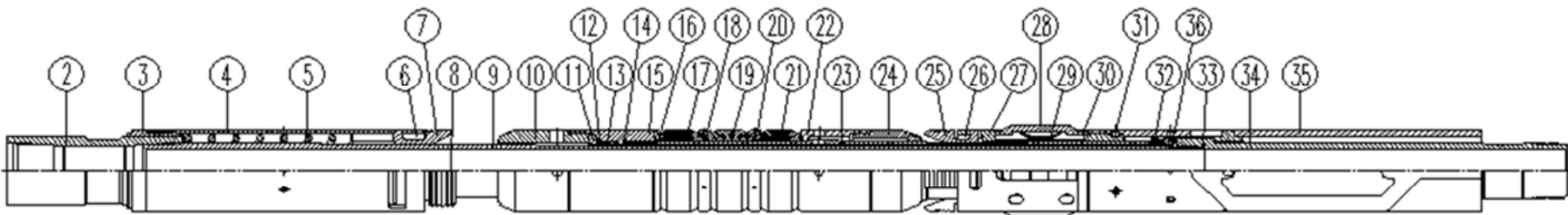



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SIZE: 5 1/2" (20.0-23.0) (p/a 0545331001) / (14.0-20.0)

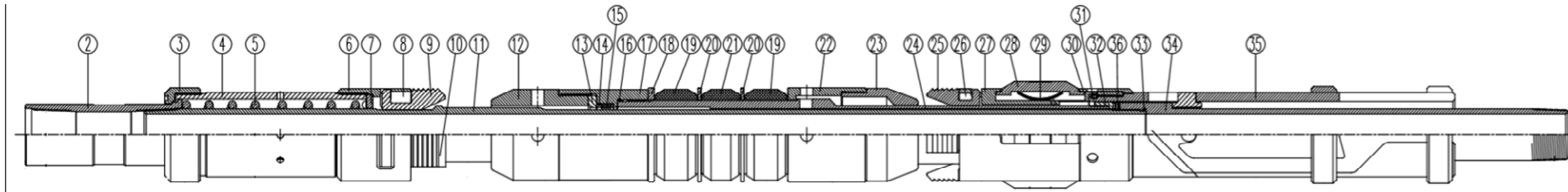


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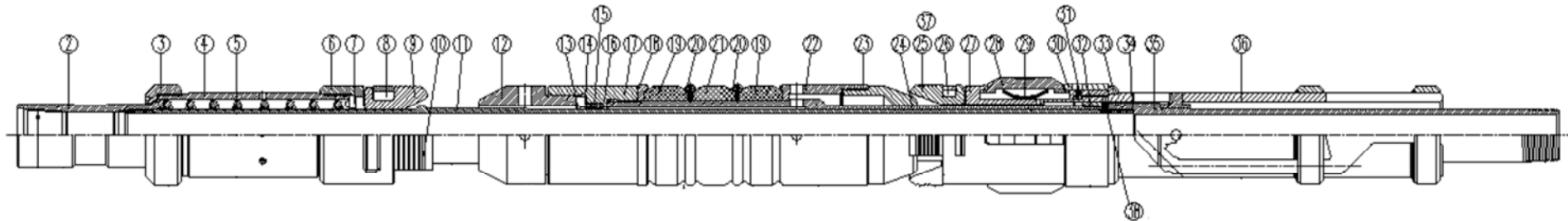



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SIZE: 6 5/8"

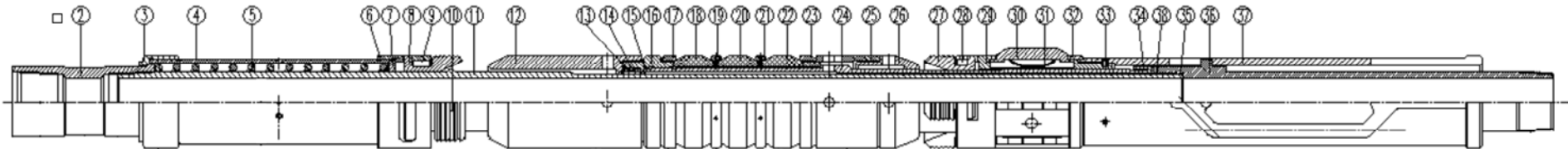


SIZE: 7" (p/a 0545332004 & 0545332005)

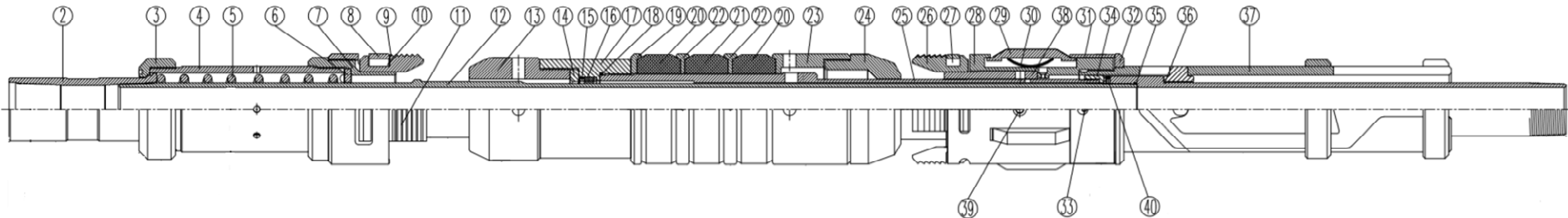



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**SIZE: 7" (p/a 0545332006 & 0545332007)**

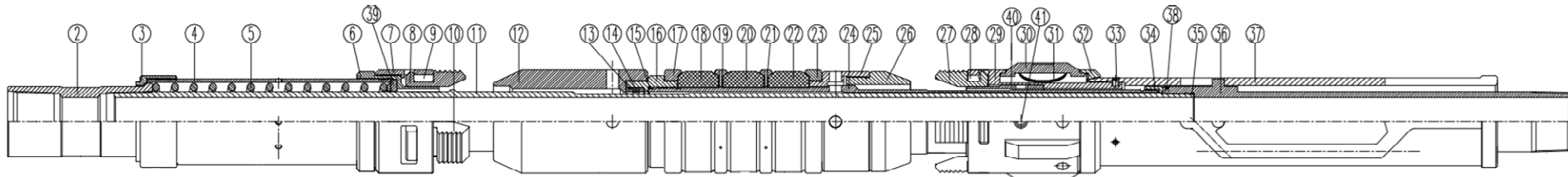


**SIZE: 7 5/8" (p/a 0545333001 & 0545333004)**

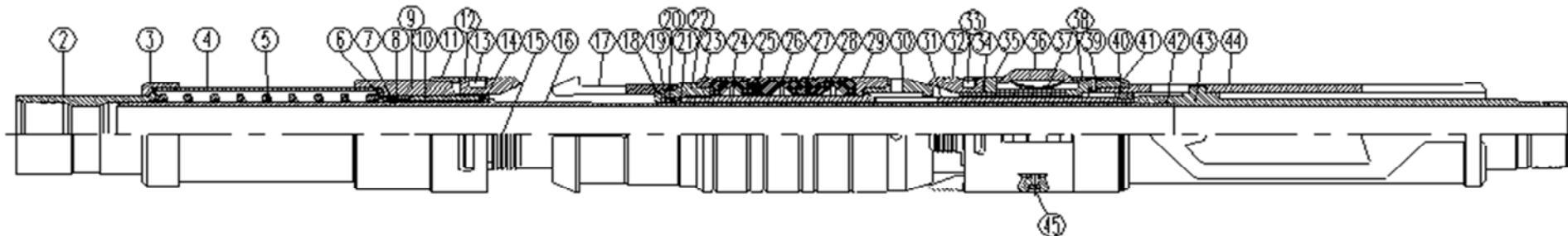



	<b>TECHNICAL UNIT</b>		
	Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>	
Product Cat.:	<b>MAPSET</b>		Tech Unit No: <b>0545330010</b>
Prepared By: <b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>	Rev. No.: <b>A</b>
			Date: <b>20 MAY 2020</b>

SIZE: 7 5/8" (p/a 0545333002 & 0545333003)



SIZE: 9 5/8"




		<h1 style="margin: 0;">TECHNICAL UNIT</h1>	
Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b> Rev. No.: <b>A</b>
Product Cat.:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By:	<b>V. CHAUHAN</b>
		Approved By:	<b>S. YANG</b>

**BOM of Assemblies**

**SIZE 4 1/2"**

Item #	Description	Qty	4 1/2"	
			9.5-13.5	
			0545330002- Wicker 0545330012 -Carbide	0545330003 - Wicker 0545330013 - Carbide
0002	Top Sub	1	0545340050	
0003	Spring Cage Cap	1	0545360051	0545360125
0004	Spring Cage	1	0545330095	0545360113
0005	Follower Spring	1	0545340053	
0006	Releasing Slip	1	0545360093	
0007	Upper Slip Spring	6	0545340056	
0008	Upper Slip	2	0545360096 (Wicker) 0545340196 (Carbide)	
0009	Inner Mandrel	1	0545330058	
0010	Upper Cone	1	0545330059	
0011	Central Coupling	1	0545360086	0545360102
0012	O-Ring	1	000P569145	
0013	Seal	1	0545340061	
0014	O-Ring	1	000P569231	
0015	End Element	1	0545340090 (90 DURO) 0545340190 (70 DURO)	0545340110 (90 DURO) 0545330099 (70 DURO)
0016	Rubber Spacer	1	0545340088	0545340103
0017	Center Element	1	0545340091 (80 DURO) 0545340290 (60 DURO)	0545340111 (80 DURO)
0018	Rubber Spacer	1	0545340088	0545340103
0019	End Element	1	0545340090 (90 DURO)	0545340110 (90 DURO)
0020	Rubber Retainer	1	0545360087	0545360104
0021	Lower Cone	1	0545330068	
0022	Rubber Mandrel	1	0545330067	
0023	Lower Slip	4	0545360097 (Wicker) 0545340197 (Carbide)	
0024	Lower Slip Spring	4	0545340070	
0025	Drag Body	1	0545340094	0545360106
0026	Drag Block	4	0545340092 (Wicker) 0545361178 (Carbide)	0545340109 (Wicker) 0545340129 (Carbide)
0027	Drag Block Spring	16	0545340072	
0028	Socket Set Screw	4	0545602097	
0029	Element Mandrel Cap	1	0545360075	
0030	O-Ring	1	000P569227	
0031	Sub Bottom	1	0545330076	
0032	J-Body	1	0545360077	0545360117
0033	Socket Set Screw	2	0545602097	

		<h1 style="margin: 0;">TECHNICAL UNIT</h1>	
Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b> Rev. No.: <b>A</b>
Product Cat.:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By:	<b>V. CHAUHAN</b>
		Approved By:	<b>S. YANG</b>

**SIZE 5"**

Item #	Description	Qty	5"	
			18.0-20.8	
			0545330006 - Wicker 0545330016 - Carbide	0545330007 - Wicker 0545330017 - Carbide
0002	Top Sub	1	0545340050	
0003	Spring Cage Cap	1	0545360051	
0004	Spring Cage	1	0545330054	
0005	Follower Spring	1	0545340053	
0006	Spring Retaining Ring		0545360089	
0007	Releasing Slip	1	0545360055	
0008	Upper Slip Spring	6	0545340056	
0009	Upper Slip	2	0545360057 (Wicker) 0545340157 (Carbide)	
0010	Inner Mandrel	1	0545330058	
0011	Upper Cone	1	0545330059	
0012	Central Coupling	1	0545360060	0545360062
0013	O-Ring	1	000P569145	
0014	Seal	1	0545340061	
0015	O-Ring	1	000P569231	
0016	End Element	1	0545340063 (90 DURO)	0545340074 (90 DURO)
0017	Rubber Spacer	1	0545340064	0545340079
0018	Center Element	1	0545340065 (80 DURO)	0545340082 (80 DURO)
0019	Rubber Spacer	1	0545340064	0545340079
0020	End Element	1	0545340063 (90 DURO)	0545340074 (90 DURO)
0021	Rubber Retainer	1	0545360138	0545360129
0022	Lower Cone	1	0545330068	
0023	Rubber Mandrel	1	0545330067	
0024	Lower Slip	4	0545360133 (Wicker) 0545340169 (Carbide)	
0025	Lower Slip Spring	4	0545340070	
0026	Drag Body	1	0545360132	
0027	Drag Block	4	0545340073 (Wicker) 0545340173 (Carbide)	0545340085 (Wicker) 0545340185 (Carbide)
0028	Drag Block Spring	16	0545340072	
0029	Socket Set Screw	4	0545602097	
0030	Element Mandrel Cap	1	0545360075	
0031	O-Ring	1	000P569227	
0032	Sub Bottom	1	0545330076	
0033	J-Body	1	0545360077	
0034	Socket Set Screw	2	0545602097	



# TECHNICAL UNIT

Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No:	<b>0545330010</b>	
			Rev. No.:	<b>A</b>	
Product Cat.:	<b>MAPSET</b>		Date:	<b>20 MAY 2020</b>	
Prepared By:	<b>A.DHAWAN</b>	Reviewed By:	<b>V. CHAUHAN</b>	Approved By:	<b>S. YANG</b>

**SIZE 5 1/2"**

Item #	Description	Qty	5 1/2"	
			20.0-23.0	
			0545331001 (Wicker) 0545331011 (Carbide)	0545331002 (Wicker) 0545331012 (Carbide)
0002	Top Sub	1	0545331050	
0003	Spring Cage Cap	1	0545361090	
0004	Spring Cage	1	0545361052	
0005	Follower Spring	1	0545341053	
0006	Upper Slip Body	1	0545331054	
0007	Releasing Slip	1	0545361055	
0008	Upper Slip Spring	6	0545341056	
0009	Upper Slip	2	0545341057 (Wicker) 0545341157 (Carbide)	
0010	Inner Mandrel	1	0545331057	0545331058
0011	Upper Cone	1	0545331059	
0012	Center Coupling	1	0545361092	
0013	O-Ring	1	000P569149	
0014	Seal	1	0545341061	
0015	O-Ring	1	000P569234	
0016	Gauge Ring	1	0545361093 (OD 4.500")	0545361062 (OD 4.625")
0017	Packing Element, End	1	0545341094 (90 DURO)	0545341063 (90 DURO) 0545341160 (70 DURO)
0018	Rubber Spacer	1	0545361095	0545361064
0019	Center Element	1	0545341096 (80 DURO)	0545341065 (80 DURO) 0545331237 (60 DURO)
0020	Rubber Spacer	1	0545361095	0545361064
0021	Packing Element, End	1	0545341094 (90 DURO)	0545341063 (90 DURO)
0022	Rubber Retainer	1	0545361097	0545361066
0023	Rubber Mandrel	1	0545331066	0545331067
0024	Lower Cone	1	0545331068	
0025	Lower Slip	4	0545341069 (Wicker) 0545361176 (Carbide)	
0026	Lower Slip Spring	8	0545341120	
0027	Drag Body	1	0545361145	0545361071
0028	Drag Block Spring	See Size	0545340072 (QTY:16)	0545340072 (QTY: 20)
0029	Drag Block	4	0545340092 (Wicker) 0545361178 (Carbide)	0545361154 (Wicker) 0545341173 (Carbide)
0030	Drag Block Retainer	1	0545361146	
0031	Socket Set Screw	5	0545602095	
0032	Rubber Mandrel Cap	1	0545361075	
0033	O-Ring	1	000P569228	
0034	Sub Bottom Assy	1	0545331076	
0035	J-Body	1	0545361077	
0036	Spring Retaining Ring	1	0545361089	




# TECHNICAL UNIT

Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No:	<b>0545330010</b>	
			Rev. No.:	<b>A</b>	
Product Cat.:	<b>MAPSET</b>		Date:	<b>20 MAY 2020</b>	
Prepared By:	<b>A.DHAWAN</b>	Reviewed By:	<b>V. CHAUHAN</b>	Approved By:	<b>S. YANG</b>

**SIZE 5 1/2"**

Item #	Description	Qty	5 1/2"	5 1/2"	5 1/2"
			20.0-30.0	15.5-20.0	13.0-14.0
			0545331006 (Wicker) 0545331016 (Carbide)	0545331007 (Wicker) 0545331017 (Carbide)	0545331008 (Wicker) 0545331018 (Carbide)
0002	Top Sub	1	0545361100		
0003	Spring Cage Cap	1	0545361133		
0004	Spring Cage	1	0545331102		
0005	Follower Spring	1	0545341103		
0006	Upper Slip Spring	6	0545341056		
0007	Releasing Slip	1	0545361105		0545361158
0008	Upper Slip	2	0545341106 (Wicker)		0545361157 (Wicker)
			0545341196 (Carbide)		0545361257 (Carbide)
0009	Inner Mandrel	1	0545331107	0545331134	
0010	Upper Cone	1	0545331108		
0011	Bearing Bushing	1	0545361109		
0012	Center Coupling	1	0545361111		
0013	O-Ring	1	000P569151		
0014	Seal	1	0545341110		
0015	O-Ring	1	000P569235		
0016	Gauge Ring	1	0545361166 (OD 4.495")	0545361135 (OD 4.625")	0545361159 (OD 4.775")
0017	Packing Element, End	1	0545341113 (90 DURO)	0545341136 (90 DURO)	0800000412 (90 DURO)
			0545331140 (70 DURO)	0545331137 (70 DURO)	0800000416 (70 DURO)
0018	Rubber Spacer	1	0545361168	0545361114	0545361161
0019	Center Element	1	0545361169 (80 DURO)	0545361137 (80 DURO)	0800000603 (80 DURO)
0020	Rubber Spacer	1	0545361168	0545361114	0545361161
0021	Packing Element, End	1	0545341113 (90 DURO)	0545341136 (90 DURO)	0800000412 (90 DURO)
0022	Rubber Retainer	1	0545361170	0545361138	0545361160
0023	Rubber Mandrel	1	0545331117	0545331139	
0024	Lower Cone	1	0545331118		
0025	Lower Slip	4	0545361119 (Wicker)		0545361156 (Wicker)
			0545341197 (Carbide)		0545361256 (Carbide)
0026	Lower Slip Spring	8	0545341120		
0027	Drag Body	1	0545361171	0545341140	
0028	Drag Block Spring	See Size	0545340072 (QTY: 16)	0545340072 (QTY: 20)	0545340072 (QTY: 16)
0029	Drag Block	4	0545340092 (Wicker)	0545361154 (Wicker)	0545340073 (Wicker)
			0545361178 (Carbide)	0545341173 (Carbide)	0545340173 (Carbide)
0030	Drag Block Retainer	1	0545341124	0545361142	
0031	Socket Set Screw	3	0545605075		
0032	Rubber Mandrel Cap	1	0545361125		
0033	O-Ring	1	000P569231		
0034	Sub Bottom Assy	1	0545331126		
0035	J-Body	1	0545361127		
0036	Socket Set Screw	2	0545620092		

		<h1>TECHNICAL UNIT</h1>	
Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b> Rev. No.: <b>A</b>
Product Cat.:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By:	<b>V. CHAUHAN</b>
		Approved By:	<b>S. YANG</b>

**SIZE 6 5/8"**

Item #	Description	Qty	6 5/8"	
			24.0-32.0	
			0545332001 (Wicker) 0545332011 (Carbide)	0545332003 (Wicker) 0545332013 (Carbide)
0002	Top Sub	1	0545332050	
0003	Spring Cage Cap	1	0545332126	
0004	Spring Cage	1	0545332054	
0005	Follower Spring	1	0545332053	
0006	Upper Slip Body	1	0545332124	
0007	Retainer Spring Ring	1	0545332060	
0008	Upper Slip Spring	6	0545342061	
0009	Releasing Slip	1	0545332113	
0010	Upper Slip	2	0545332112 (Wicker) 0545332114 (Carbide)	
0011	Inner Mandrel	1	0545332123	
0012	Upper Cone	1	0545332127	
0013	Bearing Bushing	1	0545342052	
0014	O-Ring	1	000P569153	
0015	Seal	1	0545342067	
0016	O-Ring	1	000P569242	
0017	Center Coupling	1	0545332128	
0018	Gage Ring	1	0545332142 (OD 5.500")	0545332131 (OD 5.750")
0019	End Element	2	0800000441 (90 DURO)	0800000473 (90 DURO)
0020	Rubber Spacer	2	0545332136	
0021	Center Element	1	0800000611 (80 DURO)	0800000627 (80 DURO)
0022	Rubber Retainer	1	0545332129	0545332144
0023	Lower Cone	1	0545332130	
0024	Rubber Mandrel	1	0545342072	
0025	Lower Slip	4	0545342275 (Wicker) 0545342278 (Carbide)	
0026	Lower Slip Spring	8	0545342076	
0027	Drag Body	1	0545332132	
0028	Drag Block	4	0545343066 (Wicker) 0545332191 (Carbide)	0545342079 (Wicker) 0545332191 (Carbide)
0029	Drag Block Spring	20	0545342078	
0030	Drag Block Retainer	1	0545332133	
0031	Socket Set Screw	3	0545620093	
0032	Rubber Mandrel Cap	1	0545342081	
0033	O-Ring	1	000P569233	
0034	Bottom Sub	1	0545332083	
0035	J-Body	1	0545342084	
0036	Socket Set Screw	2	0545602097	




## TECHNICAL UNIT

Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No:	<b>0545330010</b>	
			Rev. No.:	<b>A</b>	
Product Cat.:	<b>MAPSET</b>		Date:	<b>20 MAY 2020</b>	
Prepared By:	<b>A.DHAWAN</b>	Reviewed By:	<b>V. CHAUHAN</b>	Approved By:	<b>S. YANG</b>


**SIZE 7"**

Item #	Description	Qty	7"	
			26.0-32.0	
			0545332004 (Wicker) 0545332014 (Carbide)	0545332005 (Wicker) 0545332015 (Carbide)
0002	Top Sub	1	0545332050	
0003	Spring Cage Cap	1	0545332096	
0004	Spring Cage	1	0545332054	
0005	Follower Spring	1	0545332053	
0006	Upper Slip Body	1	0545332059	
0007	Retainer Spring Ring	1	0545332060	
0008	Upper Slip Spring	6	0545342061	
0009	Releasing Slip	1	0545332062	
0010	Upper Slip	2	0545332063 (Wicker) 0545332163 (Carbide)	
0011	Inner Mandrel	1	0545332064	
0012	Upper Cone	1	0545332065	
0013	Bearing Bushing	1	0545342052	
0014	O-Ring	1	000P569153	
0015	Seal	1	0545342067	
0016	O-Ring	1	000P569242	
0017	Center Coupling	1	0545342066	
0018	Gage Ring	1	0545342068 (OD 5.875")	0545342097 (OD 6.000")
0019	End Element	2	0545342069 (90 DURO) 0545342371 (70 DURO)	0545342098 (90 DURO) 0545342104 (70 DURO)
0020	Rubber Spacer	2	0545342070	0545342099
0021	Center Element	1	0545342171 (80 DURO) 0545342363 (60 DURO)	0545342100 (80 DURO) 0545342336 (60 DURO)
0022	Rubber Retainer	1	0545342073	0545342101
0023	Lower Cone	1	0545332074	
0024	Rubber Mandrel	1	0545342072	
0025	Lower Slip	4	0545342075 (Wicker) 0545342175 (Carbide)	
0026	Lower Slip Spring	8	0545342076	
0027	Drag Body	1	0545332077	
0028	Drag Block	4	0545342079 (Wicker) 0545342179 (Carbide)	0545342102 (Wicker) 0545342180 (Wicker)
0029	Drag Block Spring	24	0545342078	
0030	Drag Block Retainer	1	0545342080	0545342103
0031	Socket Set Screw	3	0545602095	0545602496
0032	Rubber Mandrel Cap	1	0545342081	
0033	Retainer Ring	1	0545342082	
0034	O-Ring	1	000P569233	
0035	Bottom Sub	1	0545332083	
0036	J-Body	1	0545342084	
0037	Socket Set Screw	2	0545602097	

	<b>TECHNICAL UNIT</b>		
	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b> Rev. No.: <b>A</b>
Product Des:			Date: <b>20 MAY 2020</b>
Product Cat.:	<b>MAPSET</b>		
Prepared By:	<b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>


**SIZE 7"**

Item #	Description	Qty	7"	
			26.0-32.0	17.0-26.0
			0545332006 (Wicker) 0545332016 (Carbide)	0545332007 (Wicker) 0545332017 (Carbide)
0002	Top Sub	1	0545332250	
0003	Spring Cage Cap	1	0545362051	
0004	Spring Cage	1	0545342054	
0005	Follower Spring	1	0545342053	
0006	Upper Slip Body	1	0545342259	
0007	Retainer Spring Ring	1	0545342260	
0008	Upper Slip Spring	6	0545342061	
0009	Releasing Slip	1	0545362062	
0010	Upper Slip	2	0545342063 (Wicker) 0545342163 (Carbide)	
0011	Inner Mandrel	1	0545332264	
0012	Upper Cone	1	0545332265	
0013	O-Ring	1	000P569155	
0014	Seal	1	0545342267	
0015	O-Ring	1	000P569243	
0016	Center Coupling	1	0545342266	
0017	Gage Ring	1	0545342255 (OD 5.875")	0545342297 (OD 6.000")
0018	End Element	2	0545342256 (90 DURO) 0545342263 (70 DURO)	0545342298 (90 DURO) 0545342253 (70 DURO)
0019	Rubber Spacer	2	0545342258	0545342299
0020	Center Element	1	0545342257 (80 DURO)	0545342254 (80 DURO)
0021	Rubber Retainer	1	0545342128	0545342296
0022	Lower Cone	1	0545332274	
0023	Rubber Mandrel	1	0545342272	
0024	Lower Slip	4	0545342275(Wicker) 0545342278 (Carbide)	
0025	Lower Slip Spring	8	0545342076	
0026	Drag Body	1	0545342277	
0027	Drag Block	6	0545342079 (Wicker) 0545342179 (Carbide)	0545342102 (Wicker) 0545342180 (Carbide)
0028	Drag Block Spring	36	0545342078	
0029	Drag Block Retainer	1	0545342261	0545342295
0030	Socket Set Screw	3	0545602697	
0031	Rubber Mandrel Cap	1	0545342281	
0032	Retainer Ring	1	Not Required	
0033	O-Ring	1	000P569237	
0034	Bottom Sub	1	0545332294	
0035	J-Body	1	0545342284	
0036	Socket Set Screw	2	0545602097	

	<b>TECHNICAL UNIT</b>			
	Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b>
Product Cat.:	<b>MAPSET</b>		Rev. No.: <b>A</b>	Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By:	<b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>

**SIZE 7 5/8"**

Item #	Description	Qty	7 5/8"	
			33.7-39.0	
			0545333001 (Wicker) 0545333011 (Carbide)	0545333004 (Wicker) 0545333014 (Carbide)
0002	Top Sub	1	0545332050	
0003	Spring Cage Cap	1	0545332096	
0004	Spring Cage	1	0545332054	
0005	Follower Spring	1	0545332053	
0006	Support Sub	1	0545333051	
0007	Retainer Spring Ring	1	0545332060	
0008	Upper Slip Body	1	0545333052	
0009	Releasing Slip	1	0545333053	
0010	Upper Slip Spring	6	0545342061	
0011	Upper Slip	2	0545333054 (Wicker) 0545333154 (Carbide)	
0012	Inner Mandrel	1	0545332064	
0013	Upper Cone	1	0545333055	
0014	Bearing Bushing	1	0545342052	
0015	Seal	1	0545342067	
0016	O-Ring	1	000P569153	
0017	Center Coupling	1	0545342066	
0018	O-Ring	1	000P569242	
0019	Gage Ring	1	0545343057 (OD 6.438")	0545343081 (OD 6.672")
0020	End Element	2	0545343058 (90 DURO)	
0021	Center Element	1	0545343060 (80 DURO)	
0022	Rubber Spacer	2	0545343059	0545343079
0023	Rubber Retainer	1	0545333065	0545333064
0024	Lower Cone	1	0545333066	
0025	Rubber Mandrel	1	0545342072	
0026	Lower Slip	4	0545343063 (Wicker) 0545343163 (Carbide)	
0027	Lower Slip Spring	8	0545342076	
0028	Drag Body	1	0545333068	
0029	Drag Block	6	0545343066 (Wicker) 0545343166 (Carbide)	0545342079 (Wicker) 0545342179 (Carbide)
0030	Drag Block Spring	36	0545342078	
0031	Drag Block Retainer	1	0545333071	
0032	Retainer Ring	1	0545343068	
0033	Socket Set Screw	3	0545602299	
0034	Rubber Mandrel Cap	1	0545342081	
0035	O-Ring	1	000P569233	
0036	Bottom Sub	1	0545332083	
0037	J-body	1	0545342084	
0038	Lower Slip Support	1	0545333073	
0039	Socket Head Cap Screw	2	X20-05-563	
0040	Socket Set Screw	2	0545602097	

		<h1 style="margin: 0;">TECHNICAL UNIT</h1>	
Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b>
			Rev. No.: <b>A</b>
Product Cat.:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By:	<b>V. CHAUHAN</b>
		Approved By:	<b>S. YANG</b>

**SIZE 7 5/8"**

Item #	Description	Qty	7 5/8"	
			33.7-39.0	
			24.0-29.7	
			0545333002 (Wicker) 0545333012 (Carbide)	0545333003 (Wicker) 0545333013 (Carbide)
0002	Top Sub	1	0545332250	
0003	Spring Cage Cap	1	0545362051	
0004	Spring Cage	1	0545342054	
0005	Follower Spring	1	0545342053	
0006	Support Sub	1	0545343051	
0007	Upper Slip Body	1	0545333080	
0008	Releasing Slip	1	0545333053	
0009	Upper Slip Spring	6	0545342061	
0010	Upper Slip	2	0545333054 (Wicker) 0545333154 (Carbide)	
0011	Inner Mandrel	1	0545332264	
0012	Upper Cone	1	0545333081	
0013	O-Ring	1	000P569155	
0014	Seal	1	0545342267	
0015	O-Ring	1	000P569243	
0016	Center Coupling	1	0545342266	
0017	Gage Ring	1	0545333092 (OD 6.453")	0545333082 (OD 6.672")
0018	End Element	1	0545333093 (90 DURO)	0545333083 (90 DURO)
0019	Rubber Spacer	1	0545333094	0545333084
0020	Center Element	1	0545333095 (80 DURO) 0545333100 (70 DURO)	0545333085 (80 DURO) 0545333101 (70 DURO)
0021	Rubber Spacer	1	0545333094	0545333084
0022	End Element	1	0545333093 (90 DURO)	0545333083 (90 DURO)
0023	Gage Ring	1	0545333092 (OD 6.453")	0545333082 (OD 6.672")
0024	Rubber Mandrel	1	0545342272	
0025	Rubber Retainer	1	0545333087	
0026	Lower Cone	1	0545333088	
0027	Lower Slip	4	0545343063 (Wicker) 0545343163 (Carbide)	
0028	Lower Slip Spring	8	0545342076	
0029	Drag Body	1	0545333090	
0030	Drag Block	6	0545342079 (Wicker) 0545342179 (Carbide)	
0031	Drag Block Spring	36	0545342078	
0032	Retainer Ring	1	0545333091	
0033	Socket Set Screw	3	0545602697	
0034	Rubber Mandrel Cap	1	0545342281	
0035	O-Ring	1	000P569237	
0036	Bottom Sub	1	0545332294	
0037	J-body	1	0545342284	
0038	Socket Set Screw	2	0545602097	0545333100
0039	Spring Ring	1	0545342260	
0040	Lower Slip Support	1	0545333098	
0041	Socket Head Cap Screw	2	X20-05-563	




## TECHNICAL UNIT


Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No:	<b>0545330010</b>	
			Rev. No.:	<b>A</b>	
Product Cat.:	<b>MAPSET</b>		Date:	<b>20 MAY 2020</b>	
Prepared By:	<b>A.DHAWAN</b>	Reviewed By:	<b>V. CHAUHAN</b>	Approved By:	<b>S. YANG</b>

**SIZE 9 5/8"**

Item#	Description	Qty	9 5/8"	
			43.5-53.5	
			0545335001 (Wicker) 0545335011 (Carbide)	0545335002 (Wicker) 0545335012 (Carbide)
0002	Top Sub	1	0545335020	
0003	Spring Cage Cap	1	0545345093	
0004	Spring Cage	1	0545345094	
0005	Follower Spring	1	0545345053	
0006	Spacer Ring	1	0545345089	
0007	Snap Ring	1	0545345059	
0008	Spring Sleeve	1	0545345075	
0009	Support Sub	1	0545345077	
0010	Slip Ring	1	0545345058	
0011	Upper Slip Body	1	0545345079	
0012	Release Slip	1	0545345095	
0013	Upper Slip Spring	6	0545345082	
0014	Spacer Ring	1	0545345090	
0015	Upper Slip	2	0545345087 (Wicker) 0545345187 (Carbide)	0545345087 (Wicker) 0545345198 (Carbide)
0016	Mandrel	1	0545335021	
0017	Upper Cone	1	0545335022	
0018	Spring Ring	1	0545345068	
0019	O-Ring	1	000P569160	
0020	Seal	1	0545345061	
0021	O-Ring	1	000P569160	
0022	Center Coupling	1	0545345067	
0023	Gage Ring	1	0545345062 (OD 8.250")	0545345102 (OD 8.500")
0024	End Element	1	0545345063 (90 DURO)	0545345103 (90 DURO)
0025	Rubber Spacer	1	0545345064	0545345105
0026	Center Element	1	0545345088 (80 DURO)	0545345104 (80 DURO)
0027	Rubber Spacer	1	0545345064	0545345105
0028	End Element	1	0545345063 (90 DURO)	0545345103 (90 DURO)
0029	Rubber Retainer	1	0545345065	0545345106
0030	Lower Cone	1	0545335023	
0031	Mandrel	1	0545345072	
0032	Lower Slip	4	0545345069(Wicker) 0545345169 (Carbide)	0545345069(Wicker) 0545345199 (Carbide)
0033	Spring Slip	8	0545345070	
0034	Support Sleeve	1	0545345055	
0035	Drag Body	1	0545345057	
0036	Drag Block	8	0545342102 (Wicker) 0545342180 (Carbide)	

	<b>TECHNICAL UNIT</b>		
	<b>PRODUCT Des: RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b> Rev. No.: <b>A</b>
<b>Product Cat.: MAPSET</b>			Date: <b>20 MAY 2020</b>
Prepared By: <b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>	


0037	Drag Block Spring	48	0545345056
0038	Drag Block Retainer	1	0545345080
0039	Socket Set Screw	3	0545602497
0040	Rubber Mandrel Cap	1	0545345076
0041	Retainer Ring	1	0545345060
0042	O-Ring	1	000P569348
0043	Bottom Sub	1	0545335025
0044	J-Body	1	0545345084
0045	Socket Head Cap Screw	2	X20-05-563

		<b>TECHNICAL UNIT</b>	
Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b>
			Rev. No.: <b>A</b>
Product Cat.:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>

## Assembly/Disassembly Instructions


### SIZE 4 1/2"

1. Place rubber retainer (item 20) in vise. Install rubber mandrel (item 22) into rubber retainer (item 20).
2. Install lower cone (item 21) onto rubber retainer (item 20). Place a bar through hole in rubber retainer (item 20) and hole in rubber mandrel (item 22) to prevent movement during assembly.
3. Install packing elements (item 15& 17& 19) and rubber spacers (item 16& 18) on rubber mandrel (item 22) as shown.
4. Install O-ring (item 14) in center coupling (item 11). Install O-ring (item 12) on seal (item 13) and install seal (item 13) in center coupling (item 11). Install center coupling (item 11) onto rubber mandrel (item 22).
5. Install upper cone (item 10) onto center coupling (item 11).
6. Install lower slip springs (item 24) and lower slips (item 23) into Drag body (item 25). Hold in place with key stock or pencils.
7. Install drag body assembly onto rubber mandrel (item 22). Install rubber mandrel cap (item 29) onto rubber mandrel (item 22). Remove bar from rubber retainer (item 21) and rubber mandrel (item 22).
8. Install drag block springs (item 27) and friction pad (item 26) in drag body (item 25). Install J-body (item 32) onto drag body (item 25). [LEFT HAND THREAD] Install set screws (item 28) in J-body (item 32). Remove this assembly from vise and set aside.
9. Place Spring Cage assembly (item 4) in vise. Install follower spring (item 5) in Spring cage assembly (item 4). Install top sub (item 2) in spring cage cap (item 3) and install spring cage cap (item 3) onto Spring cage assembly (item 4).
10. Place top sub (item 2) in vise. Install upper slip springs (item 7), upper slip (item 8), and releasing slip (item 6) into Spring Cage assembly (item 4). Hold slips in place with key stock or pencils.
11. Install inner mandrel (item 9) in top sub (item 2). DO NOT WRENCH OR CLAMP ON SEAL SURFACE.
12. Install rubber mandrel assembly onto inner mandrel (item 9).
13. Install O-ring (item 30) in bottom sub (item 31) and install bottom sub assembly on inner mandrel (item 9) and tighten.
14. Disassemble in reverse order of assembly. Always clean and inspect all parts and replace any worn or damaged parts before assembly.

		<b>TECHNICAL UNIT</b>	
Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b>
			Rev. No.: <b>A</b>
Product Cat.:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>


**SIZE 5"**

1. Place rubber retainer (item 21) in vise. Install rubber mandrel (item 23) into rubber retainer (item 21).
2. Install lower cone (item 22) onto rubber retainer (item 21). Place a bar through hole in rubber retainer (item 21) and hole in rubber mandrel (item 23) to prevent movement during assembly.
3. Install packing elements (item 16& 18& 20) and rubber spacers (item 17& 19) on rubber mandrel (item 23) as shown.
4. Install O-ring (item 15) in center coupling (item 12). Install O-ring (item 13) on seal (item 14) and install seal (item 14) in center coupling (item 12). Install center coupling (item 12) onto rubber mandrel (item 23).
5. Install upper cone (item 11) onto center coupling (item 12).
6. Install lower slip springs (item 25) and lower slips (item 24) into Drag body (item 26). Hold in place with key stock or pencils.
7. Install drag body assembly onto rubber mandrel (item 23). Install element mandrel cap (item 30) onto rubber mandrel (item 23). Remove bar from rubber retainer (item 22) and rubber mandrel (item 23).
8. Install drag block springs (item 28) and friction pad (item 27) in drag body (item 26). Install J-body (item 33) onto drag body (item 26). [LEFT HAND THREAD] Install set screws (item 29) in J-body (item 33). Remove this assembly from vise and set aside.
9. Place spring cage (item 4) in vise. Install Spring retaining (item 6) onto spring cage (item 4).
10. Install follower spring (item 5) in Spring cage (item 4). Install top sub (item 2) in spring cage cap (item 3) and install spring cage cap (item 3) onto Spring cage (item 4).
11. Place top sub (item 2) in vise. Install upper slip springs (item 8), upper slip (item 9), and releasing slip (item 7) into Spring cage (item 4). Hold slips in place with key stock or pencils.
12. Install inner mandrel (item 10) in top sub (item 2). **DO NOT WRENCH OR CLAMP ON SEAL SURFACE.**
13. Install rubber mandrel assembly onto inner mandrel (item 10).
14. Install O-ring (item 31) in bottom sub Assembly (item 32) and install bottom sub assembly on inner mandrel (item 10) and tighten.
15. Disassemble in reverse order of assembly. Always clean and inspect all parts and replace any worn or damaged parts before assembly

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Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b>
			Rev. No.: <b>A</b>
Product Cat.:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>


**SIZE 5 1/2" (20.0-23.0) (p/a 0545331001) / (14.0-20.0)**

1. Place rubber retainer (item 22) in vise. Install rubber mandrel (item 23) into rubber retainer (item 22).
2. Install lower cone (item 24) onto rubber retainer (item 22). Place a bar through hole in rubber retainer (item 22) and hole in rubber mandrel (item 23) to prevent movement during assembly.
3. Install packing elements (item 17 & 19 & 21) and rubber spacers (item 18 & 20) on rubber mandrel (item 23) as shown.
4. Install O-ring (item 15) in center coupling (item 12). Install O-ring (item 13) on seal (item 14) and install seal (item 14) in center coupling (item 12). Install gage ring (item 16) onto rubber mandrel (item 23). Install center coupling (item 12) onto rubber mandrel (item 23).
5. Install upper cone (item 11) onto center coupling (item 12).
6. Install lower slip springs (item 26) and lower slips (item 25) into Drag body (item 27). Hold in place with key stock or pencils.
7. Install drag body assembly onto rubber mandrel (item 23). Install rubber mandrel cap (item 32) onto rubber mandrel (item 23). Remove bar from rubber retainer (item 22) and rubber mandrel (item 23).
8. Install drag block springs (item 28) and Drag block (item 29) in drag body (item 27). Compress and hold friction pad (item 29) and install drag block retainer (item 30) onto drag body (item 27).
9. Install J-body (item 35) onto drag body (item 27). [LEFT HAND THREAD] Install set screws (item 31) in J-body (item 35). Remove this assembly from vise and set aside.
10. Place spring cage (item 4) in vise. Install spring retaining ring (item 36) onto upper slip body (item 6). Install upper slip body (item 6) onto spring cage (item 4).
11. Install follower spring (item 5) in spring cage (item 4). Install top sub (item 2) in spring cage cap (item 3) and install spring cage cap (item 3) onto spring cage (item 4).
12. Place top sub (item 2) in vise. Install upper slip springs (item 8), upper slip (item 9), and releasing slip (item 7) into upper slip body (item 6). Hold slips in place with key stock or pencils.
13. Install inner mandrel (item 10) in top sub (item 2). [DO NOT WRENCH OR CLAMP ON SEAL SURFACE]
14. Install rubber mandrel assembly onto inner mandrel (item 10).
15. Install O-ring (item 33) in bottom sub assembly (item 34) and install bottom sub assembly on inner mandrel (item 10) and tighten and Install set screws (item 31) in bottom sub assembly (item 34).
16. Disassemble in reverse order of assembly. Always clean and inspect all parts and replace any worm or damaged parts before assembly.

		<b>TECHNICAL UNIT</b>	
Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b>
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Product Cat.:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>


**SIZE 5 1/2" (20.0-23.0) (p/a 0545331006) / (15.5-20.0) / (13.0-14.0)**

1. Place rubber retainer (item 22) in vise. Install rubber mandrel (item 23) into rubber retainer (item 22).
2. Install lower cone (item 24) onto rubber retainer (item 22). Place a bar through hole in rubber retainer (item 22) and hole in rubber mandrel (item 23) to prevent movement during assembly.
3. Install packing elements (item 17 & 19 & 21) and rubber spacers (item 18 & 20) on rubber mandrel (item 23) as shown.
4. Install O-ring (item 15) in center coupling (item 12). Install O-ring (item 13) on seal (item 14) and install seal (item 14) in center coupling (item 12). Install gage ring (item 16) onto rubber mandrel (item 23). Install center coupling (item 12) onto rubber mandrel (item 23).
5. Install upper cone (item 10) onto center coupling (item 12).
6. Install lower slip springs (item 26) and lower slips (item 25) into Drag body (item 27). Hold in place with key stock or pencils.
7. Install drag body assembly onto rubber mandrel (item 23). Install rubber mandrel cap (item 32) onto rubber mandrel (item 23). Remove bar from rubber retainer (item 22) and rubber mandrel (item 23).
8. Install drag block springs (item 28) and Drag block (item 29) in drag body (item 27). Compress and hold Drag block (item 29) and install drag block retainer (item 30) onto drag body (item 27).
9. Install J-body (item 35) onto drag body (item 27). [LEFT HAND THREAD] Install set screws (item 31) in J-body (item 35). Remove this assembly from vise and set aside.
10. Place Spring Cage assembly (item 4) in vise. Install follower spring (item 5) in Spring cage assembly (item 4). Install top sub (item 2) in spring cage cap (item 3) and install spring cage cap (item 3) onto Spring cage assembly (item 4).
11. Place top sub (item 2) in vise. Install upper slip springs (item 6), upper slip (item 8), and releasing slip (item 7) into Spring Cage assembly (item 4). Hold slips in place with key stock or pencils.
12. Install inner mandrel (item 9) in top sub (item 2). [DO NOT WRENCH OR CLAMP ON SEAL SURFACE]
13. Install rubber mandrel assembly onto inner mandrel (item 9).
14. Install O-ring (item 33) in bottom sub assembly (item 34) and install bottom sub assembly (item 33) on inner mandrel (item 9) and tighten and Install set screws (item 36) in bottom sub assembly (item 34).
15. Disassemble in reverse order of assembly. Always clean and inspect all parts and replace any worm or damaged parts before assembly.

	<b>TECHNICAL UNIT</b>		
	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b> Rev. No.: <b>A</b>
Product Des:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Product Cat.:	<b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>


**SIZE 6 5/8"**

1. Place rubber retainer (item 22) in vise. Install rubber mandrel (item 24) into rubber retainer (item 22).
2. Install lower cone (item 23) onto rubber retainer (item 22). Place a bar through hole in rubber retainer (item 22) and hole in rubber mandrel (item 24) to prevent movement during assembly.
3. Install packing elements (item 19 & 21) and rubber spacers (item 20) on rubber mandrel (item 24) as shown.
4. Install O-ring (item 16) in center coupling (item 17). Install o-ring (item 14) on seal (item 15) and install seal (item 15) in center coupling (item 17). Install gage ring (item 18) onto rubber mandrel (item 24). Install center coupling (item 17) onto rubber mandrel (item 24).
5. Install bearing bushing (item 13) into center coupling (item 17). Install upper cone (item 12) onto center coupling (item 17).
6. Install lower slip springs (item 26) and lower slips (item 25) into Drag body (item 27). Hold in place with key stock or pencils.
7. Install drag body assembly onto rubber mandrel (item 24). Install rubber mandrel cap (item 32) onto rubber mandrel (item 24). Remove bar from rubber retainer (item 22) and rubber mandrel (item 24).
8. Install drag block springs (item 29) and Drag Block (item 28) in drag body (item 27). Compress and hold Drag Block (item 28) and install drag block retainer (item 30) onto drag body (item 27).
9. Install J-body (item 35) onto drag body (item 27). [LEFT HAND THREAD] Install set screws (item 31) in J-body (item 35). Remove this assembly from vise and set aside.
10. Place spring cage (item 4) in vise. Install spring ring (item 7) into upper slip body (item 6). Install upper slip body (item 6) onto spring cage (item 4).
11. Install follower spring (item 5) in spring cage (item 4). Install top sub (item 2) in spring cage cap (item 3) and install spring cage cap (item 3) onto spring cage (item 4).
12. Place top sub (item 2) in vise. Install upper slip springs (item 8), upper slip (item 10), and releasing slip (item 9) into upper slip body (item 6). Hold slips in place with key stock or pencils.
13. Install inner mandrel (item 11) in top sub (item 2). [DO NOT WRENCH OR CLAMP ON SEAL SURFACE]
14. Install rubber mandrel assembly onto inner mandrel (item 11).
15. Install O-ring (item 33) in bottom sub assembly (item 34) and install bottom sub assembly (item 34) on inner mandrel (item 11) and tighten. Install set screws (item 36) in bottom sub assembly (item 34).
16. Disassemble in reverse order of assembly. Always clean and inspect all parts and replace any worn or damaged parts before assembly

	<b>TECHNICAL UNIT</b>		
Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b>
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Product Cat.:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>


**SIZE 7" (p/a 0545332004 & 0545332005)**

1. Place rubber retainer (item 22) in vise. Install rubber mandrel (item 24) into rubber retainer (item 22).
2. Install lower cone (item 23) onto rubber retainer (item 22). Place a bar through hole in rubber retainer (item 22) and hole in rubber mandrel (item 24) to prevent movement during assembly.
3. Install packing elements (item 19 & 21) and rubber spacers (item 20) on rubber mandrel (item 24) as shown.
4. Install O-ring (item 16) in center coupling (item 17). Install o-ring (item 14) on seal (item 15) and install seal (item 15) in center coupling (item 17). Install gage ring (item 18) onto rubber mandrel (item 24). Install center coupling (item 17) onto rubber mandrel (item 24).
5. Install bearing bushing (item 13) into center coupling (item 17). Install upper cone (item 12) onto center coupling (item 17).
6. Install lower slip springs (item 26) and lower slips (item 25) into Drag body (item 27). Hold in place with key stock or pencils.
7. Install drag body assembly onto rubber mandrel (item 24). Install rubber mandrel cap (item 32) onto rubber mandrel (item 24). Remove bar from rubber retainer (item 22) and rubber mandrel (item 24).
8. Install drag block springs (item 29) and Drag Block (item 28) in drag body (item 27). Compress and hold Drag Block (item 28) and install drag block retainer (item 30) onto drag body (item 27).
9. Place Retainer Ring (item 33) on J-Body (item 36) Install J-body (item 36) onto drag body (item 27). [LEFT HAND THREAD] Install set screws (item 31) in J-body (item 36). Remove this assembly from vise and set aside.
10. Place spring cage (item 4) in vise. Install spring ring (item 7) into upper slip body (item 6). Install upper slip body (item 6) onto spring cage (item 4).
11. Install follower spring (item 5) in spring cage (item 4). Install top sub (item 2) in spring cage cap (item 3) and install spring cage cap (item 3) onto spring cage (item 4).
12. Place top sub (item 2) in vise. Install upper slip springs (item 8), upper slip (item 10), and releasing slip (item 9) into upper slip body (item 6). Hold slips in place with key stock or pencils.
13. Install inner mandrel (item 11) in top sub (item 2). [DO NOT WRENCH OR CLAMP ON SEAL SURFACE]
14. Install rubber mandrel assembly onto inner mandrel (item 11).
15. Install O-ring (item 34) in bottom sub assembly (item 35) and install bottom sub assembly (item 35) on inner mandrel (item 11) and tighten. Install set screws (item 37) in bottom sub assembly (item 35).
16. Disassemble in reverse order of assembly. Always clean and inspect all parts and replace any worm or damaged parts before assembly

		<b>TECHNICAL UNIT</b>	
Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b>
			Rev. No.: <b>A</b>
Product Cat.:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>


**SIZE 7" (p/a 0545332006 & 0545332007)**

1. Place rubber retainer (item 21) in vise. Install rubber mandrel (item 23) into rubber retainer (item 22).
2. Install lower cone (item 22) onto rubber retainer (item 21). Place a bar through hole in rubber retainer (item 21) and hole in rubber mandrel (item 24) to prevent movement during assembly.
3. Install packing elements (item 18 & 20) and rubber spacers (item 19) on rubber mandrel (item 23) as shown.
4. Install O-ring (item 15) in center coupling (item 16). Install o-ring (item 13) on seal (item 14) and install seal (item 14) in center coupling (item 16). Install gage ring (item 17) onto rubber mandrel (item 23). Install center coupling (item 16) onto rubber mandrel (item 23).
5. Install upper cone (item 12) onto center coupling (item 16).
6. Install lower slip springs (item 25) and lower slips (item 24) into Drag body (item 26). Hold in place with key stock or pencils.
7. Install drag body assembly onto rubber mandrel (item 23). Install rubber mandrel cap (item 31) onto rubber mandrel (item 23). Remove bar from rubber retainer (item 21) and rubber mandrel (item 23).
8. Install drag block springs (item 28) and Drag Block (item 27) in drag body (item 26). Compress and hold Drag Block (item 27) and install drag block retainer (item 29) onto drag body (item 26).
9. Place Retainer Ring (item 32) on J-Body (item 35) then Install J-body (item 35) onto drag body (item 26). [LEFT HAND THREAD] Install set screws (item 30) in J-body (item 35). Remove this assembly from vise and set aside.
10. Place spring cage (item 4) in vise. Install spring ring (item 7) into upper slip body (item 6). Install upper slip body (item 6) onto spring cage (item 4).
11. Install follower spring (item 5) in spring cage (item 4). Install top sub (item 2) in spring cage cap (item 3) and install spring cage cap (item 3) onto spring cage (item 4).
12. Place top sub (item 2) in vise. Install upper slip springs (item 8), upper slip (item 10), and releasing slip (item 9) into upper slip body (item 6). Hold slips in place with key stock or pencils.
13. Install inner mandrel (item 11) in top sub (item 2). [DO NOT WRENCH OR CLAMP ON SEAL SURFACE]
14. Install rubber mandrel assembly onto inner mandrel (item 11).
15. Install O-ring (item 33) in bottom sub assembly (item 34) and install bottom sub assembly (item 34) on inner mandrel (item 11) and tighten. Install set screws (item 36) in bottom sub assembly (item 34).
16. Disassemble in reverse order of assembly. Always clean and inspect all parts and replace any worm or damaged parts before assembly

		<b>TECHNICAL UNIT</b>	
Product Des:	<b>RETRIEVABLE MECHANICAL PRODUCTION PACKER</b>		Tech Unit No: <b>0545330010</b>
			Rev. No.: <b>A</b>
Product Cat.:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>


**SIZE 7 5/8" (p/a 0545333001 & 0545333004)**

1. Place rubber retainer (item 23) in vise. Install rubber mandrel (item 25) into rubber retainer (item 23).
2. Install lower cone (item 24) onto rubber retainer (item 23). Place a bar through hole in rubber retainer (item 23) and hole in rubber mandrel (item 25) to prevent movement during assembly.
3. Install packing elements (item 20 & 21) and rubber spacers (item 22) on rubber mandrel (item 25) as shown.
4. Install O-ring (item 18) in center coupling (item 17). Install O-ring (item 16) on seal (item 15) and install seal (item 15) in center coupling (item 17). Install gage ring (item 19) onto rubber mandrel (item 25). Install center coupling (item 17) onto rubber mandrel (item 25).
5. Install bearing bushing (item 14) into center coupling (item 17). Install upper cone (item 13) onto center coupling (item 17).
6. Install lower slip springs (item 27) and lower slips (item 26) into Drag body (item 28). Hold in place with key stock or pencils.
7. Place Lower slip support in drag body assembly & install socket head cap screws (item 39) in drag body assembly then Install drag body assembly onto rubber mandrel (item 25). Install rubber mandrel cap (item 34) onto rubber mandrel (item 25). Remove bar from rubber retainer (item 23) and rubber mandrel (item 25).
8. Install drag block springs (item 30) and Drag Block (item 29) in drag body (item 28). Compress and hold Drag Block (item 29) and install drag block retainer (item 31) onto drag body (item 28).
9. Place Retainer Ring (item 32) on J-Body (item 35) then Install J-body (item 37) onto drag body (item 28). [LEFT HAND THREAD] Install set screws (item 33) in J-body (item 37). Remove this assembly from vise and set aside.
10. Place spring cage (item 4) in vise. Install spring ring (item 6) into Support upper slip (item 7). Install Support upper slip (item 7) onto spring cage (item 4) & install Upper slip body (item 8) onto Support Upper slip (item 7).
11. Install follower spring (item 5) in spring cage (item 4). Install top sub (item 2) in spring cage cap (item 3) and install spring cage cap (item 3) onto spring cage (item 4).
12. Place top sub (item 2) in vise. Install upper slip springs (item 10), upper slip (item 11), and releasing slip (item 9) into upper slip body (item 8). Hold slips in place with key stock or pencils.
13. Install inner mandrel (item 12) in top sub (item 2). [DO NOT WRENCH OR CLAMP ON SEAL SURFACE]
14. Install rubber mandrel assembly onto inner mandrel (item 12).
15. Install O-ring (item 35) in bottom sub assembly (item 36). and install bottom sub assembly (item 36) on inner mandrel (item 12) and tighten. Install set screws (item 40) in bottom sub assembly (item 36).
16. Disassemble in reverse order of assembly. Always clean and inspect all parts and replace any worn or damaged parts before assembly.

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Product Cat.:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>


**SIZE 7 5/8" (p/a 0545333002 & 0545333003)**

1. Place rubber retainer (item 25) in vise. Install rubber mandrel (item 24) into rubber retainer (item 25).
2. Install lower cone (item 26) onto rubber retainer (item 25). Place a bar through hole in rubber retainer (item 25) and hole in rubber mandrel (item 24) to prevent movement during assembly.
3. Install Gage ring (item 23) onto Rubber retainer (item 25) and then Install packing elements (item 18, 20 & 22) and rubber spacers (item 19 & 21) on rubber mandrel (item 24) as shown.
4. Install O-ring (item 15) in center coupling (item 16). Install O-ring (item 13) on seal (item 14) and install seal (item 14) in center coupling (item 16). Install gage ring (item 17) onto rubber mandrel (item 24). Install center coupling (item 16) onto rubber mandrel (item 24).
5. Install upper cone (item 12) onto center coupling (item 16).
6. Install lower slip springs (item 28) and lower slips (item 27) into Drag body (item 29). Hold in place with key stock or pencils.
7. Place Lower slip support in drag body assembly (item 40) & install socket head cap screws (item 41) in drag body assembly then Install drag body assembly onto rubber mandrel (item 24). Install rubber mandrel cap (item 34) onto rubber mandrel (item 24). Remove bar from rubber retainer (item 25) and rubber mandrel (item 24).
8. Install drag block springs (item 31) and Drag Block (item 30) in drag body (item 29). Compress and hold Drag Block (item 30) and retainer ring (item 32) onto drag body (item 29).
9. Install J-body (item 37) onto drag body (item 29). [LEFT HAND THREAD] Install set screws (item 33) in J-body (item 37). Remove this assembly from vise and set aside.
10. Place spring cage (item 4) in vise. Install spring ring (item 39) into Support upper slip (item 6). Install Support upper slip (item 6) onto spring cage (item 4) & install Upper slip body (item 7) onto Support Upper slip (item 6).
11. Install follower spring (item 5) in spring cage (item 4). Install top sub (item 2) in spring cage cap (item 3) and install spring cage cap (item 3) onto spring cage (item 4).
12. Place top sub (item 2) in vise. Install upper slip springs (item 9), upper slip (item 10), and releasing slip (item 8) into upper slip body (item 7). Hold slips in place with key stock or pencils.
13. Install inner mandrel (item 11) in top sub (item 2). [DO NOT WRENCH OR CLAMP ON SEAL SURFACE]
14. Install rubber mandrel assembly onto inner mandrel (item 11).
15. Install O-ring (item 35) in bottom sub assembly (item 36). and install bottom sub assembly (item 36) on inner mandrel (item 11) and tighten. Install set screws (item 38) in bottom sub assembly (item 36).
16. Disassemble in reverse order of assembly. Always clean and inspect all parts and replace any worm or damaged parts before assembly.

		<h2 style="margin: 0;">TECHNICAL UNIT</h2>	
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Product Cat.:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By:	<b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>

### SIZE 9 5/8"

1. Place rubber retainer (item 29) in vise. Install rubber mandrel (item 31) into rubber retainer (item 29).
2. Install lower cone (item 30) onto rubber retainer (item 29). Place a bar through hole in rubber retainer (item 29) and hole in rubber mandrel (item 31) to prevent movement during assembly.
3. Install packing elements (item 24 & 26 & 28) and rubber spacers (item 25 & 27) on rubber mandrel (item 31) as shown.
4. Install O-ring (item 21) in center coupling (item 22). Install O-ring (item 19) on seal (item 20) and install seal (item 20) in center coupling (item 22). Install gage ring (item 23) onto rubber mandrel (item 31). Install center coupling (item 22) onto rubber mandrel (item 31).
5. Install bearing bushing (item 18) into center coupling (item 22). Install upper cone (item 17) onto center coupling (item 22).
6. Install lower slip springs (item 33) and lower slips (item 32) into Drag body (item 35). Hold in place with key stock or pencils.
7. Place sleeve support (item 34) in the drag body assembly and install screw socket head cap (item 45) into drag body then Install drag body assembly onto rubber mandrel (item 31). Install rubber mandrel cap (item 40) onto rubber mandrel (item 31). Remove bar from rubber retainer (item 29) and rubber mandrel (item 31).
8. Install drag block springs (item 37) and Drag block (item 36) in drag body (item 35). Compress and hold Drag block (item 36) and install drag block retainer (item 38) onto drag body (item 35).
9. Place Retainer ring (item 41) on the J-body (item 44) then Install J-body (item 44) onto drag body (item 35). [LEFT HAND THREAD] Install set screws (item 39) in J-body (item 44). Remove this assembly from vise and set aside.
10. Place spring cage (item 4) in vise. Install spring ring (item 6) into Sub support (item 9). Install Sub support (item 9) onto spring cage (item 4) & install Upper slip body (item 11) onto Sub Support (item 9).
11. Install follower spring (item 5) in spring cage (item 4). Install top sub (item 2) in spring cage cap (item 3) and install spring cage cap (item 3) onto spring cage (item 4).
12. Place top sub (item 2) in vise. Install upper slip springs (item 13), upper slip (item 15), and releasing slip (item 12) into upper slip body (item 11). Hold slips in place with key stock or pencils.
13. Install slip ring (item 10) and spacer ring (item 14) onto inner mandrel (item 16), Install snap ring (item 7) and spring sleeve (item 8) onto inner mandrel (item 16).
14. Install inner mandrel (item 16) in top sub (item 2). [DO NOT WRENCH OR CLAMP ON SEAL SURFACE]
15. Install rubber mandrel assembly (item 11 through item 36) onto inner mandrel (item 10).
16. Install O-ring (item 42) in bottom sub (item 43).
17. Disassemble in reverse order of assembly. Always clean and inspect all parts and replace any worn or damaged parts before assembly.

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Product Des:	<b>MAPSET</b>		Date: <b>20 MAY 2020</b>
Prepared By: <b>A.DHAWAN</b>	Reviewed By: <b>V. CHAUHAN</b>	Approved By: <b>S. YANG</b>	

**10. REPAIR INSTRUCTION:**

Please refer to Assembly/Disassembly section in the Technical Unit for repairing. For the redressing parts like elastomers or if any damaged or undamaged metal parts required, please contact nearest sales representative or our offices at different locations. Contact details can be easily accessible on our Website [www.mapoiltools.com](http://www.mapoiltools.com).

**11. REVISION HISTORY:**

Rev. No.	Rev. Date	Sections	Summary of Changes	Revised By
A	Feb. 18, 2021	All	Releasing.	A. Dhawan