

Tools required for maintenance and servicing of ViscoTwin 70



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Release: March 31, 2017

Tools required for maintenance and servicing

Maintenance and servicing of ViscoTwin 70 requires US standard, metric as well as specific tools as listed in tables below.

Definition of maintenance levels

All tools required are categorized by maintenance levels ranging from 1 to 3, whereas maintenance levels are defined as follows:

- Maintenance level 1 tools are required for standard operation and other procedures as follows:
 - Sanitary inspection
 - Removal and assembly of pump cover (position 1012) and housing of pump housing (position 1033)
 - Maintenance and exchange of mechanical seals
 - Gear oil filling level adjustment and gear oil exchange

Maintenance level 1 tools must be available on site for proper work conditions.

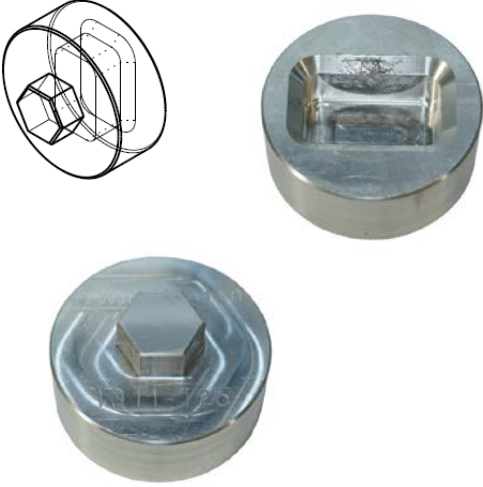
- Maintenance level 2 tools are required for:
 - All processes requiring removal or mounting of gear housing (position 2172)
 - Adjustment of spindles (positions 2200 and 2201)

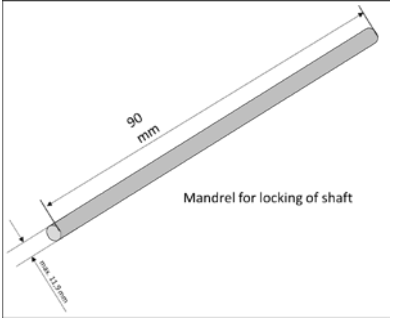


It is highly recommended to have maintenance level 2 tools available on site.





- Maintenance level 3 tools are required for maintenance of bearing housing.
 It is not necessary to have maintenance level 3 tools on site. Maintenance level 3 tasks are supposed to be processed in ViscoTec shop or in a shop equipped with required devices accordingly.



Maintenance level 1 tools






With 1 exception (key for spindle bolts position 2180), maintenance level 1 only requires standard tools available in public market. Required tools are listed in table **Error! Reference source not found.** below.




Description, Purpose <i>3rd party solution</i>	VT tool no. <i>Related position</i>	Maintenance level	eData-ID	Material
Spindle bolt socket with hexagon to loosen and tighten spindle bolts. 	T-7A 2180 / <i>Spindle bolt</i>	1	12566	Aluminium


Description, Purpose 3rd party solution	VT tool no. Related position	Maintenance level	eData-ID	Material
Locking rod to block drive shaft  Note: identical rod for all ViscoTwin types	T-7B 1000 / Drive shaft	1	18793	AISI: 304
Torque wrench <u>small</u> for metric sockets to tighten bolts and screws torque controlled. Requirements: - Min. torque: $\leq 3.68 \text{ lb-ft} \mid 5 \text{ Nm}^*$ - Max. torque: \geq min. torque of 'torque wrench BIG' - Compatible with all sockets (hexagon or Allen key) as specified by related positions  Helpful notice: 1. ^{*)} In case a torque screw driver (see Torque screw driver below) is available on site, lowest torque value to handle by means of the <u>small</u> torque wrench is increased accordingly 2. No second wrench is required if whole torque range can be handled by means of 1 torque wrench	- 1303-BC Dual Acting Mechanical Seals 2258 , 2186 1008	1 only if Dual Acting Mechanical Seals - else: 2 3	-	-
Torque wrench <u>BIG</u> for metric sockets to tighten bolts and screws torque controlled. Requirements: - Min. torque: \leq max torque of 'torque wrench 'small'' - Max. torque: $\geq 73.6 \text{ lb-ft} \mid 100 \text{ Nm}$ - Compatible with all sockets (hexagon or Allen key) as specified by related positions 	- 2180, 1016, 1041 2205, 2279, 1526 2177	1 2 2	-	-

Description, Purpose <i>3rd party solution</i>	VT tool no. <i>Related position</i>	Maintenance level	eData-ID	Material
Hexagon nut sockets for Bolts M12 Socket size: 19 mm Bolts M18 Socket size: 27 mm - Compatible with torque wrench drive 	- 1016 , 1041 2180	1 1	-	-
<u>For dual acting mechanical seals only:</u> Allen key to tighten hexagon socket screws of outboard rotor holder of double acting mechanical seals. 3 different solutions: <u>1. Best practise solution</u> Allen key bit (size 2.5 mm) compatible to torque screw driver :  Allen key bit with hexagon drive <u>2. Good practice solution</u> Allen key socket (size 2.5 mm) compatible to torque screw driver (possibly adaptor required) or torque wrench small (extension and adaptor required)  <u>3. Minimum solution</u> Allen key (size 2.5 mm) 	- 1303-BC Anga 6,11,14,15	1	-	-

Description, Purpose <i>3rd party solution</i>	VT tool no. <i>Related position</i>	Maintenance level	eData-ID	Material
<p>Various hooks to remove O-rings gently from grooves and to clean threads of shafts and spindle bolts (removing Loctite)</p>  <p><i>3rd party solution:</i> <i>Brand: Craftsman</i> <i>Name: 4PC Hook and Pick Set</i> <i>Item #: 00904981000P</i> <i>Model: 4981</i></p>	<p>- 1303-BF/BC 2261-BF/BC 2180, 1000, 2171</p>	<p>1 1 1</p>	<p>-</p>	<p>-</p>
<p>Metric feeler gage to measure clearance between spindles</p> <ul style="list-style-type: none"> - Min. : 0.04 mm - Max.: 0.3 mm or more  <p>(Metric feeler gage continued) <i>3rd party solution:</i> <i>Brand: Eastern Industries</i> <i>Type: MFG-25-T-76 GC SERIES</i></p>	<p>- 2200 , 2201</p>	<p>1</p>	<p>-</p>	<p>Steel</p>
<p>Quick and second but best solution to loosen spindles from shaft: rubber mallet (rubber hammer).</p>	<p>- 2200 , 2201</p>	<p>1</p>	<p>-</p>	<p>rubber</p>




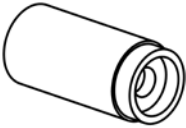
Description, Purpose <i>3rd party solution</i>	VT tool no. <i>Related position</i>	Maintenance level	eData-ID	Material
				
<p>Best practise to loosen spindles from shaft: gear wheel puller with 2 clamps. Minimum nominal size: 3"</p> 	<p>- 2200 , 2201</p>	<p>1</p>	<p>-</p>	<p>-</p>
<p>Support for gear wheel puller to loosen spindle from shaft: hexagon bolts M12 specifically modified</p> 	<p>T-7R 2200 , 2201</p>	<p>1</p>	<p>18987</p>	<p>Stainless or steel</p>
<p>Protection of spindle when loosening spindle from shaft by means of a gear wheel puller</p> 	<p>- 2200, 2201</p>	<p>1</p>	<p>-</p>	<p>Rubber plastic</p>
<p>Tap to remove Loctite from threaded hole of shafts. ISO M12 metric standard thread.</p> 	<p>- 1000 , 2170</p>	<p>1</p>	<p>-</p>	

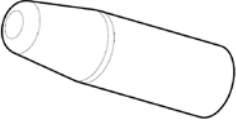
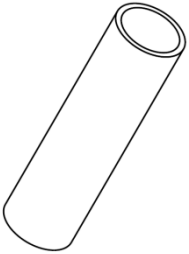
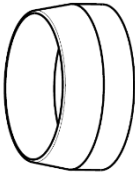

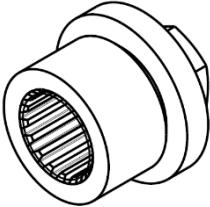
Description, Purpose <i>3rd party solution</i>	VT tool no. <i>Related position</i>	Maintenance level	eData-ID	Material
Tap wrench to drive tap to remove Loctite from threaded hole of shafts 	- 1000 , 2170	1	-	
Wet or Dry Sandpaper CAMI grit 800 or Emery cloth grit > 220 to polish shafts before mounting spindles 	- 2200 , 2201	1	-	-
3M Scotch Brite to polish surface of spindles and shafts 	- 2200 , 2201 1000 , 2171	1 1		
Paper towels free of lint to clean seal faces of mechanical seals 	- 2327, 2328	1	-	Paper
Regular paper towels for cleaning 	- <i>general</i>	1,2,3	-	paper


Description, Purpose <i>3rd party solution</i>	VT tool no. <i>Related position</i>	Maintenance level	eData-ID	Material
Acetone to clean seal faces, shafts and spindles	- 2327, 2328 1000, 2171 2200, 2201	1 1 1	-	Acetone
Thread-locking fluid Loctite blue 242  (or any other thread-locking fluid with identical properties)	- 2180 1008	1 3	-	-
Grease to lubricate shafts prior to mount spindles Basic requirement: food grade NSF-H1 <i>Product #1:</i> <i>Brand:</i> Geralyn ® 2 <i>Manufacturer:</i> Fuchs Lubritech Co. 17050 Lathrop Avenue Harvey, Illinois 60426 http://www.fuchsus.com <i>Product #2:</i> <i>Product</i> Haynes Lubri-Film Spray – 11.25 oz. Can, NSF	- 1000, 2171 2200, 2201	1	-	

Maintenance level 2 tools


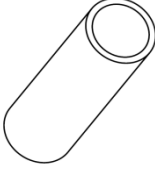
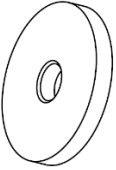
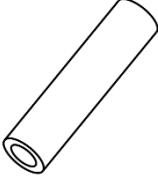

Please note: tools already listed under maintenance level 1 are not listed under ML2 tools or ML3 tool anymore.

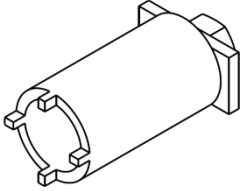
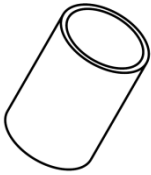
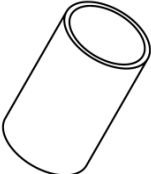
Description, Purpose <i>3rd party solution</i>	Tool No. <i>Related position</i>	Maintenance level	eData-ID	Material
End cutting pliers to remove key 1183 	- 1183	2	-	-
Hexagon nut sockets for Bolts M10 Socket size: 16 mm - Compatible with torque wrench drive 	- 2177	2	-	-
Allen key sockets for Hexagon socket screw M5 Allen key size: 4 mm Hexagon socket screw M8 Allen key size: 6 mm Hexagon socket screw M10 Allen key size: 8 mm 	- 2186 1008, 2258 2297 (intermediate flange)	2 2 2	-	-
Mandrel to press shaft sealing ring 1010 into cast iron gear housing 	T-7C 1010	2	12555	AISI: 304 EN: 1.4301

Description, Purpose 3rd party solution	Tool No. Related position	Maintenance level	eData-ID	Material
Mandrel to mount shaft sealing ring 1010 in stainless gear housing VT70	T-7I 1010	2	18775	AISI: 304 EN: 1.4301
Sleeve to protect shaft seal ring 1010 when mounting gear cover 	T-7H 1010	2	12586	AISI: 304 EN: 1.4301
Installation pipe to press shaft sealing ring 1111 into bearing housing 	T-7D 1111	2	12561	Aluminium
Mounting sleeve for mounting shaft sealing ring 1111 on shaft 	T-7E 1111	2	12568	AISI: 304 EN: 1.4301
Gear wheel puller 	T-7F 2184	2	12574	AISI: 304 EN: 1.4301
Socket to lock shaft(s) to tighten bolt 2177 or groove nut 1526 	T-7G 2177, 1526	2	12579	AISI: 304 EN: 1.4301

Description, Purpose <i>3rd party solution</i>	Tool No. <i>Related position</i>	Maintenance level	eData-ID	Material
<p>Sealing ring extractor Removal of shaft sealing rings / position 1111</p>  <p><i>Solution:</i> <i>Manufacturer or brand: Kukko</i> <i>Name: Seal pulling set (gasket) in case</i> <i>Part no: K-222-1/7</i></p>	<p>- 1111</p>	<p>2</p>	<p>-</p>	<p>-</p>

Maintenance level 3 tools

Description, Purpose <i>3rd party solution</i>	Tool No. <i>Related position</i>	Maintenance level	eData-ID	Material
Pressure plate for needle bearing inner ring 1003 	T-7J 1003	3	12543	AISI: 304 EN: 1.4301
Installation pipe for needle bearing outer ring 1529 	T-7N 1529	3	12558	AISI: 304 EN: 1.4301
Pressure plate to mount ball bearing 2181 on shaft 	T-7K 2181	3	12546	AISI: 304 EN: 1.4301
Installation pipe to mount ball bearing 2181 on shaft (pressure on inner ring) 	T-7L 2181	3	12549	AISI: 304 EN: 1.4301
Installation pipe to press shafts into bearing housing (pressure on outer ring of ball bearing 2181) 	T-7M 2181, 2200, 2201	3	12552	AISI: 304 EN: 1.4301

Description, Purpose 3rd party solution	Tool No. Related position	Maintenance level	eData-ID	Material
Socket spanner for groove nut 1526 	T-7O 1526	3	12576	AISI: 304 EN: 1.4301
Sleeve to protect shaft while mounting retaining ring 1009 of inner ring of needle roller bearing 	T-7P 1009	3	12582	AISI: 304 EN: 1.4301
Sleeve to protect shaft while mounting retaining ring 1009 of inner ring of needle bearing 	T-7Q 1009	3	12585	AISI: 304 EN: 1.4301

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Tightening torque values ViscoTwin 70

