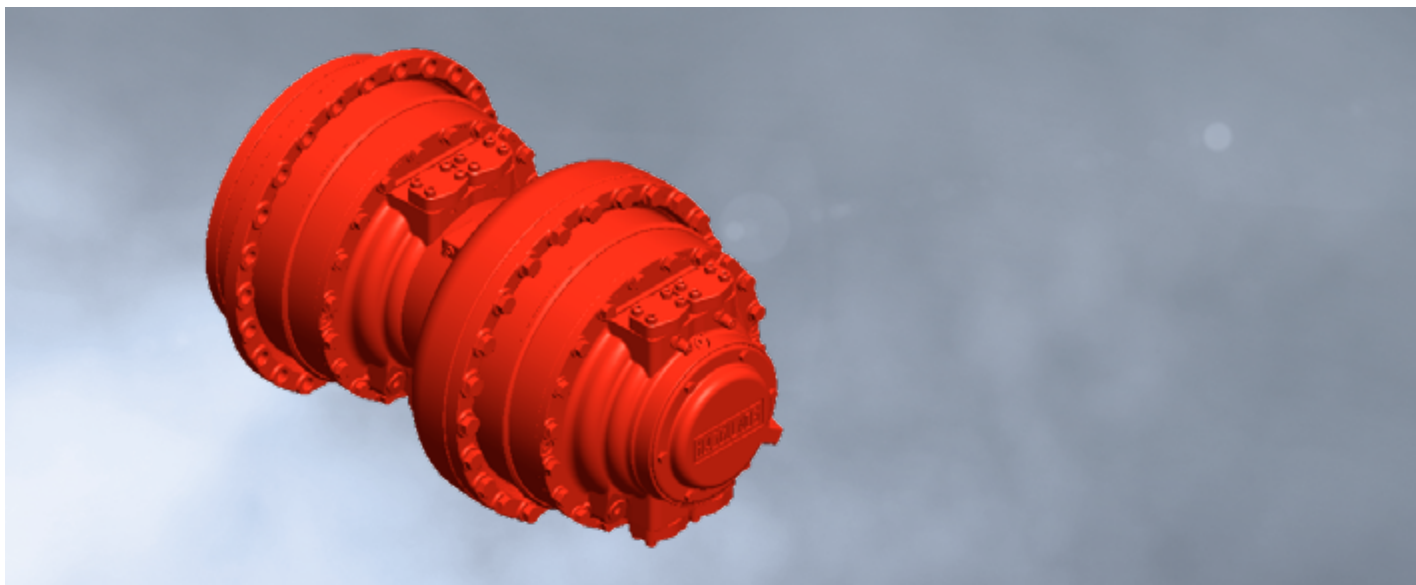


Häggglunds Tandem kit



VALID FOR

- Häggglunds CA 50 - CA 210
- Häggglunds Quantum Power 280 - Quantum Power 840

FEATURES

- Enable assembly of two motors mounted together
- Enable assembly of Häggglunds CA and MDA 14 brake mounted together (see [RE 15358](#))
- High torque output with long service life and high speed capacity
- Small outer diameter

CONTENTS

1	Preface	3
2	Ordering code	4
2.1	Tandem kit.....	4
3	General description	5
3.1	Product identification for TA-unit.....	7
4	Technical data	8
4.1	General data.....	8
4.1.1	Hägglunds CA.....	8
4.1.2	Hägglunds Quantum Power	10
4.2	Displacement shift	10
5	Dimensions/interface	11
6	Installation	13
6.1	Lifting methods	13
6.2	Fluid connections.....	15
6.3	Axial locking Set.....	17
7	Related documents	19

1 Preface

Safety messages

This documentation includes safety messages placed before sequential operating procedures that may involve the risk of personal or property damage. The described precautionary measures must be observed.

Safety messages are structured as shown below:

 SIGNAL WORD
Type and source of risk <ul style="list-style-type: none"> ▶ Consequences if disregarded ▶ Precautionary measures

Warning sign: draws attention to the risk




Signal word: identifies the hazard level

Type and source of risk: identifies the type and source of the hazard

Consequences: describes what occurs when the safety messages are not complied with

Precautions: indicates how the hazard can be avoided

Table 1: Risk categories to ANSI Z535.6-2006

Warning sign, signal word	Meaning
 DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates potential property damage: the product or the environment may be damaged.

2 Ordering code**2.1 Tandem kit**

In order to identify Hägglunds equipment exactly, the following ordering code is used. These ordering codes should be stated in full in all correspondence e.g. when ordering spare parts.

Example Hägglunds Tandem kit:

T	A		14		2		00
01	02		03		04		05

01	Tandem kit							T
02	Version							A
03	For rear motor frame size							
	CA 50							5
	CA 70							7
	CA 100							10
	CA 140							14
	CA 210							21
	Quantum Power (QMP) 280							28
	Quantum Power (QMP) 400							40
04	Modification							
	For Quantum Power							0
	For CA							2
05	Design							
	Standard							00
	Tandem kit for Hägglunds MDA 14*							01
	Special index							02-99

* Only valid for TA 21. For more information see data sheet [RE 15358](#)

3 General description

The tandem kit enables the assembly of two motors mounted together (tandem unit).

Tandem versions of Häggglunds motors are used when displacements other than the standard displacements are needed, when higher speed is needed, or when the radial space around the driven shaft is limited.

Two small motors mounted in tandem will have a smaller outer diameter than a single large motor.

There are many motor combinations to choose from in creating an optimal drive solution.

The motors are installed in parallel hydraulic circuits. Free-wheeling of one motor is possible.

The front motor can be either a spline version or a coupling version but always a type B (prepared for brake or tandem). The rear motor shall always be spline version and equal or smaller frame size than the front motor.

Note!

For information about tandem kits for Häggglunds CBp and CBm, please contact Bosch Rexroth representative.

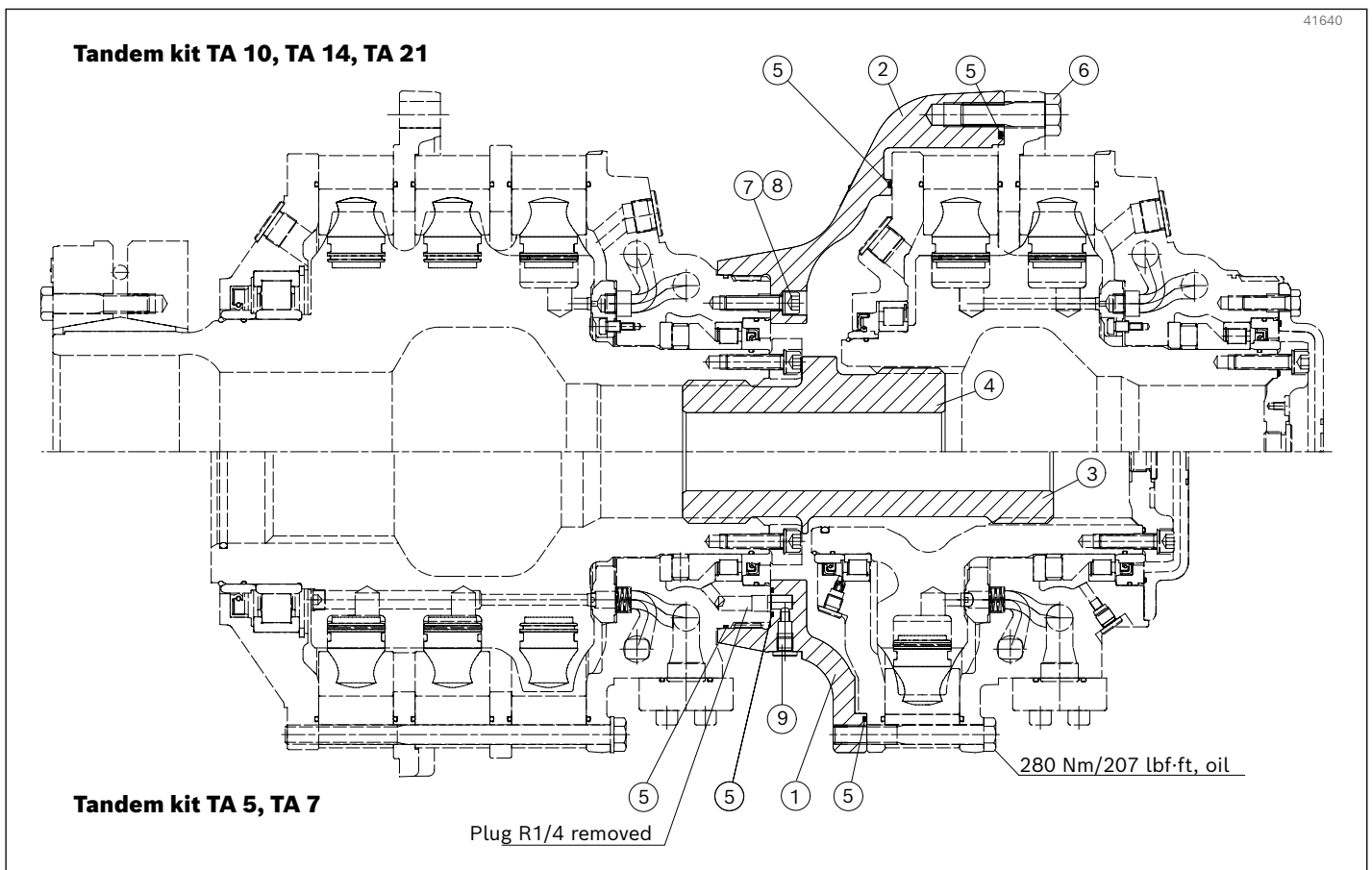


Fig. 1: Components in Tandem Kit TA 5 to TA 21

1	Adapter TA 5, TA 7	
2	Adapter TA 10, TA 14, TA 21	
3	Intermediate shaft TA 5, TA 7	
4	Intermediate shaft TA 10, TA 14, TA 21	
5	O-ring	
6	Screw	Torque 540 Nm/398 lbf-ft, oil
7	Screw	Torque 136 Nm/100 lbf-ft, oil
8	Washer	
9	Plug	

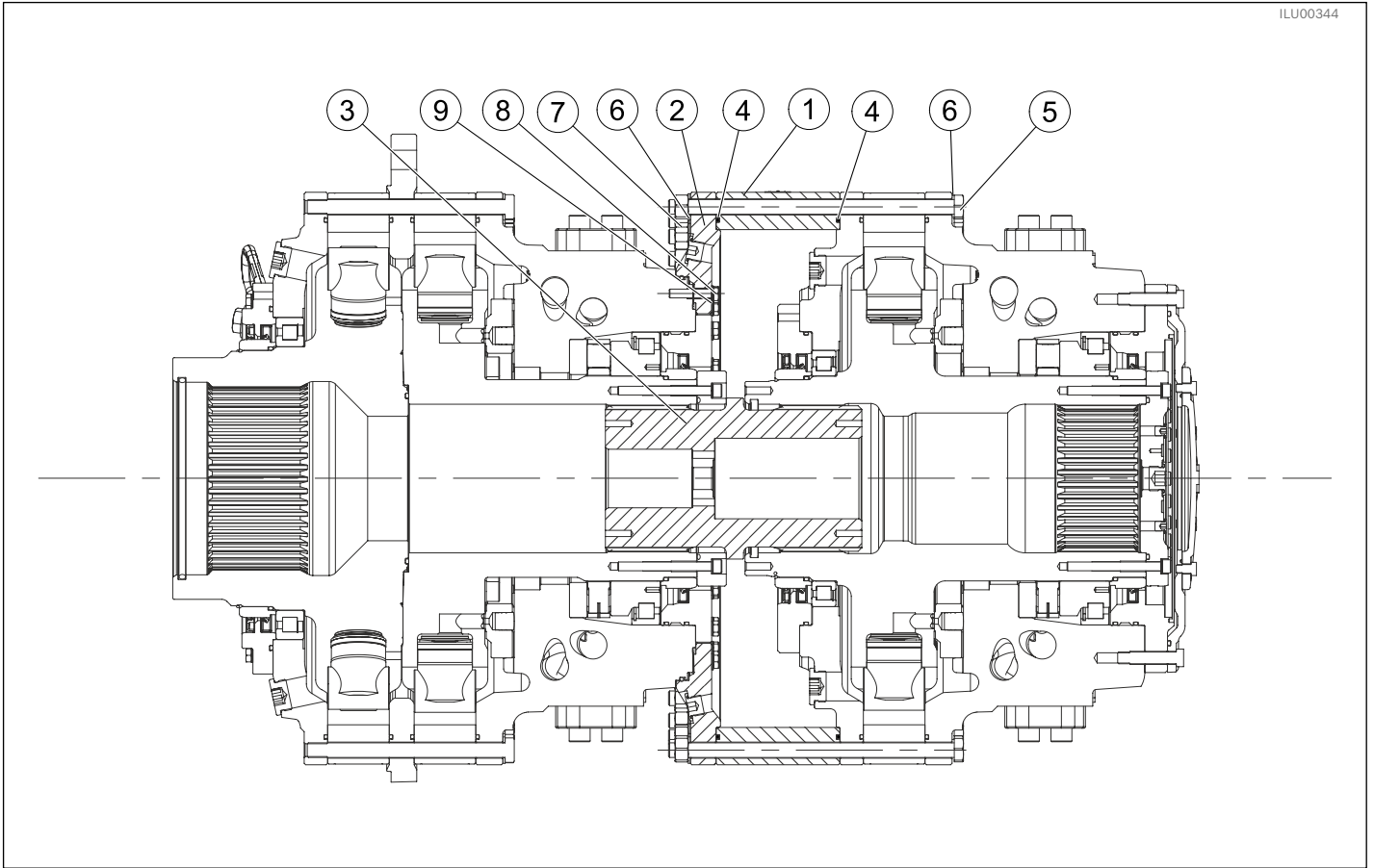
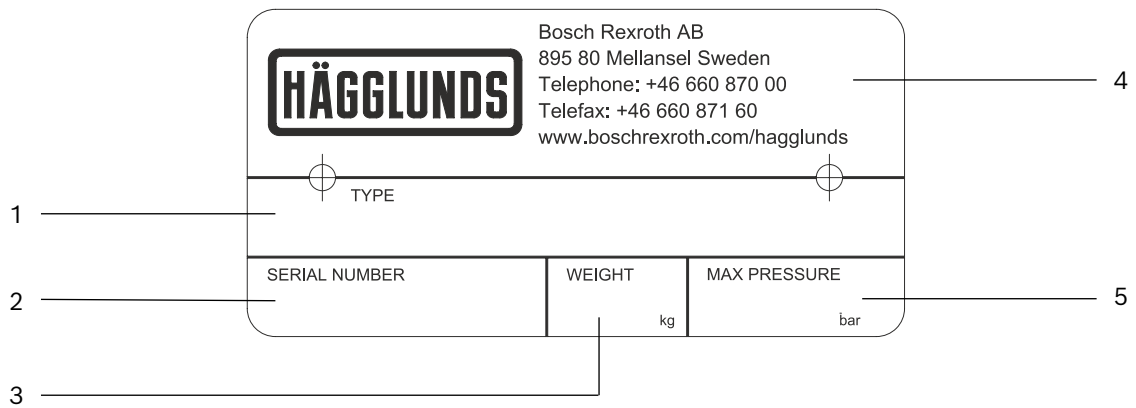
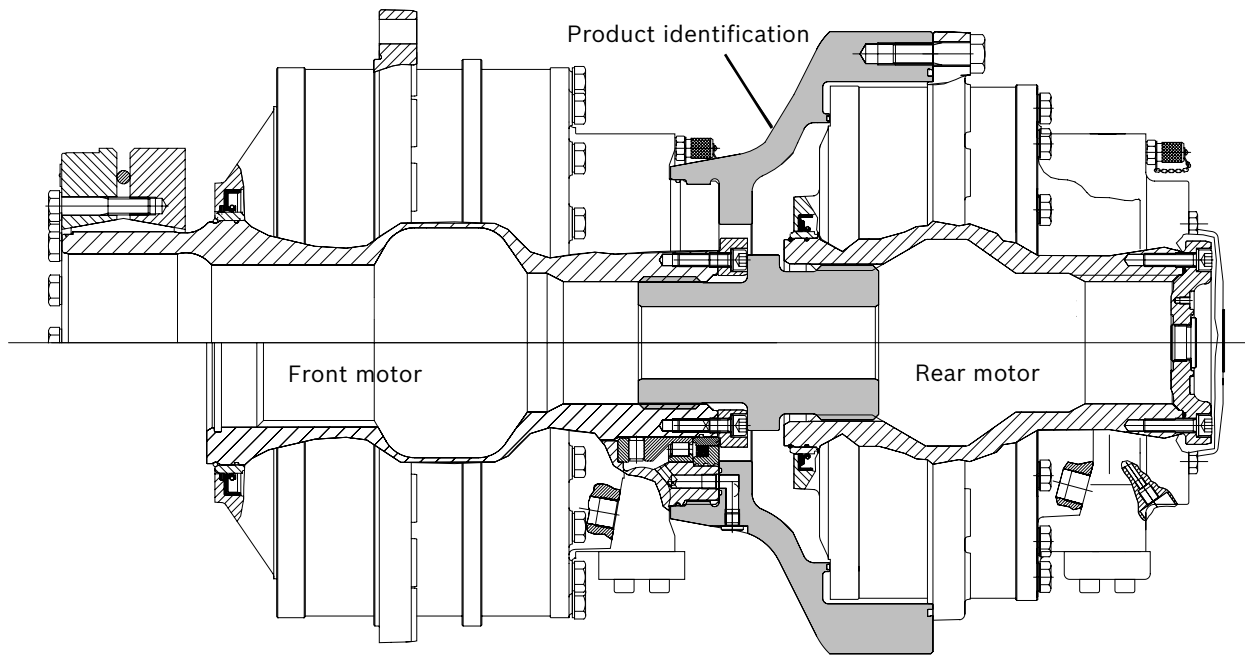


Fig. 2: Components in Tandem kit TA 28 and TA 40

1	Spacer ring	
2	Mounting flange	
3	Intermediate shaft	Note! Assembly direction
4	O-ring	
5	Screw	Torque 540 Nm 398 lbf-ft, oil
6	Washer	
7	Nut	
8	Screw	Torque 114 Nm 84. lbf-ft, oil
9	Washer	

3.1 Product identification for TA-unit

41642



1. TA-type, same as Ordering code
2. Week of assembly (yy-ww)
3. Total weight of assembly
4. Manufacturer
5. Max operating pressure for the assembly

Fig. 3: Product identification

4 Technical data

4.1 General data

The motors can be connected in parallel circuits to obtain the same max. pressure in both hydraulic motors.

See *Table 2*, *Table 3* and *Table 6*. for limitations.

Maximum speed is the same as single speed motors, see data sheet [RE 15305](#) and [RE 15428-B](#).

4.1.1 Hågglunds CA

Table 2: Max. operating pressure and max. torque for Tandem motors bidirectional

Tandem motor	Max. operating pressure				Max. torque			
	Coupling		Splines		Coupling		Splines	
	bar	psi	bar	psi	Nm	lbf·ft	Nm	lbf·ft
CA 50 + CA 50	245	3553	220	3190	24500	18056	22000	16214
CA 70 + CA 50	200	2900	210	3045	24500	18056	26000	19162
CA 70 + CA 70	175	2538	185	2683	24500	18056	26000	19162
CA 100 + CA 50	320	4640	245	3553	49000	36113	37000	27269
CA 100 + CA 70	280	4060	210	3045	49000	36113	37000	27269
CA 100 + CA 100	245	3553	185	2683	49000	36113	37000	27269
CA 140 + CA 50	250	3625	295	4278	49000	36113	56000	41272
CA 140 + CA 70	230	3335	265	3843	49000	36113	56000	41272
CA 140 + CA 100	200	2900	230	3335	49000	36113	56000	41272
CA 140 + CA 140	175	2538	190	2755	49000	36113	53800	39650
CA 210 + CA 50	280	4060	330	4786	73500	54169	86000*	63382*
CA 210 + CA 70	260	3770	300	4350	73500	54169	86000*	63382*
CA 210 + CA 100	235	3408	265	3843	73500	54169	84900*	62570*
CA 210 + CA 140	190	2755	190	2755	68400	50410	68400	50410
CA 210 + CA 210	125	1813	125	1813	54700	40313	54700	40313

Table 3: Max. operating pressure and max. torque for Tandem motors unidirectional

Tandem motor	Max. operating pressure				Max. torque			
	Coupling		Splines		Coupling		Splines	
	bar	psi	bar	psi	Nm	lbf·ft	Nm	lbf·ft
CA 50 + CA 50	245	3553	350	5076	24500	18056	35000	25795
CA 70 + CA 50	200	2900	350	5076	24500	18056	42000	30954
CA 70 + CA 70	175	2538	320	4640	24500	18056	44000	32722
CA 100 + CA 50	320	4640	350	5076	49000	36113	52500	38692
CA 100 + CA 70	280	4060	350	5076	49000	36113	59500	43851
CA 100 + CA 100	245	3553	320	4640	49000	36113	63240	46607
CA 140 + CA 50	250	3625	350	5076	49000	36113	66500	49010
CA 140 + CA 70	230	3335	350	5076	49000	36113	73500	54169
CA 140 + CA 100	200	2900	350	5076	49000	36113	84000*	61908*
CA 140 + CA 140	175	2538	320	4640	49000	36113	92000*	67804*
CA 210 + CA 50	280	4060	350	5076	73500	54169	91000*	67067*
CA 210 + CA 70	260	3770	350	5076	73500	54169	98000*	72226*
CA 210 + CA 100	235	3408	350	5076	73500	54169	108500*	79964*
CA 210 + CA 140	210	3045	350	5076	73500	54169	122500*	90283*
CA 210 + CA 210	175	2538	260	3770	73500	54169	109500*	80702*

* Max. torque over 73500 Nm/54169 lbf·ft requires a special torque arm, please contact your Bosch Rexroth representative.

Table 4: Total weight Tandem motors

Tandem motor	Total weight coupling version		Total weight spline version	
	kg	lb	kg	lb
CA 50 + TA5 + CA 50	424	936	396	874
CA 70 + TA5 + CA 50	453	1000	428	945
CA 70 + TA7 + CA 70	486	1072	459	1013
CA 100 + TA5 + CA 50	531	1172	486	1072
CA 100 + TA7 + CA 70	564	1245	519	1145
CA 100 + TA10 + CA 100	679	1497	634	1398
CA 140 + TA5 + CA 50	566	1249	526	1161
CA 140 + TA7 + CA 70	601	1326	559	1233
CA 140 + TA10 + CA 100	716	1579	674	1486
CA 140 + TA14 + CA 140	756	1668	714	1576
CA 210 + TA5 + CA 50	686	1514	616	1359
CA 210 + TA7 + CA 70	719	1587	649	1432
CA 210 + TA10 + CA 100	834	1840	764	1684
CA 210 + TA14 + CA 140	874	1929	804	1774
CA 210 + TA21 + CA 210	965	2130	895	1975

Table 5: Recommended material in the driven shaft

	With coupling	With splines
Unidirectional drives	Steel with yield strength Relmin 300 N/mm ²	Steel with yield strength Relmin 450 N/mm ²
Bidirectional drives	Steel with yield strength Relmin 450 N/mm ²	Steel with yield strength Relmin 700 N/mm ²

4.1.2 Hägglunds Quantum Power

Table 6: Max. operating pressure and max. torque for Tandem motors unidirectional

Tandem motor	Max. operating pressure		Max. torque	
	Splines		Splines	
	bar	psi	Nm	lbf-ft
QMP 0560 + QMP 0280	350	5076	280000	200000
QMP 0560 + QMP 0400 ¹	350	5076	370000	270000
QMP 0840 + QMP 0280	350	5076	370000	270000

1 Up to Quantum Power 0400-0560 is possible as rear motor

Table 7: Total weight Tandem motors

Tandem motor	Total weight spline version	
	kg	lb
QMP 0560 + TA 28 + QMP 0280	2862	6310
QMP 0560 + TA 40 + QMP 0400	3215	7088
QMP 0840 + TA 28 + QMP 0280	3202	7059

Table 8: Recommended material in the driven shaft

	With coupling	With splines
Unidirectional drives	Not allowed	Steel with yield strength Relmin 450 N/mm ²
Bidirectional drives	Not allowed	Not allowed

Single ended torque arm not allowed for Quantum Power. Always use double ended torque arm when torque arm mounted. Please contact your Bosch Rexroth representative for dimensioning support!

4.2 Displacement shift

Free-wheeling of one motor in the tandem unit enables a higher flexibility to adapt the drive solution for several different load cases. For example a tandem unit CA 210 + CA 70 give ratio 3:4 by freewheeling CA 70 and 1:4 by freewheeling CA 210.

5 Dimensions/interface

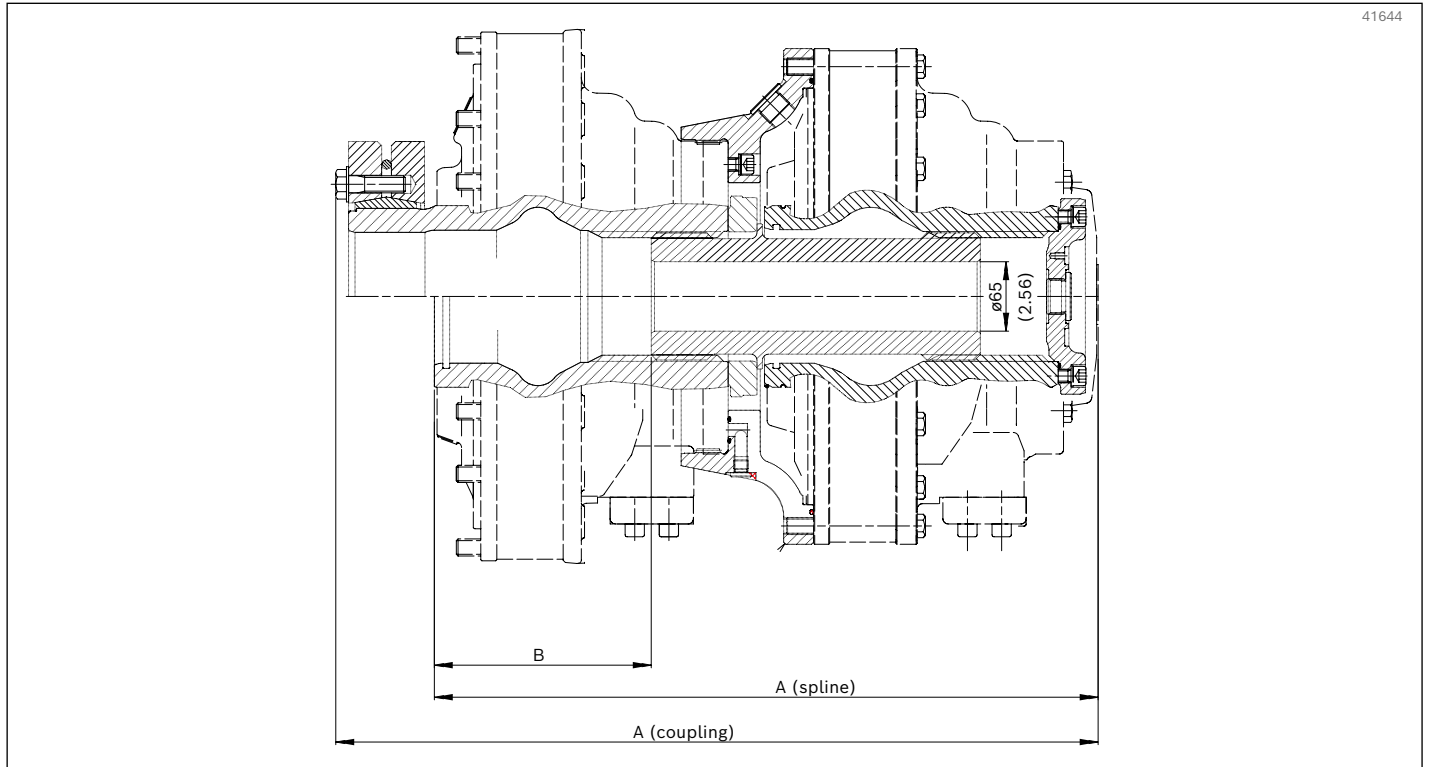


Fig. 4: Dimensions tandem kit CA

Table 9: Dimensions tandem kit CA

Motor combinations	A (spline)		A (coupling)		B	
	mm	in	mm	in	mm	in
CA 50 + CA 50	621.5	24.47	713.5	28.09	203.0	7.99
CA 70 + CA 50	621.5	24.47	713.5	28.09	203.0	7.99
CA 70 + CA 70	621.5	24.47	713.5	28.09	203.0	7.99
CA 100 + CA 50	708.5	27.89	814.0	32.05	290.0	11.42
CA 100 + CA 70	708.5	27.89	814.0	32.05	290.0	11.42
CA 100 + CA 100	820.5	32.30	926.0	36.46	290.0	11.42
CA 140 + CA 50	708.5	27.89	814.0	32.05	290.0	11.42
CA 140 + CA 70	708.5	27.89	814.0	32.05	290.0	11.42
CA 140 + CA 100	820.5	32.30	926.0	36.46	290.0	11.42
CA 140 + CA 140	820.5	32.30	926.0	36.46	290.0	11.42
CA 210 + CA 50	810.0	31.89	953.5	37.54	391.5	15.41
CA 210 + CA 70	810.0	31.89	953.5	37.54	391.5	15.41
CA 210 + CA 100	922.0	36.30	1065.5	41.95	391.5	15.41
CA 210 + CA 140	922.0	36.30	1065.5	41.95	391.5	15.41
CA 210 + CA 210	1002.5	39.47	1146.0	45.12	391.5	15.41

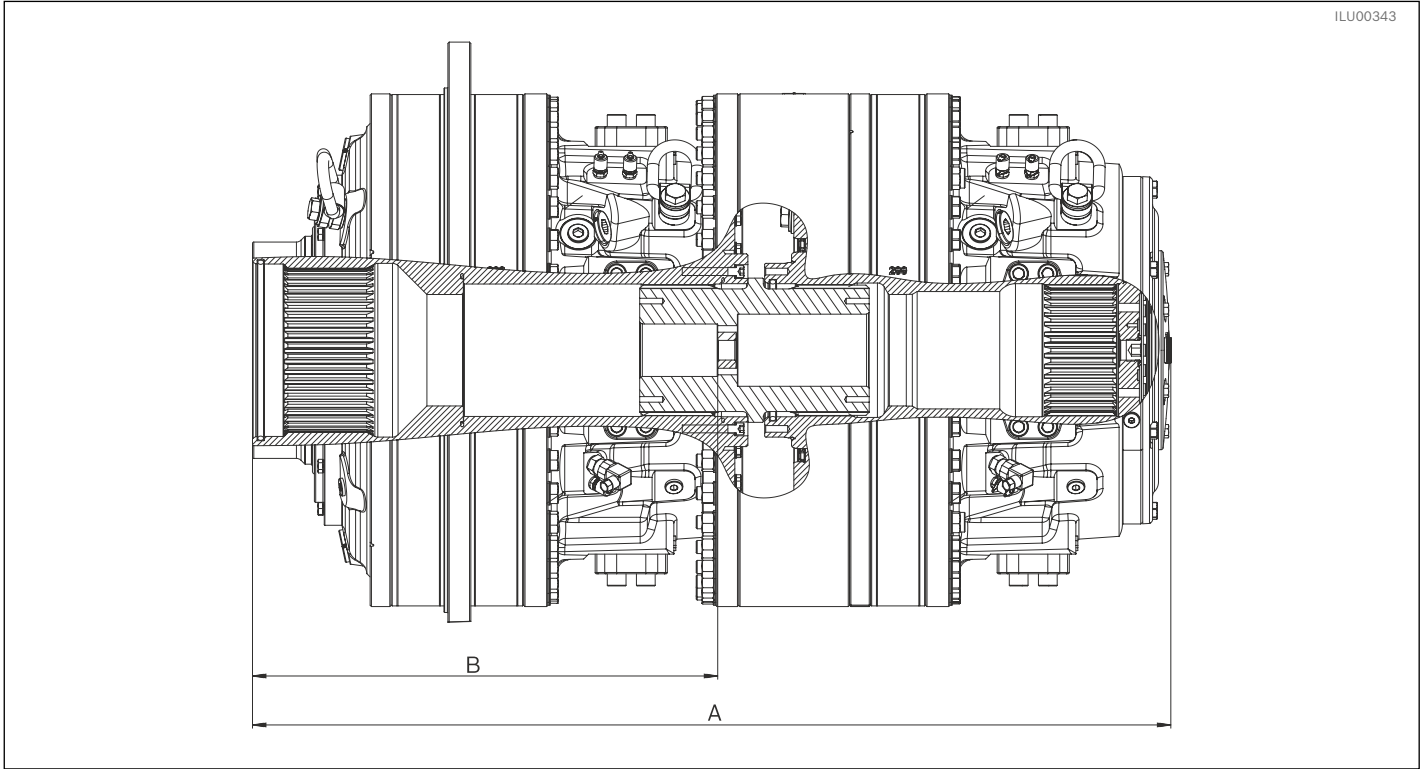


Fig. 5: Dimensions tandem kit Quantum Power

Table 10: Dimensions tandem kit Quantum Power

Motor combinations	A		B	
	mm	in	mm	in
QMP 0560 + QMP 0280	1400.5	55.139	709.5	27.933
QMP 0560 + QMP 0400	1519.0	59.803	709.5	27.933
QMP 0840 + QMP 0280	1518.5	59.785	827.5	32.579

6 Installation

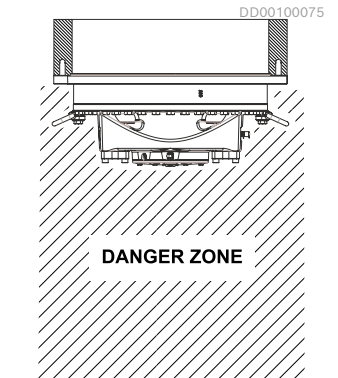
DANGER

Vertical mounted motor: Motor/flange falls down!

Vertical mounted with motor shaft pointing upwards

Risk to life and risk of injury or serious injuries and risk of damage to equipment!

- ▶ Make sure that the flange is correctly mounted to the foundation and can withstand the weight and forces from the motor.
- ▶ Make sure the motor is correctly mounted to the flange.
- ▶ Do not stand in the danger zone!
- ▶ The spline area must always be lubricated with hydraulic oil to prevent wear of spline interface. Wear of spline increase relative movement between driven shaft and motor, which can cause the axial locking set, holding the motor axially, to break.
- ▶ Torque arm mounted motor with spline and axial locking set can be used only for horizontal mounting and/or motor driven shaft pointing downwards unless extra safety arrangements is installed to secure the motor from falling.



6.1 Lifting methods

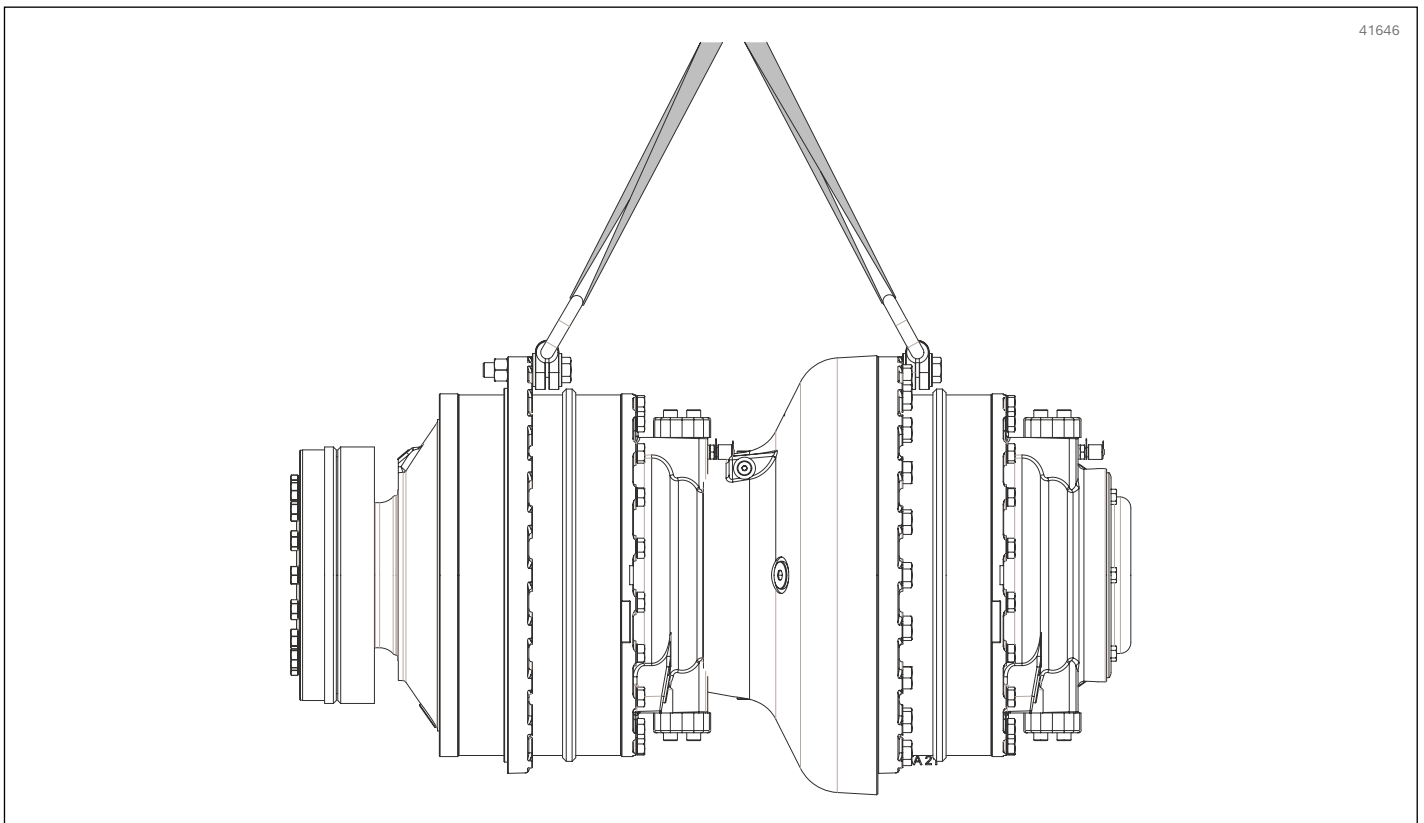


Fig. 6: Example lifting CA tandem motors



Fig. 7: Example lifting Quantum Power tandem motors

6.2 Fluid connections

Flushing of motor case is the same as single motors (both motors need flushing at higher power levels).

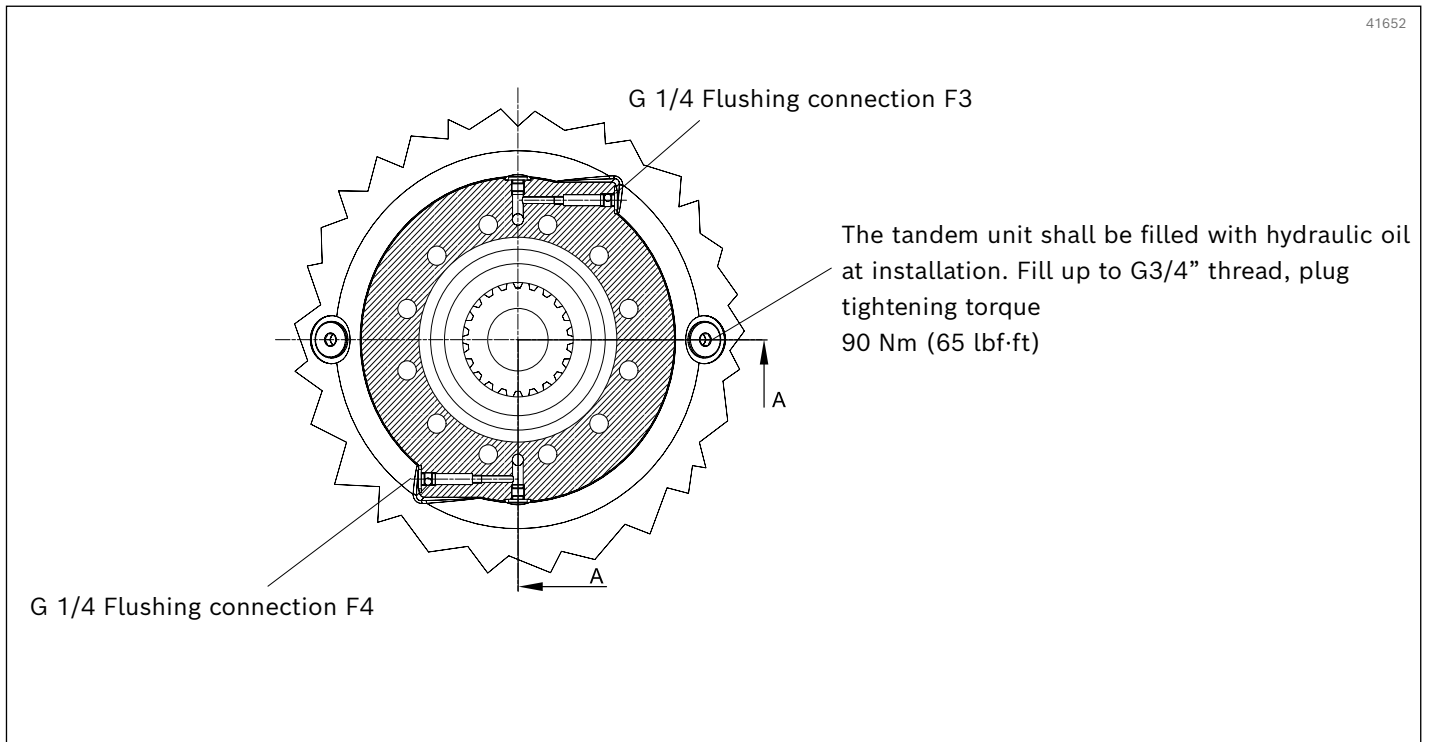


Fig. 8: Fluid connections CA

Oil volume in tandemkit are to be found in *Table 11*. For total oil volume for lubrication of spline connection in the complete tandem unit, add oil volume for front motor, rear motor and tandem kit (see [RE 15305 -WA](#)).

Table 11: Required oil volumes Hägglands CA

Tandem kit	Oil volume tandem kit (l)
	Horizontal
TA 5	5
TA 7	5
TA 10	14
TA 14	16
TA 21	16

The tandem unit shall be filled with hydraulic oil at installation. Fill up to G3/4" thread, plug tightening torque 90 Nm (65 lbf·ft)

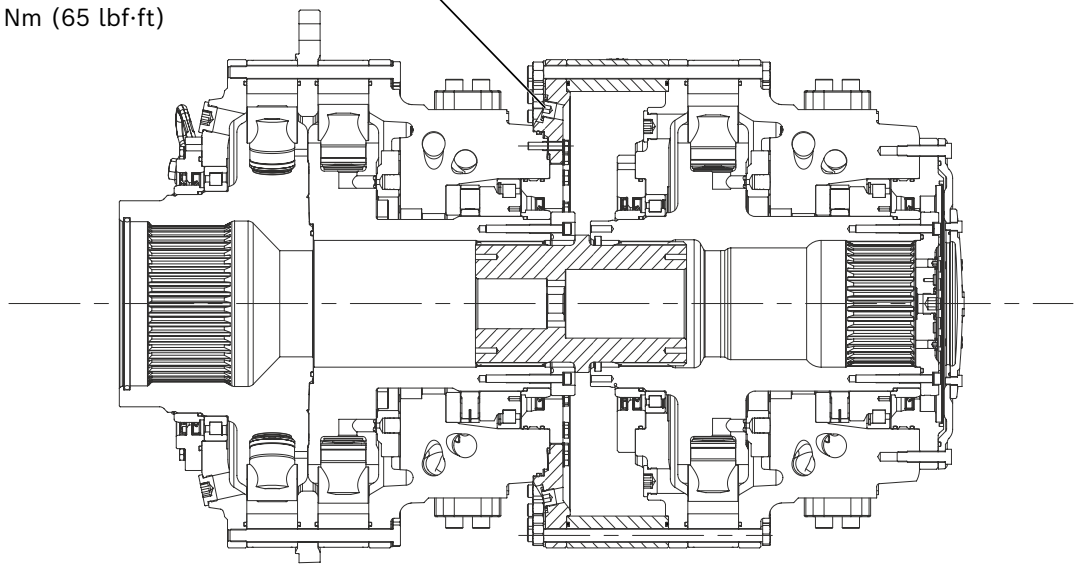


Fig. 9: Fluid connections Quantum Power

Table 12: Required oil volumes Hägglands Quantum Power

Tandem unit	Oil volume (l) ¹
	Horizontal
QMP 0560 + TA 28 + QMP 0280	26
QMP 0560 + TA 40 + QMP 0400	28
QMP 0840 + TA 28 + QMP 0280	28

1 Total oil volume motors and tandem kit

Note!

For vertical installation of tandem unit, please contact your Bosch Rexroth representative.

6.3 Axial locking Set

Material number: R939054454 axial locking set for CA tandem motors

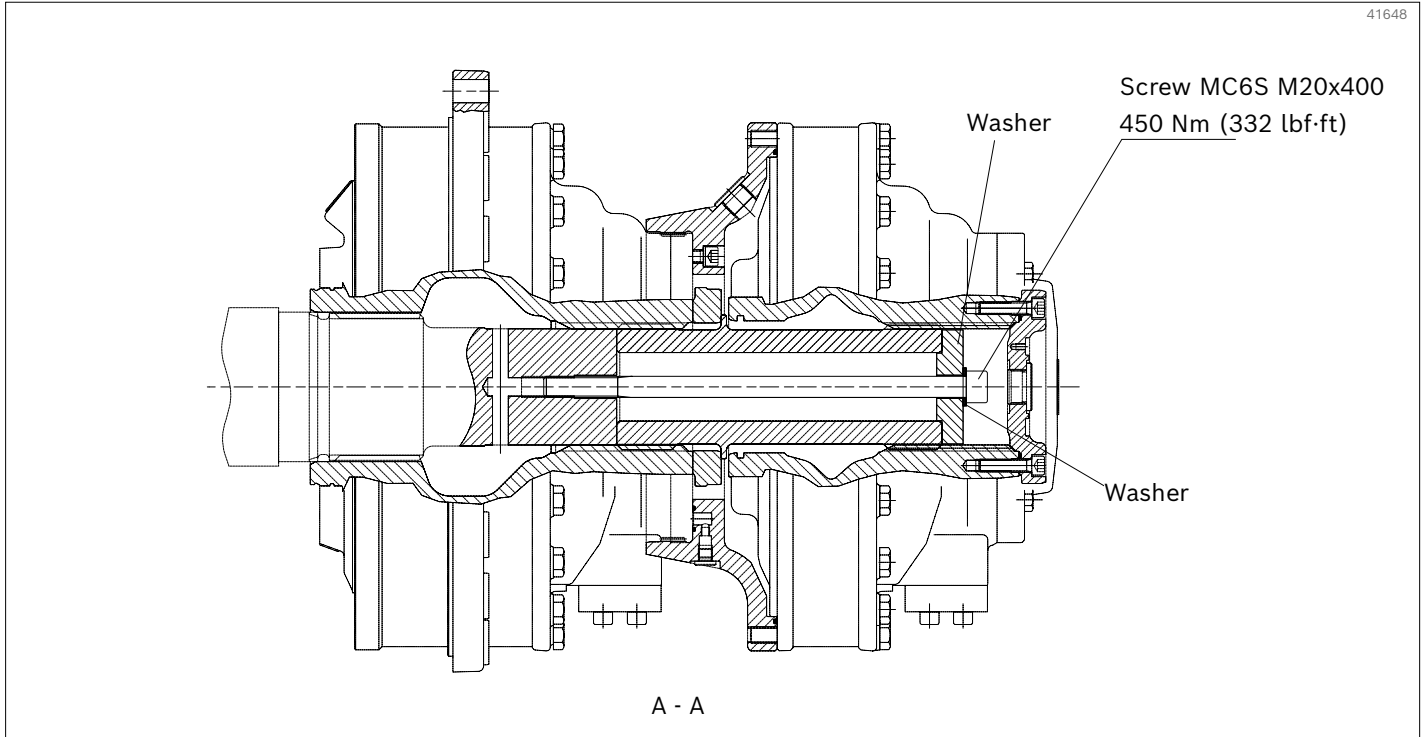


Fig. 10: Axial locking set TA 5, TA 7

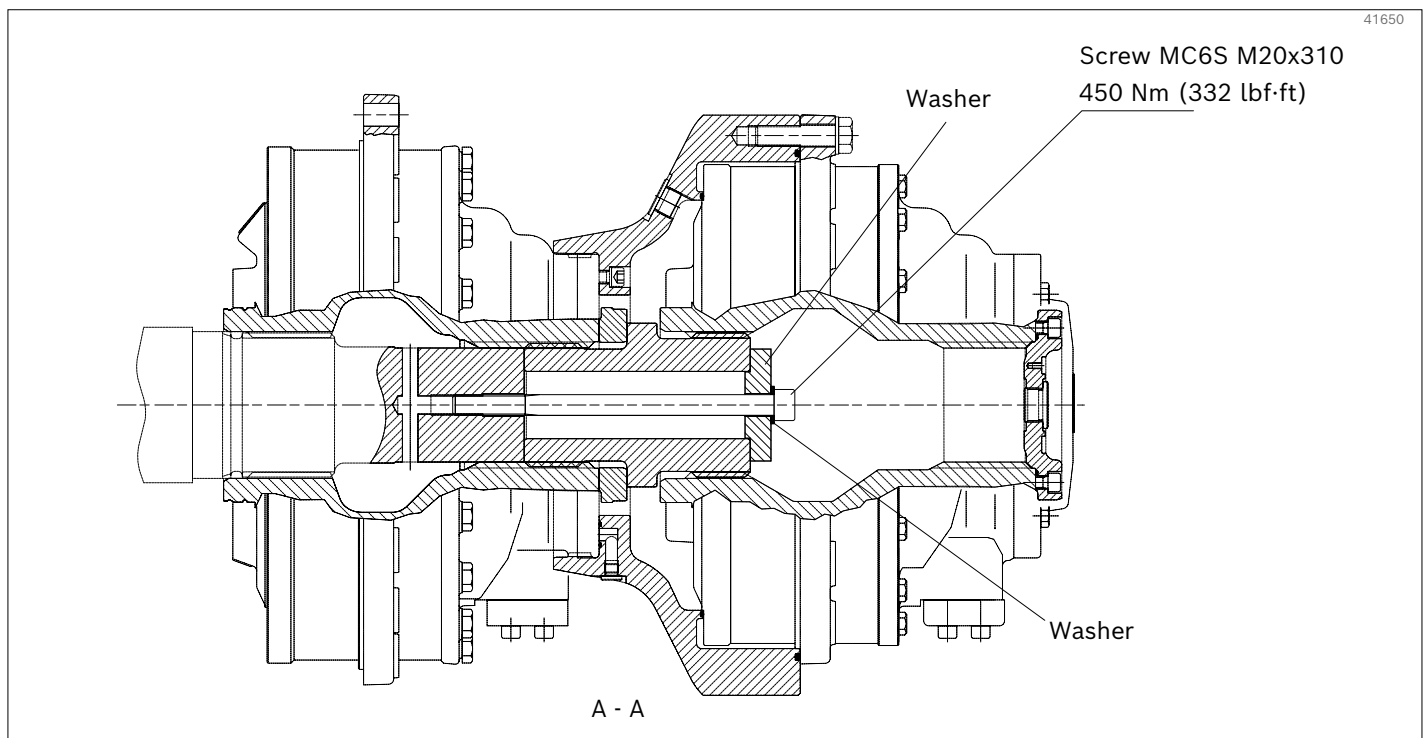
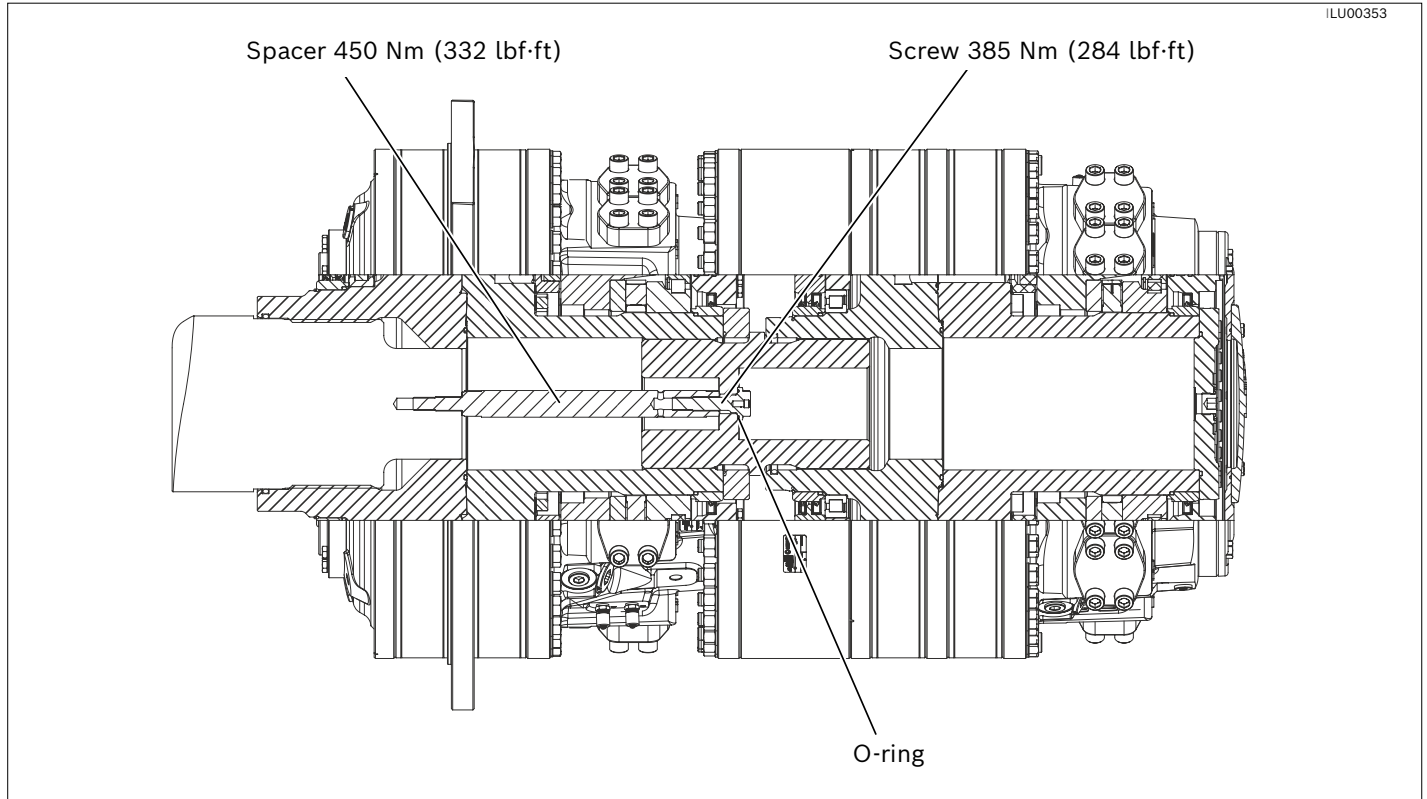


Fig. 11: Axial locking set TA 10, TA 14, TA 21

Quantum Power tandem motors use same axial locking set as the front motor.



















ILU00353

Fig. 12: Axial locking set TA 28, TA 40

Table 13: Material number axial locking set

Front motor	Material number
QMP 0560	R939081401
QMP 0840	R939081402

7 Related documents

Title	Document no	Document type
 Häggglunds CA	RE 15305	Data sheet
 Häggglunds CA	RE 15305-WA	Installation & maintenance manual
 Häggglunds Quantum Power	RE 15428-B	Data sheet
 Häggglunds Quantum Power	RE 15428-WA-B	Installation & maintenance manual
 Häggglunds MDA	RE 15358	Data sheet
 Tandem CA	178 2598	Dimension drawing
 Tandem QMP 0560 + QMP 0280	RA30083037	Dimension drawing
 Tandem QMP 0560 + QMP 0400	RA30083038	Dimension drawing
 Tandem QMP 0840 + QMP 0280	RA30083041	Dimension drawing
 Shaft CA 50 / CA 70 splines, motor with brake and torque arm	278 2232	Dimension drawing
 Shaft CA 50 / CA 70 splines, flange mounted with brake	278 2333	Dimension drawing
 Shaft CA 100 / CA 140 splines, flange mounted	278 2234	Dimension drawing
 Shaft CA 100 / CA 140 splines, with brake MDA 10 and torque arm	278 2236	Dimension drawing
 Shaft CA 210 splines, flange mounted	278 2237	Dimension drawing
 Spline shaft QMP 560 to QMP 1120 for external load torque arm	RB04289586	Dimension drawing
 Spline shaft QMP 560 to QMP 1120 flange mounted	RB05110427	Dimension drawing

Contact your Bosch Rexroth representative for dimension drawings.

HÄGGLUNDS

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