

Repair Instructions
CE 410/411 and 420/421 Series

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Chapter

1

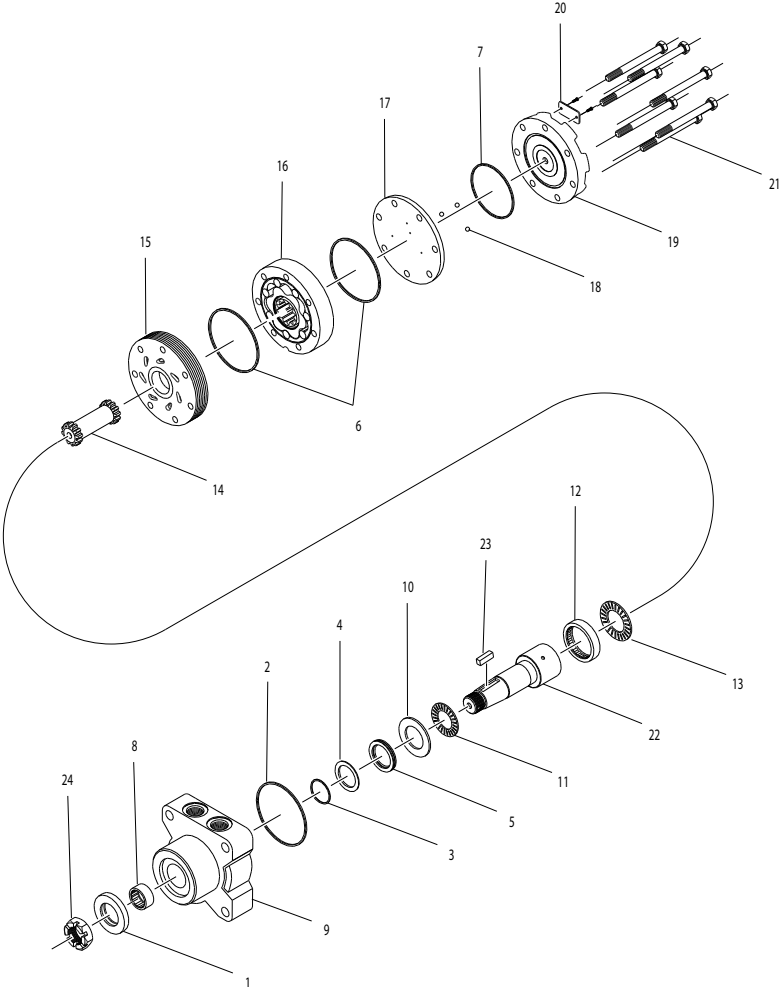
CE 410/411 and 420/421 Series Diagram

Topics:

- *CE 410/411 and 420/421
Exploded View*

CE 410/411 and 420/421 Exploded View

Exploded View Diagram



Component List

Description	Item Number
Dust seal	1
Rear housing seal	2
Metal shim	3
Back up seal	4
Shaft seal	5
Body seal	6
Endcover seal	7
Front housing bearing	8
Housing	9

Description	Item Number
Front thrust washer	10
Front thrust bearing	11
Rear housing bearing	12
Rear thrust bearing	13
Drive link	14
Manifold	15
Rotor set	16
Balance plate	17
Steel ball	18
Endcover	19
I.D. tag	20
Bolts	21
Shaft	22
Shaft key	23
Shaft nut	24

Chapter

2

CE 410/411 and 420/421 Series Service Instructions

Topics:

- *CE 410/411 and 420/421 Seal Kit Installation*

CE 410/411 and 420/421 Seal Kit Installation

dimensions: mm [in]

Note: All internal seals on products manufactured after July 1, 2016 are o-ring seals. Prior to this date the internal seals were square cut seals. It is recommended that if the product being serviced has square seals to replace with the square seals in this kit, likewise if the product has o-ring seals, replace with the o-ring seals in this kit.

1. Remove all shaft components from the shaft, (22), (i.e., keys, wire rings, nuts). To aid in reassembly of the motor, make a "V" shaped set of lines from the endcover to the housing using either paint or a marker. With the shaft facing down, secure the motor in a vise by clamping onto the housing, (9). Loosen and remove the seven bolts, (21), holding the motor assembly together. Remove the endcover, (19), from the motor.
2. Remove the balance plate, (17), rotor set, (16), and the manifold, (15), from the motor. Remove all seals from the components and discard. (Caution - when removing the balance plate, do not allow the three check balls, (18), to fall out of the plate.) (Caution - do not allow the rolls to drop out of the rotor set assembly when removing it from the motor.) Remove drive link, (14), from the motor and lay aside. Remove the thrust bearing, (13), from the housing and lay aside. From the front of the housing, gently tap the shaft, (22), upward and remove through the rear of the housing.
3. Using a slide and hammer type bearing puller, (see [Figure 1](#)), remove the rear housing bearing, (12), from the housing. Remove the thrust bearing, (11), and lay aside, remove the thrust washer, (10), and lay aside. Remove the shaft seal, (5), and discard, remove the back-up seal, (4), and discard, remove the metal shim, (3), and discard. Turn the housing over and remove the dust seal (1).



Figure 1: Figure 1

Note: At this point, all parts should be cleaned in an oil-based solvent and dried using compressed air, (for safety, observe all OSHA safety guidelines). All new seals should be lightly coated in clean oil prior to installation.

4. Place the integral thrust washer/bearing, (11), onto the shaft. The washer side should be against the shoulder of the shaft. Place a thrust washer, (10), onto the shaft on top of the thrust bearing. Coat the shaft seal, (5), with a light coat of oil and install onto the shaft with the lip side down. Place a light coat of oil on the back-up seal, (4), and place over the shaft seal. Place the metal back-up shim, (3), over the back-up seal.
5. With the pilot of the housing placed down, install the output end of the shaft through the rear bore of the housing.
6. The rear bearing is now ready to be installed. With the writing side of the bearing facing up, place the bearing, (12), into the housing bore. Using a hand press, the bearing should be pressed into the bore. It is necessary that the bearing be pressed 3.0 - 3.3 [.120 - .130] below the surface of the housing to accommodate the thrust bearing.
7. Install a thrust bearing, (13), on top of the shaft.
8. Install a lightly oiled body seal, (2), into the seal groove in the housing. Make sure that this seal is in the seal groove and protruding approximately 0.2 [.007] over the top of the housing surface.



Caution: If a bump is felt in the seal, remove the seal and make sure that there is no grit on the seal or in the seal groove.

9. Install the drive link, (14), into the housing. The proper end of the drive link has a "hat" machined in the top of the drive link on the 07-16 displacement. The drive link is to be placed in the shaft with the hat facing up on these displacements. The 18 displacements and above have a symmetrical head and either end can be put into the motor. Once the drive link has been installed, the shaft can be seated. This is done by bringing the arbor of the hand press down and putting pressure on the drive link.



Caution: Do not use excessive pressure as this could deform the thrust bearing and/or bearing races.

10. Place the manifold (15) with the seven teardrop hole side down on the housing. Line the bolt hole notches in the outside diameter of the manifold up with the seven bolt holes in the housing.
11. Install two oil coated body seals, (6), one on each side, into the seal grooves of the rotor set, (16). Place the deep groove side of the of the rotor set down on the manifold, (15).
12. Place the balance plate, (17), on top of the rotor set with the check balls, (18), up. If the check balls were removed, install three check balls into the countersunk holes in the balance plate, one ball per hole.
13. Install an oil coated body seal, (7), into the seal groove of the endcover, (19). Place the endcover onto the motor with the tag holes directly above the housing ports.



Caution: It is important that the body seal does not fall out of the endcover while being installed. Extra care must be used to insure that this doesn't happen.

14. Install the seven bolts, (20), into the motor. Pre-torque bolts to 13.6 Nm [10 ft. lb.]. The final torque on the bolts is to be 69.8 ± 7.5 Nm [51.5 ± 5.5 ft. lb.].

Chapter

3

CE 410/411 and 420/421 Series Parts Listing

Topics:

- *CE 410/411 and 420/421 Replacement Kits*

CE 410/411 and 420/421 Replacement Kits

Available Parts Kits

Note: Refer to the [Exploded View](#) for item numbers.

Table 1: Seal kit

Description	Exploded View Item Number	Qty. In Kit	Order Number
Dust seal	1	1	400444300
Rear housing seal	2	1	
Metal shim	3	1	
Back-up seal	4	1	
Shaft seal	5	1	
Body seal	6	2	
Endcover seal	7	1	
Rear housing bearing	12	1	

Table 2: Miscellaneous kits

Description	Exploded View Item Number	Qty. In Kit	Order Number
Front housing bearing	8	1	400018006
Front thrust washer	10	1	500018253
Front thrust bearing	11	1	500018252
Rear housing bearing	12	1	500018002
Rear thrust bearing	13	1	500018059
Forward manifold	15	1	500015006
Reverse manifold	15	1	500015007
Balance plate	17	1	500012001
Steel ball	18	3	500018048
Endcover	19	1	500016001
1.00-20 UNEF solid nut	24	1	500449303
1.00-20 UNEF lock nut	24	1	300339303P
1.00-20 UNEF slotted nut	24	1	500449304

Rotors, drive links, and bolts

When changing motor displacements, a matching rotor and bolt set kit must be ordered. A new drive link kit may be necessary.

Exploded View Item Number	16	16	14	21
Displacement	Standard Rotor Kit	Freeturn Rotor Kit	Drive Link Kit	Bolt Set Kit
120	500087005	500087008	400140007	500445006
160	500137005	500137011	400140007	500445006
200	500167004	500167011	400140012	500445012
230	500147002	500147004	400140014	500445014
260	500227000	500227004	400140016	500445014
300	500247005	500247011	400140018	500445018
350	500207000	500207004	400140020	500445026
375	500307005	500307011	400140024	500445024
470	500357003	500357005	400140020	500445026
540	500407005	500407011	400140032	500445032
750	500607005	500607011	400140045	500445045

Housing kits

Housing kits include the front bearing (#7), metal shim (#2), back-up seal (#3), and shaft seal (#4) installed in the housing.

Description	Exploded View Item Number	Housing Kit
W35	9	400130044
W38	9	400130045
W35	9	400130047
P38	9	400130065
P35	9	400130064
K31	9	400130041
K38	9	400130042
K35	9	400130043

Shafts and related components kits

Shaft kits come with related shaft components (i.e. keys, nuts, etc.) to order individual shaft components (i.e. keys, nuts, bolts, washers or wire rings) use the kit number for each individual part.

Exploded View Item Number	22	23	24
Description	Shaft Kit	Key Kit	Nut Kit
22	400110003	500449101	<i>See Misc. Kits</i>

