Unicla

UP200/UX200 Compressor Service Manual

UP200/UX200 Compressor Service Manual

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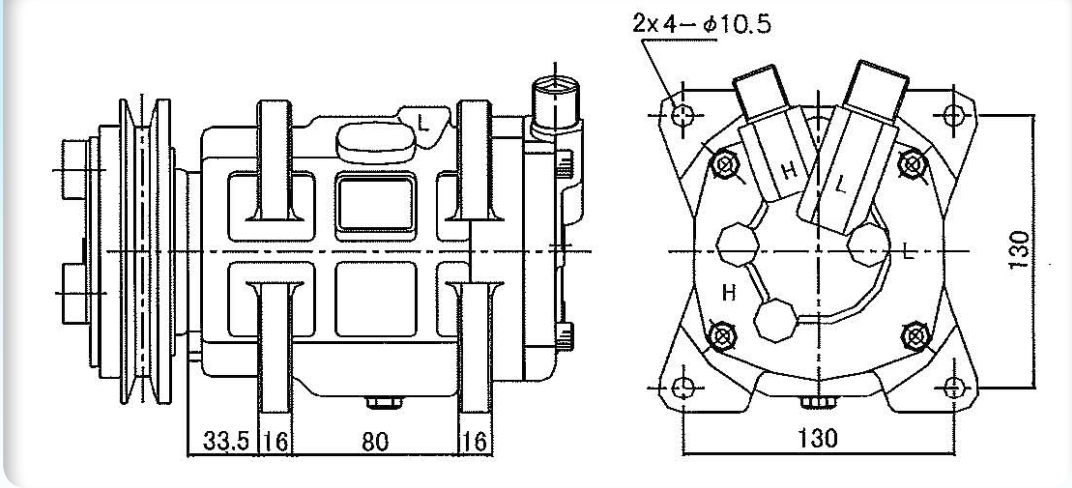
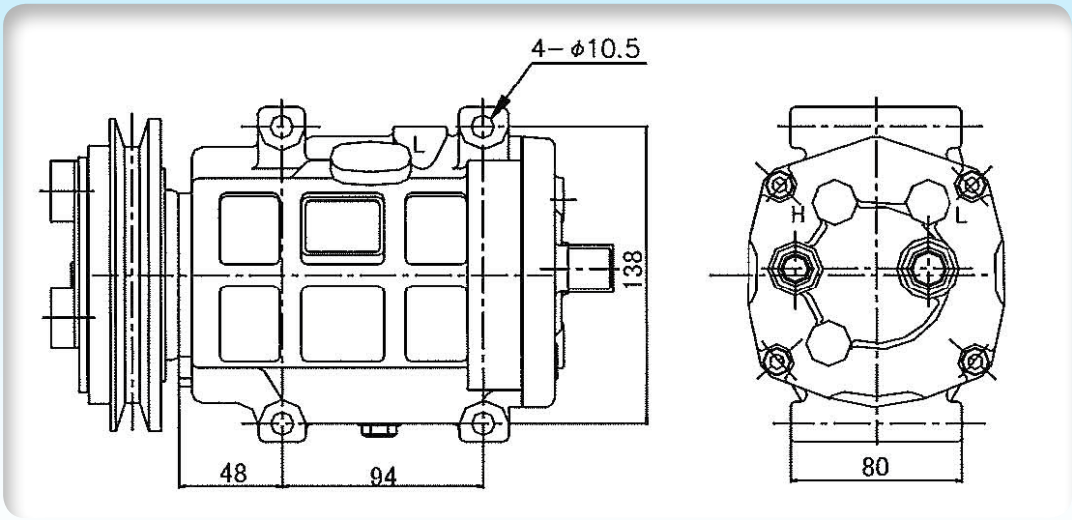
Compressor UP200

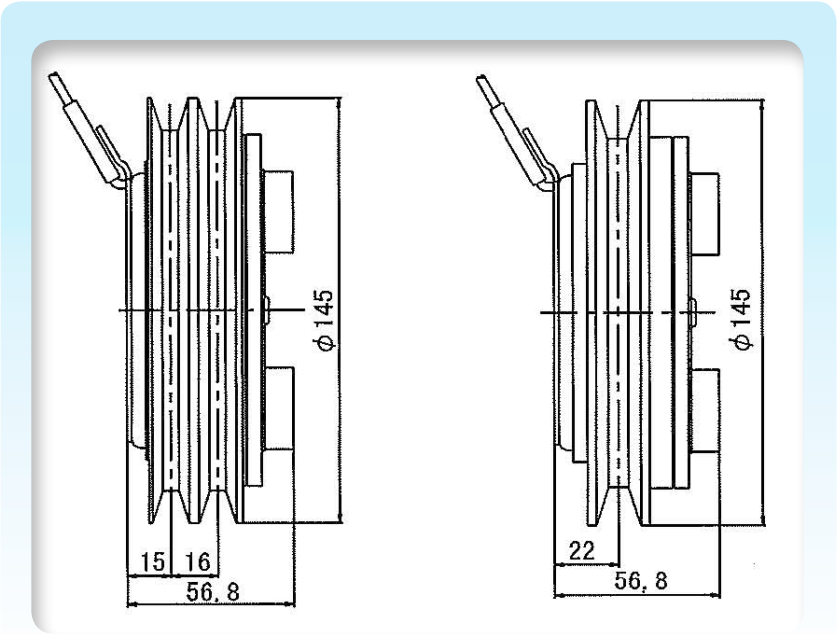


Compressor UX200



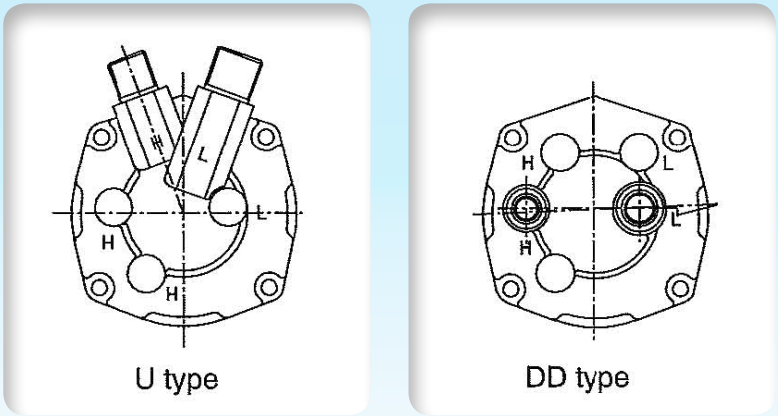
Compressor Model	UX-200 / UP-200
Number of cylinders	10
Displacement	200.4 cc/rev
Refrigerant	HFC-134a
Initial oil charge	180 cc
Oil type	Unidap 7 (PAG oil)
Weight without clutch	7.6 kg

Magnetic clutch



Part No	Rating	Revolution	Belt type	Weight
27201-000860	DC24v, Max 43w	CW	A	2.9kg
27201-000870	DC24v, Max 43w	CW	B	2.9kg

Rear cap

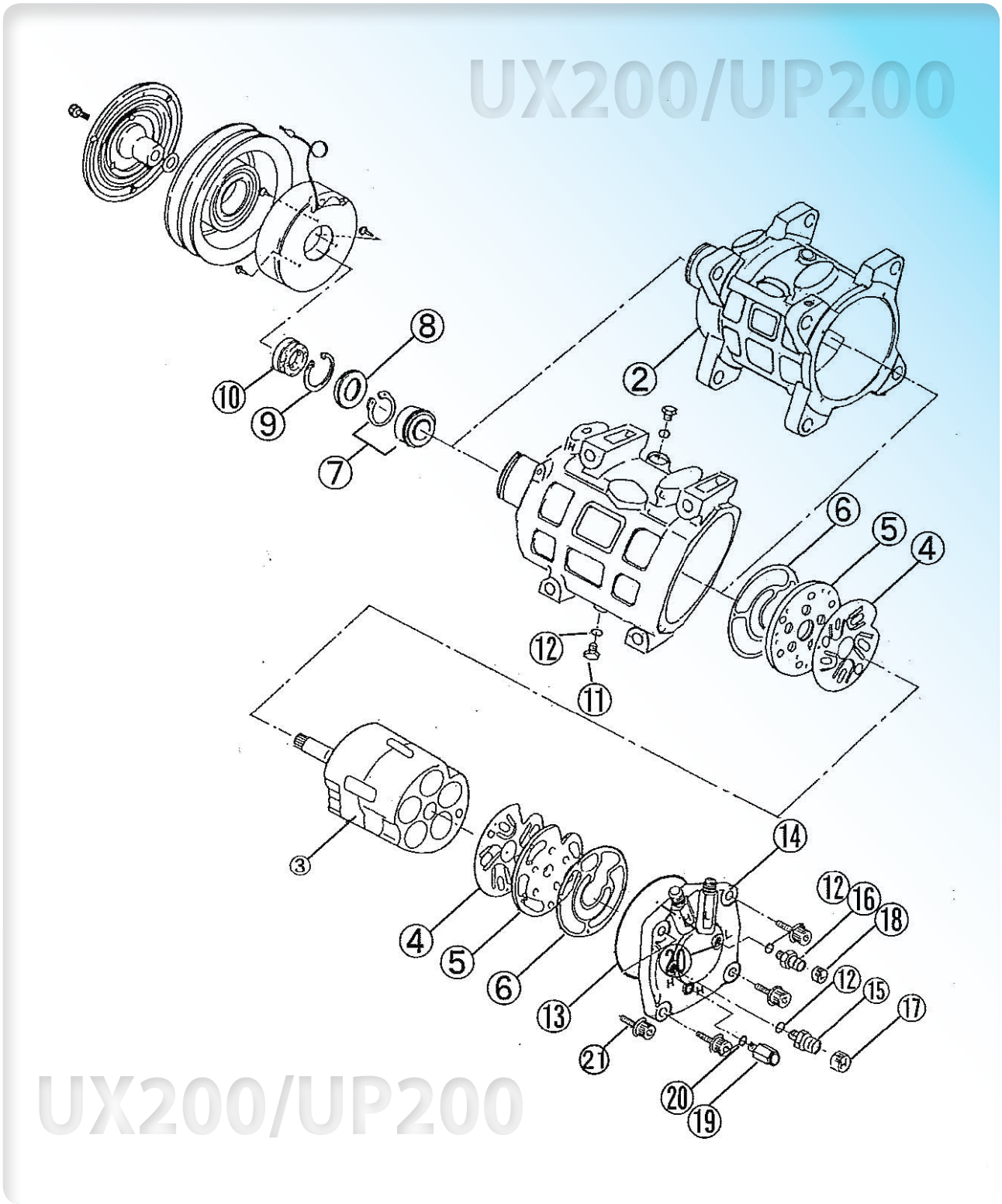


U Type	DD Type
21503-000020 (O ring)	21504-000020 (O ring)
21502-000020 (Flare)	21504-000030 (Flare)

Compressor parts

No.	Description	Part number	Qty
1	Body UX200	21405-000020	1
2	Body UP200	21405-000020	1
3	Working assembly	22010-000110	1
4	Suction valve	22602-000040	1
5	Valve plate assembly	22602-000020	2
6	Gasket	93204-000050	2
7	Lip seal	92503-000030	2
8	Spacer	93501-000200	1
9	Snap ring	92404-000010	1
10	Felt	11950-10400	1
11	Plug	13201-000010	1
12	O-ring	92501-000120	1
13	O-ring	92501-000240	4
14	Rear cap	20503-000020	1
15	Charge valve assembly (H)	38101-000030	1
16	Charge valve assembly (L)	38101-000020	1
17	H Cap	12901-000030	1
18	L Cap	12901-000020	1
19	Relief valve	38305-000011	1
20	O-ring	92501-000060	1
21	Bolt M8 x 30	91916-08030	4

Exploded view



Service tool part numbers

No.	Description	Part number
1	Working bench	03301- 000750
2	Stand	03301- 000530
3	Working bench	03301- 000760
4	Stand	03301- 000770
5	Stand	03301- 000540
6	Remover, seal plate	03301- 000580
7	Installer, ring	03301- 000600
8	Shaft rotating handle	03301- 000610
9	Guide pin	03301- 000360
10	Guide sleeve	03301- 000620
11	Installation pulley	03301 - 000740
12	Hexagonal socket	03301- 000640 M8
13	Socket	03301-000650 M6
14	Clutch wrench	03301-000710
15	Torque wrench	03301- 000380
16	Snap ring pliers *(Shaft)*	03301- 000430
17	Snap ring pliers *(Hole)*	03301- 000420
18	Remover, pulley	03301-000410
19	Plastic hammer	03301- 000390
20	Thickness guage	03301- 000400

Bolt torque specifications

Description	Bolt diameter (mm)	Tightening torque (N•m)
Housing cap bolts	M10 x P1.5	34.3 ± 1
High/low service valve	M12 x P1.0	11.7 ± 1
High/low pressure port	M8 x P1.25	24.5 ± 1
Clutch coil bolts	M6 x P1.0	5.9 ± 1
Clutch armature bolts	M8 x P1.25	19.6 ± 1

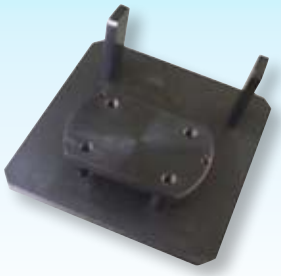
New info here?

Service tools

- Genuine Unicla tools
- Optional generic tools

For UX-200 only

1 03301- 000750



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For UP-200 only

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4 03301- 000580

3 03301- 000600

5 03301- 000610

9 03301- 000360

10 03301- 000620

8 03301- 000740

16 03301- 000640

15 03301- 000650

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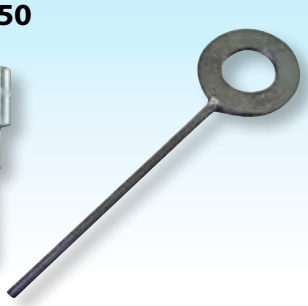

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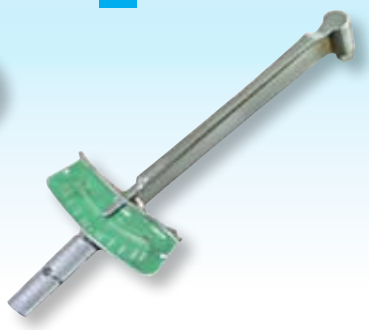
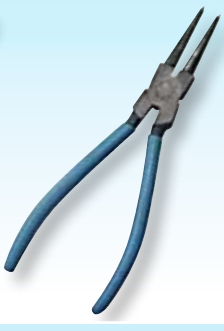


18 03301- 000430

19 03301- 000420



13 03301- 000410

17 03301- 000410

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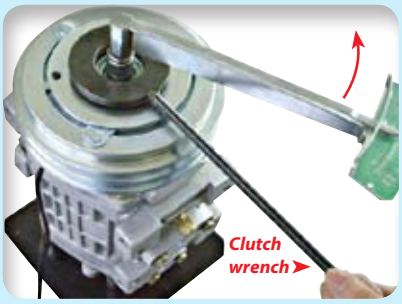
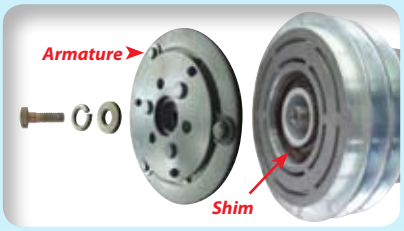
Disassembly & reassembly procedure

I. Removal of magnetic clutch armature

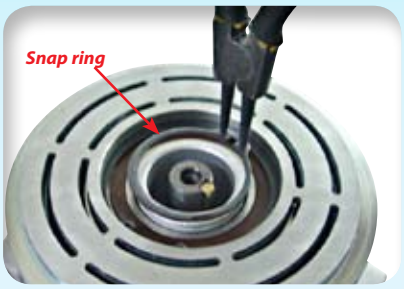
Tools required: • Stand (UX/UP) • Clutch wrench • Torque wrench • M6 Socket
Procedure: Place the compressor on the stand.
Hold clutch wrench by inserting the claws of the clutch wrench into the holes on the armature.
Remove the centre bolt by using the torque wrench.
Pull the armature upwards.





II. Removal of snap ring

Tools required: • Snap ring pliers *(shaft)*
Procedure: Remove the snap ring by the snap ring pliers.

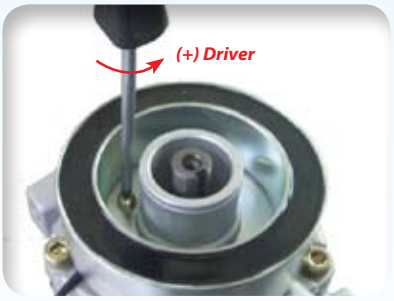


III. Removal of pulley

Tools required: • Pulley remover • Standard wrench • Pulley remover pad

IV. Removal of coil

Tools required: • Standard screwdriver
Procedure: Remove 3 M6 bolts with screwdriver



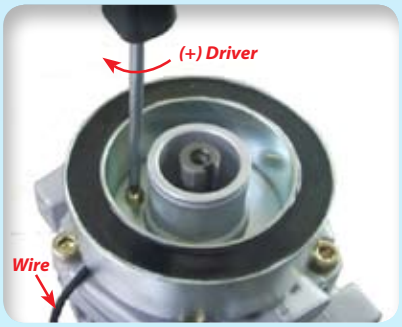
V. Inspection of magnetic clutch components

Armature - Contact surfaces must be clean, smooth and unmarked, with no abnormal scoring
Pulley - As above. Ensure bearings run smoothly
Coil - Wiring harness must be in good condition

Magnetic clutch installation

I. Installation of magnetic coil

Tools required: • Stand (UP/UX) • Standard screwdriver
Procedure: Tighten 3 bolts *(wire must be visible at 3 o'clock position, when viewed from the front).*
Tightening torque: 5.9 ±1 N•m

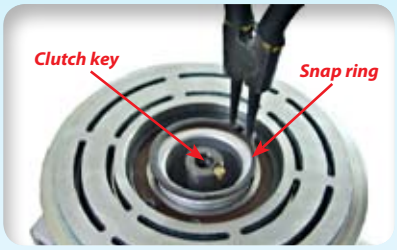


II. Installation of pulley

Tools required: • Pulley installer • Plastic hammer
Procedure: Place the pulley on the nose top and install it by tapping on the installer until it stops. Do not tap if the pulley is not located correctly.

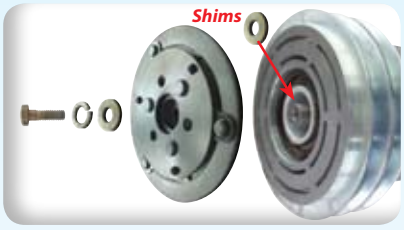
III. Installation of clutch key and snap ring

Tools required: • Snap ring pliers *(shaft)*
Procedure: Install the snap ring into the groove *(tapered side up)*



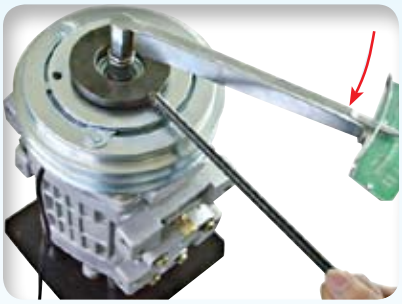
IV. Installation of shims and armature

Tools required: • Guide pin
Procedure: Install the guide pin into the centre threaded hole of the shaft and select shims *(T=0.1, 0.3 and 0.5mm)* to ensure the clutch clearance as in figure.



V. Installation of armature

Tools required: • Clutch wrench • Torque wrench • M6 Socket
Procedure: Place washers and spring washers on M6 by holding the clutch wrench on the holes *(3 positions)* on the armature. **Tightening torque: 19.6 ± 1 N•m**



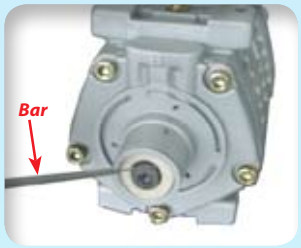
VI. Air gap

Tools required: • Thickness guage
Procedure: Ensure clutch clearance is correct all around. *(0.3mm≤ gap ≤0.6mm)*

Removal of lip seal

I. Removal of the felt

Procedure: Removal of the felt on the shaft by hooking with the slender bar.



II. Removal of snap ring

Tools required: • Snap ring pliers *(hole)*
Procedure: Remove the snap ring slowly with pliers as shown in the figure.

III. Removal of lip seal

Tools required: • Lipseal remover
Procedure: Insert the lip seal into the recess as shown in the figure, turn around lightly and pull out.

IV. Inspection of lip seal

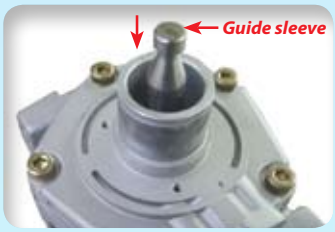
1. Felt seal - *should be dry.*
2. Snap ring - *must be in one piece and not deformed.*
3. Lip seal.

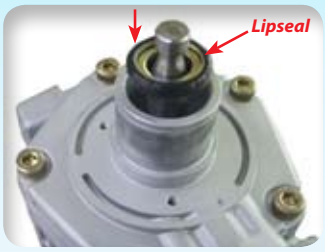
Installation of lip seal

I. Setting the guide sleeve

Tools required: • Stand • Guide sleeve
Procedure: Place compressor on the stand. Lubricate outside of the guide sleeve and insert into the shaft of the compressor.

Caution - the sleeve must be clean and unmarked.





II. Installation of lip seal

Tools required: • Guide sleeve • Lipseal installer
Procedure: Slice the lipseal over the guide sleeve. Place the remover on the lip seal correctly and press the lipseal with the remover until it stops. Then remove the guide sleeve.

Installation of lip seal *- continued*

III. Assembly of the snap ring

Tools required: • Snap ring pliers *(hole)* • Installer ring
Procedure: Insert the snap ring into nose section *(tapered part of the snap ring must be facing downwards as shown in photo)*. Push the snap ring downward with the remover, and fit into groove.

IV. Assembly of the felt seal

Tools required: • Installer ring
Procedure: Install the felt seal into the nose section. Push the felt seal until it touches the snap ring.

Disassembly of the body

Caution - O-ring should not be reused.

I. Removal of oil

Procedure: Remove the drain plug and drain the oil.

II. Removal of lipseal *(Refer to page 9 for instructions)*

III. Removal of the bolts on rear cap

Tools required: • Socket wrench *(hexagon)* 10mm • Stand
Procedure: Remove the M10 securing bolts *(5pcs)* from the rear cap.

IV. Removal of the rear cap

Procedure: Remove the rear cap by gently inserting a screw driver or lever into the recess. Lever all around, not just at one position.

Caution - Do not damage the end of front cap and body.

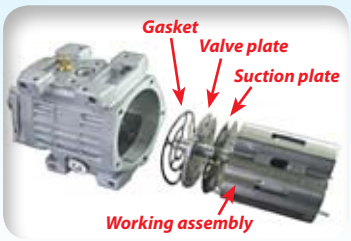
need different pics?

V. Removal of rear valve

Procedure: Remove gasket, valve plate and suction valve. Remove the working assembly by pressing the end of the shaft into the front of the body as shown.

VI. Removal of front valve and working assembly

Procedure: After removal of the cylinder, remove gasket, valve plate and suction valve from the front side.



Assembly of the body

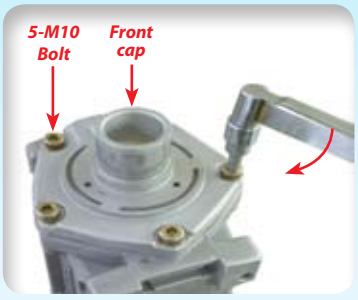
I. Installation of the O-ring for front and rear cap

Procedure: The o-ring must be free from marks and dust. Thoroughly lubricate new o-ring properly and insert into the groove. Ensure the o-ring is lying straight in the groove without a twist.

II. Installation of the front cap

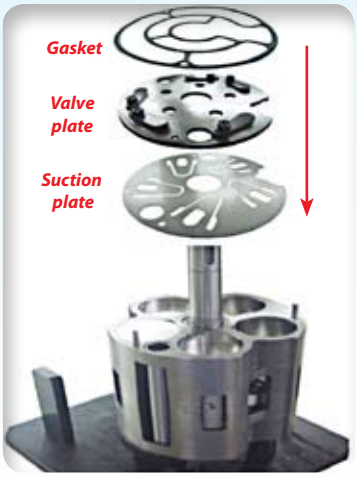
Tools required: • Torque wrench
Procedure: Place the body with front section facing upward. Place the front cap on the body *(be careful not to twist the o-ring)*. Tighten M10 bolts *(5pcs)* with torque wrench.

Tightening torque: 34.3 ±1 N•m



III. Installation of the front valve plate and body

Tools required: • Working assembly bench
Procedure: Place the working assembly on locating pins. Stack the suction plate, the valve plate and gasket on locating pins in sequence as shown in the figure. Carefully lower the body over the working assembly until it stops next to the working bench guide.



Assembly of the body - *continued*

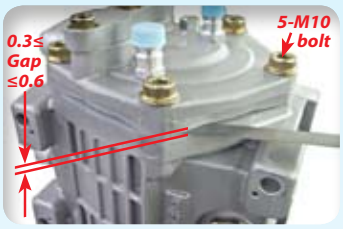
IV. Installation of the rear valve plate and rear cap

Tools required: • Stand
Procedure: Place the body in an inverted position on the stand and stack the suction plate, valve plate and gasket in the figure. Thoroughly lubricate and install the o-ring into the rear cap groove. Ensure the o-ring is lying straight in the groove without any twists.

V. Inspection, tightening and clearance of the rear cap

Tools required: • Torque wrench • Hexagon socket • Thickness guage
Procedure: Tension the M10 Hexagonal flange bolts *(5pcs)* diagonally, alternately and carefully. Check the rear cap clearance as specified: 0.3≤ Gap ≤1.2mm

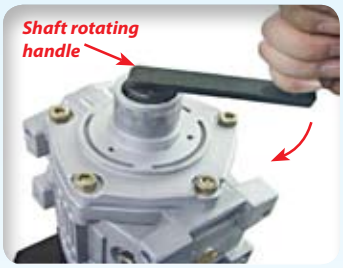
Tightening torque: 34.3 ±1 N•m



VI. Installation of lipseal (Refer to page 9 for instructions)

VII. Test working assembly rotation

Tools required: • Shaft rotating handle
Procedure: Install the handle into the front section to check the shaft rotates smoothly.



VIII. Filling compressor oil

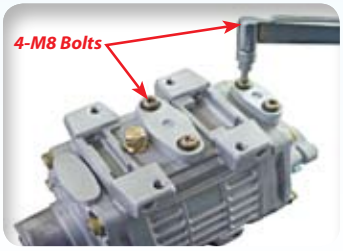
Procedure: Fill the following amount of oil from the low pressure charge port as shown in the photo.
Ensure drain correctly plugged.

Standard oil type: Unidap 7 (PAG) or Unidap 6 (POE)
Amount of oil = 180±20 cc

IX. Plug cap on oil port

Procedure: Tighten high/low pressure port caps with M8 bolts.

Tightening torque: 24.5 ±1 N•m



System oil quantity

The correct amount of oil must be maintained in the compressor and system. Long hose runs and dual evaporator systems must have additional oil added to the system. Severe oil starvation problems may result from insufficient system oil being allowed. To determine oil quantity required, Unicla recommends a calculation as a percentage of refrigerant charge as follows:

- **20% for UP/UX200 compressors** in standard applications where the suction and discharge lines are less than 6 metres in length.

- **30% for UP/UX200 compressors** in applications where suction and discharge lines exceed 6m in length.

Example:
Calculate oil charge as 20% of refrigerant charge, 5 kg charge = 5000 g x 20% = 1000 ml *(cc)* of oil. If fitting a UP/UX200 compressor, then deduct the compressor initial oil charge to determine amount of oil to be added. Therefore 1000 – 600 = 400cc oil to be added to system.

Oil type and grade

Each Unicla UP/UX200 is fitted with either PAG oil *(Unidap 7)* or POE oil *(Unidap 6)*. When adding oil to the system, Unicla oil must be used. **⚠Warranty is void if these guidelines are not followed.**

Compressor Model	Refrigerant	Oil Type (Unicla)	Viscosity @ 40˚C	Viscosity @ 100˚C	Application	Low side Saturation	Oil Separator
UP200	R134a	Unidap 7	48.01	10.51	Airconditioning	> 0˚C	Optional
UX200	R134a	Unidap 6	65.5	9.3	Airconditioning	>0˚C	Optional

The following labels will determine the type of oil in each UX330 compressor:

POE type

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PAG type

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Storage guidelines

I. Evacuate compressor for 3 minutes and fill with nitrogen (N^2) at 0.1 ~ 0.2 MPa.
II. Place the compressor in a clean and dry area with low humidity and tag with details.
III. Keep compressor away from direct sunlight.
IV. Store the compressor horizontally on a flat, even surface.
V. Do not store the compressor in temperatures above 30˚C.
VI. Place the compressor in a well ventilated area to avoid corrosion damage.

Unicla International Limited
Unit 1209-1210, 12F Manhattan Centre,
8 Kwai Cheong Rd, Kwai Chung, N.T.,
Hong Kong

Phone (852) 2422 0180
Fax (852) 2422 0680
Email: sales@unicla.hk
Website: www.unicla.hk

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