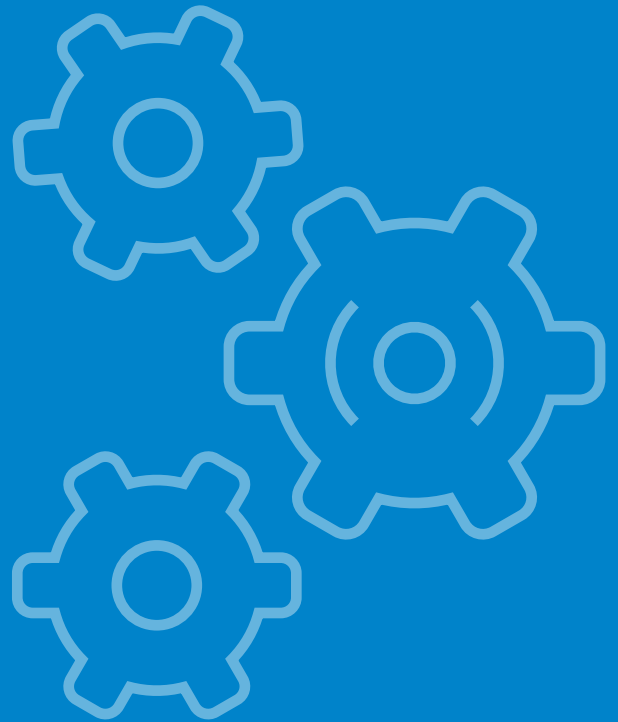


INSTRUCTION

C10 MODULE

Replacement Instructions



1. Brief description

The CA202 membrane is a cellulosic membrane designed for use in treating coloured water. It is used in conjunction with either PCI Membranes's all stainless steel B1 module or plastic C10 module. The membranes are tubular, consisting of a single ply non-woven substrate tube coated with a cellulose acetate membrane layer. Each tube is nominally 12.7mm diameter, and up to 3660mm long. The membranes contain dilute sodium metabisulphite to prevent damage to the membrane from bacterial.

2. Membrane replacement

C10 MODULE: Detailed instruction for removal and replacement of membranes.

- Remove the end caps from both ends of the module, starting with the inlet/outlet end.
- The inlet/outlet cap is removed and some resistance will be felt to the connectors coming free.
- Use the C10 U-bend removal tool start to remove the U-bends from the return end.
- Pulling out the U-bends should leave tube seals and membrane tubes intact.

Note: U-bends should be discarded after removal. Care must be taken not to scratch or damage the plastic tube plate of the C10 module.

- Remove the C10 U-bends from the feed end.
- The membrane tubes and tube seals should come out with the U-bends.
- If any tube seals are left behind in the module, use a pair of long-nosed pliers, grip one of the tube seals and gently twist the pliers until the seal starts to pucker; then pull out the seal.
- Turning the seal in this way allows for easy removal.
- Discard all tube seals.
- If any membrane tubes are left behind after removal of the U-bends insert a small screw driver between the membrane tube and its support tube and fold the membrane in so that it can be gripped by the long-nosed pliers.
- Using the long nosed pliers twist the membrane anti-clockwise and pull out.
- Throw away the membranes after removal.
- In most cases the membranes can be removed fairly easily, however, if a membrane breaks in the tube try to remove the remainder from the other end.

- If any of the following occurs, the module assembly must be replaced :
 - Scoring or scratching to the C10 tube plate sealing counter-bore.
 - Splitting of the support tube.
 - When all membranes have been removed, wash the membrane support tubes with a hose to clean and wet them.
 - Remove the shroud.
 - Ensure the shroud and tube nest is clean and free from debris.
 - Replace the Shroud.

3. Remembraning and Assembly (C10)

- The module tube assembly must be completely clean before remembraning.
- The support tubes must be wet.
- New membranes should be inserted from the feed end of the module if possible.

Caution:

Great care is needed during the following operation as the performance of the module depends on the correct installation of the membrane tubes.

It is advisable that two people work together when inserting the new membranes. The membranes contain a preservative.

- See safety data sheet supplied with membranes.
- Each set of membranes carries an identification number.
- This is marked on one of the packing tube end caps.
- Record this reference number together with the module number on RSE Record sheet.
- This information will be required in the event of a warranty claim.
- Remove both end caps from the plastic packing tube and carefully open the polythene bag.
- Use a support such as a table or a pair of step ladders to ensure the plastic tube is in line and level with the module.
- Carefully withdraw a new membrane and gently feed it into one of the support tubes in the module until 75 to 100 mm is left exposed.

Note: If a membrane tube is kinked during the insertion process, it must be discarded.

- If a membrane tube is particularly difficult to insert, withdraw it and ensure that the support tube is wet. Re-wet if necessary.
- If the membrane is still difficult to insert, try it in other tubes. If the membrane still cannot be inserted, replace it in the packing container and advise PCI Membranes.
- Using new tube seals only, insert a tube seal into the end of the membrane by folding it between the thumb and index finger or using pliers supplied.
- Insert it into the tube so that only the O-ring flange part of the seal is showing.
- Release the seal.
- Use the seal insertion prodder to seat it properly in the membrane.
- Push the membrane and tube seal fully home until the flange of the seal is within the tube plate counter-bore.

Note: It is easier to insert and seal tube seals if they are warm (30° C) and if there is a small witness of silicone grease on them.

- Insert the remaining membrane tubes and tube seals into the module.
- There are 72 membrane tubes in each C10 module, each set of replacement tubes contains 18, therefore 4 set are required for each module.
- Repeat the above for the remaining membranes and check that all tube seals are correctly seated.

Note: Use a suitable torch or lamp to examine each seal individually.

- At the feed end of the module, push the U-bends into position.
- A small witness of silicone grease on the U-bend pins will make insertion easier (too much grease will make the U-bends slide out again).
- The position of each U-bend is marked by the printing on the face of the tube plate.
- Once the U-bend is inside the tube seals it can be gently tapped home with a rubber mallet

Note: It is extremely important that the U-bends are inserted in the correct positions.

- Do not use excessive force when tapping in the U-bends.
- When all U-bends have been inserted, the feed end cap (with the inlet/outlet connectors screwed in place) can be fitted to the module.
- Silicone grease should be applied to the connector pins to aid assembly.
- When cap and connectors are properly fitted, fit and tighten the band clamp.
- At the opposite end of the module (blank end), fit the tube seals into the membranes and seat as before.
- The O-ring flange part of the tube seal should be inside the tube plate counter-bore.
- Use a lamp to inspect each seal is correctly inserted.
- Fit all remaining U-bends.
- Fit the return end cap and tighten the band clamp.
- Repeat the above procedures for all other modules being serviced.
- This completes the membraning procedure.

Caution:

Membranes must not be allowed to dry out. Remembraning of a module must if possible be completed without interruption.

If remembraning cannot be completed, the plastic bag containing the remaining membranes must be resealed and the module kept moist.

Hold Up Volumes:	C10 module	B1 module
Tube-side:	35 litres	8 litres
Shroud-side:	54 litres	16 litres
Total:	89 litres	24 litres

Preservation:

- To control biological growth during periods of extended shut-down the membranes have to be preserved.
- This involves disconnecting from supply and circulating preservative through the plant.
- The following chemical and quantities should be used for shut-down periods between 24 hours and 30 days.

Chemical required: Sodium Metabisulphite powder.

Warning:

Warning: protective clothing must be worn when handling the powdered product or solutions, in accordance with instructions from supplier. Do not inhale dust.

Concentration:

- 24 hours to 30 days: 0.25% w/w based on total hold-up volume. i.e. 2.5 g/L = 2.5 kg/m³.
- Hence for 24 hours to 30 days (a shut-down of up to 1 month) the quantity to be used:
- Quantity Sodium metabisulphite powder (kg):
2.5 x (total hold-up volume + CIP tank volume)(m³)
- Carefully weigh this quantity of chemical out before commencing the Preservation sequence.
- Slowly add to the CIP tank when preservative sequence has been initiated and the recirculation pump started.
- Recirculate the solution until returning to the CIP tank.
- Drain down the shroud and tube side of the module.
- The module is now ready to be placed in the cold store
- Enter date module placed into cold store on Cold Store Logsheet