



**Warning** Decontaminate the instrument before disposal. Refer to “Decontamination procedure” on page 66 and “Certificate of Decontamination” on page 107 about decontamination. ▲

Follow laboratory and country-specific procedures for biohazardous or radioactive waste disposal.

Dispose of the instrument according to the legislation stipulated by the local authorities concerning take-back of electronic equipment and waste. The proposals for the procedures vary by country.

**Pollution degree** 2 (see “Safety specifications” on page 96)  
**Method of disposal** Electronic waste  
 Contaminated waste  
 (Infectious waste)



**WEEE symbol** Thermo Fisher Scientific has contracted with one or more recycling/disposal companies in each EU Member State European Country, and this product should be disposed of or recycled through them. Further information on Thermo Fisher Scientific’s compliance with these Directives, the recyclers in your country, and information on Thermo Scientific products which may assist the detection of substances subject to the RoHS Directive are available at [www.thermo.com/WEEERoHS](http://www.thermo.com/WEEERoHS). ▲

Regarding the original packaging and packing materials, use the recycling operators known to you.

For more information, contact your local Thermo Fisher Scientific representative.

This section describes issues related to maintenance of the dispensing cassettes.

To wash the dispensing cassette, follow these steps:

1. Wash the tubes by predispensing them with deionized distilled water. Make sure all the tubes are washed properly.
2. If cleaning with water is insufficient, use a mild laboratory detergent and then predispense with large amounts of deionized distilled water.
3. Empty the tubings of the dispensing cassette. The dispensing cassette can be dried at room temperature.
4. After washing, store the dispensing cassette in the rest position (Figure 4–19).

## B) Dispensing cassette maintenance

### Washing the dispensing cassette

## Maintenance

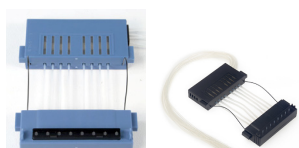
### B) Dispensing cassette maintenance

5. If the instrument is not used for a couple of hours, insert the dispensing cassette into the rest position (Figure 4–19). Refer to “Shutdown” on page 62. Handle the dispensing cassette with great care so that you do not damage the tubes and dispensing tips. These factors affect the useful life of the dispensing cassette.



**Caution** With small tube cassettes, ensure that the liquid or reagent does not contain any particles > 50 µm and that the liquid container is covered. Avoid dust or any particles > 50 µm when operating with the dispensing cassette. ▲

### Cleaning the tips



The following instructions are valid for the *Small tube plastic tip dispensing cassette* and the *Standard tube dispensing cassette*. If the tip(s) are clogged, you can first try the following alternative procedures to remove the blockage.



1. Press the **EMPTY** button for a few seconds. Then press the **PRIME** button for a few seconds.



2. Place a liquid reservoir filled with deionized distilled water under the cassette tips so that the tips are submerged in liquid and press the **EMPTY** button.

3. Clean the tips according to the procedure described below (gray metal tip cassette only). Use the cleaning tool provided.



**Note** To avoid particles re-entering the reagent, place the tubing end weight into a separate vessel while you empty the tubing. ▲

### Cleaning the metal tips



The following cleaning instructions are only valid for the *Small tube metal tip dispensing cassette*.

1. Unfasten the four screws of the cover.
2. Detach the tubing from the tips and remove the tip holder from the Small tube metal tip dispensing cassette (Cat. no. 24073295). Avoid touching the inlet of the tip.
3. Fill the 20 ml syringe (provided with the cassette) with deionized distilled water, ethanol or another suitable liquid.

## Chapter 4

# Routine Operation

### Priming vessel

Ensure that the priming vessel is inserted correctly into its slot on the left of the plate carrier. You have fastened it correctly when you slide it over a snap lock. Make sure you have a tube assembly or a cap inserted into the drain of the priming vessel (Figure 4–9) or a vessel underneath the drain.



**Figure 4–9.** Priming vessel inserted into place

### Dispensing cassettes

The Multidrop Combi can be used with dispensing cassettes with different tubing sizes.

The different dispensing cassettes of the Multidrop Combi are presented below. Refer to Table 4–1, Figure 4–10 and Table 10–15.



**Caution** With small tube cassettes, ensure that the liquid or reagent does not contain any particles > 50 µm and that the liquid container is covered. Avoid dust or any particles > 50 µm when operating with the dispensing cassette. ▲



**Note** Do not touch the dispensing cassette tips or the tubing inlet to ensure trouble-free dispensing. Thermo Fisher Scientific assumes no liability for the use of third-party dispensing cassettes. ▲

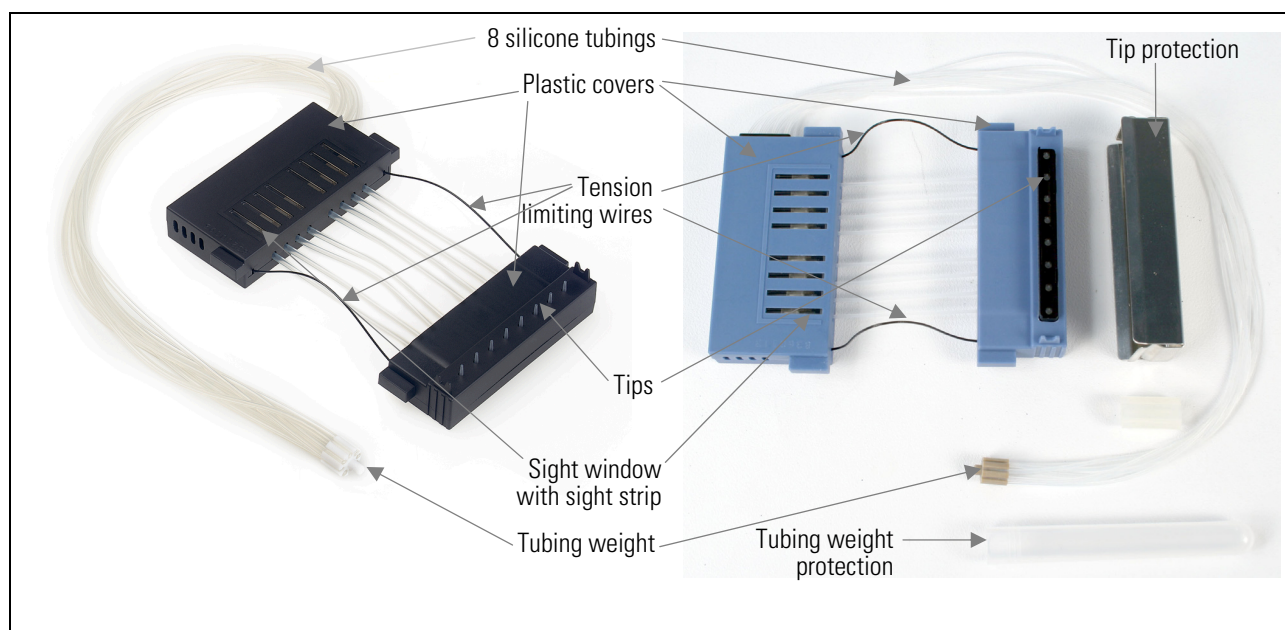
**Table 4–1.** Main types of Thermo Scientific Multidrop Combi dispensing cassettes

Picture	Code	Item	Dispensing range	Reagent pretreatment	Tubing material and Ø	Tip material and inner Ø	Autoclavability
	24073290* 24073292	Small tube plastic tip dispensing cassette, <b>blue</b> With SMART option	0.5-50 µl	preferably filtered, < 50 µm particles	silicone 0.4 mm	PP 0.22 mm	10 times
	24073295* 24073297	Small tube metal tip dispensing cassette, <b>gray</b> With SMART option	0.5-50 µl	preferably filtered, < 50 µm particles	silicone 0.4 mm	stainless steel, ruby 0.22 mm	10 times
	24072670* 24072675	Standard tube dispensing cassette, <b>black</b> With SMART option	5-2500 µl	–	silicone 1.3 mm	PP 0.5 mm	50 times

All the cassettes with the SMART option are labeled (see Table 10–15 for available dispensing cassettes):



\* These dispensing cassettes are also available with long tube versions (see Table 10–15).



**Figure 4–10.** Parts of a dispensing cassette

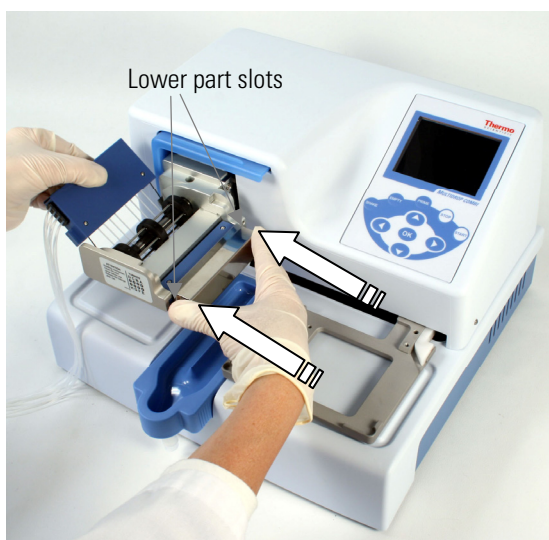
## Installing the cassette

1. Take the lower part of the cassette with the tip protection (only in small tube cassettes) into your right hand with the dispensing cassette tips pointing down and the upper part into your left hand (Figure 4–11).



**Figure 4–11.** Inserting the dispensing cassette

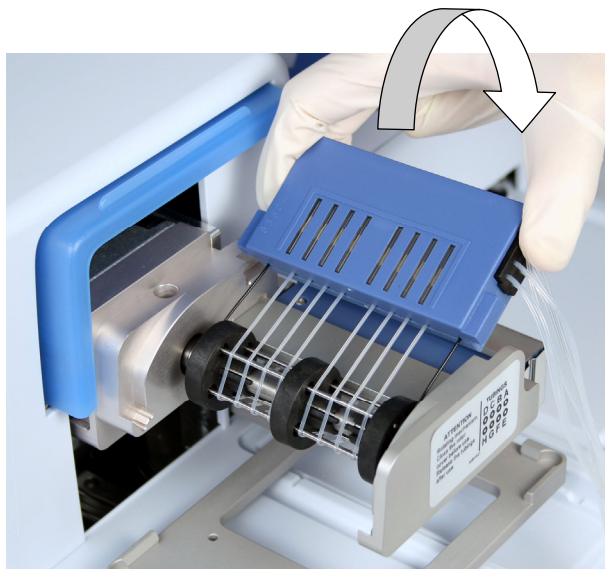
2. Carefully place the eight tubes below the pump rotor and insert the lower part of the dispensing cassette into the lower part slots of the pump body (Figure 4–12). Check that the tubes are freely placed below the pump rotor and the tension limiting wires below the rotor shaft.



**Figure 4–12.** Inserting the lower part of the dispensing cassette into its slots

3. Take a firm grip on the upper part of the dispensing cassette with your right hand and carefully pull the tubes around the pump rotor until the upper part reaches and fits into the upper part slots of the pump body (Figure 4–13). Insert into the slots. Hold onto the instrument firmly with your other hand.



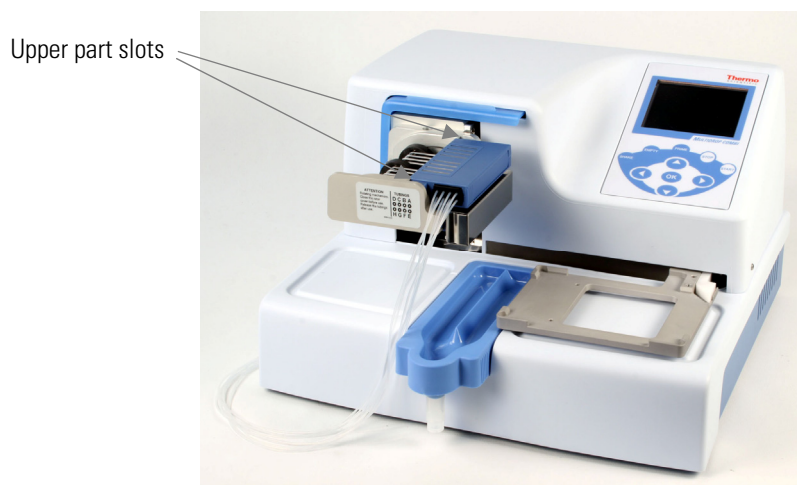


**Figure 4–13.** Inserting the upper part of the dispensing cassette



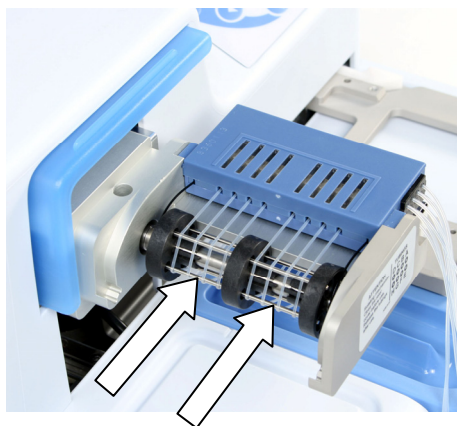
**Note** The tension limiting wires are designed to prevent the user from pulling the tubes too much as excessive tension may damage the tubes or change the calibration of the dispensing cassette. ▲

4. Double-check that both the upper and the lower parts of the dispensing cassette are properly placed into their corresponding slots (Figure 4–13 and Figure 4–14).



**Figure 4–14.** Lower and upper parts of the dispensing cassette inserted evenly into their slots

5. Ensure that all the tubes are evenly placed on the rotor needles (Figure 4–15), four tubes on each half of the pump rotor.



**Figure 4–15.** Correct placement of all the dispensing cassette tubes

6. Ensure that the tension limiting wires have a loose fit around the rotor shaft.
7. With small tube cassettes, pull the tip protection off from the dispensing cassette once the dispensing cassette has been installed (Figure 4–16).
8. Remove the tubing weight protection by removing the rubber holder and pulling the tubing weight out of the tubing protection tube (Figure 4–17 and Figure 4–18).



**Figure 4–16.** Pulling the tip protection off from the dispensing cassette



**Figure 4–17.** Removing the tubing weight protection and rubber holder



**Figure 4-18.** Cassette with the tip and tubing weight protections removed

9. Place the tubing weight into the reagent vessel, and always ensure that there is sufficient liquid present to run the protocol.

During prolonged standby, keep the cassette in its rest position (Figure 4-19).



**Figure 4-19.** Rest position of the dispensing cassette

10. Pull the rotor cover over the rotor (Figure 4-20). A sensor controls that the cover is properly placed over the pump rotor.

If the instrument is equipped with the SMART option and a SMART cassette is being used, the calibration data window appears and the calibration data can be viewed. The Calibration data view remains visible until you deactivate the view by pressing the **OK** or **STOP** button.



The Multidrop Combi is now ready for priming.





**Figure 4–20.** Pulling the rotor cover over the rotor

**Table 4–6.** Total usage of cassettes

Small tube cassette *	Standard tube cassette
100% usage 1000 pcs of 384-well plates @ 5 µl	100% usage 3000 pcs of 96-well plates @ 100 µl
50% usage 500 pcs of 384-well plates @ 5 µl	50% usage 1500 pcs of 96-well plates @ 100 µl
25% usage 250 pcs of 384-well plates @ 5 µl	25% usage 750 pcs of 96-well plates @ 100 µl

\* If you dispense 1 µl into 1536-well plates with the small tube cassette, then the 100% usage equals approximately 1200 plates.

## Screen saver

The Multidrop Combi screen saver shown below appears when the instrument has not been used for 20 minutes. You can deactivate the screen saver and return to the previous display by pressing any key.



## Shutdown

To shut down the Multidrop Combi, follow these steps:



**Warning** Remove any microplates still on the instrument. Dispose of all microplates and strips as biohazardous waste. ▲



1. After all the plates have been dispensed, press the **EMPTY** button to return the reagent or liquid from the tubes to the reservoir.



2. If there is only a break of a few minutes in dispensing, no washing or cleaning of the tubes is necessary. However, after pressing the **EMPTY** button, release the tubing tension by pulling the upper part of the dispensing cassette from its slots and place it into its rest position slots located on the left-hand side of the rotor (Figure 4–19).

3. If there is a longer break (for example, a day), wash the dispensing cassette by priming it with deionized distilled water or with special washing detergent if necessary.
4. After washing and emptying, store the dispensing cassette in the rest position (Figure 4–19).
5. Switch the Multidrop Combi off by pressing the mains switch (Figure 2–4) at the left of the back panel of the instrument into the OFF position.
6. Wipe the instrument surfaces with a soft cloth or tissue paper moistened with deionized distilled water, a mild detergent (SDS, sodium dodecyl sulfate) or soap solution.
7. If you have spilt infectious agents on the dispenser, disinfect with 70% alcohol or some other disinfectant (see “Decontamination procedure” on page 66).



**Note** Keep the dispensing cassette in the rest position when the dispensing cassette is not in use (Figure 4–19). ▲

## **Emergency situations**

In case there is any abnormal situation during operation, such as fluids spilling inside the instrument, follow these steps:

1. Switch OFF the instrument (Figure 2–4).
2. Unplug the instrument immediately from the power supply.
3. Carry out appropriate corrective measures. However, do not disassemble the instrument.
4. If the corrective measures taken do not help, contact authorized technical service or your local Thermo Fisher Scientific representative.