

The next generation Digital Burette!



# Titrette®

*class A precision*

F I R S T C L A S S · B R A N D

With the Titrette® bottle-top burette, available in 10 ml, 25 ml, and 50 ml sizes, you can titrate quickly and reliably with highest precision, even in close quarters, with no power hookup needed – in the lab, in production, or in the field!

■ **High accuracy**

Precise titration within the error limits of Class A

■ **Smooth, low-force operation**

For sensitive, drop-wise titration

■ **Compact design**

Light and stable

■ **Easy handling**

No switching between 'fill' and 'titrate'

■ **Simple maintenance**

Cleaning and part replacement right in the lab

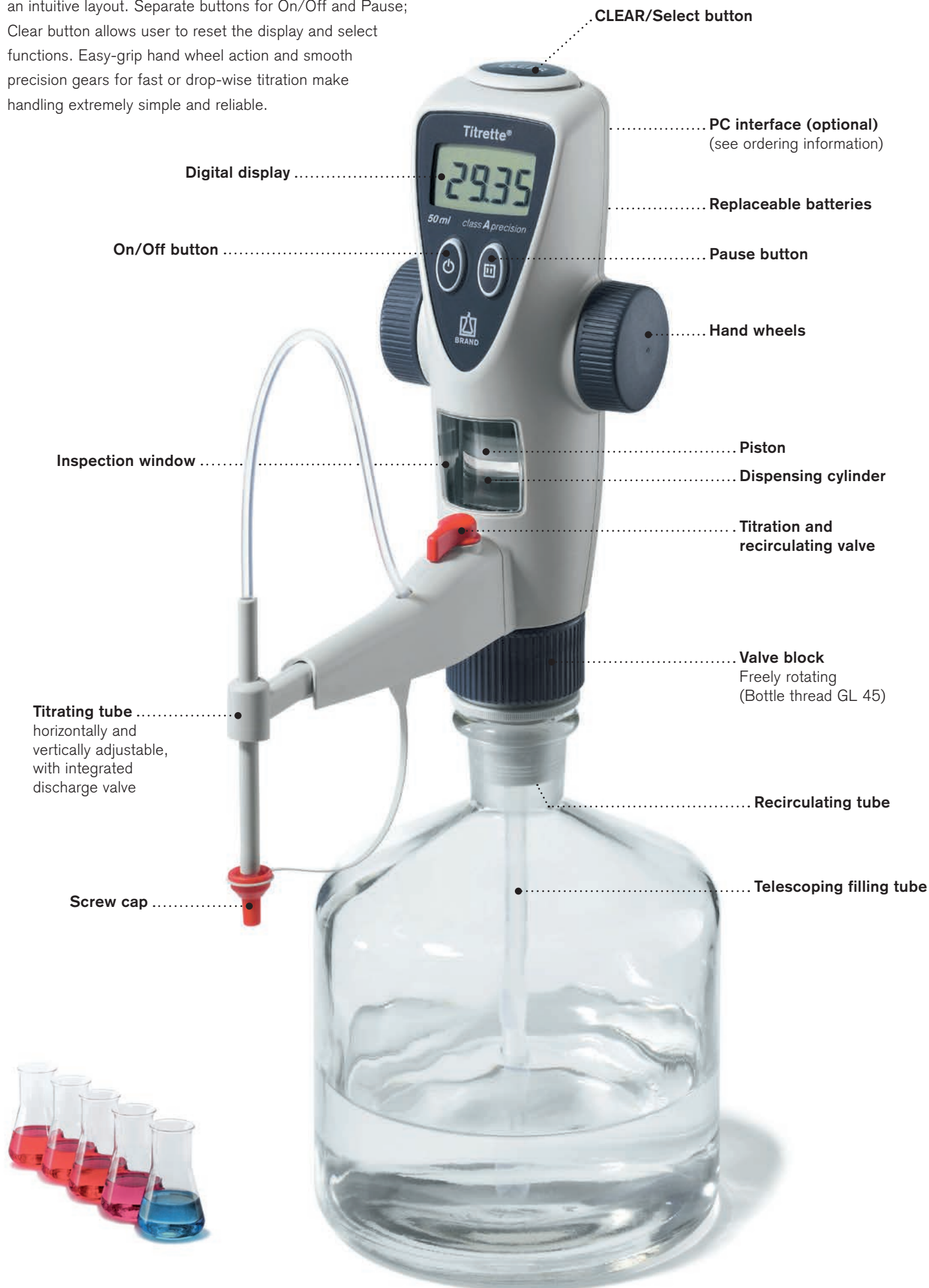
■ **PC interface (optional)**

Data transmission directly to the PC

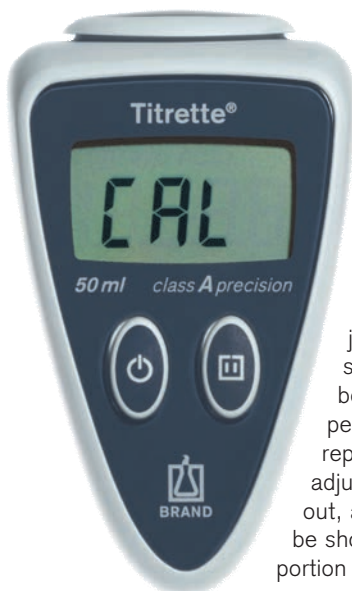


# A closer look

The control elements of the Titrette® bottle-top burette have an intuitive layout. Separate buttons for On/Off and Pause; Clear button allows user to reset the display and select functions. Easy-grip hand wheel action and smooth precision gears for fast or drop-wise titration make handling extremely simple and reliable.

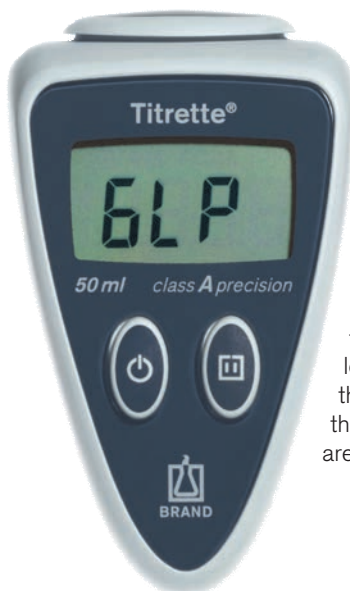


Four additional helpful electronic functions make your work easier. Hold down the CLEAR button to select the desired function:



### Adjustment with Easy Calibration

With Easy Calibration technology, you can easily make calibration adjustments of the instrument 'at the push of a button'. No tools needed! An adjustment may be necessary if the instrument has been in use for a longer period or if parts are replaced. To show that an adjustment has been carried out, a small 'CAL' icon will be shown in the upper portion of the display.

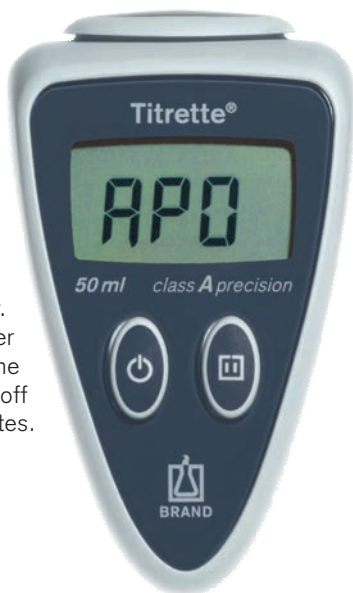


### Calibration schedule

To save a date for the next calibration, simply store it under 'GLP'. The date can be called up each time the instrument is turned on. Hold the on/off button down for a little longer, and the letters 'GLP', along with the month and year of the calibration date, are shown.

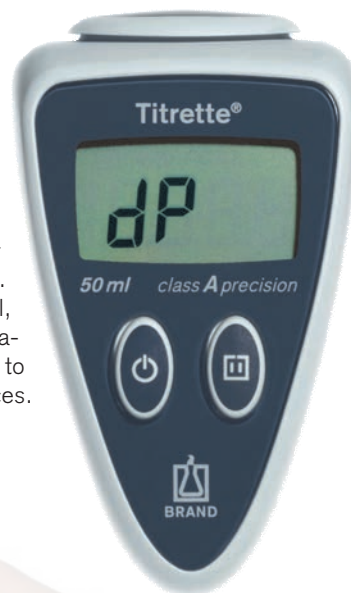
### Save power with Auto Power Off

The instrument switches off automatically after longer periods of inactivity. The current display value is stored, and returned to the display after the power is switched on again manually. Under 'APO' (Auto Power Off), you can set the time until automatic power-off from 1 to 30 minutes.



### Changing decimal place settings

For use as a microburette, you can switch the titrated volume display from 2 to 3 decimal places under 'dP' (decimal point). Above 20.00 ml, the display automatically switches to 2 decimal places.



# Easy Handling

With the Titrette® bottle-top burette, you can titrate drop-wise with great sensitivity. No switching needed between filling and titrating! The instrument is light-weight, compact, and can be dismantled for cleaning and maintenance in the lab. Easy handling!

## Drop by drop!

The large, easy-grip hand wheels are conveniently easy to turn. With the optimized gear ratio, you can fill the device quickly and titrate drop-wise with great sensitivity. The drop size for the 10 ml instrument is approx. 20 µl, and for the 25 and 50 ml instruments approx. 30 µl.



## Class A precision!

The Titrette® bottle-top burette has an innovative new measuring system which matches the Class A accuracy of glass burettes and, if needed, can offer the precision of 3 decimal places below 20 ml. This is an important feature for users who need to work within the Class A error limits of glass burettes according to DIN EN ISO 385 (e.g., in pharmaceutical work).



## No switching needed!

To change between filling and titration, no switching is needed. The instrument automatically detects whether you are filling or titrating by the direction of hand wheel rotation greatly reducing the risk of handling errors. Pressing the Pause button allows you to interrupt the titration if priming was incomplete. Simply push the button again to resume titration.



# Easy Handling



## Light-weight and compact!

All components move within the housing, reducing headroom requirements. The compact and lightweight design ensures good stability. The titrating tube can be adjusted horizontally and vertically. This provides flexibility when positioning the instrument, e.g., when using a magnetic stirrer or different bottle sizes.

## User serviceable!

We have designed the instrument to be disassembled quickly and easily – in a matter of minutes – for cleaning, to replace the piston/cylinder, or to replace the batteries. Now you can carry out maintenance conveniently and easily in the lab, and in a few minutes the instrument is ready to go again!

## Light protection!

For protection of light-sensitive media, you can replace the clear inspection windows with the amber colored windows (included). It's quick and easy, because the windows just clip into place.



# Technical data

## Comparison of error limits

| Volume ml                | Partial volume, ml | Titrette® bottle-top burette |           |              |           | Bottle-top burettes acc. to DIN EN ISO 8655-3 |     |         |    | Glass burettes Class A acc. to DIN EN ISO 385 and ASTM |
|--------------------------|--------------------|------------------------------|-----------|--------------|-----------|---|-----|---------|----|--|
|                          |                    | A* ≤ ± %                     | μl        | CV* ≤ %      | μl        | A* ≤ ± %                                      | μl  | CV* ≤ % | μl | EL** ± μl  |
| <b>10</b><br><i>NEW!</i> | 10                 | <b>0,10</b>                  | <b>10</b> | <b>0,05</b>  | <b>5</b>  | 0,3   | 30  | 0,1     | 10 | 20   |
|                          | 5                  | <b>0,20</b>                  | <b>10</b> | <b>0,10</b>  | <b>5</b>  | 0,6   | 30  | 0,2     | 10 | 20   |
|                          | 1                  | <b>1,00</b>                  | <b>10</b> | <b>0,50</b>  | <b>5</b>  | 3   | 30  | 1       | 10 | 20   |
| <b>25</b>                | 25                 | <b>0,07</b>                  | <b>18</b> | <b>0,025</b> | <b>6</b>  | 0,2   | 50  | 0,1     | 25 | 30   |
|                          | 12,5               | <b>0,14</b>                  | <b>18</b> | <b>0,05</b>  | <b>6</b>  | 0,4   | 50  | 0,2     | 25 | 30   |
|                          | 2,5                | <b>0,70</b>                  | <b>18</b> | <b>0,25</b>  | <b>6</b>  | 2   | 50  | 1       | 25 | 30   |
| <b>50</b>                | 50                 | <b>0,06</b>                  | <b>30</b> | <b>0,02</b>  | <b>10</b> | 0,2   | 100 | 0,1     | 50 | 50   |
|                          | 25                 | <b>0,12</b>                  | <b>30</b> | <b>0,04</b>  | <b>10</b> | 0,4   | 100 | 0,2     | 50 | 50   |
|                          | 5                  | <b>0,60</b>                  | <b>30</b> | <b>0,20</b>  | <b>10</b> | 2   | 100 | 1       | 50 | 50   |

\* Error limits related to the nominal capacity (= maximum volume) indicated on the instrument, obtained when instrument and distilled water are equilibrated at ambient temperature (20 °C/68 °F) and with smooth operation.

\*\* Error limit: EL = A + 2CV, according to DIN EN ISO 8655-6 Annex B (A = accuracy, CV = coefficient of variation, EL = error limit)

### Note:

If you need an official certification which confirms the error limits that are much stricter than those of DIN EN ISO 8655-3, we recommend a calibration certificate from an accredited calibration laboratory (e.g., the DAKK S laboratory at BRAND).

The titration volume is displayed in steps of 1 μl at instruments with 10 ml and 25 ml size and in steps of 2 μl for 50 ml size instruments. For titration volumes above 20 ml the display will automatically switch to steps of 10 μl.

## Material and reagents

### The instrument can be used for the following titration media (maximum concentration 1 mol/l):

|  |  |  |
|--|--|--|
| Acetic acid                            | Iron (II) sulfate solution             | Potassium thiocyanate solution           |
| Alcoholic potassium hydroxide solution | Nitric acid                            | Silver nitrate solution*                 |
| Ammonium iron (II) sulfate solution    | Oxalic acid solution                   | Sodium arsenite solution                 |
| Ammonium thiocyanate solution          | Perchloric acid                        | Sodium carbonate solution                |
| Barium chloride solution               | Perchloric acid in glacial acetic acid | Sodium chloride solution                 |
| Bromide bromate solution               | Potassium bromate solution             | Sodium hydroxide solution                |
| Cerium (IV) sulfate solution           | Potassium bromide bromate solution     | Sodium nitrite solution                  |
| EDTA solution                          | Potassium dichromate solution          | Sodium thiosulfate solution              |
| Hydrochloric acid                      | Potassium hydroxide solution           | Sulfuric acid                            |
| Hydrochloric acid in Acetone           | Potassium iodate solution              | Tetra-n-butylammonium hydroxide solution |
| Iodide Iodate solution*                | Potassium permanganate solution*       | Triethanolamine in Acetone*              |
| Iodine solution*                       |  | Zinc sulfate solution                    |

\* Use light shield inspection window

When the instrument is properly handled, dispensed liquid will only come into contact with the following chemically resistant materials: borosilicate glass, Al<sub>2</sub>O<sub>3</sub>, ETFE, PFA, FEP, PTFE, platinum-iridium; PP (screw cap).

### Limitations of use

Chlorinated and fluorinated hydrocarbons or chemical combinations which form deposits may make the piston difficult to move or may cause jamming.

Compatibility of the instrument for a special application (e.g., trace material analysis) must be checked by the user. For additional information, please contact the manufacturer.

The instrument is not autoclavable!

### Operating limits

This instrument is designed for titrating liquids, observing the following physical limits:

- +15 °C to +40 °C (59 °F to 104 °F) of instrument and reagent
- Vapor pressure up to 500 mbar
- Viscosity up to 500 mm<sup>2</sup>/s
- Altitude: maximum 3000 m above sea level
- Relative humidity: 20% to 90%

12.796

# Ordering information



## Titrette®

Items supplied:

Titrette® bottle-top burette, DE-M marking, performance certificate, telescoping filling tube (170 - 330 mm), recirculation tube, 2 batteries (AAA/UM4/LR03), 3 PP bottle adapters (GL 45/32, GL 45/S 40, GL 32/NS 29/32), 2 colored light shield inspection windows, operating manual.

| Volume            | Standard Cat. No. | with RS 232 interface* Cat. No. |
|-------------------|-------------------|---------------------------------|
| 10 ml <b>NEW!</b> | 4760 141          | 4760 241                        |
| 25 ml             | 4760 151          | 4760 251                        |
| 50 ml             | 4760 161          | 4760 261                        |

### Note:

When ordering instruments with DAkkS calibration certificates, the prefix 'DAkkS' must be added to the order number, e.g., DAkkS 4760 161.

\* Additionally included:

2 m interface cable (Sub-D plug connector, 9-pin), one CD (driver software and open RS232 communication protocol). The CD also includes an example application in XLS-file format, as well as a special operating manual.

## Storage conditions

Store the instrument and accessories at dry conditions.

Storage temperature: -20 °C to +50 °C

Relative air humidity: 5% to 95%

## PC interface (optional)

The instrument is available with an optional RS 232 communications interface.

Advantages compared to the standard configuration:

- The titration results are automatically transmitted to the PC by double-clicking on the CLEAR key. This eliminates transcription errors while recording primary data, and complies with an important requirement of GLP.
- With each data transfer, the burette sends the titrated volume, the serial number of the instrument, the nominal volume and the adjustment value, as well as the next scheduled calibration date. Thus, all raw data is collected and displayed together with actual date/time stamp from the PC.

The transmitted data is recognized as keyboard inputs by the PC. This universal input format ensures that the instrument is compatible with all PC applications that accept keyboard inputs.

To connect the instrument to a USB interface, simply use a standard USB/RS 232 adapter.



|   | Titr. Volume | Date       |
|---|--------------|------------|
| 1 | 20,01        | 14.08.2008 |
| 2 | 20,00        | 14.08.2008 |
| 3 | 20,01        | 14.08.2008 |
| 4 | 20,01        | 14.08.2008 |

# Accessories · Spare parts

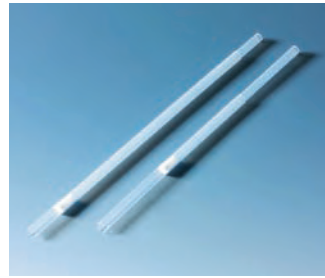


## Titrating tube

with screw cap and integrated discharge and recirculation valve. Pack of 1.

| for volume ml | Cat. No. |
|---------------|----------|
| 10            | 7075 25  |
| 25 + 50       | 7075 29* |

\* Manufactured from Jan. 2012 onwards (serial number 01K)



## Telescoping filling tube

FEP. Pack of 1.

| 170 - 330 mm | Cat. No. |
|--------------|----------|
|              | 7042 04  |
| 250 - 480 mm | Cat. No. |
|              | 7042 05  |



## Filling valve

with olive-shaped nozzle and sealing ring. Pack of 1.

|          |      |
|----------|------|
| Cat. No. | 6636 |
|----------|------|



## Inspection window

1 set colorless and 1 set amber colored (light shield).

|          |      |
|----------|------|
| Cat. No. | 6783 |
|----------|------|



## Piston

Pack of 1.

| for volume ml | Cat. No. |
|---------------|----------|
| 10            | 7075 31  |
| 25            | 7075 30  |
| 50            | 7075 32  |



## Dispensing cylinder with valve block

Pack of 1.

| for volume ml | Cat. No. |
|---------------|----------|
| 10            | 7075 33  |
| 25            | 7075 35* |
| 50            | 7075 37* |

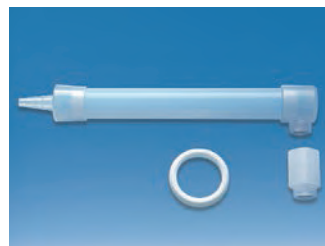
\* Manufactured from Jan. 2012 onwards (serial number 01K)



## Bottle Stand

PP. Full plastic construction. Support rod 325 mm, base plate 220 x 160 mm, weight 1130 g. Pack of 1.

|          |         |
|----------|---------|
| Cat. No. | 7042 75 |
|----------|---------|



## Drying tube

Drying tube and seal, without drying agent. Pack of 1.

|          |         |
|----------|---------|
| Cat. No. | 7079 30 |
|----------|---------|