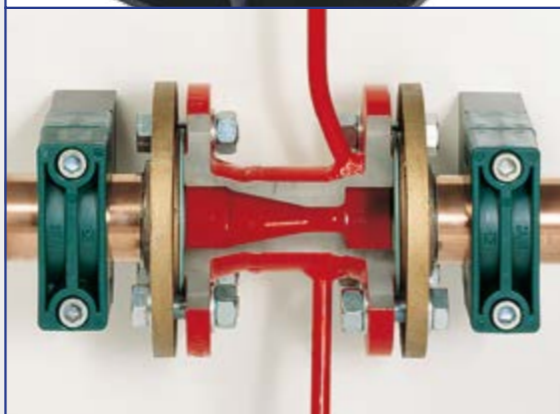


# CUTAWAY MODELS

## GEAR AND DRIVE ELEMENTS

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GL 300.02	Cutaway Model: Mitre Gear	41
GL 300.03	Cutaway Model: Spur Gear	41
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GL 300.05	Cutaway Model: Planetary Gear	41
GL 300.06	Cutaway Model: Variable Speed Belt Drive	41
GL 300.07	Cutaway Model: Control Gear	41
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GL 300.12	Cutaway Model: Pedestal Bearing	41



### Cutaway models

Explain technical correlations, functions and components simply and convincingly.

We always use the latest original components for our cutaway models. Movements and switching functions are retained.

Drawings and a technical description accompany the cutaway models to allow their use across a broad spread of technical teaching. Problems and tasks encountered in technical drawing, manufacturing engineering and testing and our chapter "fasteners and machine parts" can be demonstrated graphically in a very practical way.

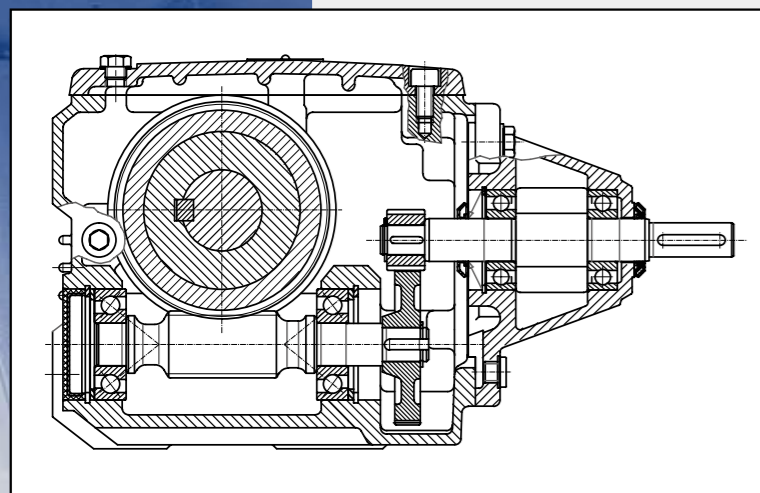
## COMPONENTS IN PIPING SYSTEMS

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## REFRIGERATION COMPONENTS

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**GL 300.01** *Cutaway Model: Worm Gear*



The technical drawings are part of the instructional material.

**Manually Operated Open Samples of Various Drive Components and Elements**

- View of the details and function of the components
- Despite the cut outs the movement functions are completely retained
- Operation using a hand crank

These models are fitted to sturdy metal base plates. Lifting handles make the models easier to carry. Technical descriptions and sectional drawings are included so that calculations and design aspects can be used as an educational topic.

LxWxH: 350 x 300 x 140 mm  
 Weight: approx. 2,5 kg  
 Item No. 030.30001



left:  
**GL 300.02** *Mitre Gear*  
 Cutaway model  
 Item No. 030.30002

right:  
**GL 300.03** *Spur Gear*  
 Cutaway model  
 Item No. 030.30003



left:  
**GL 300.04**  
*Two-Stage Spur Gear*  
 Cutaway model  
 Item No. 030.30004

right:  
**GL 300.05** *Planetary Gear*  
 Cutaway model  
 Item No. 030.30005



left:  
**GL 300.06**  
*Variable Speed Belt Drive*  
 Cutaway model  
 Item No. 030.30006

right:  
**GL 300.07** *Control Gear*  
 Cutaway model  
 Item No. 030.30007



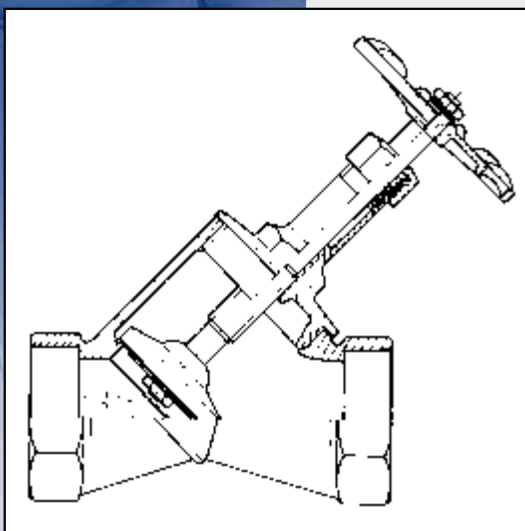
left:  
**GL 300.08** *Multiple-Disc Clutch*  
 Cutaway model  
 Item No. 030.30008

right:  
**GL 300.12** *Pedestal Bearing*  
 Cutaway model  
 Item No. 030.30012

**HM 700** *Cutaway Models of Original Piping Components*



HM 700.01 Cutaway Model: Standard Orifice Plate



Sectional view of the HM 700.06 Angle Seat Valve

**Commercial Fittings as Cutaway Models**

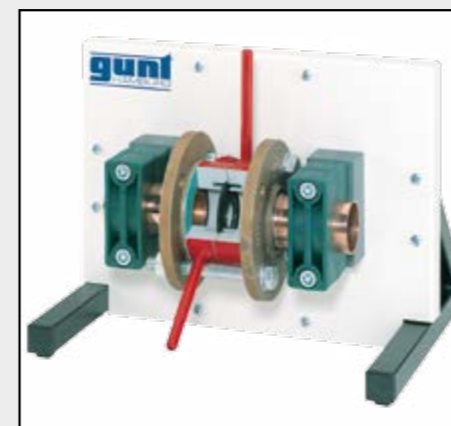
- Familiarisation with real components and their functions
- Detailed view and principle of operation of the components
- All fittings operate normally, the cuts do not hinder moving parts

The cutaway models are actual fittings and components as used in real pipework installations, e.g. valves, an orifice plate, a measuring nozzle, shut-off fittings, a safety valve and pumps.

The models are clearly laid out on display panels or base plates.

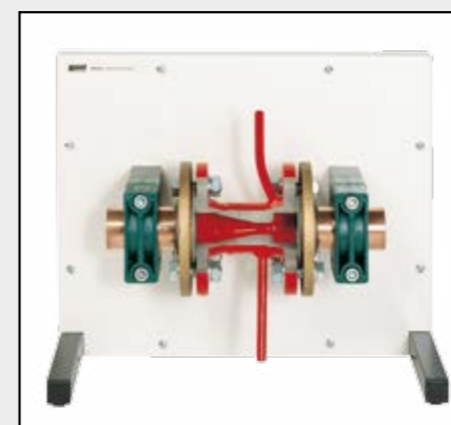
A short description and a sectional view are included, so the models can also be used for technical drawing exercises.

The HM 700 series includes 19 different models that are shown on the following pages.



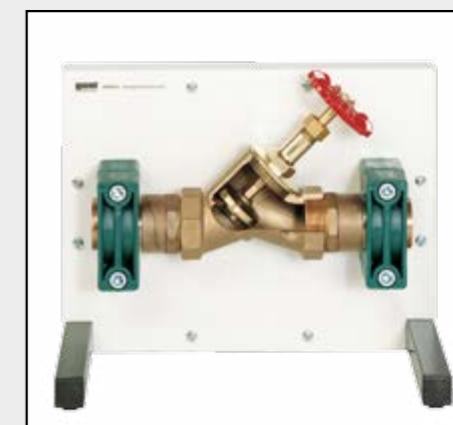
left:  
**HM 700.01 Standard Orifice Plate**  
LxWxH: 400 x 370 x 300 mm  
Weight: approx. 15 kg  
Item No. 070.70001

right:  
**HM 700.02 Flow Nozzle**  
LxWxH: 500 x 370 x 400 mm  
Weight: approx. 15 kg  
Item No. 070.70002



left:  
**HM 700.03 Standard Venturi Meter**  
LxWxH: 500 x 370 x 400 mm  
Weight: approx. 18 kg  
Item No. 070.70003

right:  
**HM 700.04 Straight-Way Valve**  
LxWxH: 400 x 370 x 300 mm  
Weight: approx. 8 kg  
Item No. 070.70004



left:  
**HM 700.05 Corner Valve**  
LxWxH: 400 x 370 x 300 mm  
Weight: approx. 8 kg  
Item No. 070.70005

right:  
**HM 700.06 Angle Seat Valve**  
LxWxH: 400 x 370 x 300 mm  
Weight: approx. 10 kg  
Item No. 070.70006



left:  
**HM 700.07 Non-Return Valve**  
LxWxH: 500 x 370 x 400 mm  
Weight: approx. 15 kg  
Item No. 070.70007

right:  
**HM 700.08 Pressure Reducing Valve**  
LxWxH: 500 x 370 x 400 mm  
Weight: approx. 15 kg  
Item No. 070.70008



left:  
**HM 700.09 Strainer**  
LxWxH: 500 x 370 x 400 mm  
Weight: approx. 10 kg  
Item No. 070.70009



right:  
**HM 700.10 Gate Valve**  
LxWxH: 400 x 370 x 300 mm  
Weight: approx. 10 kg  
Item No. 070.70010



left:  
**HM 700.11 Straight-Way Plug Valve**  
LxWxH: 500 x 370 x 400 mm  
Weight: approx. 10 kg  
Item No. 070.70011



right:  
**HM 700.12 3-Way Plug Valve**  
LxWxH: 500 x 370 x 400 mm  
Weight: approx. 20 kg  
Item No. 070.70012



left:  
**HM 700.13 Ball Valve**  
LxWxH: 400 x 370 x 300 mm  
Weight: approx. 10 kg  
Item No. 070.70013



right:  
**HM 700.14 Safety Valve**  
LxWxH: 400 x 370 x 300 mm  
Weight: approx. 10 kg  
Item No. 070.70014



left:  
**HM 700.15 Various Screwed Pipe Connections**  
LxWxH: 500 x 370 x 400 mm  
Weight: approx. 15 kg  
Item No. 070.70015



right:  
**HM 700.16 Pressure Gauges**  
LxWxH: 500 x 370 x 400 mm  
Weight: approx. 12 kg  
Item No. 070.70016

**HM 700.17 Cutaway Model: Centrifugal Pump**



**Clearly Laid Out Benchtop Model**

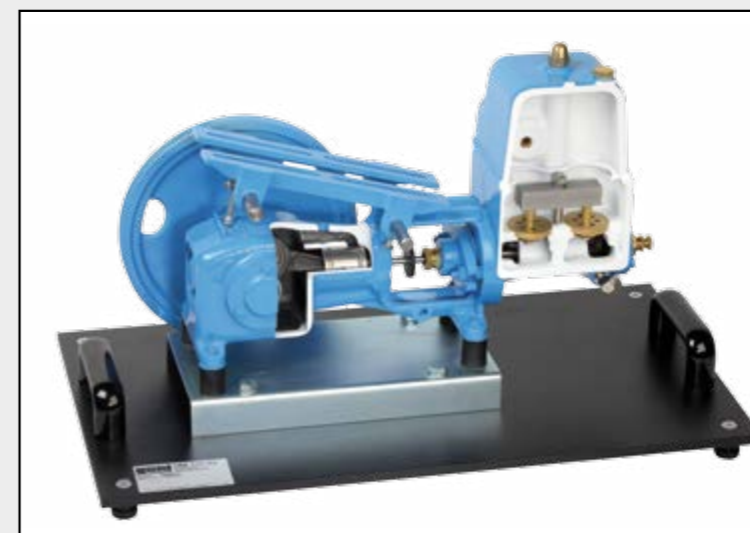
- Familiarisation with components and function

The model shows a standard centrifugal pump that has been prepared as a cutaway model and fitted to a base plate.

The impeller and shaft can be rotated.

LxWxH: 500 x 400 x 300 mm  
Weight: approx. 29 kg  
Item No. 070.70017

**HM 700.20 Cutaway Model: Piston Pump**



**Clearly Laid Out Benchtop Model**

- Familiarisation with components and function

A double-acting piston pump with disc piston is shown in cutaway, revealing all moving parts. The model is mounted on a base plate with carrying handles.

LxWxH: 650 x 350 x 450 mm  
Weight: approx. 25 kg  
Item No. 070.70020

**HM 700.22 Cutaway Model: Gear Pump**



**Clearly Laid Out Benchtop Model**

- Familiarisation with components and function

A simple gear pump that has been prepared as a cutaway model and fitted to a base plate. By rotating the drive shaft it is possible to clearly demonstrate the function.

LxWxH: 350 x 300 x 300 mm  
Weight: approx. 18 kg  
Item No. 070.70022

**VS 101** *Cutaway Model: Underground Hydrant*



**Cutaway Models from Water and Gas Mains**

- Familiarisation with components and their functions
- View of the details and understanding the principle of operation
- Movable parts retain functionality

The cutaway models shown on the following page illustrate commercial components used for drinking water and gas plumbing, such as shut-off fittings, backflow prevention valves and volumetric totalisers. These are similar in concept and design to the VS 101 model, but are mounted on vertical display panels.

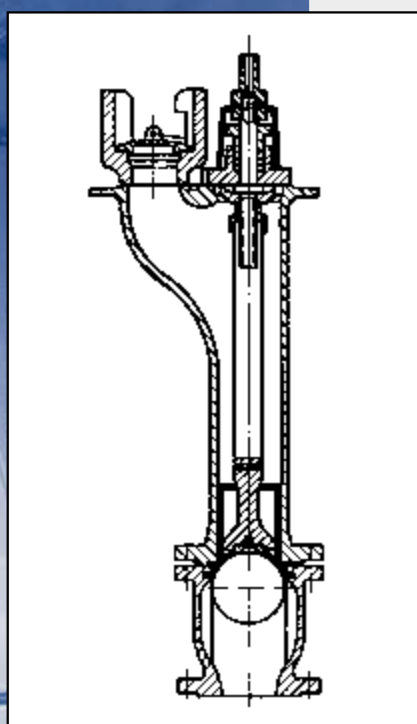
A short description and a sectional view are included. In this way the models can also be used for technical drawing exercises.

The VS 101 is a normal underground hydrant made of cast iron. Hydrants are points for drawing water from the public water supply for emergency services or street cleaning.

The location of the cuts allow the design details to be clearly seen.

The cutaway model is mounted on a robust base plate. Two handles make it easier to carry.

LxWxH: 400 x 400 x 810 mm  
 Weight: approx. 35 kg  
 Item No. 076.10100



Sectional view of the underground hydrant



left:  
**VS 102 Resilient Seated Gate Valve**

LxWxH: 500 x 370 x 400 mm  
 Weight: approx. 15 kg  
 Item No. 076.10200



right:  
**VS 103 Screw-Down Valve**

LxWxH: 500 x 370 x 400 mm  
 Weight: approx. 15 kg  
 Item No. 076.10300



left:  
**VS 104 Changeover Valve**

LxWxH: 500 x 370 x 400 mm  
 Weight: approx. 20 kg  
 Item No. 076.10400



right:  
**VS 105 Gas Meter**

LxWxH: 500 x 370 x 400 mm  
 Weight: approx. 10 kg  
 Item No. 076.10500



left:  
**VS 106 Backflow Preventer**

LxWxH: 500 x 370 x 400 mm  
 Weight: approx. 15 kg  
 Item No. 076.10600



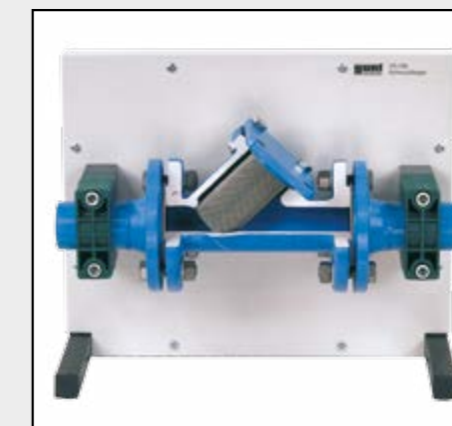
right:  
**VS 107 Non-Return Butterfly Valve**

LxWxH: 500 x 370 x 400 mm  
 Weight: approx. 15 kg  
 Item No. 076.10700



left:  
**VS 108 Water Meter**

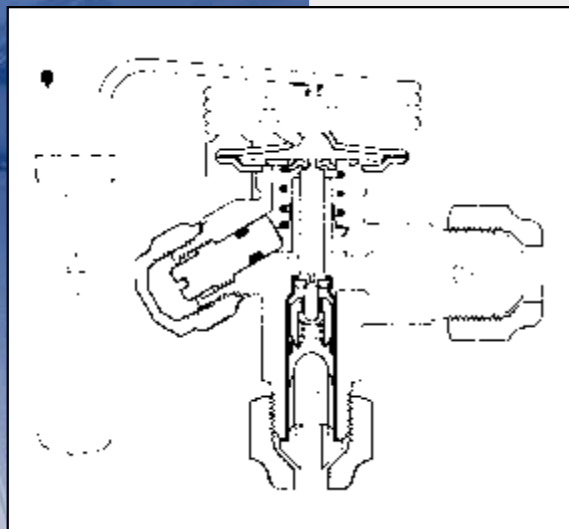
LxWxH: 500 x 370 x 400 mm  
 Weight: approx. 12 kg  
 Item No. 076.10800



right:  
**VS 109 Strainer**

LxWxH: 500 x 370 x 400 mm  
 Weight: approx. 15 kg  
 Item No. 076.10900

**ET 499.30** *Cutaway Model: Ceiling Air Cooler*



Sectional drawing of a thermostatic expansion valve

**Cutaway models from refrigeration engineering**

- Become familiar with components and their function
- Gain an insight into component details and understand functional principles
- All movements are fully reproduced

The cutaway models on the following pages show standard commercially available items from the field of refrigeration engineering, such as compressors, valves, driers and liquid separators. Each of the cutaway models come with a short description and a sectional drawing. This enables the didactic application of the models to be extended to exercises in technical drawing. The larger cutaway models are mounted on a solid base. Two handles aid transportation.

For ET 499.30, a commonly used ceiling air cooler, a thermostatic expansion valve and a filter drier are used. The cutaways are arranged to allow design details to be clearly identified.

LxWxH: 750 x 500 x 190 mm  
 Weight: approx. 20 kg  
 Item No. 061.49930



**ET 499.01 Hermetic Refrigerant Compressor**

LxWxH: 300 x 300 x 240 mm, Weight: approx. 12 kg  
 Item No. 061.49901



**ET 499.02 Semi-Hermetic Refrigerant Compressor**

LxWxH: 365 x 235 x 280 mm, Weight: approx. 41 kg  
 Item No. 061.49902



**ET 499.03 Open Refrigerant Compressor, 2-Cyl.**

LxWxH: 300 x 300 x 200 mm, Weight: approx. 14 kg  
 Item No. 061.49903



**ET 499.12 Block Drier**

LxWxH: 250 x 155 x 175 mm, Weight: approx. 5 kg  
 Item No. 061.49912



**ET 499.13 Oil Separator**

LxWxH: 360 x 110 x 130 mm, Weight: approx. 5 kg  
 Item No. 061.49913



**ET 499.14 Liquid Separator**

LxWxH: 130 x 65 x 110 mm, Weight: approx. 1 kg  
 Item No. 061.49914



**ET 499.16 Ball Valve**  
LxWxH: 155 x 30 x 70 mm  
Weight: approx. 1 kg  
Item No. 061.49916



**ET 499.18 Thermostatic Expansion Valve**  
LxWxH: 120 x 70 x 120 mm, Weight: approx. 1 kg  
Item No. 061.49918



**ET 499.19 Automatic Expansion Valve**  
LxWxH: 110 x 35 x 55 mm  
Weight: approx. 1 kg  
Item No. 061.49919



**ET 499.21 Sight Glass with Humidity Indicator**  
LxWxH: 75 x 35 x 35 mm, Weight: approx. 1 kg  
Item No. 061.49921



**ET 499.25 4/2-Way Reversing Valve**  
LxWxH: 110 x 70 x 120 mm  
Weight: approx. 1 kg  
Item No. 061.49925



**ET 499.26 Condensation Pressure Control Valve**  
LxWxH: 180 x 30 x 105 mm, Weight: approx. 1 kg  
Item No. 061.49926

## INSTRUCTIONAL MATERIAL AND SOFTWARE

### GUNT's policy is:

High-quality hardware and clearly laid-out instructional materials ensure the teaching and learning success of an experimental unit. The core elements of the instructional material provided to accompany the units are reference experiments conducted by ourselves. The description of the experiment incorporates the detailed setup, through to interpretation of the results obtained. A group of experienced engineers devise and maintain the accompanying instructional material.

Our software – in our context meaning computerised data acquisition programs – always comes with comprehensive online help to explain the features offered the detailed use of the program. GUNT software is developed and written in-house by another group of experienced engineers.

