## Otring

## 07


Technical pens
rapidograph ..... 7
isograph ..... 11
inks and accessories ..... 14
XONOX Graphics ..... 15
Mechanical pencils and
ballpoint pens ..... Tikky II 17
rotring T / rotring 300 ..... 18
erasers / fine leads ..... 19
Drawing boards
rapid ..... 21
profil ..... 22
Accessories ..... 23
Collegeboard ..... 24
drafting machine / T-square-set ..... 25
Compasses
Valuable information about compasses ..... 27
COMPACT ..... 28
CENTRO ..... 29
CONVEX ..... 30
Professional ..... 32
Compass accessories ..... 33
Drawing aids
CENTRO ..... 35rulers, set squares, protractors etc.Triangular reduction scales37
Lettering stencils and templates
Lettering stencils ..... 39
Templates ..... 40

The idea came in 1928 - the perfect writing instrument. One that would write evenly, make carbon copies, and not drip or blot. No small matter in the pre-ballpoint era! The
result was an inkpen that used a tube instead of a nib - the rotring

Tiku or Inkograph. It became a byword for precision writing.

The Tiku was an innovative solution and since then the meeting of writing and drawing challenges through innovation has become the hallmark of the rotring company

Hence, in 1950 a dialogue with draftsmen and designers gave rise to the idea of further developing the Tiku tubular tip to create the world's first technical pen - the original Rapidograph. It was refillable, created precise sharp-edged lines and had a capillary ink feed that gave a consistently smooth flow of ink. It set the standard, and indeed became synonymous with technical drawing

Over the years the Rapidograph was followed by many other drawing products. Rotring created an interlinking system for the professional drafter, from compasses and templates to the latest generation of the Rapidograph.

Functionality and technical perfection make rotring drawing instruments symbols for quality and precision. They continue on in the tradition laid down by founder Wilhelm Riepe back in 1928.


The Tiku Patent

Today, rotring drawing instruments can be found wherever individuals actively create their own lifestyles. People who understand the power of their thoughts and visions, and express them.

rotring Tikky
This need to create, understand, and express is an integral part of the development of every rotring drawing instrument. Today rotring provides a comprehensive system of products offering the optimum solution for every application within technical drawing and design, for professional drafters, students and private individuals alike.

The perfection of technology, ergonomics and design creates a universe that is ideal for drawing, also enhancing the perfect expression of ideas and visions.

rotring rapidograph, International Penline (IPL)

## rotring rapidograph

For tracing paper, vellum drawing paper and lineboard.
The rapidograph uses rotring's unique capillary cartridge. The pressure-equalization system, including ink helix is part of the ink cartridge which ensures that every time you change the cartridge, you get a clean new ink helix. This means that you never need to clean the ink helix and top reliability is guaranteed.

* Line widths for drawing per ISO 128 and DIN 15 and for lettering per ISO 3098/IDIN 6776.

Drawing tube in 3 mm dia. metal bushing.


## rotring rapidograph capillary cartridges

## (Box of 3)

Product features see page 14.

## Ink Colour

S0215710 (R590503)
S0215870 (R590509)
S0194640 (R590517)
red blue black
rotring rapidograph
Set of 4
S0204440*
(R155743)

|  |
| :---: |
|  |  |
|  |  |

rotring rapidograph


## Sets of 3 <br> 


rotring rapidograph
Sets of 8
S0204610* (R155903)

S0227240
(R155913)

rotring rapidograph with pen station
The rapidograph work sets with pen stations keep your technical pens ready to draw instantly. Simply place the pen in the pen station with light pressure. The ideal horizontal position and a grip flexible double seal prevent the pen from drying. Individual pen stations can be taken from the set and affixed to table or drawing board with double-sided tape (provided with the work set).

Junior Set
Contents: 3 rapidograph pens, 1 rotring T 0.5, 6 ink cartridges


College Set (Pen Stand)
Contents: 3 rapidograph pens, 1 rotring T 0.5,
12 hi-polymer HB leads, 1 B20 eraser, 3 pen stands, 3 ink cartridges, 1 compass attachment


S0699530 S0699550

| - | 0.25 |
| :--- | :--- | :--- |
| $\overline{1}$ | 0.35 |
|  | 0.5 |$\quad$| Е |
| :--- |$\quad 0.2$|  | 0.4 |
| :--- | :--- |



College Set
Contents: 3 rapidograph pens, 1 rotring T 0.5,
12 hi-polymer HB leads, 1 B20 eraser, 6 ink cartridges,
1 compass attachment


College Set (4 pens)
Contents: 4 rapidograph pens, 12 hi-polymer HB leads, 1 B20 eraser, 6 ink cartridges, 1 compass attachment


## Master Set

Contents: 3 rapidograph pens, 1 rotring T 0.5,
12 hi-polymer HB leads, 1 B20 eraser, 6 ink cartridges,
1 Centro compass, 1 compass attachment

S0699590 S0699600 S0699610

| - | 0.1 |
| :--- | :--- | :--- | :--- |
|  | 0.3 |
| - | 0.5 |$\quad$|  |  | 0.2 |
| :--- | :--- | :--- |
|  | 0.3 |  |
|  | 0.5 |  |$\quad$|  |  |
| :--- | :--- |



## rotring isograph

For tracing paper, vellum drawing paper and lineboard.
The isograph has a refillable ink reservoir. Its patented push-on sleeve makes for easy access to the ink helix for fast cleaning.

[^0]

The push-on sleeve can be easily removed to facilitate cleaning, even when the ink reservoir is full.

| Technical pens | Line width mm | Colour code | Replacem nibs |  |
| :---: | :---: | :---: | :---: | :---: |
| S0201850 (R151010) | 0.1 |  | S0217870 | (R751010) |
| S0201910 (R151013) | 0.13 * | 13 | S0217940 | (R751013) |
| S0201990 (R151018) | 0.18 * |  | S0218020 | (R751018) |
| S0202070 (R151020) | 0.2 | 20 | S0218100 | (R751020) |
| S0202130 (R151025) | 0.25 * | 25 | S0218170 | (R751025) |
| S0202210 (R151030) | 0.3 | 30 | S0218250 | (R751030) |
| S0202270 (R151035) | 0.35 * | 35 | S0218320 | (R751035) |
| S0202350 (R151040) | 0.4 | 40 | S0218400 | (R751040) |
| S0202410 (R151050) | 0.5 * | B | S0218460 | (R751050) |
| S0202490 (R151060) | 0.6 | 60 | S0218540 | (R751060) |
| S0202550 (R151070) | 0.7 * | 20 | S0218600 | (R751070) |
| S0202630 (R151080) | 0.8 | 80 | S0218680 | (R751080) |
| S0202690 (R151100) | 1.0 * | 10 | S0218740 | (R751100) |
| S0202770 (R151140) | $1.4 *$ | 14 | S0218810 | (R751140) |
| S0202840 (R151200) | 20 | 2.0 | S0218880 | (R751200) |

## Drawing inks for paper

rotring drawing inks in bottles and cartridges

## (Box of 5).

Product features see page 14.

|  |  | Ink Colour |  |  |
| :--- | :--- | :--- | :--- | :--- |
| S0216040 | (R591003) | 23 ml | red | $\square$ |
| S0216280 | (R591009) | 23 ml | blue | $\square$ |
| S019460 | (R591017) | 23 ml | black | $\square$ |
| S0216550 | (R5901018) | 23 ml | white | $\square$ |
| S0216630 | (5591217) | 250 ml | black | $\square$ |
| S0215630 | (R590217) | Cartridges black | $\square$ |  |

rotring isograph

| Sets of 4 |  |
| :---: | :---: |
| S0202940* |  |
| (R151973) |  |
|  |  |
| S0226890* |  |
| S0226890* |  |
| (R151983) | 三- ${ }^{0.3}$ |
|  |  |


rotring isograph
Sets of 3

| SO226720* |  |
| :--- | :--- |
| (R151732) | 0.1 |



rotring isograph with pen station
The isograph work sets with pen stations keep your technical pens ready to draw instantly. Simply place the pen in the pen station with light pressure. The ideal horizontal position and a flexible double seal prevent the pen from drying.
Individual pen stations can be taken from the set and affixed to table or drawing board with double-sided tape (provided with the work set).

Junior Set
Contents： 3 isograph pens， 1 rotring T 0．5，
4 ink cartridges

| S0699300 | S0699310 | S0699320 |
| :---: | :---: | :---: |
| －0．1 | －${ }_{0} 1$ | － 0.2 |
| 三－0．2 ${ }_{0}^{0.3}$ | 二 ${ }_{0}^{0.3}$ | 二 ${ }_{0}^{0.3}$ |
| S0699330 | 50699340 |  |


|  | 0.25 |
| :--- | :--- | :--- |
|  | 0.35 |
| - | 0.5 |$\quad$|  |  |
| :--- | :--- |$\quad$|  | 0.2 |
| :--- | :--- |
|  |  |

## College Set

Contents： 3 isograph pens， 1 rotring T 0．5，
12 hi－polymer HB leads， 1 B20 eraser， 1 bottle of ink 23 ml ， 1 compass attachment

| S0699350 | S0699360 | S0699370 | S0699380 |
| :---: | :---: | :---: | :---: |
| 0.1 | 0.1 | 二 0.2 | － 0.25 |
| 0.2 | 0.3 | － 0.3 | －0．35 |
| 0.3 | 0.5 | 0.5 | 0.5 |
| S0699390 | S0706970 | S0699400 |  |
| 0.2 | － 0.2 | － 0.2 |  |
| 0.4 | 0.4 | －0．35 |  |
| 0.6 | 0.8 | 0.7 |  |



## Master Set

Contents： 3 isograph pens， 1 rotring T 0．5，
12 hi－polymer HB leads， 1 B20 eraser， 1 Centro compass，
1 bottle of ink 23ml， 1 compass attachment
S0699410 S0699420 S0699430

| 0.1 | － 0.1 |
| :---: | :---: |
| 0.2 | ${ }^{0.3}$ |
| 0.3 | － 0.5 |
| S0699440 | S0699450 |
| 0.25 | － 0.2 |
| 0.35 | － 0.4 |
| －0．5 | － 0.6 |

## Capillary cartridges for rotring rapidograph

For tracing paper, vellum drawing paper
and lineboard. (Box of 3)
Special characteristics:
For tracing paper, vellum drawing paper and lineboard. Easy flowing, high opacity, good adhesion, smudge-proof when dry, waterproof, not erasable with rotring pencil erasers B20 or B30, lightfast, suitable for all forms of reproduction.

## Tuschefarbe

| S0215710 | (R590503) | red | $\square$ |
| :--- | :--- | :--- | :--- |
| S0215870 | (R590509) | blue |  |
| S0194640 | (R590517) | black | $\square$ |



## rotring pen cleaning unit for technical pens

For cleaning technical pens overnight. Fill cup half-full with water, add cleaner concentrate, place disassembled pen parts in the basket, and screw shut. Turning the unit over causes the cleaning solution to rinse through the pen parts, for thorough cleaning of even the most stubborn ink residues.
R S0215490 (R585281) with 10 sachets of cleaner concentrate

## rotring cleaner concentrate

For cleaning dirty, encrusted technical pens and nibs. Dissolve concentrate in water in the rotring pen cleaning unit. Cleaning time will depend on how dirty the pens are.
S0215340 (R585270) Pack of 10 sachets

rotring cleaning fluid
for technical pens
For cleaning drawing instruments used with non-etching drawing inks.
S0215410 (R585280) 100 ml
rapid-eraser B20 / B30
For erasing polymer/graphite pencil lines from all drawing media. The elastic white plastic eraser contains no abrasives, so it will not affect ink lines. It works by rolling up graphite and dirt particles in eraser dust. The erased surface stays clean, with no smears or marks. The dust brushe media surface.
rapid-eraser B20
S0194570 (R551120A)
(box of 20)
rapid-eraser B30
S0233921 (R551130A)
(box of 30)

## Capillary cartridges for rotring rapidograph $F$

With non-etching black drawing ink for all matt-coated drafting films and drafting papers.
R S0216710 (R596517) black, box of 3
Special characteristics:
Easy-flowing, high opacity and adhesion, fast-drying, unaffected by fingerprints on media, dries smudge-proof and waterproof. Not erasable with rotring pencil erasers B20 or B30. Lightfast, reproducible.


## Drawing inks for paper

for rotring isograph and Variant (II)
rotring drawing inks in bottles and cartridges (Box of 5)
Special characteristics:
Suitable for tracing paper, vellum, drawing paper and lineboard. Easy-flowing, high opacity, good adhesion. Smudge-proof when dry, waterproof, not erasable with rotring pencil erasers B20 or B30, lightfast, suitable for all forms of reproduction, coloured inks can be mixed with one another, high colour purity.

|  |  |  | Ink Colour |  |
| :--- | :--- | :--- | :--- | :--- |
| S0216040 | (R591003) | 23 ml | red | $\square$ |
| S0216280 | (R591009) | 23 ml | blue | $\square$ |
| S0194660 | (R591017) | 23 ml | black | $\square$ |
| S0216550 | (R591018) | 23 ml | white | $\square$ |
| S0216630 | (R591217) | 250 ml | black | $\square$ |
| S0215630 | (R590217) | Cartridges black | $\square$ |  |



## rapid-eraser TB20

Combined eraser for pencil and ink lines.
$2 / 3$ as T-eraser
$1 / 3$ as B-erase
S0194611
(R551320A)
(box of 20)



## rotring XONOX Graphic

A fine fibre-tip pen with non-fading waterproof pigmented ink and a metal-jacketed fibre-tip nib for accurate drawing on straightedges or templates. Free-ink technology ensures consistently high line quality to the very last drop. The ink-level window shows the amount of ink left in the reservoir at any time.

## Free Ink - The intelligent solution

Free Ink technology is a perfect example of rotring's innovative force. Our Free Ink writing instruments have clear advantages. The ink feed module gives a free yet controlled flow of ink from the reservoir onto the paper, eliminating the need for a conventional ink storage plug. This makes it possible to use $100 \%$ of the ink contents, down to the last drop.
Free Ink is efficient but it's also carefree, even fun to use.

rotring XONOX Graphic


| S0193730 | (R020501) | Ink Colour black | 0.1 |
| :---: | :---: | :---: | :---: |
| S0193750 | (R020502) | black | - 0.2 |
| S0193770 | (R020503) | black | 0.3 |
| S0193790 | (R020504) | black | 0.4 |
| S0193810 | (R020505) | black | -0.5 |
| S0193830 | (R020507) | black | = 0.7 |
| S0193850 | (R020508) | black | 0.8 |

rotring XONOX Graphic Sets


S0195700 (R020551)
0,1 • 0,3 • 0,5

S0195770 (R020553)
0,3 • 0,5 • 0,7

Ink Colour
black
black


rotring

## Tikky II



## rotring Tikky II

The ergonomic wave-form grip area offers a good hold. With its classic design, the rotring Tikky II is the ideal mechanical pencil for school and office. The button, clip and tip with high-precision sleeve are non-tarnishing. The fixed sleeve offers an unimpeded view of the page, making the Tikky II excellent for drawing with a staight-edge or template.
Also available as rotring Tikky II ballpoint with Jumbo refill.
rotring Tikky II Ballpoint

rotring Tikky II, white barrel with colour-coding

| S0206801 | (R5021030) | - | 0.35 mm |
| :---: | :---: | :---: | :---: |
| S0206861 | (R5021050) | - | 0.5 mm |
| S0194330 | (R5021070) | - | 0.7 mm |
| S0206981 | (R5021090) | - | 1.0 mm |
| Set of 3 |  | 0.35 / 0.5 / 0.7 mm |  |
| S0228760 | (R5020160) |  |  |
| 4er-Set |  |  |  |
| S0228820 | (R5020190) | 0.35 / 0.5 / 0.7 / 1.0 mm |  |

rotring Tikky II, black barrel with colour-coding

| S0206320 | (R5020030) | $\square \square$ | 0.35 mm |
| :--- | :--- | :--- | ---: |
| S0206380 | (R5020050) | $\square$ | 0.5 mm |
| S0206450 | (R5020070) | $\square \square$ | 0.7 mm |
| S0206520 | (R5020110) | $\square \square$ | 1.0 mm |
| Set of 3 |  |  |  |
| S0229070 | (R5020260) | $0.35 / 0.5 / 0.7 \mathrm{~mm}$ |  |

rotring Tikky II 0.5 mm

| S0195550 | (R5020150) | white |
| :--- | :--- | :--- |
| S0195570 | (R5020200) | red |
| S0195590 | (R5020250) | black |
| S0195650 | (R5020450) | blue |
| S0229280 | (R5020500) | yellow |

## rotring Tikky II/rotring T

Colour-coded in accordance with ISO 3098, these mechanical pencils show at a glance what line width is available, allowing you to make sketches, mechanical drawings and texts cleanly and accurately in accordance with drawing standards. The strong high-precision tip is ideal for use with a straight-edge and template. Making the Tikky II a perfect tool for mechanical drawings and sketches.
rotring T, burgundy barrel with colour-coding

| S0195671 | (R5020630) | $\boxed{\square}$ | 0.35 mm |
| :--- | :--- | :--- | ---: |
| S0195691 | (R5020650) | $\square$ | 0.5 mm |
| S0195721 | (R5020670) | $\square \square$ | 0.7 mm |
| S0195741 | (R5020690) | $\square \square$ | 1.0 mm |
| 3er-Set |  |  |  |
| S0229721 | (R5020700) | $0.35 / 0.5 / 0.7 \mathrm{~mm}$ |  |

## rotring 300 clutch pencil

The rotring 300 clutch pencil is the ideal tool for writing, drawing and sketching. With the classic hexagonal design and knurled grip, this is a pencil to show off your technical expertise. Another feature is the lead hardness grade indicator. rotring 300 clutch pencil is a "refillable" pencil for 2 mm lead refills.
rotring 300, clutch pencil, plastic
$\mathbf{S 0 2 0 7 3 0 0}$ (R502320) 2.0 mm
Eraser refills for mechanical pencils
S0271220 (R502721) for rotring Tikky II and rotring $T$



## rotring fine leads

High-polymer fine leads from rotring are a solid foundation for you to build on. Their extra-strong formula turns your mechanical pencil into something more than just a refillable pencil.

## rotring erasers

The rotring Tikky erasers can be relied upon to remove pencil and coloured pencil lines without a trace. By using dirt-catching additives and avoiding hard abrasives, they make sure that the media surface always remains clean.

## rotring Tikky erasers

Tikky 20 S0195831 (R551420A)

Tikky 30
S0234101
(R551430A)
Tikky 40
S0234151
(R551440A)

rotring leads for clutch pencils,
12 pcs.
S0230451 (R505208N) HB $\quad 2.0 \mathrm{~mm}$
rotring


## rotring rapid drawing board

## The full-featured drawing board for speed,

 precision and ease of use.- Robust board of unbreakable, non-warping material.
- Ergonomic design for easy, comfortable working.
- Parallel straightedge with STOP-and-GO locking/ unlocking action.
- The L-system straightedge design - allows drawing along the top edge of the straightedge right down to the bottom of the sheet, with full accuracy and stability.
- Two magnetic clamp strips with central pushbutton operation plus additional corner clamp, for exact media positioning and absolutely secure holding.
- Guide rails designed for permanently smooth, featherlight straightedge movement.
- End lock on A3 straightedge for added stability.
- Comes complete with rapid set square for drawing vertical and horizontal lines and angles.
- Includes tilters for comfortable working.

rotring rapid drawing boards

| S0213910 | (R522403) | rapid A3 |
| :--- | :--- | :--- |
| S0232710 | (R522404) | rapid A4 |

## rotring rapid drawing boards

 in the college caseThis rigid case features guides to hold drawing board securely, as well as space for utensils, books, etc.

| S0232980 | (R523403) | rapid A3 + college case |
| :--- | :--- | :--- |
| S0233040 | (R523404) | rapid A4 + college case |

## rotring profil drawing board

For precise drawings and easy, comfortable working.

- Robust board of unbreakable, non-warping material.
- Ergonomic design for easy, comfortable working.
- Parallel straightedge with STOP-and-GO locking/unlocking action.
- The L-system straightedge design - allows drawing along the top edge of the straightedge right down to the bottom of the sheet, with full accuracy and stability.
- Magnetic clamp strip plus additional corner clamp to hold media securely.
- Guide rails designed for permanently smooth, featherlight straightedge movement.
- End lock on A3 straightedges for added stability.
- Can be used with tilters (purchased separately) for added working comfort.


Tilters for profil and rapid drawing boards. Enable board to be tilted at either of two angles for comfortable working.
S0232330 (R522227)
1 pair

## Professional drawing head

with automatic setting every $15^{\circ}$ and locking of any angle in between, plus freeswing setting. Contra-rotating 0-90 ${ }^{\circ}$ scale, brake mechanism to lock in position on straightedge.

## S0213830 (R522346)



## Multipurpose drawing template II

 With $15^{\circ}, 30^{\circ}, 45^{\circ}, 60^{\circ}, 90^{\circ}$ angles, circles with diameters from 1-15 mm in steps of 1 mm , ellipses with large axes $12,15,20,25,30,35,40,50 \mathrm{~mm}$, surface symbols, dimensioning arrows, line device for standard lettering, $7^{\circ} / 42^{\circ}$ angles for dimetric projection.$$
\text { S0232590 (R522352) } \quad 180 \times 180 \times 1,6 \mathrm{~mm}
$$

$$
\llcorner 0.7-0.5 \overline{\mathrm{~m}} \Psi \mathrm{~V}
$$

Junior drawing head
with $15^{\circ}$ ratchet action.
S0213680
(R522230)


## Rapid set square

For direct measurement and drawing of vertical and horizontal lines and angles, and for hatching.

[^1]rotring college case, empty
This rigid case features guides to hold drawing board securely, as well as space for drawing instruments.
S0232510 (R522273) for A3 boards
S0232550 (R522274) for A4 boards



## rotring Collegeboard A3

For sheet sizes up to $450 \times 325 \mathrm{~mm}$.

- Magnetic clamp with scale.
- Straightedge guide slots on all four sides with signal humps.
- Parallel straightedge with grip area and STOP-and-GO button.
- Additional metal clamp.


## S0213660 (R522110)

## Protective carry bag

Tough weatherproof nylon.
Has detachable shoulder strap and space for books and utensils.
S0232160 (R522213)
for A3 boards
S0232200 (R522214)
for A4 boards


## rotring A2 drawing table

A complete drawing system with drawing board laminated on all sides, anodized aluminium guide track with plastic guide coating, parallel straightedge with STOP-and-GO mechanism, 25 cm vertical scale with STOP-and-GO mechanism and adjustable plastic tilter.

S0213920 (R522433) A2 (board size $700 \times 600 \times 16 \mathrm{~mm}$ )

rotring T-square-set A2
With precision anodised-aluminium guide track and plastic glide coating. Fast, simple mounting on drawing board or other work surface with special clamps.

- Parallel straightedge with STOP-and-GO mechanism.
- 25 cm rapid scale with STOP-and-GO mechanism.
- 2 special clamps made of plastic.
- Without drafting table

S0232880 (R522442) A2

rotring


## Geometry compass

- Precision radius adjustment with central spindle.
- Legs open and close synchronously.
- Highly resistant to accidental changes in radius.


## Universal compass

- Can be used for any task, by quickly setting the radius.
Larger radii can be set, without the need for extension rods.




## Rapid adjustment compass

- Convenient button-operated rapid adjustment
- Precise settings due to central spindle.
- Legs open and close synchronously
- Highly resistant to accidental changes in radius.


Pump compass

- For drawing very small circles.
- Safe operation due to low-lying centre of gravity.
- Radius set with high-precision adjustment screw.



## Rapid adjustment compass

Fast and precise radius adjustment
Mobility of the spindle can be fixed by set screw
Both legs with joint
Ergonomic plastic application and handhold depressions Circles up to $\varnothing 360 \mathrm{~mm}$
Pivot: $\emptyset 4.0$ mm
Length: 170 mm
Lead box and spare needle
S0676580


## Giant Universal Compass

Fast and smooth radius adjustment
Both legs with joint
Ergonomic plastic applications and handhold
depressions
Circles up to $\emptyset 360 \mathrm{~mm}$
Pivot: $\varnothing 3.5 \mathrm{~mm}$
Length: 160 mm
S0676550


## Geometry Compass

Precision radius adjustment through central wheel spindle Both legs with joint
Ergonomic plastic applications and handhold depressions Circles up to $\emptyset 360 \mathrm{~mm}$ Pivot: $\emptyset 4.0$ mm Length: 170 mm Lead box and spare needle


Fast and smooth radius adjustment Convenient handhold depressions
Circles up to $\emptyset 320 \mathrm{~mm}$
Pivot: $\varnothing 3.5 \mathrm{~mm}$
Length: 130 mm
Lead box
S0676530

## Universal Compass Set

Contents: Universal compass, extension bar, compass attachment with universal holding device and lead box
Circles up to $\emptyset 480 \mathrm{~mm}$
S0676540

## College Compass with rapid adjustment

Fast and precise radius adjustment
Mobility of the spindle can be fixed by setting screw
Both legs with joint
Circles up to $\emptyset 360 \mathrm{~mm}$
Pivot: $\varnothing 4.0 \mathrm{~mm}$
Length: 174 mm
Lead box and spare needle
S0233491
(R5301110)

Giant bow compass with rapid adjustment
Infinitely variable radius setting through
convenient button mechanism
Precision adjustment through central spindle
Both legs with joint
Pivot: $\emptyset 4.0 \mathrm{~mm}$
Length: 170 mm
Lead box and spare needle
S0214470 without extension bar
(R530115) circles up to 400 mm dia.
S0214540 with extension bar
(R530116)

$$
\text { circles up to } 640 \mathrm{~mm} \text { dia. }
$$

## Universal Compass

Fast and smooth running radius adjustment Insert leg with joint Circles up to $\emptyset 380 \mathrm{~mm}$
Pivot: $\varnothing 3.5 \mathrm{~mm}$ Length: 140 mm Lead box and spare needle
S0214320


Contents: universal compass, extension bar, dividers, small bow compass, drawing pen, drawing pen holder, lead box and spare needle Circles up to $\varnothing 540 \mathrm{~mm}$

## Geometry Compass

Precision radius adjustment with central wheel spindle
Spindle with end stop
Circles up to $\varnothing 250$ mm
Length: 160 mm


## Universal Compass Set

Contents: universal compass, extension bar, drawing pen, drawing pen holder, lead box and spare needle Circles up to $\varnothing 540 \mathrm{~mm}$


## Compass Set (8 pieces)

Contents: universal compass, extension bar, dividers, small bow compass, bow compass, drawing pen, drawing pen holder, lead box and spare needle Circles up to $\varnothing 540 \mathrm{~mm}$



Giant bow compass with rapid adjustment and pen adaptor
Infinitely variable radius adjustment through high-quality button mechanism
Precision fine adjustments through central wheel Swivelling pen adaptor with fine lead insert 0.5 mm Insert leg with joint
Length: 182 mm
Lead box and spare needle
S0233720 without extension bar,
(R530145) circles up to $\varnothing 400 \mathrm{~mm}$
S0233750 with extension bar,
(R530147) circles up to $\varnothing 620 \mathrm{~mm}$

(R5301350) circles up to $\varnothing 400 \mathrm{~mm}$
S0233631 with extension bar,
(R5301360) circles up to $\varnothing 640 \mathrm{~mm}$


## Compass Set (6 pieces)

Contents: universal compass, small dividing compass, extension bar, drawing pen, drawing pen holder, lead box and spare needle
Circles up to $\emptyset 600 \mathrm{~mm}$
Pivot: $\emptyset 3.5 \mathrm{~mm}$
S0233781
(R5302220)


## Compass Set (8 pieces)

Contents: universal compass, small dividing compass, extension bar, dividers, bow compass, drawing pen, drawing pen holder, lead box and
spare needle
Circles up to $\emptyset 600 \mathrm{~mm}$
Pivot: $\emptyset 3.5 \mathrm{~mm}$
S0233821
(R5302260)


## Bow Compass

-high-gloss chrome-plated-
Professional compass with special
bevelled pen holder
Extremely precise radius setting
with micro screw
Circles: $\varnothing 1$ to 14 mm
Length: 120 mm
S0214750 (R532106)
The bow compass can be fitted with 0.3 mm (S0271520), 0.5 mm (S0271530),
0.7 mm (S0271540) fine-lead inserts.

## Dual compass

 attachmentWith stepped peg to fit 3.5 and 4.0 mm dia. Peg slot adjustable by $90^{\circ}$.
S0322070
(R533345)


## Cutter insert

For use in any lead insert instead of pencil lead. Ball-ground steel blade.
Peg dia. 2.0 mm .
For paper up to $160 \mathrm{~g} / \mathrm{m}^{2}$
S0322110
(R538200)



Compass attachment with universal holding device
With stepped peg to fit 3.5 mm and 4.0 mm dia.
S0451450 (R5333600)
The universal holding device takes pens/pencils up to 11.5 mm dia.


## Lead inserts with button mechanism

For master bow and pump compasses with pen adaptor.
Brass mechanism in burgundy plastic housing.

| S0271520 | (R538233) | with 0.3 mm lead |
| :--- | :--- | :--- |
| S0271530 | (R538235) | with 0.5 mm lead |
| S0271540 | (R538237) | with 0.7 mm lead |



## Small compass spare-parts set

Contents:
5 needles $26 \times 1.3 \mathrm{~mm}$ 5 needles $20 \times 2.0 \mathrm{~mm}$ 5 needles $26 \times 1.5 \mathrm{~mm}$ 5 needles $25 \times 2.0 \mathrm{~mm}$ 10 leads S0298190 (R539800)

10 nuts $8 \times 4.0 \mathrm{~mm}$
10 nuts $9 \times 2.2 \mathrm{~mm}$
10 nuts $7 \times 2.0 \mathrm{~mm}$
10 spindels No. 11
10 spindels No. 9
10 needle inserts No. 8

## Large Geometry Set Square wih Handle

Crystal-clear, stable plastic
Robust handle
Contrary scale with coloured background
Bevelled edges and ink naps
Hypotenuse 25 cm with $22 \mathrm{~cm} / 1 \mathrm{~mm}$ scale
S0220800 (R823004)


## Professional Set Square

High-quality plexiglas
Convenient removable handle Clear and precise fine imprinting Contrary scale with coloured background Tracing edges and ink naps Angle scale $180^{\circ} / 1^{\circ}$
Hypotenuse 25 cm with $22 \mathrm{~cm} / 1 \mathrm{~mm}$ scale S0451820 (R823080)

## Geometry Set Square

Crystal-clear, stable plastic
Contrary scale with coloured background
Bevelled edges and ink naps
Hypotenuse 16 cm with $14 \mathrm{~cm} / 1-\mathrm{mm}$ scale
S0237630 (R823028)


## Geometry Set Square with Handle

Crystal-clear, stable plastic
Robust handle
Contrary scale with coloured background Bevelled edges and ink naps
Hypotenuse 16 cm with $14 \mathrm{~cm} / 1 \mathrm{~mm}$ scale S0237690 (R823042)


## Geometry Set (4 pieces)

Crystal-clear, stable plastic
Bevelled edges and/or tracing edges
Contents: 30 cm ruler,
semicircular protractor
set square $30^{\circ} / 60^{\circ}$, hypotenuse 23 cm , set square $45^{\circ}$, hypotenuse 20 cm

S0221370 (R823509)



Standard Parabola ( $\mathbf{y}=\mathbf{x}^{2}$ )
Crystal-clear, stable plastic
Bevelled edges on the outside contours
Sine/cosine curves $A=1$ and $A=0.5$
Tangent curve
Size: $123 \times 70 \times 1.8 \mathrm{~mm}$

## S0673400



Set Square $30^{\circ} / 60^{\circ}$
Crystal-clear, stable plastic tracing edges all round
Angles: 30 $/ 60^{\circ}$
Hypotenuse $23 \mathrm{~cm}, 18 \mathrm{~cm} / 1 \mathrm{~mm}$ scale
S0221090 (R823202)


## Semicircular protractor

Crystal-clear, stable plastic
Contrary scale
Centring point and bevelled edges
Scaling: 10 cm
S0221230 (R823301)

## Set Square $45^{\circ}$

Crystal-clear, stable plastic tracing edges all round Angle: $45^{\circ}$
Hypotenuse $20 \mathrm{~cm}, 13 \mathrm{~cm} / 1 \mathrm{~mm}$ scale S0221160 (R823226)


## Set Squares Sets of 2 one $45^{\circ}$ and one $30^{\circ} / 60^{\circ}$ set square

Crystal-clear, stable plastic
Tracing edges all round 1 mm scale

S0237840 $45^{\circ}$, hypotenuse 25 cm (R823523) $30^{\circ} / 60^{\circ}$, hypotenuse 29 cm
S0237870 $45^{\circ}$, hypotenuse 32 cm
(R823530) $30^{\circ} / 60^{\circ}$, hypotenuse 37 cm
S0237900 $45^{\circ}$, hypotenuse 36 cm (R823547) $30^{\circ} / 60^{\circ}$, hypotenuse 41 cm


## Plate Ruler

Crystal-clear, stable plastic
Textured plate
Scale on both sides
$1 \times 1$-mm scale
$1 \times 0.5-\mathrm{mm}$ scale
S0221020 (R823141)
Scaling: 30 cm

## Flat Ruler

Crystal-clear, stable plastic
Bevelled edge and tracing edge
1 mm increments

| S0220870 (R823103) | Scaling: 16 cm |
| :--- | :--- | :--- |
| S0220950 (R823127) | Scaling: 30 cm |
| S0221450 (R823578) | Scaling: 40 cm |
| S0221500 (R823585) | Scaling: 50 cm |




## Triangular reduction scales

Of white dimensionally stable plastic.
The precision divisions are numerated both ways.
Dimension markings in cm and m for easier working.
With 2 coloured flutings.


| S0236961 Engineer/DIN ISO 5455 |  |  |  | S0220641 Architect (R8020220) |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 5:1 | 2:1 | 1:1 | DIN | 1:10 | 1:20 | 1:25 | 4 |
| 1:2 | 1:5 | 1:10 |  | 1:30 | 1:40 | 1:50 |  |
| 1:20 | 1:50 | 1:100 |  | 1:100 | 1:200 | 1:250 |  |
| 1:500 |  |  |  | 1:300 | 1:400 | 1:500 |  |
| S0220481 Architect (R8020200) |  |  |  | S0220721 Surveying (R8020230) |  |  |  |
| 1:10 | 1:20 | 1:25 | 1 | 1:25 | 1:50 | 1:100 | 6 |
| 1:50 | 1:75 | 1:100 |  | 1:125 | 1:150 | 1:200 |  |
| 1:125 | 1:200 | 1:250 |  | 1:250 | 1:500 | 1: 1000 |  |
| 1:500 | 1:750 | 1:1250 |  | $\begin{aligned} & 1: 1250 \\ & 1: 2500 \end{aligned}$ | 1:1500 | 1:2000 |  |
| S0220561 School |  |  |  | S0237031 Mechanical design |  |  |  |
| 1: 10 | 1:20 | 1:25 | 2 | (R80202 |  |  |  |
| 1: $33^{1 / 3}$ | 1:50 | 1:75 |  | 1:10 | 1:15 | 1:20 | 9 |
| 1: 100 | 1:200 | 1:250 |  | 1:25 | 1 : $33^{1 / 3}$ | 1:50 |  |
| 1:500 | 1:750 |  |  | 1:100 | 1:200 | 1:150 |  |
|  |  |  |  | 1:250 | 1:500 |  |  |



## Lettering - as neatly as if printed

A precise technical drawing is not complete without true-to-standard lettering, and for that you need rotring's precision lettering stencils. The rotring lettering stencils are stamped with markings to show the line width and character height. This ensures that the right pen and the right stencil are used together for true-to-standards lettering.
rotring lettering stencils are made of high-quality plastic and are especially resistant to warping and breakage. The clear, yellow-tinted material provides for high contrast so that even the finest lines are clearly visible. All edges are highly precise.
rotring lettering stencils are available with double-H-profile and Z-profile.


## Stencilling joint

Attaches between nib and barrel for a more comfortable working angle.

[^2]
## Lettering stencils in Z-profile

 per ISO 3098/I, lettering type B| Roman |  | Character <br> height | rapido- <br> graph | iso- <br> graph | Colour <br> code |
| :--- | :--- | :--- | :--- | :--- | :--- |
| S0228430 | (R342025) | 2.5 mm | S0194270 | S0202130 | white |
| S0228480 | (R342035) | 3.5 mm | S0194290 | S0202270 | yellow |
| S0228530 | (R342050) | 5.0 mm | S0203700 | S0202410 | brown |
| S0228580 | (R342070) | 7.0 mm | S0203850 | S0202550 | blue |

## duo-combi <br> Lettering stencil for fibre-tip pens and fine-lead mechanical pencils <br> 2 character heights: 3.5 and 5 mm , roman lettering <br> $244 \times 75 \times 1 \mathrm{~mm}$ <br> 4 0.3-0.5-0.7-0.9 <br> - 0.1-0.3-0.5-0.7

 per ISO 3098/I B. Includes several frequently-used Greek characters.S0228181 (R3400050)


## Double-H-profile lettering stencils

 Type 1451| Roman |  | Character <br> height | rapido- <br> graph | iso- <br> graph |
| :--- | :--- | :--- | :--- | :--- |
| S0227911 | (R3060200) | 2.0 mm | S0203230 | S0202070 |
| S0227961 | (R3060300) | 3.0 mm | S0203430 | S0202210 |
| S0228021 | (R3060400) | 4.0 mm | S0203630 | S0202350 |
| S0228061 | (R3060500) | 5.0 mm | S0203700 | S0202410 |
| S0228111 | (R3060600) | 6.0 mm | S0203780 | S0202490 |

## rotring technical templates

rotring precision templates are robust and nonwarping, with perfectly formed, true-to-standards symbols selected for the most varied applications. The transparent, yellow-tinted material leaves even the finest of lines (e. g. ones drawn with a rotring fine-lead pencil) clearly visible through the template.

## "Studio" electrical engineering angle template

A drawing aid for metalworking students. With $15^{\circ}, 30^{\circ}, 45^{\circ}, 60^{\circ}, 75^{\circ}$, and $90^{\circ}$ angles, mm coordinate graduation, protractor, circles from 1-18 mm dia., and holes for hatching. Symbols and easy-to-combine symbol elements per DIN 40700, Latin and Greek characters in 3.5 mm and numerals in 3.5 and 5.0 mm sizes per ISO 3098/I Bv.

## Circles templates

Circles of $1-30 \mathrm{~mm}$ dia. in 1 mm increments.
With polygon guides and protractor.
Radii 4, 6, 10, 16 mm .
With millimetre ruler and fingerlift.

## Circles templates

Circles of 1-36 mm dia. in 1 mm increments.
With polygon guides and protractor.
Radii 6, 10, 16, 20 mm .
With millimetre ruler and fingerlift.

S0221691
(R8406330)
S0238591 -
(R8527690)
$162 \times 160 \times 1 \mathrm{~mm}$
ᄂ 0.35 ㅍ 40.3

S0221621 ■
(R8406310) $255 \times 92 \times 1.6 \mathrm{~mm}$

L $0.5 \overline{\mathrm{~m}}$ V
$255 \times 129 \times 1.6 \mathrm{~mm}$
L $0.5 \overline{\mathrm{~m}} V$

## S0238341 ■

## (R8426830)

$\emptyset 160 \times 1.6 \mathrm{~mm}$
ᄂ $0.5-0.35 \mathrm{~m}$ V

## Architect's combination template

Separate layout of symbols for furniture, sanitary fittings, electrical fittings,
door openings, level and direction symbols, insulation.

S0238711 (R8537780)
Scale 1:50
$250 \times 150 \times 1.2 \mathrm{~mm}$ L. 0.35 m

S0238781
(R8537790)
Scale 1:100
$190 \times 95 \times 1.2 \mathrm{~mm}$
L. $0.35 \overline{\mathrm{~m}}$

S0238921 -
(R8537830)
Scale 1:50
$300 \times 155 \times 1.2 \mathrm{~mm}$
L 0.5 m
S0238851
(R8537810)
Scale 1:100
$190 \times 95 \times 1.1 \mathrm{~mm}$
L 0.35 m

S0238981 -
(R8537850)
Scale 1:200
$170 \times 70 \times 1.1 \mathrm{~mm}$ ᄂ. $0.25 \overline{\mathrm{~m}}$


## S0238021

 (R8316450) $295 \times 145 \times 1.2 \mathrm{~mm}$ ᄂ 0.5 m


## ISOMETRIC ellipses template

Axial ratio 0.707 : 1.225 (1 : 1.732)/35 ${ }^{\circ} 16^{\prime}$, isometric axes 2-60 mm.
The template edges are designed to enable the ellipses to be positioned in the major isometric planes.

| Art.-No. | Page | Art.-No. | Page | Art.-No. | Page | Art.-No. | Page | Art.-No. | Page |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { R } 020501 \\ & \text { S0193730 } \end{aligned}$ | 15 | $\begin{aligned} & \text { R } 151732 \\ & \text { S0226720 } \end{aligned}$ | 12 | $\begin{aligned} & \text { R } 3060400 \\ & \text { S } 228021 \end{aligned}$ | 39 | $\begin{aligned} & \text { R } 5021090 \\ & \text { S } 0206981 \end{aligned}$ | 17 | $\begin{aligned} & \text { R } 522404 \\ & \text { S0232710 } \end{aligned}$ | 21 |
| $\begin{aligned} & \text { R } 020502 \\ & \text { S0193750 } \end{aligned}$ | 15 | $\begin{aligned} & \text { R } 151742 \\ & \text { S0226730 } \end{aligned}$ | 12 | $\begin{aligned} & \text { R } 3060500 \\ & \text { S0228061 } \end{aligned}$ | 39 | $\begin{aligned} & \text { R } 502320 \\ & \text { S0207300 } \end{aligned}$ | 18 | $\begin{aligned} & \text { R } 522433 \\ & \text { S0213920 } \end{aligned}$ | 25 |
| $\begin{aligned} & \text { R } 020503 \\ & \text { S0193770 } \end{aligned}$ | 15 | $\begin{aligned} & \text { R } 151903 \\ & \text { S0226810 } \end{aligned}$ | 12 | $\begin{aligned} & \text { R } 3060600 \\ & \text { S0228111 } \end{aligned}$ | 39 | $\begin{aligned} & \text { R } 502721 \\ & \text { S0271220 } \end{aligned}$ | 18 | $\begin{aligned} & \text { R } 522442 \\ & \text { S } 0232880 \end{aligned}$ | 25 |
| $\begin{aligned} & \text { R } 020504 \\ & \text { S0193790 } \end{aligned}$ | 15 | $\begin{aligned} & \text { R } 151913 \\ & \text { S0226860 } \end{aligned}$ | 12 | R 3400050 | 39 | R 505 208N | 19 | R 523403 | 21 |
| $\begin{aligned} & \text { R } 020505 \\ & \text { S0193810 } \end{aligned}$ | 15 | $\begin{aligned} & \text { R } 151973 \\ & \text { S0202940 } \end{aligned}$ | 12 | S0228181 |  | S0230451 | 19 | S0232980 R 523404 | 21 |
| $\begin{aligned} & \text { R } 020507 \\ & \text { S0193830 } \end{aligned}$ | 15 | $\begin{aligned} & \text { R } 151983 \\ & \text { S0226890 } \end{aligned}$ | 12 | $\begin{aligned} & \text { R } 342025 \\ & \text { S0228430 } \end{aligned}$ | 39 | $\begin{aligned} & \text { S } 0312400 \\ & \text { R } 505308 \mathrm{~N} \end{aligned}$ | 19 | S0233040 |  |
| $\begin{aligned} & \text { R } 020508 \\ & \text { S0193850 } \end{aligned}$ | 15 | R 155010 | 7 | $\begin{aligned} & \text { R } 342035 \\ & \text { S0228480 } \end{aligned}$ | 39 | S0312410 | 19 | $\begin{aligned} & \text { R } 529117 \\ & \text { S0214320 } \end{aligned}$ | 29 |
| $\begin{aligned} & \text { R } 020551 \\ & \text { S0195700 } \end{aligned}$ | 15 | S0203000 | 7 | $\begin{aligned} & \text { R } 342050 \\ & \text { S0228530 } \end{aligned}$ | 39 | S0312630 | 19 | $\begin{aligned} & \text { R } 529118 \\ & \text { S0214390 } \end{aligned}$ | 29 |
| $\begin{aligned} & \text { R } 020553 \\ & \text { S0195770 } \end{aligned}$ | 15 | $\begin{aligned} & \text { S0203070 } \\ & \text { R } 155018 \\ & \text { S0203150 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 342070 \\ & \text { S0228580 } \end{aligned}$ | 39 | $\begin{aligned} & \text { S } 0312640 \\ & \text { R } 505508 \mathrm{~N} \\ & \text { S } 0312650 \end{aligned}$ | 19 | $\begin{aligned} & \text { R } 529130 \\ & \text { S } 0233300 \\ & \text { R } 529215 \end{aligned}$ | 29 29 |
| $\begin{aligned} & \text { R } 0332100 \\ & \text { S0195260 } \end{aligned}$ | 17 | $\begin{aligned} & \text { R } 155020 \\ & \text { S0203230 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 5020030 \\ & \text { S } 0206320 \end{aligned}$ | 17 | $\begin{aligned} & \text { R } 505 \text { 510N } \\ & \text { S0312660 } \end{aligned}$ | 19 | S0233370 R 529216 | 29 |
| $\begin{aligned} & \text { R } 0332120 \\ & \text { S0195300 } \end{aligned}$ | 17 | $\begin{aligned} & \text { R } 155025 \\ & \text { S0194270 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 5020050 \\ & \text { S } 0206380 \end{aligned}$ | 17 | $\begin{aligned} & \text { R } 505511 \mathrm{~N} \\ & \text { S0312670 } \end{aligned}$ | 19 | S0233410 | 31 |
| $\begin{aligned} & \text { R } 0332130 \\ & \text { S0195320 } \end{aligned}$ | 17 | $\begin{aligned} & \text { R } 155030 \\ & \text { S0203430 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 5020070 \\ & \text { S0206450 } \end{aligned}$ | 17 | $\begin{aligned} & \text { R } 505 \text { 707N } \\ & \text { S0312680 } \end{aligned}$ | 19 | S0233471 | 29 |
| $\begin{aligned} & \text { R } 0332160 \\ & \text { S0195340 } \end{aligned}$ | 17 | $\begin{aligned} & \text { R } 155035 \\ & \text { S0194290 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 5020110 \\ & \text { S } 0206520 \end{aligned}$ | 17 | $\begin{aligned} & \text { R } 505 \text { 708N } \\ & \text { S0312690 } \end{aligned}$ | 19 | S0233491 R 530115 | 29 |
| R 151010 | 11 | $\begin{aligned} & \text { R } 155040 \\ & \text { S0203630 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 5020150 \\ & \text { S0195550 } \end{aligned}$ | 17 | $\begin{aligned} & \text { R } 505 \text { 908N } \\ & \text { S0312700 } \end{aligned}$ | 19 | S0214470 R 530116 | 29 |
| S0201850 R 151013 | 11 | $\begin{aligned} & \text { R } 155050 \\ & \text { S0203700 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 5020160 \\ & \text { S0228760 } \end{aligned}$ | 17 | R 515270 | 39 | S0214540 | 31 |
| S0201910 |  | R 155060 | 7 | R 5020190 | 17 | S0314140 |  | S0233601 |  |
| $\begin{aligned} & \text { R } 151018 \\ & \text { S0201990 } \end{aligned}$ | 11 | S 0203780 R 155070 | 7 | S0228820 | 17 | R 522110 | 24 | $\begin{aligned} & \text { R } 5301360 \\ & \text { S } 0233631 \end{aligned}$ | 31 |
| R 151020 | 11 | S0203850 |  | S0195570 |  | S0213660 |  | R 5301450 | 30 |
| S0202070 | 11 | $\begin{aligned} & \text { R } 155080 \\ & \text { S0203930 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 5020250 \\ & \text { S0195590 } \end{aligned}$ | 17 | $\begin{aligned} & \text { R } 522213 \\ & \text { S0232160 } \end{aligned}$ | 24 | S0233720 R 5301470 | 30 |
| S0202130 |  | R 155100 | 7 | R 5020260 | 17 | R 522214 | 24 | S0233750 |  |
| $\begin{aligned} & \text { R } 151030 \\ & \text { S0202210 } \end{aligned}$ | 11 | S0204000 R 155140 | 7 | S0229070 |  | S0232200 |  | $\begin{aligned} & \text { R } 5302220 \\ & \text { S0233781 } \end{aligned}$ | 31 |
| S 0202210 R 151035 | 11 | $\begin{aligned} & \text { R } 155140 \\ & \text { S0204080 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 5020450 \\ & \text { S0195650 } \end{aligned}$ | 17 | $\begin{aligned} & \text { R } 522225 \\ & \text { S0232240 } \end{aligned}$ | 23 | S0233781 | 30 |
| S0202270 | 11 | $\begin{aligned} & \text { R } 155200 \\ & \text { S0204140 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 5020500 \\ & \text { S0229280 } \end{aligned}$ | 17 | $\begin{aligned} & \text { R } 522227 \\ & \text { S0232330 } \end{aligned}$ | 22 | S0233800 R 5302260 | 31 |
| S0202350 | 11 | $\begin{aligned} & \text { R } 155721 \\ & \text { S0327470 } \end{aligned}$ | 8 | $\text { R } 5020630$ | 18 | $\text { R } 522230$ | 23 | S0233821 |  |
| S0202410 R 151060 | 11 | $\begin{aligned} & \text { R } 155722 \\ & \text { S0204370 } \end{aligned}$ | 8 | $\begin{aligned} & \text { R } 5020650 \\ & \text { S0195691 } \end{aligned}$ | 18 | $\begin{aligned} & \text { R } 522231 \\ & \text { S0213750 } \end{aligned}$ | 22 | $\begin{aligned} & \text { R } 532106 \\ & \text { S0214750 } \end{aligned}$ | 32 |
| S 0202490 R 151070 | 11 | $\begin{aligned} & \text { R } 155743 \\ & \text { S0204440 } \end{aligned}$ | 8 | $\begin{aligned} & \text { R } 5020670 \\ & \text { S } 0195721 \end{aligned}$ | 18 | $\begin{aligned} & \text { R } 522241 \\ & \text { S0232430 } \end{aligned}$ | 22 | $\begin{aligned} & \text { R } 532208 \\ & \text { S0214890 } \end{aligned}$ | 32 |
| S0202550 | 11 | $\begin{aligned} & \text { R } 155903 \\ & \text { S0204610 } \end{aligned}$ | 8 | $\begin{aligned} & \text { R } 5020690 \\ & \text { S0195741 } \end{aligned}$ | 18 | $\begin{aligned} & \text { R } 522273 \\ & \text { S0232510 } \end{aligned}$ | 23 |  |  |
| S0202630 |  | R 155913 | 8 | R 5020700 | 18 | R 522274 | 23 | $\begin{aligned} & \text { R } 533345 \\ & \text { S0322070 } \end{aligned}$ | 33 |
| $\begin{aligned} & \text { R } 151100 \\ & \text { S0202690 } \end{aligned}$ | 11 | S0227240 |  | S0229721 | 17 | S0232550 | 23 | $\begin{aligned} & \text { R } 5333600 \\ & \text { S } 0451450 \end{aligned}$ | 33 |
| $\begin{aligned} & \text { R } 151140 \\ & \text { S0202770 } \end{aligned}$ | 11 | $\begin{aligned} & \text { R } 3060200 \\ & \text { S } 0227911 \end{aligned}$ | 39 | S0206801 | 17 | S0213830 | 23 |  |  |
| $\begin{aligned} & \text { R } 151200 \\ & \text { S0202840 } \end{aligned}$ | 11 | $\begin{aligned} & \text { R } 3060300 \\ & \text { S0227961 } \end{aligned}$ | 39 | $\begin{aligned} & \text { SO206861 } \\ & \text { R } 5021070 \\ & \text { S0194330 } \end{aligned}$ | 17 | $\begin{aligned} & \text { S0232590 } \\ & \text { R } 522403 \\ & \text { S } 0213910 \end{aligned}$ | 21 |  |  |


| Art.-No. | Page | Art.-No. | Page | Art.-No. | Page | Art.-No. | Page | Art.-No. | Page |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| R 538200 | 33 | R 751018 | 11 | R 8020190 | 37 | R 8426830 | 40 | S0699530 | 9 |
| S0322110 |  | S0218020 |  | S0236961 |  | S0238341 |  | S0699540 | 9 |
| R 538233 | 33 | R 751020 | 11 | R 8020200 | 37 |  |  | S0699550 | 9 |
| S0271520 |  | S0218100 |  | S0220481 |  | R 8527690 | 40 | S0699560 | 9 |
| $\begin{aligned} & \text { R } 538235 \\ & \text { S0271530 } \end{aligned}$ | 33 | $\begin{aligned} & \text { R } 751025 \\ & \text { S0218170 } \end{aligned}$ | 11 | $\begin{aligned} & \text { R } 8020210 \\ & \text { S0220561 } \end{aligned}$ | 37 | S0238591 |  | S0699570 | 9 |
| R 538237 | 33 | R 751030 | 11 | R 8020220 | 37 | R 8537780 | 41 | S0699580 | 9 |
| S0271540 |  | S0218250 |  | S0220641 |  | S0238711 |  | S0699590 | 9 |
|  |  | R 751035 | 11 | R 8020230 | 37 | R 8537790 | 41 | S0699600 | 9 |
| R 539800 | 33 | S0218320 |  | S0220721 |  | S0238781 |  | S0699610 | 9 |
| S0298190 |  | $\begin{aligned} & \text { R } 751040 \\ & \text { S0218400 } \end{aligned}$ | 11 | $\begin{aligned} & \text { R } 8020240 \\ & \text { S0237031 } \end{aligned}$ | 37 | $\begin{aligned} & \text { R } 8537810 \\ & \text { S0238851 } \end{aligned}$ | 41 |  |  |
| $\begin{aligned} & \text { R } 551 \text { 120A } \\ & \text { S0194570 } \end{aligned}$ | 19 | $\begin{aligned} & \text { R } 751050 \\ & \text { S0218460 } \end{aligned}$ | 11 | R 823004 | 35 | $\begin{aligned} & \text { R } 8537830 \\ & \text { S0238921 } \end{aligned}$ | 41 | S0706970 | 13 |
| $\begin{aligned} & \text { R } 551 \text { 130A } \\ & \text { S0233921 } \end{aligned}$ | 19 | $\begin{aligned} & \text { R } 751060 \\ & \text { S0218540 } \end{aligned}$ | 11 | S 0220800 R 823028 | 35 | $\begin{aligned} & \text { R } 8537850 \\ & \text { S0238981 } \end{aligned}$ | 41 |  |  |
| $\begin{aligned} & \text { R } 551 \text { 320A } \\ & \text { S0194611 } \end{aligned}$ | 19 | $\begin{aligned} & \text { R } 751070 \\ & \text { S0218600 } \end{aligned}$ | 11 | S0237630 R 823042 | 35 | S0673400 | 36 |  |  |
| $\begin{aligned} & \text { R } 551 \text { 420A } \\ & \text { S0195831 } \end{aligned}$ | 19 | $\begin{aligned} & \text { R } 751080 \\ & \text { S0218680 } \end{aligned}$ | 11 | S 0237690 R 823080 | 35 | S067340 |  |  |  |
| $\begin{aligned} & \text { R } 551 \text { 430A } \\ & \text { S0234101 } \end{aligned}$ | 19 | $\begin{aligned} & \text { R } 751100 \\ & \text { S0218740 } \end{aligned}$ | 11 | S0451820 R 823103 | 37 | S0676530 S0676540 | 28 28 |  |  |
| $\begin{aligned} & \text { R } 551 \text { 440A } \\ & \text { S0234151 } \end{aligned}$ | 19 | $\begin{aligned} & \text { R } 751140 \\ & \text { S0218810 } \end{aligned}$ | 11 | S0220870 | 37 | S0676550 S0676560 S0676570 | 28 28 28 |  |  |
|  |  | R 751200 | 11 | S0220950 |  | S0676580 | 28 |  |  |
| $\begin{aligned} & \text { R } 585270 \\ & \text { S0215340 } \end{aligned}$ | 14 | S0218880 |  | $\begin{aligned} & \text { R } 823141 \\ & \text { S0221020 } \end{aligned}$ | 37 | S0699270 | 35 |  |  |
| $\begin{aligned} & \text { R } 585280 \\ & \text { S } 0215410 \end{aligned}$ | 14 | $\begin{aligned} & \text { R } 755010 \\ & \text { S0218960 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 823202 \\ & \text { S0221090 } \end{aligned}$ | 36 |  |  |  |  |
| $\begin{aligned} & \text { R } 585281 \\ & \text { S } 0215490 \end{aligned}$ | 14 | R 755013 S0219030 | 7 | $\begin{aligned} & \text { R } 823226 \\ & \text { S0221160 } \end{aligned}$ | 36 | S0699300 <br> S0699310 | 13 13 |  |  |
|  |  | R 755018 | 7 | R 823301 | 36 | S0699320 | 13 |  |  |
| R 590217 | $11+14$ | S0219110 |  | S0221230 |  | S0699330 | 13 |  |  |
| S0215630 |  | R 755020 <br> S0219200 | 7 | $\text { R } 8234000$ | 37 | S0699340 | 13 |  |  |
| $\begin{aligned} & \text { R } 590503 \\ & \text { S0215710 } \end{aligned}$ | $7+14$ | $\begin{aligned} & \text { R } 755025 \\ & \text { S0219270 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 823509 \\ & \text { S0221370 } \end{aligned}$ | 36 | S0699350 S0699360 | 13 13 |  |  |
| $\begin{aligned} & \text { R } 590509 \\ & \text { S0215870 } \end{aligned}$ | $7+14$ | $\begin{aligned} & \text { R } 755030 \\ & \text { S0219360 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 823523 \\ & \text { S0237840 } \end{aligned}$ | 36 | S0699370 S0699380 | 13 13 |  |  |
| $\begin{aligned} & \text { R } 590517 \\ & \text { S0194640 } \end{aligned}$ | $7+14$ | $\begin{aligned} & \text { R } 755035 \\ & \text { S0219430 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 823530 \\ & \text { S0237870 } \end{aligned}$ | 36 | S0699390 S0699400 | 13 13 |  |  |
| $\begin{aligned} & \text { R } 591003 \\ & \text { S0216040 } \end{aligned}$ | 11+14 | $\begin{aligned} & \text { R } 755040 \\ & \text { S0219520 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 823547 \\ & \text { S0237900 } \end{aligned}$ | 36 | S0699410 S0699420 | 13 13 |  |  |
| R 591009 | 11+14 | $\begin{aligned} & \text { R } 755050 \\ & \text { S0219590 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 823578 \\ & \text { S0221450 } \end{aligned}$ | 37 | S0699430 | 13 |  |  |
| R 591017 S0194660 | 11+14 | $\begin{aligned} & \text { R } 755060 \\ & \text { S0219670 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 823585 \\ & \text { S0221500 } \end{aligned}$ | 37 | $\begin{aligned} & \text { S0699440 } \\ & \text { S0699450 } \end{aligned}$ | 13 13 |  |  |
| $\begin{aligned} & \text { R } 591018 \\ & \text { S0216550 } \end{aligned}$ | 11+14 | $\begin{aligned} & \text { R } 755070 \\ & \text { S0219740 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 823593 \\ & \text { S0237930 } \end{aligned}$ | 37 |  |  |  |  |
| R 591217 | $11+14$ | $\begin{aligned} & \text { R } 755080 \\ & \text { S0219820 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 823594 \\ & \text { S0237950 } \end{aligned}$ | 37 | S0699460 | 9 |  |  |
| S0216630 |  | R 755100 S0219890 | 7 |  | 41 | S0699470 S0699480 | 9 |  |  |
| $\begin{aligned} & \text { R } 596517 \\ & \text { S0216710 } \end{aligned}$ | 14 | $\begin{aligned} & \text { R } 755140 \\ & \text { S0219970 } \end{aligned}$ | 7 | S0238021 |  | S0699490 S0699500 | 9 |  |  |
| $\begin{aligned} & \text { R } 751010 \\ & \text { S0217870 } \end{aligned}$ | 11 | $\begin{aligned} & \text { R } 755200 \\ & \text { S0220050 } \end{aligned}$ | 7 | $\begin{aligned} & \text { R } 8406310 \\ & \text { S0221621 } \end{aligned}$ | 40 | S0699510 S0699520 | 9 |  |  |
| $\begin{aligned} & \text { R } 751013 \\ & \text { S0217940 } \end{aligned}$ | 11 |  |  | $\begin{aligned} & \text { R } 8406330 \\ & \text { S0221691 } \end{aligned}$ | 40 |  |  |  |  |


[^0]:    * Line widths for drawing per ISO 128 and DIN 15 and for lettering per ISO 3098/IDIN 6776.

    Drawing tube in 3 mm dia. metal bushing.

[^1]:    S0232240 (R522225)

[^2]:    S0314140 (R515270)

