Advanced Linear Sy̶ WITTENSTEIN alpha –
outstanding perform̶ Advanced Segment

PM2020!

Advanced Linear Systems – the perfect solution for linear feed drives for almost every automation, wood working and machine tool application
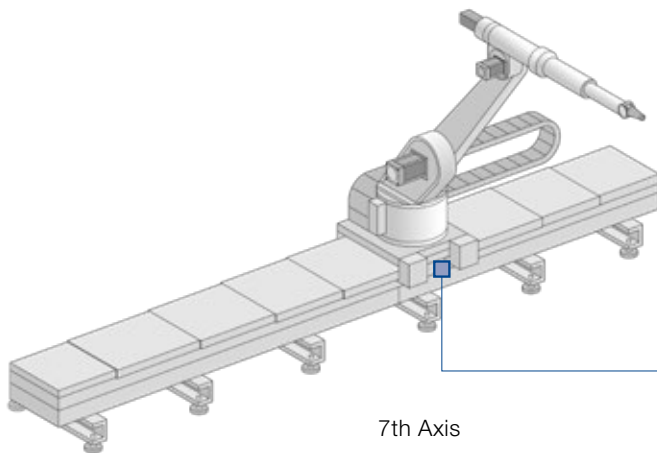
The Advanced Linear System with **SP⁺** and associated right-angle versions is used predominantly as a single drive within a range of up to 12,500 N/drive.
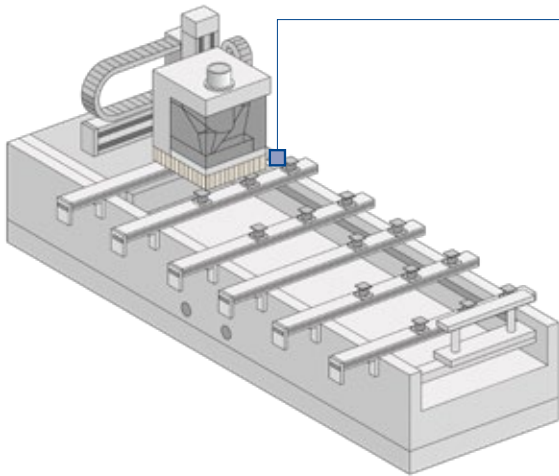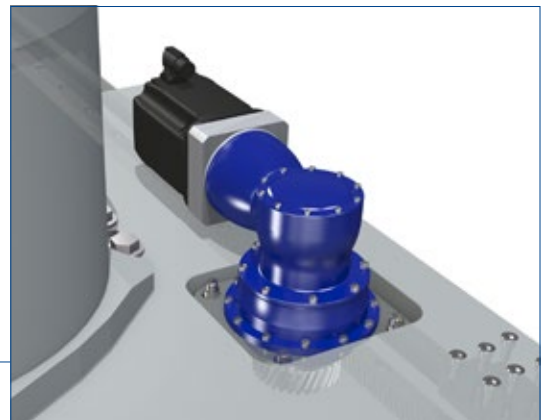


Wood working machine

The Advanced Linear System with **TP⁺** or **TP⁺ HIGH TORQUE** and associated right-angle versions is used as a single drive or master/slave drive within a range of up to 21,000 N/drive.



7th Axis

# Outstanding performance in the Advanced Segment

These systems are adapted to applications with average to high demands in terms of smooth running, positioning accuracy and feed force. Different gearbox versions and options such as HIGH TORQUE or HIGH SPEED can be selected to choose the best system for the application.

## Your benefits

· **Perfectly adapted linear systems available with planetary, right-angle and worm gearboxes or as an servo actuator**

· **Optionally with INIRA®**

· **Large individual configuration range due to numerous pinion/gearbox combinations**

| | | Advanced Linear System | Max. feed force [N] | Max. feed speed [m/min] |
|---|---|---|---|---|
| with SP+ | | ALS 2 | 2230 | 250 |
| | | ALS 3 | 3250 | 300 |
| | | ALS 6 | 6040 | 281 |
| | | ALS 8 | 8600 | 333 |
| | | ALS 12 | 12500 | 400 |
| with TP+ | MF | ALS 1 | 1370 | 325 |
| | | ALS 2 | 2500 | 412 |
| | | ALS 3 | 3600 | 367 |
| | | ALS 12 | 11800 | 438 |
| | | ALS 20 | 19700 | 570 |
| | MA | ALS 4 | 4200 | 45 |
| | | ALS 11 | 10900 | 57 |
| | | ALS 21 | 21000 | 68 |

Feed force and feed speed dependent on ratio

SP+

TP+ MF

TP+ MA

# Quick system selection

| SP+ | TP+ MF | TP+ MA |
|-----|--------|--------|

SYSTEM SIZE

| ALS 1 | ALS 2 | ALS 2 | ALS 3 | ALS 3 | ALS 4 | ALS 6 | ALS 8 | ALS 11 | ALS 12 | ALS 12 | ALS 20 | ALS 21 |

**ACCELERATION [m/s²]**

50
45
40
35
30
25
20
15
10
5
0

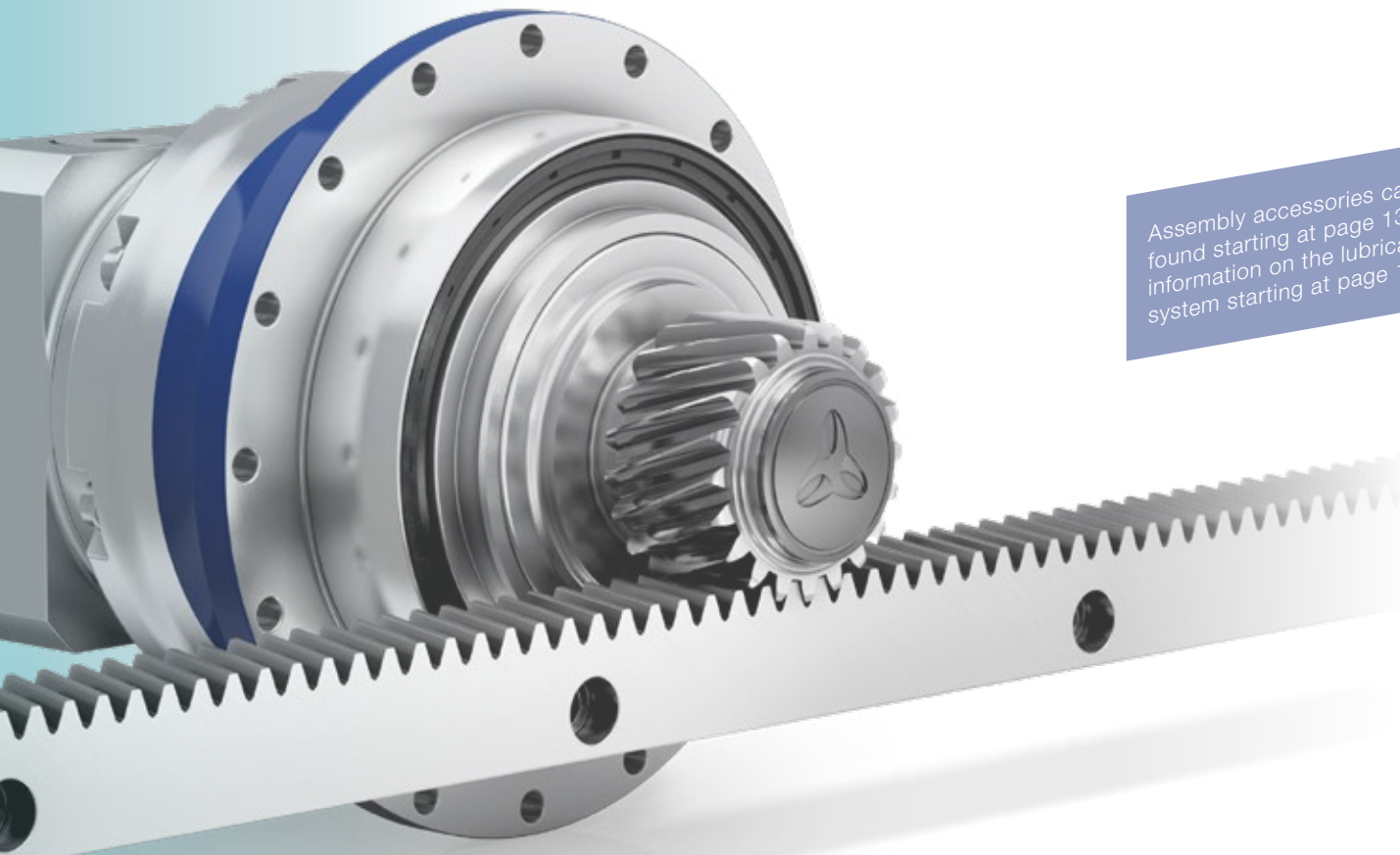10          100          1000          10000

**MASS MOVED [kg]**
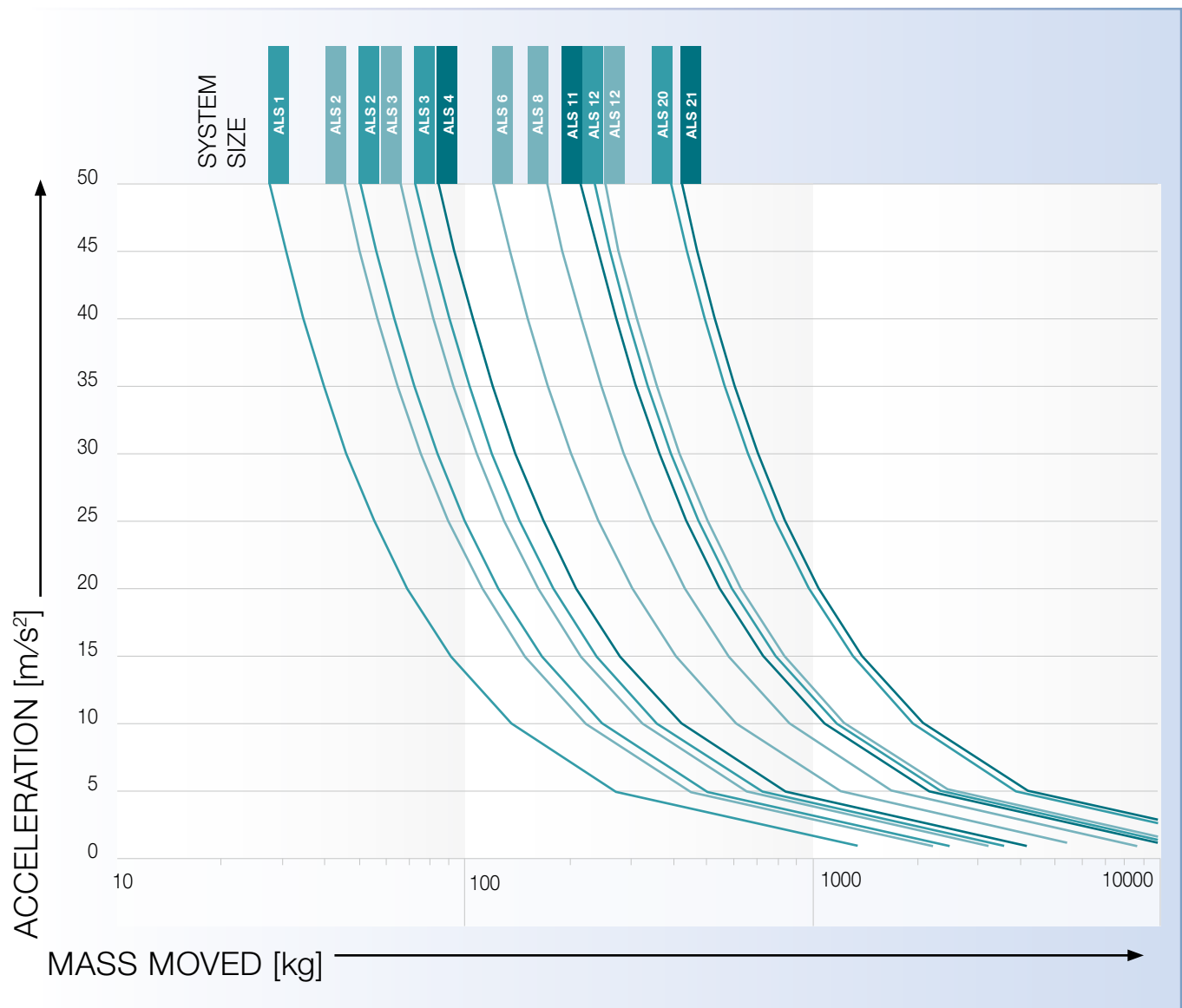
# Advanced Linear Systems overview

Our preferred linear systems are always comprised of the perfect combination of gearbox, pinion, rack and lubrication system. The systems are optimized to achieve the required feed force, feed speed, rigidity and degree of utilization of the individual components. Depending on your individual requirements, you have the option to further configure products via the ordering code. For a detailed dimensioning and configuration of the products we recommend to use cymex® 5.

| System | Gearbox | Pinion | Rack* |
|--------|---------|--------|-------|
| ALS 2 | SP⁺ 060R | RMS 200-323-15L1-016 | ZST 200-332-1000-R1 |
| ALS 3 | SP⁺ 075R | RMS 200-323-18L1-022 | ZST 200-332-1000-R1 |
| ALS 6 | SP⁺ 100R | RMS 200-323-23L1-032 | ZST 200-333-1000-R1 |
| ALS 8 | SP⁺ 140R | RMS 300-323-20L1-040 | ZST 300-332-1000-R1 |
| ALS 12 | SP⁺ 180 | RMS 400-323-20L1-055 | ZST 400-332-1000-R1 |
| ALS 1 | TP⁺ 004 MF | RMF 200-443-26L1-031-8xM5 | ZST 200-332-1000-R1 |
| ALS 2 | TP⁺ 010 MF | RMF 200-443-33L1-050-8xM6 | ZST 200-332-1000-R1 |
| ALS 3 | TP⁺ 025 MF | RMF 200-443-40L1-063-12xM6 | ZST 200-332-1000-R1 |
| ALS 12 | TP⁺ 050 MF | RMF 300-443-35L1-080-12xM8 | ZST 300-333-1000-R1 |
| ALS 20 | TP⁺ 110 MF | RMF 400-443-38L1-125-12xM10 | ZST 400-334-1000-R11 |
| ALS 4 | TP⁺ 025 MA | RMW 200-444-20L1-037 | ZST 200-332-1000-R1 |
| ALS 11 | TP⁺ 050 MA | RMW 300-444-20L1-055 | ZST 300-333-1000-R1 |
| ALS 21 | TP⁺ 110 MA | RMW 400-444-20L1-073 | ZST 400-334-1000-R11 |

* Other length options available

# Ordering code

## Gearbox*

| T | P | 0 | 2 | 5 | S | – | M | F | 1 | – | 5 | – | 0 | E | 1 | / motor** |

**Ratio***

**Backlash**
1 = Standard
0 = Reduced (MF)

**Characteristic**
S = Standard
R = Flange with slotted holes (SP⁺)

**No. of stages**
1 = 1-stage
2 = 2-stage
3 = 3-stage (TP⁺ MA, SPC⁺ / SPK⁺ TPC⁺ / TPK⁺)

**Clamping hub diameter***

**Output type**
0 = Flange (TPC⁺ / TPK⁺)
2 = Splined shaft (DIN 5480) (SPC⁺ / SPK⁺ / VS⁺)
3 = System output (TPC⁺ / TPK⁺)

**Gearbox model**
F = Standard
A = HIGH TORQUE (TP⁺ / TPK⁺)
C = HIGH SPEED

| **Product type** | **Size** |
|---|---|
| SP⁺ | 060 – 240 |
| TP⁺ | 004 – 500 |
| SK⁺ | 060 – 180 |
| TK⁺ | 004 – 110 |
| TPK⁺ | 010 – 500 |
| SPC⁺ | 060 – 180 |
| TPC⁺ | 004 – 110 |
| VS⁺ | 050 – 100 |

**M** Components with a gray font cannot be selected

* Further information on the gearboxs can be obtained from the respective catalogs, online at www.wittenstein-alpha.com or on request

** Full motor designation only required for determining gearbox mounting parts

Advanced Linear Systems

## Rack

| Z | S | T | 2 | 0 | 0 | – | 3 | 3 | 2 | – | 1 | 0 | 0 | 0 | – | R | 1 | _ | – | 3 | 0 |

**Type**
ZST = Rack

**Module**
200 = 2 mm
300 = 3 mm
400 = 4 mm
500 = 5 mm
600 = 6 mm
800 = 8 mm

**Feed force**
4 = Level 4
3 = Level 3
2 = Level 2
1 = Level 1

**Positioning accuracy**
4 = Level 4
3 = Level 3
2 = Level 2
1 = Level 1

**Smooth operation**
4 = Level 4
3 = Level 3
2 = Level 2
1 = Level 1

**Length [mm]**
500**
1000
2000

**Flank direction**

**Helix angle 19.5283°**

**Screw length [mm] INIRA® clamping***

**Bolt pattern**
_ = 125 mm
1 = 62.5 mm
3 = 62.5 mm (INIRA® pinning / adjusting)
4 = 125 mm (INIRA® pinning / adjusting)
5 = 125 mm (module 4 mm, M10 screw)
C = 62.5 mm (INIRA® clamping / pinning / adjusting)
D = 125 mm (INIRA® clamping / pinning / adjusting)

* Please refer to page 134 for an overview of available screw lengths

** Module 4, 493 mm

## Pinion

| R | M | F | 2 | 0 | 0 | – | 4 | 4 | 3 | – | 4 | 0 | L | 1 | – | 0 | 6 | 3 | – | 12x M6 |

**Module**
200 = 2 mm
300 = 3 mm
400 = 4 mm
500 = 5 mm
600 = 6 mm
800 = 8 mm

**Feed force**
4 = Level 4
3 = Level 3
2 = Level 2

**Flank direction**

**Helix angle 19.5283°**

**Positioning accuracy**
4 = Level 4
3 = Level 3
2 = Level 2

**hole pattern (RMF)**

**Interface diameter [mm]**

**Product type**
RMS = pinion mounted on splined shaft
RMF = pinion mounted on flange
RMW = pinion mounted on welding interface

**Smooth operation**
4 = Level 4
3 = Level 3
2 = Level 2

**Number of teeth**

# Advanced Linear System ALS 2 with SP+

Planetary gearbox SP+ 060R MF with rack module 2 and pinion RMS module 2

| System | Max. feed force [1] $F_{2T}$ | | 2230 N | |
|---|---|---|---|---|
| | Max. feed speed [2] $v_{max}$ | | 250 m/min | 53 m/min |
| Gearbox | No. of stages | | 1 | 2 |
| | Ratios $i$ | | 3 / 4 / 5 / 7 / 8 / 10 | 16 / 20 / 25 / 28 / 32 / 35 / 40 / 50 / 64 / 70 / 100 |
| | Clamping hub diameter | | 11 / 14 / 19 mm | 11 / 14 mm |
| | Designation | | SP 060R-MF1-_ _ _-2_ _ | SP 060R-MF2-_ _ _-2_ _ |
| Pinion | Module $m$ | | 2 mm | |
| | Number of teeth $z$ | | 15 | |
| | Pitch circle diameter $d$ | | 31.831 mm | |
| | Profile correction factor $x$ | | 0.5 | |
| | Helix angle $ß$ | | -19.5283° (left-handed) | |
| | Designation | | RMS 200-323-15L1-016 | |
| Rack | Module $m$ | | 2 mm | |
| | Length L (options) | | 1000 mm (2000 mm; 500 mm) | |
| | Helix angle $ß$ | | 19.5283° (right-handed) | |
| | Designation | | ZST 200-332-1000-R1; optionally with INIRA® | |
| Lubrication system [3] | Set consisting of lubrication pinion and axis for | Rack | LMT 200-PU -18L1-024-1 | |
| | | Pinion | LMT 200-PU -18R1-024-1 | |
| | Lubricator | 125 cm³ | LUC+125-0511-02 | |
| | | 400 cm³ | LUC+400-0511-02 | |
| | Lubricant | | WITTENSTEIN alpha G11 | |

[1] Maximum feed force depending on ratio and number of stages
[2] Calculation with lowest ratio and maximum input speed
[3] Impulse-controlled basic version with one output and 2 m hose. See page 118 for further information on the lubrication system.
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com

## Alternative system solutions

| Pinion | | | Axis distance | SP+ 060R | PBG 1 | SK+ 060S | SPC+ 060S | Rack* |
|---|---|---|---|---|---|---|---|---|
| Designation | $d$ [mm] | $x$ [ ] | $A$ [mm] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | Designation |
| RMK 200-222-18L1-016-019 | 38.197 | 0.4 | 41.899 | 2210 | 2210 | 1870 | 2210 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMS 200-323-15L1-016 | 31.831 | 0.5 | 38.916 | 2230 | 2230 | 2180 | 2230 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMS 200-323-16L1-016 | 33.953 | 0.5 | 39.977 | 2230 | 2230 | 2080 | 2230 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMS 200-323-18L1-016 | 38.197 | 0.4 | 41.899 | 2210 | 2210 | 1870 | 2210 | ZST 200-332-1000-R1; optionally with INIRA® |

$d$ = Pitch circle diameter
$x$ = Addendum modification coefficient
$A$ = Distance between pinion axle and rear surface of rack
$F_{2T}$ = Maximum feed force depending on ratio and number of stages
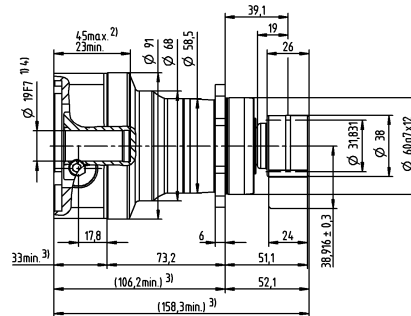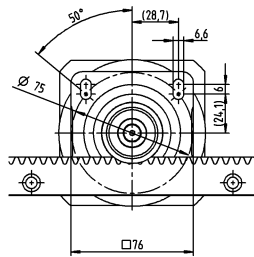Application-specific dimensioning with cymex® – www.wittenstein-cymex.com
* Other length options available

# 1-stage

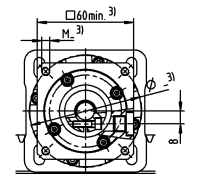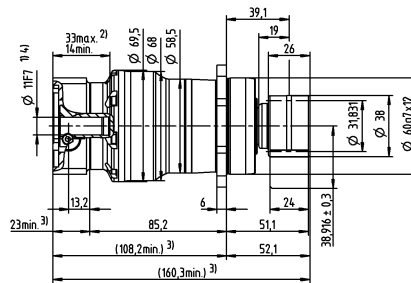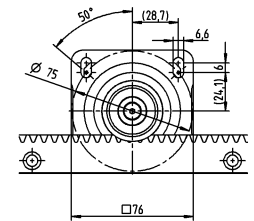**greater than 11 (B) up to 14 [4] (C) clamping hub diameters**



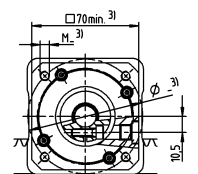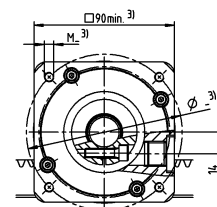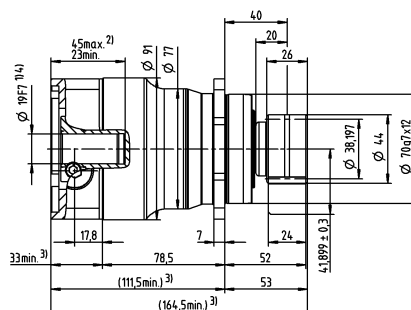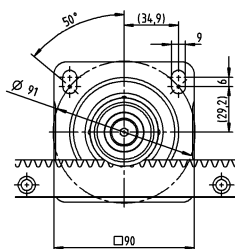**up to 19 [4] (E) clamping hub diameters**



# 2-stage

**up to 11 [4] (B) clamping hub diameters**



**up to 14 [4] (C) clamping hub diameters**



Motor shaft diameter [mm]

Non-tolerated dimensions are nominal dimensions
[1] Check motor shaft fit
[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
[3] The dimensions depend on the motor
[4] Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm

Advanced Linear Systems

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Planetary gearbox SP⁺ 075R MF with rack module 2 and pinion RMS module 2

| System | Max. feed force [1] $F_{2T}$ | 3250 N | |
|---|---|---|---|
| | Max. feed speed [2] $v_{max}$ | 300 m/min | 64 m/min |
| Gearbox | No. of stages | 1 | 2 |
| | Ratios $i$ | 3 / 4 / 5 / 7 / 8 / 10 | 16 / 20 / 25 / 28 / 32 / 35 / 40 / 50 / 64 / 70 / 100 |
| | Clamping hub diameter | 14 / 19 / 24 mm | 11 / 14 / 19 mm |
| | Designation | SP 075R-MF1-_ _ _-2_ _ | SP 075R-MF2-_ _ _-2_ _ |
| Pinion | Module $m$ | 2 mm | |
| | Number of teeth $z$ | 18 | |
| | Pitch circle diameter $d$ | 38.197 mm | |
| | Profile correction factor $x$ | 0.4 | |
| | Helix angle $ß$ | -19.5283° (left-handed) | |
| | Designation | RMS 200-323-18L1-022 | |
| Rack | Module $m$ | 2 mm | |
| | Length L (options) | 1000 mm (2000 mm; 500 mm) | |
| | Helix angle $ß$ | 19.5283° (right-handed) | |
| | Designation | ZST 200-332-1000-R1; optionally with INIRA® | |
| Lubrication system [3] | Set consisting of lubrication pinion and axis for / Rack | LMT 200-PU -18L1-024-1 | |
| | Set consisting of lubrication pinion and axis for / Pinion | LMT 200-PU -18R1-024-1 | |
| | Lubricator / 125 cm³ | LUC+125-0511-02 | |
| | Lubricator / 400 cm³ | LUC+400-0511-02 | |
| | Lubricant | WITTENSTEIN alpha G11 | |

[1] Maximum feed force depending on ratio and number of stages
[2] Calculation with lowest ratio and maximum input speed
[3] Impulse-controlled basic version with one output and 2 m hose. See page 118 for further information on the lubrication system.
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com

## Alternative system solutions

| Pinion | | | Axis distance | SP⁺ 075R | PBG 2 | SK⁺ 075S | SPC⁺ 075S | SPK⁺ 075S | Rack* |
|---|---|---|---|---|---|---|---|---|---|
| Designation | $d$ [mm] | $x$ [ ] | $A$ [mm] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | Designation |
| RMK 200-222-22L1-022-020 | 46.686 | 0.2 | 45.743 | 3230 | 3230 | 3380 | 3230 | 3250 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMS 200-323-18L1-022 | 38.197 | 0.4 | 41.899 | 3250 | 3250 | 3390 | 3250 | 3280 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMS 200-323-20L1-022 | 42.441 | 0.4 | 44.021 | 3240 | 3240 | 3400 | 3250 | 3280 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMS 200-323-22L1-022 | 46.686 | 0.4 | 46.143 | 3230 | 3230 | 3380 | 3230 | 3250 | ZST 200-332-1000-R1; optionally with INIRA® |

$d$ = Pitch circle diameter
$x$ = Addendum modification coefficient
$A$ = Distance between pinion axle and rear surface of rack
$F_{2T}$ = Maximum feed force depending on ratio and number of stages
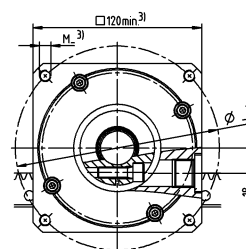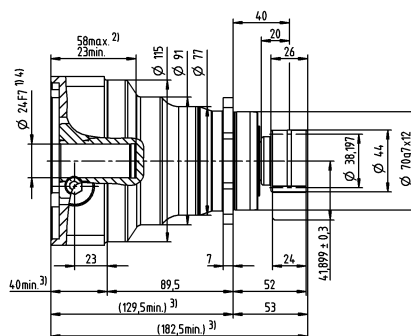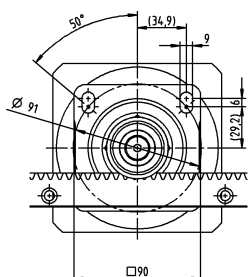Application-specific dimensioning with cymex® – www.wittenstein-cymex.com
* Other length options available

# 1-stage

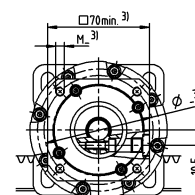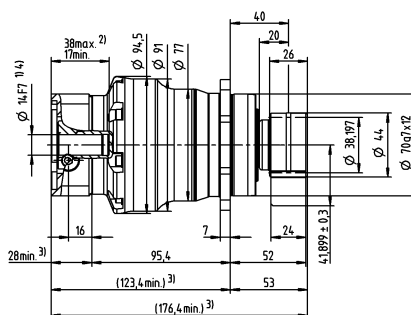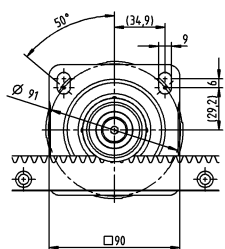**greater than 14 (C) up to 19 [4] (E) clamping hub diameters**
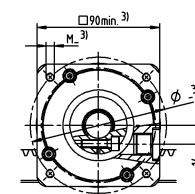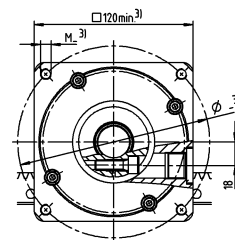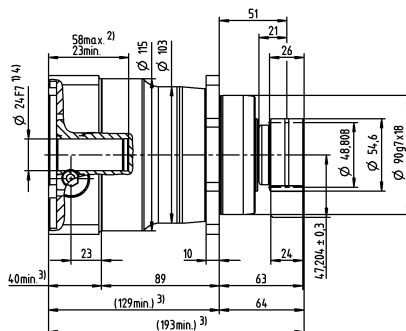


**up to 24 [4] (G) clamping hub diameters**



# 2-stage

**greater than 11 (B) up to 14 [4] (C) clamping hub diameters**



**up to 19 [4] (E) clamping hub diameters**



Motor shaft diameter [mm]

Non-tolerated dimensions are nominal dimensions
Detailed rack dimensions starting on page 161
[1] Check motor shaft fit
[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
[3] The dimensions depend on the motor
[4] Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm

# Advanced Linear System ALS 6 with SP⁺

Planetary gearbox SP⁺ 100R MF with rack module 2 and pinion RMS module 2

| System | Max. feed force [1] $F_{2T}$ | 6040 N | |
|---|---|---|---|
| | Max. feed speed [2] $v_{max}$ | 281 m/min | 62 m/min |
| Gearbox | No. of stages | 1 | 2 |
| | Ratios $i$ | 3 / 4 / 5 / 7 / 8 / 10 | 16 / 20 / 25 / 28 / 32 / 35 / 40 / 50 / 64 / 70 / 100 |
| | Clamping hub diameter | 19 / 24 / 28 / 38 mm | 14 / 19 / 24 / 28 mm |
| | Designation | SP 100R-MF1-_ _ _-2_ _ | SP 100R-MF2-_ _ _-2_ _ |
| Pinion | Module $m$ | 2 mm | |
| | Number of teeth $z$ | 23 | |
| | Pitch circle diameter $d$ | 48.808 mm | |
| | Profile correction factor $x$ | 0.4 | |
| | Helix angle $ß$ | -19.5283° (left-handed) | |
| | Designation | RMS 200-323-23L1-032 | |
| Rack | Module $m$ | 2 mm | |
| | Length L (options) | 1000 mm (2000 mm; 500 mm) | |
| | Helix angle $ß$ | 19.5283° (right-handed) | |
| | Designation | ZST 200-332-1000-R1; optionally with INIRA® | |
| Lubrication system [3] | Set consisting of lubrication pinion and axis for — Rack | LMT 200-PU -18L1-024-1 | |
| | Pinion | LMT 200-PU -18R1-024-1 | |
| | Lubricator — 125 cm³ | LUC+125-0511-02 | |
| | 400 cm³ | LUC+400-0511-02 | |
| | Lubricant | WITTENSTEIN alpha G11 | |

[1] Maximum feed force depending on ratio and number of stages
[2] Calculation with lowest ratio and maximum input speed
[3] Impulse-controlled basic version with one output and 2 m hose. See page 118 for further information on the lubrication system.
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com

## Alternative system solutions

| Pinion | | | | Axis distance | SP⁺ 100R | PBG 3 | SK⁺ 100S | SPC⁺ 100S | SPK⁺ 100S | Rack* |
|---|---|---|---|---|---|---|---|---|---|---|
| Designation | $d$ [mm] | $x$ [ ] | | $A$ [mm] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | Designation |
| RMK 200-222-26L1-032-021 | 55.174 | 0 | | 49.587 | 6000 | 6000 | 5350 | 6000 | 6000 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMS 200-323-23L1-032 | 48.808 | 0.4 | | 47.204 | 6040 | 6040 | 5350 | 6040 | 6040 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMS 200-323-25L1-032 | 53.052 | 0.4 | | 49.326 | 6020 | 6020 | 5350 | 6020 | 6020 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMS 200-323-27L1-032 | 57.296 | 0.3 | | 51.248 | 6000 | 6000 | 5350 | 6000 | 6000 | ZST 200-332-1000-R1; optionally with INIRA® |

$d$ = Pitch circle diameter
$x$ = Addendum modification coefficient
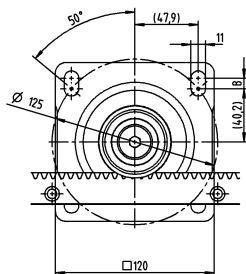$A$ = Distance between pinion axle and rear surface of rack
$F_{2T}$ = Maximum feed force depending on ratio and number of stages
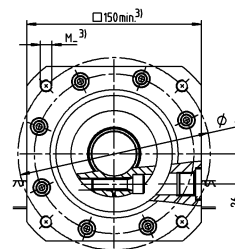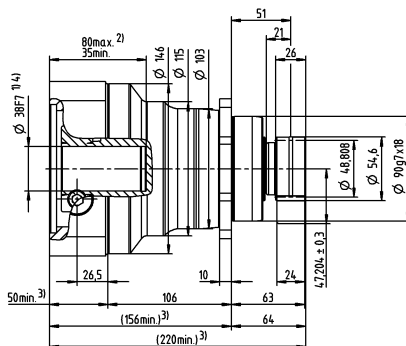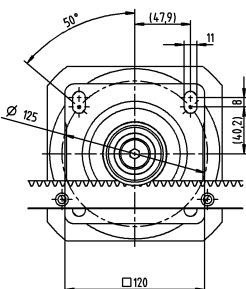Application-specific dimensioning with cymex® – www.wittenstein-cymex.com
* Other length options available

# 1-stage

**greater than 19 (E) up to 24/28 [4] (G/H) clamping hub diameters**
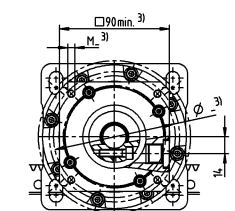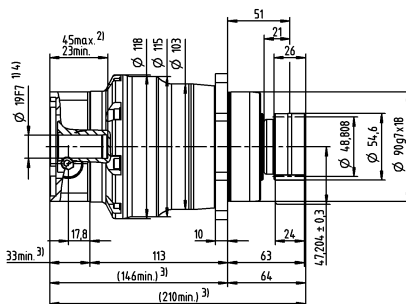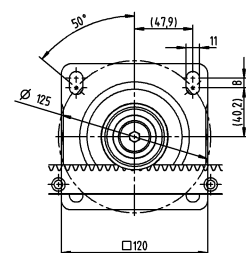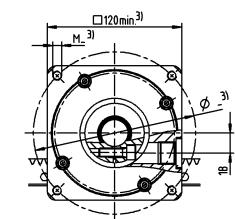


**up to 38 [4] (K) clamping hub diameters**



# 2-stage

**greater than 14 (C) up to 19 [4] (E) clamping hub diameters**



**up to 24/28 [4] (G/H) clamping hub diameters**



Motor shaft diameter [mm]

Non-tolerated dimensions are nominal dimensions
Detailed rack dimensions starting on page 161
[1] Check motor shaft fit
[2] Min./Max. permissible motor shaft length. Longer motor
   shafts are possible, please contact alpha.
[3] The dimensions depend on the motor
[4] Smaller motor shaft diameter is compensated by a
   bushing with a minimum thickness of 1 mm

# Advanced Linear System ALS 8 with SP⁺

Planetary gearbox SP⁺ 140R MF with rack module 3 and pinion RMS module 3

| System | Max. feed force [1] $F_{2T}$ | 8600 N | |
|---|---|---|---|
| | Max. feed speed [2] $v_{max}$ | 333 m/min | 75 m/min |
| Gearbox | No. of stages | 1 | 2 |
| | Ratios $i$ | 3 / 4 / 5 / 7 / 8 / 10 | 16 / 20 / 25 / 28 / 32 / 35 / 40 / 50 / 64 / 70 / 100 |
| | Clamping hub diameter | 24 / 32 / 38 / 48 mm | 19 / 24 / 38 mm |
| | Designation | SP 140R-MF1-_ _ _-2_ _ | SP 140R-MF2-_ _ _-2_ _ |
| Pinion | Module $m$ | 3 mm | |
| | Number of teeth $z$ | 20 | |
| | Pitch circle diameter $d$ | 63.662 mm | |
| | Profile correction factor $x$ | 0.4 | |
| | Helix angle $\beta$ | -19.5283° (left-handed) | |
| | Designation | RMS 300-323-20L1-040 | |
| Rack | Module $m$ | 3 mm | |
| | Length L (options) | 1000 mm (2000 mm; 500 mm) | |
| | Helix angle $\beta$ | 19.5283° (right-handed) | |
| | Designation | ZST 300-332-1000-R1; optionally with INIRA® | |
| Lubrication system [3] | Set consisting of lubrication pinion and axis for — Rack | LMT 300-PU -18L1-030-1 | |
| | — Pinion | LMT 300-PU -18R1-030-1 | |
| | Lubricator — 125 cm³ | LUC+125-0511-02 | |
| | — 400 cm³ | LUC+400-0511-02 | |
| | Lubricant | WITTENSTEIN alpha G11 | |

[1] Maximum feed force depending on ratio and number of stages
[2] Calculation with lowest ratio and maximum input speed
[3] Impulse-controlled basic version with one output and 2 m hose. See page 118 for further information on the lubrication system.
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com

## Alternative system solutions

| Pinion | | | Axis distance | SP⁺ 140R | SK⁺ 140S | SPC⁺ 140S | SPK⁺ 140S | Rack* |
|---|---|---|---|---|---|---|---|---|
| Designation | $d$ [mm] | $x$ [ ] | $A$ [mm] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | Designation |
| RMK 300-222-24L1-040-035 | 76.394 | 0 | 64.197 | 8550 | 8340 | 8550 | 8520 | ZST 300-332-1000-R1; optionally with INIRA® |
| RMS 300-323-20L1-040 | 63.662 | 0.4 | 59.031 | 8600 | 8380 | 8600 | 8600 | ZST 300-332-1000-R1; optionally with INIRA® |
| RMS 300-323-22L1-040 | 70.028 | 0.4 | 62.214 | 8590 | 8360 | 8590 | 8540 | ZST 300-332-1000-R1; optionally with INIRA® |
| RMS 300-323-24L1-040 | 76.394 | 0.4 | 65.397 | 8550 | 8340 | 8550 | 8520 | ZST 300-332-1000-R1; optionally with INIRA® |

$d$ = Pitch circle diameter
$x$ = Addendum modification coefficient
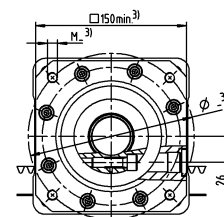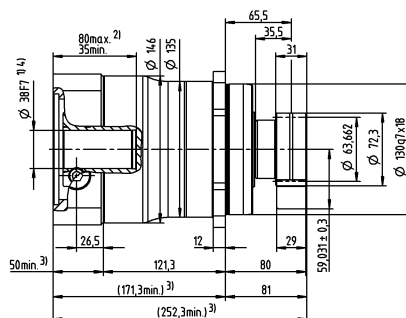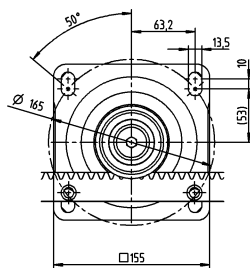$A$ = Distance between pinion axle and rear surface of rack
$F_{2T}$ = Maximum feed force depending on ratio and number of stages
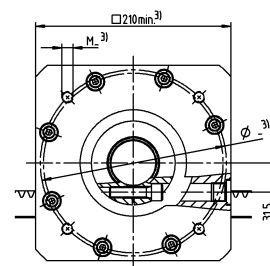Application-specific dimensioning with cymex® – www.wittenstein-cymex.com
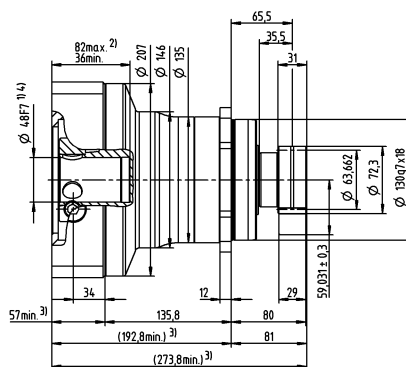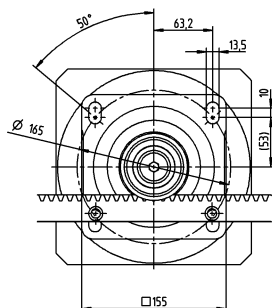* Other length options available

# 1-stage

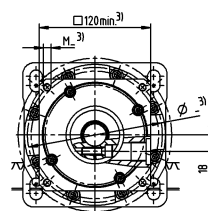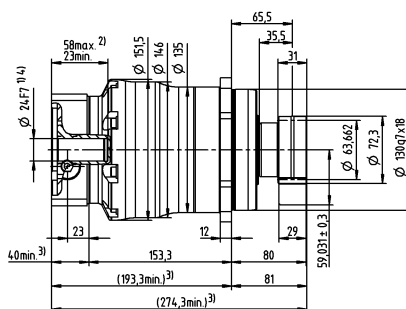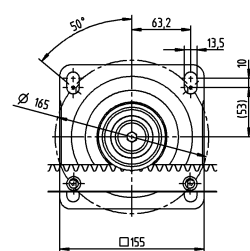**greater than 24 (G) up to 32/38 [4] (I/K) clamping hub diameters**
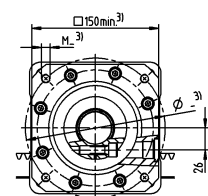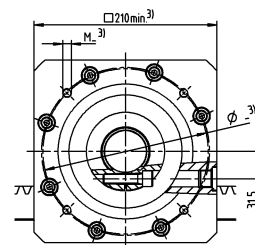
**up to 48 [4] (M) clamping hub diameters**

# 2-stage

**greater than 19 (E) up to 24 [4] (G) clamping hub diameters**

**up to 38 [4] (K) clamping hub diameters**

Motor shaft diameter [mm]



Non-tolerated dimensions are nominal dimensions
Detailed rack dimensions starting on page 161
[1] Check motor shaft fit
[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
[3] The dimensions depend on the motor
[4] Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm

# Advanced Linear System ALS 12 with SP⁺

Planetary gearbox SP⁺ 180 MF with rack module 4 and pinion RMS module 4

| System | Max. feed force [1] $F_{2T}$ | 12500 N | |
|---|---|---|---|
| | Max. feed speed [2] $v_{max}$ | 400 m/min | 83 m/min |
| **Gearbox** | No. of stages | 1 | 2 |
| | Ratios $i$ | 3 / 4 / 5 / 7 / 8 / 10 | 16 / 20 / 25 / 28 / 32 / 35 / 40 / 50 / 64 / 70 / 100 |
| | Clamping hub diameter | 38 / 48 / 55 mm | 24 / 32 / 38 / 48 mm |
| | Designation | SP 180S-MF1-_ _ _-2_ _ | SP 180S-MF2-_ _ _-2_ _ |
| **Pinion** | Module $m$ | 4 mm | |
| | Number of teeth $z$ | 20 | |
| | Pitch circle diameter $d$ | 84.883 mm | |
| | Profile correction factor $x$ | 0.4 | |
| | Helix angle $\beta$ | -19.5283° (left-handed) | |
| | Designation | RMS 400-323-20L1-055 | |
| **Rack** | Module $m$ | 4 mm | |
| | Length L (options) | 1000 mm (2000 mm, 493 mm) | |
| | Helix angle $\beta$ | 19.5283° (right-handed) | |
| | Designation | ZST 400-332-1000-R1; optionally with INIRA® | |
| **Lubrication system [3]** | Set consisting of lubrication pinion and axis for — Rack | LMT 400-PU -18L1-040-1 | |
| | Pinion | LMT 400-PU -18R1-040-1 | |
| | Lubricator — 125 cm³ | LUC+125-0511-02 | |
| | 400 cm³ | LUC+400-0511-02 | |
| | Lubricant | WITTENSTEIN alpha G11 | |

[1] Maximum feed force depending on ratio and number of stages
[2] Calculation with lowest ratio and maximum input speed
[3] Impulse-controlled basic version with one output and 2 m hose. See page 118 for further information on the lubrication system.
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com

## Alternative system solutions

| Pinion | | | Axis distance | SP⁺ 180S | SK⁺ 180S | SPC⁺ 180S | SPK⁺ 180S | Rack* |
|---|---|---|---|---|---|---|---|---|
| Designation | $d$ [mm] | $x$ [ ] | $A$ [mm] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | Designation |
| RMS 400-323-20L1-055 | 84.883 | 0.4 | 79.041 | 12500 | 13100 | 12500 | 12500 | ZST 400-332-1000-R1; optionally with INIRA® |

$d$ = Pitch circle diameter
$x$ = Addendum modification coefficient
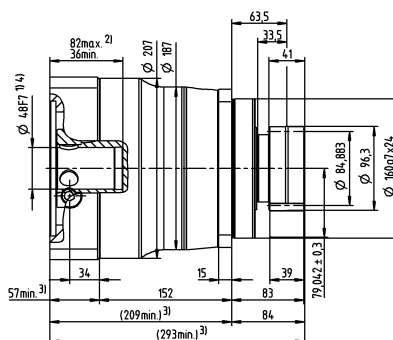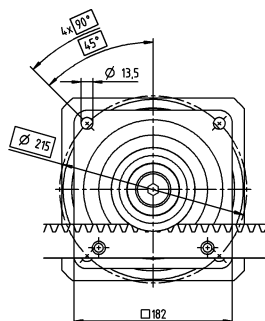$A$ = Distance between pinion axle and rear surface of rack
$F_{2T}$ = Maximum feed force depending on ratio and number of stages
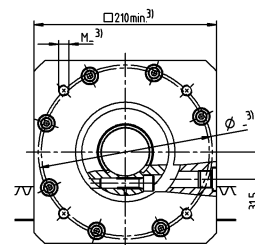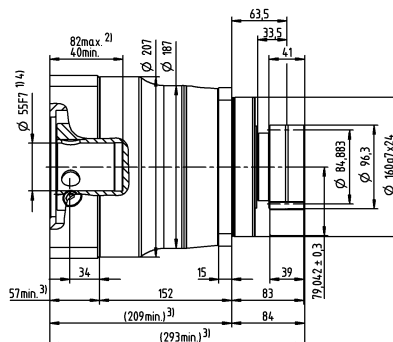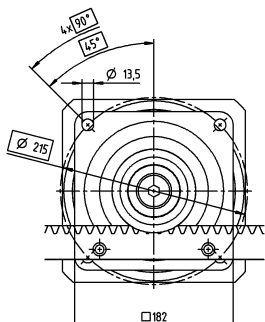Application-specific dimensioning with cymex® – www.wittenstein-cymex.com
* Other length options available

# 1-stage

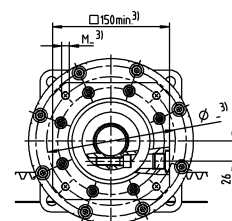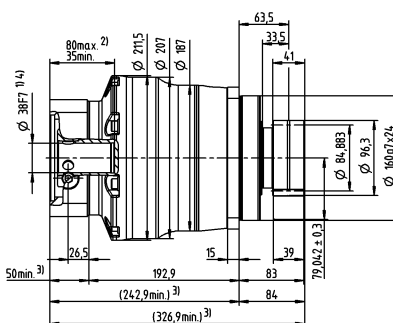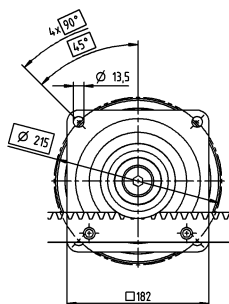**greater than 38 (K) up to 48 [4] (M) clamping hub diameters**
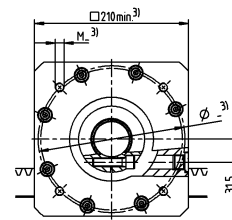


**up to 55 [4] (N) clamping hub diameters**



# 2-stage

**greater than 24 (G) up to 32/38 [4] (I/K) clamping hub diameters**



**up to 48 [4] (M) clamping hub diameters**



Motor shaft diameter [mm]

# Advanced Linear System ALS 1 with TP⁺

Planetary gearbox TP⁺ 004 MF with rack module 2 and pinion RMF module 2

| System | Max. feed force [1] $F_{2T}$ | 1370 N | |
|---|---|---|---|
| | Max. feed speed [2] $v_{max}$ | 325 m/min | 81 m/min |
| Gearbox | No. of stages | 1 | 2 |
| | Ratios $i$ | 4 / 5 / 7 / 8 / 10 | 16 / 20 / 21 / 25 / 28 / 31 / 32 / 35 / 40 / 50 / 61 / 64 / 70 / 91 / 100 |
| | Clamping hub diameter | 11 / 14 / 19 mm | 11 / 14 mm |
| | Designation | TP 004S-MF1-_ _ _-0_ _ | TP 004S-MF2-_ _ _-0_ _ |
| Pinion | Module $m$ | 2 mm | |
| | Number of teeth $z$ | 26 | |
| | Pitch circle diameter $d$ | 55.174 mm | |
| | Profile correction factor $x$ | 0.4 | |
| | Helix angle $\beta$ | -19.5283° (left-handed) | |
| | Designation | RMF 200-443-26L1-031-8xM5 | |
| Rack | Module $m$ | 2 mm | |
| | Length L (options) | 1000 mm (2000 mm; 500 mm) | |
| | Helix angle $\beta$ | 19.5283° (right-handed) | |
| | Designation | ZST 200-332-1000-R1; optionally with INIRA® | |
| Lubrication system [3] | Set consisting of lubrication pinion and axis for | Rack | LMT 200-PU -18L1-024-1 |
| | | Pinion | LMT 200-PU -18R1-024-1 |
| | Lubricator | 125 cm³ | LUC+125-0511-02 |
| | | 400 cm³ | LUC+400-0511-02 |
| | Lubricant | | WITTENSTEIN alpha G11 |

[1] Maximum feed force depending on ratio and number of stages
[2] Calculation with lowest ratio and maximum input speed
[3] Impulse-controlled basic version with one output and 2 m hose. See page 118 for further information on the lubrication system.
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com

## Alternative system solutions

| Pinion | | | Axis distance | TP⁺ 004S | PAG 1 | TK⁺ 004S | TPC⁺ 004S | Rack* |
|---|---|---|---|---|---|---|---|---|
| Designation | $d$ [mm] | $x$ [ ] | $A$ [mm] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | Designation |
| RMF 200-443-26L1-031-8xM5 | 55.174 | 0.4 | 50.387 | 1370 | 1370 | 1300 | 1370 | ZST 200-332-1000-R1; optionally with INIRA® |

$d$ = Pitch circle diameter
$x$ = Addendum modification coefficient
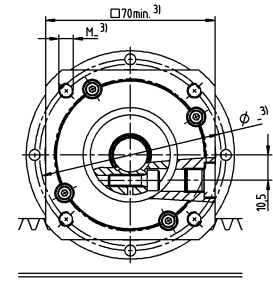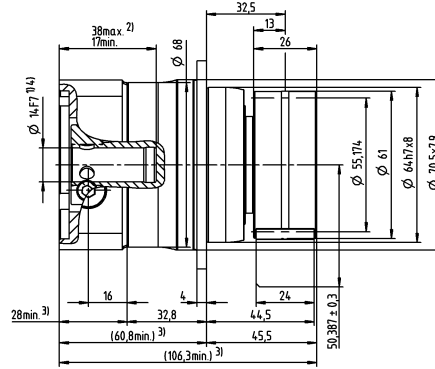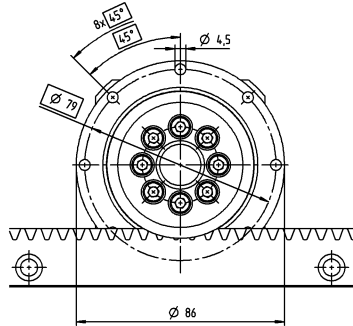$A$ = Distance between pinion axle and rear surface of rack
$F_{2T}$ = Maximum feed force depending on ratio and number of stages
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com
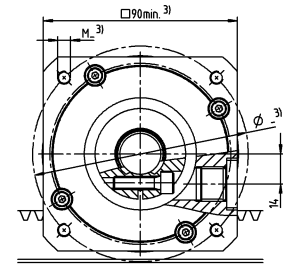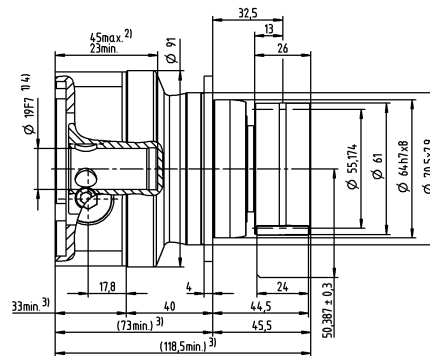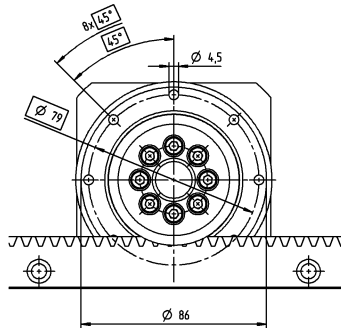* Other length options available

# 1-stage

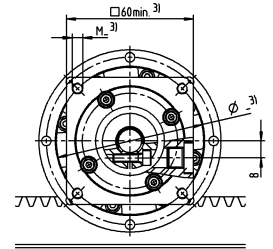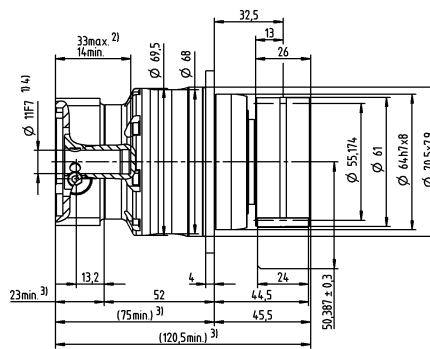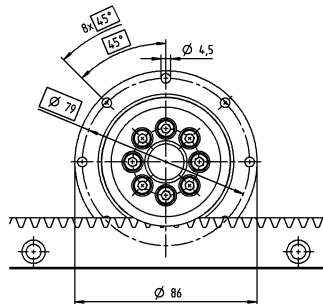**greater than 11 (B) up to 14 [4] (C) clamping hub diameters**

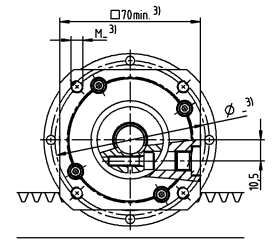

**up to 19 [4] (E) clamping hub diameters**



# 2-stage

**up to 11 [4] (B) clamping hub diameters**



**up to 14 [4] (C) clamping hub diameters**



Motor shaft diameter [mm]

Non-tolerated dimensions are nominal dimensions
Detailed rack dimensions starting on page 161
[1] Check motor shaft fit
[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
[3] The dimensions depend on the motor
[4] Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm

Advanced Linear Systems

# Advanced Linear System ALS 2 with TP⁺

Planetary gearbox TP⁺ 010 MF with rack module 2 and pinion RMF module 2

| System | Max. feed force [1] $F_{2T}$ | 2500 N | |
|---|---|---|---|
| | Max. feed speed [2] $v_{max}$ | 412 m/min | 103 m/min |
| Gearbox | No. of stages | 1 | 2 |
| | Ratios $i$ | 4 / 5 / 7 / 8 / 10 | 16 / 20 / 21 / 25 / 28 / 31 / 32 / 35 / 40 / 50 / 61 / 64 / 70 / 91 / 100 |
| | Clamping hub diameter | 14 / 19 / 24 mm | 11 / 14 / 19 mm |
| | Designation | TP 010S-MF1-_ _ _-0_ _ | TP 010S-MF2-_ _ _-0_ _ |
| Pinion | Module $m$ | 2 mm | |
| | Number of teeth $z$ | 33 | |
| | Pitch circle diameter $d$ | 70.028 mm | |
| | Profile correction factor $x$ | 0.3 | |
| | Helix angle $ß$ | -19.5283° (left-handed) | |
| | Designation | RMF 200-443-33L1-050-8xM6 | |
| Rack | Module $m$ | 2 mm | |
| | Length L (options) | 1000 mm (2000 mm; 500 mm) | |
| | Helix angle $ß$ | 19.5283° (right-handed) | |
| | Designation | ZST 200-332-1000-R1; optionally with INIRA® | |
| Lubrication system [3] | Set consisting of lubrication pinion and axis for | Rack | LMT 200-PU -18L1-024-1 |
| | | Pinion | LMT 200-PU -18R1-024-1 |
| | Lubricator | 125 cm³ | LUC+125-0511-02 |
| | | 400 cm³ | LUC+400-0511-02 |
| | Lubricant | | WITTENSTEIN alpha G11 |

[1] Maximum feed force depending on ratio and number of stages
[2] Calculation with lowest ratio and maximum input speed
[3] Impulse-controlled basic version with one output and 2 m hose. See page 118 for further information on the lubrication system.
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com

## Alternative system solutions

| Pinion | | | Axis distance | TP⁺ 010S | PAG 2 | TK⁺ 010S | TPK⁺ 010S | TPC⁺ 010S | Rack* |
|---|---|---|---|---|---|---|---|---|---|
| Designation | $d$ [mm] | $x$ [] | $A$ [mm] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | Designation |
| RMF 200-443-29L1-050-8xM6 | 61.540 | 0.3 | 53.370 | 2290 | 2290 | 3030 | 2290 | 2290 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMF 200-443-33L1-050-8xM6 | 70.028 | 0.3 | 57.614 | 2500 | 2500 | 2380 | 2500 | 2500 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMF 200-443-37L1-050-8xM6 | 78.517 | 0.3 | 61.858 | 2470 | 2470 | 2120 | 2470 | 2470 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMW 200-444-20L1-037 | 42.441 | 0.4 | 44.021 | 2280 | 2280 | – | 2280 | 2280 | ZST 200-332-1000-R1; optionally with INIRA® |

$d$ = Pitch circle diameter
$x$ = Addendum modification coefficient
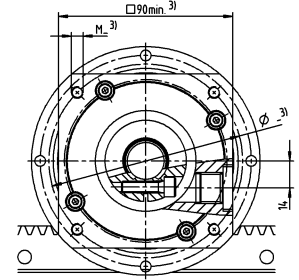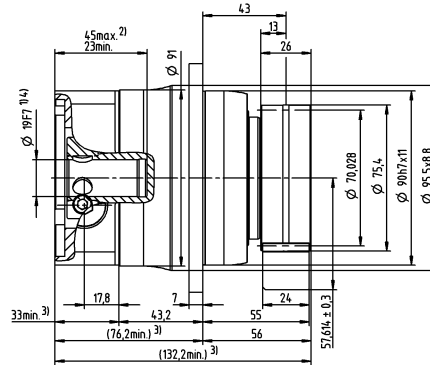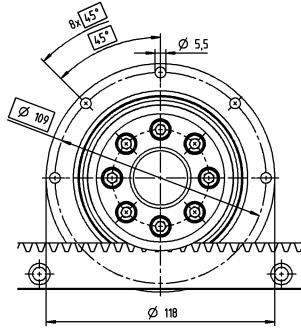$A$ = Distance between pinion axle and rear surface of rack
$F_{2T}$ = Maximum feed force depending on ratio and number of stages
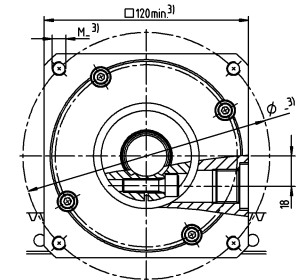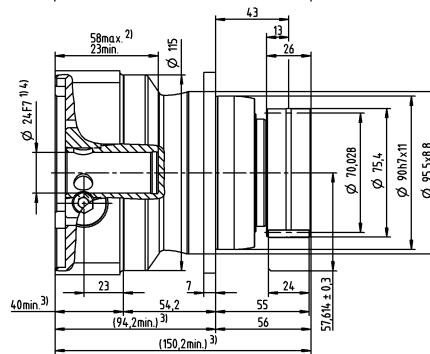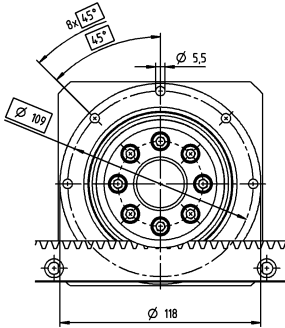Application-specific dimensioning with cymex® – www.wittenstein-cymex.com
* Other length options available

# 1-stage

Motor shaft diameter [mm]
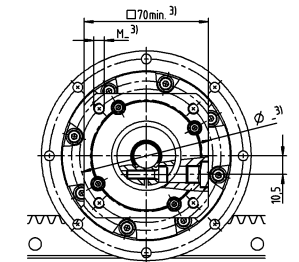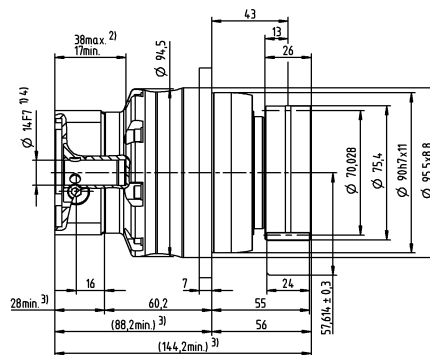
**greater than 14 (C) up to 19 [4] (E) clamping hub diameters**
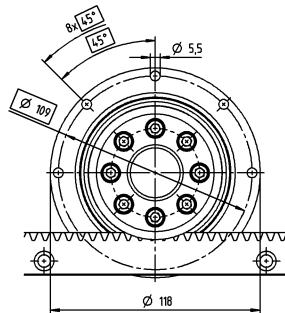


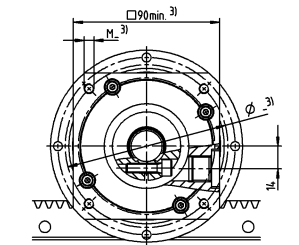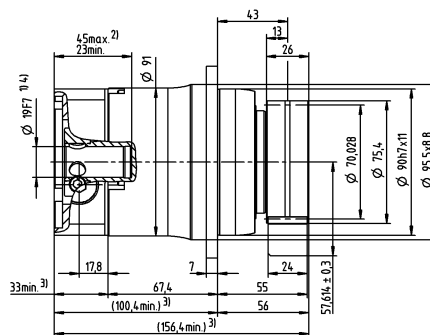**up to 24 [4] (G) clamping hub diameters**
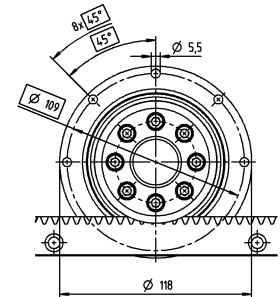


# 2-stage

**greater than 11 (B) up to 14 [4] (C) clamping hub diameters**



**up to 19 [4] (E) clamping hub diameters**



Non-tolerated dimensions are nominal dimensions
Detailed rack dimensions starting on page 161
[1] Check motor shaft fit
[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
[3] The dimensions depend on the motor
[4] Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm

Advanced Linear Systems

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Planetary gearbox TP⁺ 025 MF with rack module 2 and pinion RMF module 2

| System | Max. feed force [1] $F_{2T}$ | 3600 N | |
|---|---|---|---|
| | Max. feed speed [2] $v_{max}$ | 367 m/min | 125 m/min |
| Gearbox | No. of stages | 1 | 2 |
| | Ratios $i$ | 4 / 5 / 7 / 8 / 10 | 16 / 20 / 21 / 25 / 28 / 31 / 32 / 35 / 40 / 50 / 61 / 64 / 70 / 91 / 100 |
| | Clamping hub diameter | 19 / 24 / 28 / 38 mm | 14 / 19 / 24 mm |
| | Designation | TP 025S-MF1-_ _ _-0_ _ | TP 025S-MF2-_ _ _-0_ _ |
| Pinion | Module $m$ | 2 mm | |
| | Number of teeth $z$ | 40 | |
| | Pitch circle diameter $d$ | 84.883 mm | |
| | Profile correction factor $x$ | 0.3 | |
| | Helix angle $ß$ | -19.5283° (left-handed) | |
| | Designation | RMF 200-443-40L1-063-12xM6 | |
| Rack | Module $m$ | 2 mm | |
| | Length L (options) | 1000 mm (2000 mm; 500 mm) | |
| | Helix angle $ß$ | 19.5283° (right-handed) | |
| | Designation | ZST 200-332-1000-R1; optionally with INIRA® | |
| Lubrication system [3] | Set consisting of lubrication pinion and axis for | Rack | LMT 200-PU -18L1-024-1 |
| | | Pinion | LMT 200-PU -18R1-024-1 |
| | Lubricator | 125 cm³ | LUC+125-0511-02 |
| | | 400 cm³ | LUC+400-0511-02 |
| | Lubricant | | WITTENSTEIN alpha G11 |

[1] Maximum feed force depending on ratio and number of stages
[2] Calculation with lowest ratio and maximum input speed
[3] Impulse-controlled basic version with one output and 2 m hose. See page 118 for further information on the lubrication system.
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com

## Alternative system solutions

| Pinion | | | Axis distance | TP⁺ 025S | PAG 3 | TK⁺ 025S | TPK⁺ 025S | TPC⁺ 025S | Rack* |
|---|---|---|---|---|---|---|---|---|---|
| Designation | $d$ [mm] | $x$ [ ] | $A$ [mm] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | Designation |
| RMF 200-443-35L1-063-12xM6 | 74.272 | 0.3 | 59.736 | 3330 | 3330 | 4300 | 3330 | 3330 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMF 200-443-40L1-063-12xM6 | 84.883 | 0.3 | 65.041 | 3600 | 3600 | 3990 | 3600 | 3600 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMF 200-443-45L1-063-12xM6 | 95.493 | 0.22 | 70.187 | 3580 | 3580 | 3540 | 3580 | 3580 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMW 200-444-20L1-037 | 42.441 | 0.4 | 44.021 | 3370 | 3370 | – | 3370 | 3370 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMW 300-444-20L1-055 | 63.662 | 0.4 | 59.031 | 3220 | 3220 | – | 3220 | 3220 | ZST 300-332-1000-R1; optionally with INIRA® |

$d$ = Pitch circle diameter
$x$ = Addendum modification coefficient
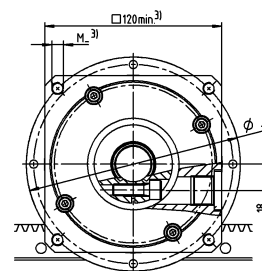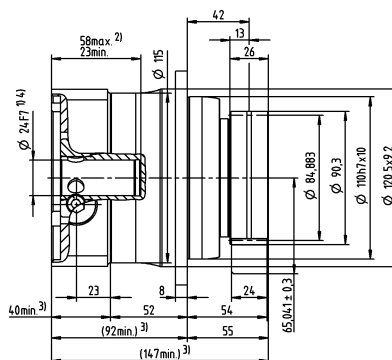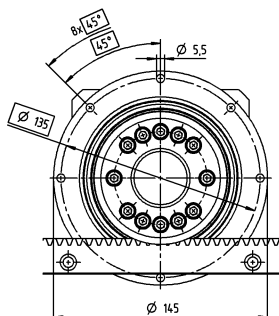$A$ = Distance between pinion axle and rear surface of rack
$F_{2T}$ = Maximum feed force depending on ratio and number of stages
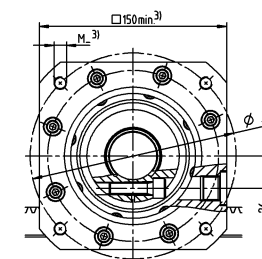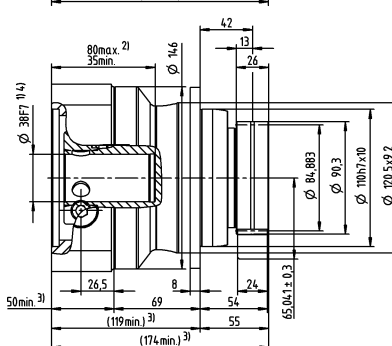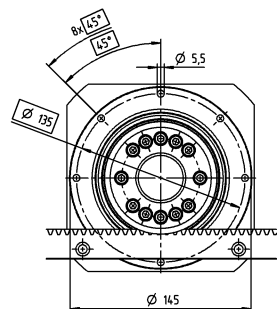Application-specific dimensioning with cymex® – www.wittenstein-cymex.com
* Other length options available

# 1-stage

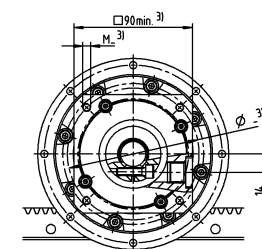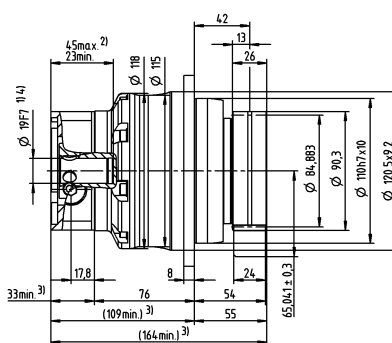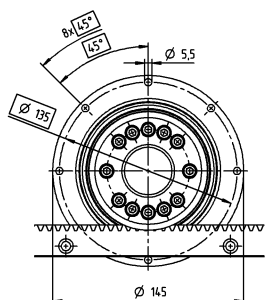**greater than 19 (E) up to 24/28 [4] (G/H) clamping hub diameters**

# 2-stage

**up to 38 [4] (K) clamping hub diameters**

**greater than 14 (C) up to 19 [4] (E) clamping hub diameters**

**up to 24/28 [4] (G/H) clamping hub diameters**

Motor shaft diameter [mm]

Non-tolerated dimensions are nominal dimensions
Detailed rack dimensions starting on page 161
[1] Check motor shaft fit
[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
[3] The dimensions depend on the motor
[4] Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm

# Advanced Linear System ALS 12 with TP⁺

Planetary gearbox TP⁺ 050 MF with rack module 3 and pinion RMF module 3

| System | Max. feed force [1] $F_{2T}$ | 11800 N | |
|---|---|---|---|
| | Max. feed speed [2] $v_{max}$ | 438 m/min | 137 m/min |
| Gearbox | No. of stages | 1 | 2 |
| | Ratios $i$ | 4 / 5 / 7 / 8 / 10 | 16 / 20 / 21 / 25 / 28 / 31 / 32 / 35 / 40 / 50 / 61 / 64 / 70 / 91 / 100 |
| | Clamping hub diameter | 24 / 32 / 38 / 48 mm | 19 / 24 / 38 mm |
| | Designation | TP 050S-MF1-_ _ _-0_ _ | TP 050S-MF2-_ _ _-0_ _ |
| Pinion | Module $m$ | 3 mm | |
| | Number of teeth $z$ | 35 | |
| | Pitch circle diameter $d$ | 111.409 mm | |
| | Profile correction factor $x$ | 0.3 | |
| | Helix angle $ß$ | -19.5283° (left-handed) | |
| | Designation | RMF 300-443-35L1-080-12xM8 | |
| Rack | Module $m$ | 3 | |
| | Length L (options) | 1000 mm (2000 mm; 500 mm) | |
| | Helix angle $ß$ | 19.5283° (right-handed) | |
| | Designation | ZST 300-332-1000-R1; optionally with INIRA® | |
| Lubrication system [3] | Set consisting of lubrication pinion and axis for | Rack | LMT 300-PU -18L1-030-1 |
| | | Pinion | LMT 300-PU -18R1-030-1 |
| | Lubricator | 125 cm³ | LUC+125-0511-02 |
| | | 400 cm³ | LUC+400-0511-02 |
| | Lubricant | | WITTENSTEIN alpha G11 |

[1] Maximum feed force depending on ratio and number of stages
[2] Calculation with lowest ratio and maximum input speed
[3] Impulse-controlled basic version with one output and 2 m hose. See page 118 for further information on the lubrication system.
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com

## Alternative system solutions

| Pinion | | | Axis distance | TP⁺ 050S | TK⁺ 050S | TPK⁺ 050S | TPC⁺ 050S | Rack* |
|---|---|---|---|---|---|---|---|---|
| Designation | $d$ [mm] | $x$ [] | $A$ [mm] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | Designation |
| RMF 300-443-31L1-080-12xM8 | 98.676 | 0.3 | 76.238 | 10600 | 7250 | 10600 | 10600 | ZST 300-332-1000-R1; optionally with INIRA® |
| RMF 300-443-35L1-080-12xM8 | 111.409 | 0.3 | 82.604 | 11800 | 6450 | 11800 | 11800 | ZST 300-332-1000-R1; optionally with INIRA® |
| RMF 300-443-40L1-080-12xM8 | 127.324 | 0.3 | 90.562 | 11100 | 5600 | 11100 | 10900 | ZST 300-332-1000-R1; optionally with INIRA® |
| RMW 300-444-20L1-055 | 63.662 | 0.4 | 59.031 | 10900 | – | 10900 | 10900 | ZST 300-332-1000-R1; optionally with INIRA® |
| RMW 400-444-20L1-073 | 84.882 | 0.2 | 78.241 | 10350 | – | 10350 | 10350 | ZST 400-332-1000-R1; optionally with INIRA® |

$d$ = Pitch circle diameter
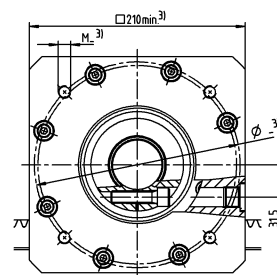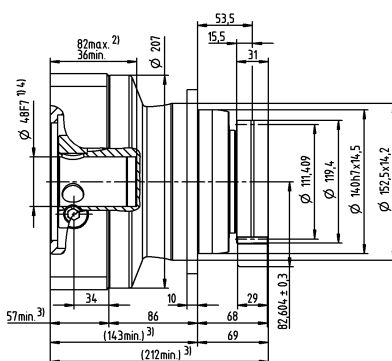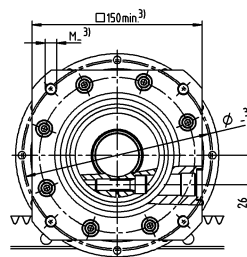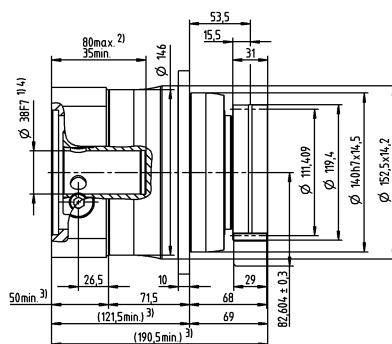$x$ = Addendum modification coefficient
$A$ = Distance between pinion axle and rear surface of rack
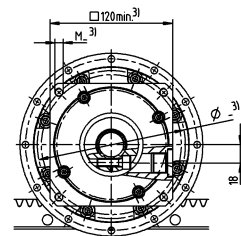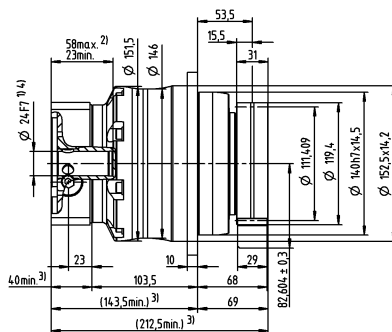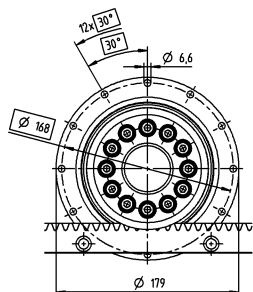$F_{2T}$ = Maximum feed force depending on ratio and number of stages
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com
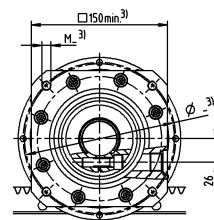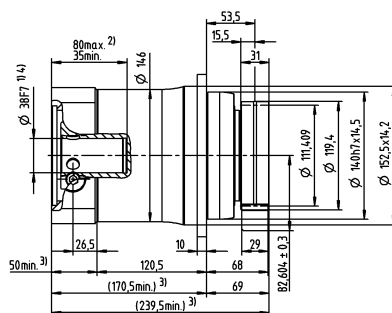* Other length options available

# 1-stage

greater than 24 (G)
up to 32/38 [4)] (I/K)
clamping hub
diameters



up to 48 [4)] (M)
clamping hub
diameters



# 2-stage

greater than 19 (E)
up to 24 [4)] (G)
clamping hub
diameters



up to 38 [4)] (K)
clamping hub
diameters



Motor shaft diameter [mm]

Non-tolerated dimensions are nominal dimensions
Detailed rack dimensions starting on page 161
[1)] Check motor shaft fit
[2)] Min./Max. permissible motor shaft length. Longer motor
    shafts are possible, please contact alpha.
[3)] The dimensions depend on the motor
[4)] Smaller motor shaft diameter is compensated by a
    bushing with a minimum thickness of 1 mm

Advanced Linear Systems

# Advanced Linear System ALS 20 with TP⁺

Planetary gearbox TP⁺ 110 MF with rack module 4 and pinion RMF module 4

| System | Max. feed force [1] $F_{2T}$ | 19700 N | |
|---|---|---|---|
| | Max. feed speed [2] $v_{max}$ | 570 m/min | 178 m/min |
| Gearbox | No. of stages | 1 | 2 |
| | Ratios $i$ | 4 / 5 / 7 / 8 / 10 | 16 / 20 / 21 / 25 / 28 / 31 / 32 / 35 / 40 / 50 / 61 / 64 / 70 / 91 / 100 |
| | Clamping hub diameter | 38 / 48 / 55 mm | 24 / 32 / 38 / 48 mm |
| | Designation | TP 110S-MF1-_ _ _-0_ _ | TP 110S-MF2-_ _ _-0_ _ |
| Pinion | Module $m$ | 4 mm | |
| | Number of teeth $z$ | 38 | |
| | Pitch circle diameter $d$ | 161.277 mm | |
| | Profile correction factor $x$ | 0.25 | |
| | Helix angle $ß$ | -19.5283° (left-handed) | |
| | Designation | RMF 400-443-38L1-125-12xM10 | |
| Rack | Module $m$ | 4 mm | |
| | Length L (options) | 1000 mm (2000 mm, 493 mm) | |
| | Helix angle $ß$ | 19.5283° (right-handed) | |
| | Designation | ZST 400-334-1000-R15; optionally with INIRA® | |
| Lubrication system [3] | Set consisting of lubrication pinion and axis for — Rack | LMT 400-PU -18L1-040-1 | |
| | Pinion | LMT 400-PU -18R1-040-1 | |
| | Lubricator — 125 cm³ | LUC+125-0511-02 | |
| | 400 cm³ | LUC+400-0511-02 | |
| | Lubricant | WITTENSTEIN alpha G11 | |

[1] Maximum feed force depending on ratio and number of stages
[2] Calculation with lowest ratio and maximum input speed
[3] Impulse-controlled basic version with one output and 2 m hose. See page 118 for further information on the lubrication system.
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com

## Alternative system solutions

| Pinion | | | Axis distance | TP⁺ 110S | TPK⁺ 110S | TPC⁺ 110S | Rack* |
|---|---|---|---|---|---|---|---|
| Designation | $d$ [mm] | $x$ [] | $A$ [mm] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | Designation |
| RMF 400-443-38L1-125-12xM10 | 161.277 | 0.25 | 116.639 | 19700 | 19700 | 19700 | ZST 400-332-1000-R15; optionally with INIRA® |
| RMW 400-444-20L1-073 | 84.882 | 0.2 | 78.241 | 21000 | 21000 | 21000 | ZST 400-332-1000-R15; optionally with INIRA® |
| RMW 500-444-19L1-089 | 100.798 | 0.4 | 86.399 | 20000 | 20000 | 20000 | ZST 500-332-1000-R1; optionally with INIRA® |

$d$ = Pitch circle diameter
$x$ = Addendum modification coefficient
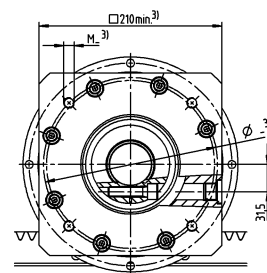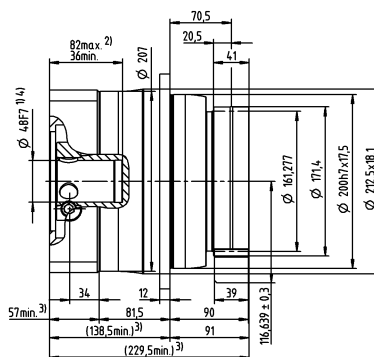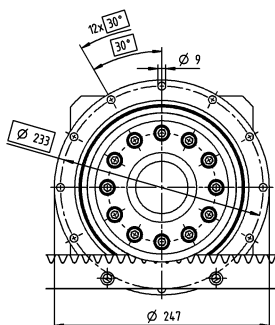$A$ = Distance between pinion axle and rear surface of rack
$F_{2T}$ = Maximum feed force depending on ratio and number of stages
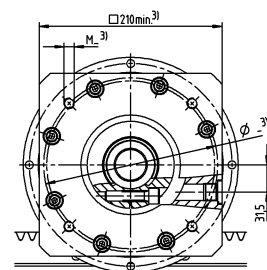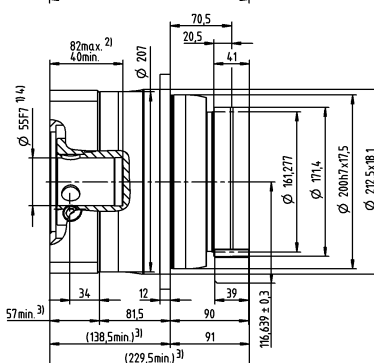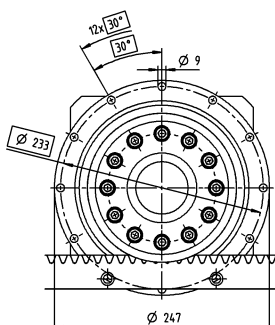Application-specific dimensioning with cymex® – www.wittenstein-cymex.com
* Other length options available

# 1-stage

greater than 38 (K)
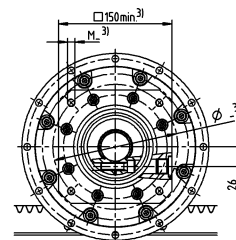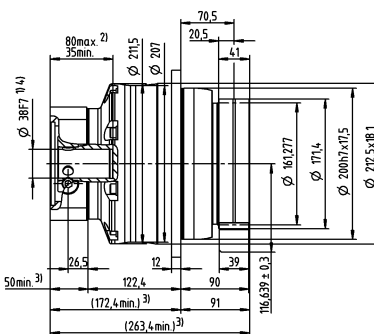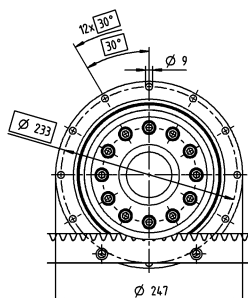up to 48 [4] (M)
clamping hub
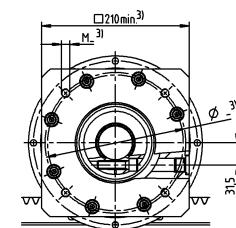diameters



up to 55 [4] (N)
clamping hub
diameters



# 2-stage

greater than 24 (G)
up to 32/38 [4] (I/K)
clamping hub
diameters



up to 48 [4] (M)
clamping hub
diameters



Motor shaft diameter [mm]

Advanced Linear
Systems

Non-tolerated dimensions are nominal dimensions
Detailed rack dimensions starting on page 161
[1] Check motor shaft fit
[2] Min./Max. permissible motor shaft length. Longer motor
    shafts are possible, please contact alpha.
[3] The dimensions depend on the motor
[4] Smaller motor shaft diameter is compensated by a
    bushing with a minimum thickness of 1 mm

# Advanced Linear System ALS 4 with TP⁺ MA

Planetary gearbox TP⁺ 025 MA with rack module 2 and pinion RMW module 2

| System | Max. feed force [1] $F_{2T}$ | 4200 N | |
|---|---|---|---|
| | Max. feed speed [2] $v_{max}$ | 45 m/min | 15 m/min |
| Gearbox | No. of stages | 2 | 3 |
| | Ratios $i$ | 22 / 27.5 / 38.5 / 55 | 66 / 88 / 110 / 154 / 220 |
| | Clamping hub diameter | 19 / 24 mm | 19 mm |
| | Designation | TP 025S-MA2-_ _ _-3_ _ | TP 025S-MA3-_ _ _-3_ _ |
| Pinion | Module $m$ | 2 mm | |
| | Number of teeth $z$ | 20 | |
| | Pitch circle diameter $d$ | 42.441 mm | |
| | Profile correction factor $x$ | 0.4 | |
| | Helix angle $ß$ | -19.5283° (left-handed) | |
| | Designation | RMW 200-444-20L1-037 | |
| Rack | Module $m$ | 2 mm | |
| | Length L (options) | 1000 mm (2000 mm; 500 mm) | |
| | Helix angle $ß$ | 19.5283° (right-handed) | |
| | Designation | ZST 200-332-1000-R1; optionally with INIRA® | |
| Lubrication system [3] | Set consisting of lubri-cation pinion and axis for — Rack | LMT 200-PU -18L1-024-1 | |
| | Pinion | LMT 200-PU -18R1-024-1 | |
| | Lubricator — 125 cm³ | LUC+125-0511-02 | |
| | 400 cm³ | LUC+400-0511-02 | |
| | Lubricant | WITTENSTEIN alpha G11 | |

[1] Maximum feed force depending on ratio and number of stages
[2] Calculation with lowest ratio and maximum input speed
[3] Impulse-controlled basic version with one output and 2 m hose. See page 118 for further information on the lubrication system.
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com

## Alternative system solutions

| Pinion | | | Axis distance | TP⁺ 025S HIGH TORQUE | TPM⁺ 025 HIGH TORQUE | TPK⁺ 025S HIGH TORQUE | Rack* |
|---|---|---|---|---|---|---|---|
| Designation | $d$ [mm] | $x$ [ ] | $A$ [mm] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | Designation |
| RMW 200-444-20L1-037 | 42.441 | 0.4 | 44.021 | 4200 | 4200 | 4200 | ZST 200-332-1000-R1; optionally with INIRA® |
| RMW 300-444-20L1-055 | 63.662 | 0.4 | 59.031 | 4050 | 4050 | 4050 | ZST 300-332-1000-R1; optionally with INIRA® |
| RMF 200-443-40L1-063-12xM8 | 84.883 | 0.3 | 65.041 | 4500 | 4500 | 4500 | ZST 200-332-1000-R1; optionally with INIRA® |

$d$ = Pitch circle diameter
$x$ = Addendum modification coefficient
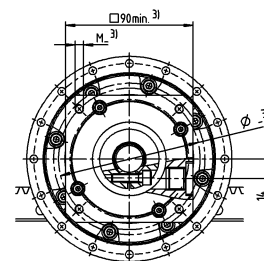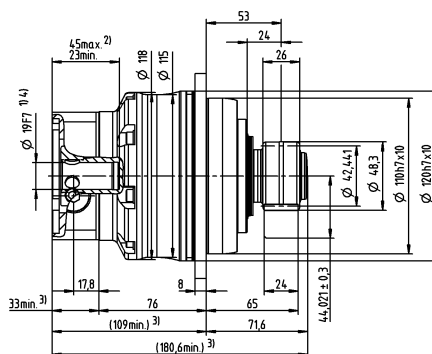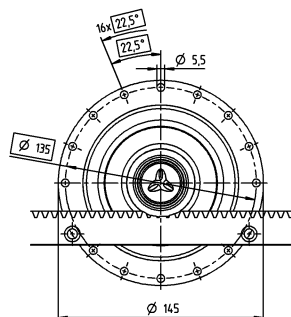$A$ = Distance between pinion axle and rear surface of rack
$F_{2T}$ = Maximum feed force depending on ratio and number of stages
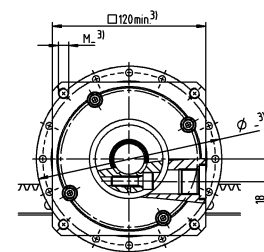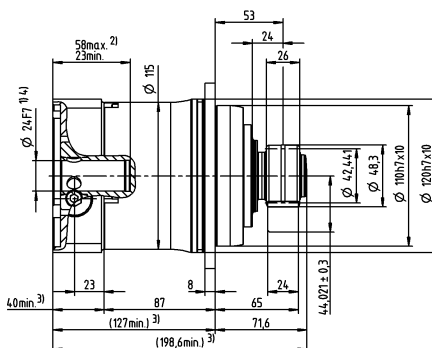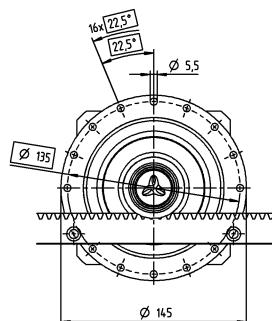Application-specific dimensioning with cymex® – www.wittenstein-cymex.com
* Other length options available

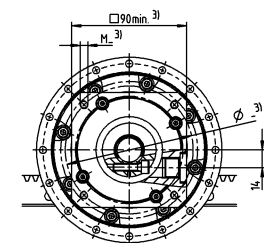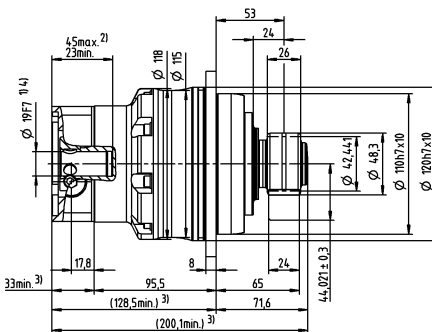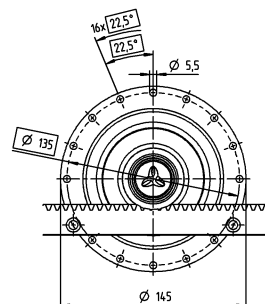# 2-stage

**up to 19 [4] (E) clamping hub diameters**

# 3-stage

**up to 24 [4] (G) clamping hub diameters**

**up to 19 [4] (E) clamping hub diameters**

Motor shaft diameter [mm]

Non-tolerated dimensions are nominal dimensions
Detailed rack dimensions starting on page 161
[1] Check motor shaft fit
[2] Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
[3] The dimensions depend on the motor
[4] Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm

# Advanced Linear System ALS 11 with TP+ MA

Planetary gearbox TP+ 050 MA with rack module 3 and pinion RMW module 3

| System | Max. feed force [1] $F_{2T}$ | 10900 N | |
|---|---|---|---|
| | Max. feed speed [2] $v_{max}$ | 57 m/min | 19 m/min |
| Gearbox | No. of stages | 2 | 3 |
| | Ratios $i$ | 22 / 27.5 / 38.5 / 55 | 66 / 88 / 110 / 154 / 220 |
| | Clamping hub diameter | 24 / 38 mm | 24 mm |
| | Designation | TP 050S-MA2-_ _ _-3_ _ | TP 050S-MA3-_ _ _-3_ _ |
| Pinion | Module $m$ | 3 mm | |
| | Number of teeth $z$ | 20 | |
| | Pitch circle diameter $d$ | 63.662 mm | |
| | Profile correction factor $x$ | 0.4 | |
| | Helix angle $ß$ | -19.5283° (left-handed) | |
| | Designation | RMW 300-444-20L1-055 | |
| Rack | Module $m$ | 3 mm | |
| | Length L (options) | 1000 mm (2000 mm; 500 mm) | |
| | Helix angle $ß$ | 19.5283° (right-handed) | |
| | Designation | ZST 300-332-1000-R1; optionally with INIRA® | |
| Lubrication system [3] | Set consisting of lubrication pinion and axis for — Rack | LMT 300-PU -18L1-030-1 | |
| | Set consisting of lubrication pinion and axis for — Pinion | LMT 300-PU -18R1-030-1 | |
| | Lubricator — 125 cm³ | LUC+125-0511-02 | |
| | Lubricator — 400 cm³ | LUC+400-0511-02 | |
| | Lubricant | WITTENSTEIN alpha G11 | |

[1] Maximum feed force depending on ratio and number of stages
[2] Calculation with lowest ratio and maximum input speed
[3] Impulse-controlled basic version with one output and 2 m hose. See page 118 for further information on the lubrication system.
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com

## Alternative system solutions

| Pinion | | | Axis distance | TP+ 050S HIGH TORQUE | TPM+ 050 HIGH TORQUE | TPK+ 050S HIGH TORQUE | Rack* |
|---|---|---|---|---|---|---|---|
| Designation | $d$ [mm] | $x$ [ ] | $A$ [mm] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | Designation |
| RMW 300-444-20L1-055 | 63.662 | 0.4 | 59.031 | 10900 | 10900 | 10900 | ZST 300-332-1000-R1; optionally with INIRA® |
| RMW 400-444-20L1-073 | 84.882 | 0.2 | 78.241 | 10300 | 10300 | 10300 | ZST 400-332-1000-R1; optionally with INIRA® |
| RMF 300-443-35L1-080-12xM10 | 111.409 | 0.3 | 82.604 | 11800 | 11800 | 11800 | ZST 300-332-1000-R1; optionally with INIRA® |
| RMF 300-443-40L1-080-12xM10 | 127.324 | 0.3 | 90.562 | 11700 | 11700 | 11700 | ZST 300-332-1000-R1; optionally with INIRA® |

$d$ = Pitch circle diameter
$x$ = Addendum modification coefficient
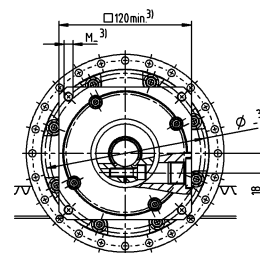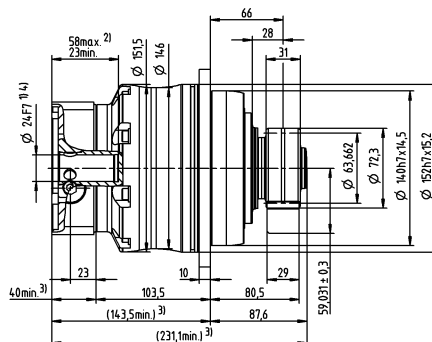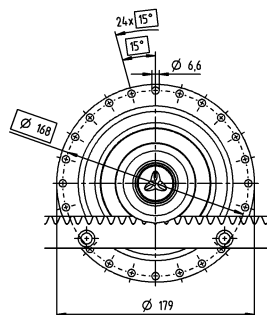$A$ = Distance between pinion axle and rear surface of rack
$F_{2T}$ = Maximum feed force depending on ratio and number of stages
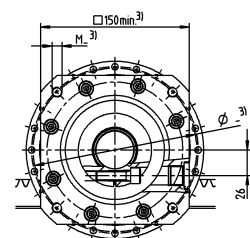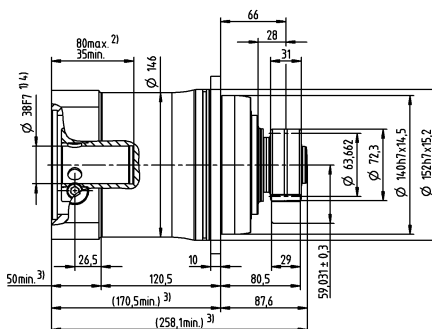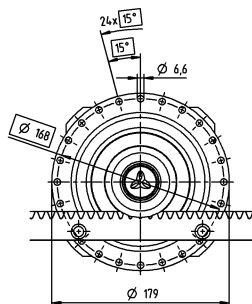Application-specific dimensioning with cymex® – www.wittenstein-cymex.com
* Other length options available
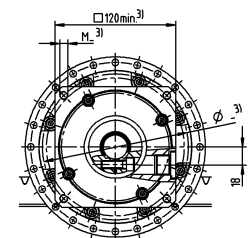
# 2-stage
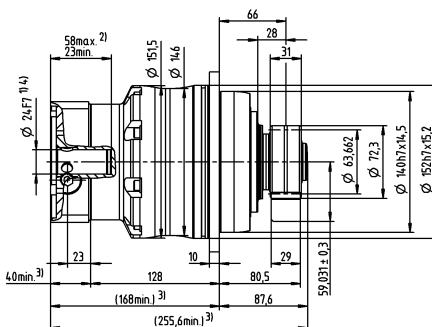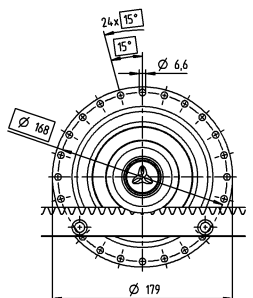
up to 24 [4] (G) clamping hub diameters



up to 38 [4] (K) clamping hub diameters



# 3-stage

up to 24 [4] (G) clamping hub diameters



Motor shaft diameter [mm]

Non-tolerated dimensions are nominal dimensions
Detailed rack dimensions starting on page 161
[1]  Check motor shaft fit
[2]  Min./Max. permissible motor shaft length. Longer motor shafts are possible, please contact alpha.
[3]  The dimensions depend on the motor
[4]  Smaller motor shaft diameter is compensated by a bushing with a minimum thickness of 1 mm

Planetary gearbox TP+ 110 MA with rack module 4 and pinion RMW module 4

| System | Max. feed force [1] $F_{2T}$ | 21000 N | |
|---|---|---|---|
| | Max. feed speed [2] $v_{max}$ | 68 m/min | 23 m/min |
| Gearbox | No. of stages | 2 | 3 |
| | Ratios $i$ | 22 / 27.5 / 38.5 / 55 | 66 / 88 / 110 / 154 / 220 |
| | Clamping hub diameter | 38 / 48 mm | 38 mm |
| | Designation | TP 110S-MA2-_ _ _-3_ _ | TP 110S-MA3-_ _ _-3_ _ |
| Pinion | Module $m$ | 4 mm | |
| | Number of teeth $z$ | 20 | |
| | Pitch circle diameter $d$ | 84.883 mm | |
| | Profile correction factor $x$ | 0.2 | |
| | Helix angle $\beta$ | -19.5283° (left-handed) | |
| | Designation | RMW 400-444-20L1-073 | |
| Rack | Module $m$ | 4 mm | |
| | Length L (options) | 1000 mm (2000 mm, 493 mm) | |
| | Helix angle $\beta$ | 19.5283° (right-handed) | |
| | Designation | ZST 400-332-1000-R15; optionally with INIRA® | |
| Lubrication system [3] | Set consisting of lubrication pinion and axis for — Rack | LMT 400-PU -18L1-040-1 | |
| | Pinion | LMT 400-PU -18R1-040-1 | |
| | Lubricator — 125 cm³ | LUC+125-0511-02 | |
| | 400 cm³ | LUC+400-0511-02 | |
| | Lubricant | WITTENSTEIN alpha G11 | |

[1] Maximum feed force depending on ratio and number of stages
[2] Calculation with lowest ratio and maximum input speed
[3] Impulse-controlled basic version with one output and 2 m hose. See page 118 for further information on the lubrication system.
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com

## Alternative system solutions

| Pinion | | | Axis distance | TP+ 110S HIGH TORQUE | TPM+ 110 HIGH TORQUE | TPK+ 110S HIGH TORQUE | Rack* |
|---|---|---|---|---|---|---|---|
| Designation | $d$ [mm] | $x$ [ ] | $A$ [mm] | $F_{2T}$ [N] | $F_{2T}$ [N] | $F_{2T}$ [N] | Designation |
| RMW 400-444-20L1-073 | 84.882 | 0.2 | 78.241 | 21000 | 21000 | 21000 | ZST 400-332-1000-R15; optionally with INIRA® |
| RMW 500-444-19L1-089 | 100.798 | 0.4 | 86.399 | 20000 | 20000 | 20000 | ZST 500-332-1000-R1; optionally with INIRA® |
| RMF 400-443-40L1-125-12xM12 | 169.766 | 0 | 119.883 | 21700 | 21700 | 21700 | ZST 400-332-1000-R15; optionally with INIRA® |

$d$ = Pitch circle diameter
$x$ = Addendum modification coefficient
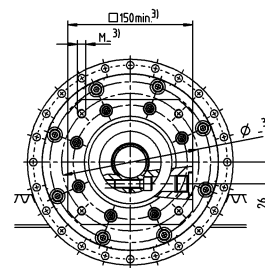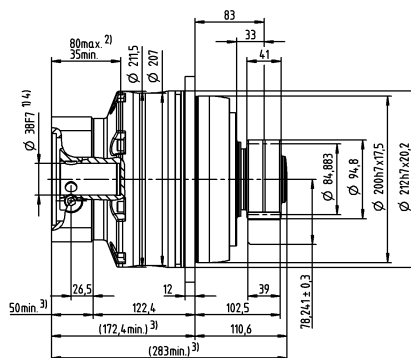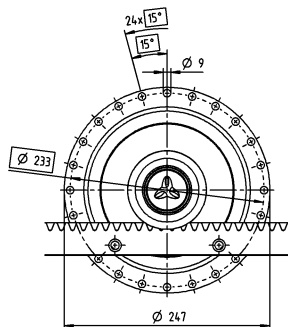$A$ = Distance between pinion axle and rear surface of rack
$F_{2T}$ = Maximum feed force depending on ratio and number of stages
Application-specific dimensioning with cymex® – www.wittenstein-cymex.com
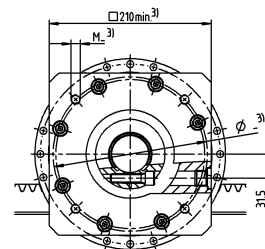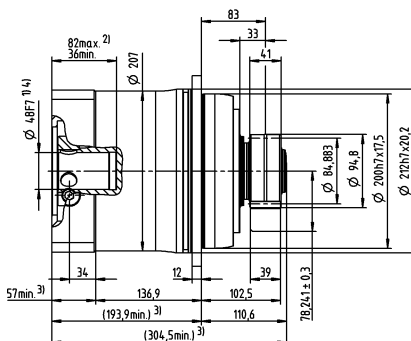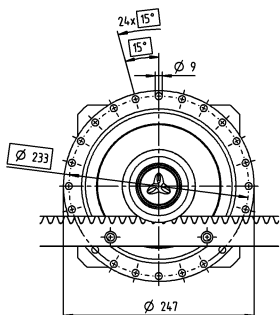* Other length options available

# 2-stage

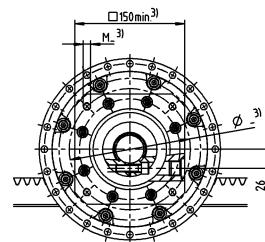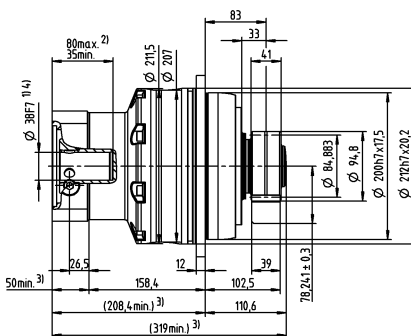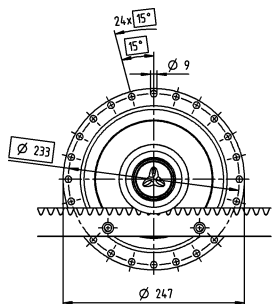up to 38 4) (K) clamping hub diameters

up to 48 4) (M) clamping hub diameters

# 3-stage

up to 38 4) (K) clamping hub diameters

Motor shaft diameter [mm]

Non-tolerated dimensions are nominal dimensions
Detailed rack dimensions starting on page 161
1) Check motor shaft fit
2) Min./Max. permissible motor shaft length. Longer motor
   shafts are possible, please contact alpha.
3) The dimensions depend on the motor
4) Smaller motor shaft diameter is compensated by a
   bushing with a minimum thickness of 1 mm