



The Key Component for highest Reliability in modern Extrusion



Railway Gears | **Extrusion Gears** | Special Gears | Melt Pumps | Couplings | Components | Service



Quality and Reliability pays off

Henschel develops the optimal solution wherever power is efficiently and safely transmitted. This applies to vehicles, plants and machinery, that require high reliability and availability. We provide perfect harmony within the entire system guaranteeing a safe operation with minimal maintenance and high efficiency.

Henschel was founded in 1810 in Kassel. With a high level expertise in the field of drive technology, Henschel has developed a worldwide reputation excelling in its high quality. In many countries today, locomotives and lorries with the Henschel star are in operation. This is symbolic of a know-how that is very familiar in the entire power train industry today.

On this base we developed our Extruder gearboxes – the core elements of our range. We develop and deliver modern, state-of-the-art Extruder gearboxes for highest output and strongest torque rates.

Committed to this tradition we develop solutions.

Reliable

Henschel services and products have a reputation for over 200 years of being very reliable. We develop systems that have a high operational reliability and are able to cope with unpredictable requirements. Safety and stability in all processes and procedures are a major feature in cooperation with our customers.

Intelligence

Henschel with his German state of the art engineering applies its best knowledge in its core markets. The validity of this knowledge is employed daily to expand and share. Based on this knowledge, we design new solutions, securing our competitive edge.

Efficient

In the operation, engineering, manufacturing and service, we are as efficient as our products. Highest efficiency, low maintenance frequencies and high safety provide excellent products.





With more than 50 Years of Experience, we look back on a long and successful Tradition of manufacturing Extruder Gearboxes

The DURUMAX® series stands for innovative extrusion gear technology at the highest level and with the highest quality. Intensive research, development and testing, as well as optimal quality control are the guarantee for the high performance of the Extruder gear in a compact design. We offer trend setting Extruder gearbox concepts which meet the daily high demands of the end users, not only in terms of output.

For extrusion lines, the drive unit consists of an essential machine component representing the highest quality and fulfilling all requirements. Under these conditions, Henschel produces high-quality, high-performance single-screw and twin screw Extruder drives.

Take advantage of the following benefits:

- Compact design with high performance through the use of high-strength steels
- Optimal smoothness and quietness by ground helical gears and optimized tooth geometry
- Vibration reducing housing construction in cast iron
- High reliability and availability

We have for each output range optimum alternative transmission and drive solutions.



DURUMAX[®] – TPM 3

Twin Shaft Extruder Gearbox counter-rotating

The DURUMAX[®] TPM 3 gearbox was the first one designed with the 3-shaft distribution concept and is running in the market for more than 40 years. Nevertheless of its age this design concept still has a wide range of applications.

Examples of areas of application are:

Pipe Extrusion | Profile Extrusion | Granulation

An overview of your advantages:

- The Extruder gearbox consists of the gearbox modules step-down gear, thrust bearing housing, power divider, adapter housing or alternatively tie bars. Each of these modules can be individually modified and interchanged. The gearbox housing modules are made of vibration reducing, thick-walled, noise reducing grey cast iron.
- The power divider with a single helical gear set transfers the torque safely and reliably whilst taking up a minimum of space. This 3-shaft power divider concept has proven its reliability world-wide since more than 40 years.
- The gears are case-hardened, correction-ground and optimised for the highest load capacity. The smoothness of running and low vibration of the Henschel gearboxes are a proof of their quality.
- In opposite of the theoretical calculation we define the safety factors for the gears and the field-experienced application factors for external disturbance variables.
- A combined splash and forced spray lubrication system guarantees optimal lubrication, even in unfavourable environmental conditions, best heat elimination and low losses.

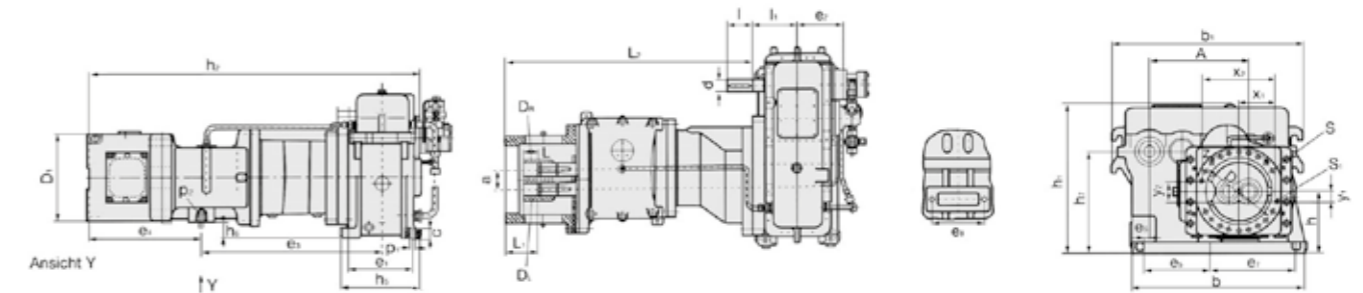
Engineering:

- Reliable design with a step-down gear and power divider with a single helical gear set
- Thrust bearings to pick up the highest thrust forces from the extrusion process
- Direct or V-belt drive
- Torque up to 28.165 Nm and all transmission ratios
- Brand name roller bearings from German manufacturers such as INA, FAG or SKF
- Splash and forced spray lubrication with integrated oil reservoir for emergency running properties
- Integrated lubrication system with flanged oil-pump, oil-filter and pressure switch
- Cylinder and screw connections according to customer requirements
- Paintwork: priming paint

Assembly dimensions

| gearbox size | main dimensions mm | | | | | | | | weight kg |
|--------------|--------------------|---------|-----|----------------|----------------|----------------|----------------|----------------|-----------|
| | a | A | h | h ₁ | h ₂ | h ₅ | h ₆ | h ₇ | |
| TPM 3-90 | 75,35 | 382,925 | 230 | ca. 561 | 1.261 | 310 | 60 | 378 | 830 |
| TPM 3-107 | 90 | 489 | 275 | ca. 670 | 1.533 | 408 | 65 | 457 | 1.440 |
| TPM 3-130 | 110 | 583 | 315 | ca. 805 | 1.769 | 480 | 75 | 547 | 2.220 |

Mounting



Power rating table

| gearbox size | TPM 3-90 | | | TPM 3-107 | | | TPM 3-130 | | |
|-----------------|---------------------|---------------------|-----------------------|---------------------|---------------------|-----------------------|---------------------|---------------------|-----------------------|
| | 75,35 mm | | | 90 mm | | | 110 mm | | |
| center distance | P _M [kW] | T ₂ [Nm] | F _{axW} [kN] | P _M [kW] | T ₂ [Nm] | F _{axW} [kN] | P _M [kW] | T ₂ [Nm] | F _{axW} [kN] |
| 5 | 4 | 8.435 | 214 | 8 | 16.000 | 303 | 15 | 28.165 | 448 |
| 10 | 9 | 8.435 | 214 | 17 | 16.000 | 303 | 29 | 28.165 | 448 |
| 15 | 13 | 8.435 | 214 | 25 | 16.000 | 303 | 44 | 28.165 | 448 |
| 20 | 18 | 8.435 | 214 | 34 | 16.000 | 303 | 59 | 28.165 | 448 |
| 25 | 22 | 8.435 | 214 | 42 | 16.000 | 303 | 73 | 27.820 | 448 |
| 30 | 26 | 8.435 | 214 | 50 | 15.840 | 303 | 83 | 26.340 | 448 |
| 35 | 31 | 8.435 | 214 | 55 | 15.120 | 303 | 92 | 25.150 | 448 |
| 40 | 35 | 8.240 | 214 | 61 | 14.525 | 303 | 101 | 24.160 | 448 |
| 45 | 37 | 7.955 | 214 | 66 | 14.020 | 303 | 110 | 23.320 | 448 |
| 50 | 40 | 7.705 | 211 | 71 | 13.585 | 303 | 118 | 22.595 | 434 |
| 55 | 43 | 7.485 | 205 | 76 | 13.200 | 300 | 126 | 21.955 | 422 |
| 60 | 46 | 7.295 | 200 | 81 | 12.860 | 292 | 134 | 21.390 | 411 |
| 65 | 48 | 7.120 | 195 | 85 | 12.555 | 285 | 142 | 20.885 | 401 |
| 70 | 51 | 6.965 | 191 | 90 | 12.280 | 279 | 150 | 20.425 | 392 |

P_M = motor power [kW]
T₂ = total output torque [Nm] at K_A = 1,25
F_{axW} = allowable axial force per shaft [kN]
n₂ = output speed [min⁻¹]

Information to the tables:

1. Define your specific centre distance in the power rating table.
2. Select the output speed n₂ you require.
3. Look for the required motor power P_M or your output torque T₂ in the selected line.
4. Take the gearbox size you have selected and confirm whether or not the installation dimensions suit your Extruder by referring to the geometry table.
5. If you are not able to find your requirements, our gearbox engineers will design your gearbox and its limiting criteria.

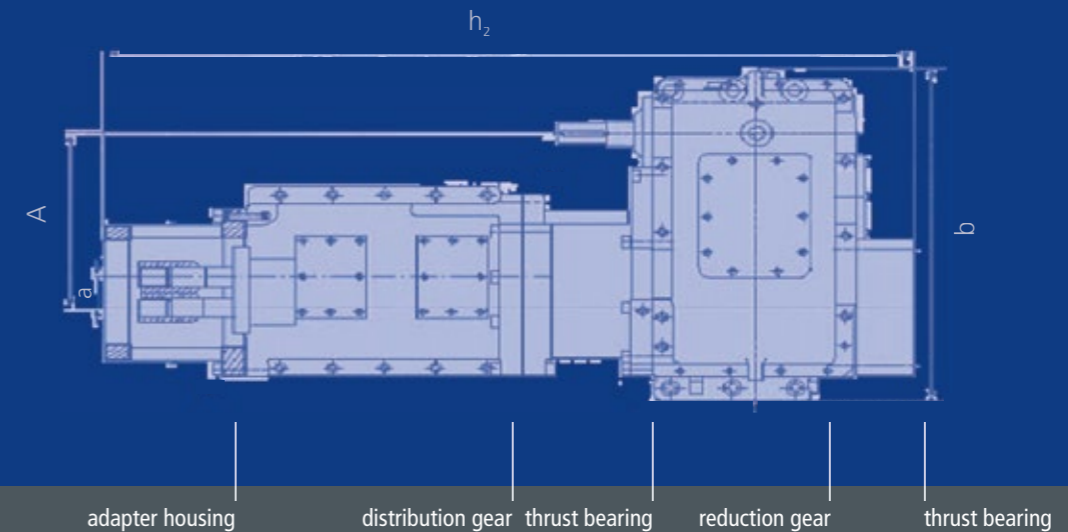
DURUMAX[®] – TPM 3 DOS-V

Twin Shaft Extruder Gearbox counter-rotating

The DURUMAX[®]-TPM DOS from Henschel Antriebstechnik offers the Extruder builder high gearbox technology based on latest technical standards, which has been globally successful in hard competition to other products. We have forward-looking Extruder gearbox concepts for you which convert the day-to-day high requirements of the end user concerning output into reality.

Examples of areas of application are:

Pipe Extrusion | Profile Extrusion | Granulation



An overview of your advantages:

- The Extruder gearbox consists of the gearbox modules step-down gear, thrust bearing housing, power divider, adapter housing or alternatively tie bars. Each of these modules can be individually modified and interchanged. The gearbox housing modules are made of vibration reducing, thick-walled, noise reducing grey cast iron.
- The unique power divider with a double helical gear set transfers the highest torque safely and reliably whilst taking up a minimum of space. High output speed and durability of the bearings are guaranteed. This 3-shaft power divider concept is the most popular concept world-wide in counter-rotating extrusion.
- The gears are case-hardened, correction-ground and optimised for the highest load capacity. The smoothness of running and low vibration of the Henschel gearboxes are a proof of their quality. We supply you with our specially designed topologically corrected gears, which enable exact adjustment of the flank fine geometry to the load and thus guarantees a well-balanced utilisation of material.
- In opposite of the theoretical calculation we define the safety factors for the gears and the field-experienced application factor for external disturbance variables.
- A combined splash and forced spray lubrication system guarantees optimal lubrication, even in unfavourable environmental conditions, best heat elimination and low losses.

Engineering:

- Reliable design with a step-down gear and power divider with a double helical gear set
- Thrust bearings to pick up the highest thrust forces from the extrusion process
- Direct or V-belt drive
- Torque up to 54.000 Nm and all transmission ratios
- Brand name roller bearings from German manufacturers such as INA, FAG or SKF
- Splash and forced spray lubrication with integrated oil reservoir for emergency running properties
- Cooling system with separate lubrication system
- Cylinder and screw connections according to customer requirements
- Paintwork: priming paint

On request we can also supply the following:

- Lubrication system with oil filter
- Monitoring of temperature, pressure or rate of flow
- Level switch
- Monitoring of the screw speed
- Torque measurement
- Load cells to measure back pressure forces
- The gearbox can be engraved with the company name and corporate logo
- Gearbox supplied with final coating

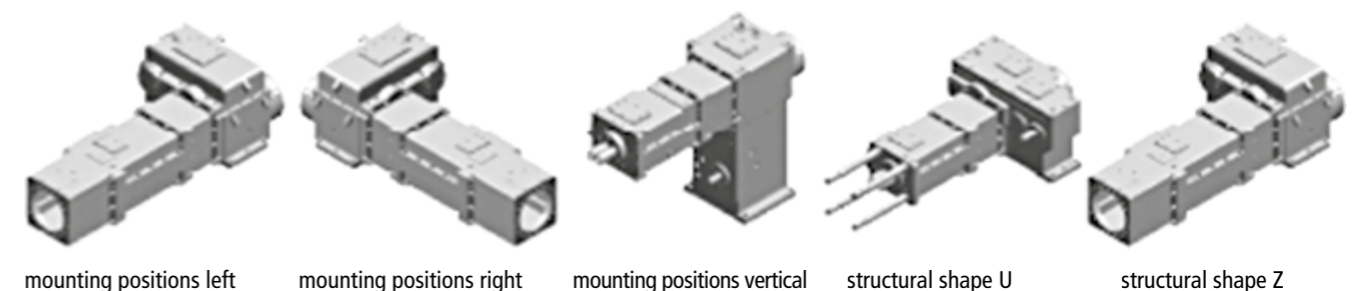
Assembly dimensions

| gearbox size | main dimensions mm | | | | |
|-----------------|--------------------|--------|----------------|------|-----------|
| | a | A | h ₂ | b | weight kg |
| TPM 2-52 DOS | 44 | 250 | 1248 | 539 | 500 |
| TPM 3-63 DOS-V | 54 | 313,13 | 1390 | 615 | 710 |
| TPM 3-68 DOS-V | 55 | 313,13 | 1390 | 615 | 710 |
| TPM 3-70 DOS | 60 | 313,13 | 1390 | 615 | 710 |
| TPM 3-75 DOS-V* | 61 | 205 | 1555 | 560 | 920 |
| TPM 3-87 DOS-V | 74 | 426,16 | 1565 | 790 | 1.240 |
| TPM 3-92 DOS-V | 75,35 | 426,16 | 1565 | 790 | 1.240 |
| TPM 3-94 DOS-V | 76 | 426,51 | 1835 | 790 | 1.260 |
| TPM 3-100 DOS-V | 80,8 | 712,6 | 2483 | 1200 | 2.500 |
| TPM 3-106 DOS-V | 88 | 489,21 | 1835 | 915 | 2.085 |
| TPM 3-110 DOS-V | 90 | 490 | 1835 | 915 | 2.085 |
| TPM 3-114 DOS-V | 93 | 491,58 | 2100 | 915 | 2.100 |
| TPM 3-130 DOS-V | 106 | 674,9 | 2706 | 1420 | 4.000 |
| TPM 3-135 DOS-V | 110 | 585,55 | 2320 | 1080 | 3.770 |
| TPM 3-140 DOS-V | 114 | 587,63 | 2610 | 1080 | 3.800 |

* vertical

Mounting position and structural shape

The mounting positions are flexible and both horizontal and vertical variations can be selected. It is to be differentiated between the Z and U form depending on the position of the motor.



DURUMAX® – TPM 3 DOS-V

Twin Shaft Extruder Gearbox counter-rotating

Power rating table

Your specific power data determines the provisional size of the gearbox. The power ratings in the table are designed in such a way that they guarantee sufficient safety factors of the gears in accordance with DIN 3990 with an application factor $K_A=1,25$. The service life of the bearings is set at a standard of $L_h > 20.000$ h. Your requirements of the gearbox and their limiting criteria are of course checked by our gearbox engineers so that you receive a product which inspires you.

| gearbox size | TPM 2-52-DOS | | | TPM 3-63-DOS-V | | | TPM 3-68-DOS-V | | | TPM 3-70-DOS | | |
|-----------------|--------------|------------|----------------|----------------|------------|----------------|----------------|------------|----------------|--------------|------------|----------------|
| center distance | 44 mm | | | 54 mm | | | 55 mm | | | 60 mm | | |
| n_2 [rpm] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] |
| 5 | 1 | 2.000 | 67 | 3 | 5.800 | 121 | 3 | 6.200 | 139 | 3 | 6.200 | 151 |
| 10 | 2 | 2.000 | 67 | 6 | 5.800 | 121 | 7 | 6.200 | 139 | 7 | 6.200 | 151 |
| 15 | 3 | 2.000 | 67 | 10 | 5.800 | 121 | 10 | 6.200 | 139 | 10 | 6.200 | 151 |
| 20 | 4 | 2.000 | 67 | 13 | 5.800 | 121 | 14 | 6.200 | 139 | 14 | 6.200 | 151 |
| 25 | 5 | 2.000 | 67 | 16 | 5.800 | 121 | 17 | 6.200 | 139 | 17 | 6.200 | 151 |
| 30 | 6 | 2.000 | 67 | 19 | 5.800 | 121 | 21 | 6.200 | 139 | 21 | 6.200 | 151 |
| 35 | 7 | 2.000 | 67 | 23 | 5.800 | 121 | 24 | 6.200 | 139 | 24 | 6.200 | 145 |
| 40 | 8 | 2.000 | 67 | 26 | 5.800 | 121 | 28 | 6.200 | 139 | 28 | 6.200 | 140 |
| 45 | 9 | 2.000 | 67 | 28 | 5.600 | 121 | 30 | 5.985 | 135 | 30 | 5.985 | 135 |
| 50 | 10 | 2.000 | 67 | 30 | 5.425 | 121 | 32 | 5.800 | 131 | 32 | 5.800 | 131 |
| 55 | 11 | 1.945 | 67 | 32 | 5.270 | 121 | 35 | 5.635 | 127 | 35 | 5.635 | 127 |
| 60 | 12 | 1.895 | 63 | 35 | 5.135 | 121 | 37 | 5.490 | 124 | 37 | 5.490 | 124 |

| gearbox size | TPM 3-75-DOS-V | | | TPM 3-87-DOS-V | | | TPM 3-92-DOS-V | | | TPM 3-94-DOS-V | | |
|-----------------|----------------|------------|----------------|----------------|------------|----------------|----------------|------------|----------------|----------------|------------|----------------|
| center distance | 61 mm | | | 74 mm | | | 75,35 mm | | | 76 mm | | |
| n_2 [rpm] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] |
| 5 | 5 | 9.400 | 168 | 9 | 15.200 | 230 | 9 | 15.720 | 254 | 10 | 17.120 | 264 |
| 10 | 11 | 9.400 | 168 | 17 | 15.200 | 230 | 18 | 15.720 | 254 | 19 | 17.120 | 264 |
| 15 | 16 | 9.400 | 168 | 26 | 15.200 | 230 | 26 | 15.720 | 254 | 29 | 17.120 | 264 |
| 20 | 21 | 9.400 | 168 | 34 | 15.200 | 230 | 35 | 15.720 | 254 | 38 | 17.120 | 264 |
| 25 | 26 | 9.400 | 168 | 43 | 15.200 | 230 | 44 | 15.720 | 254 | 48 | 17.120 | 264 |
| 30 | 31 | 9.305 | 168 | 51 | 15.200 | 230 | 53 | 15.720 | 254 | 57 | 17.120 | 256 |
| 35 | 35 | 8.885 | 168 | 60 | 15.200 | 230 | 61 | 15.720 | 244 | 67 | 17.120 | 244 |
| 40 | 38 | 8.535 | 168 | 68 | 15.200 | 230 | 70 | 15.720 | 235 | 76 | 17.120 | 235 |
| 45 | 42 | 8.240 | 168 | 75 | 14.780 | 227 | 78 | 15.615 | 226 | 85 | 17.005 | 226 |
| 50 | 45 | 7.980 | 168 | 80 | 14.320 | 220 | 84 | 15.130 | 219 | 92 | 16.475 | 219 |
| 55 | 48 | 7.755 | 164 | 86 | 13.915 | 213 | 90 | 14.700 | 213 | 98 | 16.010 | 213 |
| 60 | 51 | 7.555 | 160 | 91 | 13.560 | 208 | 96 | 14.320 | 208 | 104 | 15.595 | 208 |

| gearbox size | TPM 3-100-DOS | | | TPM 3-106-DOS-V | | | TPM 3-110-DOS-V | | | TPM 3-114-DOS-V | | |
|-----------------|---------------|------------|----------------|-----------------|------------|----------------|-----------------|------------|----------------|-----------------|------------|----------------|
| center distance | 80,8 mm | | | 88 mm | | | 90 mm | | | 92,5 mm | | |
| n_2 [rpm] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] |
| 5 | 12 | 21.660 | 299 | 13 | 23.000 | 334 | 14 | 24.800 | 363 | 17 | 30.865 | 389 |
| 10 | 24 | 21.660 | 299 | 26 | 23.000 | 334 | 28 | 24.800 | 363 | 35 | 30.865 | 389 |
| 15 | 36 | 21.660 | 299 | 39 | 23.000 | 334 | 42 | 24.800 | 363 | 52 | 30.865 | 389 |
| 20 | 49 | 21.660 | 299 | 52 | 23.000 | 334 | 56 | 24.800 | 363 | 69 | 30.865 | 389 |
| 25 | 61 | 21.660 | 299 | 64 | 23.000 | 334 | 69 | 24.800 | 363 | 86 | 30.865 | 389 |
| 30 | 73 | 21.660 | 299 | 77 | 22.765 | 334 | 83 | 24.550 | 363 | 104 | 30.865 | 372 |
| 35 | 85 | 21.660 | 299 | 85 | 21.735 | 334 | 92 | 23.440 | 355 | 121 | 30.865 | 355 |
| 40 | 96 | 21.365 | 299 | 94 | 20.885 | 324 | 101 | 22.515 | 341 | 133 | 29.655 | 341 |
| 45 | 104 | 20.620 | 299 | 102 | 20.155 | 312 | 110 | 21.735 | 329 | 144 | 28.620 | 329 |
| 50 | 112 | 19.980 | 299 | 109 | 19.530 | 303 | 118 | 21.000 | 319 | 155 | 27.730 | 319 |
| 55 | 120 | 19.415 | 299 | 117 | 18.980 | 294 | 126 | 20.465 | 310 | 166 | 26.950 | 310 |
| 60 | 127 | 18.915 | 299 | 124 | 18.490 | 287 | 134 | 19.935 | 302 | 177 | 26.255 | 302 |

| gearbox size | TPM 3-130-DOS-V | | | TPM 3-135-DOS-V | | | TPM 3-140-DOS-V | | |
|-----------------|-----------------|------------|----------------|-----------------|------------|----------------|-----------------|------------|----------------|
| center distance | 105,7 mm | | | 110 mm | | | 114 mm | | |
| n_2 [rpm] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] |
| 5 | 22 | 39.545 | 506 | 26 | 47.125 | 546 | 30 | 54.005 | 587 |
| 10 | 44 | 39.545 | 506 | 53 | 47.125 | 546 | 61 | 54.005 | 587 |
| 15 | 66 | 39.545 | 506 | 79 | 47.125 | 546 | 91 | 54.005 | 587 |
| 20 | 89 | 39.545 | 506 | 106 | 47.125 | 546 | 121 | 54.005 | 587 |
| 25 | 111 | 39.545 | 506 | 132 | 47.125 | 546 | 151 | 54.005 | 555 |
| 30 | 126 | 37.440 | 506 | 158 | 47.125 | 525 | 182 | 54.005 | 525 |
| 35 | 140 | 35.745 | 502 | 176 | 44.995 | 502 | 202 | 51.560 | 501 |
| 40 | 154 | 34.340 | 482 | 194 | 43.225 | 482 | 222 | 49.535 | 482 |
| 45 | 167 | 33.145 | 465 | 210 | 41.725 | 465 | 241 | 47.815 | 465 |
| 50 | 180 | 32.115 | 451 | 226 | 40.425 | 451 | 260 | 46.325 | 451 |
| 55 | 192 | 31.210 | 438 | 242 | 39.285 | 438 | 277 | 45.020 | 438 |
| 60 | 204 | 30.405 | 427 | 257 | 38.270 | 427 | 295 | 43.855 | 427 |

P_M = motor power [kW]
 T_2 = total output torque [Nm] at $K_A = 1,25$
 F_{axW} = allowable axial force per shaft [kN]
 n_2 = output speed [min⁻¹]

Information to the tables:

1. Define your specific centre distance in the power rating table.
2. Select the output speed n_2 you require.
3. Look for the required motor power P_M or your output torque T_2 in the selected line.
4. Take the gearbox size you have selected and confirm whether or not the installation dimensions suit your Extruder by referring to the geometry table.
5. If you are not able to find your requirements, our gearbox engineers will design your gearbox and its limiting criteria.

DURUMAX[®] – T1MAX C

Twin Shaft Extruder Gearbox counter-rotating

The new Extruder gearbox T1MAX[®] is the consistent development of the Extruder gearbox series TPM 3 DOS-V with the proved 3-shaft distribution concept, which is world-wide the most popular concept in counter-rotating extrusion. With the T1MAX[®] we offer the most efficient concept with the highest performance in its category. **(Torque enhancement of more than 15%)**

Examples of areas of application are:

Pipe Extrusion | Profile Extrusion | Granulation

An overview of your advantages:

- The Extruder gearbox consists of the gearbox modules step-down gear, thrust bearing housing, power divider, adapter housing or alternatively tie bars. Each of these modules can be individually modified and interchanged. The gearbox housing modules are made of vibration reducing, thick-walled, noise reducing grey cast iron.
- The unique power divider with a double helical gear set transfers the highest torque safely and reliably whilst taking up a minimum of space. High output speed and durability of the bearings are guaranteed. This 3-shaft power divider concept is the most popular concept world-wide in counter-rotating extrusion.
- The gears are case-hardened, correction-ground and optimised for the highest load capacity. The smoothness of running and low vibration of the Henschel gearboxes are a proof of their quality. We supply you with our specially designed topologically corrected gears, which enable exact adjustment of the flank fine geometry to the load and thus guarantees a well-balanced utilisation of material.
- In opposite of the theoretical calculation we define the safety factors for the gears and the field-experienced application factor for external disturbance variables.
- A combined splash and forced spray lubrication system guarantees optimal lubrication, even in unfavourable environmental conditions, best heat elimination and low losses.

Engineering:

- Reliable design with a step-down gear and power divider with a double helical gear set
- Thrust bearings to pick up the highest thrust forces from the extrusion process
- Direct or V-belt drive
- Torque up to 135.000 Nm and all transmission ratios
- Brand name roller bearings from German manufacturers such as INA, FAG or SKF
- Splash and forced spray lubrication with integrated oil reservoir for emergency running properties
- Cooling system with separate lubrication system
- Cylinder and screw connections according to customer requirements
- Paintwork: priming paint

On request we can also supply the following:

- Lubrication system with oil filter
- Monitoring of temperature, pressure or rate of flow
- Level switch
- Monitoring of the screw speed
- Torque measurement
- Load cells to measure back pressure forces
- The gearbox can be engraved with the company name and corporate logo
- Gearbox supplied with final coating

Power rating table

Your specific power data determines the provisional size of the gearbox. The power ratings in the table are designed in such a way that they guarantee sufficient safety factors of the gears in accordance with DIN 3990 with an application factor $K_A=1,25$. The service life of the bearings is set at a standard of $L_{10} > 20.000$ h. Your requirements of the gearbox and their limiting criteria are of course checked by our gearbox engineers so that you receive a product which inspires you.

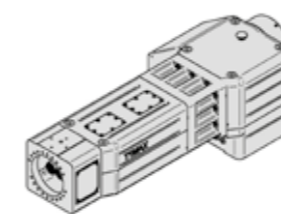
| gearbox size | T1MAX 92 C | | | T1MAX 110 C | | | T1MAX 125 C | | | T1MAX 135 C | | | T1MAX 170 C | | |
|-----------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|
| center distance | 75,35 mm | | | 90 mm | | | 108 mm | | | 110 mm | | | 146 mm | | |
| n_2 [rpm] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] |
| 5 | 10 | 17.970 | 254 | 17 | 30.252 | 363 | 28 | 50.000 | 363 | 32 | 58.000 | 363 | 75 | 135.000 | 363 |
| 10 | 20 | 17.970 | 254 | 34 | 30.252 | 363 | 56 | 50.000 | 363 | 65 | 58.000 | 363 | 150 | 135.000 | 363 |
| 15 | 30 | 17.970 | 254 | 51 | 30.25 | 363 | 84 | 50.000 | 363 | 97 | 58.000 | 363 | 226 | 135.000 | 363 |
| 20 | 40 | 17.970 | 254 | 67 | 30.252 | 363 | 111 | 50.000 | 363 | 129 | 58.000 | 363 | 301 | 135.000 | 363 |
| 25 | 50 | 17.970 | 254 | 84 | 30.252 | 363 | 139 | 50.000 | 363 | 162 | 58.000 | 363 | 376 | 135.000 | 363 |
| 30 | 60 | 17.970 | 254 | 100 | 29.947 | 363 | 165 | 49.496 | 363 | 192 | 57.415 | 363 | 447 | 133.639 | 363 |
| 35 | 70 | 17.970 | 244 | 111 | 28.593 | 355 | 184 | 47.258 | 355 | 214 | 54.819 | 355 | 497 | 127.597 | 355 |
| 40 | 80 | 17.970 | 235 | 122 | 27.465 | 341 | 202 | 45.393 | 341 | 235 | 52.656 | 341 | 546 | 122.561 | 341 |
| 45 | 89 | 17.850 | 226 | 133 | 26.513 | 329 | 220 | 43.821 | 329 | 255 | 50.832 | 329 | 593 | 118.316 | 329 |
| 50 | 96 | 17.296 | 219 | 143 | 25.617 | 319 | 236 | 42.339 | 319 | 274 | 49.113 | 319 | 637 | 114.315 | 319 |
| 55 | 103 | 16.804 | 213 | 153 | 24.964 | 310 | 253 | 41.260 | 310 | 293 | 47.862 | 310 | 683 | 111.402 | 310 |
| 60 | 109 | 16.370 | 208 | 163 | 24.317 | 302 | 269 | 40.192 | 302 | 312 | 46.622 | 302 | 725 | 108.517 | 302 |
| 65 | 116 | 15.981 | 203 | 172 | 23.738 | 295 | 284 | 39.234 | 295 | 330 | 45.511 | 295 | 767 | 105.931 | 295 |
| 70 | 122 | 15.632 | 198 | 181 | 23.220 | 288 | 299 | 38.377 | 288 | 347 | 44.517 | 288 | 808 | 103.618 | 288 |

P_M = motor power [kW]
 T_2 = total output torque [Nm] at $K_A = 1,25$
 F_{axW} = allowable axial force per shaft [kN]
 n_2 = output speed [min⁻¹]

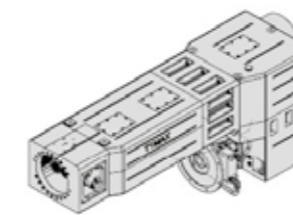
Information to the tables:

1. Define your specific centre distance in the power rating table.
2. Select the output speed n_2 you require.
3. Look for the required motor power P_M or your output torque T_2 in the selected line.
4. Take the gearbox size you have selected and confirm whether or not the installation dimensions suit your Extruder by referring to the geometry table.
5. If you are not able to find your requirements, our gearbox engineers will design your gearbox and its limiting criteria.

Mounting position and structural shape



left-hand, U-form



vertical, U-form

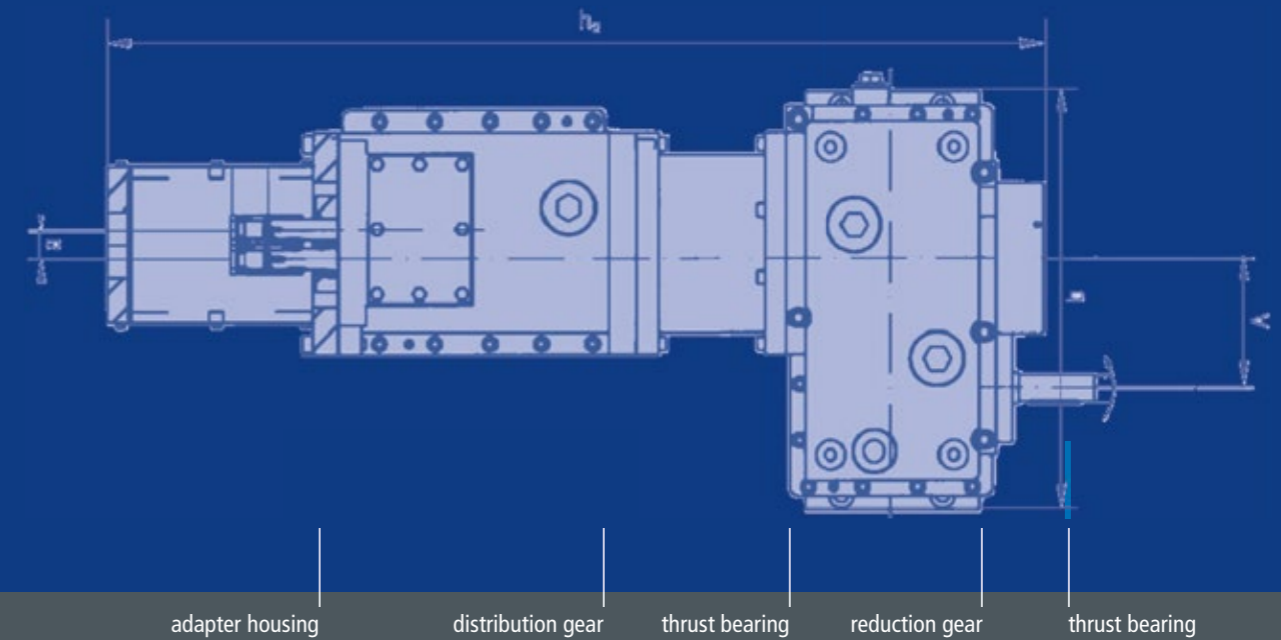
DURUMAX[®] – TGE 3 DOS

Twin Shaft Extruder Gearbox co-rotating

The DURUMAX[®]-TGE DOS from Henschel Antriebstechnik offers the Extruder builder high gearbox technology based on latest technical standards, which has been globally successful in hard competition to other products. We have forwardlooking Extruder gearbox concepts for you which convert the day-to-day high requirements of the end user concerning output into reality.

Examples of areas of application are:

Compounding | Direct Extrusion | Food and Petfood Extrusion



An overview of your advantages:

- The Extruder gearbox consists of the gearbox modules step-down gear, thrust bearing housing, power divider, adapter housing or alternatively tie bars. Each of these modules can be individually modified and interchanged. The gearbox housing modules are made of vibration reducing, thick-walled, noise reducing grey cast iron.
- The unique power divider with a double helical gear set transfers the highest torque safely and reliably whilst taking up a minimum of space. High output speed and durability of the bearings are guaranteed. This 3-shaft power divider concept is the most popular concept world-wide in co-rotating extrusion.
- The gears are case-hardened, correction-ground and optimised for the highest load capacity. The smoothness of running and low vibration of the Henschel gearboxes are a proof of their quality. We supply you with our specially designed topologically corrected gears, which enable exact adjustment of the flank fine geometry to the load and thus guarantees a wellbalanced utilisation of material.
- In opposite of the theoretical calculation we define the safety factors for the gears and the field-experienced application factor for external disturbance variables.
- A combined splash and forced spray lubrication system guarantees optimal lubrication, even in unfavourable environmental conditions, best heat elimination and low losses.

Engineering:

- Reliable design with a step-down gear and power divider with a double helical gear set
- Thrust bearings to pick up the highest thrust forces from the extrusion process
- Torque up to 25.400 Nm and all transmission ratios
- Brand name roller bearings from German manufacturers such as INA, FAG or SKF
- Splash and forced spray lubrication with integrated oil reservoir for emergency running properties
- Cooling system with separate lubrication system
- Cylinder and screw connections according to customer requirements
- Paintwork: priming paint

On request we can also supply the following:

- Lubrication system with oil filter
- Monitoring of temperature, pressure or rate of flow
- Level switch
- Monitoring of the screw speed
- Torque measurement
- Load cells to measure back pressure forces
- The gearbox can be engraved with the company name and corporate logo
- Gearbox supplied with final coating

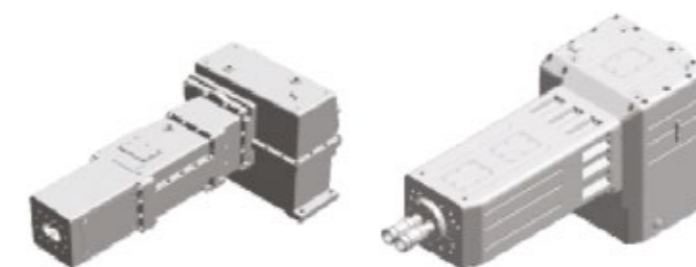
Assembly dimensions

| gearbox size | main dimensions mm | | | | |
|----------------|--------------------|-------|----------------|-----|-----------|
| | a | A | h ₂ | b | weight kg |
| TGE 3-26-DOS | 22 | 120 | 636,5 | 395 | 108 |
| TGE 3-34-DOS | 30 | 138 | 960 | 475 | 218 |
| TGE 3-37-DOS | 31 | 138 | 960 | 475 | 218 |
| TGE 3-40-DOS | 33,4 | 135,6 | 973 | 475 | 230 |
| TGE 3-48-DOS | 40 | 175 | 1253 | 525 | 440 |
| TGE 3-50-DOS* | 42 | 21 | 1290 | 379 | 465 |
| TGE 3-53-DOS | 43 | 175 | 1286 | 565 | 456 |
| TGE 3-63-DOS | 51,75 | 200 | 1514 | 652 | 764 |
| TGE 3-65-DOS* | 52 | 26 | 1336 | 460 | 870 |
| TGE 3-70-DOS | 58,5 | 225 | 1693 | 740 | 940 |
| TGE 3-72-DOS | 59,5 | 225 | 1769 | 740 | 940 |
| TGE 3-75-DOS* | 60 | 30 | 1532 | 530 | 1.095 |
| TGE 3-85-DOS | 70 | 280 | 1809 | 880 | 1.530 |
| TGE 3-95-DOS* | 78 | 44,5 | 2190 | 560 | 1.750 |
| TGE 3-130-DOS* | 110 | 55 | 2530 | 830 | 4.420 |

* vertical

h₂ are approx. values only as they vary depending on the adapter situation

Mounting position



right-hand, Z-form

vertical, Z-form

DURUMAX® – TGE 3 DOS

Twin Shaft Extruder Gearbox co-rotating

Power rating table

Your specific power data determines the provisional size of the gearbox. The power ratings in the table are designed in such a way that they guarantee sufficient safety factors of the gears in accordance with DIN 3990 with an application factor $K_A=1,25$. The service life of the bearings is set at a standard of $L_h > 20.000$ h. Your requirements of the gearbox and their limiting criteria are of course checked by our gearbox engineers so that you receive a product which inspires you.

| gearbox size | TGE 3-26-DOS | | | TGE 3-34-DOS | | | TGE 3-37-DOS | | | TGE 3-40-DOS | | |
|-----------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|
| center distance | 22 mm | | | 30 mm | | | 31 mm | | | 33,4 mm | | |
| n_2 [rpm] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] |
| 300 | 8 | 245 | 2 | 20 | 620 | 6 | 23 | 685 | 16 | 28 | 850 | 24 |
| 350 | 9 | 245 | 2 | 24 | 620 | 5 | 26 | 685 | 16 | 33 | 850 | 24 |
| 400 | 11 | 245 | 2 | 27 | 620 | 5 | 30 | 685 | 16 | 37 | 850 | 24 |
| 450 | 12 | 245 | 2 | 31 | 620 | 5 | 34 | 685 | 16 | 42 | 850 | 24 |
| 500 | 13 | 245 | 2 | 34 | 620 | 5 | 38 | 685 | 16 | 47 | 850 | 24 |
| 550 | 15 | 245 | 2 | 38 | 620 | 5 | 41 | 685 | 16 | 51 | 850 | 24 |
| 600 | 16 | 245 | 2 | 41 | 620 | 5 | 45 | 685 | 16 | 56 | 850 | 24 |
| 650 | 17 | 240 | 2 | 43 | 605 | 5 | 48 | 670 | 16 | 60 | 850 | 24 |
| 700 | 18 | 235 | 2 | 46 | 595 | 4 | 50 | 655 | 16 | 65 | 850 | 24 |
| 800 | 20 | 225 | 2 | 50 | 570 | 4 | 55 | 630 | 16 | 75 | 850 | 24 |
| 900 | 21 | 215 | 2 | 54 | 550 | 4 | 60 | 605 | 16 | 80 | 810 | 20 |
| 1.000 | 23 | 210 | 2 | 59 | 535 | 4 | 65 | 590 | 16 | 85 | 780 | 20 |
| 1.100 | 25 | 205 | 2 | 63 | 520 | 4 | 69 | 570 | 16 | 95 | 780 | 20 |
| 1.200 | 26 | 200 | 2 | 67 | 505 | 4 | 73 | 555 | 16 | 100 | 780 | 20 |
| gearbox size | TGE 3-48-DOS | | | TGE 3-50-DOS | | | TGE 3-53-DOS | | | TGE 3-63-DOS | | |
| center distance | 40 mm | | | 42 mm | | | 43 mm | | | 51,75 mm | | |
| n_2 [rpm] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] |
| 300 | 49 | 1.470 | 26 | 55 | 1.655 | 27 | 60 | 1.830 | 29 | 105 | 3.190 | 45 |
| 350 | 57 | 1.470 | 26 | 64 | 1.655 | 27 | 70 | 1.830 | 29 | 123 | 3.190 | 45 |
| 400 | 65 | 1.470 | 26 | 73 | 1.655 | 27 | 80 | 1.830 | 29 | 140 | 3.190 | 45 |
| 450 | 73 | 1.470 | 26 | 82 | 1.655 | 27 | 90 | 1.830 | 29 | 158 | 3.190 | 45 |
| 500 | 81 | 1.470 | 26 | 91 | 1.655 | 27 | 101 | 1.830 | 29 | 175 | 3.190 | 45 |
| 550 | 89 | 1.470 | 26 | 100 | 1.655 | 27 | 111 | 1.830 | 29 | 193 | 3.190 | 45 |
| 600 | 97 | 1.470 | 26 | 109 | 1.655 | 27 | 121 | 1.830 | 29 | 210 | 3.190 | 45 |
| 650 | 103 | 1.435 | 26 | 116 | 1.615 | 27 | 128 | 1.785 | 29 | 222 | 3.110 | 45 |
| 700 | 108 | 1.405 | 26 | 122 | 1.580 | 27 | 134 | 1.745 | 29 | 234 | 3.045 | 44 |
| 800 | 119 | 1.350 | 26 | 134 | 1.520 | 27 | 148 | 1.675 | 29 | 257 | 2.925 | 43 |
| 900 | 129 | 1.305 | 26 | 145 | 1.465 | 27 | 160 | 1.620 | 29 | 279 | 2.820 | 41 |
| 1.000 | 139 | 1.265 | 26 | 156 | 1.420 | 27 | 173 | 1.570 | 29 | 301 | 2.735 | 40 |
| 1.100 | 148 | 1.225 | 26 | 167 | 1.380 | 27 | 184 | 1.525 | 29 | 321 | 2.660 | 39 |
| 1.200 | 158 | 1.195 | 26 | 177 | 1.345 | 27 | 196 | 1.485 | 29 | 342 | 2.590 | 38 |

| gearbox size | TGE 3-65-DOS | | | TGE 3-70-DOS | | | TGE 3-72-DOS | | | TGE 3-75-DOS | | |
|-----------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|---------------|---------------|-------------------|
| center distance | 52 mm | | | 58,5 mm | | | 59,5 mm | | | 60 mm | | |
| n_2 [rpm] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] |
| 300 | 105 | 3.190 | 45 | 152 | 4.605 | 55 | 160 | 4.845 | 58 | 160 | 4.845 | 58 |
| 350 | 123 | 3.190 | 45 | 177 | 4.605 | 55 | 186 | 4.845 | 58 | 186 | 4.845 | 58 |
| 400 | 140 | 3.190 | 45 | 203 | 4.605 | 55 | 213 | 4.845 | 58 | 213 | 4.845 | 58 |
| 450 | 158 | 3.190 | 45 | 228 | 4.605 | 55 | 240 | 4.845 | 58 | 240 | 4.845 | 58 |
| 500 | 175 | 3.190 | 45 | 253 | 4.605 | 55 | 266 | 4.845 | 58 | 266 | 4.845 | 58 |
| 550 | 193 | 3.190 | 45 | 278 | 4.605 | 55 | 293 | 4.845 | 58 | 293 | 4.845 | 58 |
| 600 | 210 | 3.190 | 45 | 304 | 4.605 | 55 | 320 | 4.845 | 58 | 320 | 4.845 | 58 |
| 650 | 222 | 3.110 | 45 | 321 | 4.495 | 55 | 338 | 4.730 | 58 | 338 | 4.730 | 58 |
| 700 | 234 | 3.045 | 44 | 338 | 4.395 | 55 | 356 | 4.625 | 58 | 356 | 4.625 | 58 |
| 800 | 257 | 2.925 | 43 | 372 | 4.225 | 55 | 391 | 4.445 | 57 | 391 | 4.445 | 57 |
| 900 | 279 | 2.820 | 41 | 403 | 4.075 | 55 | 425 | 4.290 | 55 | 425 | 4.290 | 55 |
| 1.000 | 301 | 2.735 | 40 | 434 | 3.950 | 53 | 457 | 4.155 | 53 | 457 | 4.155 | 53 |
| 1.100 | 321 | 2.660 | 39 | 464 | 3.840 | 52 | 489 | 4.040 | 52 | 489 | 4.040 | 52 |
| 1.200 | 342 | 2.590 | 38 | 493 | 3.740 | 50 | 519 | 3.935 | 50 | 519 | 3.935 | 50 |
| gearbox size | TGE 3-85-DOS | | | TGE 3-95-DOS | | | TGE 3-130-DOS | | | | | |
| center distance | 70 mm | | | 78 mm | | | 110 mm | | | | | |
| n_2 [rpm] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | P_M [kW] | T_2 [Nm] | F_{axW} [kN] | | | |
| 300 | 260 | 7.890 | 81 | 325 | 9.840 | 101 | 834 | 25.400 | 192 | | | |
| 350 | 304 | 7.890 | 81 | 379 | 9.840 | 101 | 973 | 25.400 | 192 | | | |
| 400 | 347 | 7.890 | 81 | 433 | 9.840 | 101 | 1.112 | 25.400 | 192 | | | |
| 450 | 390 | 7.890 | 81 | 487 | 9.840 | 101 | 1.232 | 25.019 | 189 | | | |
| 500 | 434 | 7.890 | 79 | 541 | 9.840 | 101 | 1.348 | 24.644 | 186 | | | |
| 550 | 477 | 7.890 | 77 | 595 | 9.840 | 101 | 1.461 | 24.274 | 183 | | | |
| 600 | 520 | 7.890 | 75 | 649 | 9.840 | 101 | 1.546 | 23.546 | 178 | | | |
| 650 | 550 | 7.700 | 73 | 687 | 9.605 | 101 | 1.625 | 22.839 | 173 | | | |
| 700 | 580 | 7.530 | 72 | 723 | 9.395 | 98 | 1.697 | 22.154 | 167 | | | |
| 800 | 637 | 7.235 | 69 | 794 | 9.025 | 95 | 1.881 | 21.490 | 162 | | | |
| 900 | 691 | 6.985 | 66 | 862 | 8.715 | 91 | - | - | - | | | |
| 1.00 | 744 | 6.770 | 64 | 928 | 8.440 | 88 | - | - | - | | | |
| 1.100 | 796 | 6.575 | 63 | 992 | 8.205 | 86 | - | - | - | | | |
| 1.200 | 845 | 6.410 | 61 | 1.055 | 7.990 | 84 | - | - | - | | | |

P_M = motor power [kW]
 T_2 = total output torque [Nm] at $K_A = 1,25$
 F_{axW} = allowable axial force per shaft [kN]
 n_2 = output speed [min⁻¹]

Information to the tables:

1. Define your specific centre distance in the power rating table.
2. Select the output speed n_2 you require.
3. Look for the required motor power P_M or your output torque T_2 in the selected line.
4. Take the gearbox size you have selected and confirm whether or not the installation dimensions suit your Extruder by referring to the geometry table.
5. If you are not able to find your requirements, our gearbox engineers will design your gearbox and its limiting criteria.

TA Oil Cooling and Lubrication Units

Tailor made oil cooling and lubrication Units for every Application

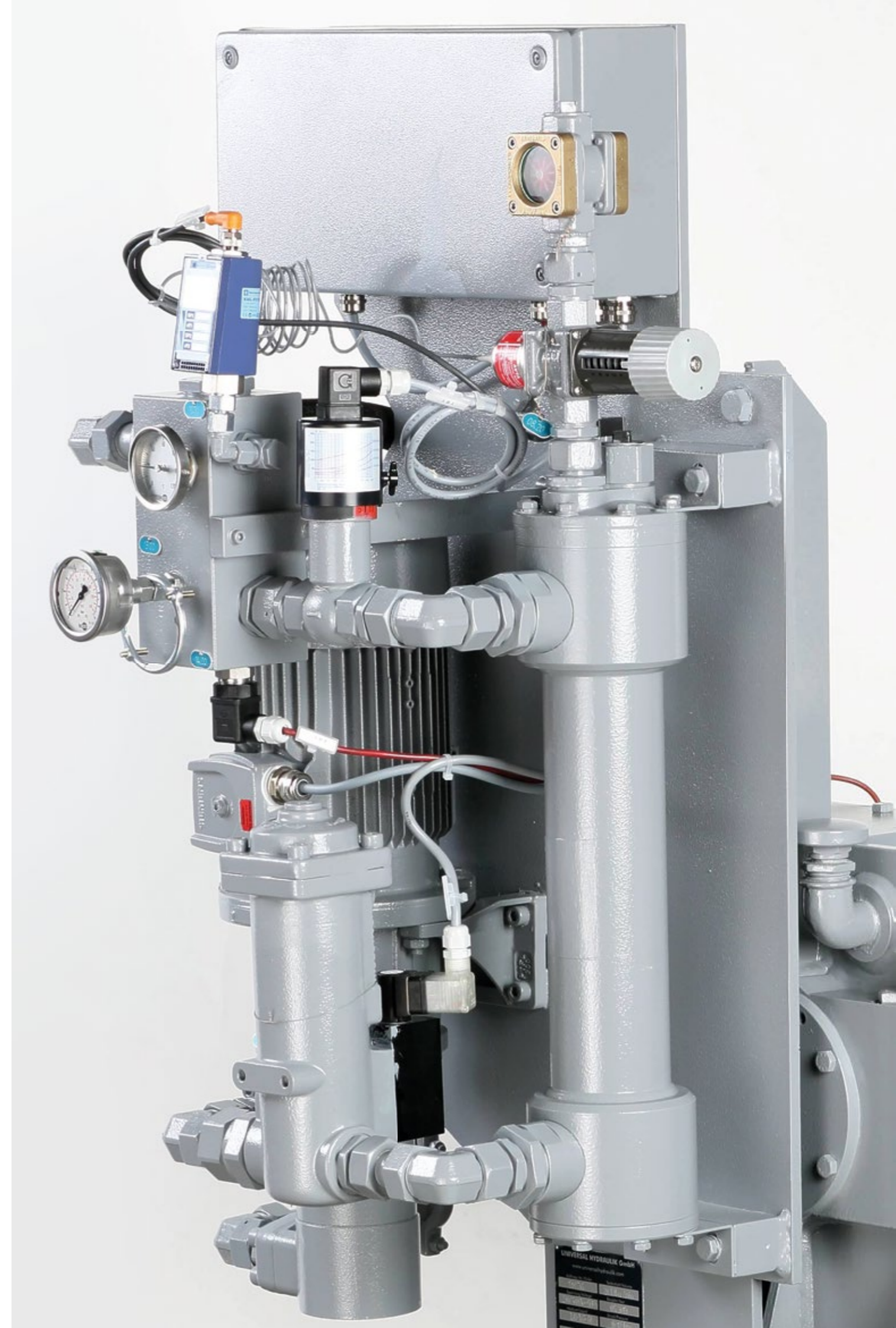
Our tailor made oil cooling and lubrication units ensure optimum lubrication of our DURUMAX® gearboxes and a efficient heat elimination in every range of performance.

Features:

- For every application the right dimensioned oil cooling and lubrication unit
- Wide range of standard units consisting of:
 - electrical driven oil-pump
 - heat-exchanger
 - pressure switch
 - oil-filter
- Each unit can be adjusted individually e.g. with
 - switchable double oil-filter with impurification display
 - thermometer, manometer
 - thermostat valve for cooling water flow

Technical Details:

| type | cooling capacity [kW] | circulating oil quantity [l/min] |
|----------------|-----------------------|----------------------------------|
| TA 2,5-6-320 | 2,5 | 6 |
| ... | ... | ... |
| TA 265-700-320 | 265 | 700 |



Wide Variety of Applications

Profile | Pipe | WPC | Food | Petfood | Compounds | Recyclat | Masterbatch | Confectionary





We want you to be pleased with us

Our policy of quality has established itself within our company code. We wish to offer our customers products and services of the highest standard. For this reason we have introduced an apparatus for a contract based quality management system according to DIN EN ISO 9001. This system is applied to every contract. We pursue the permanent target of producing even better products with less deviances.



Our employees both on the production level and in administration have committed themselves in the interest of our customers to systematically applying this quality management system.

Henschel Antriebstechnik supports its claim to quality as a member company of the "Forschungsvereinigung Antriebstechnik e.V." (FVA). By taking part in numerous FVA-teams working on such subjects as spur gears, materials, worm gearboxes, computer calculation and simulation as well as oils and lubrication our engineers are actively informed of the most up to date research results. This knowledge is then constantly transferred to our products.

We want you to be pleased with us. Your success is our motivation!



Henschel service proven as the best choice for all cases

Henschel is known worldwide for its high quality and durability. On this basis, it is our philosophy to ensure the highest possible availability of our systems. We master all technologies necessary to assess the gears as part of your high available equipment. In line with this we offer you the best possible service.

We are a German engineering company with over 200 years of experience. Few companies can rely on such a vast accumulated know-how. This makes our service unique.

Service for the entire life cycle of your Extruder gearbox

Installation and commissioning | Schooling | Training | Start-up service | Special Tools

From the commissioning and start-up of its systems, you can use our professional knowledge for your purposes. We assist you with the installation of your gear with our Henschel local specialists, wherever and whenever you need us. We will prepare you for your gear and give you a successful and long-lasting operation.

During Operation | Monitoring | Mobile Services | Plant Data Collection

We provide on-site operational, energetic support and bring to you our knowledge in your production - even for other products. At your location, we provide operational support and put our knowledge to your production. We are there for you worldwide, wherever and whenever you need us. With „Go Smart“ we provide you with exclusive and confidential operational data – for you to maximise your current work load and prepare you for the future.

Procurement policy | Spare parts platform | Financing | Rentals | Transmission Refurbishment | Replacement Parts | Repair

We provide you with exclusive and fast replacement of parts or devices before the day is out! At the end of the life cycle, we offer a refurbishment plan, or advise you as part of a new acquisition. For all types of repairs we are competently and quickly available, including repairs on gears from other manufacturers. Our specialists are eager to find solutions for your challenges.

Henschel performance program

With Henschel you have a partner who is targeted to the sustainable improvement of system availability and performance and to sharing their expert knowledge in your home base. The Henschel performance program is tailored to challenges through care and maintenance.

Henschel local specialists, wherever and whenever they are needed.

**Worldwide
made by
Henschel**



China

Henschel, Shanghai
Phone: +86 21 6469 7696
chn@henschelgroup.de

Czech Republic

Henschel, Brno
Phone: +420 602 710 300
cze@henschelgroup.de

Egypt

Henschel, Giza
Phone: +20 233 88 20 00
egy@henschelgroup.de

Germany

Henschel, Kassel
Phone: +49 561 801 5960
antriebstechnik@henschel.de

Henschel, Heilbad-Heiligenstadt
Phone: +49 3606 6073620
fertigungstechnik@henschel.de

Great Britain

Henschel, Nottingham
Phone: +44 115 9753655
gbr@henschelgroup.de

Henschel, Leconfield
Phone: +44 1964 751413
gbr@henschelgroup.de

India

Henschel, Ahmedabad
Phone: +91 79 25620953
ind@henschelgroup.de

Henschel, New Delhi
Phone: +91 11 47637300
ind@henschelgroup.de

Italy

Henschel, Milano
Phone: +39 02 48952242
ita@henschelgroup.de

North America

Henschel, Green Bay
Phone: +1 920 336 11 22
usa@henschelgroup.de

Russia

Henschel, Moskau
Phone: +7 985 7617249
rus@henschelgroup.de

South Korea

Henschel, Seoul
Phone: +82 31 4730453
kor@henschelgroup.de

Switzerland

Henschel, Meilen
Phone: +41 44 6804600
che@henschelgroup.de

Taiwan

Henschel, Taipei
Phone: +886 2 27731885
tw@henschelgroup.de

HENSCHEL

Henschel GmbH
Marketing
Henschelplatz 1, 34127 Kassel, Germany
Phone: +49 561 801-6118
henschel@henschel.de



www.henschel.de

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