

# Rear Axle — Group 35

## General

| Gearing        | Number of teeth<br>drive pinion: ring gear | Gear ratio | Backlash |
|----------------|--|------------|----------|
| Gleason Hypoid | 10 : 41                                    | 1 : 4.10   | 0.16     |

## Bearings

| Use   | Designation   | Internal<br>diameter    | External<br>diameter    | Radial play | End play              |
|---|---|-------------------------|-------------------------|-------------|-----------------------|
| Annular grooved bearing for<br>rear axle shaft*                     | 180 981 00 25<br>special purpose bearing<br>6208 C4 DIN 625 | $\frac{39.988}{40.000}$ | $\frac{80.000}{79.987}$ | 0.032-0.050 | approx.<br>0.32-0.50  |
| Angular contact bearing** with<br>split inner race for drive pinion | 000 981 04 27<br>000 981 07 27<br>(optional)                | $\frac{34.988}{35.000}$ | $\frac{80.000}{79.987}$ | —           | approx.<br>0.01-0.035 |
| Cylindrical roller bearing for<br>drive pinion                      | 000 981 16 01   | $\frac{39.988}{40.000}$ | $\frac{80.000}{79.987}$ | 0.018-0.031 | —                     |
| Taper roller bearing for<br>differential                            | 30 208 DIN 720  | $\frac{39.988}{40.000}$ | $\frac{80.000}{79.987}$ | adjustable  | adjustable            |

\* On the rear axle shaft, only bearings with a rounding radius of  $2 \pm 0.7$  mm on the inner race may be used.

\*\* A number of rear axles have also been fitted with angular contact bearing 3307 DIN 628 with one-piece inner race.

## Rear Axle Shaft

| Length  |                     | Diameter for<br>sealing<br>ring retainer | Internal<br>diameter of<br>sealing ring<br>retainer | Oversize              | External<br>diameter of<br>sealing ring<br>retainer | Diameter<br>for outer<br>sealing ring | Diameter at<br>seat for<br>annular<br>grooved bearing |
|---|---------------------|--|---|-----------------------|---|---------------------------------------|---|
| left  | right               |  |   |                       |   |                                       |   |
| 693   | $\frac{676}{687^*}$ | $\frac{34.059}{34.043}$                  | $\frac{34.000}{34.025}$                             | + 0.018 to<br>+ 0.059 | $\frac{37.700}{37.540}$                             | $\frac{50.000}{49.840}$               | $\frac{40.013}{40.002}$                               |
| Permissible diameter decrease at sealing surfaces |                     |  |   |                       | 0.5   |                                       |   |
| Brake drum fit                                    |                     |  |   |                       | 66.954—67.000                                       |                                       |   |

| Permissible eccentricity | at sealing surfaces and ball bearing seat | at splines |
|--------------------------|---|------------|
|                          | 0.02                                      | 0.1        |
| Permissible run-out      | 0.1                                       |            |

| Thread on outside sealing surface of rear axle shaft | Left shaft   | Right shaft |
|--|--------------|-------------|
|  | right thread | left thread |

\* Rear axle shafts with locking device for the sliding sleeve

## Left Axle Tube

| Fitting length | Parallel deviation<br>of flange surfaces | Bore for annular<br>grooved bearing | Depth of bore for<br>annular grooved<br>bearing | Bore for taper<br>roller bearing |
|----------------|--|-------------------------------------|---|----------------------------------|
| $599.5 \pm 1$  | 0.1                                      | $\frac{79.985}{80.004}$             | 20.00 <sup>0.1</sup>                            | $\frac{79.985}{79.999}$          |

## Right Axle Tube

| Length from flange to center fork eyes | Parallel deviation between center fork eyes and flange | Bore for annular grooved bearing | Depth of bore for annular grooved bearing | Distance between eyes | Parallelity of eyes | Width of eyes           | Permissible decrease at inner face of each eye |
|--|--|----------------------------------|---|-----------------------|---------------------|-------------------------|--|
| 670.5 ± 1                              | 0.1  | $\frac{79.985}{80.004}$          | 20.00 + 0.1                               | 115 + 0.2             | 0.05                | $\frac{25.960}{25.876}$ | 0.3  |

| Bore of eyes            | External diameter of bushings | Oversize           | Bore of bushing         | Sleeve on connecting pin | Clearance      |
|-------------------------|-------------------------------|--------------------|-------------------------|--------------------------|----------------|
| $\frac{38.000}{38.025}$ | $\frac{38.059}{38.043}$       | + 0.018 to + 0.050 | $\frac{33.000}{33.025}$ | $\frac{32.975}{32.950}$  | 0.025 to 0.075 |

|   |          |
|---|----------|
| Clearance between axle tube and rear axle housing | max. 0.1 |
|---|----------|

## Supporting Tube

| Bore in axle tube       | External diameter of supporting tube | Oversize           |
|-------------------------|--------------------------------------|--------------------|
| $\frac{26.000}{26.021}$ | $\frac{26.048}{26.035}$              | + 0.014 to + 0.048 |

## Rear Axle Housing

|                  |   | Bore in housing         | External diameter of bearing | Force-fit dimension or clearance |
|------------------|---|-------------------------|------------------------------|----------------------------------|
| For drive pinion | Angular contact bearing with split inner race | $\frac{79.994}{80.013}$ | $\frac{80.000}{79.987}$      | — 0.026 to + 0.006               |
|                  | Cylindrical roller bearing                    | $\frac{79.985}{80.004}$ | $\frac{80.000}{79.987}$      | — 0.017 to + 0.015               |
| For differential | Taper roller bearing                          | $\frac{79.985}{79.999}$ | $\frac{80.000}{79.987}$      | — 0.012 to + 0.015               |

|  |               |
|--|---------------|
| Distance of contact surfaces for eyes of right axle tube | 110.9—111     |
| Permissible decrease each side                           | 0.3           |
| Diameter of bore   | 27.983—27.996 |

## Connecting Pin and Sleeves

| Type                                  | Color code | Connecting pin external diameter | Bore in sleeve          | Oversize           |
|---------------------------------------|------------|----------------------------------|-------------------------|--------------------|
| I                                     | white      | $\frac{28.000}{27.994}$          | $\frac{27.983}{27.989}$ | + 0.005 to + 0.017 |
| II                                    | blue       | $\frac{27.993}{27.987}$          | $\frac{27.976}{27.982}$ |                    |
| Permissible run-out of connecting pin |            |                                  |                         | 0.1                |

## Differential Gear

### Drive Pinion

|                          | at ball bearing seat | at splines |
|--------------------------|----------------------|------------|
| Permissible eccentricity | 0.005                | 0.03       |
| Permissible run-out      | 0.005                |            |

|                            | Bearing seat on shaft   | Internal diameter of bearing | Force-fit dimension or clearance |
|----------------------------|-------------------------|------------------------------|----------------------------------|
| Angular contact bearing    | $\frac{35.006}{34.995}$ | $\frac{34.988}{35.000}$      | — 0.005 to + 0.018               |
| Cylindrical roller bearing | $\frac{40.013}{40.002}$ | $\frac{39.988}{40.000}$      | + 0.002 to + 0.025               |

### Universal Joint Flange

|   |                         |
|---|-------------------------|
| Permissible run-out, measured at outside diameter   | 0.02                    |
| When repairs are necessary, the universal joint flange can be turned down to a minimum thickness of 5.70 mm |                         |
| Diameter of sealing surface   | $\frac{35.000}{34.840}$ |
| When repairing, the sealing surface can be reconditioned; maximum removal of stock 0.5 mm                   |                         |

### Differential

| Differential pinion shaft  | Type | Color code | Differential pinion shaft | Bore in differential gear housing | Oversize           |
|--|------|------------|---------------------------|-----------------------------------|--------------------|
|  | I    | white      | $\frac{17.023}{17.012}$   | $\frac{17.000}{17.010}$           | + 0.002 to + 0.003 |
|  | II   | blue       | $\frac{17.034}{17.023}$   | $\frac{17.011}{17.021}$           |                    |
| Bore in differential pinion gear                                 |      |            |                           | $\frac{17.07}{17.72}$             |                    |
| Play of differential pinion gears on differential pinion shaft   |      |            |                           | 0.036—0.108                       |                    |
| External diameter of bearing surfaces at differential side gears |      |            |                           | $\frac{35.475}{35.450}$           |                    |
| Bore in differential gear housing                                |      |            |                           | $\frac{35.500}{35.525}$           |                    |
| Play of differential side gears in differential gear housing     |      |            |                           | 0.025—0.075                       |                    |
| Clearance between shim plate and differential gear housing       |      |            |                           | 0.05—0.1                          |                    |

## Differential (continued)

|  |   |                                |   |                          |                     |
|--|---|--------------------------------|---|--------------------------|---------------------|
| Ring gear                              | Diameter at differential housing          |                                | Bore in ring gear                             |                          | Force-fit dimension |
|  | $\frac{107.035}{107.013}$                 |                                | $\frac{107.000}{107.013}$                     |                          | 0,000 to + 0,035    |
|  | Permissible run-out                       |                                |   | Permissible eccentricity |                     |
|  | 0.005                                     |                                |   | 0.01                     |                     |
| Seat and bore of taper roller bearings | Designation of bearing                    | Inner race of bearing diameter | Bearing seat at differential housing diameter |                          | Force-fit dimension |
|  | Taper roller bearing<br>30 208<br>DIN 720 | $\frac{39.988}{40.000}$        | $\frac{40.030}{40.014}$                       |                          | + 0.014 to + 0.042  |

## Sliding Joint

| Type | Color code   | Needle bearing bushing external diameter                          | Bore in yokes           | Force-fit dimension or clearance  | Needle bearing bushing internal diameter | Trunnion diameter       | Clearance    |
|------|--------------|---|-------------------------|---|--|-------------------------|--------------|
| I    | 1 white dot  | $\frac{29.502}{29.512}$<br>$\left(\frac{29.522}{29.515}\right)^*$ | $\frac{29.500}{29.510}$ | $\begin{matrix} -0.008 \\ \text{to} \\ +0.012 \\ \left(\begin{matrix} +0.005 \\ \text{to} \\ +0.022 \end{matrix}\right)^* \end{matrix}$ | $\frac{22.641}{22.620}$                  | $\frac{17.600}{17.589}$ | 0.02 to 0.05 |
| II   | 2 white dots | $\frac{29.513}{29.523}$<br>$\left(\frac{29.528}{29.523}\right)^*$ | $\frac{29.511}{29.521}$ | $\begin{matrix} -0.008 \\ \text{to} \\ +0.012 \\ \left(\begin{matrix} +0.002 \\ \text{to} \\ +0.017 \end{matrix}\right)^* \end{matrix}$ |  |                         |              |

\* Previous dimensions

## Torque Readings

|   |            |
|---|------------|
| Screws attaching ring gear to differential  | 7–8 mkg    |
| Right threaded ring in rear axle housing  | 4 mkg      |
| Roller cage in rear axle housing  | 50–80 cmkg |
| Grooved nut for drive pinion shaft  | 14–16 mkg  |
| Adjusting screws for pressure ring at angular contact bearing on drive pinion shaft | 2.5 mkg    |
| Hexagon screw to connecting pin   | 10–12 mkg  |
| Castle nut for torque arm at step bearing   | 8 mkg      |