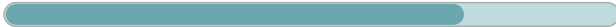


PLPE

The cost effective planetary gearbox with the best torque-low heat performance

Our **PLPE** combines the best features of the Economy series with a performance bonus: The optimized output bearing is designed for higher radial and axial forces. The compact outer contour of the PLPE also allows it to be used in limited spaces.

Nominal output torque **5 - 460 Nm**



Radial force **800 - 5200 N**



Axial force **1000 - 7000 N**



Torsional backlash **7 - 19 arcmin**

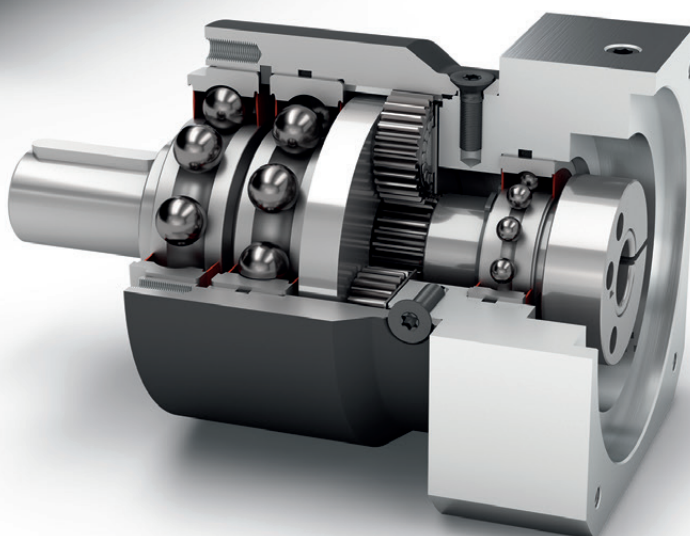
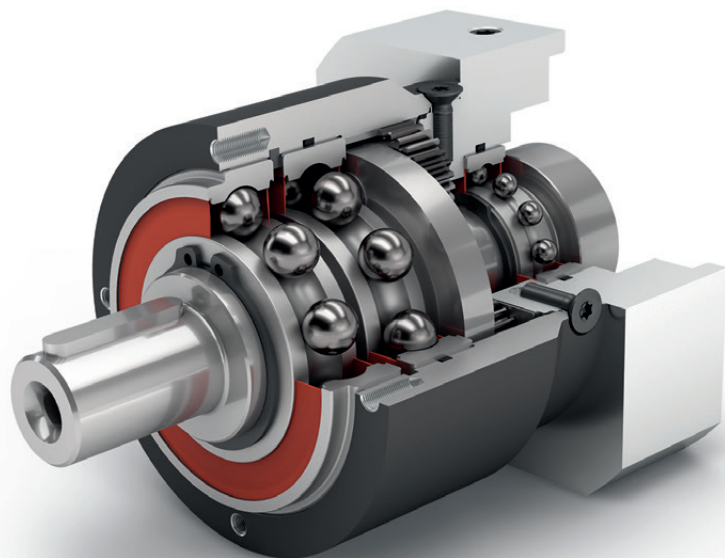


Protection class **IP54**

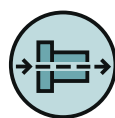


Frame sizes





Economy Line



Coaxial gearbox



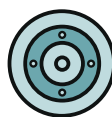
Spur gear



Reinforced deep groove ball bearings



Equidirectional rotation



Round type output flange



Planet carrier in disc design

Detailed explanations of the technical features starting on page 171.

PLPE

| Code | Gearbox characteristics | | | PLPE050 | PLPE070 | PLPE090 | PLPE120 | PLPE155 | p ⁽¹⁾ | |
|----------|--|------------------|--|--------------------------|---|--------------------------|----------------------------|------------------------------|------------------|--|
| | Service life (L _{10h}) | t _L | h | 30,000 | | | | | | |
| | Efficiency at full load ⁽²⁾ | η | % | 98 | | | | | 1 | |
| | | | | 97 | | | | | 2 | |
| | Min. operating temperature | T _{min} | °C | -25 (-13) | | | | | | |
| | Max. operating temperature | T _{max} | (°F) | 90 (194) | | | | | | |
| | Protection class | | | | IP54 | | | | | |
| S | Standard lubrication | | | | Grease (lifetime lubrication) | | | | | |
| F | Food grade lubrication | | | | Grease (lifetime lubrication) | | | | | |
| L | Low temperature lubrication ⁽³⁾ | | | | Grease (lifetime lubrication) | | | | | |
| | Installation position | | | | Any | | | | | |
| S | Standard backlash | j _t | arcmin | < 15 | < 10 | < 7 | < 7 | < 6 | 1 | |
| | | | | < 19 | < 12 | < 9 | < 9 | < 9 | 2 | |
| | Torsional stiffness ⁽²⁾ | c _g | Nm /arcmin (lb _f .in/ arcmin) | 0.7 - 1.0 (6 - 9) | 3.5 - 5.6 (31 - 50) | 9.7 - 15.0 (86 - 133) | 24.5 - 39.5 (217 - 350) | 54.5 - 71.0 (482 - 628) | 1 | |
| | | | | 0.7 - 1.1 (6 - 9) | 3.3 - 5.8 (29 - 51) | 9.7 - 16.1 (86 - 142) | 21.0 - 43.5 (186 - 385) | 55.0 - 73.0 (487 - 646) | 2 | |
| | Gearbox weight ⁽²⁾ | m _G | kg (lb _m) | 0.6 (1.3) | 1.4 (3.1) | 3.2 - 3.3 (7.1 - 7.3) | 7.4 - 7.5 (16.3 - 16.6) | 16.8 (37.0) | 1 | |
| | | | | 0.8 - 1.1 (1.7 - 2.4) | 1.7 - 1.9 (3.7 - 4.1) | 3.9 - 4.0 (8.6 - 8.9) | 9.3 - 9.6 (20.6 - 21.3) | 22.1 - 22.5 (48.8 - 49.6) | 2 | |
| S | Standard surface | | | | Housing: Steel – heat-treated and post-oxidized (black) | | | | | |
| | Running noise ⁽⁴⁾ | Q _g | dB(A) | 58 | 58 | 60 | 65 | 70 | | |
| | Max. bending moment based on the gearbox input flange ⁽⁵⁾ | M _b | Nm (lb _f .in) | 4,5 (40) | 12 (106) | 16 (142) | 40 (354) | 180 (1593) | | |

| Output shaft loads | | | PLPE050 | PLPE070 | PLPE090 | PLPE120 | PLPE155 | p ⁽¹⁾ |
|---|-----------------------|-----------------------------|------------|------------|------------|-------------|--------------|------------------|
| Radial force for 20,000 h ⁽⁶⁾⁽⁷⁾ | F _{r20.000h} | N (lb _f) | 800 (180) | 1050 (236) | 1900 (427) | 2500 (562) | 5200 (1169) | |
| Axial force for 20,000 h ⁽⁶⁾⁽⁷⁾ | F _{a20.000h} | | 1000 (225) | 1350 (303) | 2000 (450) | 4000 (899) | 7000 (1574) | |
| Radial force for 30,000 h ⁽⁶⁾⁽⁷⁾ | F _{r30.000h} | | 700 (157) | 900 (202) | 1700 (382) | 2150 (483) | 4600 (1034) | |
| Axial force for 30,000 h ⁽⁶⁾⁽⁷⁾ | F _{a30.000h} | | 800 (180) | 1000 (225) | 1500 (337) | 3000 (674) | 6000 (1349) | |
| Maximum radial force ⁽⁷⁾⁽⁸⁾ | F _{rStat} | | 1300 (292) | 1650 (371) | 3100 (697) | 4000 (899) | 8400 (1888) | |
| Maximum axial force ⁽⁷⁾⁽⁸⁾ | F _{aStat} | | 1000 (225) | 2100 (472) | 3800 (854) | 5900 (1326) | 11000 (2473) | |
| Tilting moment for 20,000 h ⁽⁶⁾⁽⁸⁾ | M _{K20.000h} | Nm (lb _f .in) | 26 (230) | 42 (372) | 99 (876) | 168 (1487) | 497 (4399) | |
| Tilting moment for 30,000 h ⁽⁶⁾⁽⁸⁾ | M _{K30.000h} | | 22 (195) | 36 (319) | 89 (788) | 144 (1275) | 440 (3894) | |

| Moment of inertia | | | PLPE050 | PLPE070 | PLPE090 | PLPE120 | PLPE155 | p ⁽¹⁾ |
|---------------------------------------|---|---|----------------------------------|----------------------------------|----------------------------------|------------------------------------|------------------------------------|------------------|
| Mass moment of inertia ⁽²⁾ | J | kgcm ² (lb _f .in.s ² 10 ⁻⁴) | 0.015 - 0.030 (0.133 - 0.266) | 0.069 - 0.174 (0.611 - 1.540) | 0.374 - 0.789 (3.310 - 6.983) | 1.419 - 2.764 (12.559 - 24.463) | 4.932 - 7.611 (43.652 - 67.363) | 1 |
| | | | 0.014 - 0.026 (0.124 - 0.230) | 0.064 - 0.126 (0.566 - 1.115) | 0.356 - 0.625 (3.151 - 5.532) | 1.376 - 2.334 (12.179 - 20.658) | 4.759 - 7.108 (42.121 - 62.911) | 2 |

(1) Number of stages
 (2) The ratio-dependent values can be retrieved in Tec Data Finder – www.neugart.com
 (3) T_{min} = -40°C. Optimal operating temperature max. 50°C
 (4) Sound pressure level from 1 m, measured on input running at n_i=3000 rpm no load; i=5
 (5) Max. motor weight* in kg = 0.2 x M_b / motor length in m
 * with symmetrically distributed motor weight
 * with horizontal and stationary mounting
 (6) These values are based on an output shaft speed of n₂=100 rpm
 (7) Based on center of output shaft
 (8) Other (sometimes higher) values following changes to T_{2N}, F_r, F_a, cycle, and service life of bearing. Application specific configuration with NCP – www.neugart.com

| Output torques | | | PLPE050 | PLPE070 | PLPE090 | PLPE120 | PLPE155 | i ⁽¹⁾ | p ⁽²⁾ |
|---|-----------------|---------------|--------------------------------------|-------------------|---------------|------------|------------|------------------|------------------|
| Nominal output torque ⁽³⁾⁽⁴⁾ | T _{2N} | Nm (lb.in) | 11 (97) | 28 (248) | 85 (752) | 115 (1018) | - | 3 | 1 |
| | | | 15 (133) | 33 (292) | 90 (797) | 155 (1372) | 460 (4071) | 4 | |
| | | | 13 (115) | 30 (266) | 82 (726) | 172 (1522) | 445 (3939) | 5 | |
| | | | 8,5 (75) | 25 (221) | 65 (575) | 135 (1195) | - | 7 | |
| | | | 6 (53) | 18 (159) | 50 (443) | 120 (1062) | - | 8 | |
| | | | 5 (44) | 15 (133) | 38 (336) | 95 (841) | 210 (1859) | 10 | |
| | | | 12 (106) | 33 (292) | 97 (859) | 157 (1390) | - | 9 | 2 |
| | | | 15 (133) | 33 (292) | 90 (797) | 195 (1726) | - | 12 | |
| | | | 13 (115) | 33 (292) | 82 (726) | 172 (1522) | - | 15 | |
| | | | 15 (133) | 33 (292) | 90 (797) | 195 (1726) | 460 (4071) | 16 | |
| | | | 15 (133) | 33 (292) | 90 (797) | 195 (1726) | 460 (4071) | 20 | |
| | | | 13 (115) | 30 (266) | 82 (726) | 172 (1522) | 445 (3939) | 25 | |
| | | | 15 (133) | 33 (292) | 90 (797) | 195 (1726) | - | 32 | |
| | | | 13 (115) | 30 (266) | 82 (726) | 172 (1522) | 460 (4071) | 40 | |
| | | | - | - | - | - | 445 (3939) | 50 | |
| | | | 7,5 (66) | 18 (159) | 50 (443) | 120 (1062) | - | 64 | |
| | | | 5 (44) | 15 (133) | 38 (336) | 95 (841) | 210 (1859) | 100 | |
| | | | Max. output torque ⁽⁴⁾⁽⁵⁾ | T _{2max} | Nm (lb.in) | 17,5 (155) | 45 (398) | 136 (1204) | |
| 24 (212) | 53 (469) | 144 (1275) | | | | 248 (2195) | 736 (6514) | 4 | |
| 21 (186) | 48 (425) | 131 (1159) | | | | 275 (2434) | 712 (6302) | 5 | |
| 13,5 (119) | 40 (354) | 104 (920) | | | | 216 (1912) | - | 7 | |
| 9,5 (84) | 29 (257) | 80 (708) | | | | 192 (1699) | - | 8 | |
| 8 (71) | 24 (212) | 61 (540) | | | | 152 (1345) | 336 (2974) | 10 | |
| 19 (168) | 53 (469) | 155 (1372) | | | | 251 (2222) | - | 9 | 2 |
| 24 (212) | 53 (469) | 144 (1275) | | | | 312 (2761) | - | 12 | |
| 21 (186) | 53 (469) | 131 (1159) | | | | 275 (2434) | - | 15 | |
| 24 (212) | 53 (469) | 144 (1275) | | | | 312 (2761) | 736 (6514) | 16 | |
| 24 (212) | 53 (469) | 144 (1275) | | | | 312 (2761) | 736 (6514) | 20 | |
| 21 (186) | 48 (425) | 131 (1159) | | | | 275 (2434) | 712 (6302) | 25 | |
| 24 (212) | 53 (469) | 144 (1275) | | | | 312 (2761) | - | 32 | |
| 21 (186) | 48 (425) | 131 (1159) | | | | 275 (2434) | 736 (6514) | 40 | |
| - | - | - | | | | - | 712 (6302) | 50 | |
| 12 (106) | 29 (257) | 80 (708) | | | | 192 (1699) | - | 64 | |
| 8 (71) | 24 (212) | 61 (540) | | | | 152 (1345) | 336 (2974) | 100 | |

PLPE

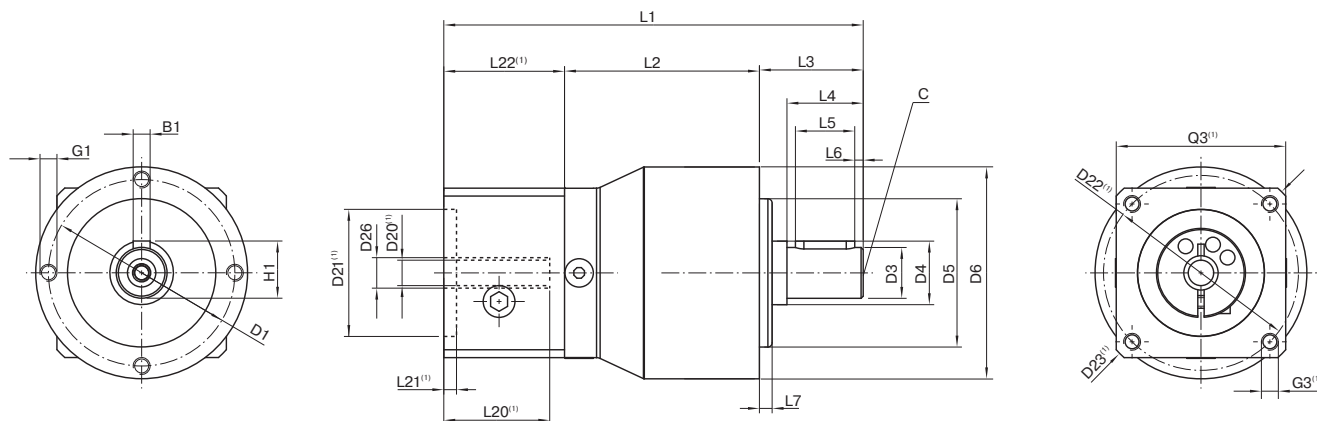
(1) Ratios (i=n₁/n₂)
 (2) Number of stages
 (3) Application specific configuration with NCP – www.neugart.com
 (4) Values for feather key (code "A"): for repeated load
 (5) 30,000 rotations of the output shaft permitted; see page 164

PLPE

| Output torques | | | PLPE050 | PLPE070 | PLPE090 | PLPE120 | PLPE155 | i ⁽¹⁾ | p ⁽²⁾ |
|--------------------------------------|--------------------|-----------------------------|------------|------------|------------|------------|------------|------------------|------------------|
| Emergency stop torque ⁽³⁾ | T _{2Stop} | Nm (lb _f .in) | 22,5 (199) | 66 (584) | 180 (1593) | 390 (3452) | - | 3 | 1 |
| | | | 30 (266) | 88 (779) | 240 (2124) | 520 (4602) | 920 (8143) | 4 | |
| | | | 36 (319) | 80 (708) | 220 (1947) | 500 (4425) | 890 (7877) | 5 | |
| | | | 26 (230) | 80 (708) | 178 (1575) | 340 (3009) | - | 7 | |
| | | | 27 (239) | 80 (708) | 190 (1682) | 380 (3363) | - | 8 | |
| | | | 27 (239) | 80 (708) | 200 (1770) | 480 (4248) | 420 (3717) | 10 | |
| | | | 33 (292) | 88 (779) | 260 (2301) | 500 (4425) | - | 9 | |
| | | | 40 (354) | 88 (779) | 240 (2124) | 520 (4602) | - | 12 | |
| | | 36 (319) | 88 (779) | 220 (1947) | 500 (4425) | - | 15 | 2 | |
| | | 40 (354) | 88 (779) | 240 (2124) | 520 (4602) | 920 (8143) | 16 | | |
| | | 40 (354) | 88 (779) | 240 (2124) | 520 (4602) | 920 (8143) | 20 | | |
| | | 36 (319) | 80 (708) | 220 (1947) | 500 (4425) | 890 (7877) | 25 | | |
| | | 40 (354) | 88 (779) | 240 (2124) | 520 (4602) | - | 32 | | |
| | | 36 (319) | 80 (708) | 220 (1947) | 500 (4425) | 920 (8143) | 40 | | |
| | | - | - | - | - | 890 (7877) | 50 | | |
| | | 27 (239) | 80 (708) | 190 (1682) | 380 (3363) | - | 64 | | |
| 27 (239) | 80 (708) | 200 (1770) | 480 (4248) | 420 (3717) | 100 | | | | |

| Input speeds | | | PLPE050 | PLPE070 | PLPE090 | PLPE120 | PLPE155 | i ⁽¹⁾ | p ⁽²⁾ |
|---|-----------------|-----|--|---------------------|---------------------|---------------------|---------------------|------------------|------------------|
| Average thermal input speed at T _{2N} and S1 ⁽⁴⁾⁽⁵⁾ | n _{1N} | rpm | 5000 | 4500 ⁽⁶⁾ | 3250 ⁽⁶⁾ | 2650 ⁽⁶⁾ | - | 3 | 1 |
| | | | 5000 | 4500 ⁽⁶⁾ | 3750 ⁽⁶⁾ | 2800 ⁽⁶⁾ | 1800 ⁽⁶⁾ | 4 | |
| | | | 5000 | 4500 | 4000 ⁽⁶⁾ | 3100 ⁽⁶⁾ | 2150 ⁽⁶⁾ | 5 | |
| | | | 5000 | 4500 | 4000 | 3500 ⁽⁶⁾ | - | 7 | |
| | | | 5000 | 4500 | 4000 | 3500 | - | 8 | |
| | | | 5000 | 4500 | 4000 | 3500 | 3000 | 10 | |
| | | | 5000 | 4500 | 4000 ⁽⁶⁾ | 3500 ⁽⁶⁾ | - | 9 | 2 |
| | | | 5000 | 4500 | 4000 | 3500 ⁽⁶⁾ | - | 12 | |
| | | | 5000 | 4500 | 4000 | 3500 ⁽⁶⁾ | - | 15 | |
| | | | 5000 | 4500 | 4000 | 3500 ⁽⁶⁾ | 2900 ⁽⁶⁾ | 16 | |
| | | | 5000 | 4500 | 4000 | 3500 | 3000 ⁽⁶⁾ | 20 | |
| | | | 5000 | 4500 | 4000 | 3500 | 3000 ⁽⁶⁾ | 25 | |
| | | | 5000 | 4500 | 4000 | 3500 | - | 32 | |
| | | | 5000 | 4500 | 4000 | 3500 | 3000 | 40 | |
| | | | - | - | - | - | 3000 | 50 | |
| | | | 5000 | 4500 | 4000 | 3500 | - | 64 | |
| | | | 5000 | 4500 | 4000 | 3500 | 3000 | 100 | |
| | | | Max. mechanical input speed ⁽⁴⁾ | n _{1Limit} | rpm | 18,000 | 13,000 | 7000 | |

(1) Ratios (i=n₁/n₂)
 (2) Number of stages
 (3) Permitted 1000 times
 (4) Application-specific speed configurations with NCP – www.neugart.com
 (5) See page 164 for the definition
 (6) Average thermal input speed at 50% T_{2N} and S1



Drawing corresponds to a PLPE050 / 1-stage / output shaft with feather key / 8 mm clamping system / motor adaptation – one part / B5 flange type motor

⁽¹⁾ The dimensions vary with the motor/gearbox flange. The input flange dimensions can be retrieved for each specific motor in Tec Data Finder at www.neugart.com

| Geometry ⁽²⁾ | | | PLPE050 | PLPE070 | PLPE090 | PLPE120 | PLPE155 | p ⁽³⁾ | Code |
|---|-----|----|----------------------------------|-------------|--------------|---------------|----------------|------------------|------|
| Pitch circle diameter output | D1 | | 44 (1.732) | 62 (2.441) | 80 (3.150) | 108 (4.252) | 140 (5.512) | | |
| Shaft diameter output | D3 | k7 | 12 (0.472) | 16 (0.630) | 22 (0.866) | 32 (1.260) | 40 (1.575) | | |
| Shaft collar output | D4 | | 15 (0.591) | 30 (1.181) | 35 (1.378) | 50 (1.969) | 55 (2.165) | | |
| Centering diameter output | D5 | h7 | 35 (1.378) | 52 (2.047) | 68 (2.677) | 90 (3.543) | 120 (4.724) | | |
| Housing diameter | D6 | | 50 (1.969) | 70 (2.756) | 90 (3.543) | 120 (4.724) | 155 (6.102) | | |
| Mounting thread x depth | G1 | 4x | M4x8 | M5x8 | M6x9 | M8x20 | M10x20 | | |
| Min. total length | L1 | | 94 (3.701) | 111 (4.370) | 147 (5.787) | 192 (7.559) | 275.5 (10.846) | 1 | |
| | | | 106.5 (4.193) | 124 (4.882) | 165 (6.496) | 219.5 (8.642) | 320 (12.598) | 2 | |
| Housing length | L2 | | 46 (1.811) | 51 (2.008) | 67.5 (2.657) | 76.5 (3.012) | 100 (3.937) | 1 | |
| | | | 58.5 (2.303) | 64 (2.520) | 85 (3.346) | 104 (4.094) | 144.5 (5.689) | 2 | |
| Shaft length output | L3 | | 24.5 (0.965) | 36 (1.417) | 46 (1.811) | 68 (2.677) | 97 (3.819) | | |
| Centering depth output | L7 | | 3 (0.118) | 3 (0.118) | 4 (0.157) | 5 (0.197) | 8 (0.315) | | |
| Motor shaft diameter j6/k6 | D20 | | More information on page 161/162 | | | | | | |
| Clamping system diameter input | D26 | | More information on page 161/162 | | | | | | |
| Output shaft with feather key (DIN 6885-1) | | | A 4x4x14 | A 5x5x25 | A 6x6x32 | A 10x8x50 | A 12x8x70 | | A |
| Feather key width (DIN 6885-1) | B1 | | 4 (0.157) | 5 (0.197) | 6 (0.236) | 10 (0.394) | 12 (0.472) | | |
| Shaft height including feather key (DIN 6885-1) | H1 | | 13.5 (0.531) | 18 (0.709) | 24.5 (0.965) | 35 (1.378) | 43 (1.693) | | |
| Shaft length from shoulder | L4 | | 18 (0.709) | 28 (1.102) | 36 (1.417) | 58 (2.283) | 82 (3.228) | | |
| Feather key length | L5 | | 14 (0.551) | 25 (0.984) | 32 (1.260) | 50 (1.969) | 70 (2.756) | | |
| Distance from shaft end | L6 | | 2 (0.079) | 2 (0.079) | 2 (0.079) | 4 (0.157) | 6 (0.236) | | |
| Center hole (DIN 332, type DR) | C | | M4x10 | M5x12.5 | M8x19 | M12x28 | M16x36 | | |
| Smooth output shaft | | | | | | | | | B |
| Shaft length from shoulder | L4 | | 18 (0.709) | 28 (1.102) | 36 (1.417) | 58 (2.283) | 82 (3.228) | | |

⁽²⁾ Dimensions in mm

⁽³⁾ Number of stages