Приложение 5.3

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | 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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ГОСТ 1139-80.**  **ОСНОВНЫЕ НОРМЫ ВЗАИМОЗАМЕНЯЕМОСТИ**  **СОЕДИНЕНИЯ ШЛИЦЕВЫЕ. ПРЯМОБОЧНЫЕ.**  **МЕЖГОСУДАРСТВЕННЫЙ СТАНДАРТ**   |  |  | | --- | --- | | **Основные нормы взаимозаменяемости**  **СОЕДИНЕНИЯ ШЛИЦЕВЫЕ ПРЯМОБОЧНЫЕ**  **Размеры и допуски**  Basic norms of interchangeability. Straight-sided splined joints. Dimensions and tolerances | **ГОСТ 1139-80** |   **Дата введения 01.01.82**  Настоящий стандарт распространяется на шлицевые соединения общего назначения с прямобочным профилем зубьев, расположенных параллельно оси соединения и с боковыми сторонами профиля, параллельными оси симметрии шлица вне окружности диаметра *d,*и устанавливает число зубьев, номинальные размеры соединений легкой, средней и тяжелой серий, а также допуски для соединений с центрированием по внутреннему диаметру, по наружному диаметру и по боковым сторонам зубьев.  Стандарт не распространяется на специальные шлицевые соединения, которые отличаются от регламентируемых настоящим стандартом номинальными размерами и видом центрирования.  Стандарт не распространяется на изделия, спроектированные до 1980 г.  Стандарт полностью соответствует стандарту СТ СЭВ 6844-89.  **(Измененная редакция, Изм. № 2).**  **1. РАЗМЕРЫ**  1.1.Основные размеры и числа зубьев шлицевых соединений должны соответствовать указанным на чертеже и в табл. [1](http://gostrf.com/normadata/1/4294839/4294839619.htm#i98664) - [3](http://gostrf.com/normadata/1/4294839/4294839619.htm#i135570).  http://gostrf.com/normadata/1/4294839/4294839619.files/x001.jpg  Таблица 1  **Размеры легкой серии, мм**   | *z × d × D* | Число зубьев *z* | *d* | *D* | *b* | *d*1*,*не менее | *а,*не менее | *с* | | *r*, не более | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Номин. | Пред. откл. | | 6 × 23 × 26 | 6 | 23 | 26 | 6 | 22,1 | 3,54 | 0,3 | +0,2 | 0,2 | | 6 × 26 × 30 | 6 | 26 | 30 | 6 | 24,6 | 3,85 | 0,3 | +0,2 | 0,2 | | 6 × 28 × 32 | 6 | 28 | 32 | 7 | 26,7 | 4,03 | 0,3 | +0,2 | 0,2 | | 8 × 32 × 36 | 8 | 32 | 36 | 6 | 30,4 | 2,71 | 0,4 | +0,2 | 0,3 | | 8 × 36 × 40 | 8 | 36 | 40 | 7 | 34,5 | 3,46 | 0,4 | +0,2 | 0,3 | | 8 × 42 × 46 | 8 | 42 | 46 | 8 | 40,4 | 5,03 | 0,4 | +0,2 | 0,3 | | 8 × 46 × 50 | 8 | 46 | 50 | 9 | 44,6 | 5,75 | 0,4 | +0,2 | 0,3 | | 8 × 52 × 58 | 8 | 52 | 58 | 10 | 49,7 | 4,89 | 0,5 | +0,3 | 0,5 | | 8 × 56 × 62 | 8 | 56 | 62 | 10 | 53,6 | 6,38 | 0,5 | +0,3 | 0,5 | | 8 × 62 × 68 | 8 | 62 | 68 | 12 | 59,8 | 7,31 | 0,5 | +0,3 | 0,5 | | 10 × 72 × 78 | 10 | 72 | 78 | 12 | 69,6 | 5,45 | 0,5 | +0,3 | 0,5 | | 10 × 82 × 88 | 10 | 82 | 88 | 12 | 79,3 | 8,62 | 0,5 | +0,3 | 0,5 | | 10 × 92 × 98 | 10 | 92 | 98 | 14 | 89,4 | 10,08 | 0,5 | +0,3 | 0,5 | | 10 × 102 × 108 | 10 | 102 | 108 | 16 | 99,9 | 11,49 | 0,5 | +0,3 | 0,5 | | 10 × 112 × 120 | 10 | 112 | 120 | 18 | 108,8 | 10,72 | 0,5 | +0,3 | 0,5 |   Таблица 2  **Размеры средней серии, мм**   | *z × d × D* | Число зубьев *z* | *d* | *D* | *b* | *d*1*,*не менее | *а,*не менее | *с* | | *r*, не более | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Номин. | Пред. откл. | | 6 × 11 × 14 | 6 | 11 | 14 | 3,0 | 9,9 | - | 0,3 | +0,2 | 0,2 | | 6× 13× 16 | 6 | 13 | 16 | 3,5 | 12,0 | - | 0,3 | +0,2 | 0,2 | | 6 × 16×20 | 6 | 16 | 20 | 4,0 | 14,5 | - | 0,3 | +0,2 | 0,2 | | 6 × 18×22 | 6 | 18 | 22 | 5,0 | 16,7 | - | 0,3 | +0,2 | 0,2 | | 6 × 21 × 25 | 6 | 21 | 25 | 5,0 | 19,5 | 1,95 | 0,3 | +0,2 | 0,2 | | 6 × 23 × 28 | 6 | 23 | 28 | 6,0 | 21,3 | 1,34 | 0,3 | +0,2 | 0,2 | | 6 × 26 × 32 | 6 | 26 | 32 | 6,0 | 23,4 | 1,65 | 0,4 | +0,2 | 0,3 | | 6 × 28 × 34 | 6 | 28 | 34 | 7,0 | 25,9 | 1,70 | 0,4 | +0,2 | 0,3 | | 8 × 32 × 38 | 8 | 32 | 38 | 6,0 | 29,4 | - | 0,4 | +0,2 | 0,3 | | 8 × 36 × 42 | 8 | 36 | 42 | 7,0 | 33,5 | 1,02 | 0,4 | +0,2 | 0,3 | | 8 × 42 × 48 | 8 | 42 | 48 | 8,0 | 39,5 | 2,57 | 0,4 | +0,2 | 0,3 | | 8 × 46 × 54 | 8 | 46 | 54 | 9,0 | 42,7 | - | 0,5 | +0,3 | 0,5 | | 8 × 52 × 60 | 8 | 52 | 60 | 10,0 | 48,7 | 2,44 | 0,5 | +0,3 | 0,5 | | 8 × 56 × 65 | 8 | 56 | 65 | 10,0 | 52,2 | 2,50 | 0,5 | +0,3 | 0,5 | | 8 × 62 × 72 | 8 | 62 | 72 | 12,0 | 57,8 | 2,40 | 0,5 | +0,3 | 0,5 | | 10 × 72 × 82 | 10 | 72 | 82 | 12,0 | 67,4 | - | 0,5 | +0,3 | 0,5 | | 10 × 82 × 92 | 10 | 82 | 92 | 12,0 | 77,1 | 3,00 | 0,5 | +0,3 | 0,5 | | 10 × 92 × 102 | 10 | 92 | 102 | 14,0 | 87,3 | 4,50 | 0,5 | +0,3 | 0,5 | | 10 × 102× 112 | 10 | 102 | 112 | 16,0 | 97,7 | 6,30 | 0,5 | +0,3 | 0,5 | | 10 × 112 × 125 | 10 | 112 | 125 | 18,0 | 106,3 | 4,40 | 0,5 | +0,3 | 0,5 |   Таблица 3  **Размеры тяжелой серии, мм**   | *z × d × D* | Число зубьев *z* | *d* | *D* | *b* | *d*1*,*не менее | *с* | | *r*, не более | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Номин. | Пред. откл. | | 10 × 16 × 20 | 10 | 16 | 20 | 2,5 | 14,1 | 0,3 | +0,2 | 0,2 | | 10 × 18 × 23 | 10 | 18 | 23 | 3,0 | 15,6 | 0,3 | +0,2 | 0,2 | | 10 × 21 × 26 | 10 | 21 | 26 | 3,0 | 18,5 | 0,3 | +0,2 | 0,2 | | 10 × 23 × 29 | 10 | 23 | 29 | 4,0 | 20,3 | 0,3 | +0,2 | 0,2 | | 10 × 26 × 32 | 10 | 26 | 32 | 4,0 | 23,0 | 0,4 | +0,2 | 0,3 | | 10 × 28 × 35 | 10 | 28 | 35 | 4,0 | 24,4 | 0,4 | +0,2 | 0,3 | | 10 × 32 × 40 | 10 | 32 | 40 | 5,0 | 28,0 | 0,4 | +0,2 | 0,3 | | 10 × 36 × 45 | 10 | 36 | 45 | 5,0 | 31,3 | 0,4 | +0,2 | 0,3 | | 10 × 42 × 52 | 10 | 42 | 52 | 6,0 | 36,9 | 0,4 | +0,2 | 0,3 | | 10 × 46 × 56 | 10 | 46 | 56 | 7,0 | 40,9 | 0,5 | +0,3 | 0,5 | | 16 × 52 × 60 | 16 | 52 | 60 | 5,0 | 47,0 | 0,5 | +0,3 | 0,5 | | 16 × 56 × 65 | 16 | 56 | 65 | 5,0 | 50,6 | 0,5 | +0,3 | 0,5 | | 16 × 62 × 72 | 16 | 62 | 72 | 6,0 | 56,1 | 0,5 | +0,3 | 0,5 | | 16 × 72 × 82 | 16 | 72 | 82 | 7,0 | 65,9 | 0,5 | +0,3 | 0,5 | | 20 × 82 × 92 | 20 | 82 | 92 | 6,0 | 75,6 | 0,5 | +0,3 | 0,5 | | 20 × 92 × 102 | 20 | 92 | 102 | 7,0 | 85,5 | 0,5 | +0,3 | 0,5 | | 20 × 102 × 115 | 20 | 102 | 115 | 8,0 | 94,0 | 0,5 | +0,3 | 0,5 | | 20 × 112 × 125 | 20 | 112 | 125 | 9,0 | 104,0 | 0,5 | +0,3 | 0,5 |   Примечания:  1. Исполнение 1 дано для изготовления валов соединений легкой и средней серий методом обкатывания. Валы соединений тяжелой серии методом обкатывания не изготовляются.  2. Шлицевые валы исполнений 1 и 3 изготовляются при центрировании по внутреннему диаметру, исполнения 2 - при центрировании по наружному диаметру и боковым сторонам зубьев.  **(Измененная редакция, Изм. № 2).**  1.2. **(Исключен, Изм. № 2).**  1.3. Фаска у пазов отверстия втулки может быть заменена закруглением с радиусом, равным величине фаски *с.*  **2. ДОПУСКИ**  2.1.Общие положения, допуски и основные отклонения размеров *d, D, b*шлицевого соединения - по [ГОСТ 25346](http://gostrf.com/normadata/1/4294850/4294850962.htm).  2.2. Поля допусков шлицевых валов и втулок для образования посадок при различных видах центрирования должны соответствовать указанным в табл. [4](http://gostrf.com/normadata/1/4294839/4294839619.htm#i304992); [5](http://gostrf.com/normadata/1/4294839/4294839619.htm#i361085); [5а](http://gostrf.com/normadata/1/4294839/4294839619.htm#i422084).  Поля допусков, заключенные в квадратные скобки, являются рекомендуемыми, а поля допусков, отмеченные звездочками - предпочтительными из числа рекомендуемых (поля допусков, применяемые в ИСО).  Таблица 4  **Поля допусков шлицевых валов и втулок для образования посадок при центрировании по внутреннему диаметру**   | Вид соединения | | | Подвижное | | | | | | | | | | Неподвижное | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Поля допуска | *d* | Втулка | Н8 | [Н7]\* | | | | | | | | | [H7]\* | | | | | | | | Вал | е8 | [f7]\* | | | | | [g6] [g7]\* | | | h7 | [h7]\* | | [js6] js7 | | | n6 | | | *b* | Втулка | [D9]  D10  [F10] | [D9]  [F10] | |  |  | [H9]\*  [Н11]\* | D9  F10 |  | [H9]\*  [Н11]\* | D9  F10 | H8  H9\*  Н11\* | | F8  F10 |  |  | F8  F10 |  | | D9 | F8 | F8 | D9 | H8 | H8 | |  |  |  |  |  |  | | Вал | d9 | е8 | f7 |  | f7 |  | f8 | f7 | [d10]\* | f8 | h6 | [h7] | h7 | [js7] |  | h7 |  | |  |  | |  | f8 | [d10]\* |  |  |  |  |  | |  |  |  |  |  | | е8 |  | f8 | h9 | h7 | [f9]\* | h8 |  |  |  |  | | [js7] | [K7] | [js7] |  | js7 | | [е9] | е9 | [f9] |  | h9 |  | h9 | [h7] | [f9]\* | [h9] | h8 | [h10]\* | [K7] |  |  | [js7] |  |   Примечания:  1. Поля допусков F10 и НИ применяются только для закаленных нешлифованных втулок.  2. Поле допуска h9 применяется при чистовом фрезеровании незакаленных шлицевых валов.  Таблица 5  **Поля допусков шлицевых валов и втулок для образования посадок при центрировании по наружному диаметру**   | Вид соединения | | | Подвижное | | | | | | | Неподвижное | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Поля допусков | *I)* | Втулка | Н8  Н10  Н11 | [Н7] | | | | | | [H7] | | | Вал | d8  е8  h7 | [f7] | | | [g6] | | [h7] | [js6] | n6 | | *b* | Втулка | D9  F8  Н11 | [D9]  F8  [F10] | [F8] |  | D9 |  | D9 | D9 | D9 | |  | D9 |  | F8 |  |  |  | | [F10] |  | [F8] |  | F8 | [F8] | F8 | | Вал | d8  е8  d10 | [d9]  е8  [h9] | [f7]  [f8]  h8 | f7  h8  h9 | f7 | h8 | f7 | h8 | h8 | | h9 |  |  |  |  | |  |  |  | [js7] | js7 |   Примечания:  1. Поля допусков H10 и H11 применяются только для закаленных втулок, не подлежащих дополнительной обработке.  2. Поле допуска h9 применяется при чистовом фрезеровании незакаленных шлицевых валов.  Таблица 5а  **Поля допусков шлицевых валов и втулок для образования посадок при центрировании по боковым сторонам шлицев**   | Вид соединения | Подвижное | | | | | | | Неподвижное | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Поля допусков размера | Втулка | [D9] | | F8 | | [F10] | | D9 | [F8] | | F10 | | Вал | d9 | [e8] | | e9 | | [f8] | [js7] | | k7 | | | f9 | h8 | | h9 | |  | |  |  |  |  |  |  |  |  |  |  |  |  |   Примечание. Рекомендуется применять поле допуска е9 для незакаленных валов.  **(Измененная редакция, Изм. №** **2).**  2.3. Рекомендуемые посадки валов и втулок приведены в приложении [1](http://gostrf.com/normadata/1/4294839/4294839619.htm#i726752).  2.4. Поля допусков нецентрирующих диаметров должны соответствовать указанным в табл. [6](http://gostrf.com/normadata/1/4294839/4294839619.htm#i488905).  Таблица 6   | Нецентрирующий диаметр | Вид центрирования | Поле допуска | | | | --- | --- | --- | --- | --- | | Вал\* | | Втулка | | Подвижное соединение | Неподвижное соединение | | *d* | По *D*или *b* | - | - | Н11 | | *D* | По *d*или *b* | [a11]\*  d10 f9 | [a11]\*  f9, H10 | [Н10]\*, Н11  Н12 |   \* Диаметр *d*не менее диаметра *d*1*.*  **(Измененная редакция, Изм. №** **2).**  2.4.1. Допуски симметричности боковых сторон шлицев в диаметральном выражении по отношению к оси симметрии центрирующего элемента должны соответствовать указанным в табл. [7](http://gostrf.com/normadata/1/4294839/4294839619.htm#i522208).  Таблица 7   | *b* | 2,5; 3 | 3,5; 4; 5; 6 | 7; 8; 9; 10 | 12; 14; 16; 18 | | --- | --- | --- | --- | --- | | IТ7 | 0,010 | 0,012 | 0,015 | 0,018 |   **(Введен****дополнительно, Изм. №2).**  2.5. При длине шлицевого вала или втулки, превышающей длину комплексного калибра, предельные отклонения от параллельности сторон зубьев вала и пазов втулки относительно оси центрирующей поверхности не должны превышать на длине 100 мм:  0,03 мм - в соединениях повышенной точности с допусками на размер *b*от IT6 до IT8;  0,05 мм - в соединениях нормальной точности с допусками на размер *b*от IT9 до IT10.  2.6. Рекомендации по контролю шлицевых соединений приведены в приложении [2](http://gostrf.com/normadata/1/4294839/4294839619.htm#i923890).  2.7. Пример условного обозначения соединения с числом зубьев *z =*8, внутренним диаметром *d*= 36 мм, наружным диаметром *D*= 40 мм, шириной зуба *b =*7мм, с центрированием по внутреннему диаметру, с посадкой по диаметру центрирования http://gostrf.com/normadata/1/4294839/4294839619.files/x002.png по нецентрирующему диаметру http://gostrf.com/normadata/1/4294839/4294839619.files/x003.png и по размеру *b* http://gostrf.com/normadata/1/4294839/4294839619.files/x004.png:  9 - 8 × 36 http://gostrf.com/normadata/1/4294839/4294839619.files/x002.png × http://gostrf.com/normadata/1/4294839/4294839619.files/x003.png × 7 http://gostrf.com/normadata/1/4294839/4294839619.files/x004.png  То же, при центрировании по наружному диаметру с посадкой по диаметру центрирования http://gostrf.com/normadata/1/4294839/4294839619.files/x005.png и по размеру *b* http://gostrf.com/normadata/1/4294839/4294839619.files/x006.png:  http://gostrf.com/normadata/1/4294839/4294839619.files/x007.png  **(**[**Поправка**](http://gostrf.com/normadata/0/4294819/4294819722.htm)**).**  То же, при центрировании по боковым сторонам:  *b -*8 × 36 × 40 http://gostrf.com/normadata/1/4294839/4294839619.files/x003.png × 7 http://gostrf.com/normadata/1/4294839/4294839619.files/x008.png  Пример условного обозначения втулки того же соединения при центрировании по внутреннему диаметру:  *d -*8 × 36*Н7*× 40*Н12 × 7 Н9*  То же, вала:  *d -*8*×*36 *f*7*×*40*a*11*×* 7 f9*.*  **(Измененная редакция, Изм. № 2).**  2.8. Допускается при необходимости обеспечения взаимозаменяемости в изделиях, спроектированных до 1 января 1980 г., выполнять шлицевые элементы деталей по [ГОСТ 1139](http://gostrf.com/normadata/1/4294839/4294839622.pdf).  **(Введен****дополнительно, Изм. № 1).**  *ПРИЛОЖЕНИЕ 1 Рекомендуемое*  **РЕКОМЕНДУЕМЫЕ ПОСАДКИ ВАЛОВ И ВТУЛОК**  Допуски и посадки, приведенные в настоящем стандарте, не распространяются на шлицевые прямобочные соединения неответственных деталей изделий (например, деталей, не передающих крутящий момент, зубчатые шайбы и т.п.).  В табл. [1](http://gostrf.com/normadata/1/4294839/4294839619.htm#i794938) - [3](http://gostrf.com/normadata/1/4294839/4294839619.htm#i885070) приведены поля допусков шлицевых валов и втулок для образования посадок при различных видах центрирования.  **1. Центрирование по внутреннему диаметру**  Таблица 1  **Посадки центрирующего диаметра**   | Поле допуска втулки | Основное отклонение вала | | | | | | | --- | --- | --- | --- | --- | --- | --- | | е | f | g | h | js | n | | Н7; Н8 | http://gostrf.com/normadata/1/4294839/4294839619.files/x009.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x010.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x011.png http://gostrf.com/normadata/1/4294839/4294839619.files/x012.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x013.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x014.png http://gostrf.com/normadata/1/4294839/4294839619.files/x015.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x016.png |   Таблица 1a  **Посадки по боковым сторонам шлицев**   | Поле допуска втулки | Основное отклонение вала | | | | | | | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | d | e | | f | | | | h | | | | js | k | | D9 | D9  d9 | D9  e8 | http://gostrf.com/normadata/1/4294839/4294839619.files/x017.png | D9  f7 | D9  f8 | | http://gostrf.com/normadata/1/4294839/4294839619.files/x018.png | D9  h8 | | D9  h9 | | http://gostrf.com/normadata/1/4294839/4294839619.files/x019.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x020.png | | D10 | D10  d9 | D10  e9 | | - | | | | - | | | | - | - | | F8 | - | - | | F8  f7 | | F8  f8 | | http://gostrf.com/normadata/1/4294839/4294839619.files/x021.png | | F8  h9 | | http://gostrf.com/normadata/1/4294839/4294839619.files/x022.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x023.png | | F10 | F10  d9 | F10  e8 | http://gostrf.com/normadata/1/4294839/4294839619.files/x024.png | F10  f7 | F10  f8 | | http://gostrf.com/normadata/1/4294839/4294839619.files/x025.png | F10  h7 | F10  h8 | | F10  h9 | http://gostrf.com/normadata/1/4294839/4294839619.files/x026.png | F10  k7 | | Н8 | - | - | | - | | | | H8  h7 | | H8  h8 | | H8  js7 | - | | Н9 | http://gostrf.com/normadata/1/4294839/4294839619.files/x027.png | - | | http://gostrf.com/normadata/1/4294839/4294839619.files/x028.png | | | | http://gostrf.com/normadata/1/4294839/4294839619.files/x029.png | H9  h8 | | http://gostrf.com/normadata/1/4294839/4294839619.files/x030.png | - | - | | Н11 | http://gostrf.com/normadata/1/4294839/4294839619.files/x031.png | - | | http://gostrf.com/normadata/1/4294839/4294839619.files/x032.png | | | | http://gostrf.com/normadata/1/4294839/4294839619.files/x033.png | H11  h8 | | http://gostrf.com/normadata/1/4294839/4294839619.files/x034.png | - | - | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   **Центрирование по наружному диаметру**  Таблица 2  **Посадки центрирующего диаметра**   | Поле допуска втулки | Поле допуска вала | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | | d | е | f | g | h | js | n | | Н7 | - | - | http://gostrf.com/normadata/1/4294839/4294839619.files/x035.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x036.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x037.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x038.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x039.png | | Н8 | Н8  d8 | Н8  е8 | - | - | Н8  h7 | - | - | | Н10 | Н10  d8 | Н10  е8 | - | - | - | - | - |   Таблица 2а  **Посадки по боковым сторонам шлицев *b***   | Поле допуска втулки | Поле допуска вала | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | | d | e | f | | h | | js | | D9 | http://gostrf.com/normadata/1/4294839/4294839619.files/x040.png | D9  e8 | D9  f7 | | D9  h8 | D9  h9 | D9  js7 | | F8 | - | F8  e8 | http://gostrf.com/normadata/1/4294839/4294839619.files/x041.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x042.png | F8  h8 | | http://gostrf.com/normadata/1/4294839/4294839619.files/x022.png | | F10 | F10  d9 | F10  e8 | http://gostrf.com/normadata/1/4294839/4294839619.files/x043.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x044.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x038.png | | - | |  |  |  |  |  |  |  |  |   **Центрирование по боковым сторонам шлицев**  Таблица 3  **Посадка по боковым сторонам шлицев**   | Поле допуска втулки | Поле допуска вала | | | | | | | | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | d | e | f | | h | | js | k | | D9 | D9  d9 | http://gostrf.com/normadata/1/4294839/4294839619.files/x045.png | http://gostrf.com/normadata/1/4294839/4294839619.files/x046.png | D9  f9 | D9  h8 | D9  h9 | D9  js7 | D9  k7 | | F8 | - | F8  e8 | F8  f8 | | - | | http://gostrf.com/normadata/1/4294839/4294839619.files/x022.png | - | | F10 | http://gostrf.com/normadata/1/4294839/4294839619.files/x047.png | F10  e8 | http://gostrf.com/normadata/1/4294839/4294839619.files/x048.png | F10  F9 | F10  h8 | F10  h9 | F10  js7 | F10  k7 |   Примечание. В табл. [1](http://gostrf.com/normadata/1/4294839/4294839619.htm" \l "i794938" \o "Таблица 1), [1а](http://gostrf.com/normadata/1/4294839/4294839619.htm#i812274), [2](http://gostrf.com/normadata/1/4294839/4294839619.htm#i835072), [2а](http://gostrf.com/normadata/1/4294839/4294839619.htm#i865842), [3](http://gostrf.com/normadata/1/4294839/4294839619.htm#i885070) посадки, заключенные в квадратные рамки, являются предпочтительными.  *ПРИЛОЖЕНИЕ [1](http://gostrf.com/normadata/1/4294839/4294839619.htm" \l "i726752" \o "Приложение 1).***(Измененная редакция, Изм. № 2).**  **СОДЕРЖАНИЕ**   |  | | --- | | [1. Размеры](http://gostrf.com/normadata/1/4294839/4294839619.htm#i38721)  [2. Допуски](http://gostrf.com/normadata/1/4294839/4294839619.htm#i231245)  [Приложение 1 Рекомендуемые посадки валов и втулок](http://gostrf.com/normadata/1/4294839/4294839619.htm#i751430)  [Приложение 2 Рекомендации по контролю шлицевых соединений](http://gostrf.com/normadata/1/4294839/4294839619.htm#i956620) | |  |