



: 97 ., 36 ., 22 ., 65 ., 6

3100x2100x100 ,

65 .

2,

IP51.

31.

500 ,

35,7 ,

23,13 .

SolidWorks

2021

Splan7

1. [ ].  
: <https://alfasport.by/razmer-futbolnyh-vorot-standarty/>. -  
: 16.03.2024.
2. [ ]. - :  
<https://www.joom.ru/ru/products/657742b42ebaa50176d01042>. - :  
19.04.2024.
3. [ ]. - :  
<https://pro-interactive.ru/shop/interaktivnyie-vorota/>. - : 16.03.2024.
4. METEORIT [ ]. - : <https://ppt-online.org/230802>. -  
: 10.03.2024.
5. 13229-78 . - . - ., 1989 - 6 .  
01.01.1980. -
6. 8617-2018 . - . 01.03.2019. - . - ., 2019. -  
24 .
7. 14771-76 . - .  
01.01.1977. - . - ., 2007. - 39 .
8. [ ]. - :  
<https://aprila.by/pricepy/oborudovanie/remen-styazhnoj-3t-lm-35mm>. -  
: 16.03.2024.
9. 4784-2019 . - . 01.09.2019.\*- . - ., 2019. -  
36 .
10. 9.301-86 . - .  
— . 30.06.1987. - . - ., 2010. - 16 .
11. 1100 [ ]. - :  
<https://alloysintl.com/ru/inventory/aluminum-alloys-supplier/aluminum-1100/>. -  
: 16.03.2024.
12. 31 [ ].  
: <https://nfmetall.ru/articles/50.html>. - :  
16.03.2024.

13. : , . . . . . / . . . . . -
- 5- . - . : « » , 2007. - 256 .
14. [ ] . -  
: <https://mirstankov.com/mnogoshpindelnye-frezemye-stanki/>. —  
: 16.03.2024.
15. [ ] .  
— : <https://stanko-group.net/product-category/izmeritelnoe-oborudovanie/universalnyy-izmeritelnyy-instrum/>. — : 16.03.2024.
16. [ ] . - :  
[https://ozlib.com/873722/tehnika/kontrolnye\\_operatsii](https://ozlib.com/873722/tehnika/kontrolnye_operatsii). - :  
16.03.2024.
17. 2789-73  
. - . 01.01.1975. - . - . , 2018. - 7 .
18. 30893.2-2002 « . . . . .  
» [ ] . - :  
<http://vsegost.com/Catalog/58/5889.shtml>. - : 16.03.2024.
19. [ ] . -  
: <https://www.damatool.com/ru/hizmetlerimiz/16-%D0%9C%D0%B5%D1%82%D0%BE%D0%B4%D1%8-%D0%90%D0%BB%D1%8E%D0%BC%D0%B8%D0%BD%D0%B8%D0%B5%D0%B2%D0%BE%D0%B9-%D0%AD%D0%BA%D1%81%D1%82%D1%80%D1%83%D0%B7%D0%B8%D0%B8.html>. - : 16.03.2024.
20. [ ] . -  
: <https://profstal.by/stati/vidyi-mexanicheskoy-obrabotki-metallov>.  
- : 16.03.2024.
21. - \* 6 82 [ ] . -  
: [https://rustan.ru/t\\_310\\_6t82g.htm](https://rustan.ru/t_310_6t82g.htm). - : 16.03.2024.
22. 6 5 [ ] . -  
: <https://turens.by/instrument/13731.html>. - : 16.03.2024.
23. 28527-90 . . . . . -  
. 01.01.1991. - . - . , 2008. - 11 .
24. - 6 12 [ ] . -  
: <https://vseostankah.com/frezemye-stanki/6r12-tehnicheskie-harakteristiki-pasport-shemy.html>. - : 16.03.2024.
25. 6 5 [ ] . - :  
<https://turens.by/instrument/10344.html>. - : 16.03.2024.

26. 32831-2014  
7:24. . - . 01.01.2016.  
- . - ., 2020. - 16 .
27. [ . - : <https://dacha2000.ru/otlichie-monolitnogo-polikarbonata-ot-orgstekla#:~:text=%D0%9B%D0%B8%D1%81%D1%82%20%D0%BE%D1%80%D0%B3%D1%81%D1%82%D0%B5%D0%BA%D0%BB%D0%B0%20%D0%A%D1%80%D0%B5%D0%BF%D0%BA%D0%B8%D0%B9%20%D0%B8%20%D0%BC%D0%BE%D0%B6%D0%B5%D1%82,%D0%9F%D0%BE%D0%BB%D0%B8%D0%BA%D0%B0%D1%80%D0%B1%D0%BE%D0%BD%D0%B0%D1%82%20%D0%B1%D0%BE%D0%BB%D0%B5%D0%B5%20%D0%B3%D0%B8%D0%B1%D0%BA%D0%B8%D0%B9%2C%20%D1%87%D0%B5%D0%BC%20%D0%BE%D1%80%D0%B3%D1%81%D1%82%D0%B5%D0%BA%D0%BB%D0%BE.> - : 29.03.2024.
28. [ . - : [https://udachi.by/polikarbonat/monolitnyj-polikarbonat-15 mm-prozrachnyj-borrex-1250x2050/](https://udachi.by/polikarbonat/monolitnyj-polikarbonat-15-mm-prozrachnyj-borrex-1250x2050/). - : 29.03.2024.
29. 120 [ . - : [https://vitahim.ru/catalog/polimemye\\_materialy/orgsteklo\\_so\\_120\\_ /](https://vitahim.ru/catalog/polimemye_materialy/orgsteklo_so_120_/). - : 29.03.2024.
30. [ . - : <https://sevzapkanat.com/info/news/styazhnye-remni-rukovodstvo-po-ekspluatatsii/>. - : 24.03.2024.
31. [ . - : <https://gpservis.by/articles/o-styazhnyh-renmyah.> - : 24.03.2024.
32. ABS- VH-0810 [ . - : [https://www.polymersale.ni/goods/51241004-abs plastik starex vh\\_0810 Samsung cheil industries.](https://www.polymersale.ni/goods/51241004-abs_plastik_starex_vh_0810_Samsung_cheil_industries.) - : 29.03.2024.
33. ABS- PT-0175 [ . - : [https://www.inpolimer.ru/about/2205/abs-plastik-pt-0175?utm\\_referrer=https%3A%2F%2Fwww.google.com%2F.](https://www.inpolimer.ru/about/2205/abs-plastik-pt-0175?utm_referrer=https%3A%2F%2Fwww.google.com%2F.) - : 29.03.2024.
34. ABS- ASA{Etemal) [ . - : [https://3dsfera.by/for-model-developers/additional-equipment/etemal-plastik-rec-1.75 /](https://3dsfera.by/for-model-developers/additional-equipment/etemal-plastik-rec-1.75/). - : 29.03.2024.
35. [ . - : <https://www.zska.by/ru/katalog/paneli-upravleniya/41-gibkie-paneli-upravleniya.> - : 29.03.2024.

36. Arduino Mega 2560 [ ]. -  
: <https://arduino.ru/Hardware/ArduinoBoardMega2560>. -  
: 24.03.2024.
37. ARDUINO MEGA [ ]. -  
: <https://rxtx.su/mikrokontrollery/arduino/arduino-mega-2560-r3>. -  
: 24.03.2024.
38. [ ]. -  
: <https://planar.spb.ru/switching-button>. - : 24.03.2024.
39. KLS7-TS1202-4.3-180 [ ]. -  
: <https://www.chipdip.by/product/sdtx-210-n>. -  
: 24.03.2024.
40. Datasheet KLS7-TS1202 12x12 Tact Switch Series [ ]. -  
: <https://static.chipdip.ru/lib/972/DOC002972833.pdf>. -  
: 24.03.2024,
41. [ ]. -  
: <https://3d-diy.ru/product/pezoizluchatel-zvuka-na-95db>. -  
: 24.03.2024.
42. SMA-17-P10, 17 , [ ]. -  
: <https://www.chipdip.by/product/sma-17-pl0>. -  
: 24.03.2024.
43. Datasheet SMA-17 Multi-Application buzzer [ ]. -  
: <https://static.chipdip.ru/lib/116/DOC032116360.pdf>. -  
: 24.03.2024.
44. [ ]. -  
: [https://alexgyver.ru/ws2812\\_guide/](https://alexgyver.ru/ws2812_guide/). - : 24.03.2024.
45. 2811, 2812, 2813. [ ]. -  
: <https://led4light.by/2018/09/20/2584/>. - : 24.03.2024.
46. SPI-5000P-RAM 12V RGB (5060, 150 LED xl) [ ]. -  
: [https://ledpremium.by/catalog/begushchaya\\_volna/lenta\\_spi\\_5000p\\_ram\\_12v\\_rgb\\_5060\\_150\\_led\\_xl/](https://ledpremium.by/catalog/begushchaya_volna/lenta_spi_5000p_ram_12v_rgb_5060_150_led_xl/). - : 24.03.2024.
47. Bluetooth -06 Datasheet [ ]. -  
: <https://html.alldatasheet.com/html-pdm79032/ETCI/HC-06/805/7/HC-06.html>. -  
: 24.03.2024.
48. Bluetooth -06 [ ]. -  
: <https://easycraft.by/moduly-bluetooth-hc-06-s-razyemom>. -  
: 24.03.2024.

49. Arduino Bluetooth -05 -06  
[ ]. - : <https://arduinomaster.ru/datchiki-arduino/arduino-bluetooth-hc05-hc06/>. - : 24.03.2024.

50. Bluetooth -05 [ ]. - :  
<https://3d-diy.ru/wiki/arduino-moduli/bluetooth-modul-hc-05/>. - :  
24.03.2024.

51. Datasheet -05 [ ]. - :  
[https://components101.com/sites/default/files/component\\_datasheet/Hc-05%20Datasheet.pdf](https://components101.com/sites/default/files/component_datasheet/Hc-05%20Datasheet.pdf). - : 24.03.2024.

52. 13737-90  
- . 01.01.1992. - . - ., 1990 — 19 .

53. 13229-78  
01.01,1980. - , - ., 1989 - 6 ,

54. 11474-76  
. 01.01.1978. - , - ., 2008. - 8 .

55. 13621-90  
- . 01.01.1992. - . - .,

1990.-11 .  
56. 17473-18  
- . 01.01.1982. - . - .,

2006.-7 .  
57. 5915-70  
- . 01.01.1973. - . - ., 2010. -

5 .  
58. 11650-80  
- .

. 01.01.1982. - . - ., 2007. - 4 .  
59. «  
» 127 16.12.2013:

08.11.2011 127.- , 2013.-5 .  
60.

: 33 30.04.2013:  
30.04.2013 105. - , 2013. - 26 .

61. , , :  
115 16.11.2011:

16.11.2011 115. -

, 2011. - 20 .

62. 2.04.03-2020 /

45-2.04-153-2009 (02250). -

, 2021. - 63 .

63. 4.02.03-2019 ,

/

( 4.02.01-03). - , 2020. - 73 .

64. 2.02.05-2020 /

2.02.01-2019 ( 45-

2.02-315-2018 (33020)). - , 2021. - 65 .

65.

[ ] :

21.12.2021 82 //

/ . . . . . , 2021.