

|                                      |                                     |                 |  |                                     |
|--------------------------------------|-------------------------------------|-----------------|--|-------------------------------------|
|                                      | <b>Screws and nuts:</b>             |                 |  |                                     |
|                                      | <b>diameter , length</b>            | <b>quantity</b> | <b>Description</b>                           | <b>Link</b>                         |
|                                      | M4x10mm                             | 20              | DIN 912 / ISO 4762 (hexagon socket head cap) |                                     |
|                                      | M3x8mm                              | 10              | 2 mm head height                             |                                     |
|                                      | M3x8mm                              | 50              | DIN 912 / ISO 4762 (hexagon socket head cap) |                                     |
|                                      | M3x14mm                             | 30              | DIN 912 / ISO 4762 (hexagon socket head cap) |                                     |
|                                      | M3 nut                              | 10              | DIN 912 / ISO 4762 (hexagon socket head cap) |                                     |
|                                      | M3x25mm                             | 10              | DIN 912 / ISO 4762 (hexagon socket head cap) |                                     |
|                                      | M2x10mm                             | 10              | DIN 912 / ISO 4762 (hexagon socket head cap) |                                     |
|                                      | M3x16mm                             | 10              | DIN 912 / ISO 4762 (hexagon socket head cap) |                                     |
|                                      | M3x6mm                              | 10              | Pan head phillips                            |                                     |
|                                      | M3x12mm                             | 30              | DIN 912 / ISO 4762 (hexagon socket head cap) |                                     |
|                                      | M3x35mm                             | 10              | DIN 912 / ISO 4762 (hexagon socket head cap) |                                     |
|                                      | M4x16mm                             | 30              | DIN 912 / ISO 4762 (hexagon socket head cap) |                                     |
|                                      | M4x14mm                             | 10              | DIN 912 / ISO 4762 (hexagon socket head cap) |                                     |
|                                      | M4x50mm                             | 10              | DIN 912 / ISO 4762 (hexagon socket head cap) |                                     |
|                                      | <b>Gearboxes:</b>                   |                 |  |                                     |
| <b>Name in building instructions</b> | <b>Type</b>                         | <b>quantity</b> | <b>Description</b>                           | <b>Link</b>                         |
| Gearbox 20:1                         | Nema 17 20:1 EG precision planetary | 2               | <a href="#">Link</a>                         | <a href="#">Link</a>                |
| Gearbox 10:1                         | Nema 17 10:1 EG precision planetary | 1               | <a href="#">Link</a>                         | <a href="#">Link</a>                |
|                                      | <b>Motors:</b>                      |                 |  |                                     |
| <b>Name in building instructions</b> | <b>Type</b>                         | <b>quantity</b> | <b>Description</b>                           | <b>Link</b>                         |
| Stepper 1                            | Nema 17 16Ncm,42x42x20mm            | 1               | <a href="#">Link</a>                         | <a href="#">Link</a>                |
| Stepper 2                            | Nema 17 45Ncm,42x42x40mm            | 3               | <a href="#">Link</a>                         | <a href="#">Link</a>                |
| Stepper 3                            | Nema 17 65Ncm,42x42x60mm            | 2               | <a href="#">Link</a>                         | <a href="#">Link</a>                |
|                                      | <b>Belts:</b>                       |                 |  |                                     |
| <b>Name in building instructions</b> | <b>Type</b>                         | <b>quantity</b> | <b>Description</b>                           | <b>Link</b>                         |
| Joint 1 belt                         | HTD3 396                            | 1               | 6 mm width                                   |                                     |
| Joint 3 belt                         | HTD3 342                            | 1               | 6 mm width                                   |                                     |
| Joint 4 belt                         | HTD3 201                            | 1               | 6 mm width                                   |                                     |
| Joint 5 belt                         | HTD3 246                            | 1               | 6 mm width                                   |                                     |
|                                      | <b>Pulleys:</b>                     |                 |  |                                     |
| <b>Name in building instructions</b> | <b>Type</b>                         | <b>quantity</b> | <b>Description</b>                           | <b>Link</b>                         |
| J4 pulley, J5 pulley                 | HTD3M 12 tooth 5mm bore 10mm width  | 2               |  |                                     |
| J1 pulley                            | HTD3M 15 tooth 5mm bore 10mm width  | 1               |  |                                     |
|                                      | <b>Mechanical stuff:</b>            |                 |  |                                     |
| <b>Name in building instructions</b> | <b>Type</b>                         | <b>quantity</b> | <b>Description</b>                           | <b>Link</b>                         |
| Shaft coupler                        | Shaft coupler                       | 3               | 8 mm hole shaft, M4 screw holes              | <a href="#">Link</a>                |
|                                      | <b>Bearings:</b>                    |                 |  |                                     |
| <b>Name in building instructions</b> | <b>Type</b>                         | <b>quantity</b> | <b>Description</b>                           | <b>Link</b>                         |
| Bearing 1                            | AXK3552                             | 1               | 35X52X4, needs to have top and bottom plate  |                                     |
| Bearing 2                            | NSK HR32906J                        | 5               | Joint 5, 4 and 3                             |                                     |
| Bearing 3                            | NSK HR32907J                        | 4               | Joint 1 and 2                                |                                     |
| Tension bearing                      | Ball bearing 3x8x4                  | 20              | Used for belt tension                        |                                     |
| Tension bearing                      | Ball bearing 3x10x4                 | 20              | Used for belt tension                        |                                     |
|                                      | <b>Electronics:</b>                 |                 |  |                                     |
| <b>Name in building instructions</b> | <b>Type</b>                         | <b>quantity</b> | <b>Description</b>                           | <b>Link</b>                         |
|                                      | PAROL control board                 | 1               | <a href="#">source-robotics.com</a>          | <a href="#">source-robotics.com</a> |
|                                      | On/Off button                       | 1               | 12mm 3-6V                                    | <a href="#">Link</a>                |
|                                      | Noctua NF-A4x20 5V 40mm             | 1               |  |                                     |
|                                      | Power connector - male + female     | 1               | GX16 2PIN                                    | <a href="#">Link</a>                |
|                                      | Gripper connector (electric)        | 1               | M8 sensor Female 4 pin                       | <a href="#">Link</a>                |
|                                      | Power supply                        | 1               | Any 24V 5A supply                            |                                     |
|                                      | Limit switches                      | 3               | Type ZW12-3                                  |                                     |
|                                      | Inductive sensor 1                  | 1               | 4mm NPN NO                                   | <a href="#">Link</a>                |
|                                      | Inductive sensor 2                  | 1               | GX-F8A                                       | <a href="#">Link</a>                |
|                                      | Inductive sensor 3                  | 1               | M5, NPN NO                                   | <a href="#">Link</a>                |
|                                      | Estop                               | 1               | Any NC estop                                 |                                     |
|                                      | Pneumatic connector - robot         | 4               | 4 mm type PM                                 |                                     |
|                                      | Pneumatic Gripper                   | 1               | MHZ2-16D                                     |                                     |
|                                      | Pneumatic gripper connector         | 2               | PC4 - M5                                     |                                     |
|                                      | Pneumatic tube                      | 5 meters        | 1 meter, 4x2.5mm                             |                                     |
|                                      | xt30 connector female               | 1               | used to deliver power to PAROL6 PCB          |                                     |
|                                      | Stlink                              | 1               | Used to program PAROL6 control board         |                                     |
|                                      | USB B cable                         | 1               | Comms to the PC                              |                                     |
|                                      | 5/2 solenoid air valve              | 1               | Used to control pneumatic gripper            |                                     |