# CE OPERATION MANUAL

## ELECTRIC WIRE ROPE WINCH

SAFETYLIFTINGEAR.COM

Contact Us
Tel: 0808 123 69 69
Fax: 0117 9381 602
Email: sales@safetyliftingear.com

Unit R1D Rockingham Gate
Poplar Way West
Cabot Park, Bristol
BS11 0YW

# DUKE Electric Wire Rope Winch Introduction

The Duke Electric Wire Rope Winch is designed for building sites, commercial and domestic, as well as various construction workplaces, such as warehousing, buildings, storage areas, factories in general, as well as domestic applications.

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# 1. Preface

- Please read this Instruction Manual carefully before you start using the electric winch. You will find many useful hints which will help you to keep the winch always in its first-class condition.
- You are kindly requested to read this manual thoroughly, to follow scrupulously the instructions given and for safety reasons, avoid controlling, adjusting or performing procedures other than those specified.
- This winch has been designed and built in full compliance with EN ISO 12100, ISO 14121 and EN 60204 standards on machine and further modification, with high-quality materials and particularly studying the possibilities to reduce as much as possible the risks of accident.
- Foreword to the operating instructions
  The operating instructions are designed to familiarize the user with the winch and its designated use.
- The instruction manual contains important information on how to operate the winch safety, properly and most efficiently. Observing these instructions helps to avoid danger, to reduce repair costs and downtimes and to increase the reliability and life of the winch.
- The instruction manual is to be supplemented by the respective national rules and regulations for accident prevention and environmental protection.
  The operating instructions must always be available wherever the winch is in use.
  These operating instructions must be applied by any person in change of carrying out work with and on the winch, such as
  - operation including setting up, troubleshooting in the course of work, care of consumables
  - maintenance (serving, inspection, repair) and/or
  - transport

  This electric winch is designed and built in full compliance with the safety standard, please read carefully before installing the machine.You will find many hints to keep the machine in its best condition, also to avoid the risk of accident.
- In addition to the operating instructions and to the mandatory rules and regulations for accident
- Prevention and environment protection in the country and place of use of the winch, the generally recognized technical rules for safe and proper working must also be observed.

# 2. Safety Instruction

## 2-1 Safety regulations

### 2-1-1 General safety rules

1. This electric winch is designed for lifting products only. Do not apply the electric winch for lifting person.
2. The electric winch should be mounted on a flat solid place.
3. Installing the electric winch at a proper levelling condition to ensure the steel rope arranged neatly. This may avoid steel rope friction against the winch body due to regular winding.
4. Make sure your power source comply with the voltage indicated on the electric winch before connecting the power wires to the power source.
5. Connect the power wires. Tighten the terminals securely.
6. Make sure the electric winch has been properly grounded. The power circuit should be equipped with an electric shock breaker.
7. Before operating the electric winch, read and follow the instructions for allowable lifting weight, speed and voltage etc. Indicated on the attached plate.
8. Do not exceed the rated lifting capacity of the electric winch. Allowable lifting weight is indicated on the attached plate.
9. The electric winch should be operated by a skilled operator. Before operating the electric winch check again if all lock screws are tightened securely without loosening.
10. Before operating the electric winch check to see if the steel rope drum runs to the correct direction and the brake works normally.
11. Do not allow any person approaches under the electric winch, bracket or weight.
12. Select a proper location for mounting the electric winch, to prevent the lifting weight bumping against any construction, steel frame or construction beam etc while lifting.
13. Always keep the steel rope in a good condition. When applying the electric winch for lifting heavy load, keep the steel rope at least 3 turns wounded around the drum.
14. Lift weight vertically. Do not lift weight in a slant or horizontal direction. Do not have weight hooked on the steel rope for a long time.
15. Do not use the electric winch to pull out any object fixed in the floor or any construction.
16. When the electric winch is running, keep your hands or any object away from it to avoid danger.
17. Prevent control wire or power wire from hooking or contacting by the wire rope. This may avoid electric shock or any danger.
18. In case any malfunction or abnormal noise occurs during operation, stop the electric

winch immediately. Check and repair it immediately for safety.

19. Do not alter the electric circuit or use any other replacement parts not supplied from the original manufacturer.. This avoids affection on the winch performance or any accident.
20. The operator is requested to fully obey the safety rules listed for safety protection.

## 2-1-2 Electrical safety rules

1. Before installing, please pay attention to the input rated voltage and current and make sure the winch is grounded, in order to prevent accident.
2. There must be a main power switch (main breaker) at main input side of electric control system.
3. Remember to disconnect the main power before repair, maintenance and clean.
4. Unauthorized or untrained personnel cannot repair or maintain any electric equipment.
5. The keys of electric box and mode select should be conserved by authorized personnel. Don't give the key or authorized code to unauthorized personnel.
6. Comply with the maintenance instruction to repair and maintain the electric equipment.
7. Before operating the winch, check all of the electric equipments and parts are broken or damaged or not. If there is something broken or damaged, replace a new one immediately and please note its original rated specification.
8. After connecting power, check the direction of motor rotation and the direction of winch is correct or not.
9. Please check whether the function of emergency stop button is normal or not. The emergency stop button is used under emergency situation to cut off power of winch. (Operator usually misunderstand that the winch is broken down when they forgot to release the emergency stop button.)
10. Please check whether the function of each safety parts is normal or not, such as emergency stop button, emergency stop wire, interlocking switch, main power switch, safety valve, limit switch, and etc.
11. Please check whether the screws of each terminal base are tightened or not. If the screws loose, screw them tightly.
12. The wiring practices of electric control system must be complied with circuit diagram.

## 2-1-3 Safety rules of winch

1. Don't misuse the winch, to avoid danger.
2. Before start the winch, make sure all the protecting covers are not breakdown and damage.
3. If the mechanism or any part breakdown, operator should stop the winch immediately and then examine and repair it.
4. If it results abnormal sound during operation, operator should stop the winch immediately and then examine and repair it.
5. If abnormal temperature phenomenon happens during operation, operator should stop the winch immediately and then examine and repair it.
6. Don’t modify the original design of mechanical structure, in order to keep the best efficiency and security.
7. Please store the spare parts and tools well, and avoid moist and damage.
8. Untrained or unauthorized operator is prohibited operating, installing or maintaining winch.
9. Please maintain and repair the winch according to service instruction.
10. Please replace broken part according to the specification in part list.

## 2-2. Location of warning sign, CE mark, nameplate

| Electric shock |
| --- |
|  |
| **CE symbol** |
| CE |
| **Nameplate** |
|   |   |

## 2-3. Checklist of electrical and safety function

| Item | Content inspection and safety requirement | Result | Comment |
|---|---|---|---|
| 1 | Is every terminal protected by isolation plate (IP2X)? | YES | |
| 2 | Does technician follow the procedure number to wire? | YES | |
| 3 | Are the diameter of grounding wire and each circuit accord with safety requirement of designed electrical circuit? | YES | |
| 4 | Is fuse accord with safety requirement of designed electrical circuit? | YES | |
| 5 | Are these screws on electric box fixed tightly? | YES | |
| 6 | Is the electric box equipped with a ventilator (e.g. fan)? | YES | |
| 7 | Does the design of electric box conform to IP requirement? | YES | |
| 8 | Is all the function of every control switch and component described specifically on this operation manual? | YES | |
| 9 | Are input voltage, frequency, and phase marked correctly? | YES | |
| 10 | Is the machine earthed? | YES | |
| 11 | Is there an independent earth copper plate equipped inside electric box? | YES | |
| 12 | Is every function of control device regular? | YES | |
| 13 | Is the emergency stop device functional? | YES | |
| 14 | Is the rotary direction of motor or transmission correct? | YES | |
| 15 | Is the cover functional (fixed or movable)? | YES | |
| 16 | Is the machine set stable? | YES | |
| 17 | Have all the acute angle and fur been ground? | YES | |
| 18 | Has the machine been pasted a CE mark? | YES | |
| 19 | Has the machine been pasted a nameplate? | YES | |
| 20 | Has the machine been pasted related warning marks? | YES | |
| 21 | Have the listed related safety parts in TCF 1.6 been installed indeed? | YES | |
| 22 | Have all the safety information and attentions been provided completely for user? | YES | |
| 23 | Does the written language of manual and machine conform to local country? | YES | |
| 24 | Has the operation manual been provided? | YES | |
| 25 | Has the EC Declaration of Conformity been signed? | YES | |

# 3. Electric Wire Winch Description

## 3-1 General characteristics

### 3-1-1 Usages

Fit for various workplace applications, such as general factories, warehouse, construction, plumbing, and agriculture industries. Designed for unique rigging applications encountered at small venues, lightweight, quiet, and portable. Operates on 1-phase 100V~240V, or 3-phase 220V~380V depends on request.

### 3-1-2 Features

**Braking:** designed for both static and dynamic loading. Brake will automatically apply in the event of power loss.

**Gearing:** Precision machined gears heat treated for strength and durability, the ball or needle bearings at all rotating points run in oil bath lubrication for a quieter, smoother and cooler operation. Planetary gearing for maximum mechanical efficiency.

**Motor:** Equipped with induction motor, quiet and durable.

**Switch:** Simply layout of the control with 2M power cable as standard and emergency stop as option.

# 3-2 Specifications

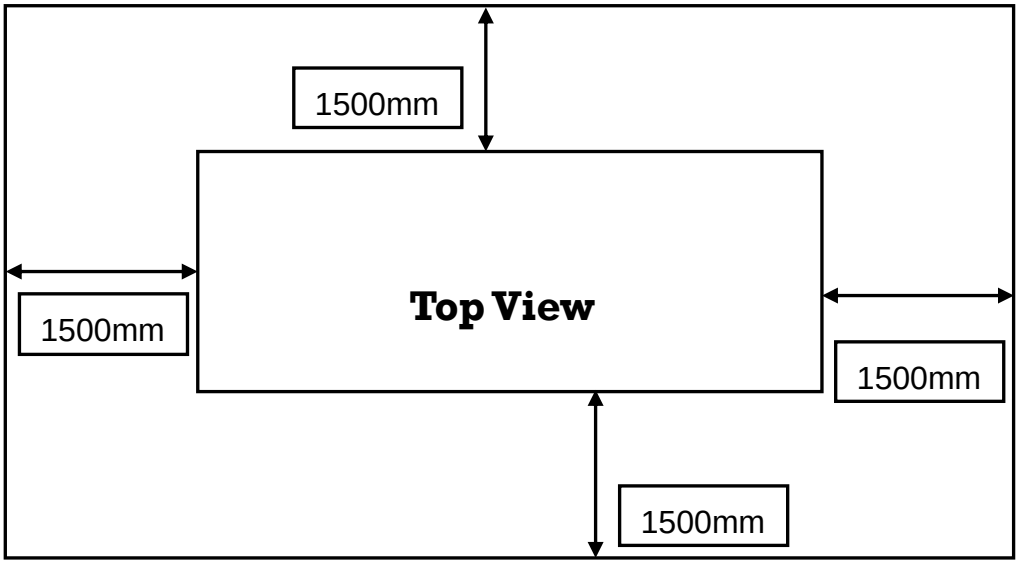
| Model / Dimensions | DU-201 | DU-202 | DU-204 | DU-221H | DU-205 | DU-208 | DU-223H | DU-210 | DU-212 | DU-2K | DU-213 | DU-3K | DU-214 | DU-215 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Length (mm) | 380 | 520 | 525 | 585 | 580 | 585 | 675 | 710 | 1120 | 1190 | 1290 | 1240 | 1350 | 1450 |
| Width (mm) | 190 | 201 | 201 | 201 | 201 | 201 | 220 | 310 | 385 | 400 | 590 | 400 | 590 | 590 |
| Height (mm) | 230 | 201 | 201 | 233 | 233 | 233 | 283 | 285 | 340 | 365 | 520 | 365 | 520 | 520 |
| Capacity (kg) | 150 | 200 | 250 | 250 | 300 | 350 | 350 | 500 | 1000 | 2000 | 2000 | 3000 | 3000 | 5000 |
| Standard Lift(m) | 25 | 30 | 30 | 30 | 30 | 45 | 45 | 45 | 70 | 45 | 70 | 45 | 70 | 70 |
| Control Cable(m) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 10 | 10 | 10 | 10 | 10 |
| Lifting Speed(m/min) | 15 | 15 | 15 | 33 | 15 | 15 | 38 | 21 | 12 | 12 | 12 | 12 | 12 | 12 |
| Wire rope(mm) | 5 | 6 | 6 | 7 | 7 | 6 | 7 | 8 | 10 | 12 | 12 | 14 | 14 | 16 |
| Safety Factor | WLL X 1.25 | | | | | | | | | | | | | |
| Insulation Class | F | | | | | | | | | | | | | |
| ED% | 40% | | | | | | | | | | | | | |
| No. Of Starts per hr | 240 | | | | | | | | | | | | | |
| N..W (kg) | 27 | 34 | 35 | 41 | 38 | 42 | 66 | 70 | 133 | 171 | 364 | 193 | 375 | 395 |
| G.W (kg) | 28 | 36 | 37 | 45 | 39 | 43 | 71 | 76 | 145 | 183 | 392 | 205 | 405 | 426 |

## 3-3 Overall dimensions

| MODEL | Length(mm) | Width(mm) | Height(mm) |
|---|---|---|---|
| DU-201 | 380 | 190 | 230 |
| DU-202 | 520 | 201 | 233 |
| DU-204 | 525 | 201 | 233 |
| DU-221H | 585 | 201 | 233 |
| DU-205 | 580 | 201 | 233 |
| DU-208 | 585 | 201 | 233 |
| DU-223H | 675 | 220 | 283 |
| DU-210 | 710 | 310 | 285 |
| DU-212 | 1120 | 385 | 340 |
| DU-2K | 1190 | 400 | 365 |
| DU-213 | 1290 | 590 | 520 |
| DU-3K | 1240 | 400 | 365 |
| DU-214 | 1350 | 590 | 520 |
| DU-215 | 1450 | 590 | 520 |

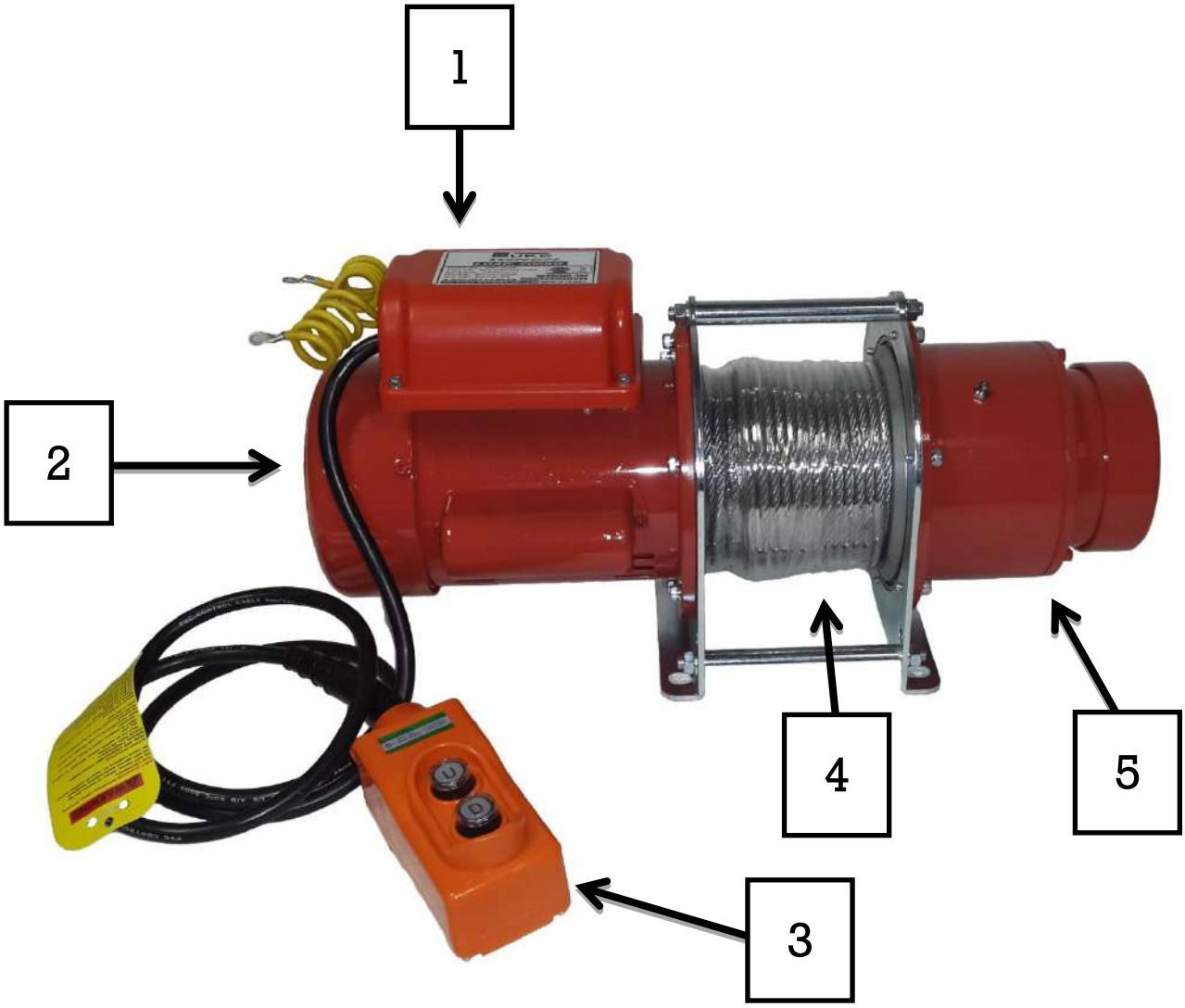
## 3-4 Working space required and operating position

**FRONT OPERATOR**




**FRONT OPERATOR** 

## 3-5 Main units and name




| Item | Part's name |
|---|---|
| 1 | Electric Department |
| 2 | MOTOR |
| 3 | PUSH BUTTON |
| 4 | WIRE ROPE |
| 5 | GEAR BOX |

# 4. Pre-use Preparation

## 4-1 Notice and inspection before operation

### 4-1-1 Mechanical Check

1. Are all transport protection facilities removed?
2. Is there any mechanical damage?
3. Are all the safety device, safety covers refitted from the set-up installation?
4. Are all winch unit correctly aligned and locked in position?
5. Are all mobile and rotating parts exempt of foreign bodies? Is there mobility unimpaired (tools wire, yarns, waste, etc.)

### 4-1-2 Electrical Check

1. Are all ground conductors connected?
2. Are all cables connected?
3. Is there any mechanical damage of electrical control operating and indicator units
4. Are all plug-in connection to the winch fitted correctly?
5. Are all the cable near mobile parts fixed correctly?
6. Are the cable fitting tightened?
7. Were wire rests and metal objects removed and cleaned away from switch box, junction box, control cabinets, and operating panel?
8. Are frequency inverters motor set for the correct V/Hz ratio if applied?
9. Are the drive rotating direction correct?

## 4-2 Expected use and limits of use

**Specification of essential parts:**

Please refer to the list of specification in operation manual.

**This winch is expected to be used under industrial environment:**

The well lighting, well ventilation, clean environment, dry, and maintains a normal temperature (-10°C to +50°C).

**The winch needs the following supplies:**

Electric power: 1-phase / 240V / 50Hz, or 3-phase / 415V / 50Hz (or base on previous designation).

**Working Duty (ED%):**

40%.

No more than 20 minutes use within 60 minutes frame.

The required technique and experience during safety operation and use.

They should be a proficient operator or trained staff.

# 5. Transport and Install

## 5-1 Transport

Always carry the winch with two hands to prevent a strike.

Below table shows net weight and gross weight for each model of winch.

| MODEL | NET WEIGHT (kg) | GROSS WEIGHT (kg) |
|---|---|---|
| DU-201 | 27 | 28 |
| DU-202 | 34 | 36 |
| DU-204 | 35 | 37 |
| DU-221H | 41 | 45 |
| DU-205 | 38 | 39 |
| DU-208 | 42 | 43 |
| DU-223H | 66 | 71 |
| DU-210 | 70 | 76 |
| DU-212 | 133 | 145 |
| DU-2K | 171 | 183 |
| DU-213 | 364 | 392 |
| DU-3K | 193 | 205 |
| DU-214 | 375 | 405 |
| DU-215 | 421 | 447 |

## 5-2 Install

### 5-2-1 Environment Precautions

The following environmental conditions may adversely affect the winch

- Low temperature below -10°C
  High temperature above 40°C
  High humidity conditions above 90%

- In organic, chemical, or explosive conditions

- In wet weather conditions or snow *(Cause rust or short circuit)*

- In heavy dusty conditions
  *(Cause malfunction or poor performance)*

### 5-2-2 Power Cord Insertion

- Insert the power plug into the power receptacle of the winch, firmly hand tighten by turning the locking ring clockwise.
- Be sure to lock the cord onto the holder mounted on the winch.
- Do not allow the cords to be tangled into the wire rope and drum

**Determining the appropriate cord based on length required**

**Grounding**

- To prevent the risk of electric shock, the power plug must be plugged into a matching grounded socket.

**Switch/Pendant cord connection**

- Insert the pendant plug into the pendant receptacle of the winch and tighten it by turning the locking ring clockwise. Be sure to hook the cord on the holder.
- To extend the length of the cord connect an extension cord of 15feet max. Do not exceed 50feet in total

## 5-2-3 Mounting

- The winch is designed to be hung or mounted on a firm or stable bar or bracket. Which ensures the winch doesn't move from side to side, or swing in a 360°
- As an optional accessory the winch Bracket can be purchased.
- When hung, do not allow the body or load to be caught by any obstruction.

***Be sure to lock the hanger for extra safety***
***Never hang from the hook only.***
***This hook is not designed to take a load***

## 5-2-4 Continuous rating

- *Never use the winch beyond the 20 minutes permitted per hour.*

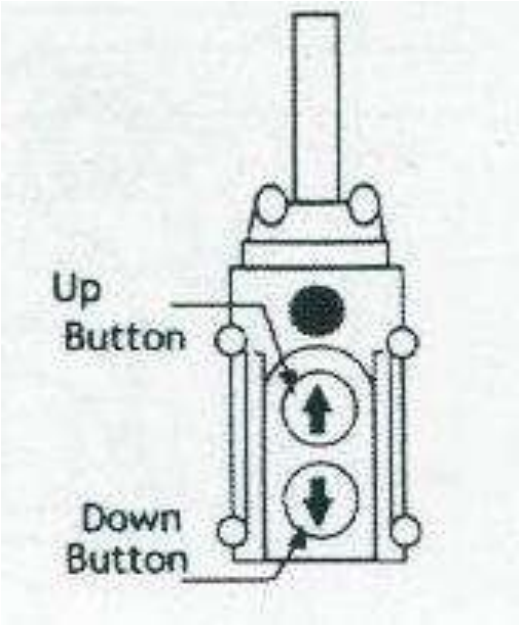
- The life of the winch depends on the conditions of the load and working frequency. During long operating periods make sure to use the winch within its continuous rating.

- Continuous Rating means the amount of allowable usage within one hour which is 35% or 20 minutes per hour or 300 starts per hour.

- The maximum number of starts means the number of times the motor starts within the hour.

# 6. Operation

## 6-1 Control device: Control panel

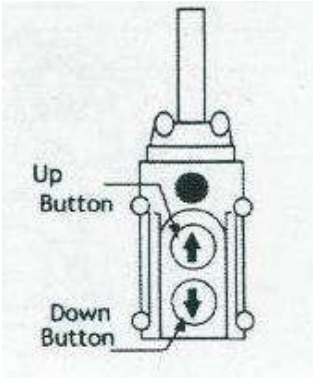



## 6-2 Operating procedure

The person who is untrained or unfamiliar with the operation procedure is prohibited from operating machine.

**Preparation before Working**

- Check all safety and environmental conditions
- Ensure there are a minimum of five(5) wraps of wire wound around the drum
- Check the wire rope and discard should there be any signs of excessive wear, too many broken wires, corrosion, or other defects.
- One wire rope consists of 7 strands. One strand has 19 wires. So one of the 7 strands must not have more than 3 of the 19, damaged wires.
- Connect the main power source and ensure grounding.
- Do not lift loads exceeding the rated load.
- Always use power source at the rated voltage.




**Up and Down Control Switch**

- **To Lift a Load.** Press ▲ Button
- **To Lower a Load. Press** ▼ Button

## 6-3 Handling Precautions

**WARNING**

***Pay close attention to the following instructions.***

***Incorrectly operating the winch may result in personal injury or equipment damage.***

- Never try to lift a load more than the rated capacity
- Always remain in control. Never leave a load
- Don't work, walk or stand under and operating winch
- Never ride on the hook, sling, or load
- A minimum of five (5) wraps of rope around the drum is necessary to support the rated load
- Always look up when working the winch. Watch for overhead danger
  Be sure to lift a load vertically. Any slack may allow wire to be tangled.
- Prior to lifting make sure the brake is performing correctly.
  If any malfunction is detected stop the operation immediately.
- Never wrap the load with the wire rope
- Wire rope with one or more of the following defects must be replaced immediately.
  1. Kink
  2. Distortion
  3. Corrosion
  4. Showing signs of excessive wear or if 1 of the 7 strands has more than 3 of the 19 wires damaged
- Do not pull the control pendant to move/pull a load
  Do not exceed the continuous rating
- Do not rapidly change from Lifting to Lowering
- Never work on or weld on a suspended load
- Stop operation immediately if the wire rope slackens.
- Ensure the slings are fixed in the centre of the swivel hook

- **Other Important Precautions**

Stop operating the winch if there is an abnormal noise or vibration in the gear box.
Do not use the winch or the wire rope as grounding for a welding machine
Make sure the load being lifted is well balanced and secured before commencing.

# 7. Maintenance and Adjustment

## 7-1 Periodical Checking

| | Parts | Checks | Checking Method | Timing | | | |
|---|---|---|---|---|---|---|---|
| | | | | Daily | 3mths/ 20 hrs | 1 year | 3 years |
| 1 | Brake | Performance | Visual | | ✓ | | |
| | | Wearing of pressed plate | Decomposition Check | | | | ✓ |
| | | Broken springs | Decomposition check | | | | ✓ |
| 2 | Motor | Condition of insulation | Visual | ✓ | | | |
| | | Staining damage | Visual | | ✓ | | |
| | | Carbon Powder accumulation | Decomposition Check | | | ✓ | |
| 3 | Control Assy | Working | Manual | ✓ | | | |
| | | Outer damage of switch cords | Visual | ✓ | | | |
| | | Connection of earth wire | Visual | ✓ | | | |
| | | Condition of Insulation | Visual | | ✓ | | |
| 4 | Safety devices | Over prevention function | Visual | ✓ | | | |
| | | Reverse winding prevention function | Visual | ✓ | | | |
| | | Distortion over winding function | Visual | ✓ | | | |
| | | Wrong rotary direction-winding | Visual | ✓ | | | |
| 5 | Wire Rope | Kinking | Visual | ✓ | | | |
| | | Broken wires | Visual | ✓ | | | |
| | | Decreased diameter by more than 10% | Visual | ✓ | | | |
| | | Deforming or corrosion | Visual | ✓ | | | |
| 6 | Swivel hook & Hanger | Distortion | Visual | ✓ | | | |
| | | Damage | Visual | ✓ | | | |
| | | Loosening | Visual | ✓ | | | |
| 7 | Drum | Rupture of Flange | Visual | | ✓ | | |
| | | Wearing | Visual | | ✓ | | |
| 8 | Gear Case | Damaged | Visual | ✓ | | | |
| | | Check oil level | Measuring | | ✓ | | |
| | | Lubrication for couplings | Measuring | | ✓ | | |
| 9 | Fastenings | Loosening | Manual | ✓ | | | |

***It is Important that*:**

1. **Only Qualified persons can conduct any form of Checking**
2. **Each Item listed above is to be carried out according to the specified Timing**

## 7-2 Maintenance

**Drum**

- Insert a new wire rope w/clamp through the limit switch lever and insert it into the hole of the drum
- Put a P.T. screw into the hole of the drum and tighten it by a hexagon key
- Uneven winding of the rope may cause the load to swing thus damaging the rope and reducing its life swan

**Oil Lubrication**

- The Winches are prefabricated at the factory and do not require initial lubrication.
- Re-lubrication interval depends upon service.

## 7-3 Troubleshooting

If the winch fails to start after several attempts or the winch's operation appears to be defective check the following:

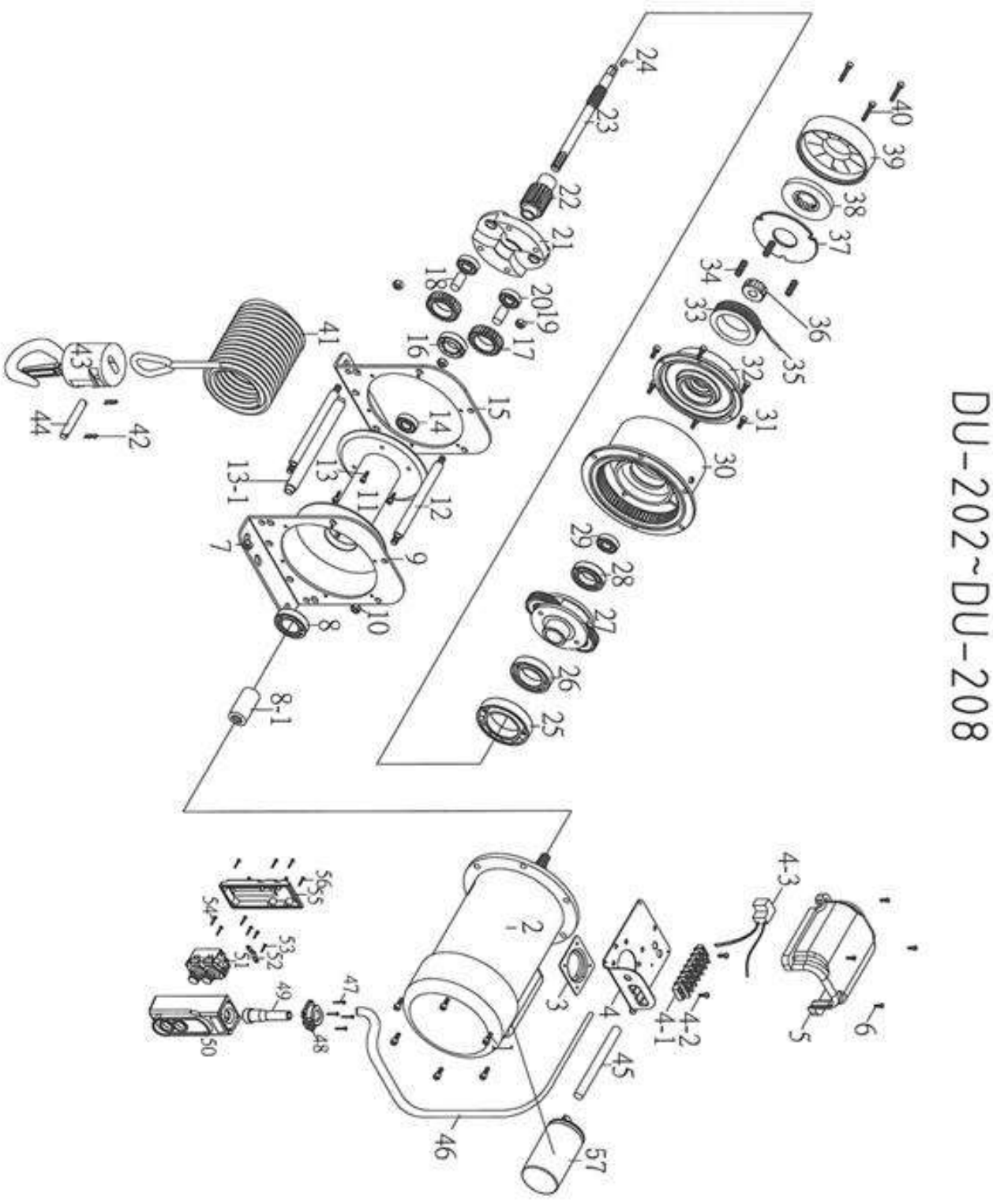
| ***Observed Anomaly*** | ***Possible Cause*** | ***Solution*** |
|---|---|---|
| No Reaction after pressing the buttons on the control pendant | No power | Check power source |
| | Disconnection of plug, power cord or pendant cord | Replace or repair |
| | Damaged motor resulting from overload | Replace |
| | Burnt diode assy | Replace |
| | Considerable voltage drop | Adjust to rated voltage |
| | Wearing of carbon brushes | Replace carbon brushes |
| Brake distance too long | Wearing of lining, pressed plate and pawl | Replace |
| | Disconnection of electronic generated braking | Repair nut cord or Replace D type resister |
| | Voltage Too high | Adjust to rated voltage |
| No over-winding Prevention while swivel hook touches limit lever | Disconnection of electronic generated braking | Repair nut cord or Replace D type resister |
| | Malfunction of limit switch | Replace |
| Lifting speed too slow | Overload | Reduce Load |
| | Considerable voltage drop | Adjust to rated voltage and check the section of the power cord |
| Electrical leakage or shock | Burnt motor resulting from overload | Replace motor |
| | Wearing of carbon brushes | Replace carbon brushes and clean any carbon powder in the motor |
| | Water invaded motor or push button | Dry it or replace motor if badly saturated |
| Abnormal sound in gear box | Insufficient oil resulting from oil leakage | Replace oil seal and refill with sufficient oil |
| | Distortion of gear box | Repair |

**NB: All mechanical or electrical work must be carried out by a qualified tradesperson**

# 8. Drawings and Part list

## 8-1 Assembly drawings and part list

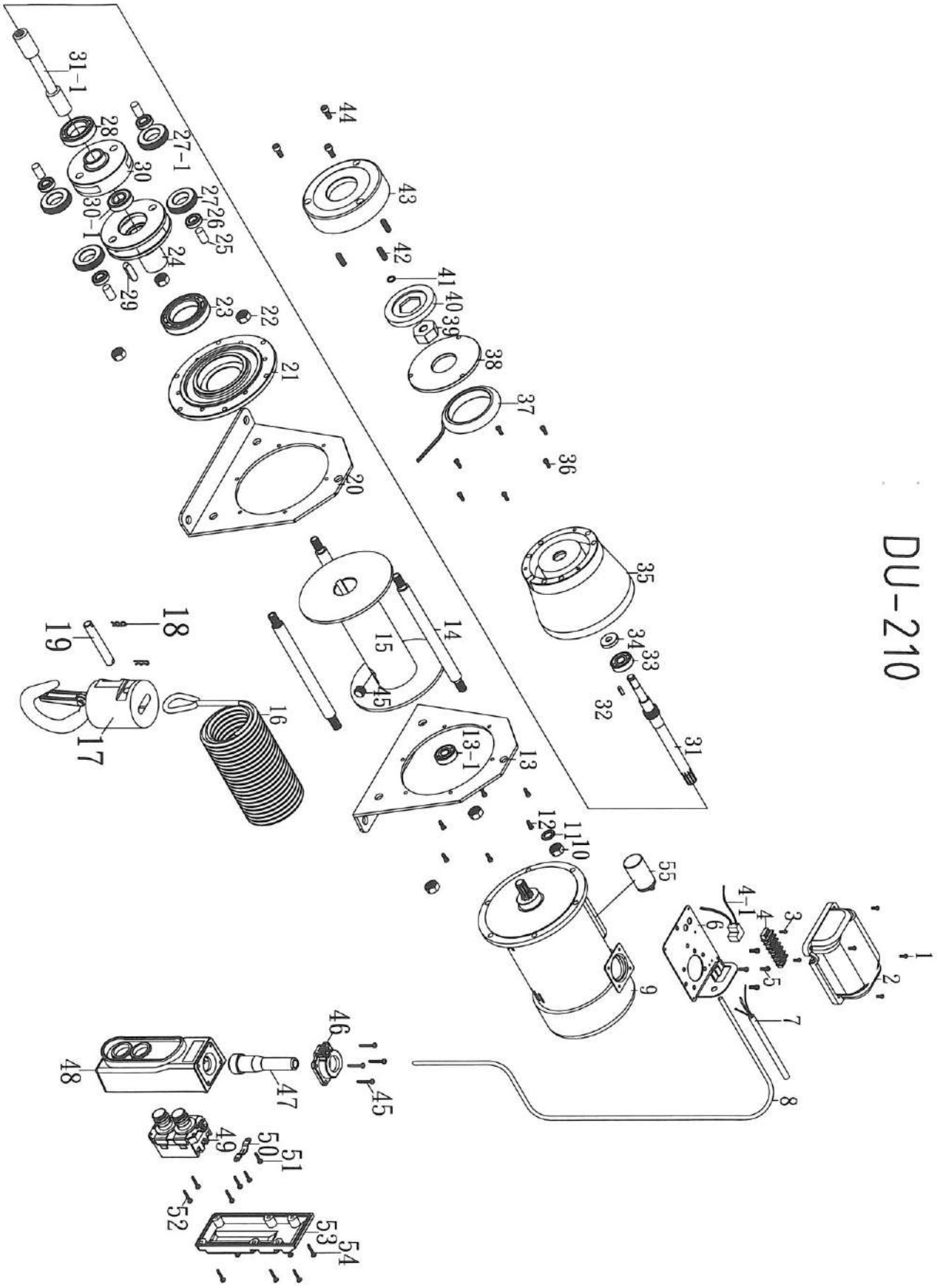
**MODEL: DU-201 / DU-202 / DU-204 / DU-221H**
**DU-205 / DU-223H / DU-208 - Assembly drawings**



# MODEL: DU-201 / DU-202 / DU-204 / DU-221H - Part List
# DU-205 / DU-223H / DU-208 - Part List

| | | | |
|---|---|---|---|
| 1 | Screw | 27 | Base of gear component |
| 2 | Motor | 28 | Bearing |
| 3 | Rack of motor cable | 29 | Bearing |
| 4 | Plastic box rack | 30 | Gear box |
| 4-1 | Terminal plate | 31 | Screw |
| 4-2 | Screw | 32 | Base of brake coil |
| 4-3 | Rectifier | 33 | Brake coil |
| 5 | Plastic box rack | 34 | Spring |
| 6 | Screw | 35 | Screw |
| 7 | Bolt | 36 | Gear reducer |
| 8 | Bearing | 37 | Brake steel plate |
| 8-1 | Link | 38 | Brake disc |
| 9 | Main body(motor) | 39 | Brake cover |
| 10 | Bolt | 40 | Screw |
| 11 | Drum | 41 | Wire rope |
| 12 | Fix bar | 42 | R-type pin |
| 13 | Screw | 43 | Hook |
| 13-1 | Fix bar | 44 | Fix pin |
| 14 | Bearing | 45 | Power cable |
| 15 | Main body(gear) | 46 | Switch cable |
| 16 | Bearing | 47 | Screw |
| 17 | Gear | 48 | Base of plastic tube |
| 18 | Fix pin | 49 | Plastic tube |
| 19 | Bolt | 50 | Switch connector |
| 20 | Bearing | 51 | Fix plate |
| 21 | Gear component | 52 | Fix plate |
| 22 | Output shaft | 53 | Screw |
| 23 | Shaft | 54 | Screw |
| 24 | Key | 55 | Switch button cover |
| 25 | Bearing | 56 | Screw |
| 26 | Bearing | 57 | Capacitor |

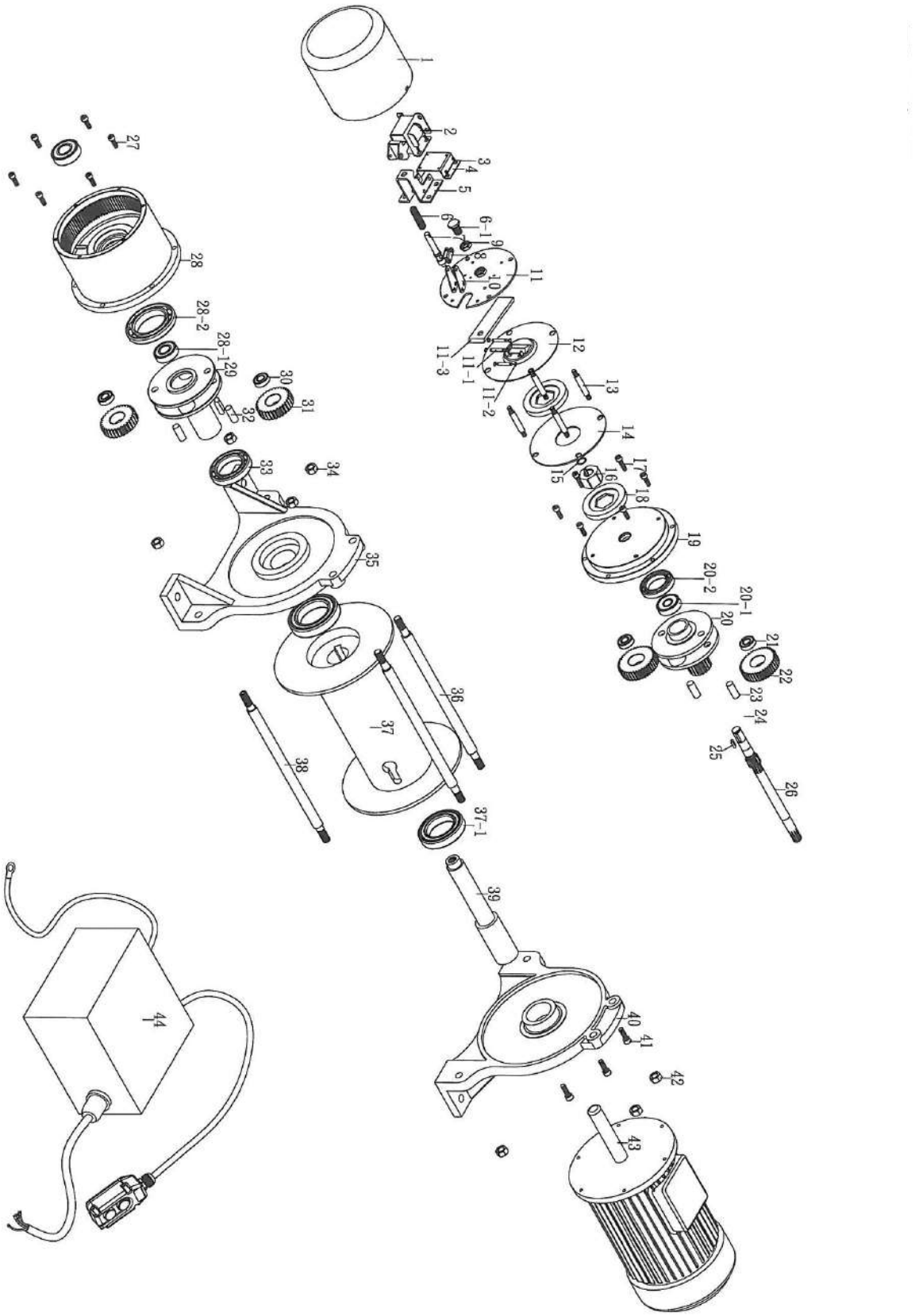
# MODEL: DU-210 - Assembly drawings



## MODEL: DU-210 - Part List

| | | | |
|---|---|---|---|
| 1 | Screw | 28 | Bearing |
| 2 | Plastic box | 29 | Key |
| 3 | Screw | 30 | Gear component |
| 4 | Terminal plate | 30-1 | Link |
| 4-1 | Rectifier | 31 | Shaft |
| 5 | Screw | 31-1 | Arbor |
| 6 | Plastic box rack | 32 | Key |
| 7 | Power cable | 33 | Bearing |
| 8 | Switch cable | 34 | Oil seal |
| 9 | Motor | 35 | Gear box |
| 10 | Bolt | 36 | Screw |
| 11 | Washer | 37 | Brake Coil |
| 12 | Screw | 38 | Brake plate |
| 13 | Main body(Motor) | 39 | Brake |
| 13-1 | Oil seal | 40 | Brake disc |
| 14 | Fix bar | 41 | Spring |
| 15 | Drum | 42 | Brake spring |
| 16 | Wire rope | 43 | Brake cover |
| 17 | Hook | 44 | Screw |
| 18 | R pin | 45 | Screw |
| 19 | Fix pin | 46 | Plastic tube base |
| 20 | Main body(Gear) | 47 | Plastic tube |
| 21 | Base of gear | 48 | switch |
| 22 | Blot | 49 | Switch contactor |
| 23 | Bearing | 50 | Fix plate |
| 24 | Out put shaft | 51 | Screw |
| 25 | Fix pin | 52 | Screw |
| 26 | Bearing | 53 | Fix plate |
| 27 | Gear | 54 | Screw |
| 27-1 | Gear | 55 | Capacitor |

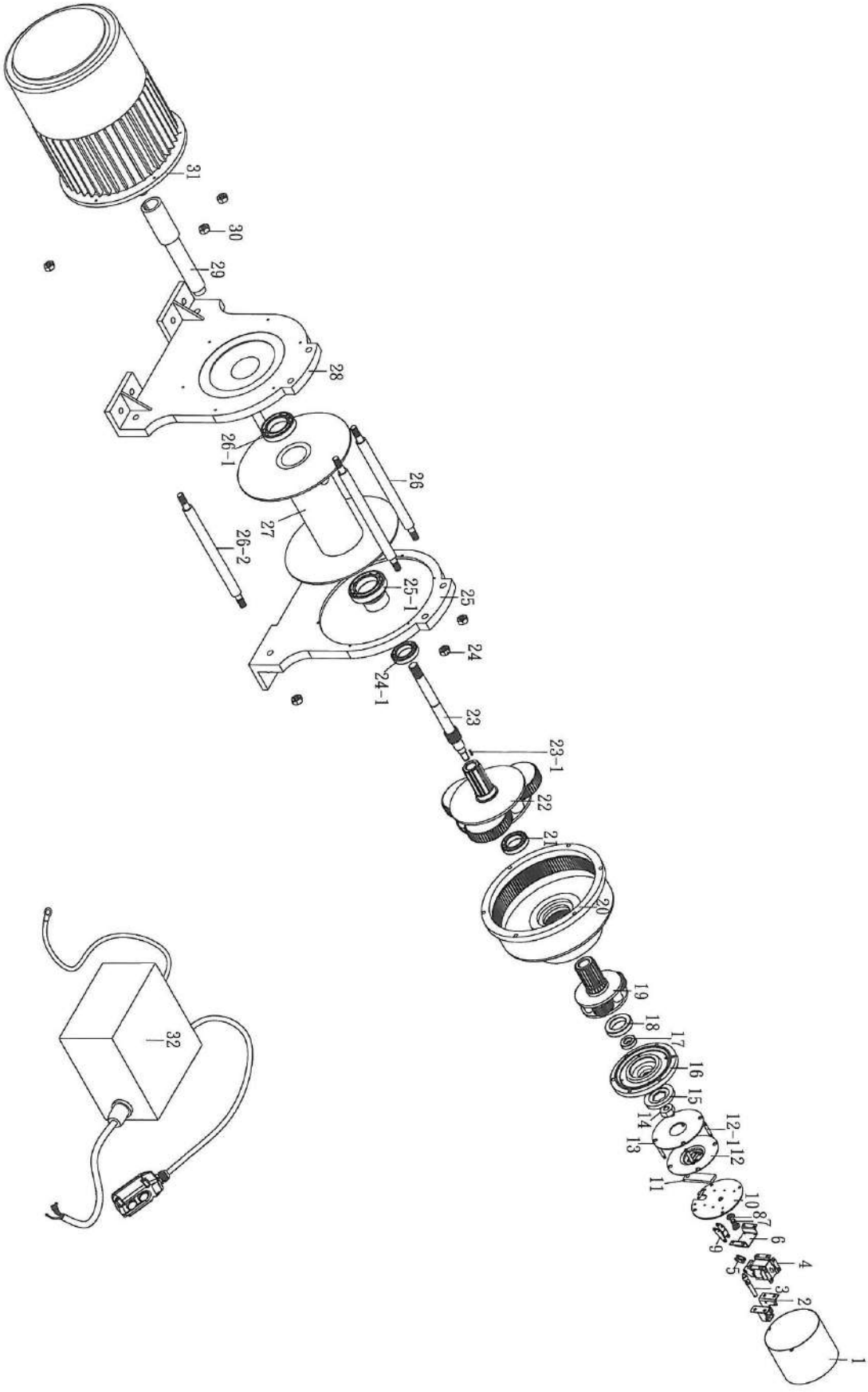
# MODEL: DU-212 / 2K / 3K - Assembly drawings



## MODEL:DU-212 / 2K / 3K - Part List

| | | | |
|---|---|---|---|
| 1 | Gear cover | 20-1 | Bearing |
| 1-1 | Screw | 20-2 | Bearing |
| 2 | Solenoid valve | 21 | Bearing |
| 2-1 | Screw | 22 | Gear |
| 3 | Screw | 23 | Fix pin |
| 4 | Base of solenoid Valve | 24 | spring |
| 5 | Brake component | 25 | Key |
| 5-1 | Screw | 26 | Shaft |
| 6 | Spring | 27 | Screw |
| 6-1 | Screw | 28 | Gear box |
| 6-2 | Screw | 28-1 | Bearing |
| 7 | Solenoid valve brake link | 29 | Gear component |
| 8 | Brake component | 30 | Bearing |
| 9 | Bolt | 31 | Gear |
| 9-1 | Bolt | 32 | Fix pin |
| 10 | Brake component | 33 | Bearing |
| 11 | Brake steel plate | 34 | Nut |
| 11-1 | Brake component | 35 | Main body of Gear |
| 11-2 | Spring | 36 | Fix bar |
| 12 | Brake steel plate | 37 | Drum |
| 13 | Fix bar | 37-1 | Bearing |
| 14 | Brake steel plate | 38 | Fix bar |
| 15 | Spring | 39 | Arbor |
| 16 | Hexagon brake | 40 | Main body of motor |
| 17 | Screw | 41 | Screw |
| 18 | Hexagon brake disc | 42 | Bolt |
| 19 | Base of gear | 43 | Motor |
| 20 | Gear component | 44 | Controller Box |

# MODEL: DU-213 / DU-214 / DU-215 - Assembly drawings



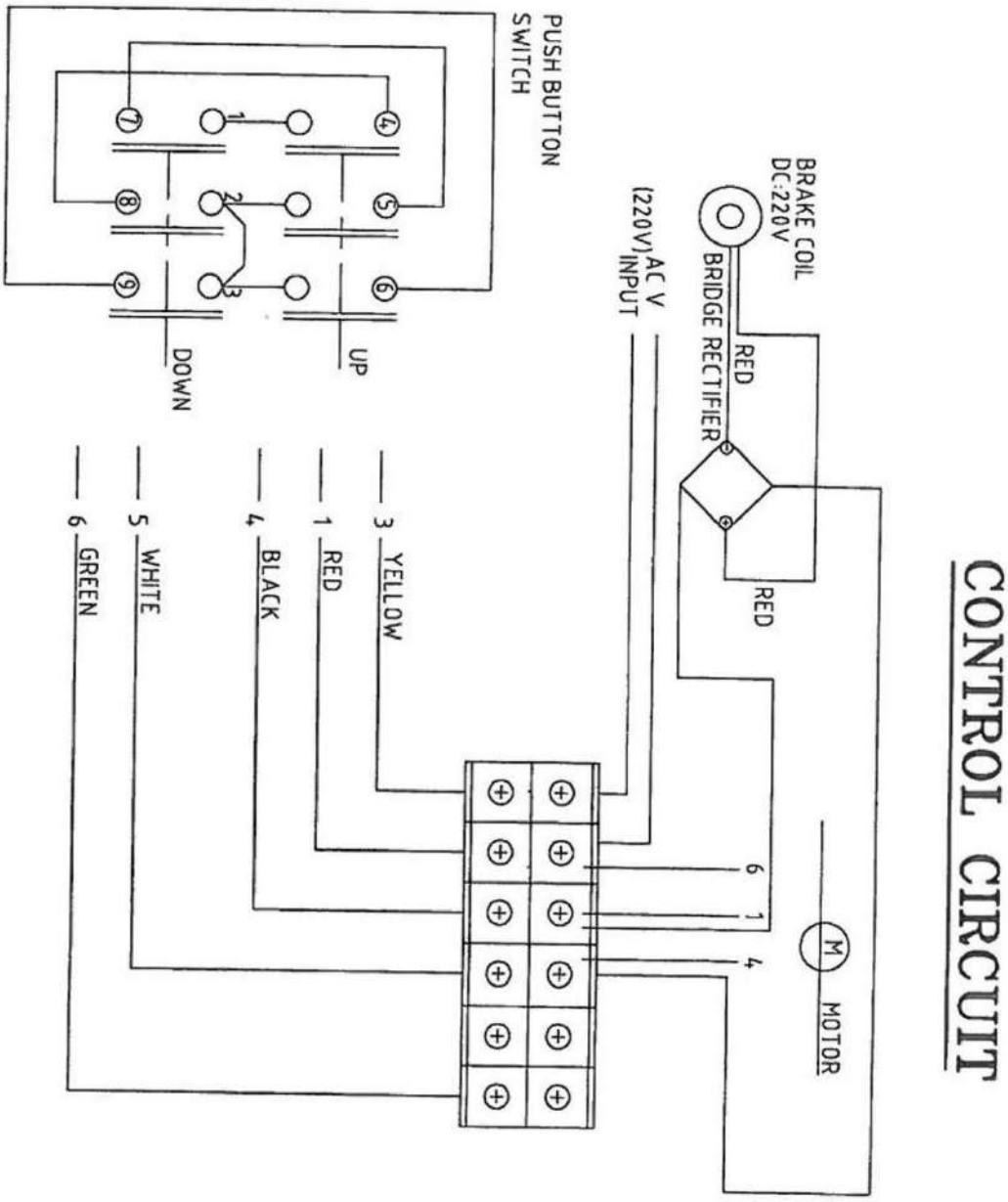
# MODEL:DU-213 / DU-214 / DU-215 - Part List

| | | | |
|---|---|---|---|
| 1 | Gear cover | 19 | Gear ass'y stage 1 |
| 2 | Brake component | 20 | Gear box |
| 3 | Solenoid valve brake link | 21 | Bearing |
| 4 | Solenoid valve | 22 | Gear ass'y stage 2 |
| 5 | Brake component | 23 | Brake Shaft |
| 6 | Base of solenoid Valve | 23-1 | Key |
| 7 | Screw | 24 | Nut |
| 8 | Brake component | 24-1 | Bearing |
| 9 | Brake component | 25 | Main body of Gear |
| 10 | Brake steel plate | 25-1 | Bearing |
| 11 | Brake component | 26 | Fix Bar |
| 12 | Brake steel plate | 26-1 | Bearing |
| 12-1 | Fix bar | 27 | Drum |
| 13 | Brake steel plate | 28 | Main body of motor |
| 14 | Hexagon brake | 29 | Arbor |
| 15 | Hexagon brake disc | 30 | Bolt |
| 16 | Base of gear | 31 | Motor |
| 17 | Bearing | 32 | Controller Box |
| 18 | Bearing | | |

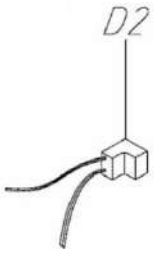
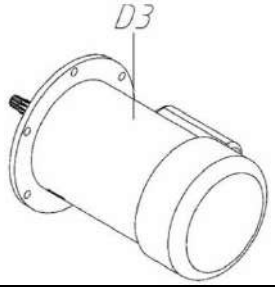
## 8-2 Electrical system drawings and part list

## MODEL: DU-201/ DU-202 / DU-204 / DU-221H /DU-205/ DU-223H /DU-208

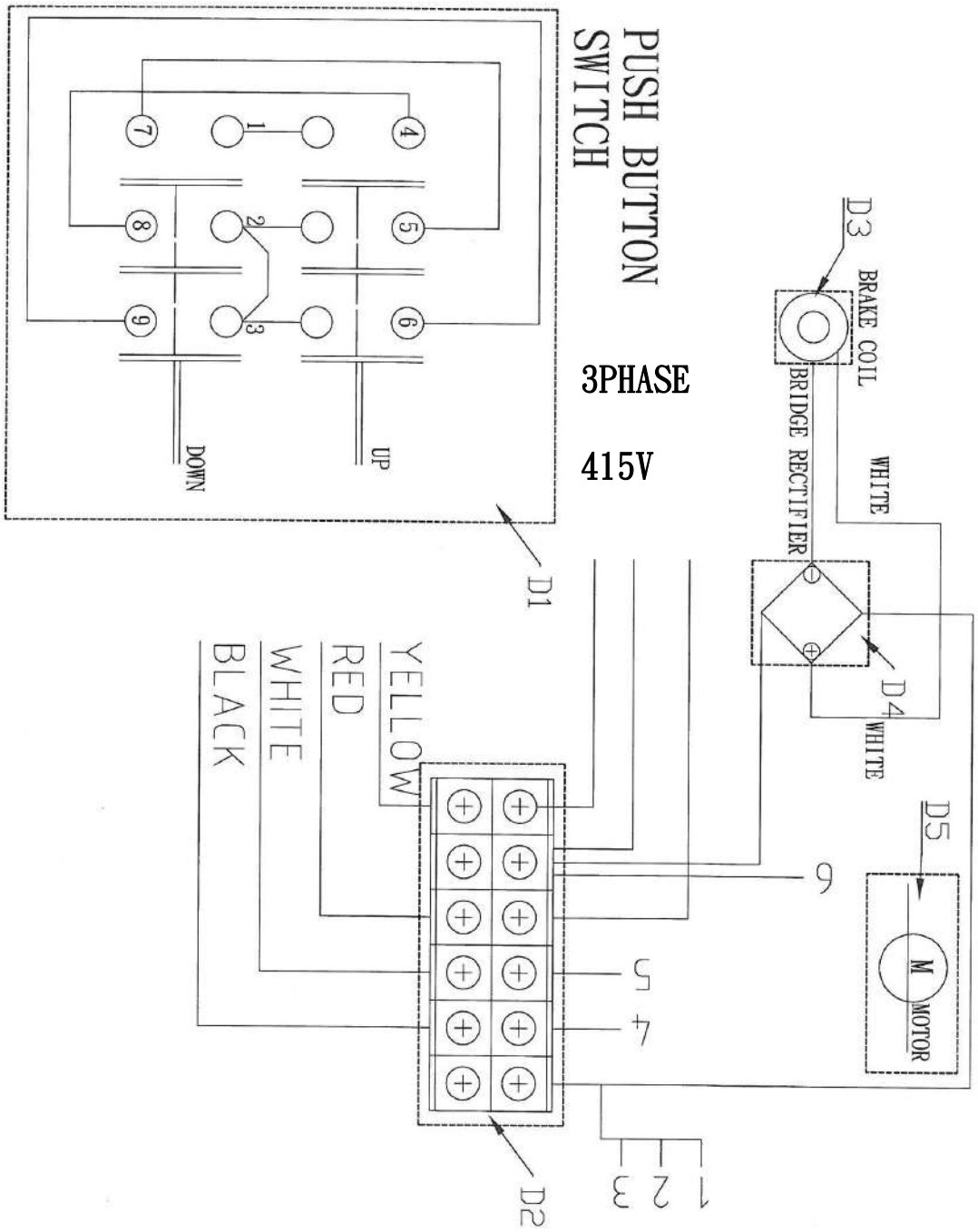
### - Electrical system drawings---240V



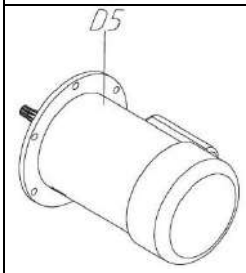
# MODEL DU-201/ DU-202 / DU-204 / DU-221H /DU-205/ DU-223H /DU-208 - Part list

| Item | Description | Specification |
|---|---|---|
|  | BRAKE COIL | |
|  | BRIDGE RECTIFIER | |
|  | MOTOR | 1PH 240V |
|  | PUSE BUTTON SWITCH | UP / DOWN<br>500V 2.2KW |
|  | TERMINAL BLOCK FIX | |

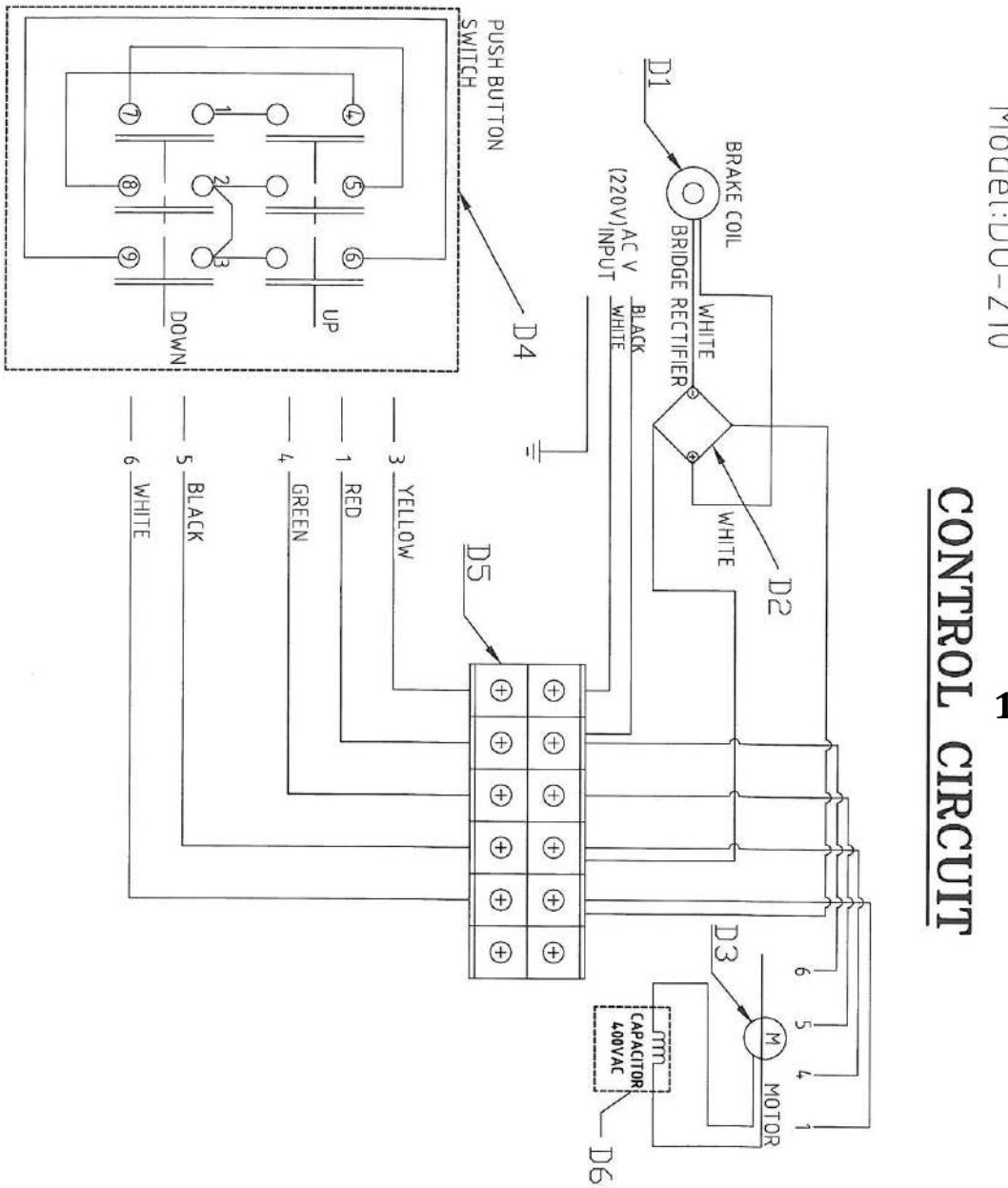
**MODEL: DU-202 / DU-204 / DU-221H /DU-205**
**DU-223H /DU-208 /DU-210**
**- Electrical system drawings ---415V**



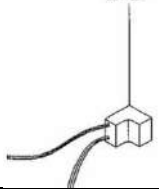
## MODEL: DU-202 / DU-204 / DU-221H /DU-205
## DU-223H /DU-208 /DU-210
## - Electrical system drawings

| Item | Description | Specification |
|---|---|---|
|  | PUSE BUTTON SWITCH | UP / DOWN<br>500V 2.2KW |
|  | TERMINAL BLOCK FIX | |
|  | BRAKE COIL | |
|  | BRIDGE RECTIFIER | |
|  | MOTOR | 3PH 415V |

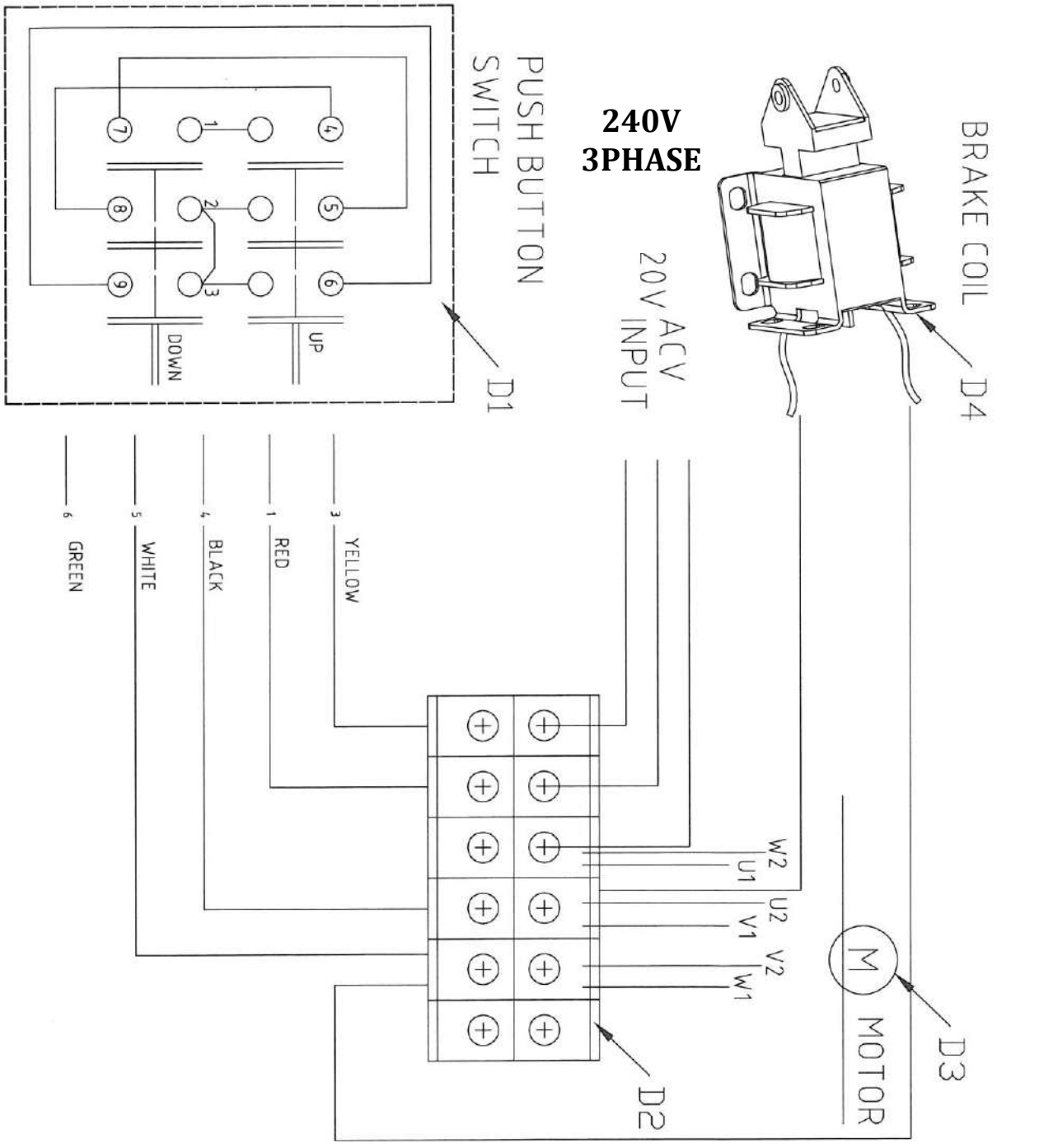
# MODEL:DU-210 - Electrical system drawings ---240V



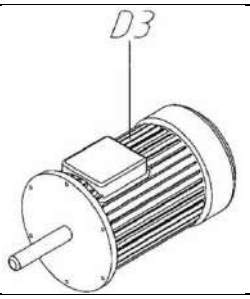
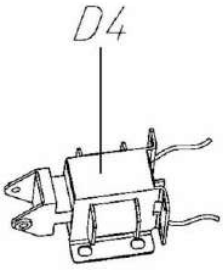
# MODEL:DU-210 - Part list

| Item | Description | Specification |
|---|---|---|
|  | BRAKE COIL | |
|  | BRIDGE RECTIFIER | |
|  | MOTOR | 1PH 240V |
|  | PUSE BUTTON SWITCH | UP / DOWN<br>500V 2.2KW |
|  | TERMINAL BLOCK FIX | |
| D6  | CAPACITOR | |

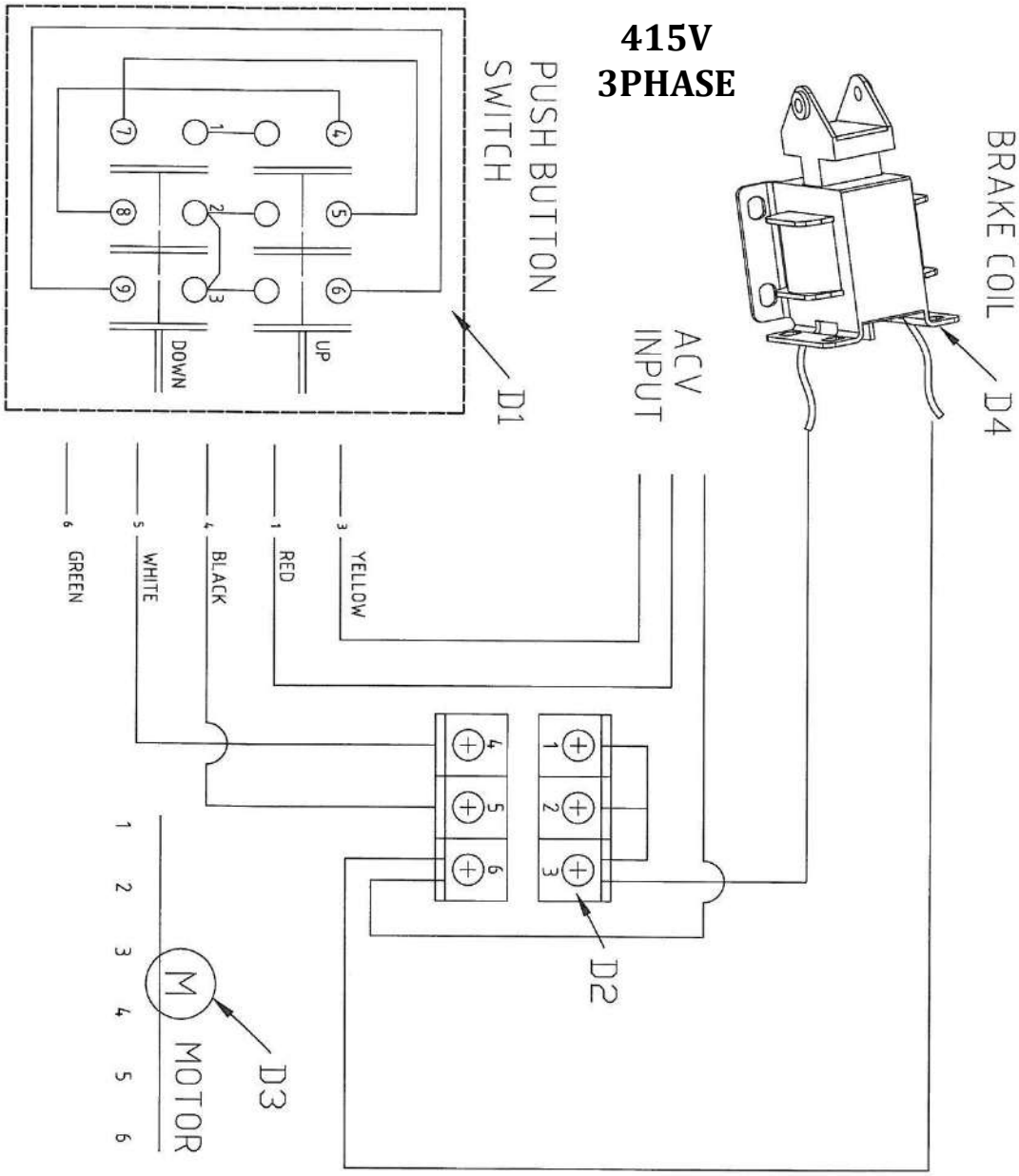
# MODEL:DU-212 - Electrical system drawings ---240V



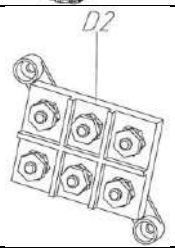
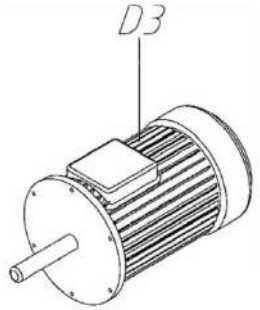
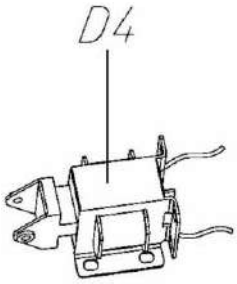
# MODEL:DU-212 - Part list

| Item | Description | Specification |
|---|---|---|
|  | PUSH BUTTON | |
|  | TERMINAL BLOCK FIX | |
|  | MOTOR | 3PH 240V |
|  | BRAKE COIL | |

## MODEL:DU-212 - Electrical system drawings ---415V

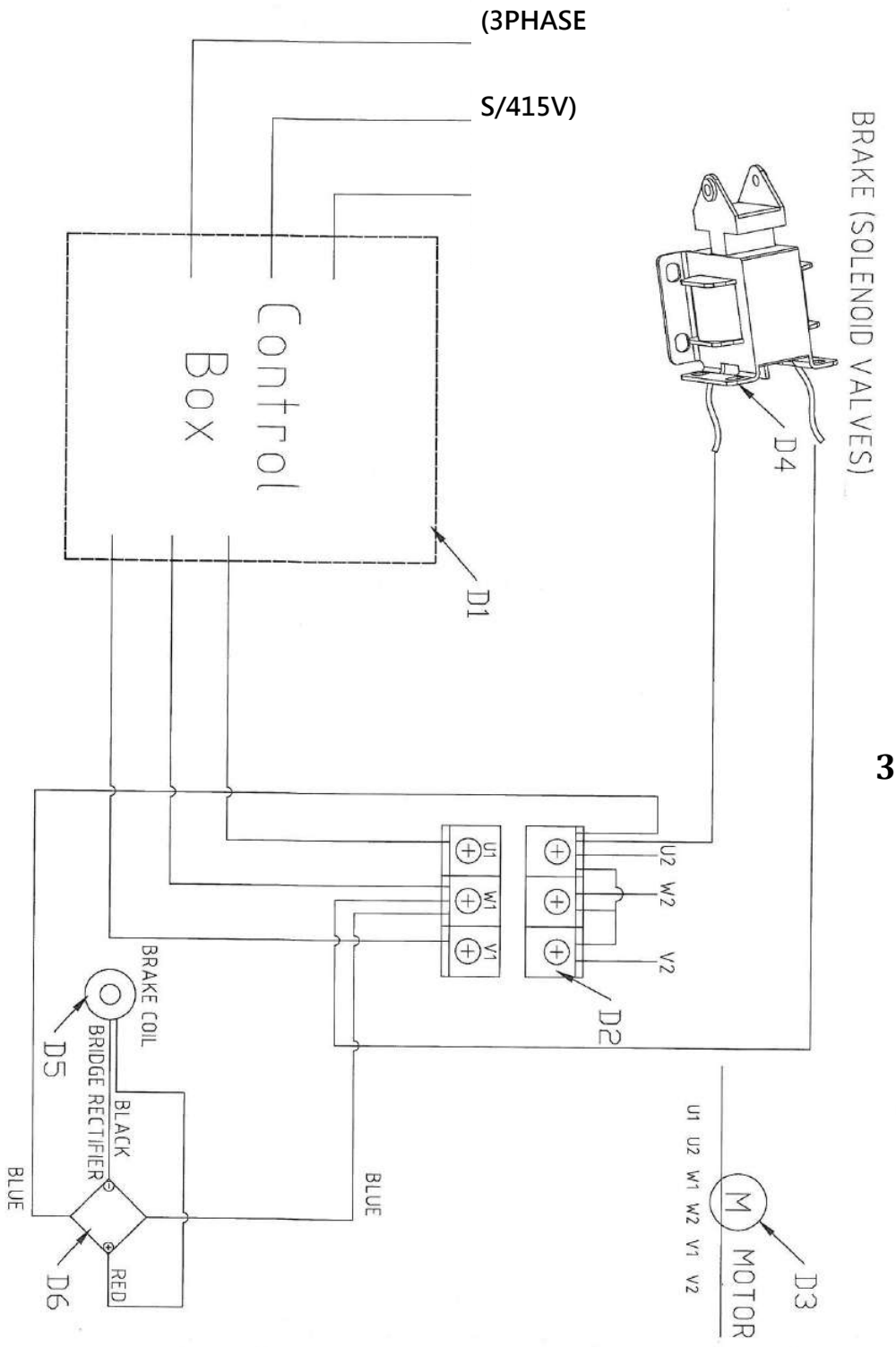


## MODEL:DU-212 - Part list

| Item | Description | Specification |
|---|---|---|
|  | PUSH BUTTON | |
|  | TERMINAL BLOCK FIX | |
|  | MOTOR | 3PH 415V |
|  | BRAKE<br>(SOLENOID VALVES) | |

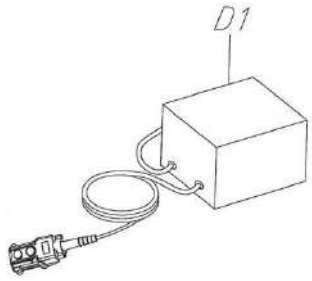
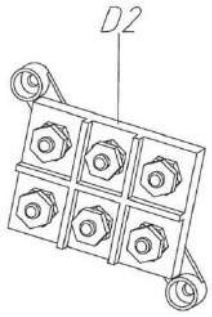
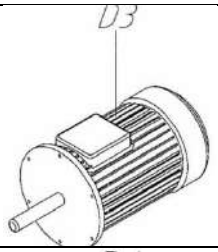
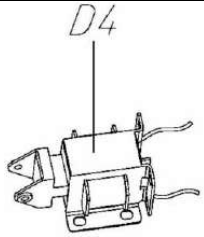
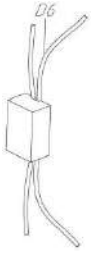
**MODEL:DU-2K/DU-213/DU-214/DU-3K/DU-215**

**- Electrical system drawings ---415V**




**415V**
**3PHASE**

# MODEL: DU-2K/DU-213/DU-214/DU-3K/DU-215- Part list

| Item | Description | Specification |
|---|---|---|
|  | CONTROL BOX | |
|  | TERMINAL BLOCK FIX | |
|  | MOTOR | 3PH 415V |
|  | BRAKE<br>(SOLENOID VALVES) | |
|  | BRAKE COIL | |
|  | BRIDGE RECTIFIER | |