BRUSHING MACHINE
SERIES TWINGO

TWINGO 400
TWINGO 600

GUIDE TECHNICAL DOCUMENTATION

ORIGINAL OPERATING AND MAINTENANCE MANUAL

Manufacturer: **HOUFEK a.s.**
5 may 797, CZ-582 82 Golčův Jeníkov, Czech Republic

APPLICATION YOUTUBE FACEBOOK WEBSITE

List no. 1 / number of pages 36 + attachments
Date of issue: 2011
Date of update: 07/2025
Document number

PLEASE STUDY THIS MANUAL THOROUGHLY PRIOR TO STARTING THE MACHINE UP!

CONTENT

1 INTRODUCTION 4

2 HYGIENE AND WORK SAFETY RULES; ENVIRONMENT; NOISE POLLUTION, RESIDUAL RISKS AND THEIR PREVENTION 5

2.1 QUALIFIED PERSONNEL 5

2.2.1 GENERAL SAFETY RULES 6

2.2.2 WORKPLACE SAFETY RULES 7

2.2.3 SAFETY RULES FOR MACHINE OPERATION 7

2.2.4 SAFETY RULES FOR MACHINE MAINTENANCE 9

3 RESIDUAL RISKS 10

3.1 RISKS ON THE ELECTRICAL PART OF THE MACHINE 10

3.2 RISKS ON THE MECHANICAL PART OF 10

4 PURPOSE AND METHOD OF USE 11

4.1 MACHINE USE DESIGNATION 11

4.1.1 WORK ACTIVITIES 11

4.1.2 WORKPIECE MATERIALS 11

4.2 WORK ENVIRONMENT 12

4.3 APPLICATION METHOD 12

5 TECHNICAL DATA AND MACHINE DESCRIPTION. 13

5.1 TECHNICAL DATA 13

5.2 MACHINE TECHNICAL DESCRIPTION – MAIN CONSTRUCTION GROUPS 14

5.3 MACHINE CONTROL AND FUNCTION ELEMENTS 21

5.3.1 MACHINE SAFETY CIRCUIT (OPERATING POSITION) 22

5.3.2 PUTTING THE MACHINE INTO STANDBY MODE 22

5.3.3 EMERGENCY STOP 22

5.3.4 SETTING THE DESK DISTANCE FROM THE BRUSH PERIPHERY 22

5.3.5 WORKPIECE HEIGHT (THICKNESS) DISPLAY 22

5.3.6 AGGREGATE MOTOR STARTING/STOPPING 24

5.3.7 MATERIAL FEED START/STOP 24

5.3.8 SWITCHING ON/OFF THE VACUUM BENCH PUMP MOTOR 24

5.3.9 SIDE GRINDING MOTOR STARTING/STOPPING 24

5. 3.10 BRUSHING HEAD OSCILLATION STARTING/STOPPING 25

5.4. WARNING SIGNS 25

6 TRANSPORT, HANDLING & STORAGE 26
6.1 MACHINE TRANSPORT 26
6.2 MACHINE STORAGE 26
7 SETTING, CONNECTING, AND COMMISSIONING THE MACHINE 27
7.1 MACHINE SETTING 27
7.2 MACHINE CONNECTION TO ELECTRIC NETWORK 27
7.3 PRESSURED AIR CONNECTION 28
7.4 MACHINE CONNECTION TO EXHAUST DEVICE 29
7.5 FIRST ACTIVATION OF THE MACHINE 29
8 INSTRUCTIONS FOR USE, WORK PROCEDURES 29
8.1 THE BASIC GRINDING OPERATION 29
8.2 GENERAL SANDING CONDITIONS – CUTTING CONDITIONS 30
9 GRINDING TOOLS – BRUSHES, REQUIREMENTS, STORAGE 30
9.1 STORAGE OF GRINDING TOOLS-BRUSHES 30
9.2 GRINDING TOOL REPLACEMENT 30
9.3 PURCHASE OF GRINDING TOOLS-BRUSHES 30
10 THE MACHINE SETTING AND SERVICE 31
10.1 GRINDING BRUSH EXCHANGE 31
10.2 STRETCHING THE PROPELLER BELTS 31
10.3 FEEDING BELT CENTRING 32
10.4 SETTING THE LIFT AND PRESSURE FORCE OF PRESSURE ROLLERS 32
11 MACHINE MAINTENANCE 32
11.1 MACHINE GREASING AND CLEANING 32
11.2 MAINTENANCE OF FEATURES OF ELECTRICAL FITTINGS 33
11.3 MAINTENANCE OF PNEUMATIC SYSTEM COMPONENTS 33
11.3.1 OPERATING PRESSURE ADJUSTMENT 33
11.3.2 CONDENSATE (WATER) DRAINAGE 33
12 TROUBLESHOOTING INSTRUCTIONS 34
14.1 COMPONENT DESIGNATION 35
14.2 PARTS ORDERING 35
15.1 CZECH REPUBLIC 35
15.2 OTHER COUNTRIES 35
16 MANUFACTURER'S CONTACT ADDRESS 36

1 INTRODUCTION

Dear customers,

Thank you for purchasing the brushing machine of production series Twingo, which is our company product. Simple and safe operation, multi application, and small dimensions coupled with an advantageous price are the main features of this machine.

The brushing machine **Twingo** is made in compliance with valid technical standards and standards valid in the EU at the time this accompanying technical documentation is issued; a certificate of conformity has been issued.

The review of technical regulations and standards used for the conformity evaluation of the brushing machine **TWINGO** series is specified in the „DECLARATION OF CONFORMITY“, brushing machine production series TWINGO.

See annex to this manual.

IMPORTANT INSTRUCTIONS IN THIS GUIDE ARE MARKED WITH A WARNING SIGN ⚠
MOREOVER, THEY ARE IN CAPITAL OR BOLD LETTERS; YOU NEED TO PAY THEM SPECIAL ATTENTION.

We hope you will be happy with our product. In case of technical questions and defects on the machine, contact the manufacturer’s nonstop service or our manufacturing plant’s Sales Dept., or an adequate national dealer authorised to sell our machines.

Aleš HOUFEK
Chairman of the Board of Directors
Houfek a.s.

NOTE: BOTH THE TEXT AND PICTURES IN THIS GUIDE, INCLUDING ANNEXES, ARE PART OF INTELLECTUAL PROPERTY OF HOUFEK a.s. – Golčův Jeníkov AND REMAIN ITS PROPERTY. WITHOUT THIS COMPANY'S CONSENT, ANY PARTS OF THIS GUIDE MUST NOT COPIED, NOR ARE ANY THIRD PARTIES TO BE ALLOWED TO STUDY THIS GUIDE OR ITS PARTS.

2 HYGIENE AND WORK SAFETY RULES; ENVIRONMENT; NOISE POLLUTION, RESIDUAL RISKS AND THEIR PREVENTION

⚠ CAUTION!

BEFORE COMMISSIONING THE MACHINE, STUDY THIS GUIDE CAREFULLY. DETAILED KNOWLEDGE OF THIS GUIDE AND OBSERVATION OF ITS RULES WILL HELP YOU TO SIMPLY COMMISSION THE MACHINE, ENSURING ITS OPTIMAL AND SAFE USE. THE MANUFACTURER BEARS NO RESPONSIBILITY FOR INJURIES OR DAMAGE CAUSED BY IMPROPER USE, MAINTENANCE, AND PLACEMENT OF THE BRUSHING MACHINE - TWINGO. QUALIFIED PERSONNEL IMPLEMENTING ASSEMBLY, PUTTING INTO OPERATION, MAINTENANCE, AND ATTENDANCE, MUST ALWAYS STUDY THIS GUIDE DEMONSTRABLY BEFORE COMMENCING ANY SUCH ACTIVITY. THE MANUFACTURER BEARS NO RESPONSIBILITY FOR INJURIES OR DAMAGE CAUSED BY AN UNQUALIFIED PERSON.

MACHINE NOISE LEVEL

Levels of acoustic output: Equivalent levels of permanent acoustic pressure were established accurately as per the specified measuring methods. The values below can be stated:

Acoustic pressure - Lpa	dB	81
Acoustic power - Lwa	dB	88

'The specified values are emission levels and must not represent the safe operating levels. Despite the correlation between the emission levels and the exposition levels is present, the values cannot be used for reliable specification if measures are required or not. Factors influencing real levels of employee exposure include work area characteristics, other noise sources, etc., e.g. number of machines and neighbouring processes. The highest permissible exposure level can vary in individual countries. The information is provided to the machine user to enable better risk and risk level assessment.'

2.1 QUALIFIED PERSONNEL

⚠ MECHANICS

- Expert workers appointed to implement maintenance and repairs (min. apprenticeship, e.g. in the fields of a fitter, machine mechanic, electrician) and trained (e.g. by either the manufacturer or service workers of authorised national dealers) to implement machine maintenance and repairs; and demonstrably introduced to this Guide; and with adequate electro-technical qualification based on valid national regulations and standards The workers must not be under 18.

⚠ OPERATION

Workers (men and women) not younger than 18 (if younger, then they must be at least 16 years old and work under supervision of a qualified worker over 18, e.g. within their training, field practice, etc. in compliance with adequate national regulations), who were demonstrably introduced to this Guide, tending, and basic maintenance.

2.2 RULES OF SAFE WORK

2.2.1 GENERAL SAFETY RULES

⚠ THIS MACHINE IS EQUIPPED WITH SAFETY DEVICES ENSURING BOTH SAFE WORK FOR THE OPERATING STAFF AND MACHINE PROTECTION AGAINST DAMAGE. STILL, IT IS NOT POSSIBLE TO LIST ALL SAFETY ASPECTS OCCURRING WHILE WORKING WITH WORKPIECES OF VARIOUS SHAPES AND MATERIALS. IT IS THEREFORE ESSENTIAL FOR THE OPERATING STAFF TO STUDY THIS GUIDE CAREFULLY, AND UNDERSTAND ALL ITS PARTS; WHILE FOLLOWING ALL RULES LISTED HEREIN WHEN WORKING WITH TWINGO LINE MACHINES.

⚠FOLLOW ALL RULES AND INSTRUCTIONS ON THE PLATES ON THIS MACHINE. DO NOT REMOVE OR DAMAGE THESE PLATES. IF DAMAGED, THE PLATES MUST BE IMMEDIATELY REPLACED WITH NEW ONES. NEW PLATES CAN BE ORDERED FROM THE MACHINE MANUFACTURER.

⚠CHAPTER 5.3 MACHINE DESIGNATION – PRODUCTION PLATE GIVES AN OVERVIEW OF ALL PLATES WITH GRAPHIC SYMBOLS THAT MAY BE USED ON THIS MACHINE TYPE. STUDY THE MEANING OF THOSE GRAPHIC SYMBOLS.

⚠ BEFORE THE WORK COMMENCEMENT WITH THIS MACHINE, STUDY THE PLACEMENT AND FUNCTIONS OF INDIVIDUAL CONTROL FEATURES ON THE MACHINE'S CONTROL PANEL. MEMORISE THEIR POSITION, CHIEFLY THAT OF THE EMERGENCY BUTTONS, IN CASE YOU NEED TO USE THEM IN A HURRY.

⚠ ANY ACTIVITIES ON THE BRUSHING MACHINE TWINGO SERIES MAY ONLY BE PERFORMED BY QUALIFIED STAFF, IN COMPLIANCE WITH RESOLUTION PART 2.1 QUALIFIED STAFF AND PART 3 PURPOSE AND METHOD OF USE; AS WELL AS RULES STATED HEREIN – STUDY THE GUIDE

⚠ CONNECT THE BRUSHING MACHINE TWINGO ONLY TO ELECTRICAL SYSTEMS THAT MEETS ADEQUATE NATIONAL REGULATIONS; THE SYSTEM MUST BE REVISED REGULARLY, IN COMPLIANCE WITH ADEQUATE NATIONAL REGULATIONS. THE CONNECTION NETWORK MUST BE OF IDENTICAL CONNECTION VOLTAGE; IT MUST BE DIMENSIONED FOR RESPECTIVE INPUT BASED ON DATA ON THE MACHINE PLATE. THE MACHINE MAY ONLY BE CONNECTED TO ELECTRIC NETWORK BY PERSONNEL AUTHORISED INCOMPLIANCE WITH GIVEN NATIONAL REGULATIONS.

⚠ HANDLING AND TRANSPORT OF TWINGO BRUSHING MACHINES MUST FOLLOW INSTRUCTIONS GIVEN HEREIN, SECTION 5. TRANSPORT, HANDLING & STORAGE.

⚠ DURING THE MACHINE DISPOSAL, FOLLOW RELEVANT NATIONAL REGULATIONS OR HAVE THE DISPOSAL IMPLEMENTED BY A SPECIALISED FIRM. THE MACHINE IS MADE FROM COMPONENTS AND MATERIALS HARMLESS TO PEOPLE AND ENVIRONMENT.

2.2.2 WORKPLACE SAFETY RULES

⚠ INSTALL THE BRUSHING MACHINE ONTO AN EVEN SURFACE IN COMPLIANCE WITH RECOMMENDATIONS GIVEN IN THIS GUIDE. VERIFY FLOOR CAPACITY WITH REGARD TO MACHINE WEIGHT.

⚠ CHECK THAT NO OBJECTS ARE PLACED ON THE WORKTABLE, AND THAT SIDE MACHINE DOOR AND BOTTOM MACHINE COVERS ARE FASTENED TIGHTLY.
CHECK THAT THE FEED TABLE WITH THE BELT IS FREELY PASSABLE, AND THAT NO WORKPIECES, OR THEIR PARTS, ARE STUCK INSIDE THE MACHINE FROM PREVIOUS GRINDING.

⚠ PROVIDE SUFFICIENT LIGHTING, WITHOUT SHADOWS OR STROBOSCOPIC EFFECT, IN THE WORK AREA. FOLLOW RESPECTIVE NATIONAL REGULATIONS. USUALLY, THE INTENSITY REQUIRED IS 500 LX.

⚠ THE WORK AREA AROUND THE MACHINE MUST BE FREE, CLEAN, SO THAT ALL CONTROL FEATURES OF THE MACHINE ARE ALWAYS ACCESSIBLE IMMEDIATELY, WHILE ENSURING SAFE AND FREE BOTH MOVEMENT AND HANDLING OF THE WORKPIECES FOR THE OPERATING STAFF. ITS SIZE IN FRONT OF AND BEHIND THE MACHINE NEEDS TO BE ADJUSTED WITH REGARD TO THE SIZE OF WORKPIECES. WHEN PLACING THE MACHINE, FOLLOW RULES STATED IN PART 6.1 MACHINE PLACEMENT.

⚠ WHEN WORKING WITH THE BRUSHING MACHINE TWINGO SERIES PROTECTIVE ANTI-NOISE AIDS MUST BE USED. IN COMPLIANCE WITH RESPECTIVE NATIONAL REGULATIONS ON NOISE EMISSION LEVELS, NOISE LEVEL AT THE WORKPLACE MUST BE MEASURED, BECAUSE THE TOTAL NOISE LEVEL INCLUDES ALL SOURCES OF NOISE AND ACOUSTIC CHARACTERISTICS OF GIVEN PREMISES. BASED ON VALUES MEASURED, FURTHER PRECAUTIONS FOR NOISE EMISSION LEVELS NEED TO BE DEFINED, E.G., MUTUAL BLOCKING OF INDIVIDUAL MAIN SOURCES OF NOISE.

2.2.3 SAFETY RULES FOR MACHINE OPERATION

⚠ BEFORE WORK COMMENCEMENT, ALWAYS PERFORM A REGULAR MACHINE CHECK. CHECK THE OPERATING BRUSHES FOR DAMAGE. DIRECTION OF THE BRUSHES MOVEMENT WHILE GRINDING MUST BE DESIGNATED AND THEIR ASSEMBLY ON THE MACHINE MUST BE COMPLETED IN COMPLIANCE WITH MACHINE MOVEMENT – MARKED BY A RED ARROW (ON THE FRONT PANEL OF THE GRINDING UNIT).

CHECK THE THRUST ROLLERS USE HIGH QUALITY GRINDING BRUSHES IN COMPLIANCE WITH RULES STATED IN PART 4.1 MACHINE TECHNICAL DATA.

CHECK INPUT VALUE OF PRESSURED AIR. DURING THE MACHINE OPERATION IT IS PROHIBITED TO TOUCH ANY OF ITS ROTATING PARTS. DIRECTION OF THE BRUSHES MOVEMENT WHILE GRINDING MUST BE DESIGNATED AND THEIR ASSEMBLY ON THE MACHINE IN COMPLIANCE WITH MACHINE MOVEMENT – MARKED BY A RED ARROW (ON THE FRONT PANEL OF THE GRINDING UNIT).

⚠ BEFORE WORK COMMENCEMENT, ALWAYS CHECK THE MACHINE MERGENCY STOP

FUNCTION. CHECK THE FUNCTION OF THE MACHINE EMERGENCY STOP BY PRESSING THE EMERGENCY STOP BUTTON ON THE FRONT CONTROL PANEL, OR BY SWITCHING THE MAIN

SWITCH OFF THE MACHINE MUST STOP WITHIN 10 SECONDS. IT IS PROHIBITED TO USE THE MACHINE IF THE EMERGENCY BRAKE FAILS TO COMPLETE THE MACHINE EMERGENCY STOP WITHIN 10 SEC OR IF IT IS DYSFUNCTIONAL.

⚠ THE BRUSHING MACHINE TWINGO SERIES MUST NOT BE USED WITHOUT PERFECTLY FASTENED COVERS .THE FRONT COVER OPENING IS PROTECTED FROM OPENING BY SAFETY SWITCH.NEVER REMOVE THE COVERS DURING THE MACHINE OPERATION.

WHEN WORKING ON THE MACHINE, WEAR WORK CLOTHES WITH FASTENED CUFFLINKS; REMOVE ANY BRACELETS, PENDANTS, RINGS, AND WATCHES. REMOVE OR FASTEN LOOSE SECTIONS OF CLOTHING. DURING WORK USE SPECIFIED WORK TOOLS AS PER THE RESPECTIVE NATIONAL REGULATIONS, SUCH AS WORK FOOTWEAR AND PROTECTIVE GOGGLES.

⚠

IT IS FORBIDDEN TO OPERATE THE MACHINE UNDER THE INFLUENCE OF ALCOHOL AND DRUGS.DURING THE MACHINE OPERATION IT IS PROHIBITED TO TOUCH ANY OF ITS ROTATING PARTS.

⚠ NEVER PLACE YOUR HANDS ON EITHER FRONT OR BACK SIDE OF THE DESK; FEED BELT; INPUT/OUTPUT MACHINE AREA; OR WITHIN VICINITY OF WORKING ROLLERS AND PRESSURE ROLLERS WHILE THE MACHINE IS IN OPERATION. DON NOT HANDLE ANY OBJECTS WITHIN THE INPUT AND OUTPUT MACHINE AREAS. DURING THE MACHINE OPERATION IT IS PROHIBITED TO TOUCH ANY OF ITS ROTATING PARTS. NEVER PLACE ANY OBJECTS ONTO THE MACHINE'S WORKTABLE.

IF, DURING MACHINING, THE WORKPIECE EITHER STOPS OR GETS STUCK IN THE MACHINE, PERFORM EMERGENCY STOP. AFTER THE MACHINE STOP, RESET THE GRINDING UNITS IN THE UPWARD DIRECTION AND RELEASE THE WORKPIECE.

⚠ IT IS FORBIDDEN TO INSERT MORE WORKPIECES INTO THE MACHINE IF PREVIOUS WORKPIECES ARE STUCK IN IT AND WORKPIECES CANNOT FREELY PASS THROUGH THE MACHINE.

⚠ NEVER PLACE ANY OBJECTS ON THE FEEDING BELT ONTO THE MACHINE'S WORKTABLE.

⚠ WORK ONLY WITH MATERIALS FOR WHICH THE MACHINE IS DESIGNED.
DO NOT USE ANY MATERIAL WHICH COULD EMIT SPARKS, THERE IS A RISK OF FIRE.

⚠ IT IS NOT ALLOWED TO PERFORM MACHINING OF VERY LARGE WORKPIECES OF HIGH WEIGHT PERFECT GUIDANCE OF WHICH ON THE WORKBENCH BY MEANS OF THRUST ROLLERS IS NOT GUARANTEED.

IT IS FORBIDDEN TO WORK WITH PIECES SHORTER THAN THE MINIMUM ALLOWED LENGTH DEFINED IN PART 4.1 MACHINE TECHNICAL DATA, DUE TO IMPERFECT GUIDING ON THE WORKTABLE AND POSSIBILITY OF WORKPIECE JAMMING INSIDE THE MACHINE

WHEN WORKING LONG WORKPIECES, THEY MUST COME IN AND OUT OF THE MACHINE AT TABLE LEVEL. IT IS THEREFORE NECESSARY TO USE ADJUSTABLE SUPPORTS WITH ROLLERS, OR TABLES WITH ADJUSTABLE HEIGHT, OR POSITION THE WORKPIECE MANUALLY ON BOTH INPUT AND OUTPUT.

⚠ ALWAYS HAVE THE MAIN SWITCH TURNED OFF AND LOCKED WHEN PERFORMING CLEANING, CHECKS, MAINTENANCE, AND MACHINE REPAIRS TO AVOID MACHINE STARTING BY ANOTHER PERSON.

CLEAN THE MACHINE REGULARLY, AT LEAST ONCE PER WORK SHIFT. ADJUST MACHINE CLEANING TO PERIOD OF OPERATIING TIME. CLEANING WITH PRESSURED AIR IS FORBIDDEN. CLEAN THE MACHINE STRICTLY BY SUCKING THE DIRT OFF.

⚠ AFTER YOU FINISH WORK, SECURE THE MACHINE AGAINST STARTING BY AN UNAUTHORISED PERSON: TURN OFF THE MAIN SWITCH AND LOCK IT IN THE OFF POSITION USING A PADLOCK; AND CLOSE OFF THE PRESSURED AIR INLET BY A MANUAL VALVE ON THE INPUT UNIT OF PRESSURED AIR ADJUSTMENT UNIT (CLOSED - VALVE CONTROL IS IN TRANSVERSE POSITION TO THE SUPPLY PIPELINE).

WHEN MACHINE IS EQUIPPED WITH SIDE BRUSH UNITS, WIRE OR ABRASIVE WIRE BRUSHES (ABRALON, TYNEX ®) MUST NOT BE INSTALLED ON THESE UNITS.

REVERSE RUN OF SIDE BRUSH UNIT(S) CAN ONLY BE USED AT ONE'S OWN RISK.

2.2.4 SAFETY RULES FOR MACHINE MAINTENANCE

⚠ BEFORE STARTING ANY MAINTENANCE WORK ON THE MACHINE, TURN THE MAIN SWITCH OFF AND LOCK IT. ITS ACCIDENTAL STARTING BY ANOTHER PERSON IS THUS PREVENTED. THE MAIN SWITCH DOES NOT DISCONNECT THE MACHINE FROM THE PRESSURED AIR SUPPLY.

BEFORE STARTING MAINTENANCE AND CLEANING OF THE MACHINE, IT IS THEREFORE ESSENTIAL TO SWITCH THE BALL VALVE ON THE PRESSURED AIR INPUT UNIT INTO THE OFF POSITION (RED VALVE CONTROL IS TRANSVERSE TO THE SUPPLY PIPELINE AXIS).

⚠ ELECTRICAL INSTALLATION MAINTENANCE MAY ONLY BE PERFORMED BY ADEQUATELY QUALIFIED PERSONNEL IN COMPLIANCE WITH RESPECTIVE NATIONAL REGULATIONS.

⚠ NEVER USE PRESSURED AIR TO CLEAN THE ELECTRICAL CONTROL PANEL ALWAYS SUCK THE DIRT OFF. TJIS GENERALLY APPLIES TO THE WHOLE MACHINE

⚠ ALWAYS CHECK AND CLEAN THE MACHINE BASED ON THE AMOUNT OF ITS USE; THE MINIMUM IS ONCE IN A WORK SHIFT.
CHECK THE THRUST ROLLERS WHEN CHECKING AND CLEANING THE MACHINE, DISCONNECT THE MACHINE FROM THE EL. DISTRIBUTION NETWORK BY SWITCHING OFF THE MAIN MACHINE SWITCH (TURNING THE MAIN SWITCH TO 0).

⚠ THE POWER CORD AND ELECTRICAL FITTINGS MUST BE INSPECTED REGULARLY IN ACCORDANCE WITH APPROPRIATE NATIONAL REGULATIONS. DAMAGED CABLES, PLUGS, AND SOCKETS, OR OTHER ELECTRICAL FITTING COMPONENTS, IF APPLICABLE, MUST NOT BE USED. DAMAGED INSULATION OR DAMAGED COMPONENTS OF ELECTRICAL FITTINGS, IF APPLICABLE, PRESENT A LIFE THREAT. FREE ELECTRICAL PARTS (CABLES) MUST BE PROTECTED AGAINST MECHANICAL DAMAGE AND MUST NOT CREATE AN OBSTACLE IN THE WORKING AREA

⚠ WHEN EXCHANGING ANY COMPONENTS AND MACHINE PARTS, IT IS ESSENTIAL TO USE ORIGINAL SPARE PARTS BY THE MANUFACTURER, BASED ON A SPARE PARTS CATALOGUE DELIVERED BY THE MANUFACTURER OR HIS AUTHORISED DEALER.

⚠ DURING THE MACHINE DISPOSAL, FOLLOW RELEVANT NATIONAL REGULATIONS OR HAVE THE DISPOSAL IMPLEMENTED BY A SPECIALISED FIRM. THE MACHINE IS MADE FROM COMPONENTS AND MATERIALS HARMLESS TO PEOPLE AND ENVIRONMENT.

3 RESIDUAL RISKS

Risks associated with the operation of BRUSHING MACHINE TWINGO SERIES under the assumed application and logically anticipated incorrect application were minimized by means of available technical measures.

Despite the applied constructional and technical measures, certain residual risks involved during machine operation remain, as indicated in the risk analysis, which are given by the technological process during various phases of the service life of the machine.

These risks specifically result from worker inattention and by failing to adhere to safety principles during operation.

We caution against resulting residual risks to further reduce the risks and to secure effective safety protection. We specify the following technical and organizational measures to be performed by the user, which are designated for overcoming the respective risks and danger.

3.1 RISKS ON THE ELECTRICAL PART OF THE MACHINE

⚠ CONNECTING, MAINTENANCE, OVERHAULS, AND REPAIRS OF ELECTRICAL EQUIPMENT MAY ONLY BE PERFORMED BY QUALIFIED, PROFESSIONAL MECHANICS IN ACCORDANCE WITH APPROPRIATE NATIONAL REGULATIONS AND STANDARDS.

⚠ ANY DAMAGE TO THE ELECTRICAL EQUIPMENT MUST BE REPAIRED WITHOUT DELAY. DAMAGED EQUIPMENT MUST NOT BE USED.

⚠ ANY MODIFICATION OF THE SAFETY CIRCUITS, AND/OR ANY UNAUTHORIZED ACTION THAT ALTERS THE RELIABILITY AND SAFETY OF THESE CIRCUITS IS STRICTLY FORBIDDEN.

⚠ THE CIRCUITS CONNECTED UPSTREAM OF THE MAIN SWITCH ARE CONSTANTLY UNDER VOLTAGE. CIRCUITS ARE DESIGNATED BY WARNING LABELS AND CONFORM TO THE IP 20 CODE

3.2 RISKS ON THE MECHANICAL PART OF

⚠ RISK OF: - CUTTING (OFF)

- WINDING ON

- PULLING IN OR CATCHING

These risks may occur when moving around the grinding aggregate.
It is prohibited to move in the area with the rotating grinding aggregate.
Very serious injuries are impending from the aggregate rotation.

ACCESS TO HAZARDOUS LOCATIONS OF THE DEVICE:

⚠ It is necessary to be familiar and observe all safety regulations concerning dangerous places on the machine.

ACCESS OF OUTSIDE EMPLOYEES TO THE WORKPLACE:

⚠ Access of outside employees to the workplace needs to be prevented by local operation regulations processed by the user.

ACCESS TO MOVING MACHINE PARTS FROM VARIOUS SIDES:

⚠ Areas designated as dangerous must be under constant supervision of an attending employee.

NOISE LEVELS

⚠ - Machine noise levels do not exceed the maximum admissible values in compliance with valid standards.

OTHER RISKS AND HAZARDS

⚠ All employees must be formally trained and introduced to machine use. All employees must use specified personal protective equipment as per chapter no. 2.2 – WORK SAFETY

⚠ IT IS ESSENTIAL TO STUDY THE WORK SAFETY CHAPTER BEFORE STARTING THE MACHINE.

The operator must report any defects on the machine and its equipment, in particular those threatening operational safety, to the workshop foreman and superior employee and the defects must be removed. Defect type and their removal must be recorded in a defect log**.**

CAUTION! THE MANUFACTURER DOES ACCEPT THE ENTITLEMENT TO DAMAGE COMPENSATION IF THEY RESULTED FROM INCOMPLIANCE WITH THE SPECIFIED PRINCIPLES

4 PURPOSE AND METHOD OF USE

4.1 MACHINE USE DESIGNATION

4.1.1 WORK ACTIVITIES

Brushing machines TWINGO are designed for treating the surfaces of small and medium workpieces made from wood, wood base composite materials, and some plastic materials. The brushed materials must not sparkle during brushing or change its features due to increasing temperature.

Considering these features, the brushing machine TWINGO is designed in small and medium wood processing workshops and the machine operation is provided by two persons.

⚠ The brushing machine TWINGO - is designed for dry environment and it is not suitable for the environment with explosion hazard.

4.1.2 WORKPIECE MATERIALS

Brushing machines series TWINGO are designed for sanding workpieces made from wood, wood base composite materials, paper and some plastic materials and metals. The grinded materials must not sparkle during grinding or change its features and shape due to increasing temperature from grinding.

Maximum and minimum dimensions of the workpieces must be adhered to in compliance with the values specified in part 4.1 MACHINE TECHNICAL DATA.

⚠ EXTREMELY LARGE AND HEAVY WORKPIECES THAT CANNOT BE PERFECTLY GUIDED ON THE WORKTABLE USING PRESSURE ROLLERS MUST NOT BE WORKED ON THE MACHINE

IT IS FORBIDDEN TO WORK WITH PIECES SHORTER THAN THE MINIMUM ALLOWED LENGTH DEFINED IN PART 4.1 MACHINE TECHNICAL DATA, DUE TO IMPERFECT GUIDING ON THE WORKTABLE AND POSSIBILITY OF WORKPIECE JAMMING INSIDE THE MACHINE.
WHEN WORKING LONG WORKPIECES, THEY MUST COME IN AND OUT OF THE MACHINE AT TABLE LEVEL. IT IS THEREFORE NECESSARY TO USE ADJUSTABLE SUPPORTS WITH ROLLERS, OR TABLES WITH ADJUSTABLE HEIGHT, OR POSITION THE WORKPIECE MANUALLY ON BOTH INPUT AND OUTPUT.

⚠ LOAD WORKPIECES IN MACHINE ONE BY ONE.
IT IS PROHIBITED TO MACHINE SEVERAL PARTS AT THE SAME TIME, IN ORDER TO ENSURE PERFECT GUIDANCE AND FEEDING THE WORKPIECES AT THE ENTRY IN THE MACHINE BY MEANS OF THE THRUST ROLLER.

4.2 WORK ENVIRONMENT

⚠ BRUSHING MACHINES TWINGO SERIES ARE DESIGNED FOR A WORKSHOP ENVIRONMENT OF TEMPERATURES FROM +5 TO 40 °C, AND RELATIVE AIR HUMIDITY OF 30% TO 95% - NON-CONDENSING.
ENVIRONMENT CLASSIFICATION – FIRE RISK OF FLAMMABLE DUST BE2N2.

4.3 APPLICATION METHOD

Brushing machine series TWINGO may only be used in compliance with rules stated herein.
Rules given in the following parts of this Guide must be absolutely followed:

2.1	QUALIFIED PERSONNEL
2.2	RULES OF SAFE WORK
3.1.1	WORK ACTIVITIES
3.1.2	WORKPIECE MATERIALS
2.2	WORK ENVIRONMENT
4.1	TECHNICAL DATA
7	INSTRUCTIONS FOR USE, WORK PROCEDURES
10	MACHINE MAINTENANCE AND SETTING

5 TECHNICAL DATA AND MACHINE DESCRIPTION.

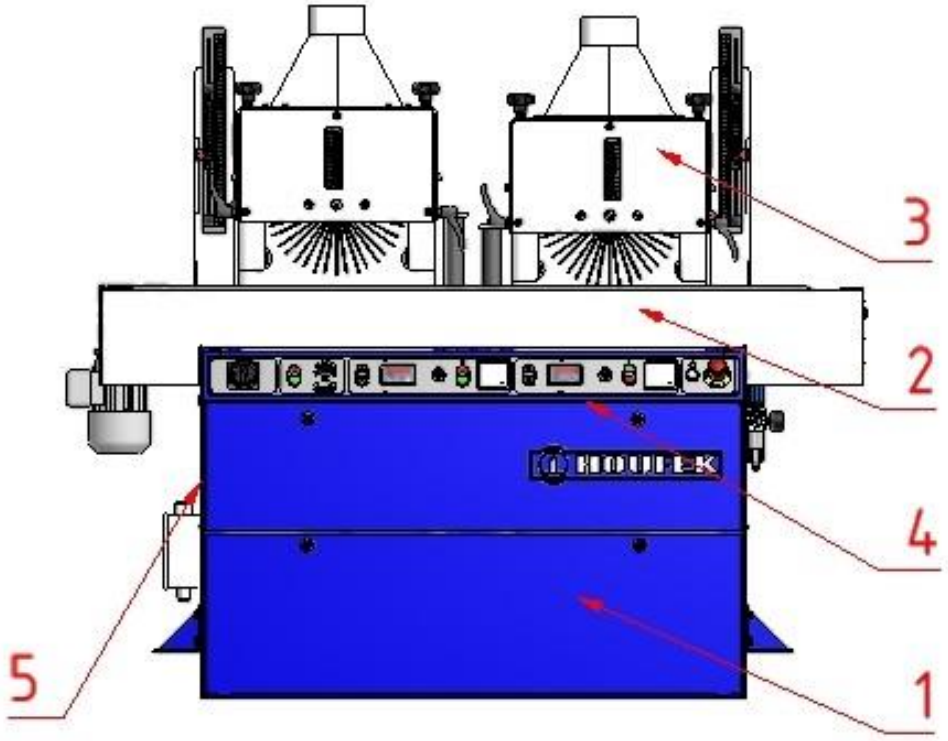
5.1 TECHNICAL DATA

TECHNICAL DATA		Units	Width 400	Width 600
Work width		mm	380/350*	580/550* Work
width max.		mm	300	
Min. workpiece length		mm	350	
Max. workpiece weight		Kg	60	
Work tools dimensions				
Diameter of the brush		mm	120-300	
Brush length		mm	400	600
Diameter of side brush		mm	150-230	
Length of side brush		mm	150	
Clamping shaft diameter		mm	40	
Shaft rpm		rpm	1140	
Shaft rpm with frequency converter		rpm	180-1000/300-1900	
Side brush shaft rpm		rpm	950	
Brush motor output		Kw	4	
Side brush motor output		Kw	0.55	
Output of feeding belt motor		Kw	0.3/0.43	
Feed belt speed		m/min.	4.5/9	
Suction				
Suction neck diameter		mm	120	
Suction neck diameter of side brush		mm	100	
Required air suction speed		m/sec	18	
Belt circumferential speed**		m/sec	18,5	
Grinding belt width x length**		mm	70 x 1790	70 x 2200
Suction neck diameter**		mm	120	
Required suction device output (B; BB; BBB; BBBB; BBBBB; BBBBBB)		m3/hod	800/1600/2400/3200/4000/4800	
Total dimensions (l x w x h)	B	mm	1500/1000/1750	1500/1200/1750
	BB		1700/1000/1750	1700/1200/1750
	BBB		2300/1000/1750	2300/1200/1750
	BBBB		2900/1000/1750	2900/1200/1750
	BBBBB		3500/1000/1750	3500/1200/1750
	BBBBBB		4100/1000/1750	4100/1200/1750
Total weight	B	kg	435	500
	BB		655	840
	BBB		1070	1300
	BBBB		1360	1800
	BBBBB		2210	2500
	BBBBBB		2350	2640

*it applies for machines fitted with the brush unit oscillation
**it applies for machines fitted with transverse aggregate Q

5.2 MACHINE TECHNICAL DESCRIPTION – MAIN CONSTRUCTION GROUPS

The production line **TWINGO** represent machines of modular construction, which allows arranging various machines based on customer's requirements. The machines have basic design groups, the technical description of which is given below. Each design group is delivered in its standard version. On customer's request, these standard-delivered groups may be completed or adjusted by further accessories expanding or adjusting their work options (including higher power of driving motors). The following description of design groups focuses on the standard-delivered versions first; it then includes further adjustment and accessory possibilities of the design groups.



1. MACHINE FRAME
2. FEED TABLE
3. GRINDING UNIT
4. WIRING AND PNEUMATIC SCHEME
5. MACHINE DESIGNATION

MACHINE FRAME – 1 is produced from steel bent sheet metal from two parts. The lower part comprises of the machine base. The upper frame part includes suspended grinding units and shift fixed motors of the aggregate drives. The lower parts of the side parts are fitted with openings with diameter 12 mm for potential machine anchorage to the floor. Both parts of the frame are mutually inserted.

FREED TABLE – 2 it is attached to the machine lower frame with four screws M12, which enable setting the desk position considering the level of grinding aggregates. The work desk is fitted with steel plate used for accurate guiding of the feeding belt and accurate workpiece guiding. The feeding belt is stretched between the steel rollers. The roller in the rear part is used for the belt drive.

The drive is provided with electrical motor and gearbox. The machine standard equipment includes two revolution motor for the gearbox drive started with a switch placed on the front control panel. This solution ensures smooth changing of 2 feeding belt speed values - 4.5 and 9 m/min. Special accessories include the frequency converter for the drive electrical motor control of the feeding belt supplied upon request. This ensures smooth changing of the feeding belt speed from 3 to 12m/min. The frequency converter control is provided by a switch on/off and potentiometer for setting the required speed of the feeding belt. The value of selected speed in m/min is displayed. All controllers are located on the machine control panel.
The feeding belt in standard design is stretched by means of two stretching screws on the front side of the work desk. Special accessories upon request include automatic centering of the feeding belt. In this case, belt position is controlled electro-pneumatically. The belt position is checked by a sensor controlled by an electro-pneumatic valve. This valve controls the pressured air distribution to the pneumatic roller, which shifts the right side of the front stretching roller which controls the feeding belt position. The regulation of the stretching force regulation of pneumatic rolled for the belt centering includes the reduction valve connection with manometer to the pressure air inlet.
Special accessories upon request for the machine may include the work desk extension in length 300 mm fitted with steel rollers. The extension can be used for the front and rear part of the worktop. The workpiece guiding on the feeding belt is provided with three thrust steel rollers with plastic coating and it is possible to supply it with rubber coating with solidity 45° Sh. The thrust force of the rollers can be regulated by screw turning M12 with plastic nut 2pcs per one roller placed on the upper part of the grinding aggregate. Prior to setting, the side rollers require to release two sleeve lever nuts M12 placed on the right and left side After setting the height, the nuts must be fastened again.

The equipment of the feeding desk supplied as required – optional accessories

Feeding belt automatic centring

In this case, belt position is controlled electro-pneumatically. The edge of the belt is checked by a mechanical sensor that an electro-pneumatic valve. This valve controls the pressured air distribution to the pneumatic roller, which shifts the right side of the front stretching roller. Shifting the stretching roller on the right side controls feeding belt's position.

Extension of the worktop

If large workpieces are ground, it is possible to add extension modules to standard desk fitted with two rollers. The module length is approx 500 mm. The extension modules can be assembled on the inlet and outlet side of the feeding desk.

Vacuum desk

If the machine grinds parts of small dimensions or parts with very small thickness, it does not include perfect line on the feeding belt, it is possible to supply the vacuum desk with openings on the top plate and with perforated feeding belt. The desk internal side is exhausted with the air pump connected with the flexible hose to the desk. The air pump is supplied as non-standard equipment and must be ordered independently. The vacuum exhausts by means of the openings in the desk plate and the feeding belt sucks the parts to the feeding belt increasing the force used for holding the parts on the feeding plate.

Gradual control of the feeding belt speed

To adjust optimum speed of the feeding belt during grinding, a control adjustment of the driving electromotor of the feeding belt using a frequency converter is delivered. This ensures smooth changing of the feeding belt speed from 3 to 12 m/min. Change in speed is performed in a standard manner by means of potentiometer. The value of the selected feeding speed is deducted on numerical scale with potentiometer located on the control panel of the machine or

CLEANING (GRINDING) UNITS – 3 form the main part of the machine. They are made of bent and welded steel profile and guided in the grooves on the machine sides. The lower part of the grinding units include the main motors with the flange. The motors are fixed with screws in four grooves of the bearing plate together with the support desk used for stretching the belts. The belt stretching is performed by releasing 4 clamping screws and releasing the upper nut M12 on the stretching screw. The belts are released or stretched by turning the lower nut. After the stretching completion fasten all clamping motor screw. The unit rear part is covered with removable cover which covers the drive aggregates and also the grinding unit line environment with built-in screw and the nut for lifting the

whole aggregate. The aggregate lift is performed with electrical motor with the gear connected directly with the lift screw placed in the rear lower part. The upper part of the grinding unit includes the shafts with cleaning tools and thrust rollers with guiding plates. The front, upper part of the units is removable after the release of screws on the board periphery. The access to the brushing rollers is provided by removing the plate together with the shaft bearing cartridge. The left roller shaft is fitted with the right thread, the right roller shaft is fitted with the left thread. After every handling of the cover plate, it is necessary to check the fastening of the connections on the plate, guiding rollers, roller shafts, etc., and fasten free connections.
The front upper part of the grinding unit includes the measuring gauge to define the unit position above the table.

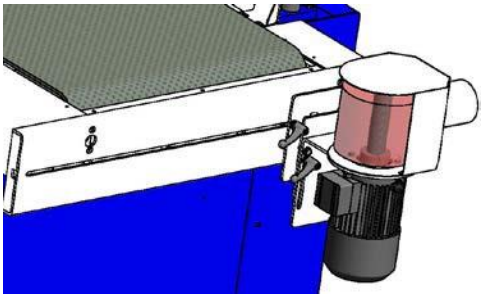
Above standard equipment - Optional accessories

This grinding unit is completed with work brush oscillation which is resolved by means of eccentric shaft propelled by motor with screw gear. Eccentric shaft is connected via a bearing with the arm which forms the oscillating movement of brush with internal frame of the grinding unit. Internal frame with the brush is suspended on two horizontal bars where it slides by means of linear ball line within range 30mm.

The setting of the optimum revolutions enables the machine fitting with double speed motors or motors with rpm controlled with frequency converters. The rpm regulation can be supplied with the potentiometer control on the machine control panel and with indication of actually set speed (rpm).

SIDE GRINDING WITH MANUAL SETTING (OPTIONAL ACCESSORIES)

It is made from steel bent sheet metal. It comprises of fixed part screwed to the desk and moving part with motor and brush. The setting is completed by releasing the ratchet and shifting on horizontal or vertical groove. The brush cover with suction is set by releasing the screw with plastic head and turning around the brush axis. The brush is controlled with a switch in the rpm direction and potentiometer to change the rpm on the main panel. If the suction outlet on the front brush leads to the right, we want to grind the left side on the brush (see figure), the brush must rotate clockwise from the top view. If the suction outlet leads to the left, the brush must turn anticlockwise.

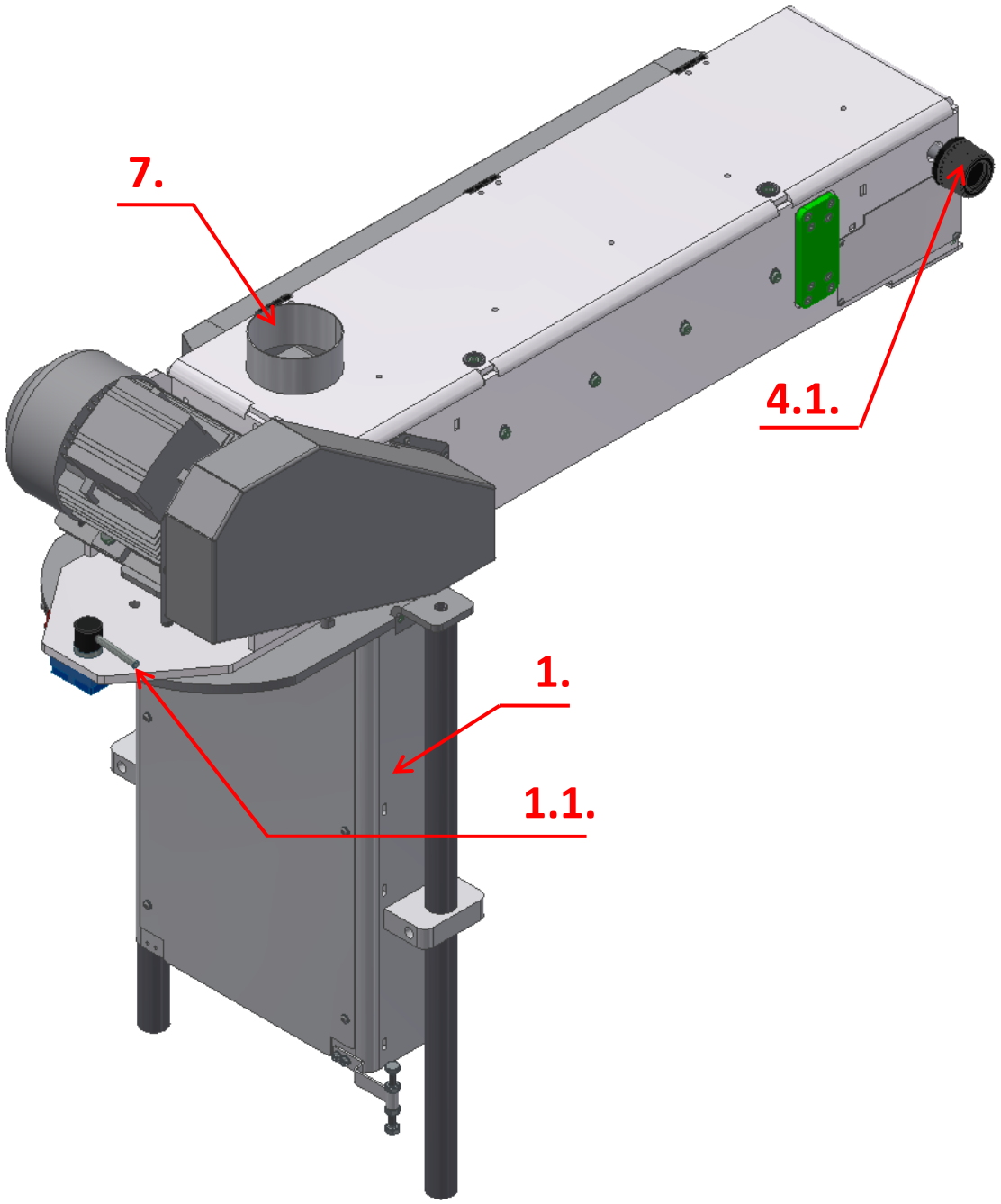


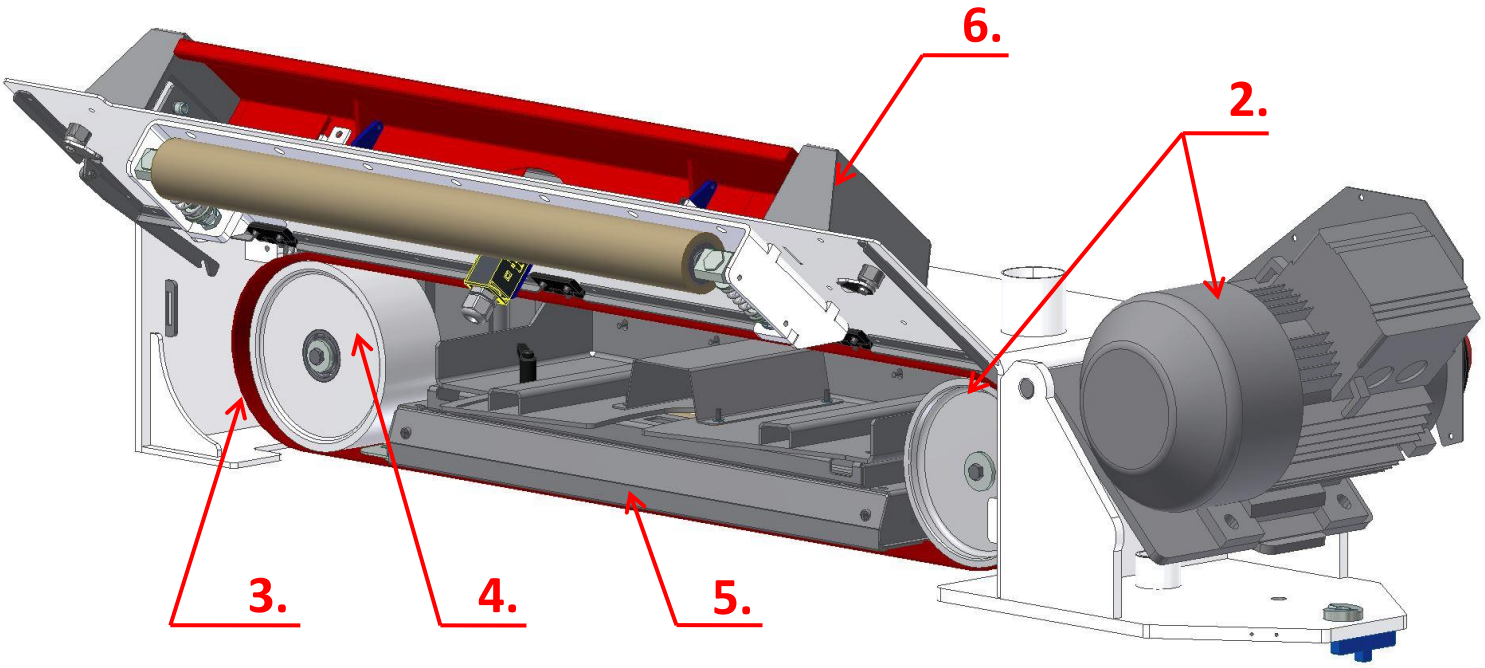
⚠ WHEN MACHINE IS EQUIPPED WITH SIDE BRUSH UNITS, WIRE OR ABRASIVE WIRE BRUSHES (ABRALON, TYNEX ®) MUST NOT BE INSTALLED ON THESE UNITS.

⚠ REVERSE RUN OF SIDE BRUSH UNIT(S) CAN ONLY BE USED AT ONE'S OWN RISK.

TRANSVERSE GRINDING – AGGREGATE Q

The aggregate is designed for grinding wooden workpieces or wood base composite materials, and some plastic materials





DESCRIPTION OF THE AGGREGATE

1. AGGREGATE FRAME WITH SHEET METAL HOUSING

The main machine frame of the transverse aggregate is welded from bent steel sheet profiles with the construction arrangement providing sufficient strength and stability of the machine. The upper part of the frame includes the work unit of the aggregate. The unit can be set under angle +/- 5°. Resetting to another position is completed after releasing the safety levers (Pos.. 1.1.).

2. DRIVING MOTOR WITH MOTOR

The driving motor is connected with the main motor using chain gear to provide the torque transmission from the driving band pulley to the driven pulley. The driving belt is used for force transmission on the grinding belt. Correct adjustment of the grinding belt can set the optimum position of the entry house using four adjustment screws M5 placed in the aggregate frame under the driven band pulley.

3. GRINDING BELT

The grinding belt is a work tool of transverse aggregate. The aggregate is commonly supplied with the belt with grain size P16. Parameters of the grinding belt are listed in part “4.1. - MACHINE TECHNICAL DATA”.

4. STRETCHING ROLLER WITH PNEUMATIC MECHANISM

The stretching roller is placed on the oscillating rotary shaft which enables the rotation around the vertical axis. This position is secured with the arresting screw for centering the grinding belt (pos. 4.1). During the screw rotation, the stretching plate is pushed away. The stretching plate must return

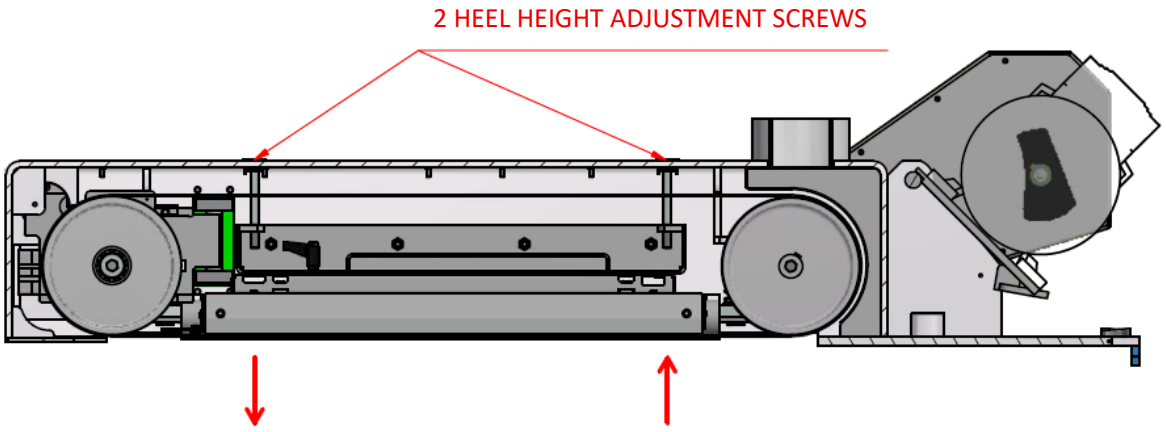
to the original position using a spring mechanism. The bearing plate shifts on the line using pneumatic roller which enable the stretching of the grinding belt. The recommended pressure for the stretching belt is 3-4 bar. The stretching pressure can be set on the reduction valve placed on the machine frame.

5. PNEUMATIC FOOT

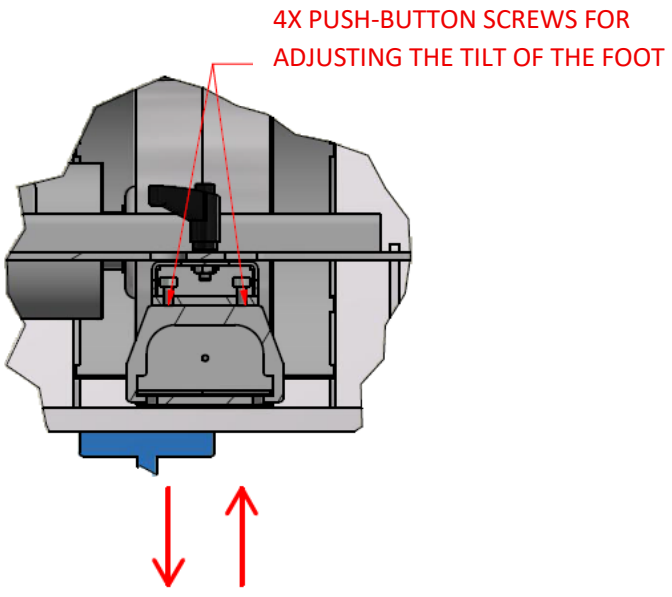
Transverse aggregate is supplied with the grinding pneumatic foot. The foot is fitted with flexible polyurethane layer with graphite surface. The foot bar can be removed from the work unit. The footing bar is inserted on fixed guiding profile of the footing stand. The covered footing unit area includes the man-lock filled with compressed air. The man-lock presses the lever with the grinding belt towards the ground surface. Pressure regulation adjusts the footing bar flexibility. Pressure regulator with manometer is located on the machine control panel.

5.1 ADJUSTING THE FLATNESS OF THE PNEUMATIC FOOT

The flatness of the base can be adjusted in two directions using screws



To adjust the height of the base, first loosen the screws located on the back of the unit Q that secure the main support plate of the base. Then, using two screws, adjust to the optimal height – “flatness”



grinding pads.

The base can be tilted using four adjustment screws to achieve the desired flatness in the second direction.

6. FRONT TILTING SAFETY COVER

The front safety cover includes the set of stop-bar and the set of front thrust roller. Setting the thrust rollers is described in part “9.4 SETTING THE LIFT AND THRUST FORCE OF PRESSURE ROLLERS". The front cover is implemented as a tilting due to simple replacement of the grinding belt and potentially the graphite in the pneumatic footing.

7. SUCTION SUPPLY

The machine frame includes the suction chimney with 30 mm diameter which requires the connection of the respective suction hose.

8. TRANSVERSE GRINDING CONTROL

The transverse aggregate control is performed by means of buttons placed on the machine control panel. The machine control is detailed in part „4. 3. FUNCTION AND CONTROL ELEMENTS OF THE MACHINE“.

ELECTRICAL FITTINGS – 4

is completed in compliance with the respective standards and complies with CE (UL, cUL, CSA) standard.
Connecting the machine to the electrical mains is achieved by the use of a cable (must be fitted with safety conductor),
which is connected into the terminal block in the supply cabinet in the lower left machine part. Rating and series protection of supply mains must meet machine power demands.
Maximum machine power is designated on the production plate; it differs based on components used.
The machine is equipped with an M8 grounding screw for attaching of an independent ground wire.
The electrical control panel is in the front part of the machine, and it is accessible after the door is opened. Machine control features are on a separate panel above the switchboard.

It secures the following functions:

standard

- connecting/disconnecting the machine to/from the distribution network/s (MAIN SWITCH) safe machine operation (machine control circuit is controlled by PELV voltage)
- the protection from repeated start-up during supply voltage failure (MAIN CONTACTOR) emergency machine halt
  (EMERGENCY STOP BUTTONS on the front control panel and upper part)
  Of aggregate)
  Are a part of the series safety circuit
  (MOTOR STARTER for each aggregate)
- the protection of the aggregate motor from overloading and short circuit (MOTOR STARTER)

- automatic machine aggregate motor start-up
- lift motor overload and short-circuit protection (MOTOR STARTER)
- Setting of workpiece height (thickness) by a JOYSTICK
- checking limit lift positions by END SWITCHES
- the protection of the shift motor from overloading and short circuit (MOTOR STARTER)
- START/STOP feed
- feed speed change 1-0-2 (CAM ALTERATION SWITCH)
-TURN ON CONTROL VOLTAGE

Accessories

- machine safety circuit is fitted with PRESSURE SWITCH

Current consumption of aggregate motor display on AMMETER

- workpiece height display on DIGITAL GAUGE
- feed motor overload and short-circuit protection (FUSE SWITCH, FREQUENCY CONVERTER)
- gradual feed regulation using POTENTIOMETER
- aggregate motor overload and short-circuit protection (FUSE SWITCH, FREQUENCY CONVERTER)
- POTENTIOMETER for smooth regulation of aggregate roller revolutions
- feed belt centring (POSITION SWITCH, ELECTRO-VALVE)
- the protection of the air pump motor from overloading and short circuit (MOTOR STARTER)
- START/STOP of vacuum bench pump
- the protection of the brushing head oscillation motor from overloading and short circuit (MOTOR STARTER)
- START/STOP brushing head oscillation
- the protection of the side grinding motor from overloading and short circuit (MOTOR STARTER)
- START/STOP side grinding motor
- change of turning direction of side grinding motor

For descriptions of the connection of electrical fittings and control features, as well as a list of components used, see this Guide's annexes

⚠ **ATTENTION!** THE MAIN SWITCH MUST BE TURNED OFF WHEN REPLACING THE BRUSHES; DURING DISASSEMBLY OF THE COVER; CLEANING AND MAINTENANCE; AS WELL AS DURING FINISHING OR PROLONGED INTERRUPTION OF OPERATION.

PNEUMATIC INSTALLATION

Together with electric fittings, it ensures proper and safe machine functioning.
The machine is connected to a pressured air network by a hose with an adequate end piece delivered with the machine The connection spot is in the left back part of the machine.

It secures the following functions:

Accessories

- easy connection of pressured air (QUICK COUPLING)
- Closing/opening of pressured air supply to the machine (BALL VALVE)
- pressurized air filtering, purging, lubrication, and regulation (INPUT AIR ADJUSTMENT)

- feeding belt centring (ELECTRO-VALVE, PNEUMATIC ROLLER)

- Monitoring the minimum inlet pressure 4 bar (PRESSURE switch)

5.3 MACHINE CONTROL AND FUNCTION ELEMENTS

DUE TO HIGH MACHINE VARIABILITY RESULTING IN NUMEROUS VERSIONS OF THE CONTROL PANEL DESIGNS, THE CONTROL FEATURES OF EACH MACHINE, WITH FUNCTION DESCRIPTION, ARE INCLUDED IN AN ANNEX TO THIS GUIDE!

5.3.1 MACHINE SAFETY CIRCUIT (OPERATING POSITION)

standard
- emergency halt buttons (pulled up)
- motor starter (position „I“)

Accessories
- pressure switch (operating pressure of 0.4 Mpa (4 bar) and higher)
- aggregate frequency converter (without error indication)

5.3.2 PUTTING THE MACHINE INTO STANDBY MODE

⚠ **BEFORE STARTING THE MACHINE, CHECK THAT NO MATERIAL, OR ITS REMAINS, WAS LEFT ON THE FEEDING BELT.**
- Turn on the main switch position ‘I’
- Machine safety circuit must be in order
- Press the white button of control voltage
- After pressing the white button is illuminated

5.3.3 EMERGENCY STOP

⚠ **IN DANGEROUS SITUATIONS WITH RISK EITHER TO OPERATING PERSONNEL’S HEALTH OR OF MACHINE DAMAGE**!- press the emergency stop button (button EMERGENCY STOP BUTTONS on the front control panel and upper part of the aggregate)
- upon pressing the emergency shutdown buttons remain arrested
- To restart, set the emergency buttons back to operating position (pulled out)

5.3.4 SETTING THE DESK DISTANCE FROM THE BRUSH PERIPHERY

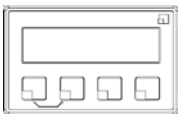
- use the lift controller to set the desk distance from the brush periphery
- with the stroke controller pressed downwards, the aggregate moves downwards (the value displayed on the meter drops)
- Pressing the lift control up moves the aggregate upwards (value displayed on the measuring device is rising)

⚠ **THE BRUSH MUST NOT TOUCH THE FEEDING BELT. IT COULD BECOME DAMAGED.**

5.3.5 WORKPIECE HEIGHT (THICKNESS) DISPLAY

- The resulting workpiece height (thickness) is displayed on the measuring device display.

Elgo IZ 15 Digital Measuring – Twingo



- This is a battery powered measuring device showing the values of the toll external periphery from the work desk
- Manufacturer claims a battery life of approx. 1 year;
- If the battery dies, it needs to be replaced;
- Battery casing is on the back side of the device;
- Batteries are accessible after opening the distribution box;
- After batteries are exchanged, display values need to be reset to correspond with the real value;

Measuring Mode

- The Incr/Abs button is used to switch between the absolute (actual value) and incremental value.
When switching to incremental measuring, the display resets automatically (showing INC sign);
- From this 'zero', it is possible to measure in the direction of either '+' or '-';
- Pressing the button Incr/Abs again takes you back to the absolute value (showing ABS sign);

If, in the absolute mode, the value shown does not correspond with one measured on the product

- measure the distance between the tool external periphery and work desk
- Implement display adjustment based on following instructions:

F P — Press the F button for 3 seconds.
The display shows the value of the first parameter P01.

F P — Press several times until P09 comes up followed by its value;

Set — Shifting cursor position (blinking position).

Incr/Abs — Change the numerical value of the current position
- Each time you press this button, the value increases by 1

F P 3s — - Press and hold the F button for 3 seconds
- The original value will appear on the display
- The setting is complete

- Pressing the F P + Set buttons the value on the display rewrites with a value from memory 1.
Caution – this value cannot be recorded in the incremental mode.

5.3.6 AGGREGATE MOTOR STARTING/STOPPING

standard - automatic aggregate motor start 0-Y(star)- Δ (triangle)
- Press the green button I of aggregate
- motor switches to Y
- after approx 30 sec. the motor automatically switches from Y to Δ

- upon switching off press the red button 0 of the

aggregate

Accessories - frequency converter of aggregate

motor
- Use the potentiometer to set required shaft rpm within given range
- Press the green button I of aggregate
- After about 30 seconds, motor reaches revolutions required

- upon switching off press the red button 0 of the aggregate

5.3.7 MATERIAL FEED START/STOP

- Can only be started if: - standard – aggregate motor is switched in Δ (triangle)
  - Frequency converter of aggregate motor - aggregate motor is on
  - side brushing unit – the unit motor is on
- Press green 'I' button of the feed
- select required speed using the cam switch 1-0-2
- Use the potentiometer to set required feed speed within given range

- To turn it off, press the red '0' feed button

5.3.8 SWITCHING ON/OFF THE VACUUM BENCH PUMP MOTOR

standard
- Press the green "I" button of the vacuum bench pump motor

Accessories - automatic vacuum bench pump motor start-up 0 – Y ("star") – Δ ("triangle")
- Press the green "I" button of the vacuum bench pump motor
- motor switches to Y
- after approx 30 sec. the motor automatically switches from Y to Δ

- To turn it off, press the red '0' button for the vacuum desk air pump motor

5.3.9 SIDE GRINDING MOTOR STARTING/STOPPING

- Press green 'I' button of the side grinding motor

- To turn it off, press the red '0' button for side grinding motor

accessories
- use selector switch to select the brush turning direction clockwise or anticlockwise

5.3.10 BRUSHING HEAD OSCILLATION STARTING/STOPPING

- switch to position „I“ to start the brushing head oscillation function

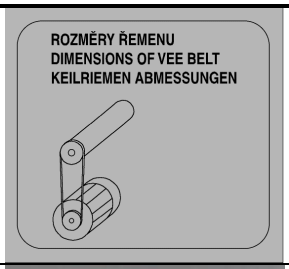
- for switching off switch the switches to ‘0’ position.

5.4. WARNING SIGNS

Type designation – name of the TWINGO machine is placed on the upper left side part of the frame
The production label is placed in the lower rear part of the machine frame. The production label contains the data:

- Name and head office of manufacturer
- Business name and type of the machine;
- Production number
- year of manufacture
- Max. workpiece weight;
- Electric voltage;
- Total input;
- Nominal current;
- Drive electromotor revolutions;
- Total weight;

POSITION	GRAPHIC SIGN	MEANING OF MARKINGS
1		beware, caution
2		beware, electrical device
3		ground supply
4		Main switch
5		operating pressure
6		CE

7		belt dimensions
8		rotation direction
9		Direction of travel

⚠ MACHINE OPERATOR MUST ENSURE ALL MACHINE DESIGNATION PLATES ARE VISIBLE AND UNDAMAGED DURING THE ENTIRE TIME OF MACHINE USE. IN CASE OF DAMAGE REPAIR THE SIGNS.

6 TRANSPORT, HANDLING & STORAGE

6.1 MACHINE TRANSPORT

The brushing machine TWINGO is supplied from the manufacturer into PE foil. In this packaging, the machine may be transported by either manual or motor pallet stackers with forks that can be inserted along the machine

⚠ THE TRANSPORT AND HANDLING WITH THE MACHINE BY MEANS OF HANDLING TOOLS MUST BE PERFORMED ONLY BY PERSONS QUALIFIED AND AUTHORIZED FOR SUCH ACTIVITIES

⚠ DURING ITS TRANSPORT, IT IS FORBIDDEN TO FASTEN THE MACHINE ACROSS THE WORKTOP – RISK OF MACHINE DAMAGE. MANUFACTURER'S WARRANTY DOES NOT COVER SUCH DAMAGE.

6.2 MACHINE STORAGE

No special requirements relate to the machine storage. Store the machines in dry and ventilated areas protected from weather conditions.

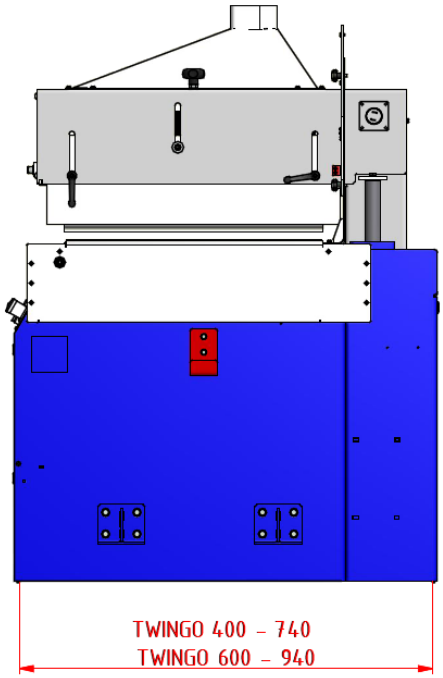
⚠ THE MACHINE CONSTRUCTION AND PACKAGING METHOD DO NOT ALLOW THE PERFORMANCE OF VERTICAL MACHINE LOAD, AND IT IS PROHIBITED TO PUT INDIVIDUAL MACHINE PARTS ON THE TOP OF EACH OTHER DURING TRANSPORT AND STORAGE.

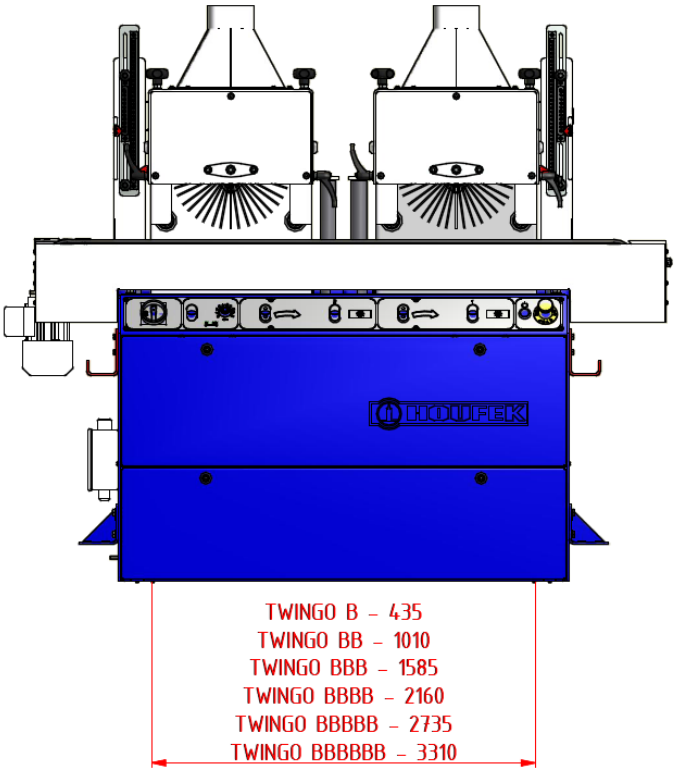
7 SETTING, CONNECTING, AND COMMISSIONING THE MACHINE

7.1 MACHINE SETTING

Brushing machine - TWINGO is set in such way to provide required safe area for the operation and handling of the workpieces. Minimum 1000 mm free space on all machine sides. The machine location must be selected considering the availability of electricity supply cable connection and the option of suction system connection. Minimum space for the access to the electricity supply location must be 800 mm.

We will transport the machine to the designated location, remove the packaging foil PE. During the machine installation, it is necessary to complete a special base. Place the machine on flat floor surface in such way to set it on the full periphery of the machine lower frame. If necessary, the machine may be anchored to the floor using four M 10 anchor bolts into openings made in the bottom parts of the machine frame sides.





7.2 MACHINE CONNECTION TO ELECTRIC NETWORK

⚠ THE MACHINE MAY BE CONNECTED TO THE ELECTRIC NETWORK AFTER IT IS SET TO GIVEN PLACE, COMPLETELY ASSEMBLED, AND THOROUGHLY CHECKED.

Connecting the machine to the electrical mains is achieved by the use of a cable (must be fitted with safety conductor),
which is connected into the terminal block in the supply cabinet in the lower left machine part. Rating and series protection of supply mains must meet machine power demands.

Maximum machine power is designated on the production plate; it differs based on components used. The machine is equipped with an M8 grounding screw for attaching of an independent ground wire.

⚠ FOR SAFETY REASONS, IT IS ESSENTIAL THAT THE MACHINE IS PROPERLY GROUNDED. RISK OF STATIC ELECTRICITY!

⚠ IF THE MACHINE CONTAINS FREQUENCY CONVERTER, IT IS PROBABLE THE CURRENT PROTECTION WITH VALUE 30mA MANAGES THE POWER SUPPLY INTERRUPTION. BASED ON CONNECTION OF A DISTRIBUTION NETWORK, USE OF 100 mA CURRENT PROTECTOR NEEDS TO BE CONSIDERED.

⚠ INDIVIDUAL PHASE SEQUENCES OF THE ELECTRICAL NETWORK MUST BE OBSERVED.

The inspection is performed after connecting the machine to the electrical mains and control voltage activation:

- with the stroke controller presses downwards, the aggregate moves downwards (the value displayed on measuring reduces)
- with the stroke controller presses upwards, the aggregate moves upwards (the value displayed on measuring increases)

⚠ MAXIMUM CARE AND ATTENTION IS REQUIRED WHEN CONTROLLING PROPER PHASE SEQUENCE. IMPROPER CONNECTION MAY RESULT IN MACHINE BREAKDOWN AS WELL AS MECHANICAL DAMAGE TO CERTAIN MACHINE COMPONENTS.
THE WARRANTY DOES NOT INCLUDE UNPROFESSIONAL CONNECTION AND SUBSEQUENT MACHINE DAMAGE.

⚠ CONNECTING, MAINTENANCE, AND REPAIRS OF ELECTRICAL EQUIPMENT MAY ONLY BE PERFORMED BY QUALIFIED, PROFESSIONAL MECHANICS IN ACCORDANCE WITH APPROPRIATE NATIONAL REGULATIONS AND STANDARDS.

⚠ ELECTRICAL SUPPLY FITTINGS MUST BE PERFORMED ACCORDING TO APPROPRIATE NATIONAL REGULATIONS AND THE REQUIREMENTS OF RESPECTIVE STANDARDS. THE POWER CORD, THE PLUG, AND THE SOCKET MUST ALL MEET THESE STANDARDS.

⚠ THE POWER CORD AND ELECTRICAL FITTINGS MUST BE INSPECTED REGULARLY IN ACCORDANCE WITH APPROPRIATE NATIONAL REGULATIONS. DAMAGED CABLES, PLUGS, AND SOCKETS, OR OTHER ELECTRICAL FITTING COMPONENTS, IF APPLICABLE, MUST NOT BE USED. DAMAGED INSULATION OR DAMAGED COMPONENTS OF ELECTRICAL FITTINGS, IF APPLICABLE, PRESENT A LIFE THREAT. FREE ELECTRICAL PARTS (CABLES) MUST BE PROTECTED AGAINST MECHANICAL DAMAGE AND MUST NOT CREATE AN OBSTACLE IN THE WORKING AREA.

7.3 PRESSURED AIR CONNECTION

⚠ PRESSURED AIR DISTRIBUTION SYSTEM MUST CONTAIN PRESSURED AIR WITHOUT CONDENSED WATER AND OTHER PARTICLES AND DIRT.

⚠ MINIMUM PRESSURED AIR SUPPLY MUST CONSTANTLY BE AT 0.6 MPA (6 BAR).

Connection must follow these instructions:

- Check pneumatic system features.
- Connect pressure air supply hose with a quick coupling on the inlet locking ball valve attached to the inlet unit f air adjustment.
- Let the pressured air into the pneumatic system of the machine by turning the hand valve lever.
- Check the setting of pneumatic system’s setting features.

7.4 MACHINE CONNECTION TO EXHAUST DEVICE

For connecting to the exhaust device, the machine is fitted on the upper side of the grinding unit with suction outlet for inserting the connecting flexible hose to the suction device. The connecting hose must have connection diameter 120 mm. Secure the hose in the neck with clip. If the machine is equipped with transverse aggregate Q, connect the aggregate chimney at the connection hose with 30 mm diameter.

⚠ THE EXHAUST DEVICE MUST MEET AT LEAST THE TECHNICAL REQUIREMENTS LISTED IN PART 4.1 – MACHINE TECHNICAL DATA.

⚠ SUCTION SYSTEM MUST COMPLY WITH THE REQUIREMENTS FOR EXPLOSIVE
DUST SUCTION AND PARTICLE WITH FRACTIONS SMALLER THAN 0.5 MM. THE SUCTION SYSTEM MUST BE SECURED FROM ELECTROSTATIC DISCHARGE.

⚠ THE MACHINE MUST NOT BE USED WITHOUT SUCTION DEVICE

7.5 FIRST ACTIVATION OF THE MACHINE

- If you took all of the above preparatory and checking steps (see Chapter 6, you may proceed to the first machine commissioning.
- Based on configuration, it is necessary to go through all points of Chapter 4.3.
- After implementing all of the previous tasks, the machine is ready for operation.

8 INSTRUCTIONS FOR USE, WORK PROCEDURES

8.1 THE BASIC GRINDING OPERATION

TWINGO brushing machine is multipurpose device designed for the following work activities:

- Cleaning the surface after former operations, e.g. after milling, thickening, and grinding as a preparation for the following operations of surface adjustments, e.g. varnishing, staining, waxing, etc. For this purpose the operating brushes are used with natural or synthetic fibres of low hardness.
- Surface polishing after former operations such as fine grinding, waxing, staining, etc. For this purpose the operating tools are used – disks made on textile base, various polishing felt, etc.

- The completion fine grinding on formerly machined workpieces after former rough grinding, milling etc. For this purpose, the work tools are used – brushes made of e.g. grinding materials slips on textile or paper mat, potentially special discs fitted with fibres containing the grinding components, or discs with combined grinding slips and fibres.
- Surface treatment, structuring, and graining. These work processes are used for surface treatment of the workpieces made mostly of massif. The goal of the procedures is the creation or highlighting of the wood natural structure. For this purpose, a wide product range of tools is supplied – brushes. The selection of suitable tool is based on the requirement of the work procedure and the resulting required structure. The work parts of the tools in this case are made of natural, synthetic, and metal fibres of various features.

It is prohibited to use operating tools on the machine which do not comply with perfect and safe fastening on the propeller shaft and their specified area of rpm does not comply with the rpm data on propeller shafts as specified in part 4.1 TECHNICAL DATA

8.2 GENERAL SANDING CONDITIONS – CUTTING CONDITIONS

For high quality surface sanding the optimum selection of the cutting conditions is crucial The cutting conditions include the below parameters:

- THE CUTTING SPEED
- FEEDING SPEED
- WORKPIECE STROKE
- MATERIAL MACHINABILITY

It is specified by the ground material features, usually determined by hardness, level of drying, content of resin and other features

The cutting conditions specify the cutting performance which can analogically compared to the abraded material volume. The cutting output directly affects the resulting cutting force loading the electrical motors. If we change one cutting parameter, it is necessary to change the remaining values in order to maintain optimum state. During calibration the cutting force comprises mostly of the force for material separation, during fine grinding friction forms an element crucial element (workpiece heats up slightly).

The installed amperemeter (optional) measures the propeller electrical motor current and is used for the inspection of the cutting performance If we exceed the optimum cutting performance, it will be reflected in quality – flatness of the workpiece surface; the lower material hardness locations will include indented surfaces, and the surfaces in locations with higher surface hardness are elevated, e.g. nods and the vicinity.

NOTE: The cutting performance and the surface quality has decisive effects on the level of wear - blunting the grinding belt, potentially its contamination during wood grinding with high content of resin (pine tree).

9 GRINDING TOOLS – BRUSHES, REQUIREMENTS, STORAGE

The brushing machines may only use grinding tools whose parameters correspond with grinding tools data given in part 4.1 TECHNICAL INFORMATION.

⚠ DAMAGED AND DEFORMED BRUSHES MUST NOT BE USED.

9.1 STORAGE OF GRINDING TOOLS-BRUSHES

Store the grinding tools in original packages as supplied, in the areas with permanent temperature and moisture. Inadequate fluctuation of temperature and moisture may result in permanent deformations of grinding tools which may result in their devaluation. Never use damaged and deformed grinding tools. The sanding quality and grinding tools service life directly depends on their storage. Store the grinding tools in original packaging at temperatures 15 to 25°C and moisture content 40 to 70%.

9.2 GRINDING TOOL REPLACEMENT

Grinding tool replacement is described in Chapter 9.1.

9.3 PURCHASE OF GRINDING TOOLS-BRUSHES

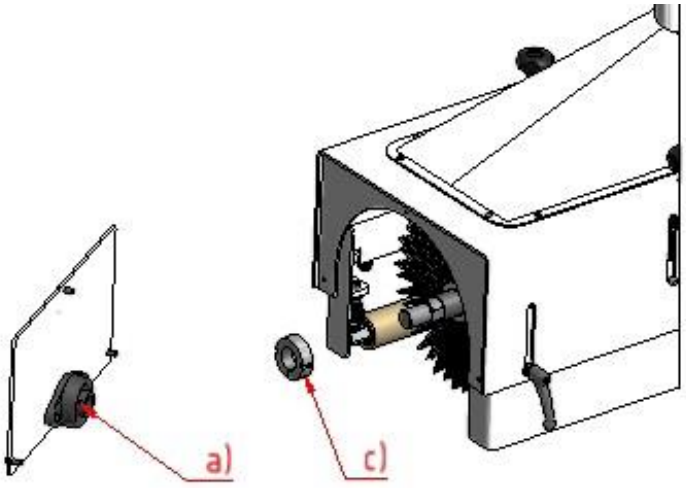
From authorised dealers or directly from machine manufacturer – see clause 15.

10 THE MACHINE SETTING AND SERVICE

⚠ **ATTENTION!** PRIOR TO ANY INTERVENTION IN THE MACHINE, PLACE THE MAIN SWITCH TO THE OFF "O" POSITION.

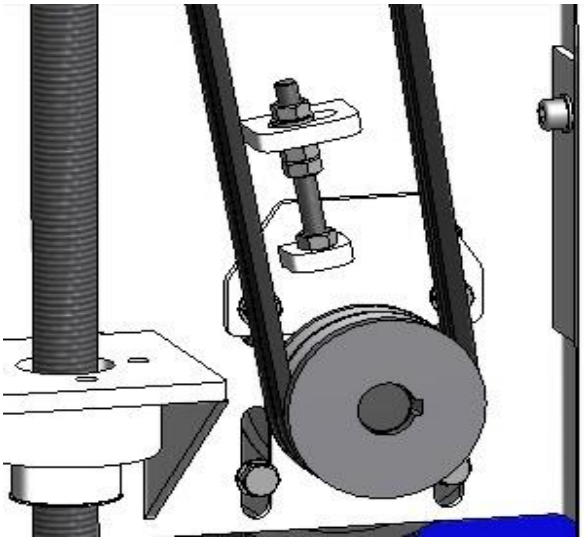
10.1 GRINDING BRUSH EXCHANGE

During the grinding brush replacement, proceed as follows:



a) at first release the safety adjustment screws of the tilting bearing
b) remove the cover grinding units by means of three screws and remove it with the bearing
c) release the safety nut screw and remove the nut from the shaft
d) now remove the brush from the shaft and insert new
e) the brush on the machine is fixed with and secure it with a screw
f) Screw the front covers back, secure the bearing on the shaft with adjustment screws and the machine is ready for operation

10.2 STRETCHING THE PROPELLER BELTS



With new machines, check the tensioning after approx. 20 hours of operation. After fitting the chains, perform the inspection approx in 50 operating hours.

Perform the tensioning by moving the flange motor in the assembly panel grooves. First, lightly release four motor fastening bolts. Then release lower nuts on the stretching angle bar and gradually tightening the nuts on the upper side of the angle bar. Proper tensioning is such that pressure applied on the belts in the middle results in approx. 5 to 10 mm slack. After achieving the required tension, tighten lower nuts of the angle bar and tighten the four fastening bolts of the flange motor.

10.3 FEEDING BELT CENTRING

Correct feeding belt centring is such that the feeding belt moves on both driving and stretching rollers between longitudinal sections of the feeding table approx. 5 mm form the section edges. As the feeding belt is made of elastic materials, it is unevenly extended during grinding, which causes its movement sideways. To centre the belt, it must be extra-stretched on the side on which the belt deflected towards the edge section. To avoid disproportionate stretching of the feeding belt, it is always necessary to loosen it a little on the side opposite to the one where it is being tensioned. Correct tensioning of a feeding belt is such that the bottom belt part slack, under the worktable, is within a maximum of approx. 3 to 5 mm.

Machines with automatic feeding belt centring only require basic belt initial tension. The belt is aligned automatically, using front stretching roller travel, which is, on the right machine side, implemented by a lever mechanism controlled by a pneumatic roller. Filling of this pneumatic roller is controlled by an electro-valve switched by a sensor on the left side of the feeding belt. Sensor arm has a plastic roll onto which the left edge of the feeding belt runs. Basic belt initial tensioning of this system is performed by a stretching bolt on the left side of the belt. A stretching bolt on the right side of the belt is used to set such a tension under which: if the piston rod of the pneumatic roller is projected, the belt slowly moves to the left; and if it is engaged, the belt moves to the right.

Air pressure of the pneumatic roller stretching force complies with grinding belt stretching pressure – approx 5,5 bar

10.4 SETTING THE LIFT AND PRESSURE FORCE OF PRESSURE ROLLERS

Setting the thrust force is performed by means of manual control nut placed on the upper part of the grinding unit. At first release the lever from the aggregate side and the reset the rollers with manual nut, then fasten.

11 MACHINE MAINTENANCE

11.1 MACHINE GREASING AND CLEANING

CLEANING

The construction of TWINGO brushing machine is very simple; the machine requires no special maintenance. During machine maintenance, follow these instructions:

- Regularly clean the machine from splinters and grinding dust, based on frequency of use. The most suitable cleaning method is by suction. Minimum cleaning period is after eight operating hours. Pay special attention to cleaning the main brush rollers and the area around the thrust rollers. Set contamination can cause imbalanced rollers and vibrations, potentially adverse machine function.
- Regularly check the machine for the wear and tear, contamination, and damage during grinding In case of damage or wear proceed to the roller replacement.
- The machine does not include any greasing locations: Grinding roller shaft bearings and motor are filled with greasing agent. Perform the filling inspection after 5 000 operating hours. The drive gear of the desk and the unit gear lift is filled with oil with service life 10000 operating hours.

CAUTION: DURING CLEANING MAKE SURE THAT FILINGS DO NOT GET UNDER THE FEEDING BELT. FILINGS AND OTHER DIRT UNDER THE FEEDING BELT CAUSE LOW GRINDING QUALITY – UNEVEN SURFACE GROUND.

LUBRICATION

Al machine bearings are lubricated by lubricating greases with long life and do not require lubricating during operation. The bearings have either covered on both sides or sealed with radial shaft sealing rings. Motion screws of the lifting mechanism are lubricated similarly.

⚠ THE MAINTENANCE AND REPAIRS OF THE MACHINE MECHANICAL PARTS AND ELECTRICAL SYSTEM SHALL BE PERFORMED BY QUALIFIED MECHANICS OR MANUFACTURER SERVICING.

⚠ THE PERFORMANCE AND INSPECTION AND OVERHAULS OF ELECTRICAL INSTALLATION SHALL BE RECORDED IN COMPLIANCE WITH THE RESPECTIVE NATIONAL REGULATIONS.

11.2 MAINTENANCE OF FEATURES OF ELECTRICAL FITTINGS

⚠ CONNECTING, MAINTENANCE, AND REPAIRS OF ELECTRICAL EQUIPMENT MAY ONLY BE PERFORMED BY QUALIFIED, PROFESSIONAL MECHANICS IN ACCORDANCE WITH APPROPRIATE NATIONAL REGULATIONS AND STANDARDS.

⚠ DO NOT BLOW THE SWITCHBOARD WITH PRESSURE AIR!

11.3 MAINTENANCE OF PNEUMATIC SYSTEM COMPONENTS

Compressed Air Treatment Unit (Festo MS4-LFR)

This unit filters the compressed air supplied to the machine (removing contaminants up to 40 µm in size and water) and maintains a stable operating pressure.

11.3.1 OPERATING PRESSURE ADJUSTMENT

The unit allows the outlet pressure to be adjusted within a range of 0.3 to 7 bar.

UNLOCKING THE WHEEL

- Grasp the upper rotary control and pull it upward (you will hear or feel a click).

PRESSURE ADJUSTMENT – Turn the control to set the desired pressure on the pressure gauge:

- Turn to the **right** (clockwise) – the pressure **increases.**

- Turn to the **left** (counterclockwise) – the pressure **decreases**. The unit automatically vents excess pressure.

LOCK SETTINGS – Push the rotary control back down to prevent accidental changes to the pressure during operation.

11.3.2 CONDENSATE (WATER) DRAINAGE

This model is equipped with manual condensate drainage—designated by the letter M. The water level must be checked and drained regularly.

The water level in the lower transparent container must never reach the filter cartridge (maximum volume is approx. 16m5 ml). Check the level at least once a week.

DRAINING PROCEDURE

- Place a hose or container under the bottom drain screw to catch the water.
- Turn the bottom drain valve counterclockwise—the air pressure will force the accumulated water out.
- Once only clean air begins to escape, turn the valve clockwise to close it tightly.

CLEANING THE CONTAINER

- Clean the plastic container (polycarbonate) only with lukewarm water or a soapy solution. Do not use thinners, acetone, or harsh cleaners—the container could crack under pressure.

REPLACING THE FILTER CARTRIDGE

- If there is a significant drop in airflow or the cartridge is heavily contaminated, disconnect the machine from the air supply, depressurize the system, and have the cartridge replaced by maintenance personnel.

12 TROUBLESHOOTING INSTRUCTIONS

MOST FREQUENT FAILURES AND THEIR REMOVAL

⚠ ANY WIRING REPAIRS SHALL ONLY BE PERFORMED BY AN ENGINEER ELECTRICIAN WITH PROPER QUALIFICATION AND AUTHORISATION AS REQUIRED BY RELEVANT NATIONAL REGULATIONS; LET THESE REPAIRS BE CARRIED OUT BY AN AUTHORISED COMPANY.

Function defect on the machine	Cause	Removal method
Machine after pressing white button of control voltage does not operate	- interrupted control voltage circuit	Check the function of all safety circuit elements according to the principles defined in part MACHINE SAFETY SYSTEM and all safety elements
Aggregate motor on, machine does not grind	- lose propeller chains	Stretch the chains
The machine vibrates after starting	Imbalance on the brushing mechanism resulting from dust and sediments inside the roller	Air blow the internal part of the roller
Feding belt cannot be commissioned	- Motor starter disconnected	Connect starter in working position

⚠ IN THE EVENT OF COMPLETE DECOMMISSIONING OF THE MACHINE, DISCONNECT THE MACHINE FROM THE ELECTRICAL POWER GRID, OR RELEASE THE MACHINE'S ANCHORING IF IT IS THE MACHINE IS ANCHORED, AND ENTRUST ITS DISPOSAL TO A SPECIALIZED COMPANY THAT HANDLES THE COLLECTION AND DISPOSAL OF WASTE MATERIALS. WHEN DISPOSING OF THE MACHINE, IT IS NECESSARY TO COMPLY WITH THE APPLICABLE NATIONAL REGULATIONS.

⚠ ALL DISASSEMBLY WORK RELATED TO THE DISPOSAL OF THE MACHINE MUST BE PERFORMED BY QUALIFIED PERSONNEL FROM AUTHORIZED COMPANIES.

13 ACCESSORIES DELIVERED WITH THE MACHINE

The brushing machine is delivered completely assembled, based on customer's order specifications in compliance with machine description given in paragraph 4.2.2 MAIN DESIGN GROUPS – for both standard and special equipment including a grinding belt and a special catch for opening the doors and el. control panel cover.

Each machine is delivered with one copy of this Guide. On request, customers may be provided with more copies, or have this Guide sent on a CD or by e-mail.

14 SPARE PARTS AND THEIR ORDERING

14.1 COMPONENT DESIGNATION

Each machine is delivered with a spare parts list. The list is attached to the manual based on the main design groups of the machine. Each part has its number, manufacturer, securing its unambiguous identification. When ordering spare parts, always give this number and manufacturer, together with machine serial number from the production plate.

14.2 PARTS ORDERING

The manufacturer delivers spare parts within the Czech Republic. Deliveries are implemented based on an order sent to manufacturer's address given in this Guide. Parts removal is possible directly in the production plant or the ordered parts can be sent by required or agreed method.

In other countries where the machines are supplied, the spare parts orders are prvided bymeans of verified national sellers.

15 SERVICE AND REPAIR SERVICES

15.1 CZECH REPUBLIC

Within the Czech Republic, the first commissioning, warranty, and after-warranty service are provided by the manufacturer. The contact place and address are given at the end of this Guide.

15.2 OTHER COUNTRIES

An authorised dealer is in charge of all services for machines exported to other countries – unless agreed upon differently with the customer on purchase.

16 MANUFACTURER'S CONTACT ADDRESS

HOUFEK a.s.
May 5, 797
582 82 Golčův Jeníkov
Czech Republic

Central office: +420 569 430 700

sales department: +420 569 430 711-12
fax: +420 569 430 715
Email: houfek@houfek.com

Service department: +420 775 639 983
+420 569 430 749
Email: servis@houfek.com

internet: http://www.houfek.com



END OF THE INSTRUCTIONS

7 ANNEXES

ANNEX 1	Repair work order
ANNEX 2	Report on repairs implemented
ANNEX 3	Report on putting the machine into operation
ANNEX 4	Single test form
ANNEX 5	Warranty Certificate
ANNEX 6	Declaration of Conformity
ANNEX 7	Electric and pneumatic schemes
ANNEX 8	Controlling system guide (if part of the equipment)
ANNEX 9	Technical data (if not included in the Guide)
ANNEX 10	Machine settings
ANNEX 11	Supplier manuals (if other devices are connected to the machine)

Record on completed machine repairs

Date	Repair type warranty/ post-warranty	Description of the repair	Servicing technician

Machine type: ..... **Series number** .....

:

Customer: ..... **Plant:** .....

.....

.....

.....

.....

.....

.....

Tel.: .....

Fax: .....

Machine type: .....

SPECIAL EQUIPMENT:	
VYJÁDŘENÍ ZÁKAZNÍKA:	
VYJÁDŘENÍ SERVISNÍHO TECHNIKA:	

Technical documentation added: **YES** ☐ **NO** ☐

MACHINE COMMISSIONING ON:

I have been trained and acquainted with the maintence of the machine Mr. ……**signature** ……

……

Stamp and signature of the client technician

……

Stamp and signature of the servicing

SINGLE TEST FORM

Producer: **Houfek a.s.**

Address: **5. may 797, 582 82 Golčův Jeníkov**

Company ID No.: 27523543
VAT registration No.: CZ27523543

Equipment: BRUSHING MACHINES

Type line: Twingo

The brushing machine passed a single test.

Brushing machines	Twingo 400, Twingo 600	Series number:	
Year of manufacture		Insulation resistance	Phase 1
Transition resistance		Insulation resistance	Phase 2
		Insulation resistance	Phase 3

Measuring devices used:

1) REVEX 51 incl. 400115
2) MULTIMETR FK technics M3900
3) TONG-TEST AMMETER-FINEST 135 CLAMP METER ser. no. 970312035

The machine passed tests implemented. Machine delivered for network connection

– TN-S …… A

Golčův Jeníkov
Issued in:

Date:

Authorised person:

WARRANTY CERTIFICATE

MACHINE IDENTIFICATION: Brushing machines

TYPE LINE: KS, KR, Twingo, Final

TYPE: _____ **PRODUCT NUMBER:** _____

A 12 MONTH WARRANTY PERIOD APPLIES ON THE ABOVE SPECIFIED PRODUCT.

THE WARRANTY APPLIES ON DEFECTS AND OPERATIONAL SHORTCOMINGS CAUSED BY DEFECTED MATERIALS USED, CONSTRUCTION, AND MANUFACTURE.

THE WARRANTY DOES NOT APPLY TO DEFECTS CAUSED BY UNQUALIFIED USE, MECHANICAL DAMAGE, OR TRANSPORT.

MANUFACTURER'S ADDRESS: HOUFEK a.s.
5. may 797
582 82 Golčův Jeníkov
TEL/FAX: +420 569 430 700 / 715

SALE DATE: _____ DEALER'S STAMP AND SIGNATURE _____