USER MANUAL FOR PIPE BEVELLING SYSTEMS

MODELS

ISY/SDC/TCM/ISC/TSC

Read this manual carefully prior to the commencement of works and make sure that you understand the content of it.

Keep the manual for future reference.

SUBJECT TO CHANGE

Contents:

◆SECTION 1 - PREAMBLE

We would like to congratulate you to the purchase of the bevelling machine made by company N.KO Machines.

The present manual provides you with the principles, instructions, functions, technical specifications, delivery and assembly, operating methods and safety procedures. Please read this manual carefully prior to the assembly of the machine and make sure that you fully understand the content of it.

◆SECTION 2 - SAFETY INSTRUCTIONS

The company N.KO Machines pays great attention to production safety and high quality products, and accentuates safety of users. We strongly recommend all users that the following safety procedures and instructions are adhered to when operating the machine. Due to the safety and the safety of the others, read this safety recommendation and user manual and get familiar with them yet before you start using the machine.

Warning! User are obliged to read this manual thoroughly, get familiar with the operation of the machine and the scope of its use yet prior to the machine activation in order to avoid any unpredictable behaviour of the machine. Electrical switchboards must be kept clean and without any stored foreign objects.

Safety instructions are divided in two groups: **Dangers and notices.**

 **Danger: If the machine is used wrongfully, or to a different purpose than the machine is made for, operator might get severely injured.**

 **Notice: If the machine is used wrongfully, or to a different purpose than the machine is made for, operator might get severely injured and the machine damaged.**

 **Due to personal safety, carefully follows the information containing notice or danger.**

 **The machine shall only be operated by qualified technician who was duly trained in the operation of the machine.**

 **The machine shall only be used to the specified purpose which it was designed and made for.**

 **Keep the workplace clean and tidy. Mess on workplace increases the probability of occurrence of injuries and incidents.**

 **The work environment should not be wet. Do not use the machine in humid environment. Only put machine in operation when it is in good condition.**

 **Do not touch the power switch if your hands are wet. You might suffer an electric shock.**

 **Protect yourself and other from electric shock. Do not touch live parts.**

 **If you don't intend to use the machine for a longer period of time, place it in a dry and safe place.**

 **Use suitable work clothes. Do not wear free clothes or jewellery. Use personal protective equipment, such as goggles, gloves and suitable head cover.**

 **Do not approach rotary parts during the operation.**

 **When in operation, use eye protection and ear defenders. If higher amount of dust is present, wear respirator or breathing mask.**

 **Do not stress the supply cord. Do not pull the machine by the supply cord, or do not switch the machine off by pulling the cord from the socket. Keep the cord out of the reach of sources of heat, oil impurities and sharp tools. Check the supply cord regularly. If damaged, replace it; if lose, hand the machine over to an authorised service shop and get it fixed immediately.**

 **Perform regular maintenance on the machine. Keep the machine clean. Only then it will work properly. Refill the lubricant, as advised in the user manual.**

 **Prior to the performance of maintenance, or replacement of any accessories, for instance indexable inserts, unplug the machine from the power supply.**

 **Avoid accidental activation of the machine. When plugging the machine in, do not touch the switch and make sure it is off.**

 **Use a suitable supply cord extension. In case you use the machine outdoors, the used power supply must be designed for outdoor applications.**

 **Be extremely cautious when operating the machine. Operators must be fully aware of the work procedure. If you feel unease, stop the machine.**

 **Check whether the machine was not damaged. Check all the machine parts prior to its use to ensure its proper function. Check the indexable inserts and the entire machine for proper seating on the machined materials.**
If any failure is detected, immediately stop using the machine and contact an authorised service shop.

 **Use only genuine spare parts and accessories. If you have any doubts as concerns the origin of spare parts, contact the supplier of the machine, or the company N.KO Machines.**

 **The machine shall only be repaired by trained specialist in accordance with safety standards.**

If your machine is equipped with electromotor, make sure that the supply voltage corresponds with the voltage stated on the type plate.

 **If the machine is equipped with pneumatic drive check the compressed air pressure.**

 **Check the handle and safety pedal regularly (applies to pneumatic machines only).**

 **Make sure that you have been using the machine correctly.**

 **Do not modify the machine in any manner whatsoever. It might jeopardize or reduce the power.**

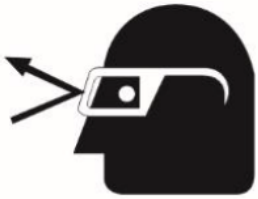
 **!!! CAUTION!!!**

In case of power dropout or pulling the supply cord out of the socket,

SWITCH THE MAIN SWITCH TO THE OFF POSITION!!!

Otherwise the machine may start up spontaneously once the power supply is back on.

Warning signs for using the machine:

	**CAUTION** Electrical safety Motor must be grounded.
	Do not approach rotary parts during the operation. Have your hands and arms at least 2 metres from the moving parts, except for
	**WARNING** Wear eyes protection resistant to , when working in the proximity of the tool.

◆SECTION 3 - MACHINE SPECIFICATION

3.1 FUNCTION PRINCIPLE

The ISY/SDC/TCM/ISC/TS models are powered by electric or pneumatic motor. Due to multiple gearing, the machine features high torque on the outlet that then rotates the milling head. The indexable inserts are fixed by screws in the milling head. The machine is clamped to the pipe by clamping mechanism with automatic centring. Shift in cut is oriented in clamping shaft axis.

3.2 SCOPE OF USE

.KO Machines is a company that has been specialising in the manufacture of portable machines for milling and bevelling. The ISY/SDC/TCM/ISC/TS models are designed for bevelling of pipe with 16 - 1500 mm outer diameter. The machine can bevel pipes and align front surfaces of flanges.

3.3 MACHINE PROPERTIES

3.3.1 FAST SETUP

1. Installation and unpacking of the machine takes not more than 15 minutes in majority of cases.

2. Pipes can be effectively centred and fastened by NC handwheel.

3. Indexable inserts can be set up and adjusted in a short time.

3.3.2 EASY OPERATION

1. Just turn the machine on and off by its easily accessible switch.

2. The installed scales for direct reading ensure precision check of performance of operations.

3. Due to compact structure, you can work even in restricted working space.

3.3.3 UNIQUE FUNCTIONS

1. Duralumin, the material of the base frame, features low total weight of the machine.

2. The machine can create U- and V-shape bevels.

3. Cold bevelling process does not affect the quality of the pipe material.

4. Highly efficient sliding speed; big dimension of opening block increases the strength during the machining to the maximum extent possible.

3.4 PACKAGING INFORMATION

The machine is supplied in a steel transport cage along with connecting pieces, indexable inserts and fitting material.

◆SECTION 4 - TECHNICAL SPECIFICATIONS

4.1 MODEL ISY/SDC/TCM (1)

Model		TCM/ISY -28	TCM/ISY -80	TCM/SDC -120	TCM/ISY /SDC-150	TCM/ISY -250	TCM/ISY -250-Ⅱ	TCM/ISY SDC-351	TCM/ISY -351-Ⅱ
Max Ømm	inner diameter	16~24	28~76	38~90	65~159	80~240	80~240	150~330	150~330
	Outer diameter	20~28	32~80	44~100	73~180	90~270	90~270	163~351	163~351
★Power of pneumatic motor (W)		440	440	580	580	740	740	740	740
Rotational speed (rpm)		55	55	34	34	16	16	14	14
★Max pressure of working air MPa (kg/cm^2)		0.8 (6)							
★Maximum air supply (l/min)		650	650	960	960	960	1000	1000	1000
Axial feed track (mm)		35	35	40	50	50	55	55	55
Maximum thickness of terminal bevel wall (mm)		15	15	15	20	20	75	20	80
Horizontal feed (mm/rev)							0.15		0.15
★Air supply hose inner diameter (mm)		12				14			
Noise (acoustic pressure) dB(A)		≤90							
Net weight (kg)		7	7	10	12,5	38	40	42	45

Note: The ISY/SDC model is a pipe bevelling electric machine. The TCM model is a pneumatic beveller.

The "★" symbol identified specifications that only apply to pneumatic models.

Electric models are fitted with motors with rated power 75~2000W, supply voltage 220 V and input frequency 50 Hz.

On purchase, pay attention to voltage and frequency. In case you are interested, we will offer you a motor that will satisfy your requirements.

4.2 MODEL ISY/SDC/TCM (2)

Model		TCM/ISY -630	TCM/ISY -630-Ⅱ	TCM/ISY -850-Ⅱ	TCM/ISY -1050-Ⅱ	TCM/ISY -1300-Ⅱ	TCM/ISY -1500-Ⅱ
Max Ø mm	inner diameter	280~600	28~76	65~159	80~240	80~240	150~330
	Outer diameter	300~630	32~80	73~180	90~270	90~270	163~351
★Power of pneumatic motor (W)		740	440	580	740	740	740
Rotational speed (rpm)		10	55	34	16	16	14
★Max working air pressure MPa (kg/cm^2)		0.8(6)					
★Maximum air flow consumption (l/min)		1000		1300		1500	
Axial feed track (mm)		55					
Maximum thickness of terminal bevel wall (mm)		15	80	100	100	100	85
Horizontal feed (mm/rev)			0.15				
★Air supply hose inner diameter (mm)		14					
Noise (acoustic pressure) dB (A)		≤90					
Net weight (kg)		55	55	65	80	90	100

Note: The ISY/SDC model is a pipe bevelling electric machine. The TCM model is a pneumatic beveller.

The "★" symbol identified specifications that only apply to pneumatic models.

Electric models are fitted with motors with rated power 75~2000W, supply voltage 220 V and input frequency 50 Hz.

Supply voltage 220 V and input frequency 50 Hz.

On purchase, pay attention to voltage and frequency. In case you are interested, we will offer you a motor that will satisfy your requirements.

4.3 MODEL ISY/SDC/TCM - Table of compensation inserts / jaws

Model	TCM/ISY -28	TCM/ISY -80	TCM/SDC -120	TCM/ISY SDC-150	TCM/ISY -250	TCM/ISY -250-2	TCM/ISY SDC-351	TCM/ISY -351-Ⅱ
Insert free		Φ28-36	Φ45-53	Φ65-87	Φ80-100	Φ80-100	Φ150-180	Φ150-180
009-01	Φ16	Φ36-44	Φ53-61	Φ87-105	Φ100-120	Φ100-120	Φ180-210	Φ180-210
009-02	Φ18	Φ44-52	Φ61-69	Φ105-123	Φ120-140	Φ120-140	Φ210-240	Φ210-240
009-03	Φ19	Φ52-60	Φ69-77	Φ123-141	Φ140-160	Φ140-160	Φ240-270	Φ240-270
009-04	Φ20	Φ60-68	Φ77-85	Φ141-159	Φ160-180	Φ160-180	Φ270-300	Φ270-300
009-05	Φ21,5	Φ68-76	Φ85-93		Φ180-200	Φ180-200	Φ300-330	Φ300-330
009-06	Φ23				Φ200-220	Φ200-220		
009-07	Φ24,5				Φ220-240	Φ220-240		
009-08	Φ26							
009-09	Φ27							

Model	TCM/ISY -630	TCM/ISY -630-Ⅱ	TCM/SDC -850-Ⅱ	TCM/ISY -1050-Ⅱ	TCM/ISY -1300-Ⅱ	TCM/ISY -1500-Ⅱ
Insert free	Φ280-300	Φ280-300		Φ590-620	Φ790-820	Φ890-920
009-01	Φ300-330	Φ300-330	Φ600-630	Φ620-650	Φ820-850	Φ920-950
009-02	Φ330-360	Φ330-360	Φ630-660	Φ650-680	Φ850-880	Φ950-980
009-03	Φ360-390	Φ360-390	Φ660-690	Φ680-710	Φ880-910	Φ980-1010
009-04	Φ390-420	Φ390-420	Φ690-720	Φ710-740	Φ910-940	Φ1010-1040
009-05	Φ420-450	Φ420-450	Φ720-750	Φ740-770	Φ940-970	Φ1040-1070
009-06	Φ450-480	Φ450-480	Φ750-780	Φ770-800	Φ970-1000	Φ1070-1100
009-07	Φ480-510	Φ480-510	Φ780-810	Φ800-830	Φ1000-1030	Φ1100-1130
009-08	Φ510-540	Φ510-540	Φ810-830	Φ830-860	Φ1030-1060	Φ1130-1160
009-09	Φ540-570	Φ540-570		Φ860-890	Φ1060-1090	Φ1160-1190
009-010	Φ570-600	Φ570-600		Φ890-920	Φ1090-1120	Φ1190-1220
009-011				Φ920-950	Φ1120-1150	Φ1220-1250
009-012				Φ950-980	Φ1150-1180	Φ1250-1280
009-013				Φ980-1010	Φ1180-1210	Φ1280-1310
009-014					Φ1210-1240	Φ1310-1340
009-015					Φ1240-1270	Φ1340-1370
009-016						Φ1370-1400
009-017						Φ1400-1430
009-018						Φ1430-1460

4.4 MODEL ISC/TSC

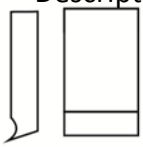
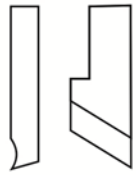
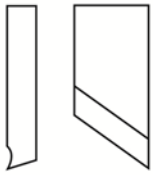
Electric model	Pneumatic model	Operating range (inner diameter) mm	Pipe thickness mm	Rotational speed (rpm)
ISC-53	TSC-53	Φ8-53	≤8	42-66 (adjustable)
ISC-63	TSC-63	Φ20-63	≤12	42-66 (adjustable)
Noise (acoustic pressure)		90dB		

Note: The theoretical data stated in the table are based on situation without loading the milling head. Hence the speed itself is lower than is the one stated in the table.
When selecting a model please remember that the rotational speed of the milling head is limited by air pressure, and the maximum pipe thickness is lower than in electric models wit the same specification.
The electric model can be equipped with Metabo electromotor. Supply voltage 220 V,input frequency 50 Hz~60Hz, rated power 1,400 W.
On purchase, please pay attention to pressure and frequency. We will offer you motors that suit your requirements.
In pneumatic models, customers have to get air supply. Air operating pressure 0.8~1.5 MPa, consumption 1000~1500 l/min, no sparks are produced during operation. The machine can be used in flammable and hazardous work environments.

4.5 TABLE of compensation inserts / jaws of MODELU ISC/TS model

Model	ISC/TSC-53															
Operating range	Φ8	Φ10	Φ14	Φ16	Φ18	Φ20	Φ22	Φ25	Φ28	Φ32	Φ38	Φ42	Φ45	Φ48	Φ51	Φ53
Model	ISC/TSC-63															
Operating range	Φ20	Φ22	Φ25	Φ28	Φ32	Φ38	Φ42	Φ44.5			Φ48	Φ51	Φ54	Φ57	Φ60	Φ63

4.6 INDEXABLE INSERTS TABLE

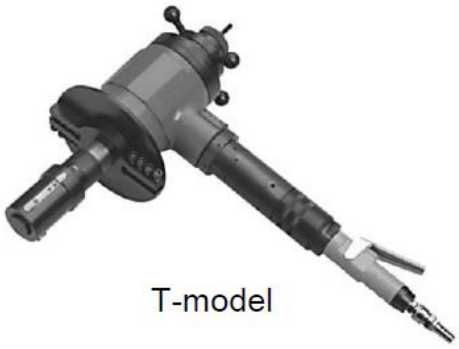
Typ Type	Název Name	Obj.č Order No.	Počet ks Quantity	Popis Description
	flat cutter, spot-facing	601-01	1	Shears for pipe front spot-facing 0°
	Bevelling blade	602-02	1	Blade for bevelling under the angle of 30 degrees
	Bevelling blade	602-03	1	Blade for bevelling under the angle of 37 degrees
	Bevelling blade - inner	603-04	1	Blade for bevelling under the angle of 15 degrees

Note: The inserts stated in the table are designed for standard carbon steels. If you intend to process higher-grade material, please contact your supplier, or the company N.KO Machines.

◆SECTION 5 - BEVELLING WORK PROCEDURE

5.1 CLASSIFICATION OF MACHINES

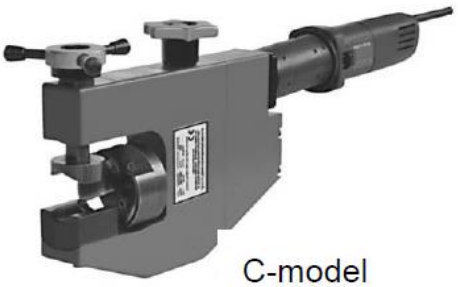
Pipe bevellers are divided in T-models, Y-model, model II, C model, etc.



T-model

Y-model

II-model



C-model

There are similarities and differences between the models. Operate the machines in the following manner:

5.2 OPERATION OF T- AND Y- PIPE BEVELLERS

- First of all, measure the inner diameter of the pipe and select suitable compensation inserts/jaws by the above table. Install the jaws on a stretching mandrel. Tighten with screws.
- Using the indexable insert table, select suitable blades (knives) by the required bevel type. Install them on the milling head and tighten with screws.

⚠**Notice: when fixed, the blade must not touch the main stretching shaft or the compensation inserts/jaws.**

- Turn the feed handwheel and pull out the main feed shaft.
- Mount the beveller on a pipe by placing the stretching mandrel with the jaws into the pipe. Free space must be left between the cutting edge and the pipe for subsequent rotation of the milling head.

⚠**Notice: Install the machine so that the depth of sunken jaws was max 20 mm below the edge of the pipe.**

- Turn the stretching handwheel. In the meantime, adjust the position of the machine so that the main feed shaft was in the centre of the pipe. Tighten the screw closure using a wrench on the handwheel.
- Turn on the motor. Keep turning the handwheel until the razor edge touches the pipe and performs the bevel.

⚠**Notice: Adjust the feed speed during the work. Any fragments produced by the bevel might damage the blades and inner parts. If the machine vibrates, or if the surface of the bevel is not straight, immediately tighten the stretching handwheel to avoid damages to the machine caused by a loose stretching mechanism.**

- After the machining, first remove the indexable insert and only then release the stretching mechanism.

5.3 OPERATION OF PIPE BEVELLER Ⅱ

- Follow the above steps 1-5 of chapter 5.2.
- Adjust the width of the bevel using a machining arm that is connected to the main frame. Tighten the screws on the positioning arm and secure the angle of the bevel.

⚠**Notice: The indexable inserts may not touch the pipe wall.**

- Clamp the machine on the pipe. Take out the feed handwheel and keep turning it so that the indexable inserts get to the proximity of the pipe edge. Push the handwheel to the initial position, start up the motor, let it run idle, turn the motor off, when the indexable inserts touch the tip of the pipe.

⚠**Notice: The distance between the indexable inserts and the pipe should be the same on the circumference. Otherwise you have to reset the stretching mechanism.**

- Take out the feed handwheel, set the indexable inserts from the upper edge of the pipe 3-4 mm to the outer edge, push the handwheel in the original position and start up the beveller.
- After the machining, turn feed handwheel and pull out the indexable inserts. Release the stretching mechanism using a nut and dismantle the machine.
- Other operations are the same as in the T- and Y-model bevellers.

5.4 OPERATION OF TYPE C PIPE BEVELLER

- Select and fix the compensation isnerts/jaws and indexable inserts. Secure then with a bolt.
- Keep turning the feed handwheel until the milling head is pushed as much as possible to the body of the beveller.
- Slowly tighten the handwheel for clamping whilst checking the machine position on the pipe. Secure the machine in a position where main shaft with the milling head is in the centre of the pipe. Secure the machine on the pipe with a clamping mechanism. Free space must be left between the cutting edge and the pipe for subsequent rotation of the milling head.
- Start up the motor, and keep turning feed handwheel so that the indexable insert touches the edge of pipe to be bevelled.
- Once machined, remove the shaper out of the machining area and take off the indexable inserts, release the clamping mechanism and dismantle the machine.
- Other operations are the same as in the T- and Y-model bevellers.

5.5 NOTICE

- Before the machining clear the end of the pipe - remove and burrs and dirt after the milling operation.
- Be careful of the feed. If the end of the pipe isn't straight, proceed with extreme cautiousness.
- Use cooling medium (cutting emulsion or another suitable cutting oil). By doing so, you will extend the life service of the indexable inserts and all machine parts.
- If blunt, indexable inserts have to be exchanged or sharpened.
- If the milling head gets overloaded or the rotation stops completely due to bad condition of the razor edge or large feed, immediately turn off power supply, otherwise the inner parts of the electromotor burn, or the gearing mechanism damages.
- During the machining make sure that no impurities, dirt particles or fragments get into the motor. This would cause serious damage to the motor.
- Closed carbon brush nut is set correctly before it leaves the plant. Do not reset it. Otherwise you may damage the motor.
- Grease the machine in relevant points, at least once daily. In doing so, you will ensure good performance of the machine. After the machining, clean the machine immediately. You will prevent other damage or occurrence of rust. Clean the machine with compressed air or with suitable textile. Wear goggles when working with compressed air.

5.6 NOTES TO PNEUMATIC MOTOR

The B15 AIR machine is equipped with pneumatic drive. Smooth operation requires sufficient quality of compressed air.
Use filtration and lubrication units to ensure so.
The right choice of that air treatment unit shall be consulted with your supplied, or directly with the manufacturer of B15 AIR - company N.KO Machines.

For lubrication, select suitable oil intended for lubrication of pneumatic drives. Set the lubrication cycle to medium position.

◆SECTION 6 - PROBLEMS AND TROUBLESHOOTING

Problem	Cause	Troubleshooting
Wrong final bevel quality	Check the indexable inserts	Check whether the indexable insert is in good condition, correctly fastened, and whether the surface of it is clean
	Clamping/clamping system	Correctly clamped machine must have the spindle axis in parallel to the pipe axis. The surface of the milling head must be at the right angle. This may be a problem, if the compensation inserts/jaws are wrongly mounted on the machine, or if they are damaged.
	Check the pipe	Check whether the pipe isn't bent, or otherwise damaged.
Fast wear-off of indexable inserts	Fixing of indexable inserts	Make sure that indexable inserts are properly fastened. If fastened wrongly, or loose, take them out, clean them and re-fasten.
	The indexable inserts are not suitable for the given material.	Select suitable indexable inserts, as advised in chapter 4.6 Indexable inserts.
	Milling head feed speed	Feed must be faster in thin-walled pipes, than in thick-walled pipes.
	Lubricant	If possible, use cutting emulsion or another suitable cutting oil. It will extend significantly the life span of indexable inserts.
Electric motor doesn't start up	Check the switch	Check if the switch is closed
	Check the power supply	Check the breaker, fuse and supply voltage
	Check the socket	If damaged, let a specialist deal with the repair.
	Check the supply cord	If damaged, have a specialist exchange it.
	Check the carbons	If necessary, have them exchanged by a specialist.

If the problem persists, or if it is missing in the above table, stop the operation and consult the manufacturer for further information.

◆SECTION 7 - MAINTENANCE & REPAIRS

Only professional technician in an authorised service shop may carry out maintenance and repairs.
Proper run of the machine can only be guaranteed if genuine spare parts are used.

⚠**Notice: Before you carry out maintenance of the machine, make sure you have disconnected power supply.**

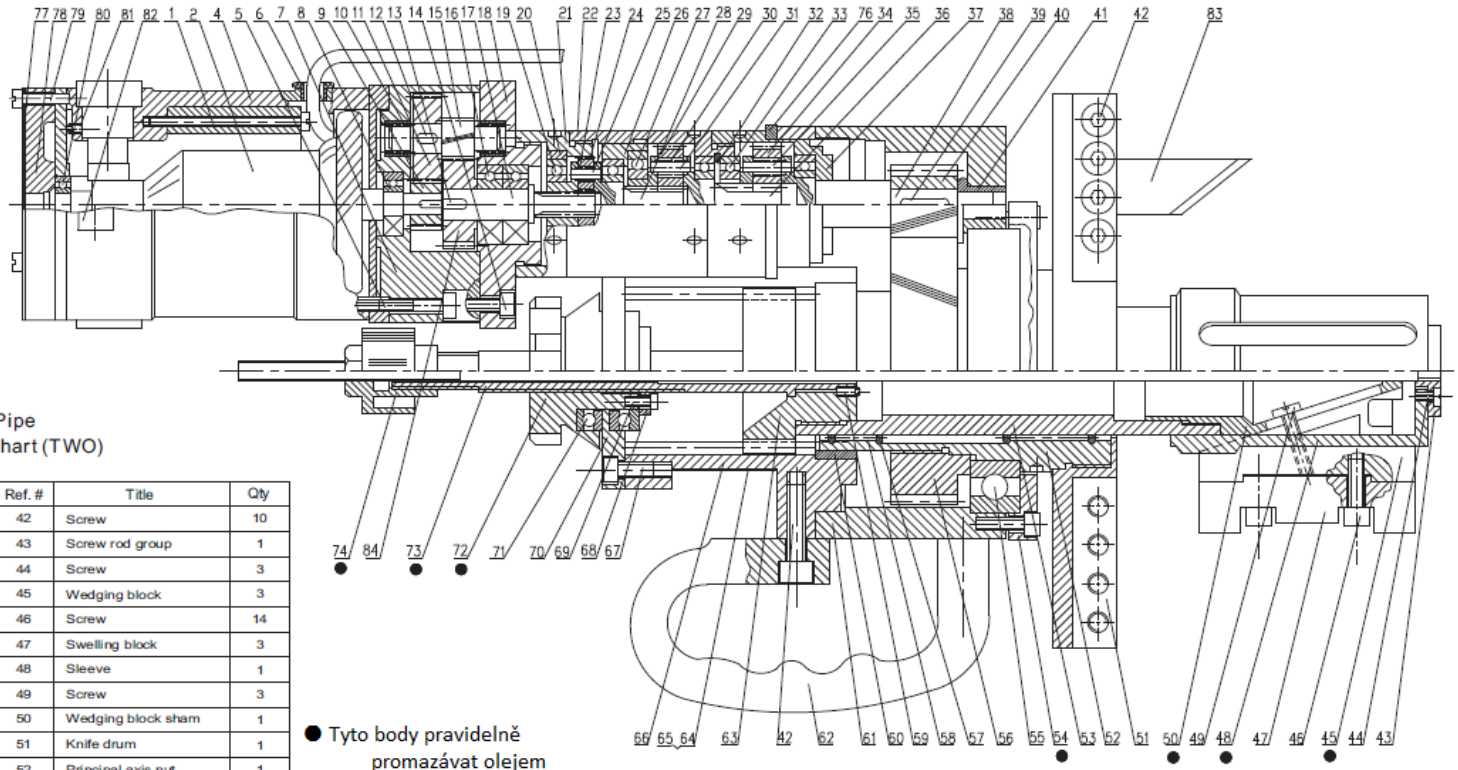
Store the original containers well. You will be able to transport the machine and accessories easily and fast.
Keep the machine clean. Only then it will work properly.
After every startup of the machine, clean and treat it with anticorrosive lubricant.

Do not place the machine in humid or dirty environment.

⚠**Notice: Do not place any objects on the rotary shaft.**

⚠**Notice: Clean the machine with a brush, suitable textile or compressed air.**

Clean the machine before every use so that no residues are left there.
In order to ensure smooth operation, the system needs to undergo overall inspection, disassembly and lubrication once a year in an authorised service shop.



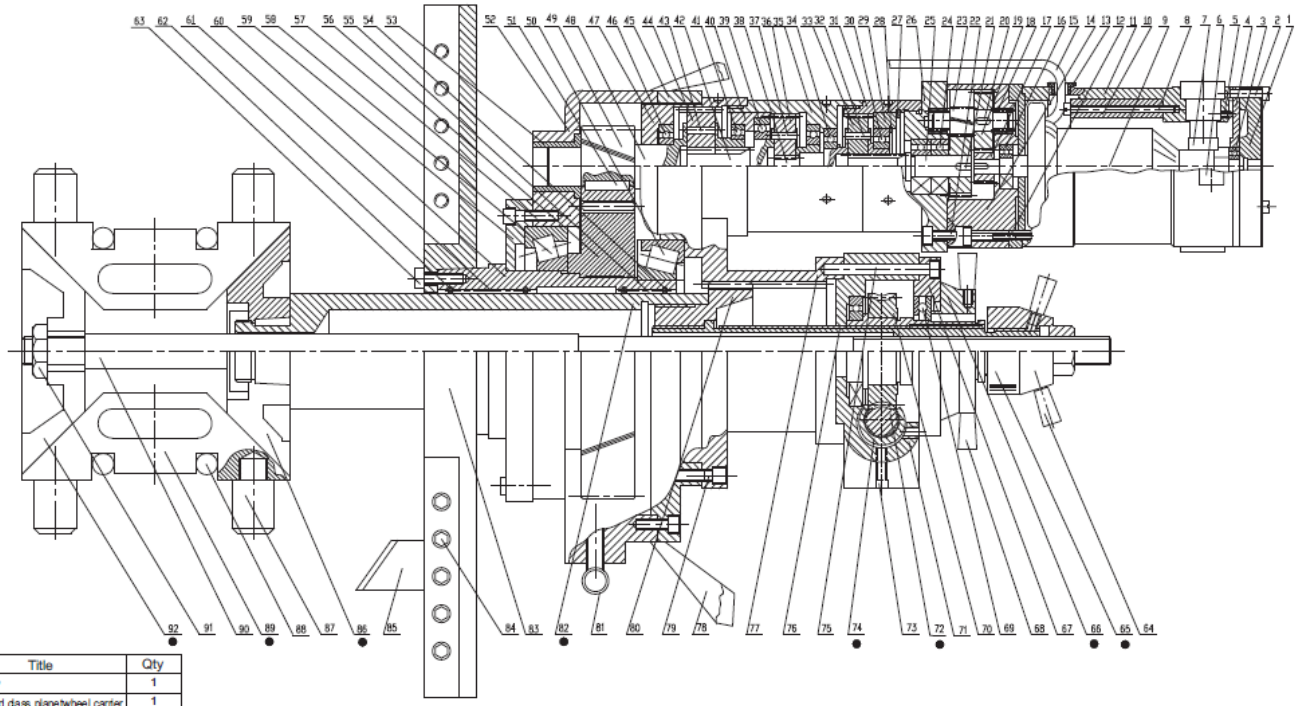
ISY-150 Electric Inner Swell Pipe
ISY-250-1 Bevelling Machine Chart (TWO)

● Tyto body pravidelně promazávat olejem

Ref.#	Title	Qty	Ref.#	Title	Qty
1	Screw	2	42	Screw	10
2	Motor	1	43	Screw rod group	1
4	Motor capsid	1	44	Screw	3
5	Screw	4	45	Wedging block	3
6	Retainer	1	46	Screw	14
7	Slow-down capsid	1	47	Swelling block	3
8	Radial ball bearing	1	48	Sleeve	1
9	Petty bevel gear	1	49	Screw	3
10	Needle bearing	2	50	Wedging block sham	1
11	Large bevel gear	1	51	Knife drum	1
12	Bond	1	52	Principal axis nut	1
13	Bond	1	53	Feed principal axis	2
14	Screw	3	54	Bearing cap	1
15	Bevel gear axle	1	55	Needle bearing	1
16	Radial ball bearing	2	56	Bevel gear	1
17	Output axle	1	57	Snap ring for port	4
18	Bearing support	1	58	Needle bearing	3
19	Radial ball bearing	2	59	Screw	2
20	bushing	1	60	Bushing	1
21	The first class interior tooth enclosing	1	61	Housing	1
22	The second class interior tooth enclosing	1	62	Handlebar	1
23	The first class gear	2	63	Feed gear	1

Ref.#	Title	Qty	Ref.#	Title	Qty	Ref.#	Title	Qty	Ref.#	Title	Qty	Ref.#	Title	Qty
24	Needle bearing	2	64	Name plate	1	33	Radial ball bearing	3	74	Swelling handwheel	1			
25	Needle roller	2	66	Fundamental top frame	1	34	The third class gear	2	76	Shim	1			
26	Raceway	2	67	Screw	3	35	Needle roller	2	78	Cover	1			
27	Radial ball bearing	1	68	Bearing end cover	1	36	The second class planet wheel carrier	1	79	Screw	4			
28	The first class planet wheel carrier	1	69	Screw	3	37	The third class planetwheel carrier	1	80	Radial ball bearing	1			
29	The second class gear	2	70	Bearing support	1	38	The third class planet wheel carrier	1	81	Screw	2			
30	Needle bearing	2	71	Ball thrust bearing	2	39	Bond	2	82	Switch	1			
31	Needle roller	2	72	Feed handwheel	1	40	Main drive bevel gear	1	83	Bevelling cutter	1group			
32	Snap ring for port	1	73	Screw pipe union	1	41	Bush	1	84	Bevel gear	1			

ISY-351-1 Electric Inner Swell Pipe
ISY-630-1 Bevelling Machine Chart (THREE)



● Tyto body pravidelně promazávat olejem

Ref. #	Title	Qty	Ref. #	Title	Qty
1	Cover	1	47	Screw	1
2	Screw	2	48	The third class planetwheel carrier	1
3	Radial ball bearing	1	49	Main drive bevel gear	1
4	Bearing support	1	50	Taper roller bearing	1
5	Screw	1	51	Bond	1
6	Switch	1	52	Housing	1
7	Carbon brush	1	53	Bush	1
8	Screw	1	54	Snap ring for port	2
9	Motor runer	1	55	Needle bearing	1
10	Motor stator	1	56	Driven bevel gear	1
11	Motor capsid	1	57	Screw	6
12	Screw	4	58	Taper roller bearing	1
13	Retainer	1	59	Lower cover of housing	1
14	Slow-down capsid	1	60	Principal axis knife drum	1
15	Electric wire	1	61	Needle bearing	1
16	Radial ball bearing	1	62	Snap ring for port	2
17	Bevel gear	1	63	Screw	6
18	Needle bearing	1	64	Swelling handle	3

Ref. #	Title	Qty
19	Bevel gear	2
20	Bond	1
21	Bond	1
22	Screw	1
23	Bevel gear axle	1
24	Radial ball bearing	1
25	Output axle	1
26	Bearing support	1
27	Snap ring for port	1
28	Snap ring for port	1
29	Bushing	1
30	Radial ball bearing	1
31	The first class interior tooth enclosing	1
32	Needle roller	3

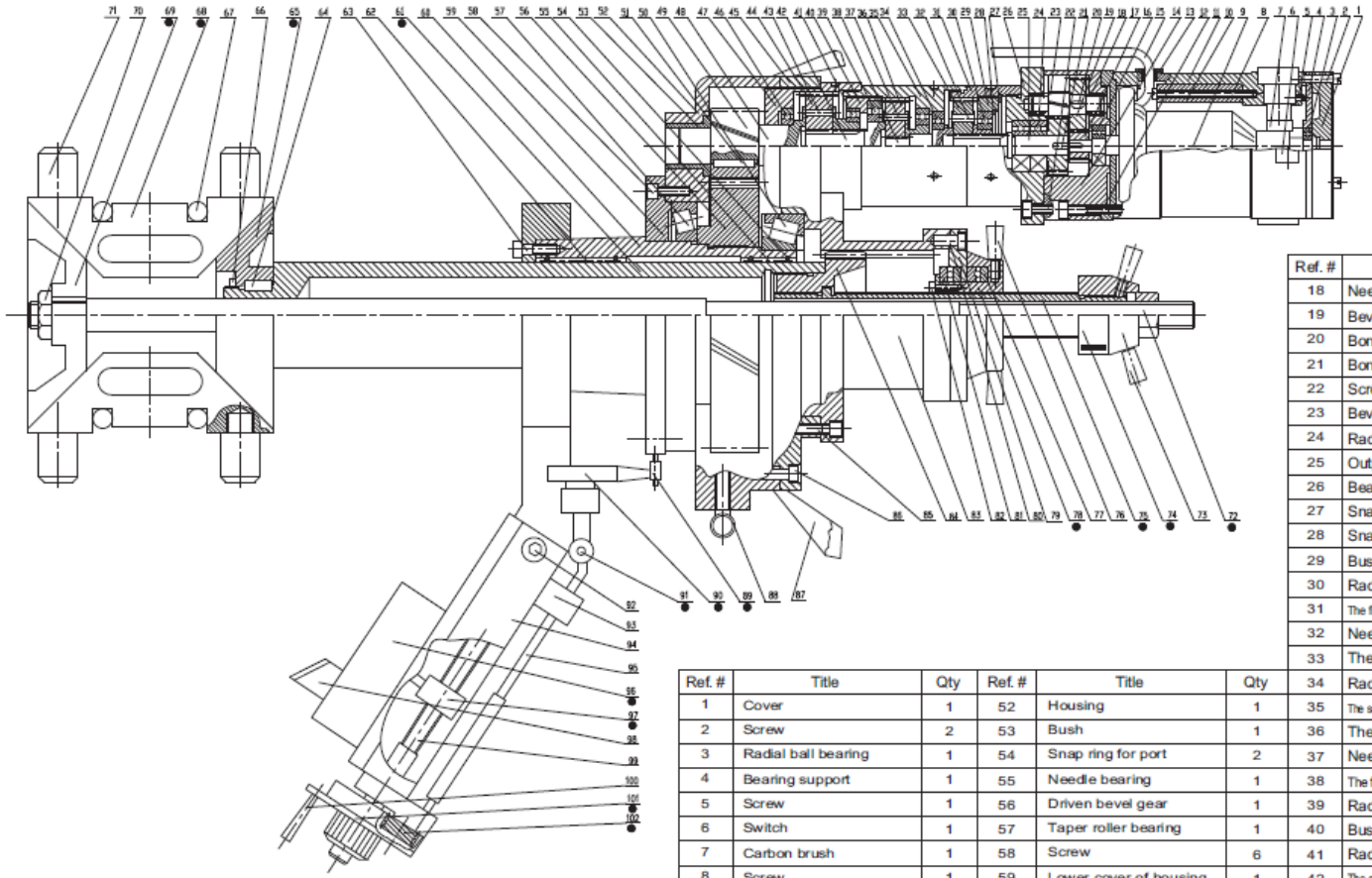
Ref. #	Title	Qty
65	Swelling handwheel	1
66	Feed handle	1
67	Bearing support for worm case	1
68	Feed handle	4
69	Radial ball bearing	1
70	Worm gear	1
71	Worm case	1
72	Feed worm transversely	1
73	Screw	1
74	Housing for feed worm transversely	1
75	Screw	4
76	Feed screw	1
77	Stand	1
78	Handlebar	2

Ref. #	Title	Qty
33	The first class gear	3
34	Radial ball bearing	1
35	The second class interior tooth enclosing	1
36	The third class gear	3
37	Needle roller	3
38	The first class planet wheel carrier	1
39	Radial ball bearing	1
40	Bushing	1
41	Radial ball bearing	1
42	The second class planet wheel carrier	1
43	Needle roller	3
44	The third class gear	3
45	Top head for housing	1
46	Radial ball bearing	1

Ref. #	Title	Qty
79	Screw	6
80	Feed gear	1
81	Flying rings	1
82	Radial ball bearing	1
83	Knife drum	1
84	Screw	10
85	Bevelling cutter	1group
86	Swelling top dial	1
87	Swelling block	6
88	Spring	6
89	Swelling wedging block	3
90	Tension bar	1
91	Nut for tension bar	1
92	Swelling low dial	1

ISY-251-2
ISY-351-2
ISY-630-2

Electric Inner Swell Pipe Bevelling Machine Chart (FOUR)

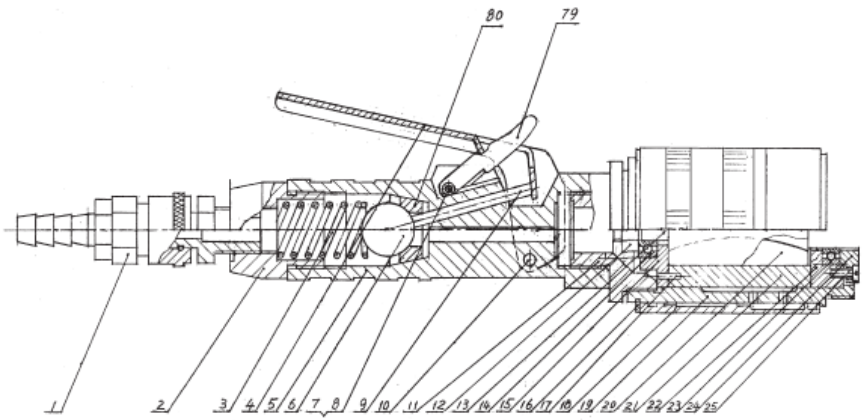


Ref. #	Title	Qty	Ref. #	Title	Qty
1	Cover	1	52	Housing	1
2	Screw	2	53	Bush	1
3	Radial ball bearing	1	54	Snap ring for port	2
4	Bearing support	1	55	Needle bearing	1
5	Screw	1	56	Driven bevel gear	1
6	Switch	1	57	Taper roller bearing	1
7	Carbon brush	1	58	Screw	6
8	Screw	1	59	Lower cover of housing	1
9	Motor runer	1	60	Principal axis knife drum	1
10	Motor stator	1	61	Feed handle	1
11	Motor capsid	1	62	Needle bearing	2
12	Screw	4	63	Screw	4
13	Retainer	1	64	Bond	1
14	Slow-down capsid	1	65	Swelling top dial	1
15	Electric wire	1	66	Nut	1
16	Radial ball bearing	1	67	Spring	3
17	Bevel gear	1	68	Swelling block	2

Ref. #	Title	Qty	Ref. #	Title	Qty
18	Needle bearing	1	69	Swelling low dial	1
19	Bevel gear	2	70	Nut for tension bar	1
20	Bond	1	71	Swelling block	6
21	Bond	1	72	Tension bar	1
22	Screw	1	73	Swelling handle	3
23	Bevel gear axle	1	74	Swelling nut	1
24	Radial ball bearing	1	75	Feed screw	1
25	Output axle	1	76	Feed handle plumb	4
26	Bearing support	1	77	Ball thrust bearing	1
27	Snap ring for port	1	78	Feed handwheel	1
28	Snap ring for port	1	79	Bearing support for stand	1
29	Bushing	1	80	Screw	6
30	Radial ball bearing	1	81	Ball thrust bearing	1
31	The first class interior tooth enclosing	1	82	Screw	3
32	Needle roller	3	83	Stand	1
33	The first class gear	3	84	Feed gear	1
34	Radial ball bearing	1	85	Screw	6
35	The second class interior tooth enclosing	1	86	Screw	6
36	The third class gear	3	87	Handlebar	2
37	Needle roller	3	88	Flying rings	2
38	The first class planet wheel carrier	1	89	Bump block	1
39	Radial ball bearing	1	90	Overrunning clutch	1
40	Bushing	1	91	Universal joint	1
41	Radial ball bearing	1	92	Six angle screws inside	1
42	The second class planet wheel carrier	1	93	Support of feed to the connecting rod	1
43	Needle roller	3	94	Feed planker	1
44	The third class gear	3	95	Feed connecting rod	1
45	Top head for housing	1	96	Cutter frame	1
46	Radial ball bearing	1	97	Feed nut	1
47	The third class interior tooth enclosing	1	98	Bevelling cutter	1group
48	The third class planet wheel carrier	1	99	Screw for feed worm transversely	1
49	Main drive bevel gear	1	100	Feed handle	1
50	Taper roller bearing	1	101	Feed handwheel	1
51	Bond	1	102	Gear	1

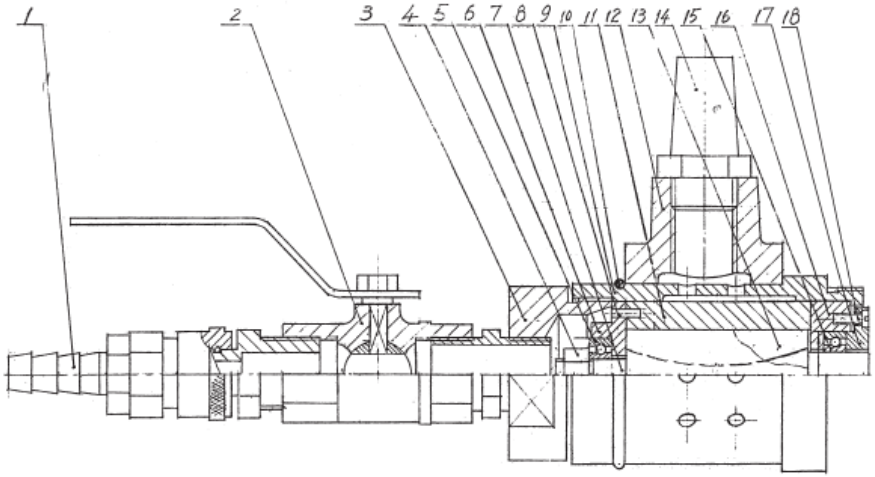
● Tyto body pravidelně promazávat olejem

TCM-80 Pneumatic Motor



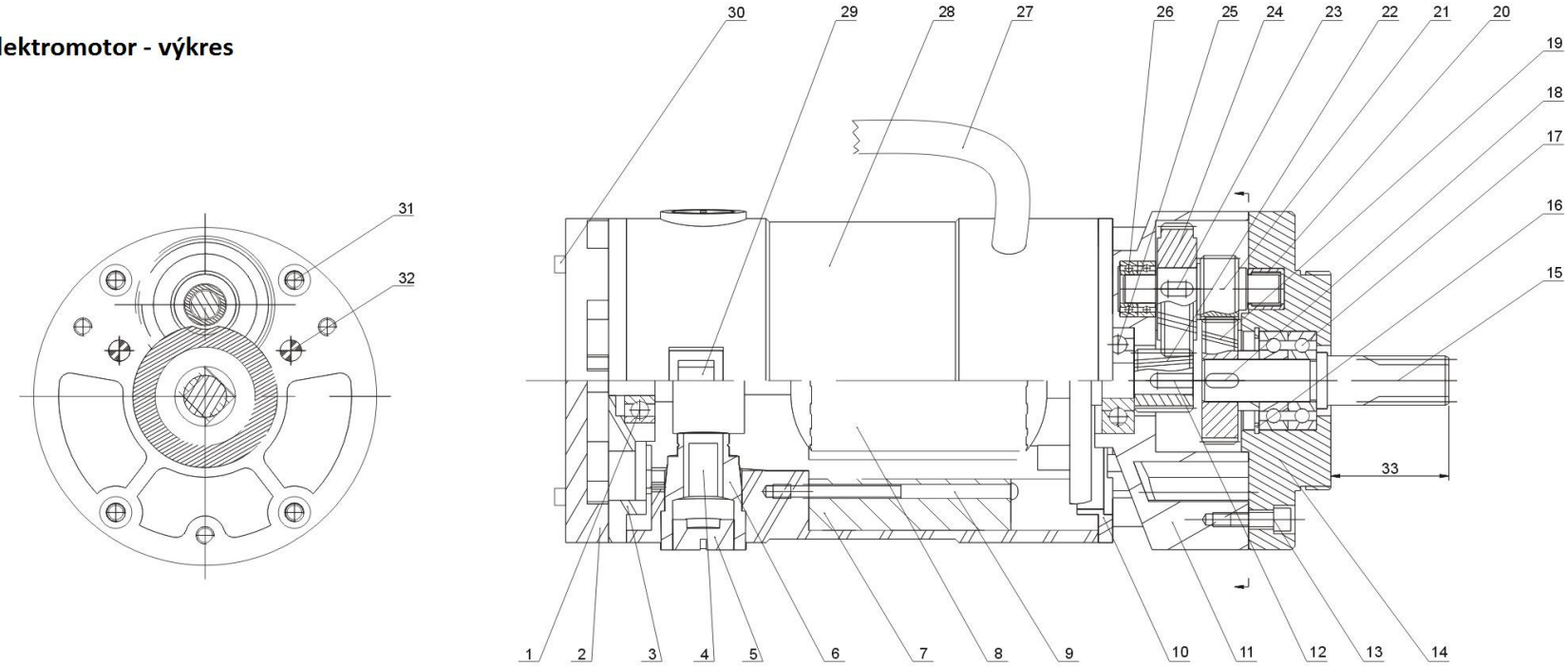
Ref. #	Title	Qty	Ref. #	Title	Qty
1	Quick fittings for air pipe	1	16	Check ring	1
2	Junction for air intake	1	17	Pin	1
3	Spring	1	18	Sound absorber	1
4	Handle	1	19	Housing for motor	1
5	Valve body	1	20	Blade	5
6	Steel ball	1	21	Arbor for motor	1
7	Pin	1	22	Bearing cap	1
8	Torsion spring	1	23	Radial ball bearing	1
9	Pin	1	24	Cap	1
10	Pin	1	25	Screw	1
11	Screw cover for motor	1	79	Lock block	3
12	Nut	1	80	Ball pad	1
13	Internals for motor	1			1
14	Radial ball bearing	1			
15	Bearing cap for motor	1			

TCM150 ~ 630 Series Pneumatic Motor



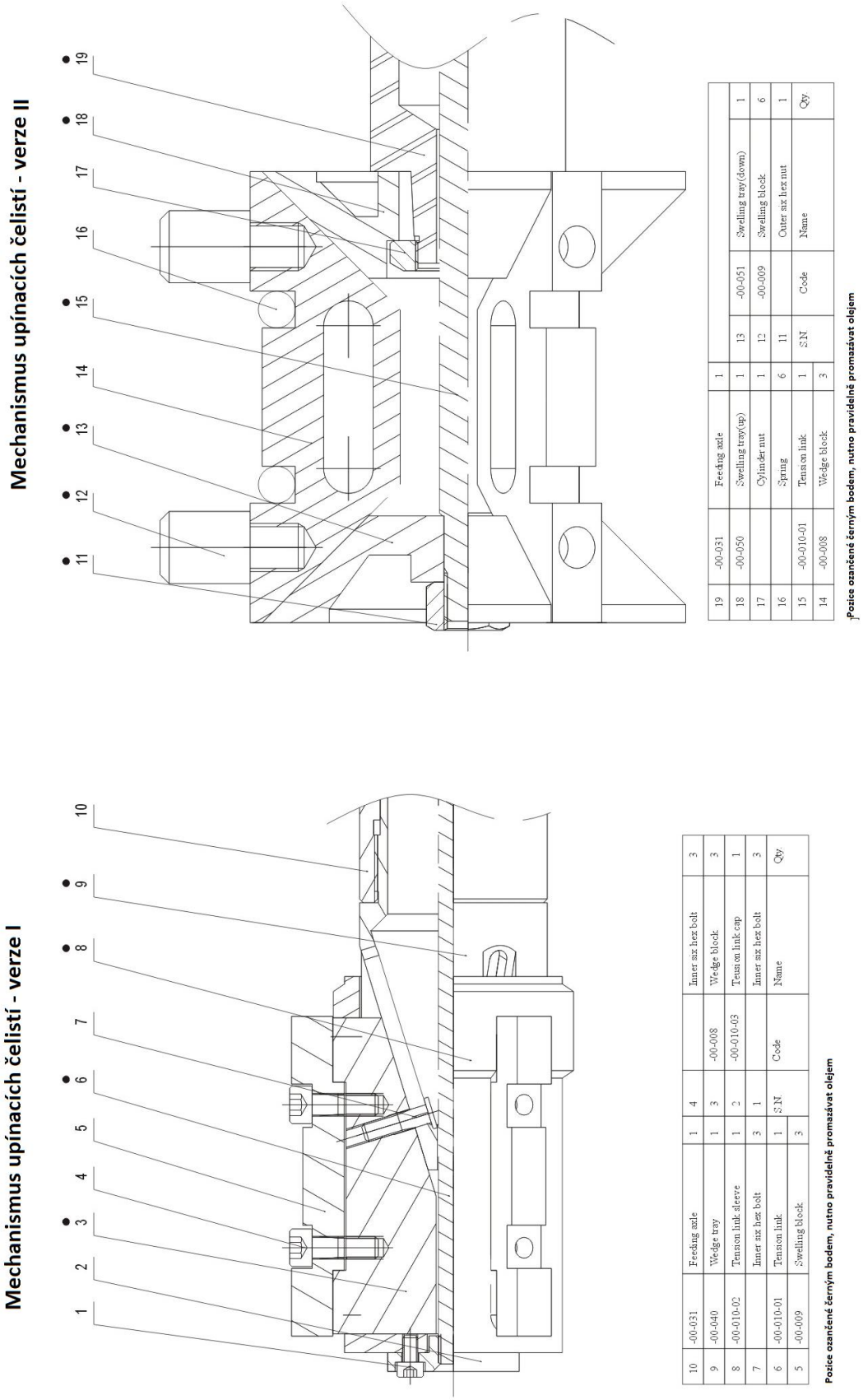
Ref. #	Title	Qty	Ref. #	Title	Qty
1	Quick fittings for air pipe	1	16	Bearing cap	1
2	Ball valve switch	1	17	cap	1
3	Cap for motor	1	18	Screw	1
4	nut	1	19		1
5	Radial ball bearing	1	20		5
6	Bearing cap for motor	1	21		1
7	Internals for motor	1	22		1
8	Pin	1	23		1
9	Housing for motor	1	24		1
10	O band	1	25		3
11	Arbor for motor	1	79		1
12	Sound absorber	1	80		1
13	Blade	1			
14	Core plug	1			
15	Radial ball bearing	1			

elektromotor - výkres



32		Cylinder pin	2	16		Hole flexible bead flange	1	23		Pin	1	7		Stator	1
31		Inner six hex bolt	4	15	-02-210	Output motor axle	1	22	-02-205	Drive helical gear	1	6		Brush tray	2
30		Inner six hex bolt	4	14	-02-209	Bearing tray of motor	1	21	-02-207	Helical tooth axle	1	5		Brush cap	2
29		Switch	1	13		Inner six hex bolt	3	20		Needle bearing	1	4		Brush	2
28	-02-202	Case of motor	1	12		Pin	1	19	-02-208	Driven helical gear	1	3		Back bearing cap of motor	1
27		Power line	1	11	-02-203	Motor reducer case	1	18		Pin	1	2	-02-201	Back cap of motor	1
26		Radial ball bearing	2	10	-02-204	Motor knot	1	17		Radial ball bearing	1	1	-02-211	Radial ball bearing	1
25		Radial ball bearing	1	9		Semi-circular bolt	2	S.N.	Code	Name	Qty.	S.N.	Code	Name	Qty.
24	-02-206	Driven helical gear	1	8		Rotator	1								
S.N.	Code	Name	Qty.	S.N.	Code	Name	Qty.								

Electromotor - drawing



19	-00-031	Feeding axle	1					
18	-00-050	Swelling tray(up)	1	13	-00-051	Swelling tray(down)	1	
17		Cylinder nut	1	12	-00-009	Swelling block	6	
16		Spring	6	11		Outer six hex nut	1	
15	-00-010-01	Tension link	1	S.N	Code	Name	Qty.	
14	-00-008	Wedge block	3					

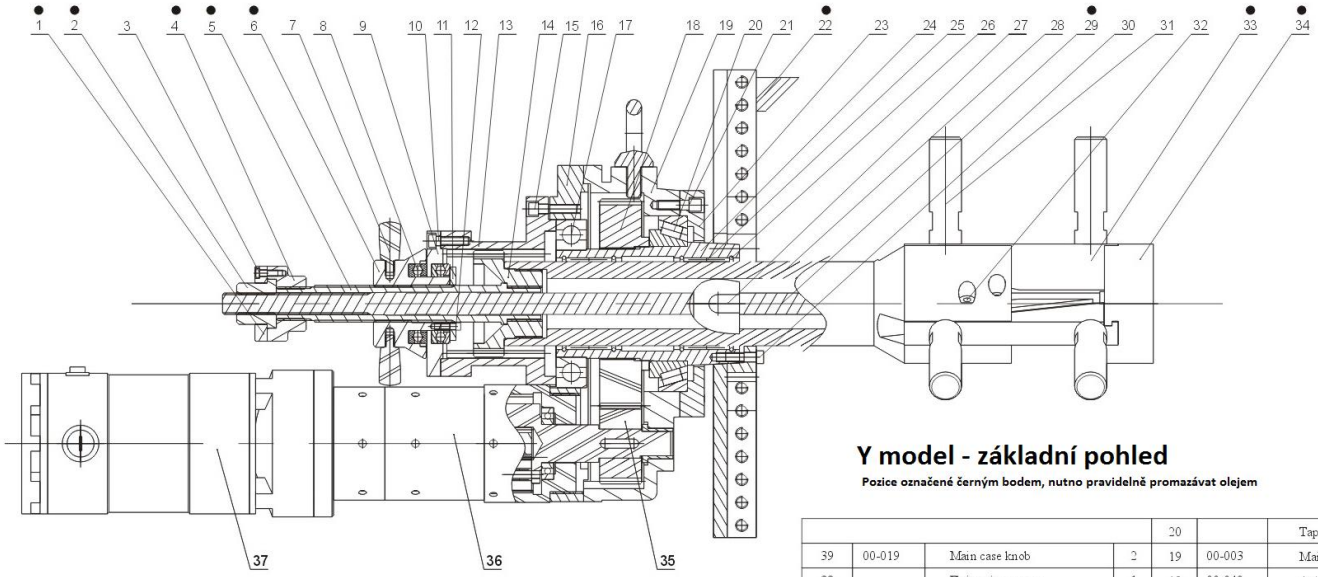
Pozice označené černým bodem, nutno pravidelně promazávat olejem

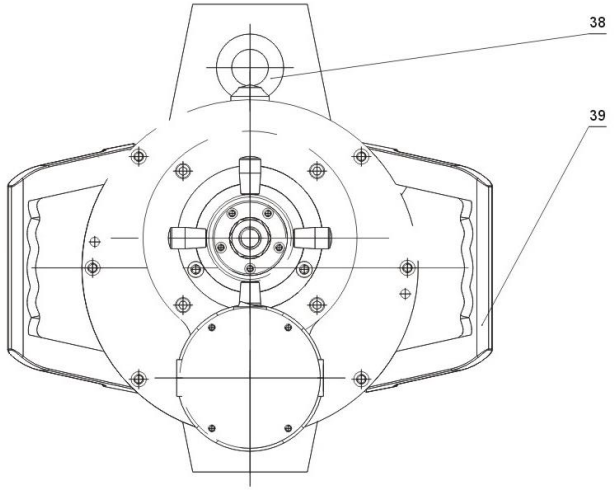
10	-00-031	Feeding axle	1	4		Inner six hex bolt	3
9	-00-040	Wedge tray	1	3	-00-008	Wedge block	3
8	-00-010-02	Tension link sleeve	1	2	-00-010-03	Tension link cap	1
7		Inner six hex bolt	3	1		Inner six hex bolt	3
6	-00-010-01	Tension link	1	S.N.	Code	Name	Qty
5	-00-009	Swelling block	3				

Pozice označené černým bodem, nutno pravidelně promazávat olejem

Clamping jaw mechanism - version 1

The positions marked with a black point must be greased with oil regularly.





Y model - základní pohled

Pozice označené černým bodem, nutno pravidelně promazávat olejem

				20		Taper roller bearing	1
39	00-019	Main case knob	2	19	00-003	Main case	1
38		Flying ring screw	1	18	00-042	Axis driven bevel gear	1
37	02	Electric motor	1	17		Radial ball bearing	1
36	09	Reducer	1	16	00-052	Upper body of the main case	1
35	00-041	Axis drive bevel wheel	1	15		Inner six hex bolt	4
34	00-051	Swelling tray	1	14	00-047	Feeding gear	1
33	00-008	Wedging block	3	13	00-045	Feeding inner gear tray	1
32		Inner six hex screw	6	12		Inner six hex bolt	3
31	00-009	Swelling block	6	11	-00-046	Axle cap of feeding wheel	1
30		Inner six hex screw bolt	6	10		Inner six hex bolt	4
29	00-010-01	Tension link	1	9	-00-015	Upper lid of main case	1
28	00-031	Feeding axle	1	8		Thrust ball bearing	2
27		Flat key	1	7	-00-016	Turn band bearing	4
26		Hole steel wire bead flange	4	6	-00-012	Feeding wheel	1
25		Entad needle and holder	2	5	00-048	Feeding screw	1
24	00-047	Cutterhead axis	1	4	00-011-03	Swelling nut 03	1
23	00-004	Lower cover of main case	1	3		Inner six hex bolt	5
22		Beveling tools	1	2	00-011-01	Swelling nut 01	1
21		Inner six hex bolt	6	1	00-011-02	Swelling nut 02	1
S.N	Code	Name	Qty.	S.N	Code	Name	Qty.

A copy of this manual is supplied with every ISY/SDC/TCM/ISC/TSC pipe bevelling machine model.

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