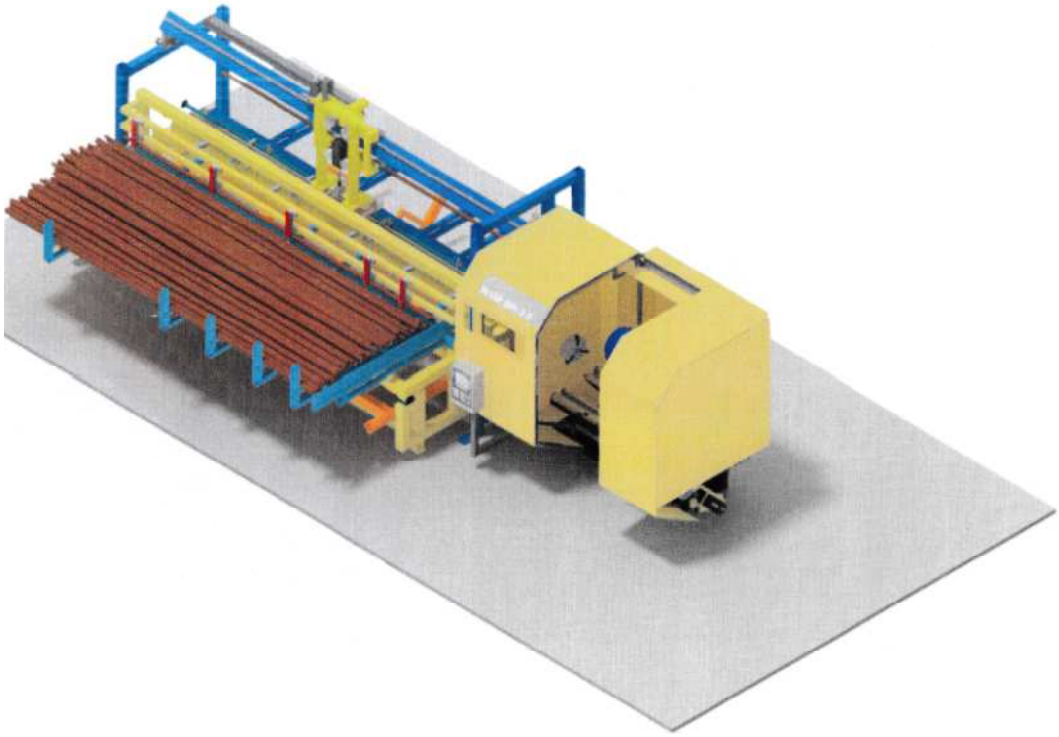
WIAP® Werkzeugmaschinen

Neumaschinen, Drehmaschinen, Sondermaschinen

Product description

Skin and roller burnishing system WIAP DM3 S with Automation WIAP HLV



NC-controlled skin and roller burnishing WIAP DM3S for the processing of anchor bolts, machine can also be a tube processing machine to 6 meters manufactured

Content

1 Introduction:

The WIAP AG Ltd SA, with headquarters in Dulliken in Switzerland has developed in previous years, many automated systems, designed and manufactured. For some time, the demand for automation is significantly increased again, so the WIAP AG has decided to breathe new life together with the engineering and the automation again.

The many experiences with the construction of large lathes, vertical lathes, pipe cutting machines and much more could be integrated into a new product now, namely in this foundation bolts processing machine. This is designed for a fully-automatic process. 50 workpieces are still bound placed on a memory. This is cut, and then everything happens by itself. No manual interaction is required to perform the processing. The WIAP AG has not to be influenced by existing designs. It was itself considered and developed a concept that makes it possible to produce such workpieces efficiently. The WIAP AG has given the customer the basis for the concept to create the specifications. A machine that does not yet exist in the way cannot be mentioned in the specification. This facility is also this to consider, in order to process and pipes. Workpieces to 6 meters in length can be processed without great effort.

Thanks to the new patents (since 2014) with the vibration Relax, newly called WIAP MEMV, and the whole structure of machine beds, headstocks, slide systems, as well as automation is so much easier. It can quickly and without loss of quality, within weeks developed an extremely complicated machine bed and other components, welded, relaxed and also vibration damping, are produced.

Do you have an idea? A project? Contact the WIAP AG in contact. In many cases, WIAP finds a solution. Thanks to that almost everything comes from one source, can be very quickly without first having to question everything, be answered.

2 Special features of the system:

- The whole skiving and roller burnishing conditioning WIAP DM3S with the latest CNC technology.
- Wear monitoring tool with integrated in the CNC.
- With vibration function for the blank feeder which automatically regulates the supply, the speed, depending on the weight of the blanks; calculated it and itself controls
- Lining way and clamping force can be programmed for various. Component sizes lining full tension distance of over 100 mm travel drive without clamping jaw change.
- The HLV has hidden reserves can drive over 10x faster in the Y axis, if it were necessary.
- Only two types of photoelectric sensors are used in the whole system. Easy to maintain
- Only two valves types used. All with the center position for safe emergency stop situation.
- Most cylinders are used, the same in several places. Easy to maintain

3 Machine data

Dimensions L x W x H	8500mm x 3500mm x 2400mm
Total weight	approximately 6500 kg
SPL	below 80 dB (A)

Detailed technical data

3.1 Scope of supply and technical data WIAP DM2-S

CNC controlled lathe bed Horizontal compact with integrated handling WIAP HLV 40, 40 Kg piece weight

3.2 Machine bed / processing area

4-panel flat-bed (2 outer Z-carriage; 2 inside for tailstock are not used).
With movable Z slide at outdoor two guides.

- Bed length	mm	2280
- Spindle center from the ground about	mm	1025
- Bed mode length	mm	900
- Height	mm	370
- Swing over bed	mm	720
- Swing over carriage (tool carrier)	mm	420

- Bed welded; relaxed by WIAP-Replacement annealing-method and vibration damping system VDSF
- Keeping requirements honed
- Guides hardened about 55 to 63 HRC about 1 mm deep mm 40x70
- Screwed guides and exchangeable for maintenance according to the system WIAP

3.3 Not Rotating workpiece holder - instead of the headstock / main drive -

Firmly arrangede, robust construction. Built on the bed instead of normal usual headstock

- Number workpiece centering holder	pcs.	1
- Workpiece centering holder bore	mm	75
- Spindle nose	DIN	55021 A8
- Automatic chuck system for	mm	160/250

3.4 Longitudinal and cross slides

- Number of cross slide	St.	1
- Number longitudinal slide	St.	1
- Axis measuring the motor no reference point necessary remain stored location positions and must only engine Exchange to be set		
- Axis end position monitoring (3 switch)		
- Final drive Z-feed motor		
- Feed force	kN	1.2
- Feed: Ball screw diameter	mm	50
- Travel: Z axis about	mm	1000
- Rapid Z-axis	mm / min	6000
- Final drive X-feed motor		
- Feed force	kN	0.8
- Feed: backlash-free ball screw diameter	mm	40
- X axis	mm	500
- Rapid traverse the X-axis	mm / min	4000
- Took Turcyte / Wolf sliding coatings		
- Impulse lubrication integrated with sufficient lubrication points all slides		

3.5 Double spindle head mounted on cross slide

with spindle motor

- Spindle nose standard size for tool head	about mm	200
- Number headstocks	St,	2
- Interpretation drive power	KW	11
- Rotational speed of 50 Hz to 100 Hz	RPM	730/1460
- Spindle 1 ratio 1: 2 =	nm	144/288
- Cross slide	St,	1
- Dimensions of the slide	mm	500
- Leadership hardened ground about 60 HRC	mm	40 x 70

- Double spindle drive system; both spindles run simultaneously
- with mounted encoders for the thread pitch control, even of the thread roll heads

3.6 Roller head for thread rolling M20, M27, M30, M36

- Quick change, rolling speed up to 30 m / min.

3.7 Peeling head for thread M20, M27, M30, M36

- for the pre-turning of the diameter of the threaded 4 cutting up to 0.2 mm Feed per cutting edge

3.8 Blank WIAP RT LC 4000 mm 6000 mm feeding alternative

- for 50 blanks, designed for the long part of the family, an alternative 100 pcs.
- Tubular frame system with integrated separation
  Protection, possibly a vibration solution for the secure separation
  the blanks of the Zone 1 Stock pickup
  is individually positioned in front, so that the portal loader,
  gripper can pick up the blank.

3.9 Precast WIAP FT4000 LC Parts removal system alternative 6000 mm

- for 50 finished parts, designed for long parts family
- Tubular frame system with way swivel system
  identical for the finished part as the delivery system
  put the finished parts. The workpiece is in a
  shelf set. Then, it is by means of rotational movement
  lifted into the precast concrete bunker, the finished workpiece
  goes into a sink path which are adjusted manually
  can there in a round-cutting, so that the binding of the 50
  parts is simplified

3.10 WIAP auxiliary charging device HLV40

- designed with 1 double parallel gripper. For workpiece weight 1 x 40 kg.
  Maximum long parts mm 4100 (6000)
  Minimum long parts mm 1500

3.11 Guard personal hazard

All zones where people can be endangered or terminal points exist,
alternatively covered L barriers with protective covers. Keypads
with horn zones and light barriers stop

3.12 Chip conveyor

- 1 slat conveyor integrated in the machine
  integrated under the machine in the machine bed incl. coolant tank
- Ejection height ca. mm 950

3.13 Coolant system

- integrated in the system sufficient pressure for the tool
  requirements as to the durability and a band filter system

3.14 Suction

- Designed for the volume of the fully enclosed
  the WIAP DM machine

3.15 machine cover

- Subspace panel with sliding door 1 automatically closable over M function;
  safety glass new system, 20 times better than the conventional safety glass

3.16 CNC Control

- CNC SIEMENS SINUMERIK 808; 1 channel solution
  according to the following description:
  Panel-based compact CNC control
  Turning technology. CNC designed for 3 axes / spindles
  In our case: 2 CNC rotary axes, one main spindle, which
  PLC S7-200 PLC

  - Supplementary HMI with S7-1200
  - Automatic tool monitoring
    of the skiving head, rotating head and the setting
  - Different speed settings of the vibrator WIAP V05
  - Setting the feed for the opening speed and
    number of turns for rapid traverse and creep of feed

The machining program is programmed parameterized
There are per workpiece, a CNC program with few parameters,
contain the parameters for the respective workpiece
length, thread length, thread pitch. The remaining values
are always identical and are located in a main program,
that is executed on each pass.
The entire program sequence runs over the WIAP parameterized system.
That is, when the blank length is input, the CNC control of the white
machine, as well as the HLV loaders, all positions as they are approached
have to. The workpieces are 0.1 mm in accuracy in the machine
introduced

3.17 Electrical equipment

- Electrical cabinet / voltage	V	400
integrates light in the machine -		
- Cranes for automatic and manual operation		
- As well as CNC programming console easily and clearly in a control panel on the left side of the machine appropriate. Total control voltage switches, etc.	DC	24

3.18 Technical specialty

- Feed motor 1 x X axis Min 2000 RPM NM 10th
- Feed motor 1 x Z axis Min 2000 RPM NM 10th
- Feed motor 1 x Y axis Min 2000 RPM for 10 NM gantry loader.
- AC motor 6 pole 1 x S main spindle 11 KW motor standard 8-pin 730 50Hz rev.
- Feed close engine 1.1 kW 180 Nm
- Claw rotation raw and finished part 2 x 0.75 KW

3.19 Power supply

- All chips vulnerable energy supply systems are in protective hoses or arranged in the cable drag chain.
- The electrical cables in the cable trailing. The drag chain cables are oil and emulsion resistant

3.20 General

To dye:

- Propelled pieces of light gray	RAL	7035
- Stationary parts dark gray	RAL	7024
- Machine weight net with about Automation	kg	5000

3.21 Space only machine

- Machine length	mm	about 2800
- Machine width	mm	3500
- Machine height	mm	about 2400

- Space with automation and machine (4000 mm version)

- Machine and Automation	length	mm	8371
- Machine and Automation	width	mm	3600
- Machine and Automation	height	mm	2420

4 Machine Function Description

CNC horizontal lathe WIAP DM3S with WIAP auxiliary loader HLV 40

Technical description of the version 2D
Horizontal machine bed WIAP DM3S

Designed for flat-bed lathe to 11 kW output. Bearing the DM2 series. there is a workpiece holding floor, workpiece fixed in place of the headstock. Possibilities of feeding back with auxiliary charging device; forward by hand. As a workpiece holder a spiral ring chuck is used with automatic drive, so that a jaw change is necessary in all diameters never, ie all parts are redirected without jaw change.
2 headstocks are mounted on the cross slide, one with the cutting head, the second with the thread rolling head.
Simultaneously driving a motor; stepless speed. The engine is designed for pole-changing the required torque machining task. The cross travel of the X-axis is 500 mm; So that a good operation for setting is possible the Z-axis 1000 mm.
The blank feeder is a blank magazine for the laying of 1 bunch of 50 pieces which must be cut, then a separation is integrated. The feed is 2000 mm long; fixed with a slope.
The prefabricated member is in an identical bunkers. The finished part is stored bunkered 1 bunch a 50 parts prepared so that the surgeon can prevent the collar and remove.
The double gripper of the gantry loader removes the finished parts and loads the blank; thus the loading and unloading time is cumulative.

Processing completed

1. Raw / prefabricated gripper is forward, the holding part in the processing
2. Signal comes from machine finished via M function CNC programmable
3. Auxiliary loader says food to over M function
4. Loader moves to the workpiece delivery position from the machine about 2000mm programmed via third axis Y
5. Loader lowers 100 mm from via M function with pneumatic cylinder
6. Loader opens gripper via M function 2 WIAP HLV gripper

Filed precast

7. Loading device goes with gripper from interference zone 100 to the top;
8. Loader makes rotary motion with finished part FT band set M function of the CNC part is vibrated over previously jogger and skew in the feed, if necessary pushed with synchronous pusher forward
9. Precast storage drives in the 50's filing position if he would stand in the Committee Zone
10. Loading device makes rotary motion to blank gripper receiving position on M function
11. Longitudinal stop tube with 400 mm lifting cylinder presses the workpiece to the longitudinal stop on M function
12. Loader lowers 100 mm from via M function

New blank is added to the Edit

13. 2 longitudinally adjustable gripper to M function capable of monitoring
14. 2 adjustable longitudinally drool lift 100 in the center of rotation on M function
15. Carriage moves forward quickly as the Y axis for all 10 different workpiece lengths
16. Workpiece comes into calculated cone zone for insert speed lowers
17. Workpiece is in the Lang's traveling zone before the end position stops loader by position switch
18. Close M functional lining
19. achieved feed current and switch position OK, clamped workpiece
20. Start editing
21. Processing see enclosed list

Laying overload Committee away

22. In overloading the tool during pre-turning of the feed is interrupted
23. The program is stopped and restarted and the HLV auxiliary loader opens the feed
24. The committee parts storage station moves to the position for the workpiece, which is not ok
25. The HLV brings the workpiece back deposits the Committee
26. The HLV starts again at the position

5 Function sequence description

Figure 1: First, a covenant with foundation raw rods is placed on automation. 50 pieces to 2 tons. Lengths from 1.6 m to 4 meters; ø ø 20 to 40 mm. The threads are peeled and rolled.

Figure 2: Only a few bars are ø 40 x 2.8 meters in length in the bunker front. The new covenant is ø 40 x 2200 mm, rear still tied.

Figure 3: The federal government is cut and without manual use it distributes itself through a special vibration technology. By means of a vibrator WIAP V05 (for workpiece weighing up to 5 tons) the distribution is carried out. The vibrator can be adjustment from 0 up to 750 kg stimulator energy set.

Figure 4: When the collar is cut, is provided with the M function M89, an automatic expiration expansion software that the federal government will smoothly spread by itself.

Figure 5: This is posted 2 pcs. 6 mm allen wrenches. The vibrator WIAP V05 ensures that.

Figure 5a: The eccentric stage can be set with this scale of 0 to 100% .

	Einzel Scheibe	Doppel Scheibe	3D System
	LC05 und MEMV bis 5 To		
RPM	N		
1000	55	110	220
1500	124	248	496
2000	220	440	880
2500	345	690	1380
3000	497	994	1988
3500	676	1352	2704
4000	883	1766	3532
4500	1118	2236	4472
5000	1380	2760	5520
5500	1670	3340	6680
6000	1988	3976	7952
6500	2333	4666	9332
7000	2706	5412	10824

Figure 5b: The information setting at 100% eccentric.

Figure 6: Several gum (100 x 120 x 200) to ensure a good damping, so that no vibrations are passed.

Figure 7: Thanks to the great thickness of the damping rubber is very good. The upper part vibrates, the lower part remains calm.

Figure 7: At the CNC control panel, side, an additional control panel. Here three operating groups for the operator can be selected. But actually, no adjustments are necessary.

Figure 7b: The vibrator V05 can work with three speed levels. M60 stage 1, stage 2 M61 and M63 stage 3. If rods 50 are located on the automation (according piece counter), the V05 vibrates more than if only 10 bars residing on memory. The CNC program searches the zones and automatically jumps into the respective zone where M60 / M61 / M62 are selected. There is also a stepping mechanism, which switches automatically through all speeds, so even with tilted workpieces these are shaken loose.

Figure 8: The blank holder with a 60's cylinder, ensures that a workpiece can migrate controlled forward.

Figure 9: The blank holder waits for blanks.

Figure 10: The blanks come slowly forward. They are held by the blank holder. Only when the two light barriers are operated, the holder can open. This prevents the parts going obliquely through the holder. It may be that more parts are used simultaneously. However, what does not bother, because the structure is designed.

Figure 11: Monitor such 2 light barriers, whether the workpiece is present. Front 500 mm and 1500 mm. The light barriers can be set from 0 to 150 mm sensing zone.

Figure 12: When both light barriers are operated, the blank opens bracket with a cylinder. Includes but immediately when a part which is checked with a single light barrier is gone again.

Figure 12a: The right light barrier is there that the blank flap opens. The left photoelectric switch closes immediately, so not too many pieces roll down at once.

Figure 13: The blank falls on the pre-state position. Although three pieces come together, it does not bother, because the blank claw then makes the final separation. The separation is necessary so that the hook during lowering has no interference contour. Report 2 photocells workpiece in a preliminary location, position exists. The blank claw can only rotate when as both light barriers are operated.

Figure 13a: Here you can see right the light barriers in the pre-state position.

Figure 14: When the workpiece in the preliminary position is position, the blank rotates claw via an M function, the workpiece in the center position.

Figure 14b: The blank claw and claw finished part are driven by two central rods. The basic position is always when they are out of harm's straight down.

Figure 14c: A proximity switch stops the claw when it is down again.

Figure 15: The stock is now in the recording prysma basic position.

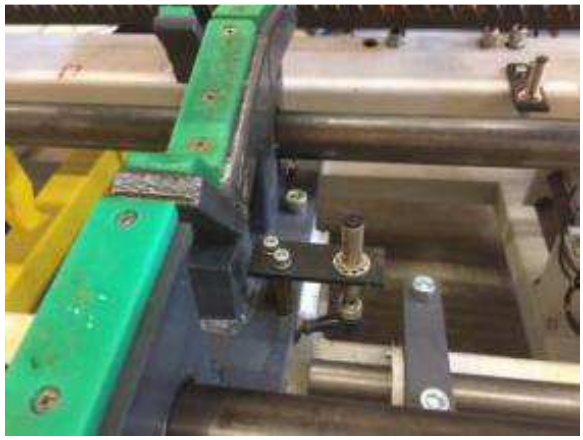


Figure 16: Check the photocells 1 + 2, if a defect is present.

Figure 17: The workpiece pressing device which can be inverted for each rod lengths only with a handle within seconds, now pushes the workpiece forward when the two switches are operated such that a workpiece is present.

Figure 18: The pressers suppressed to the blank on the front switch.

Figure 19: The pressers can solve without screw, are parked in seconds for various workpiece lengths.

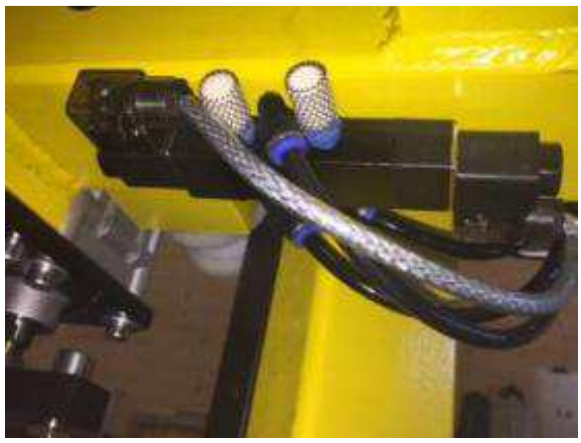


Figure 20: The valve for the movement of the bottom of the HLV. Near the cylinder, so that the movements are more dynamic.

Figure 21: The switch is important for process safety. The blank can be brought to 0.1 mm into the chuck.

Figure 22: The gripper then lowers 150 mm, the grippers that are monitored include.

Figure 23: 2 check photocells if the grippers are up or down.

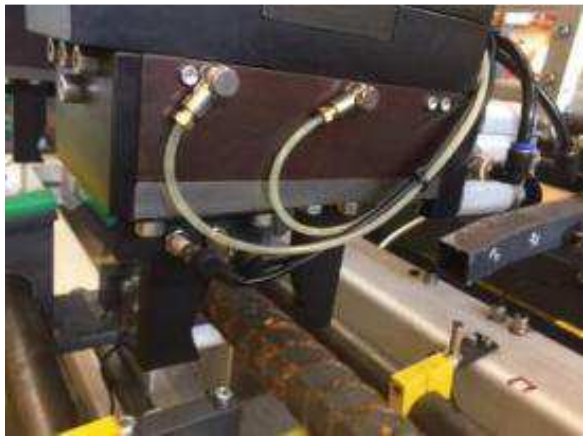


Figure 24: The WIAP grab for 40 kg include self-centering. They are monitored with 4 proximity switch. If no workpiece is present, switch the internal switch and there is an alarm. If ok, the grippers lift back to 150 mm.

Figure 25: Gripper monitoring. Open is checked. Full interior = no workpiece or to and no switch is ok. Both gripper left and right with the same monitoring.

Figure 26: Here, the workpiece is driven into the machine with the HLV loader.

Figure 27: The chuck in the machine is a geared motor which can reach 180 Nm, closed and opened.

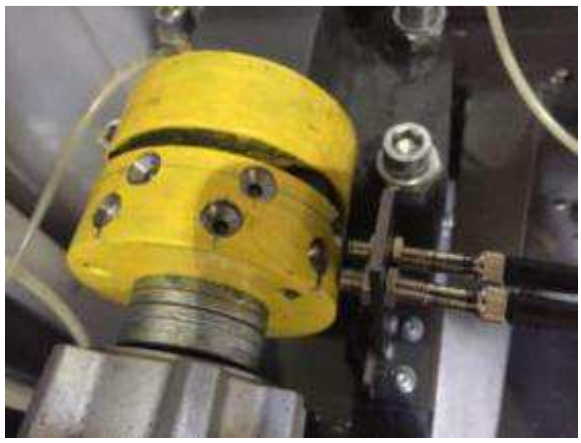


Figure 28: The feed voltage goes with a 180 Nm geared motor. All major elements are force-lubricated. A pulse counter, 8 per revolution, opens the feed; 51 in rapid pulses. That is, 6.3 turn. Thus, the base bar has no collision when she goes in overdrive in the machine. Then it concludes with 45 pulses in rapid traverse, then close slowly. The double switch is used to check whether it rotates forward or backward.

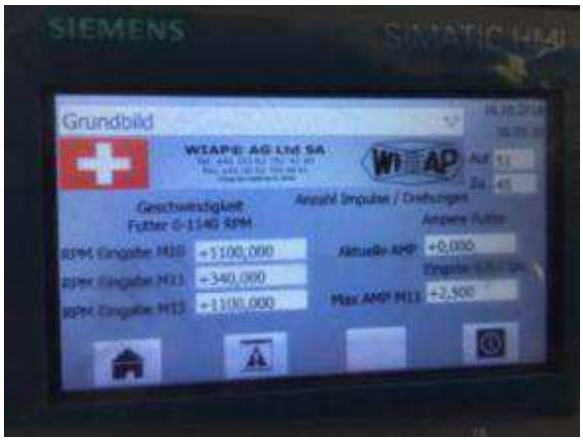


Figure 28a: At the HMI, the speed of the feed can be set for the opening and closing in rapid and creep. We still have the reserve that we could increase the speed to 100 Hz instead of 50 Hz. However, we are 12 seconds ahead of schedule. That is, 3 speeds in the control panel and the pulse number at the top right of the opening and closing in rapid.
In rapid traverse drive onto the workpiece, the chuck firmly clamped so that it can only be opened with the 4-edges key. The tightening torque can be up 180Nm.

Figure 29: Links, positively for the rolling head. Since the position is always the same place, he does not have to be for the different workpieces changed. The rolling head comes from a single source machine of the customer, so this opening system.

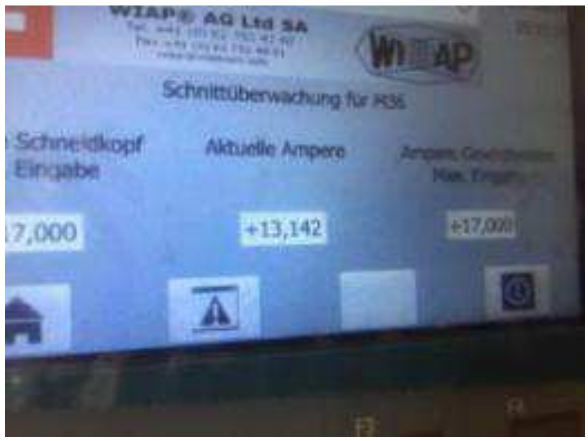


Figure 29a: To peel and rolling there is one tool wear monitoring. A relative, which can be at the end of the cycle stand in front of the tool break the system. The program jumps into the next program and indicates what to do. When the work is done, only the start button can be pressed and the system continues to operate.

Figure 29b: In addition to controlling is the HMI, which is responsible for the M functions, tool wear monitoring, vibrator and feed.

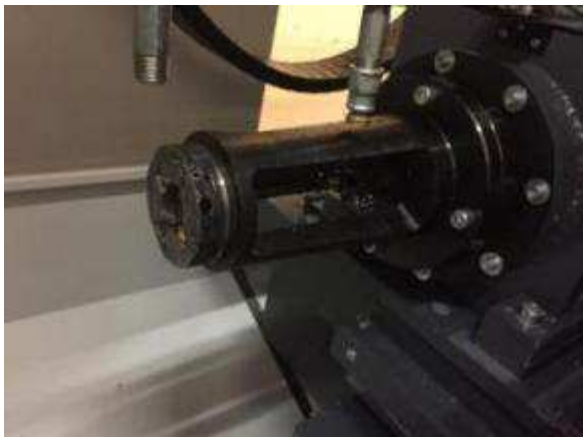


Figure 30: In the machine, the part is clamped with the chuck and then peeled with a 4-blade tool. The tool peels front with 4 plates. Each travels with 0.17 mm feed resulting 0.68 mm per revolution for four plates. Back is still a chamfering who does chamfering the inlet for the roles. He makes a 20° bevel. The chamfering must be respectively set manually for different lengths. The rotation speed is lowered and the feed rate reduced by the factor 0.6, when cutting 7 is engaged simultaneously.

Figure 31: The peeling head is cooled with emulsion M07 peeling head, M08 burnishing head.

Figure 32: The guard reduces the spraying of emulsion in the engine room. Even so the engine above does not require an additional cover.

Figure 33: The amount of water can be adjusted with the tap. The water valve provides the location of the emulsion.

Figure 36: The peeling is a persistent issue. The steel S355 pressed, is very tough. Then these ribs, often quite high, need a robust machine, so that the tools extended period of time have no plate breakage. The front of the spigot, it requires a chamfer with 20 ° or else suffer the rolls at the inlet. The peeling head has integrated this chamfering.

Figure 35: After peeling sees the precast, ready for rolling, like this. Diameter minimum with pitch diameter. It should be noted that parts are magnetic. From time to stay chips, hanging by the magnetism of the part. A guard covers the whole food.

Figure 35b: Feed cover

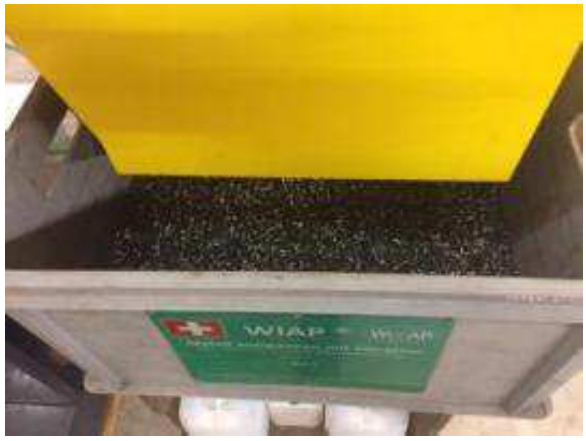


Figure 37: 100 bars give about this chips volume.

Figure 37a: The chip conveyor always only runs for a short distance, so that the chips can drain enough in slope backwards so that no water comes into the chip container. There are always dry chips in the container.

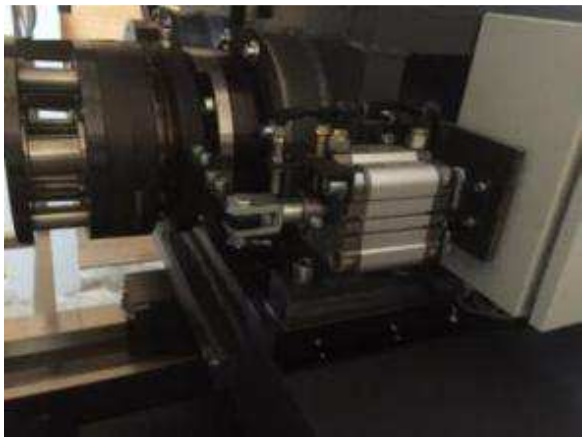


Figure 38: The Rolling head which was pressed previously, is now not closed. A cylinder is the impulse and closes the rolling head over an M function.

Figure 38a: Marking for the surgeon

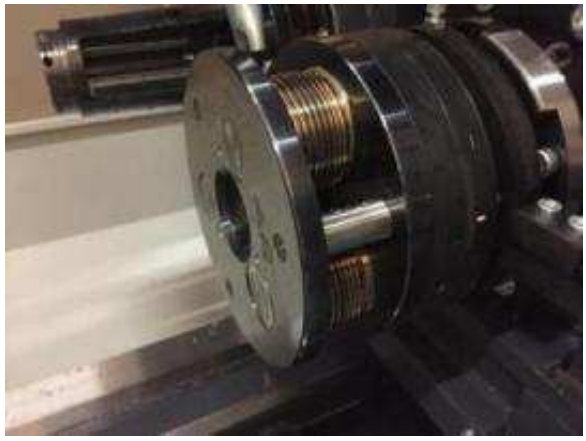


Figure 39: After peeling is rolled with the thread rolling head. The rolling head is pressed back in the lining and closed via an M function before the new rolling. Since the workpiece expands in length when rolling, we need to have the thread pitch at an increased slope of 1%.

Figure 40: Also, the burnishing head is cooled with emulsion; M08 on / M09 from.

Figure 41: The Rolling head can be adjusted to the water flow regulator.

Figure 42: The pushpin next to the feed opening the rolling head mechanically when he reached the front notching position.

Figure 43: The finished workpiece. Here M36x4 180 mm thread length. Bake the beginning to end of thread is always 50 mm. Depending on the length of the thread everything is automatically calculated using parameters. The surgeon has no duty to enter something in the CNC program. Except: thread diameter (for the speed calculation), pitch and length of the thread and the length of the workpiece.

Figure 43: A function flooded the chips away; this has not been programmed here.

Figure 44: Then, the finished part is performed again from the machine with the HLV (auxiliary charging device). The loader lowers the part. Part removal station moves to the horizontal position.

Figure 45: The racks prevents end position, that when the Y axis motor would be removed once and the machine loses the position that no unwanted is possible via the racks driving. The machine does not require a reference point more. You always know where it is, as long as the engine is not removed with the integrated measuring system without marking.

Figure 46: The prefabricated storage must come up to place the finished part.

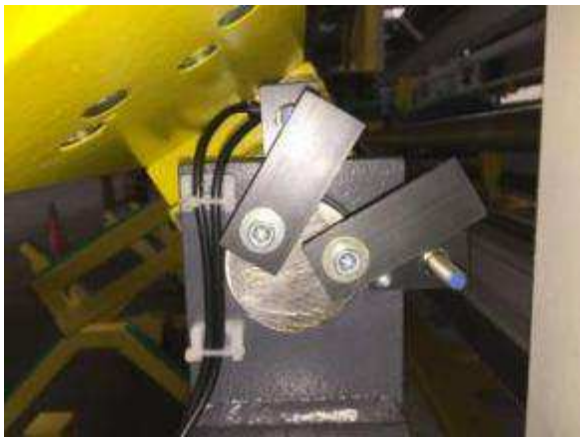


Figure 46: The location of the storage is monitored using two good adjustable limit switches.

Figure 46b: All the movements go over M functions. With air. All valves with intermediate position for a safe emergency stop system.

Figure 46c: This valve block controls the whole automation. Manually movements can be enforced when a valve is not permanently addressed by the control here. Otherwise it gets, push the emergency stop.

Figure 47: The filing "rake" moves up on the CNC program. In the off-time with an M function.

Figure 48: The finished part claw rises upward to the finished part can be intercepted, i.e. uncontrolled fall to the finished parts. The foremost cylinder, thread side, lowers delayed so that the workpiece does not fall onto the thread and being injured thereby.

Figure 49: Then, the finished claw rotates the sprocket left under the protective grid, and places the part away on the finished part deposit, which must be available for these tasks above.

Figure 50: The finished part is lifted with the rotary claws.

Figure 51: The finished part holds the back of the stop.

Figure 52: If the finished part of the photocell is over, it can lower only.

Figure 53: The prefabricated holder lowers slowly, in-cycle and opens below the claw so that the thread side falls down later.

Figure 54: The whole collar is carried out without manual intervention and the prefabricated rear stored in the precast concrete bunker. Again 50 pcs. Then, the machine goes into the hold.
The finished collar can then be removed with the forklift or the crane from the finished part bin. Ideally, the best ever bind right here.

Figure 55: Finished parts thread length 180 mm M36x4. Storage for 50 pcs.

Figure 55: Cylinder 80 mm, diameter 80 push the precast car, depending on the M function in the CNC program into place.

Figure 56: HLV 40 is called the auxiliary charging device 40, for 40 kg Pallet weights. The maximum length of the parts may be 4010 mm.

Figure 57: View of the machine with automatic protection door.

Figure 57: A band filter system ensures that the rust dust the roles of the rolling system does not prevent the long run.

Figure 57b: If the filter is dirty, the water runs slowly and raises the switch.

Figure 57c: Then the filter automatically runs after.

Figure 57d: The chip conveyor has a switch, level up and level down, and automatically pumps the water to the belt filter.

Figure 57e: Entry of water from the conveyor.

Figure 57f: In-band filter is the main pump which supplies the whole machine. If too little water will first give a warning and then the system switches to the stop mode and tells the operator what to do.

Figure 58: Identification of HLV. Identical sign for the machine

Figure 58: The whole area is protected by three guard. Screwed. Nevertheless, with light barriers. Rear view.

Figure 58b: This is the side between HLV and machine panel side.

Figure 58c: This is the side of the electrical cabinet.

Figure 58d: The whole area is secured with horn and stop zones. The chain prevents unwitting third parties come into the danger zone. If someone runs into the stop zone, stop the whole system. There are occasionally people who get too close because they want to touch what they see.

Figure 58e: Blank feeding is also controlled. First the horn zone and 150 mm progresses is shut down with stop the plant. Also here is a chain for outsiders.

Figure 59: Machine during transport to the customer

Figure 60: Automation; machine at the customer

Figure 62: Machine rear view.

Figure 61: Timing of the machine at the customer. The plant is running with the 2.8 meters rod 12 seconds rapidly. And there is the possibility of being 30 seconds faster. But this is not necessary because the equipment is either way too fast.

SBB WIAP DM25 Maschine

Kalkultion zur WIAP DM Maschine, Projekt SBB

Erstellt hpw 11082017, Anpassung 26062018

Pos Nummer	Zeichn Nummer	Benennung	Material	Zugfestigkeit N/mm	Rohlingdurchmesser Durchschnitt	Gewicht der Stange	Gewicht Gebraut kg	Gewinde Steigung	Anzahl Gewinde	Gewinde Rohlingdurchmesser	Gewinde Länge	Total Verrotzten Länge	Anzahl Schnitt + Schneiden	Durchmesser Schnitt	Durchmesser Gewindeteile	Durchmesser Schnitt + Schneiden	Geschwindigkeit	Kraft Fertigkeit mm/s	Kw	Nm	Drehzahl Gewinde Rotate	Kw	Nm	Gewinde Steigung	Einstellungszeit drehen	Nebenzeit OP 1	Bearbeitungszeit collieren	Nebenzeit OP 2	Fertigungsdauer - Zeitstand	Automatisch	Total Sekunden	Total Minuten
1																																	
2	371.10.0105	Fundamentschraube	B500B	600	30/33		30	3,5	5x45	27,65	160	1800	0,6	60	35	837	4	600	3,6	54	372	4,7	120	3,5	25,1	15	7,4	20	21	85	134	2,6
3	371.10.0105	Fundamentschraube	B500B	600	30/33		30	3,5	5x45	27,65	160	2150	0,6	60	35	837	4	600	3,6	54	372	4,7	120	3,5	25,1	15	7,4	20	22	85	155	2,6
4	371.10.0105	Fundamentschraube	B500B	600	36/39,5		36	4	6x45	33,32	180	2200	0,6	60	35	531	4	600	2,5	45	310	5,3	164	4	33,9	15	8,7	20	22	85	165	2,7
5	371.10.0105	Fundamentschraube	B500B	600	36/39,5		36	4	6x45	33,32	180	2500	0,6	60	35	531	4	600	2,5	45	310	5,3	164	4	33,9	15	8,7	20	23	85	166	2,8
6	371.10.0105	Fundamentschraube	B500B	600	36/39,5		36	4	6x45	33,32	180	2800	0,6	60	35	531	4	600	2,5	45	310	5,3	164	4	33,9	15	8,7	20	24	85	167	2,8
7	371.10.0105	Fundamentschraube	B500B	600	36/39,5		36	4	6x45	33,32	180	3300	0,6	60	35	531	4	600	2,5	45	310	5,3	164	4	33,9	15	8,7	20	25	85	168	2,8
8	371.10.0105	Fundamentschraube	B500B	600	36/39,5		36	4	6x45	33,32	180	4200	0,6	60	35	531	4	600	2,5	45	310	5,3	164	4	33,9	15	8,7	20	28	85	170	2,8
9	382.00.09	Gestänge Nachspannpme	St37	510	20	4,3	20	2,5			55	1610	0,6	60	35	955	3	600	6,1	61	557	3,3	57	2,5	5,8	15	2,4	20	21	85	129	2,1
10	382.00.09	Gestänge Nachspannpme	St37	510	20	4,93	20	2,5			55	1060	0,6	60	35	955	3	600	6,1	61	557	3,3	57	2,5	5,8	15	2,4	20	21	85	130	2,2
11	382.00.09	Gestänge Nachspannpme	St37	510	20	6,1	20	2,5			55	2410	0,6	60	35	955	3	600	6,1	61	557	3,3	57	2,5	5,8	15	2,4	20	23	85	131	2,2
12	382.00.09	Gestänge Nachspannpme	St37	510	20	7,33	20	2,5			55	2640	0,6	60	35	955	3	600	6,1	61	557	3,3	57	2,5	5,8	15	2,4	20	24	85	132	2,2
13	382.00.09	Gestänge Nachspannpme	St37	510	20	8,8	20	2,5			55	3500	0,6	60	35	955	3	600	6,1	61	557	3,3	57	2,5	5,8	15	2,4	20	26	85	134	2,2
14	382.00.09	Gestänge Nachspannpme	St37	510	20	10,3	20	2,5			55	4010	0,6	60	35	955	3	600	6,1	61	557	3,3	57	2,5	5,8	15	2,4	20	27	85	135	2,3
15	222.91.4301	Anschweissende	S235	510	20	2	27	2,5			190	450												2,5						18			
16	222.91.4301	Anschweissende	S355	510	36	2,91	36	4	3x45		120	300																		17			

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Figure 63: The processing time calculation of all workpieces for this machine.

The 2.8 meter workpiece M36x6 was calculated: 02.08 minutes = 2.48 minutes. It required 2.5 min (2.3). Available sufficient reserve that could be run under 2 minutes.

6 Processing time calculation

SBB WIAP DM2S Maschine

Kalkultion zur WIAP DM Maschine, Projekt SBB

Erstellt hpw 11082017, Anpassung 26062018

Pos Nummer	Zeichn Nummer	Werkstück Name	Material	Zugfestigkeit N/mm	Rohdurchmesser Durchschnitt	Gewicht der Stange	Gewinde Grösse M	Gewinde Steigung	Fase am Gewinde	Gewinde Rolldurchmesser	Gewinde Länge	Total Werkstück Länge	Vorschub Schälen 4 Schneiden	Schnittmeter Schälen	Schnittmeter Gew Rollen	Drehzahl Schälen 4 Schneiden	Spantiefe	Stahl Festigkeit/mm2	Kw	Nm	Drehzahl Gewinde Rollen	Kw	Nm	Gewinde Steigung	Berabeitungszeit drehen	Nebenzeit OP 1	Berabeitungszeit rollieren	Nebenzeit OP 2	Längenabhängige Zusatzzeit	Automation	Total Sekunden	Total Minuten
1																																
2	371.10.0105	Fundamentschraube	B500B	600	30/33		30	3,5	5x45	27,65	160	1800	0,6	60	35	637	4	680	3,6	54	372	4,7	120	3,5	25,1	15	7,4	20	21	65	154	2,6
3	371.10.0105	Fundamentschraube	B500B	600	30/33		30	3,5	5x45	27,65	160	2150	0,6	60	35	637	4	680	3,6	54	372	4,7	120	3,5	25,1	15	7,4	20	22	65	155	2,6
3	371.10.0105	Fundamentschraube	B500B	600	36/39,5		36	4	6x45	33,32	180	2200	0,6	60	35	531	4	680	2,5	45	310	5,3	164	4	33,9	15	8,7	20	22	65	165	2,7
4	371.10.0105	Fundamentschraube	B500B	600	36/39,5		36	4	6x45	33,32	180	2500	0,6	60	35	531	4	680	2,5	45	310	5,3	164	4	33,9	15	8,7	20	23	65	166	2,8
4	371.10.0105	Fundamentschraube	B500B	600	36/39,5		36	4	6x45	33,32	180	2800	0,6	60	35	531	4	680	2,5	45	310	5,3	164	4	33,9	15	8,7	20	24	65	167	2,8
5	371.10.0105	Fundamentschraube	B500B	600	36/39,5		36	4	6x45	33,32	180	3300	0,6	60	35	531	4	680	2,5	45	310	5,3	164	4	33,9	15	8,7	20	25	65	168	2,8
6	371.10.0105	Fundamentschraube	B500B	600	36/39,5		36	4	6x45	33,32	180	4200	0,6	60	35	531	4	680	2,5	45	310	5,3	164	4	33,9	15	8,7	20	28	65	170	2,8
7	382.00.09	Gestänge Nachspanngew	St37	510	20	4,3	20	2,5			55	1610	0,6	60	35	955	3	680	6,1	61	557	3,3	57	2,5	5,8	15	2,4	20	21	65	129	2,1
8	382.00.09	Gestänge Nachspanngew	St37	510	20	4,93	20	2,5			55	1860	0,6	60	35	955	3	680	6,1	61	557	3,3	57	2,5	5,8	15	2,4	20	21	65	130	2,2
9	382.00.09	Gestänge Nachspanngew	St37	510	20	6,1	20	2,5			55	2410	0,6	60	35	955	3	680	6,1	61	557	3,3	57	2,5	5,8	15	2,4	20	23	65	131	2,2
10	382.00.09	Gestänge Nachspanngew	St37	510	20	7,33	20	2,5			55	2640	0,6	60	35	955	3	680	6,1	61	557	3,3	57	2,5	5,8	15	2,4	20	24	65	132	2,2
11	382.00.09	Gestänge Nachspanngew	St37	510	20	8,6	20	2,5			55	3500	0,6	60	35	955	3	680	6,1	61	557	3,3	57	2,5	5,8	15	2,4	20	26	65	134	2,2
12	382.00.09	Gestänge Nachspanngew	St37	510	20	10,3	20	2,5			55	4010	0,6	60	35	955	3	680	6,1	61	557	3,3	57	2,5	5,8	15	2,4	20	27	65	135	2,3
13	222.91.4301	Anschweissende	S235	510	20	2	27	2,5			190	450												2,5					18			
14	222.91.4301	Anschweissende	S355	510	36	2,31	36	4	3x45		120	300																	17			

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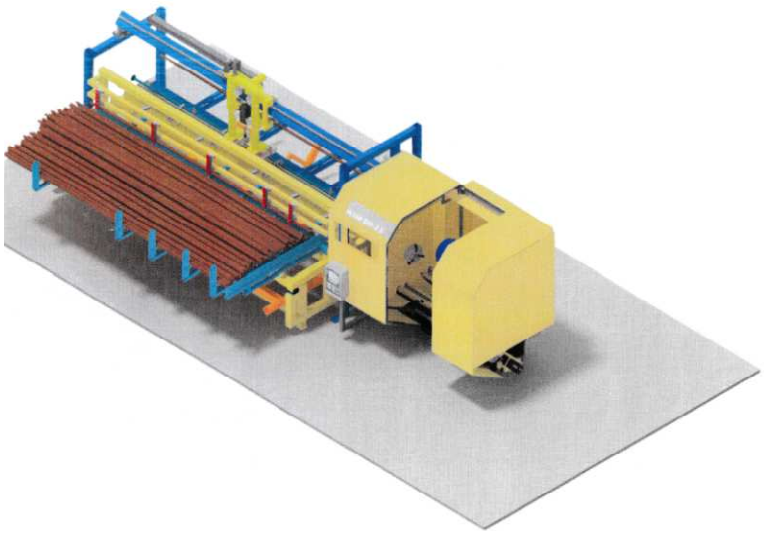
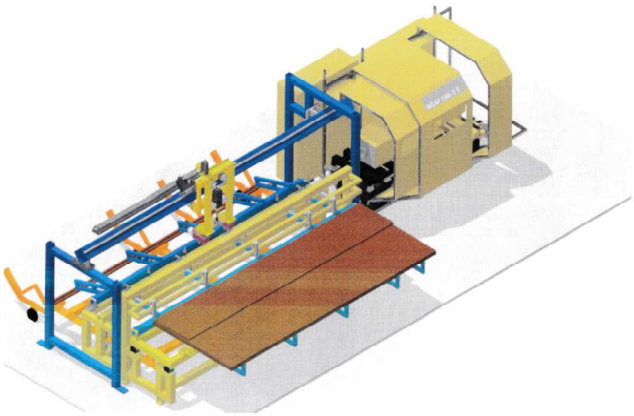
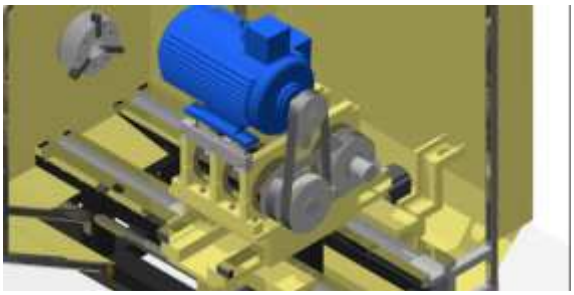


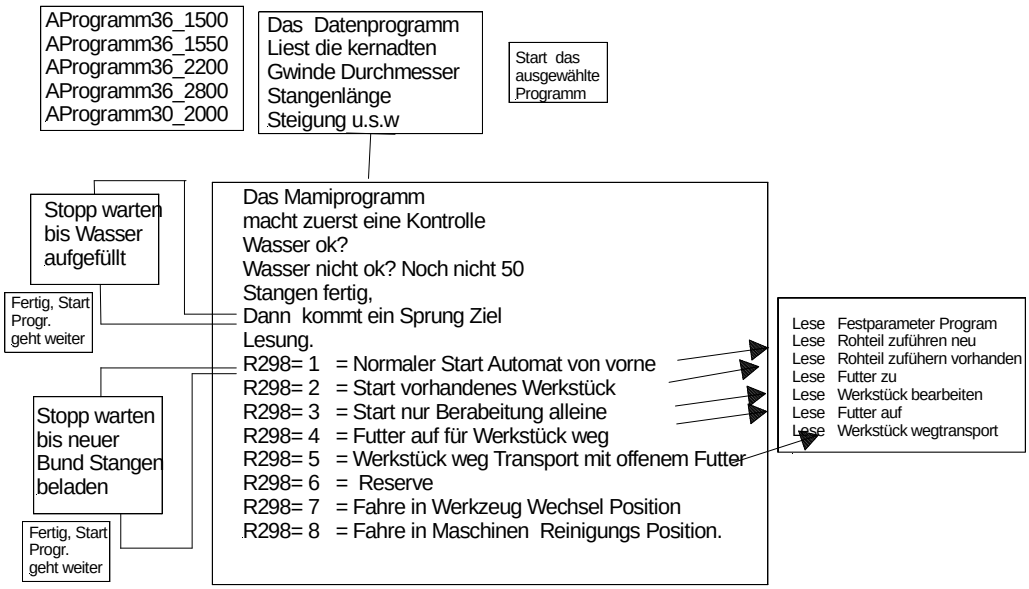
7 Module Description:

BG00 = Compilation
BG01 = Machine bed
BG02 = Spindle feed console bracket
BG03 = Z carriage
BG04 = X carriage
BG05 = Main drive
BG06 = Z drive
BG07 = X drive
BG08 = Workpiece holder feed
BG09 = Shuttering
BG10 = Guides
BG 15 = Pneumatic
BG16 = Lubrication
BG 17 = Tool
BG19 = Chip conveyor coolant supply
BG20 = HLV auxiliary loader
BG21 = Material and routing, Automation
BG24 = Stamping
BG 26 = Grid protective device
BG30 = Siemens
BG31 = Electrical material





8 Program flow description WIAP DM3S:



Jim Peter and Sven Widmer occasion of the successful final acceptance by the customer.
(Oct 2018)

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