



Operating Manual CM16 Maintenance Book

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8. Maintenance

8.1. Warning and Notes

**NOTE:**

In principle, the maintenance is divided into intervals of 8, 40, 160 and 1920 hours, which corresponds to 1 day, 1 week, 1 month and 1 year of single-shift operation.

**WARNING:**

The main switch must always be switched off and be secured in this position before you start any maintenance work!

**NOTE:**

Please observe this maintenance plan and follow it exactly! Good maintenance will pay you back through the increased service life of the machine!

**NOTE:**

The CM16 must be completely lubricated by hand. They do not have a central lubrication as a standard!

8.2. Maintenance Interval – 8 hours (1 day or 1 shift)

8.2.1. General Information


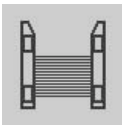
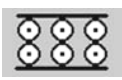
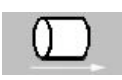



The machine should be cleaned daily. Use a cloth for this, and a detergent that is not too oily (for example, petrol).



ATTENTION:

Welding rollers, profiling rollers and wire transport pulleys of the chopper must not be cleaned with oily materials, but must only be cleaned "dry".

8.2.2. List of Tasks for Maintenance Interval – 8 hours (1 day or 1 shift)

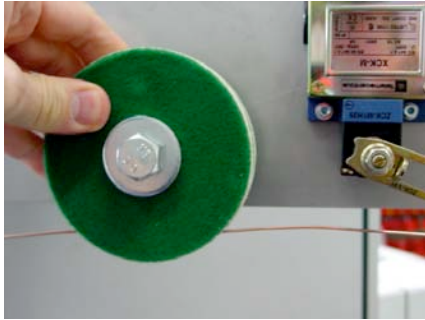
Wire Drive		Checking the wire cleaning wheels <input type="checkbox"/> Cleaning of the guiding wheels <input type="checkbox"/> Checking the wire width <input type="checkbox"/> Checking the tin indent <input type="checkbox"/> Cleaning the chopper wheels <input type="checkbox"/>
Feeder		General cleaning <input type="checkbox"/>
Rollforming machine		Checking the roller clearance <input type="checkbox"/> General cleaning <input type="checkbox"/>
Canbody Transportation and Guidance		Cleaning the linear guides <input type="checkbox"/> Cleaning the tool <input type="checkbox"/> Check the transport belt <input type="checkbox"/>
Welding		Cleaning the welding rollers /grooves <input type="checkbox"/> Tear off seam quality check <input type="checkbox"/> Overlap check <input type="checkbox"/>
Pneumatics / Cooling		Checking the welding pressure <input type="checkbox"/> Check of the wire tension <input type="checkbox"/> Check the air distributor and oiler <input type="checkbox"/> Check and clean the fine filter <input type="checkbox"/>
Miscellaneous		Checking the error memory <input type="checkbox"/> Reporting anything unusual <input type="checkbox"/>

Signature of the supervisor

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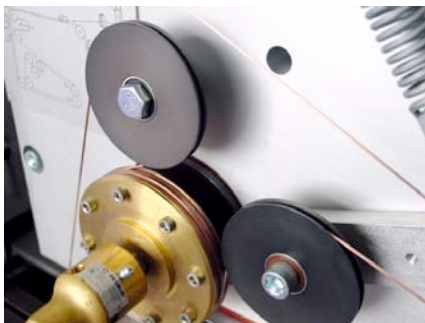
8.2.3. Wire Drive

Checking the wire cleaning wheels



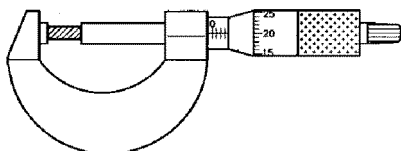
Turn the wheels of the wire cleaning through one quarter of a turn.

Cleaning of the guiding wheels



Clean the wheels of the wire guidance.

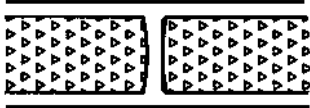
Checking the wire width



Important: Always measure only the wire widths with the supplied micrometer.

NOTE:
For the table of the respective wire widths, please refer to Chapter 7.2.

Checking the fin indent



Check the fin indent on the inner and outer side of the wire. They should have a separation of 1 – 2 mm.

NOTE:

You can find further information in Chapter 7.11.

Cleaning the chopping wheels



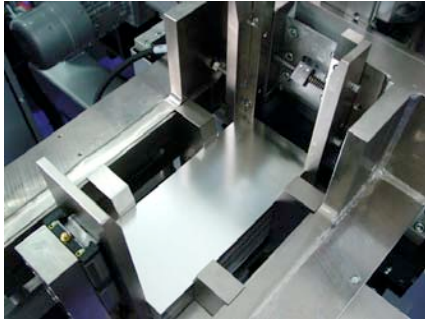
Use the small brush that was delivered with the machine and clean the transport wheels of the chopper. The transport wheels are the upper pair of wheels.

**ATTENTION:**

Never use compressed air in the vicinity of the roller bearings (this also includes the linear guides) !

8.2.4. Feeder

Cleaning



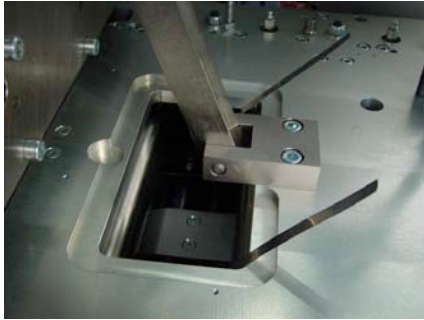
Clean the feeder.

NOTE:

Here you can use compressed air, but only to a max. of 2 bar pressure! Wear glasses!

8.2.5. Rollformer

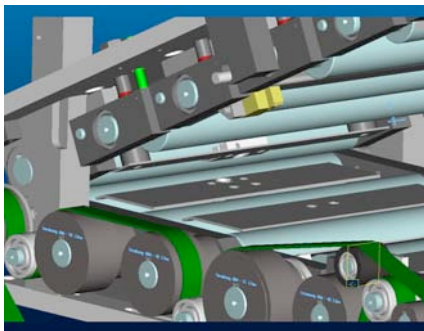
Checking the roller clearance



Check the roller clearance from the first to the last roller pair.

NOTE:
See Chapter 7.5.

Cleaning the rollformer

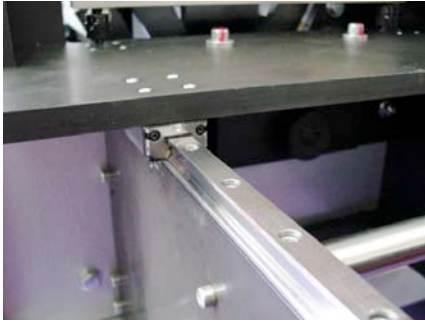


Open the rollformer and clean the rollformer with a dry, clean cloth.

NOTE:
Please do not use compressed air!

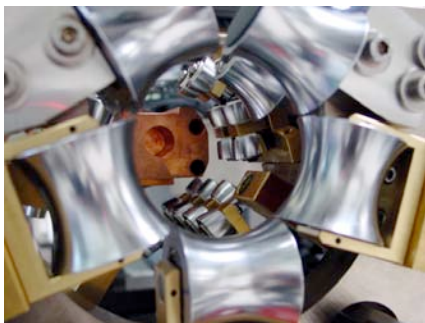
8.2.6. Canbody Transportation and Guidance

Cleaning the linear guides



Use an oily cloth for this and clean the complete length of the rail or use a dry cloth to remove the dirt.

Cleaning the tool



Clean the rollers of the pre-calibration and the Diabolo rollers.

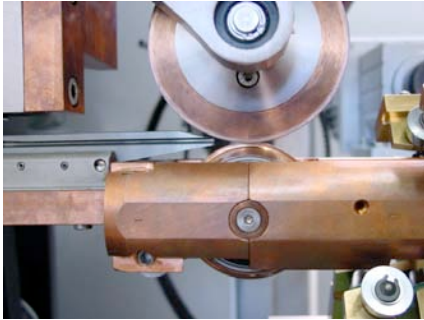
Check the transport belt



Check the fingers and the inner and outer transport belt for damages and wear.

8.2.7. Welding

Cleaning the welding rollers



Check the groove of the rollers and/or the surface of the rollers. Clean the rollers in the welding zone with a cloth, and with a brush if necessary.

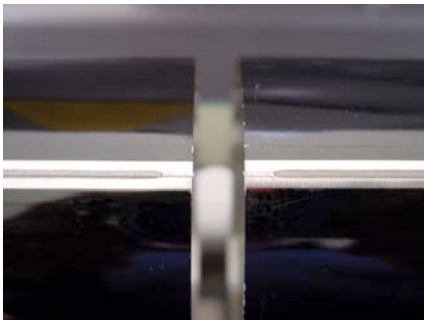
Tear off seam quality check



Check the welded can. Use the supplied tool to do this, or use the ball tester.

NOTE:
Refer to Chapter 6.3. and 7.10. for more details.

Overlap check



Carry out an overlap check.
Refer to Chapter 6.7. for notes.

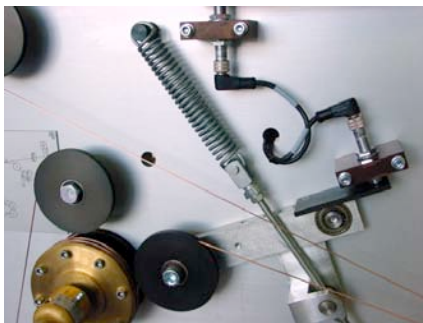
8.2.8. Pneumatics / Cooling

Checking the wire tension pressure gauge

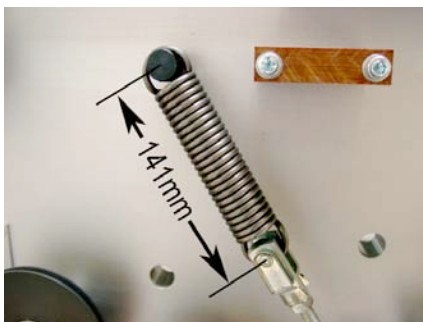


The pressure controller for the wire tension (with pressure gauge) after the wire profiling unit has to be adjusted on 1,8 - 2,0 bar.

NOTE:
Further information can be found in Chapter 5.2.



Check the wire tension in the wire loop.
(only Type CM 16 – 200).



The setting for the distance: 141mm
(measured without wire).



Check the pressure gauge of the wire loop of the type CM 16 – 300/400.
Correct pressure setting: 2 bar

Checking the welding pressure



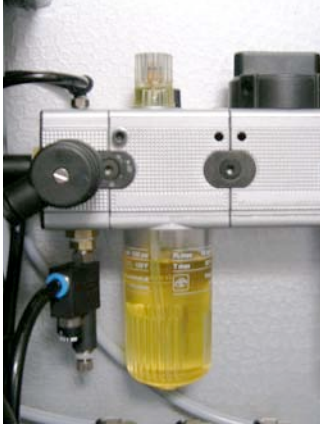
Check the welding pressure on the pressure gauge (manometer).
The setting pressure should be between 2.5 – 3.0 bar (resp. 41 – 49 daN).

Checking the air distributor



Check the air distributor and empty it if there is water in the glass container.

Checking the oiler (if present)



Check the amount of oil in the oil container. If necessary, fill the oil container up to the max. marking with „Tellus 27“ from Shell or a similar oil.

**NOTE:**

If the oil consumption exceeds 1 cm /8 hours of full production, the setting screw must be screwed further into the valve (clockwise).

Checking and cleaning the fine filter



Screw the fine particle filter out of its housing and replace it.



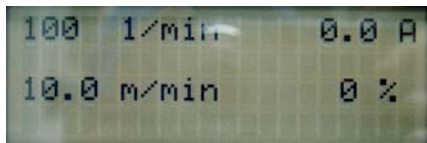
Replace the filter as soon as the water pressure falls below set value of the pressure switch S120.

NOTE:

The fine filter is only needed for HG-free PowerRoll™ welding rollers.

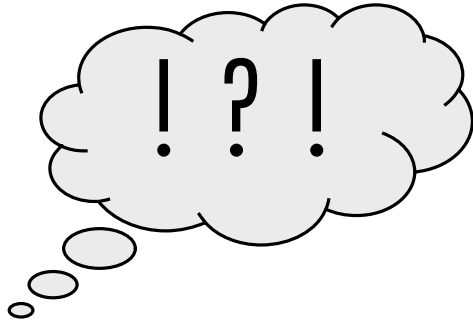
8.2.9. Miscellaneous

Checking the error memory



Check the error memory and report the error messages to your manager (at least those that you regard as unusual).

Unusual incidents



If you notice anything unusual, you must always report this to your superiors.

8.3. Maintenance Interval – 40 hours (1 week / 5 days or 5 shifts)


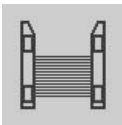
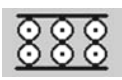
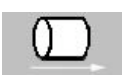



8.3.1. General Information



NOTE:

All the following work is to be carried out in addition to the daily maintenance work.

8.3.2. List of Tasks for Maintenance Interval – 40 hours (1 week / 5 days or 5 shifts)

Wire Drive		Cleaning the wire profiling unit <input type="checkbox"/> Checking belt tension and profiling unit <input type="checkbox"/> Lubrication of the profiling unit (5 loc.) <input type="checkbox"/> Lubrication of the chopper unit (3 loc.) <input type="checkbox"/> Clearance of the chopper wheels <input type="checkbox"/>
Feeder		Check oil level of the vacuum pump <input type="checkbox"/> Lubrication (2 locations) <input type="checkbox"/>
Rollforming machine		Lubrication (2 x 14 locations) <input type="checkbox"/> Checking the roller clearance <input type="checkbox"/> Checking the belt tension <input type="checkbox"/>
Canbody Transportation and Guidance		Lubrication (total of 10 locations) <input type="checkbox"/> Checking the tool <input type="checkbox"/> Inspection of the Diabolo rollers <input type="checkbox"/> Checking the nose- headpiece <input type="checkbox"/>
Welding		Checking the welding rollers <input type="checkbox"/> Check the belt of the pendulum head <input type="checkbox"/>
Pneumatics / Cooling		Check the seals of the water circulation <input type="checkbox"/> Check the seals of the pneumatic circuit <input type="checkbox"/> Check the level of the cooling water <input type="checkbox"/>
Miscellaneous		Lubrication of the conveyor belt (4 x 4 locations) <input type="checkbox"/> Functional check of the safety switches <input type="checkbox"/> Checking the covers <input type="checkbox"/> Cleaning the machine <input type="checkbox"/>

Signature of supervisor

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8.3.3. Wire Drive

Cleaning the wire profiling unit

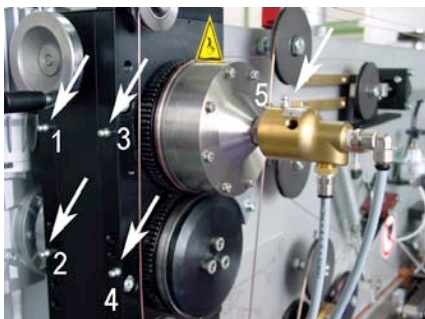


Clean the carbide steel surfaces of the wire-profiling unit. Check with your fingernail whether „tyre effects“ are already present.

Lubrication of the wire profiling unit



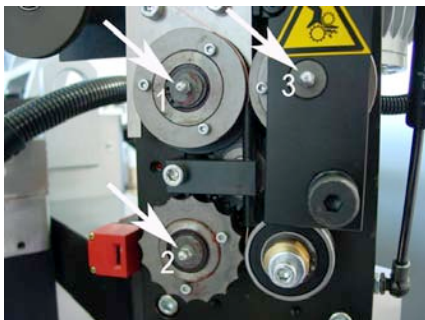
Make use of the supplied grease gun. The complete machine should be lubricated on a weekly basis.



5x

First of all, lubricate the 5 grease nipples on the wire-profiling unit with two shots of lubricant.

Lubrication of the wire chopper



3x

Wire chopper:
Inject grease from the supplied grease gun into the 3 grease nipples. 2-3 grease shots will be sufficient.

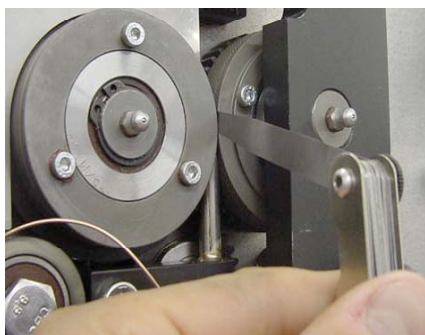


Apply a little grease to the flanks of the gears.



ATTENTION: Ensure that you do not grease the area that comes into contact with the copper wire!

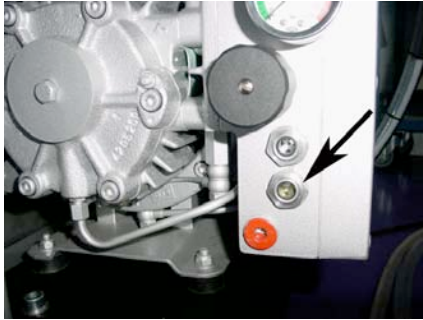
Clearance of the chopper wheels



Check the clearance between the transport rings according to the table in Chapter 7.3.

8.3.4. Feeder

Check oil level of vacuum pump:



Check the oil level window of the vacuum pump.

NOTE:

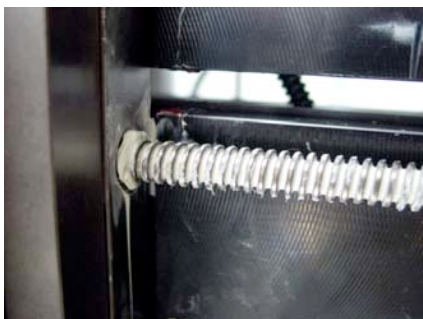
Further information can be found in the manual of the company „Rietschle“.

Lubrication



1x

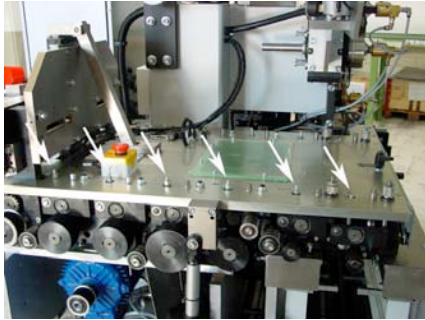
Inject grease from the supplied grease gun into the grease nipples of the two guide carriers, 2 shots are sufficient.



Apply a little grease to the spindle of the hand wheel adjustment.

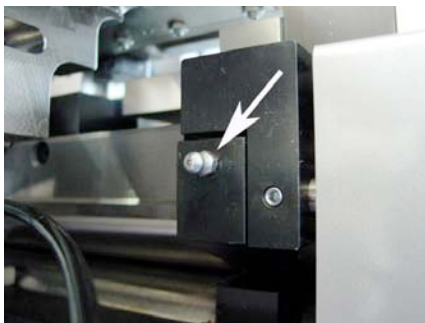
8.3.5. Rollformer

Lubrication



12x

12 of 14 grease nipples for the upper rollers are mounted on the upper side. 6 nipples are located on rollformer outside (arrows) and 6 on the opposite side.

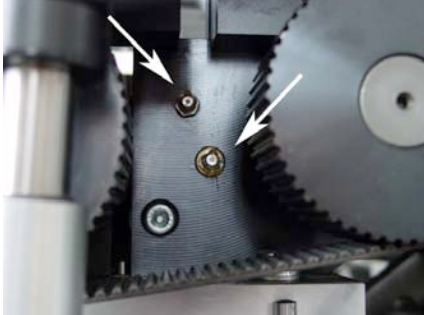


2x

The remaining 2 nipples of the first, upper roller pair are more difficult to find (arrow – nipple on righthand side).



Apply 2-3 shots of grease to each grease nipple on the upper roller using the grease gun.



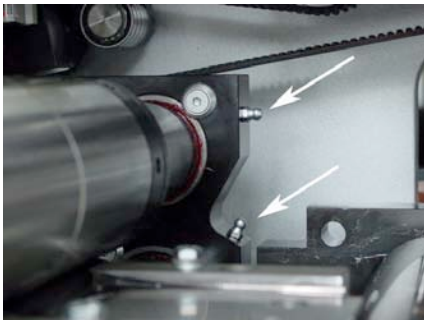
12x

All 12 grease nipples for the lower roller are mounted on the outside. At the top, the grease is applied to the bearing via a tube, i.e., guided to the opposite side, directly underneath.



2x

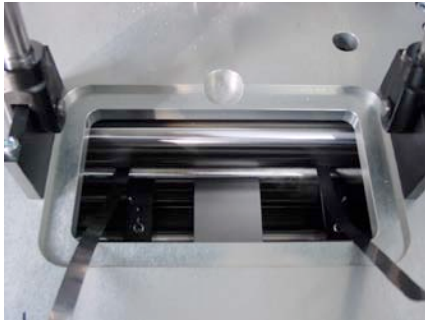
The grease nipple for the lower front roller pair (left and right).



2x

Scoring unit (optional):
If you have a scoring unit, lubricate the two grease nipples on the inner side of the rollformer.

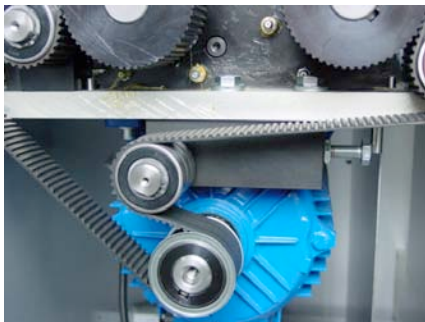
Roller clearance:



Check the roller clearance of all roller pairs.
(Picture shows a CM X1 welder).

NOTE:
See Chapter 7.5. for more details.

Belt tension

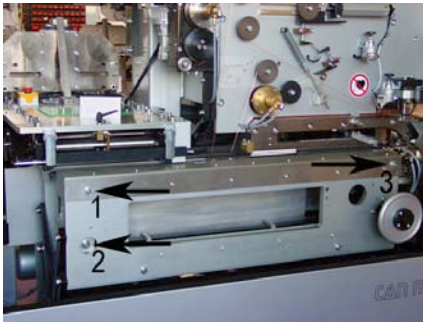


Check the condition and the tension of the
inner and outer belt of the rollformer.

NOTE:
See also Chapter 7.5.

8.3.6. Canbody Transportation and Guidance

Lubrication



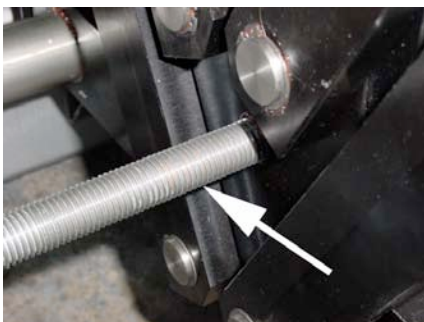
6x

Body transport belt:

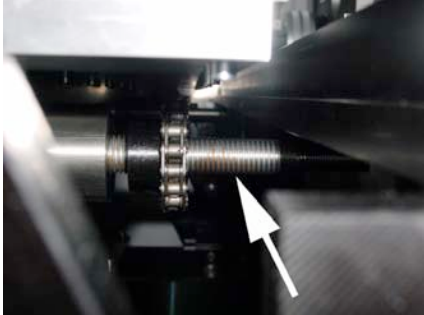
The two body transport belts have each 3 grease nipples on their pulleys (arrows showing the outside ones). Those should be lubricated with two shots of grease on a weekly basis.



One out of the three nipples at the inside.



Apply some grease on the spindle of the canbody carrier (longitudinal travel direction).



Apply also some grease on the spindle below the canbody carrier (for width adjustment).

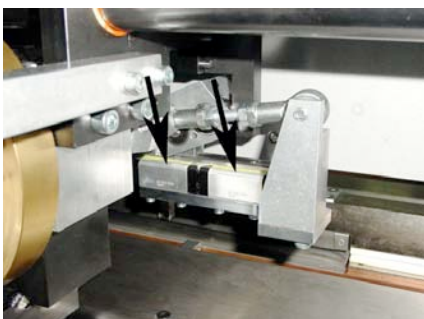
Lubricate the linear guides of the tooling plate



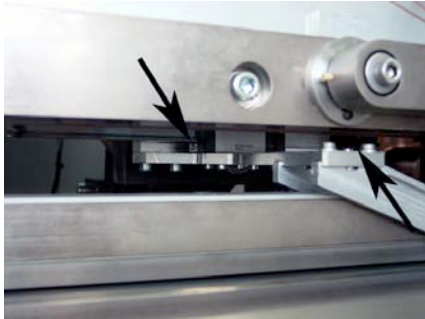
2x

Those two grease nipples on either linear guide should be lubricated with two shots of grease on a weekly basis.

Lubricate the linear guide of the Synchrostar (Canbody Advance)



The two carriers of the linear guide.
(Picture taken from the back of the machine)



2x

The two grease nipples, view and access from the front. Those should be lubricated with two shots of grease.

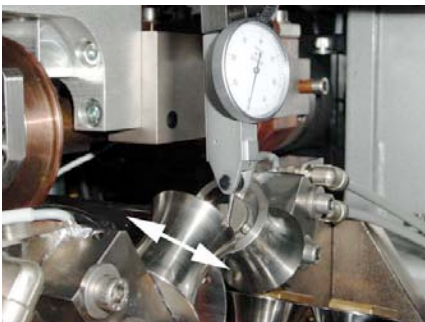
Checking the tool with the setting mandrel



Check the tool with the setting mandrel. All rollers should be free to turn.

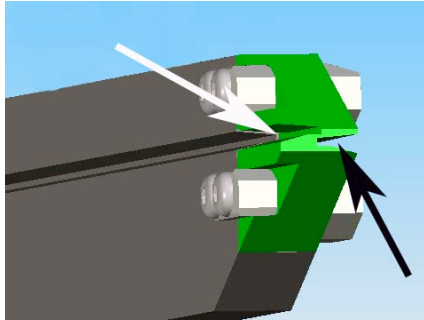
NOTE:
See Chapter 7.6.2.

Checking the diabolo rollers



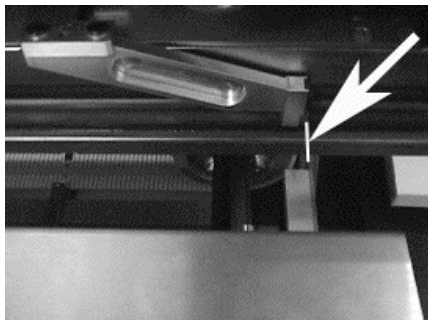
Check the radial clearance of the upper Diabolo rollers.
(The illustration shows an X1 machine)

Checking the nose- /headpiece



Check the “Z-bar grooves” for wear. Use a suitable light source for this, and a magnifying glass.
(The illustration shows a nose-/headpiece of a X1 machine)

Check the synchronisation

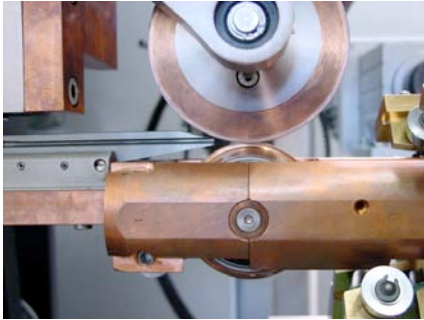


Check the three reference positions. The picture shows reference position 3.

NOTE:
Refer to Chapter 7.8.1. for more details.

8.3.7. Welding

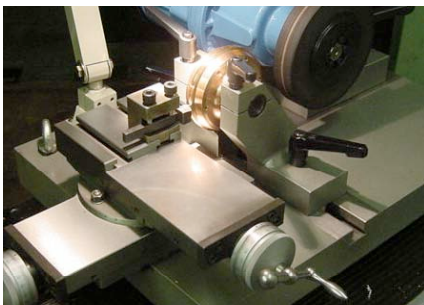
Checking the welding rollers



Check the wire grooves of the rollers and the corresponding edges of the same. Pay special attention, that the grooves are not crooked.



If the groove for the welding wire is run-in, worn or mechanically damaged, you must re-turn the corresponding profile with the supplied engraving tool.



NOTE:
To do this, use our Type CM 91 roller turning equipment.

Check the belt tension of the pendulum head



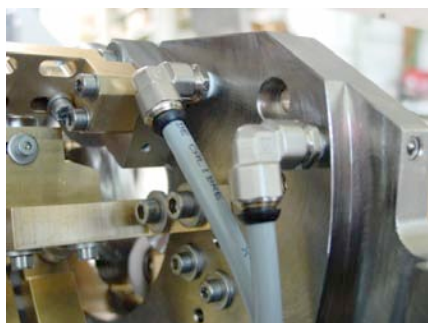
Check the belt tension of the pendulum head.



Undo the four M8 screws, and pull the motor unit to tighten the belt.

8.3.8. Pneumatics / Cooling

Checking the water circuit for leaks

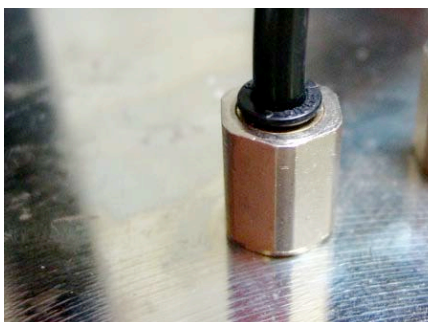


Check after production, that there are no leaks in any of the water lines. Look out for wet patches on the floor and correct any leakages found.



NOTE:
All lines that carry water are coloured grey, while all pneumatic lines are black.

Checking the pneumatic circuit for leaks



Check that there are no leaks anywhere in the air lines, and correct any leakages found.

Cooling water level



Check that the water level in the cooling unit is between the two arrows, and top up with water if necessary.

NOTE:

Also refer to the operating instructions of the cooling unit.

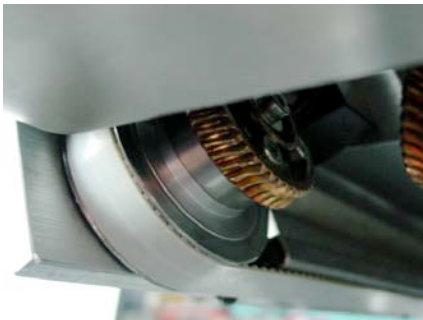
8.3.9. Miscellaneous

Conveyor belt lubrication



4x

Apply two shots of grease to each of the 2 grease nipples to the left and right.



Also apply a little grease to the two worm gears (screw drives) that are accessible from the bottom.

Safety switch



Check the function of safety switch (S 60.4) for the sliding door. The machine may not produce while the sliding door is open.

Covers



Check that all the protective covers are properly in place and tightened.


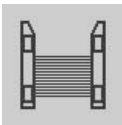
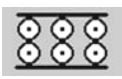




Cleaning the machine



Keep the machine clean, therefore use our provided finish and cleaning set.

8.4. Maintenance Interval – 160 hours (1 month / 20 days or 20 shifts)

8.4.1. List of Tasks at Maintenance Interval – 160 hours (1 month/20 days or 20 shifts)

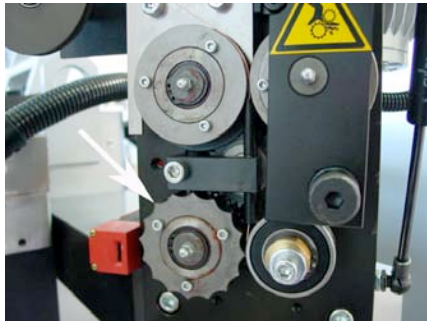
Wire Drive		Check cutting blade of the chopper <input type="checkbox"/> Check the wear on the chopper <input type="checkbox"/> Replace the wire cleaning wheel <input type="checkbox"/>
Feeder		Check the suction filter <input type="checkbox"/> Check the wear of the suction cap <input type="checkbox"/>
Rollforming machine		Check the double sheet function <input type="checkbox"/> Check wear at downholding and rollforming wedge <input type="checkbox"/>
Canbody Transportation and Guidance		Check fingers/dogs of the belt <input type="checkbox"/> Check the belt tension <input type="checkbox"/>
Welding		Check the welding geometry <input type="checkbox"/>
Pneumatics / Cooling		Check the cooling water <input type="checkbox"/> Clean the coarse filter <input type="checkbox"/> Check the flow monitor <input type="checkbox"/>
Miscellaneous		Check the conveyor belt <input type="checkbox"/>

Signature of the supervisor

..... ☐

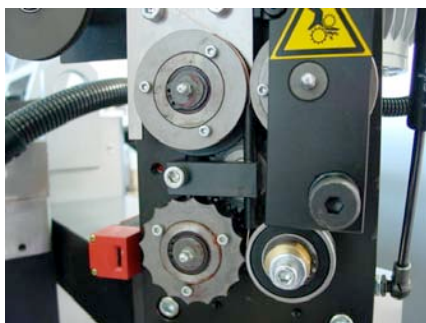
8.4.2. Wire drive

Check cutting blade of the chopper:



Check the position of the counter bearing at the chopping station and the condition of the cutting blade. Each individual blade should slightly touch the counter bearing and a relatively even sound should be audible when the wire chopper runs empty (i.e., without wire).

Checking for wear on the chopper:



Check the gear wheels and the transport wheels of the chopper for wear or damage.

Replace the wire cleaning disk:



Replace the wire cleaning disks.

CM Article No. 000221

8.4.3. Feeder

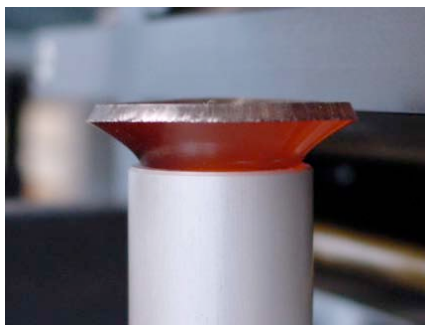
Filter checks:



Check the suction filter(s) and replace it/them if necessary.

CM Article No. 003636

Check wear of suction caps:



Check the suction caps for wear. Replace them if necessary.

CM Article No. 000109 (ø 50 mm)

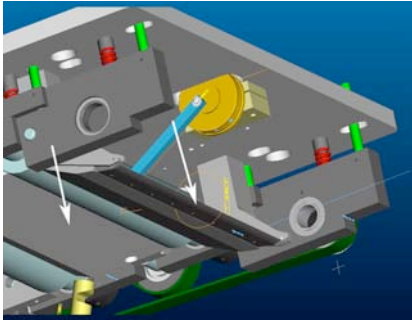
8.4.4. Rollformer

Test the double sheet function:



Check the double sheet function.

Check wear at downholding and bending wedge:



Check wear at downholding and bending wedge.

CM Art No. 000339 downh. wedge 260mm

CM Art No. 000398 downh. wedge 350mm

CM Art No. 000329 bending wedge 260mm

CM Art No. 000375 bending wedge 350mm

8.4.5. Canbody Transportation and Guidance

Check the fingers/dogs:



Check whether the dogs/fingers of the canbody belts are at right angle to the running direction.

CM Article No. 002535 (pair)

Check the belt tension of the canbody transport:



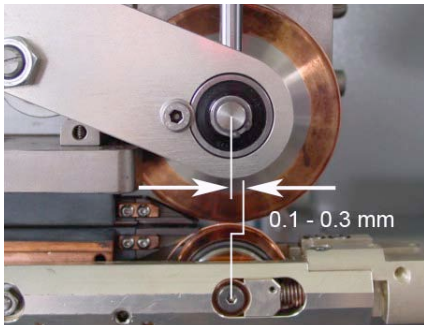
Check the tension and condition of the belts of the carrier drives. The white arrow shows you where you can adjust the tension of the outside belt. The inner belt has the same feature.

NOTE:

For more details refer to Chapter 7.8.2.

8.4.6. Welding

Checking the welding geometry



Check the welding geometry.

With machines that weld WIMA seams, the electrode wheels must be located exactly over one another. The allowed misalignment of the wheels in relationship to the welding direction is 0.1 – 0.3 mm.

8.4.7. Pneumatics / Cooling

Checking the cooling water



Check the cooling water, and replace all of it.

NOTE:

Refer also to the operating instructions of the cooling unit.

Checking and cleaning the coarse filter



Screw the coarse filter out of its brass housing using the open-ended spanner (SW 20) and clean it with compressed air. The filter is located underneath the service unit.



Replace the filter if necessary.

Checking the flow monitor.



Check the correct setting of the flow monitor. Compare it with the IBS report.

8.4.8. Miscellaneous

Conveyor belt




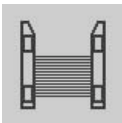



Check the belt for any visible external damage.



CM16

8.5. Maintenance Interval – 1920 hours (1 year / 240 days or 240 shifts)

8.5.1. List of Tasks for Maintenance Interval – 1920 hours (1 year / 240 days or 240 shifts)

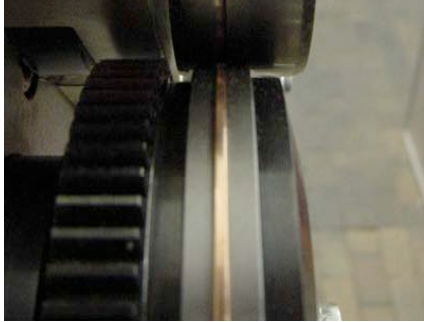
Wire Drive		Check the profiling unit	<input type="checkbox"/>
Feeder		Change the vacuum pump oil	<input type="checkbox"/>
Rollforming machine			
Canbody Transportation and Guidance			
Welding			
Pneumatics / Cooling		Replace the cooling water	<input type="checkbox"/>
Miscellaneous		Check the screws Check the insulation	<input type="checkbox"/> <input type="checkbox"/>

Signature of the supervisor

..... ☐

8.5.2. Wire Drive

Profiling unit:



Check whether the rollers of the profiling units have been retracted. If this is the case, you can move the wire insertion roller by approx. 3 mm in order to obtain a new wire throughput position. Do not forget to order the new profiling unit rings afterwards, however.

CM Article No. 001290

8.5.3. Feeder

Oil change for the vacuum pump



Completely change all the oil.

NOTE:

Refer here to the operating instructions of the Vacuum pump manufacturer.

8.5.4. Pneumatics / Cooling

Changing the cooling water



Replace all the cooling water, and clean the tank.

NOTE:

Also refer to the operating instructions of the cooling unit manufacturer.



Do not forget to add the coolant lubricant. We recommend mixing in the Zubora 92 F product using a mixer. The dosage should be about 3 – 5 %.

In the illustration: 20-litre canister.
CM Article No. 002609 (20 lt. as shown)



The emulsion-mixing unit works on the principle of the jet pump. The mixing unit is suitable for the production of stable and homogeneous emulsions over a wide range of concentrates.

NOTE: See also Chapter 8.3.

CM Article No. 002612

8.5.5. Miscellaneous

Checking the screws



Check that all the screws are firmly seated, and in particular those on the welding circuit (transformer connections, roller head carriers, connecting rails, current leads).

Insulation check



Carry out the insulation check as described in the IBS Report.