

Data Sheet:

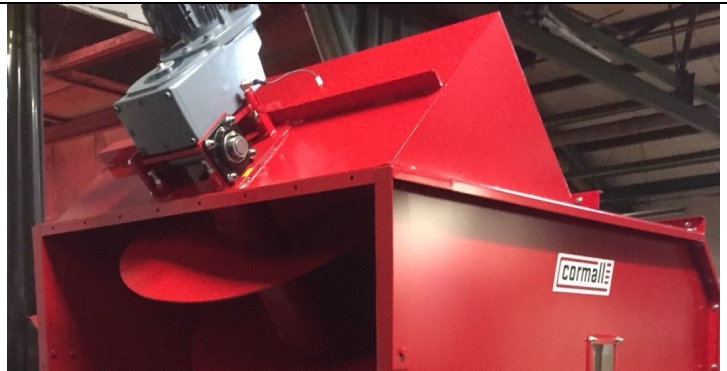
SBB 1400 - Bale breaker



januar 11, 2021



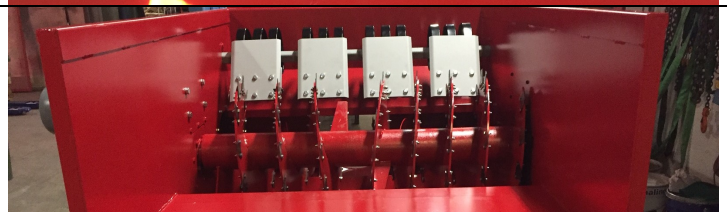
Bale breaker housing with SBO



Bale breaker, side outlet with housing mounted.



Bale breaker with center outlet



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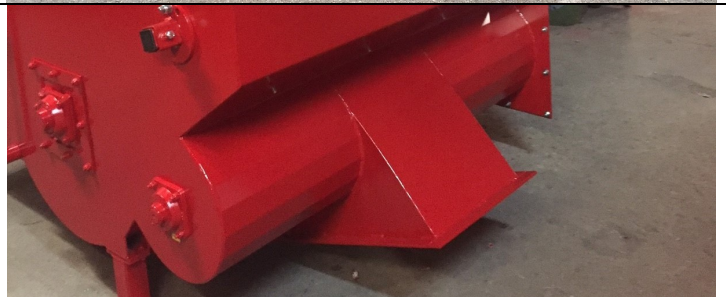
Center outlet for straw mill Ø 450



Side outlet for straw mill Ø 400



Center outlet to chain conveyer for straw burner



Full outlet, reduced capacity regulation only



Optional equipment, hinge for letting round bales pass the SBO



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A range of different knives can be chosen for the different material demands



Machine number	1039-314
Custom tariff number	84369900
Machine paint	Standard ISO 12944-5 category C2. Machines, guards etc. comes in a color type RAL 3001 red suitable for indoor, non corrosive environment, aggregate that is used inside the machine is only with gray primer paint – paint is water and oil resistant -15 to + 60 degrees C, surface purified with alkaline degreaser, painted with a machine primer and here after coating paint.
Standard	DS/EN 60204-1:2006 Safety of Machinery - Electrical Equipment of Machines, DS/EN ISO 13850 of January 29th 2007 emergency stop, DS/EN ISO 13849-1 safety-related parts of control systems, DS/EN 60204-1: 2006, cable installation method E
Machine function	<p>Materials is dissolved/broken up in its strokes/bale stamps and is moved over the horizontal bale breaking auger. The blades/knives press the material against a flexible shear bar that holds back the material and prevents the material from blocking. After the shear bar is the material entering down into a metering auger, this can also be delivered as a free opening. Stones and other contamination in the straw is falling into the bottom of the machine and transported below under where the straw enters the horizontal bale breaking auger, here is made an opening in which stones and other foreign objects is pushed into as collection stone trap. A level sensor in the top of the machine controls the feed table and prevents the machine from being overfilled.</p>
Blockage and overload control:	The two augers are breaking the material against the flexible shear bar. Material can be contaminated and block, and also the material itself can be wheat and cause blocking of the augers. To overcome this are both augers individually controlled with “augers reversed system”: The frequency inverter on each motor measures the amp usage and makes the automatic reverse when

the augers are overloaded.


Value settings: overload above 80% of A_{max} for more than 0,7 sec. = stop, and rev. 2 sec and start again with small ramp.

WARNING! NEVER MORE THAN 2 SEC. REVERSE.

RISK ASSESSMENT Machine

The machine can be only be used with a MTX_H machine.

RISK ASSESSMENT – ATEX

	GESTIS-STAU-EX	
Material	Stroh (2213)	Miscanthus
Feuchte	-	10,2 %
Korngösse < 500 µm	96%	56%
Korngösse < 125 µm	26%	35%
Median-Wert µm	200 µm	280 µm
UNtere Ex-Grenze	125 g/m ³	60 g/m ³
Max Ex Überdruck	8,0 bar	7,7 bar
K _{ST} -Wert [bar m/s]	47	115
Ex-Fähigkeit	St1	St1
Zündtemp.	470 C	-
Glimmtemperatur	310 C	-

Wheat straw:

We have primary evaluated the risk for dust explosion based on the conditions that have to be full filled with regard to dust explosion, and have used the official figures from the German institute BGIA:

As translation to the above table sheet is the most important figures as follows:

- Fragmentation must contain 96 % below 0,5 mm.
- The medium length must be 0,2 mm

The fragmentation of any straw quoted from 5 mm screen and more:

- 96 % will be more than 1,3 mm

We conclude that no person is in danger of explosive burning, only normal fire is possible.

EN/ISO 13849-1

Safety levels:

PLr: c, as machine with automatic start if access is restricted and not possible.

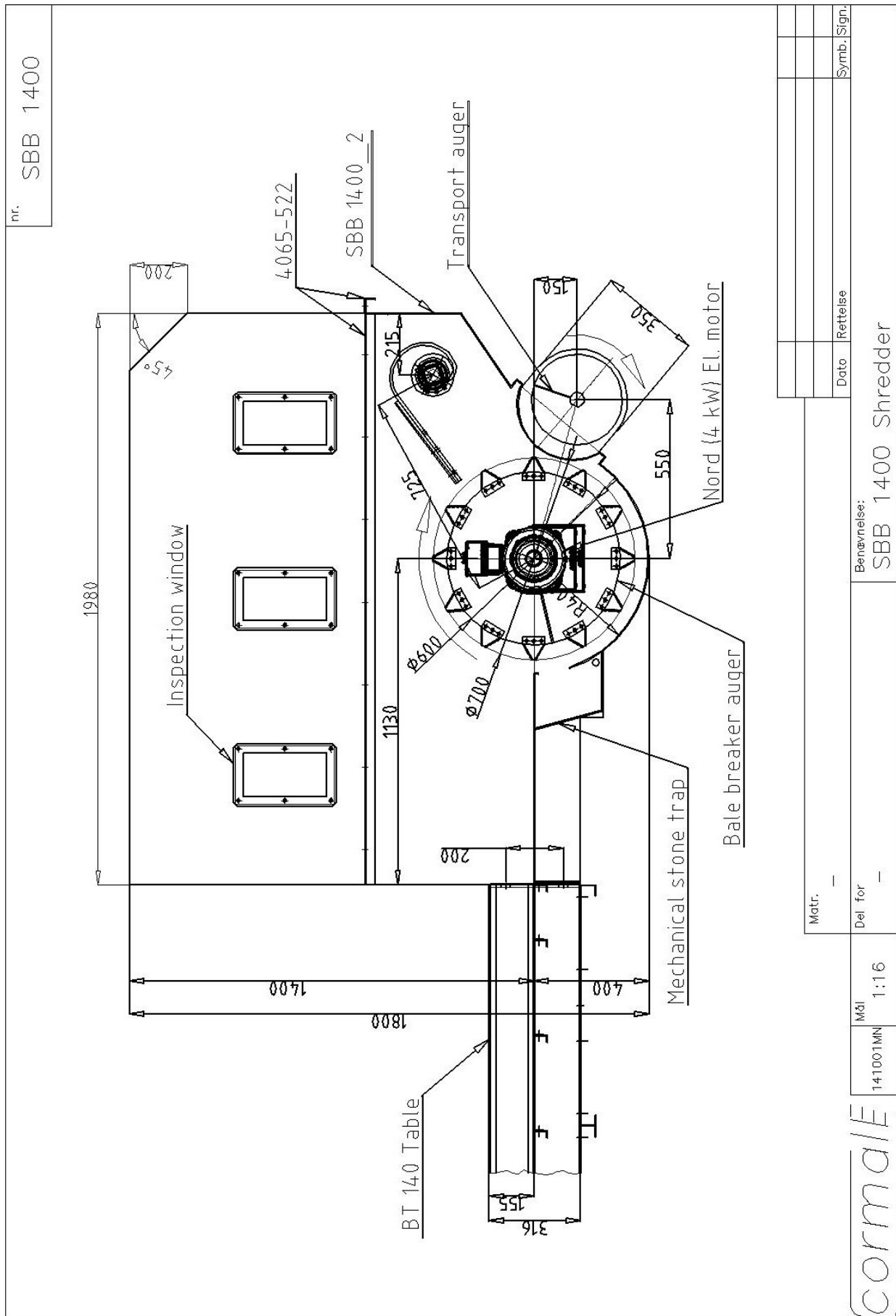
Analyzed risk following EN-ISO 13849-1:	S	F	P	PLr
1. Mounting: The machine is provided lifting positions that ensures balance when lifting and strong enough to hold machine load. Work place assessment should be made, before start with mounting.	S2	F1	P1	c
2. Operating: The machine has to be mounted with a conveying auger on the outlet, or similar machine that closed access into the rotating bale breaker auger. It also has to be used with a closed filling device, Cormall BT 140 bale table or similar, and access to the table has to be protected by hand rail min 1100 mm or the table itself as barrier	S2	F1	P1	c
3. Servicing: All lubrication positions are from safe position.	S1	F1	P1	a
4. Renovation: On the Auger is placed knives that has to be either turned or exchanged approx 1-2 times per year. To do this you have to enter into the machine from the same side where the straw is coming in. DO NOT STEP INTO THE MACHINE UNLESS POWER IS EFFECTIVE TURNED OFF. Have always ensured the machine is turned off and secure the power supply to the motor with a cabinet lock, that you hold the keys for and nobody else, - all this to prevent accidental start up during knife change. Work place assessment should be made, before start with mounting.	S2	F1	P1	c
5. Scrapping/recycling: same comment as under 1. Mounting	S2	F1	P1	c

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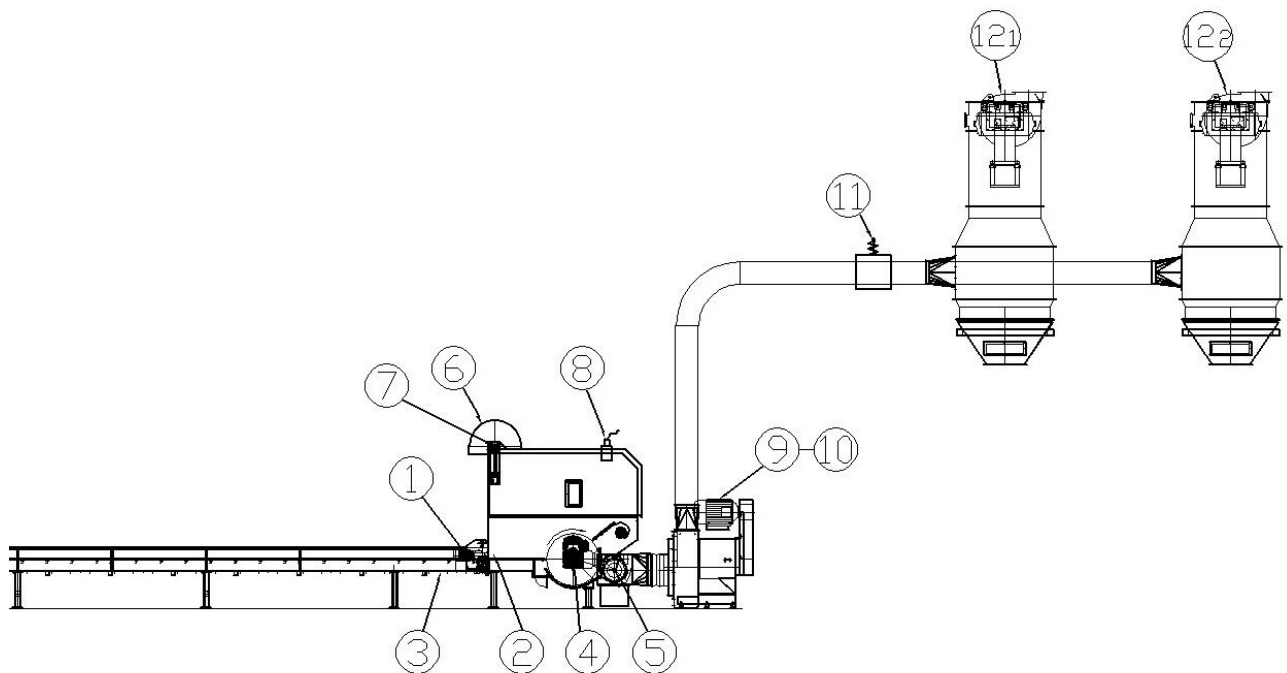
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Control of starters and signal handling on typical delivery with mill and filter:



Start of line:

- 11 and (12-1 or 12-2)
- 9
- 5
- 4
- 6
- 1

Gr. 1: 8, 11 and 12 (1 or 2)

After mill has been in Y for 2 sec.:

Gr. 2: 5, 4, 6 and 1

Stop line:

- 1
- 6
- 4
- 5
- 9
- 11 and 12 (1 or 2)

Gr. 1: 1, 6, 4, 5, 9 and 11

After approx 5 minutes of bag cleaning

Gr. 2: 12-1 or 12-2

Feeding into the bale breaker with table, automatic:

Level sensor pos 8 has to give a signal for more than 3 sec, before the table is turned on, it continues until the level sensor again is with signal = new/more straw is above the bale breaker auger.

You can see this at work on this film link:

<https://www.youtube.com/watch?v=psWhWsE0s3c>

Straw bale opener POS 6 and RPM sensor:

The feeding line pos 1 and SBO pos 6 must STOP, if the RPM sensor is not getting its signal. (Reason can be that they forgot to remove twine/string from the bale)

Overload control of bale breaker pos 4:

The inverter should be chosen as one that can be programmed for automatic reversing when the motor is overloaded for more than (0,7 sec.), make the reversing time 1, max 2 sec. and then run forward again. The level of how hi the amps may be before reverse sequence starts, should be adjustable.

Overload control of metering auger pos 5:

Chose same type of inverter as on pos 4. If the auger is blocking and coursing overload for more than (0,7 sec.), then stop auger and stop also pos 4. Reverse auger and reverse pos 4 at the same time. Start first pos 5 forward, and after 1-2 sec start also pos 4

Load control from bale breaker to mill:

The speed = frequency of pos 5, determines the load to the mill, if the speed is set at a level where the mill never is overloaded, then you have made it to slow, and are not fully using the capacity of the mill. If the mill is frequent overloaded, then you need to reduce the speed of pos 5.

Overload on hammer mill pos 9:

At I: max for more than (0,7 sec) (pos 10), then stop pos 5 until mill is again recovered to lower amps, for 1-2 sec. and start again pos 5

Straw Bale Opener Angle Sensor:

This sensor is used for stopping the bale conveyor when the bale breaker opener auger rotates and exceed its max level. It should be installed as shown below.

The sensor should be mounted with distance 125 mm from the top housing and the bolt should be at distance 160 mm from the top housing. The shown position is the maximum position when the auger rotates and reach it the sensor stop the conveyor. So, make sure that this distance is equivalent to the shown figure. For transportation reasons the bottom nut will be turned all the way up to fix the auger from rotation, however it should be turned down all the way as shown in the left figure.



The Sick UM 30-214111 level sensor:

This sensor is used for automatic filling from a straw bale conveyer. When level is low, then will the sensor call for material, until level again is high, you can program the level directly on the sensor.

The level sensor can be placed at 3 different positions over the bale breaker housing, depending on the material, and how large/high up, the filling has to be accordingly to material behavior and power consumption on the bale breaker augers,

Recommendation: start with placing the sensor close to the opening where the straw falls into the machine.

The sensor can be set at a distance/ level of straw inside the machine over the bale breaker augers/knife rotors, by simple programming of the sensor.

If the TDA auger is not taking away the straw under the bale breaker augers, then this level will not get lower, and the sensor will not call for more material, only when the TDA auger has taken away straw below the bale breaker augers, then will the sensor again call for more material. You will see inside the bale breaker the straw is “vomited” if there is allot of straw, this is correct and how it should be.