ROXELL®

FLEX-AUGER™

Presentation

Main Flex-Auger applications

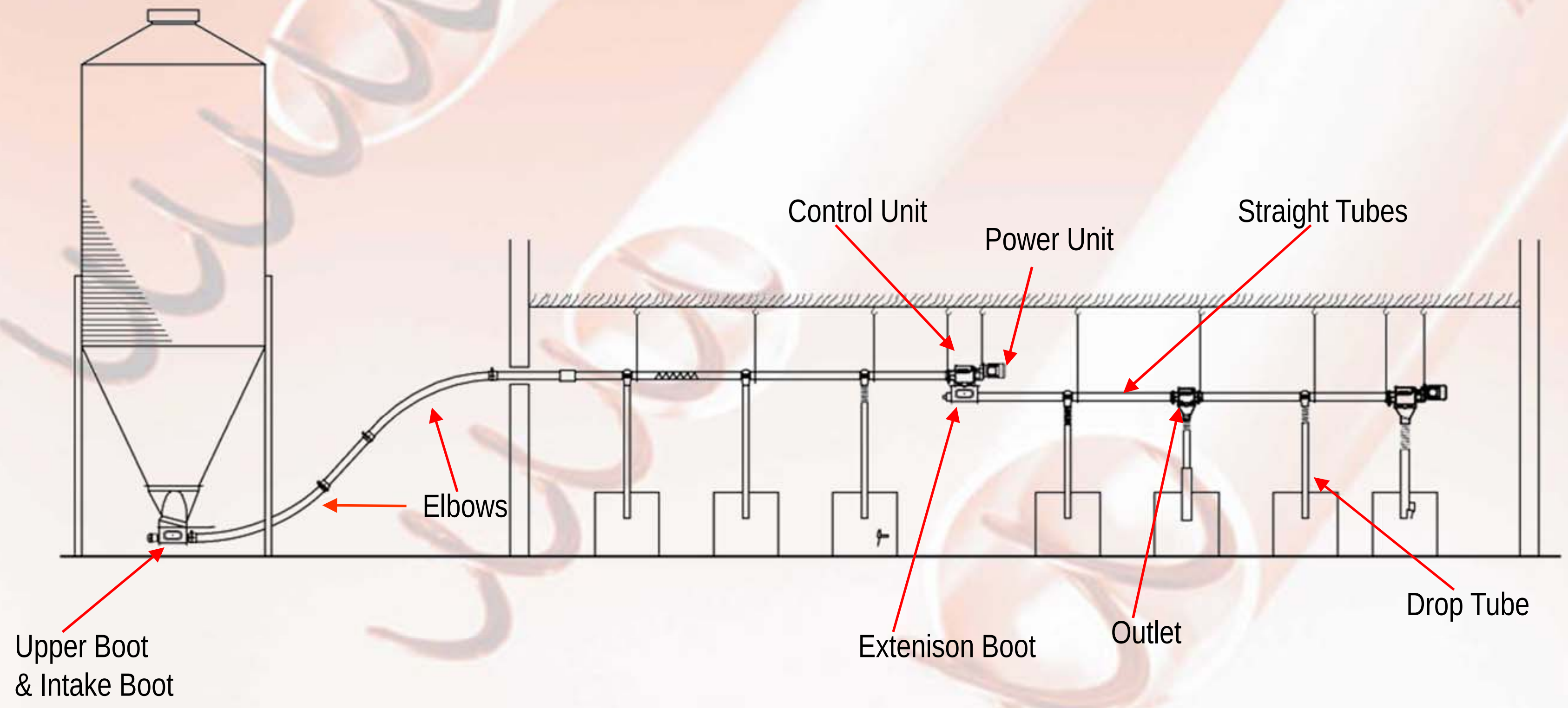
Many different kinds of feed !

PIGS

POULTRY

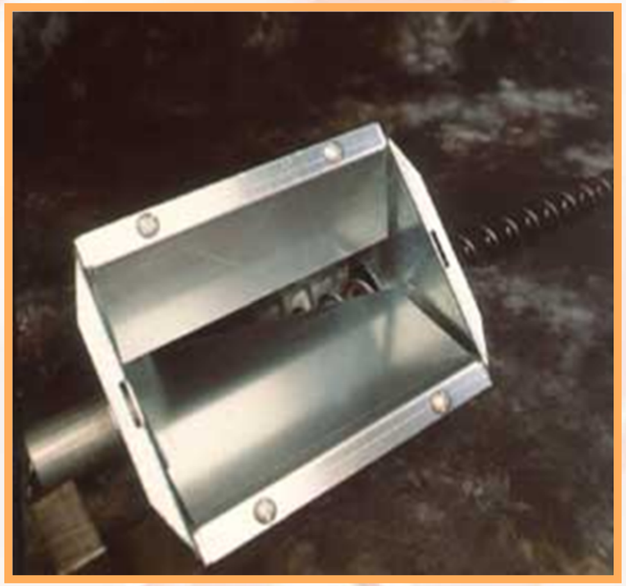
CATTLE

General view of a Flex-Auger transport system



Product Info | Applications | Technical results

1. Intake Boot.



FACTS

Solid removable thumper for mash.

Unique removable pellet guides.

Thumper with bearing.

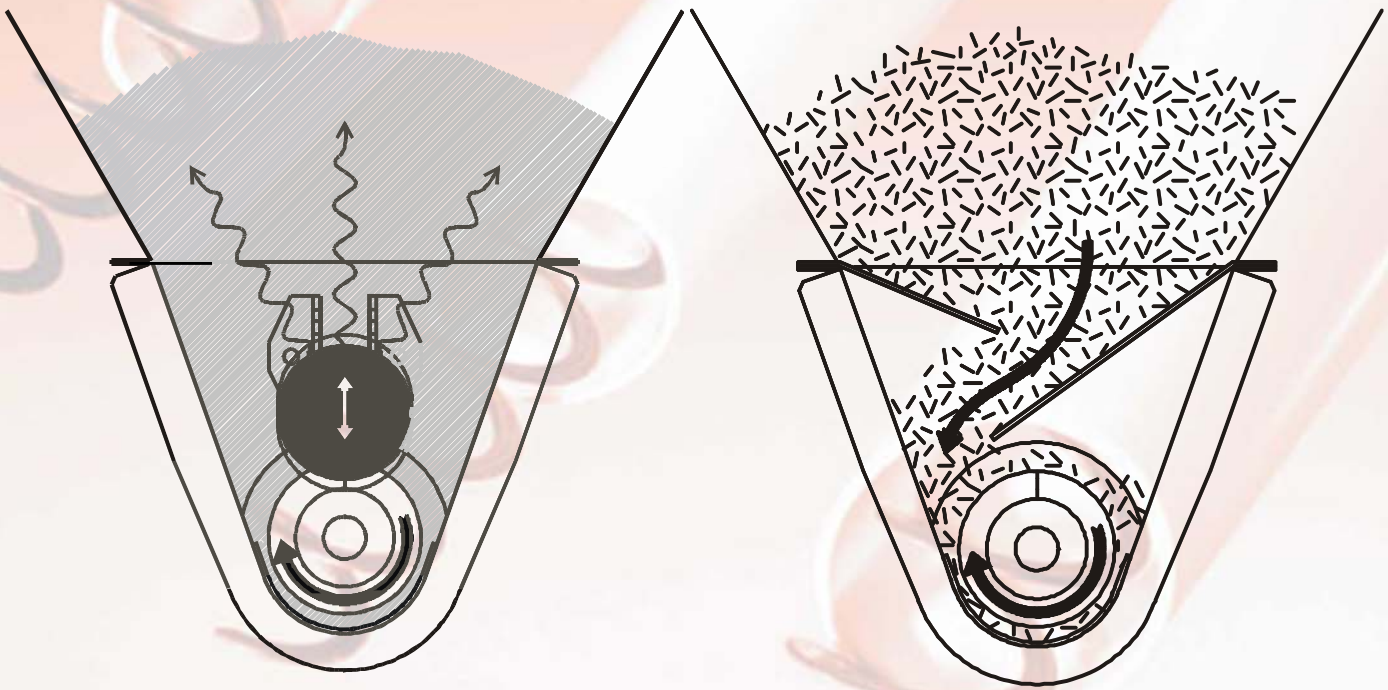
BENEFITS

No bridging of mash !

No broken pellets !

No damage to intake boot !

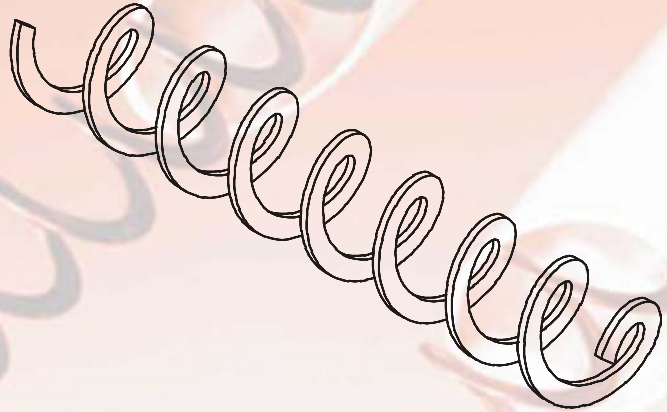
1. Intake Boot (continued).



NO BRIDGING OF MASH !

NO BROKEN PELLETS !

2. Roxell's unique AUGER.



10-year warranty !!!

FACTS

Made of oil-hardened steel wire with very high tensile strength.

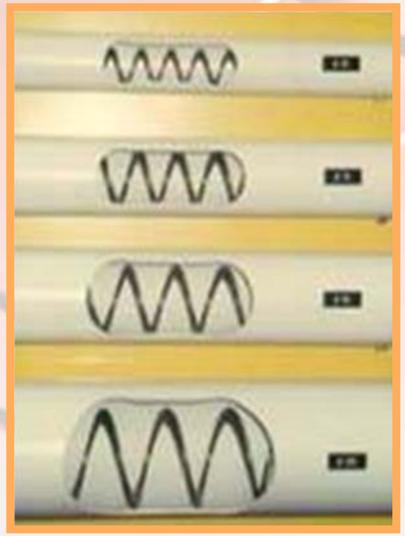
Auger made of flat wire.

BENEFITS

Very durable. 10-year warranty !

No feed separation !

3. NOVICOR Tubes.



- Tube dia. 55 mm / Auger dia. 38,60 mm
- Tube dia. 75 mm / Auger dia. 60,45 mm
- Tube dia. 90 mm / Auger dia. 68,33 mm
- Tube dia. 125 mm / Auger dia. 94,60 mm

FACTS	BENEFITS
NOVICOR quality.	High UV-resistance. High wear resistance (30% higher than PVC). High temperature resistance (-40°C up to +60°C).
Low friction coefficient.	Feed does not stick.

4. NOVICOR Elbows.

FACTS

NOVICOR quality.

Low friction coefficient.

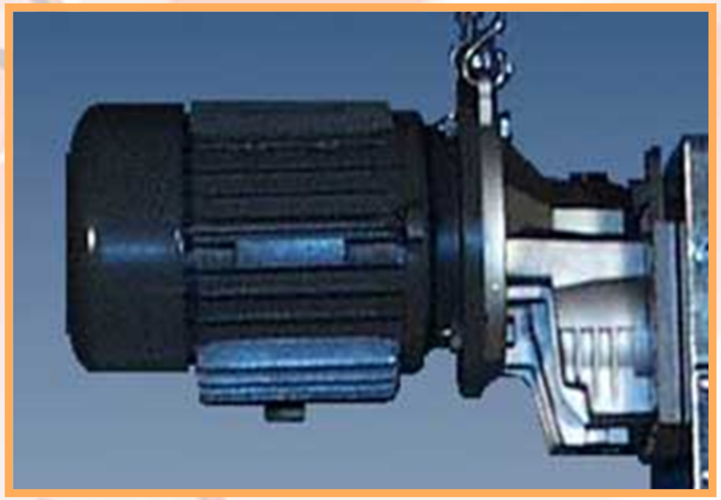
BENEFITS

High UV-resistance. High wear resistance (30% higher than PVC).

High temperature resistance (-40°C up to +60°C).

Feed does not stick.

5. Power Unit.



FACTS	BENEFITS
DIN-normalised.	High quality !
Aluminium gearhead.	Very durable !

Identikit

	55	75	90	90HD	125
Feed transport	520	1300	2400	3100	5400
capacity kg/hour (*)		600	3100		
			3900		
Feed amount/m tube (*)	0,70 kg	1,90 kg	2,50 kg	2,50 kg	4,80 kg
Maximum length	60 m				
(3 m inclination)	(90 m**)	60 m	42 m	60 m	28 m
Maximum length with					
1 extension boot	120 m	120 m	84 m	120 m	56 m
Max run time	2 hours/day				
Power unit kW (***)	0,37	0,75	0,75	1,5	1,1
3 phase - 50 Hz		0,37	1,1		
			1,5		
RPM	350	350	350	450	290
		175	450		
			550		
Max. pellet diameter	6 mm	8 mm	9 mm	9 mm	9 mm(*)
			12 mm		
			(w/auger 75)		
Outside diameter tube	56 mm	75 mm	89 mm	89 mm	127 mm
Wall thickness tube	2,5 mm	3,2 mm	3,4 mm (N)	3,4 mm (N)	5 mm (N)
			1,5 mm (S)	1,5 mm (S)	2 mm (S)
Elbow material	(N)	(N)	(N) or (S)	(N) or (S)	(N) or (S)
Elbow radius	1,5 m	1,5 m	1,5 m	1,5 m	1,5 m
Maximum inclination	75°	75°	75°	Horiz. !	45°
Suspension points	Novicor : every 1,5 m / Steel : every 3 m				
Installation time (including					
suspension and electricity supply)	2 skilled people : 1 line per day				

(*) For commercial mash, crumble or pellets (dia 3 mm) with a specific weight of 0,65 kg/dm³ or 41 lbs/ft3 !

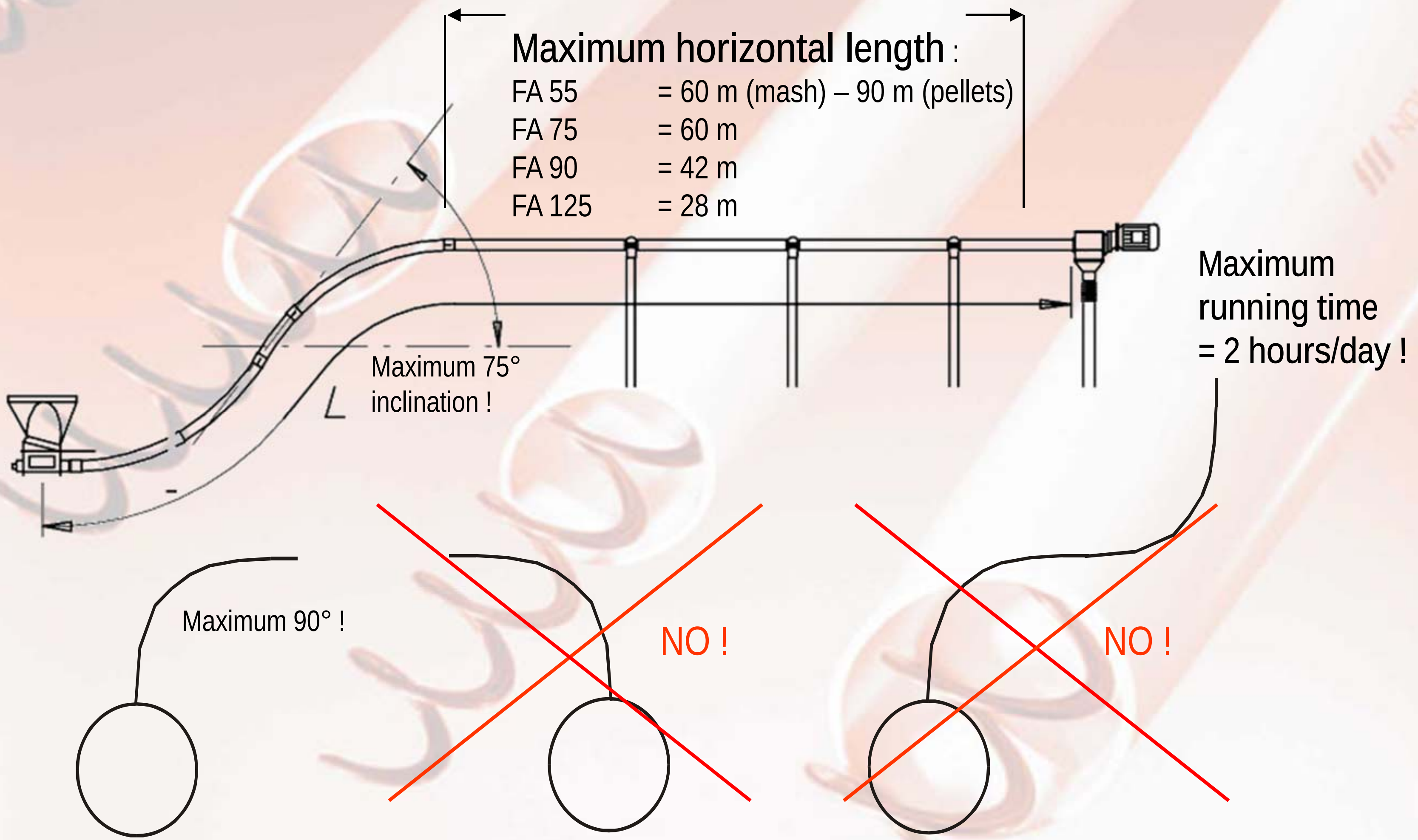
Under horizontal installation upper boot
With restrictor or tandem inline, max capacity - 20 %
With 60Hz motor, max. capacity + 20%
Pellets dia <= 6 mm, max capacity - 20 %

(**) With fill points every 0,5 m and for pellets only (not for mash) !

(***) 0,75 kW = 1 HP !

(N) = Novicor (S) = Steel

///ROXELL® General guidelines for Flex-Augers

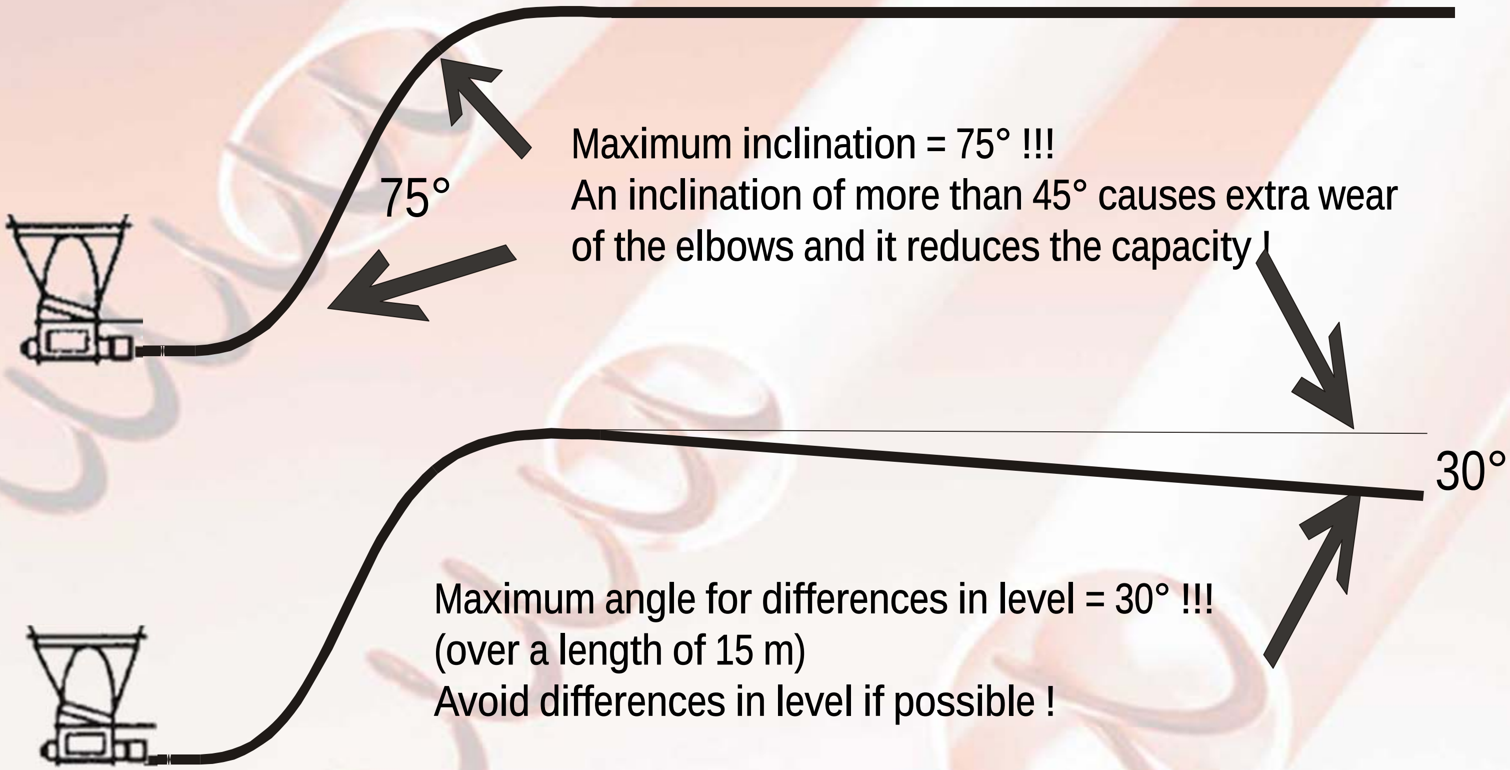


Avoid left hand elbows !

Left hand elbows = no feed at inner corner = WEAR !

(For abrasive feed the opposite is true !)

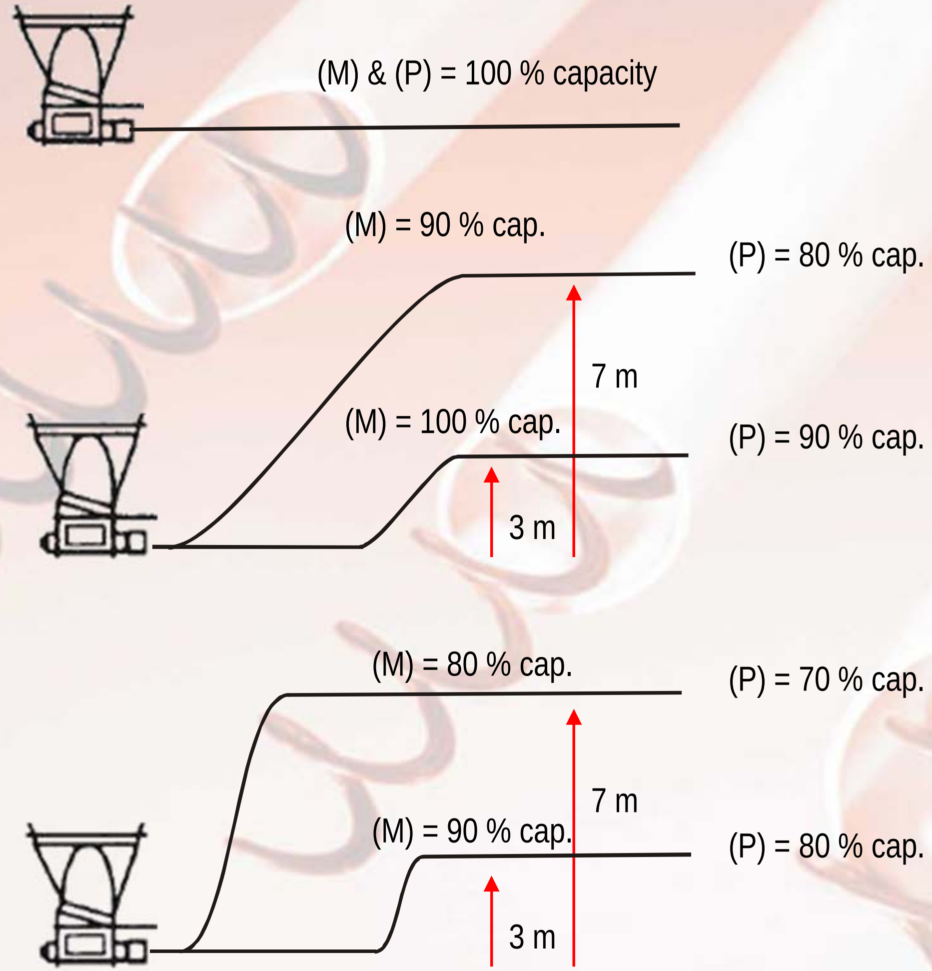
Optimum conditions for Flex-Augers



Maximum inclination = 75° !!!
An inclination of more than 45° causes extra wear of the elbows and it reduces the capacity !

Maximum angle for differences in level = 30° !!!
(over a length of 15 m)
Avoid differences in level if possible !

Capacity of the Flex-Auger with horizontal boot



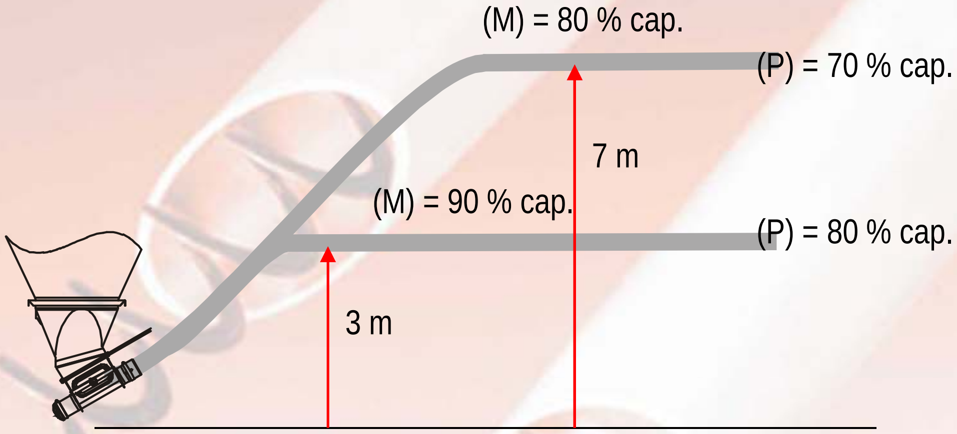
HORIZONTAL BOOT, NO ELBOWS
= *IDEAL*

HORIZONTAL BOOT, 45° INCLINED

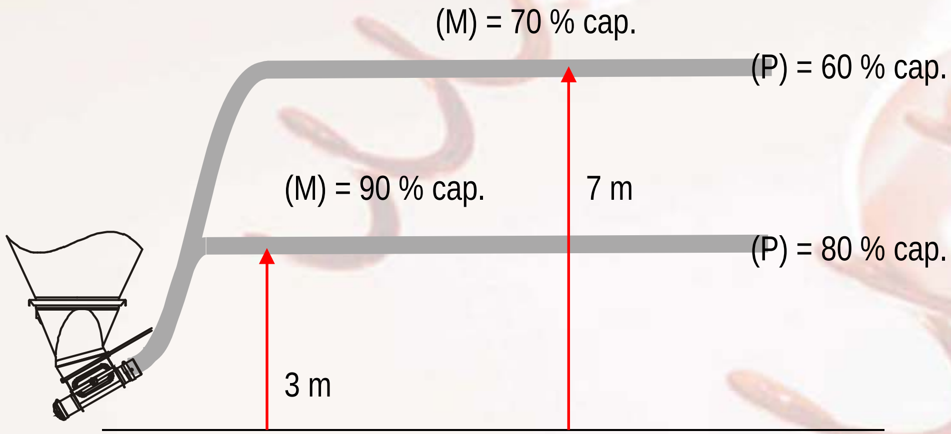
HORIZONTAL BOOT, 75° INCLINED

(M) = MASH (P) = PELLETS

Capacity of the Flex-Auger with 30° boot



30° BOOT, NO EXTRA ELBOWS



30° BOOT, WITH EXTRA ELBOW 45° = 75° INCLINED

(M) = MASH (P) = PELLETS

How to compose a Flex-Auger?

- <u>Example for fattening pigs</u>.

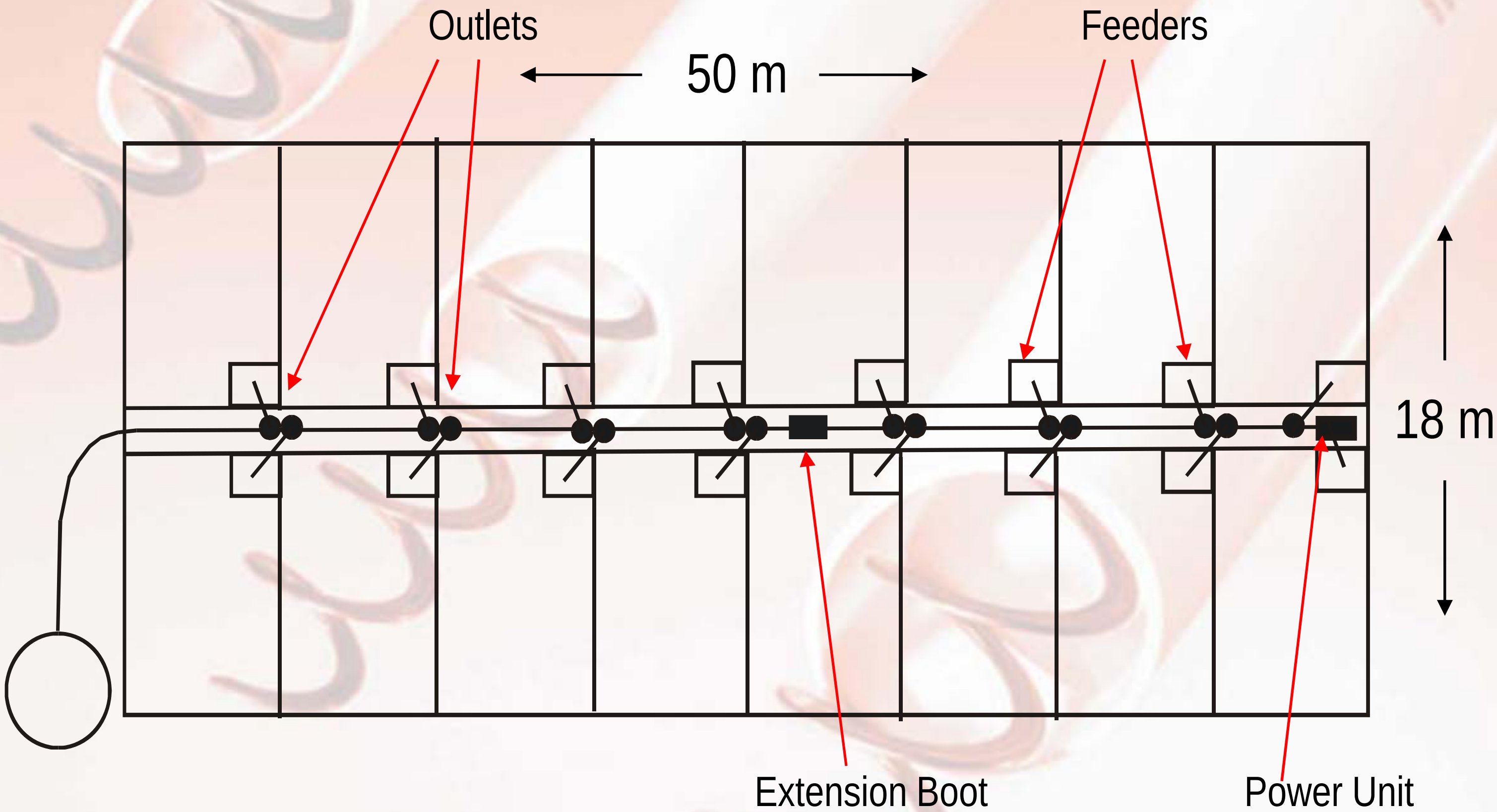
1. Kind of animals : fattening pigs.

2. Number of animals : 1.800.
Daily feed consumption =
1.800 x 2,5 kg = 4.500 kg.

3. Maximum running time of the Flex-Auger :
FA 55 = 4.500/550 = 8,2 hours/day = *TOO LONG !*
FA 75 = 4.500/1.300 = 3,5 hours/day = *TOO LONG !*
FA 90 = 4.500/2.400 = 1,9 hours/day = *OK !*

4. Length :
50 m + 9 m = 59 m, so use an *<u>extension boot</u>* !

- Drawing (ref. slide 13).



- Example for fattening pigs.

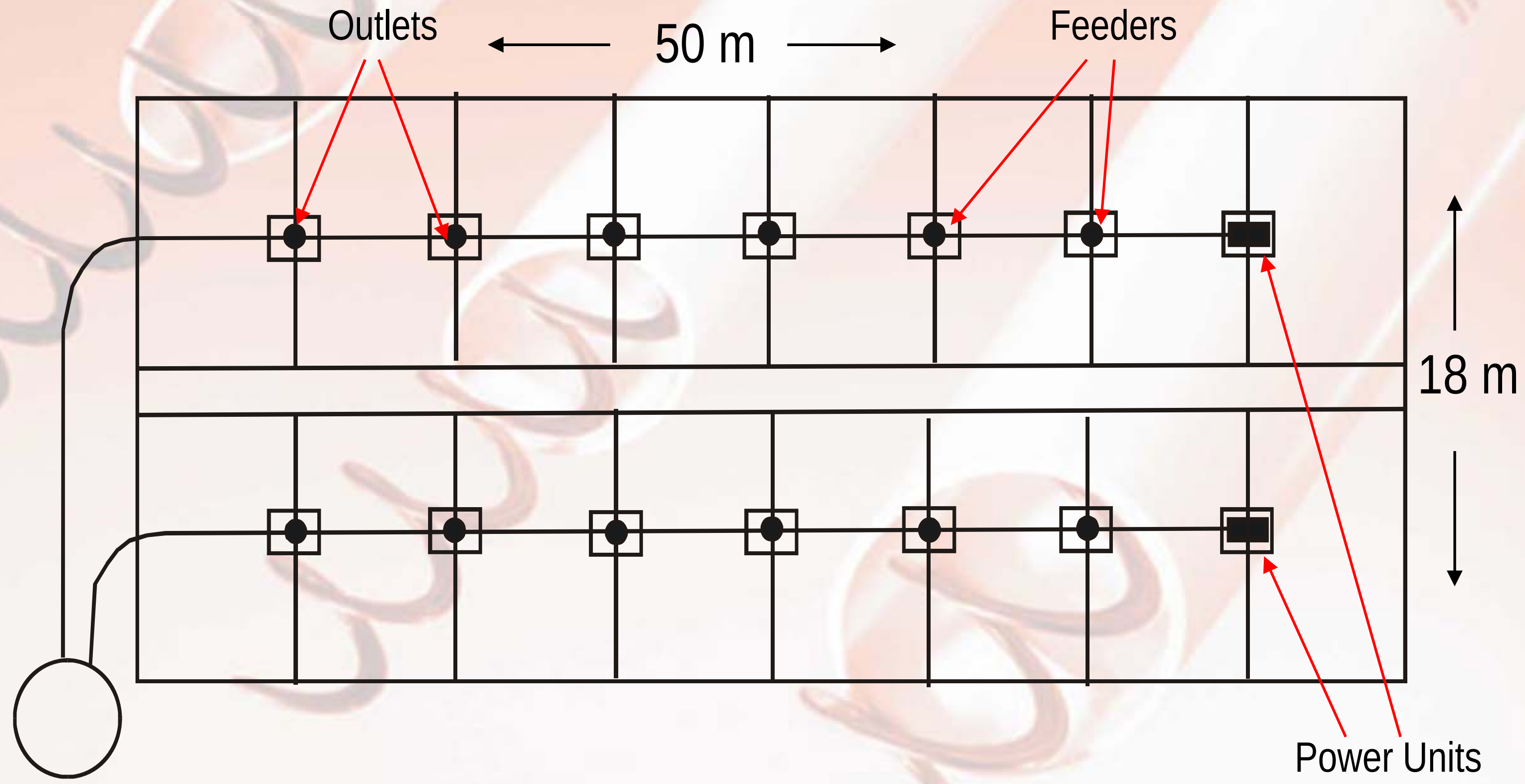
1. Kind of animals : fattening pigs.

2. Number of animals : 1.800.
Daily feed consumption =
1.800 x 2,5 kg = 4.500 kg = 2.250 kg per row.

3. Maximum running time of the 2 Flex-Augers :
FA 55 = 2.250/550 = 4 hours/day = *TOO LONG !*
FA 75 = 2.250/1.300 = 1,7 hours/day = *OK !*

4. Length :
45 m + 5 m = 50 m, so no extension boot needed !
45 m + 10 m = 55 m, so no extension boot needed !

- Drawing (ref. slide 15).



- Example for broilers.

1. Kind of animals : broilers.

2. Number of animals : 24.000.

Daily feed consumption =

24.000 x 0,15 kg = 3.600 kg.

3. Maximum running time of the Flex-Auger :

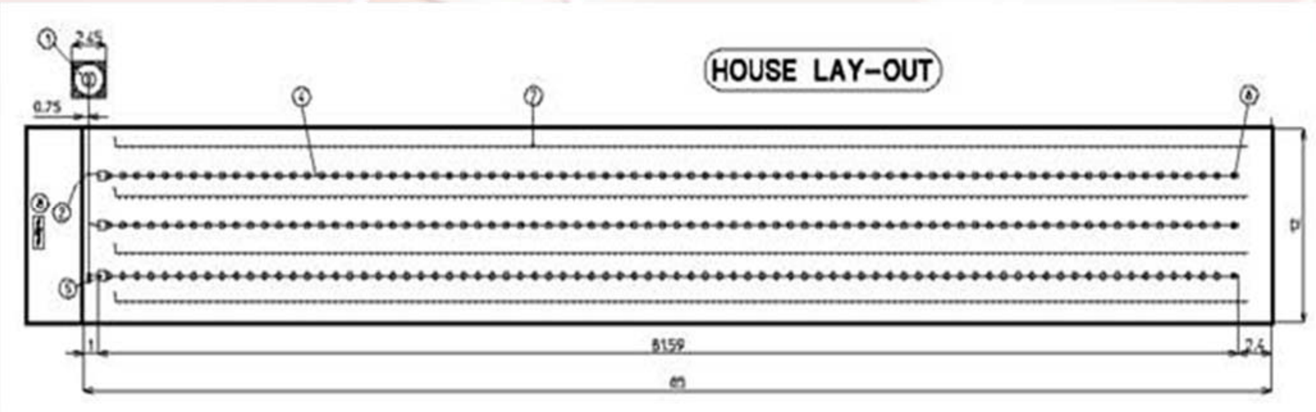
FA 55 = 3.600/550 = 6,5 hours/day = *TOO LONG !*

FA 75 = 3.600/1.300 = 2,8 hours/day = *OK !*

- Drawing (ref. page 17).

Flex-Auger 75 filling up 3 feeder lines.

1. Boot.
2. Hopper.
3. Control panel.
4. Feeder lines.
5. FA control unit with motor.
6. Feeder line control unit with motor.
7. Drinking lines.



Which Flex-Auger model?

- Example for breeders.

1. Kind of animals : broiler breeders.

2. Number of animals : 7.200 females.
   3 fill points.

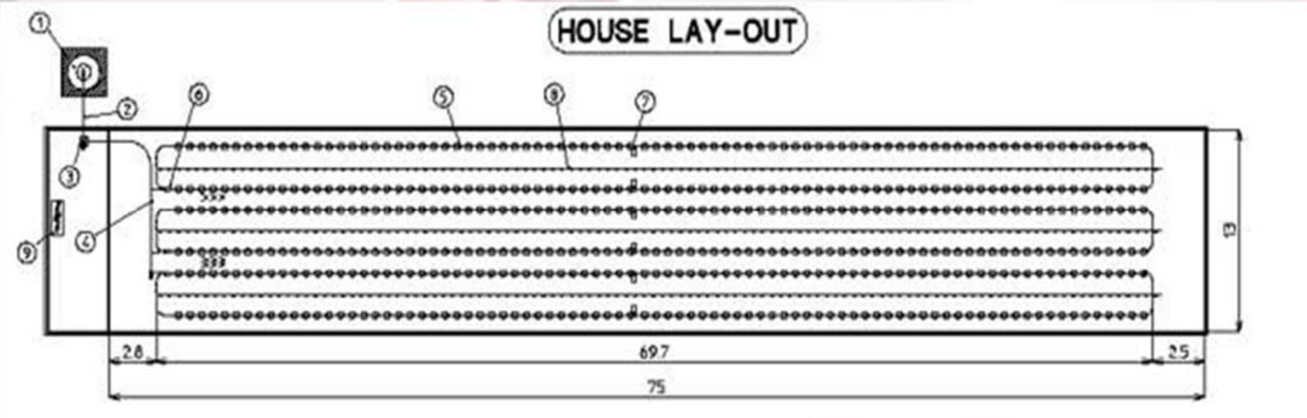
3. The capacity of the Flex-Auger *MUST* exceed the capacity of the circuits :
   FA 90 / 350 rpm = 2.400 kg/hour = *TOO LOW !*
   FA 90 : 550 rpm = 3.900 kg/hour (*) = *OK !*

(*) ADVICE : cut off the anchor in the feed intake boot to obtain the highest capacity !

- Drawing (ref. page 19).

Flex-Auger 90 filling up 3 feeding circuits.

1. Boot.
2. FA from the bin.
3. FA control unit with motor.
4. FA to the feeding circuits.
5. Feeding circuits.
6. Feed intake boots.
7. Drive units.
8. Drinking lines.
9. Control panel.



- <u>Component 1 – Upper Boot.</u>

- Application(s)

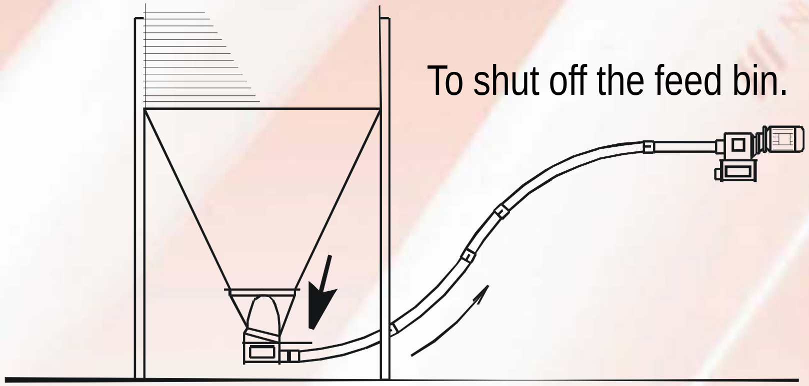
Horizontal is recommended !

30° *ONLY* if the bin is close to the house !

- Component 2 – Transfer Assembly.

- Application(s)

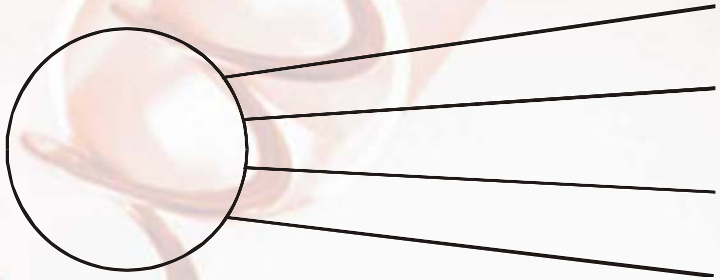
To shut off the feed bin.



- Component 3 – Quadruple Boot.

- Application(s)

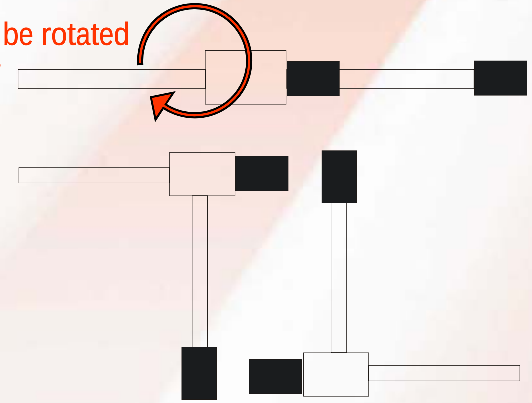
Up to 4 lines from one feed bin.



- Component 4 – Extension Boot.

- Application(s)

To extend a Flex-Auger in any direction.



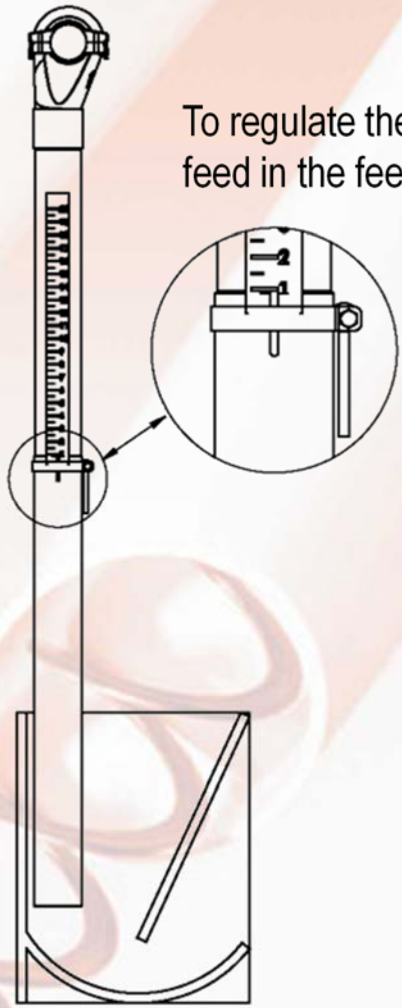
- Component 5 – Outlet Drop Ass'y.

- Application(s)

To open or close a feeding place.

- Component 6 – Telescopical Drop Tube.

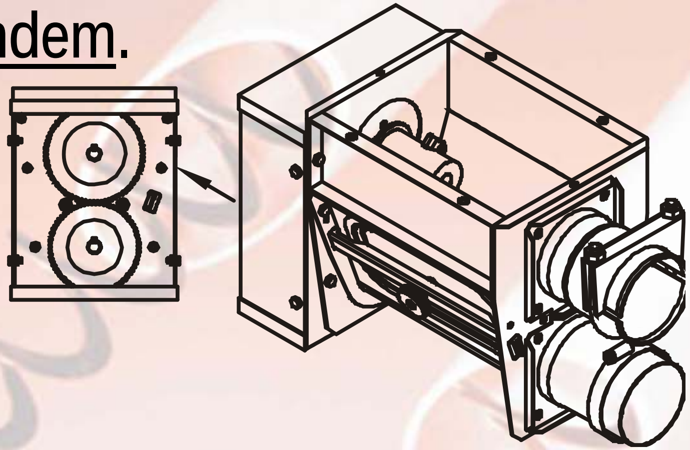
- Application(s)



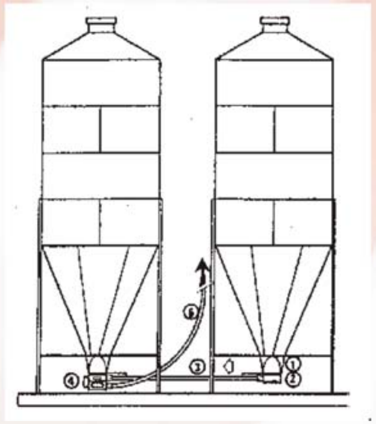
To regulate the amount of feed in the feeder (hopper).

Flex-Auger components and their applications

- Component 7 – Return Tandem.

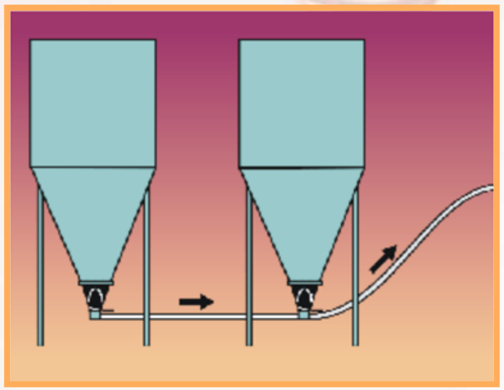


- Application(s)



Separate main line and tandem line.
The auger between the 2 bins cannot deform.
There is no axial pressure on the auger bearing in the boot.
For Flex-Augers 75-90-125.
ALWAYS SHUT OFF ONE OF THE BINS !!!

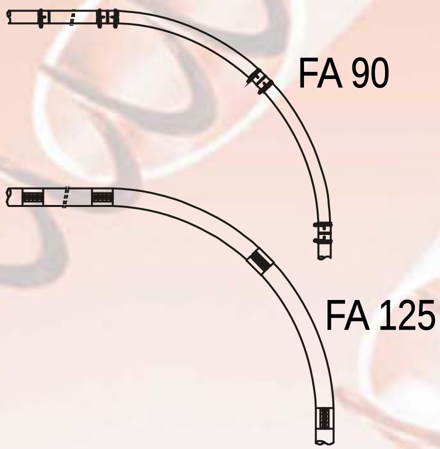
- Component 8 – Tandem in Line.



- Application(s)

Many applications : for Flex-Augers 75-90-125.
Roxell recommends to use a RETURN TANDEM rather than a tandem in line.
ALWAYS SHUT OFF ONE OF THE BINS !!!

- <u>Component 9 –</u>
  <u>Steel Tubes & Elbows</u>.



- Application(s)

For transport of abrasive layer feed.
Tubes are made of *galvanised* steel.
Elbows are made of *hardened* steel.

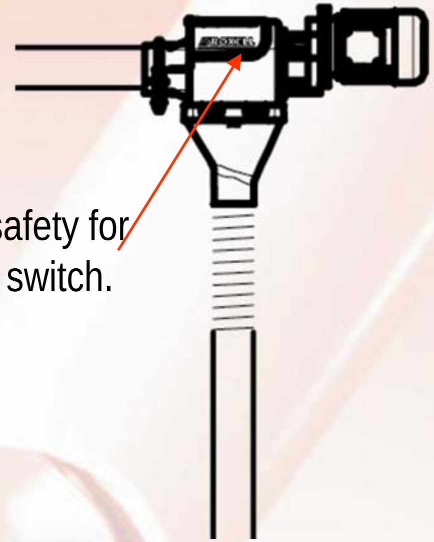
- <u>Component 10 – Seal &</u>
  <u>Seal Ring</u>.

- Application(s)

To prevent air flow through the holes
In the house walls.

- Component 11 – Control Unit.

- Application(s)



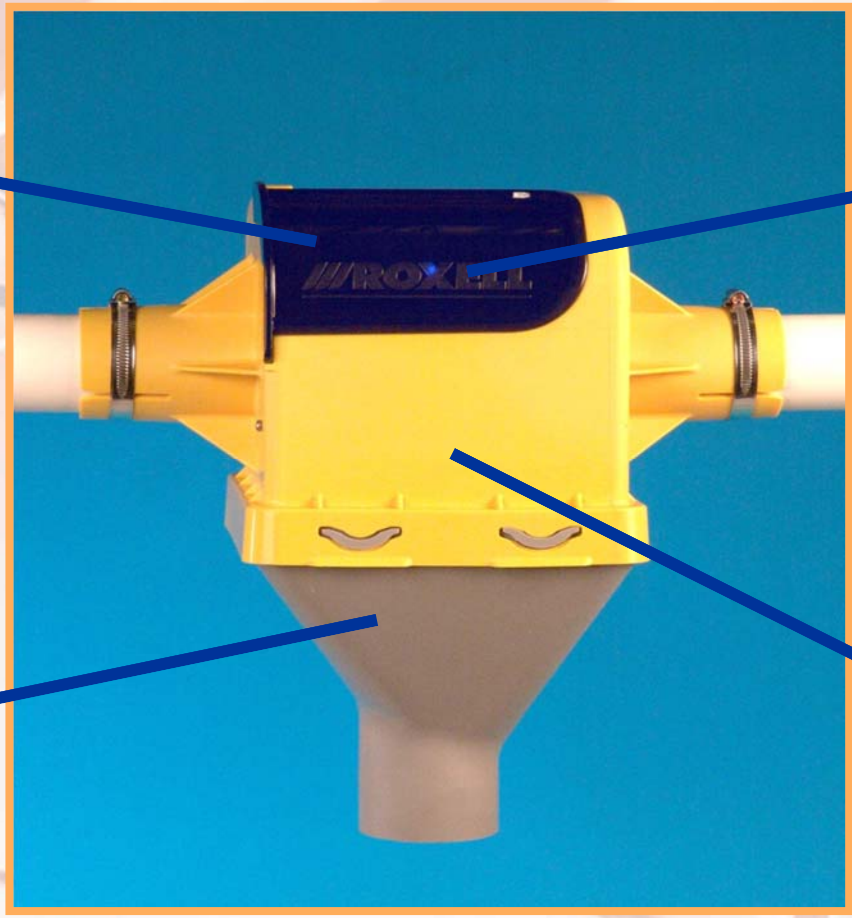
Flex-Auger components and their applications: Manual outlets

Facts	Benefits
• Splash water proof	• no water inside outlet during cleaning
• Shut-off slide in nylon	• Very smooth and durable operation
• Assymetric drop out	• Excellent feed flow

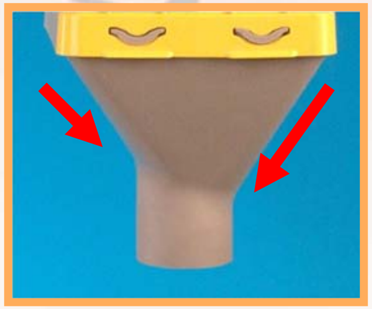
→ Easier installation

Flex-Auger components and their applications: automatic outlet

Large Transparent window for fast control and easy access



24 V DC motor
Easy to remove



Assymetric drop for excellent feed flow

160 mm opening – 100 % drop out
Rotation tube – No rest feed

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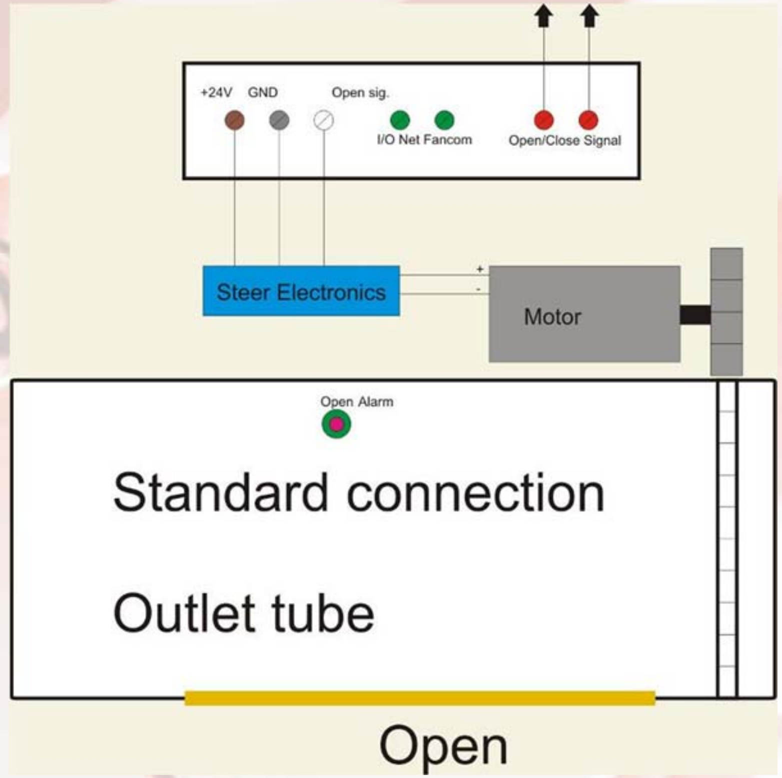
Flex-Auger components and their applications: automatic outlet

FACTS	**BENEFITS**
• 160 mm drop out opening	• Complete drop-out of the feed – no overshoot
• Rotating opening tube	• No rest feed in closed position
• Nylon housing + FG reinforcement	• Durable and strong
• motor housing 100 % air tight	• durable in ammonia environment
• drop ‘clicks’ on housing	• easy (dis) assembly of drop
• No opening – completely closed	• Splash water and dust proof

Control of the outlet

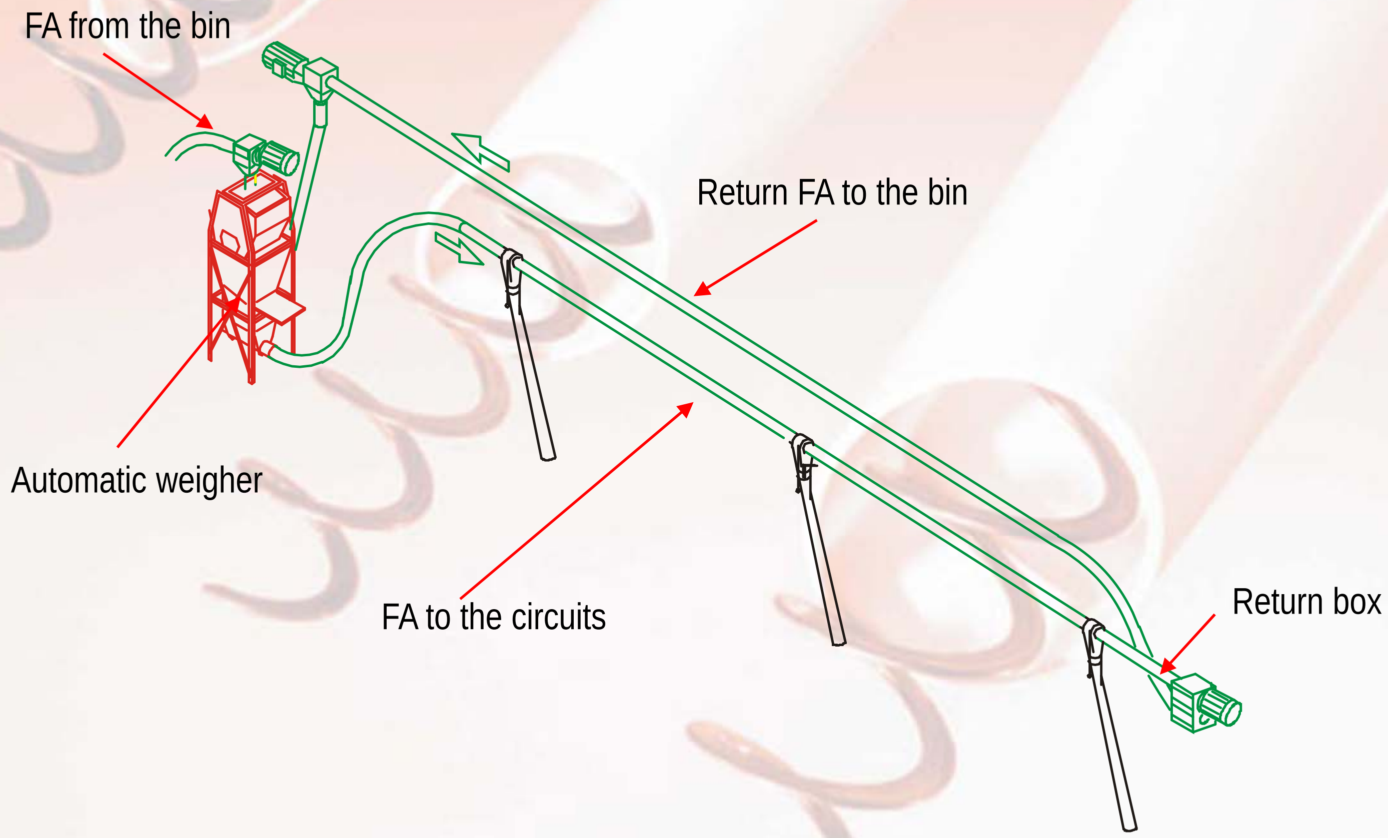


FACTS	**BENEFITS**
• electronic control → no switches	• No mechancal sensitivity
• intelligent control	• CAN as classical connection possible • Feed back open/close status outlet • automatic calibration of outlet

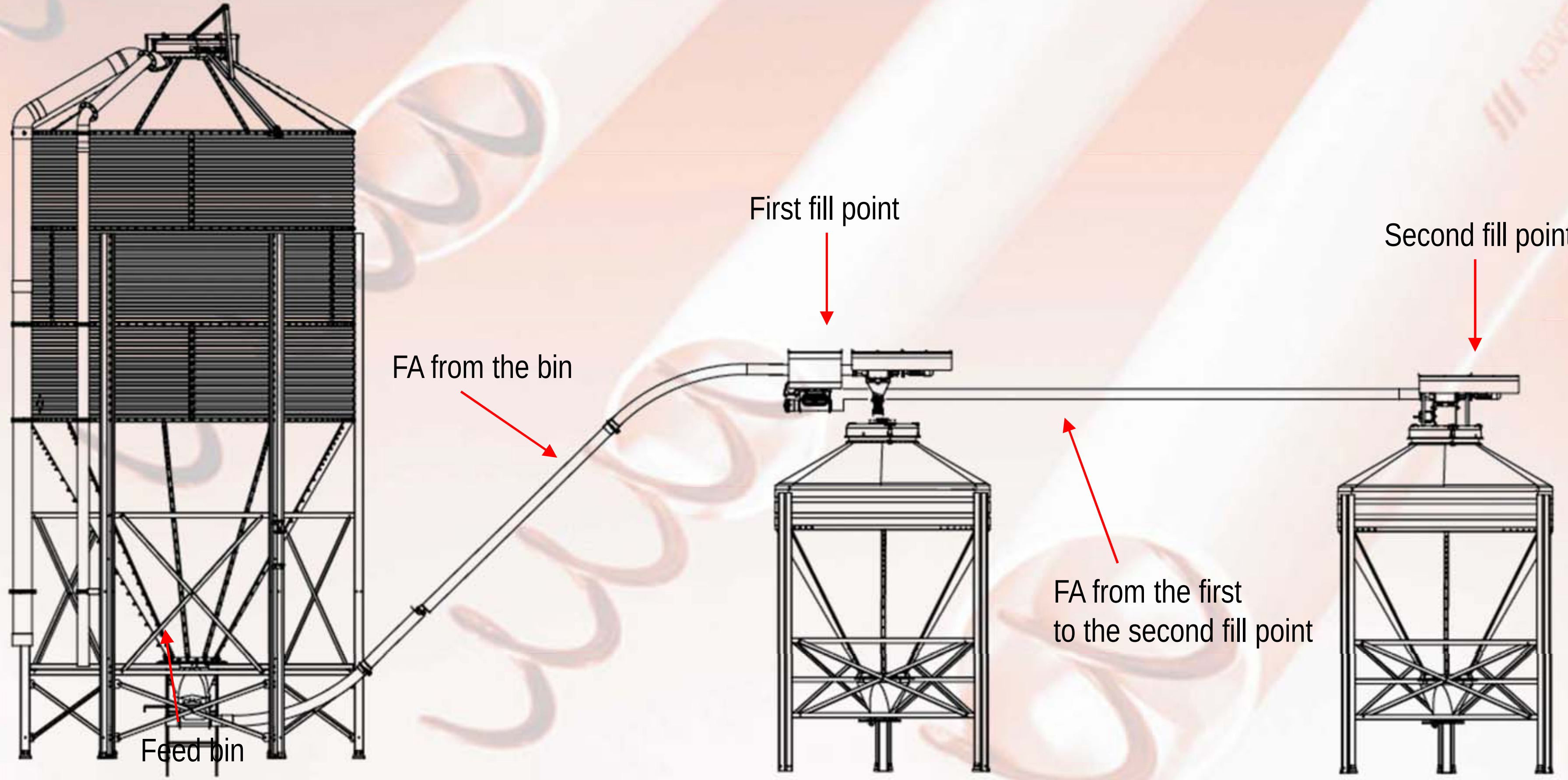
Control of the outlet

Status	Action
Bleu led	Not flashing: outlet is active Flashing: outlet is open
Green led	Calibration
Red led	Alarm – motor is blocked

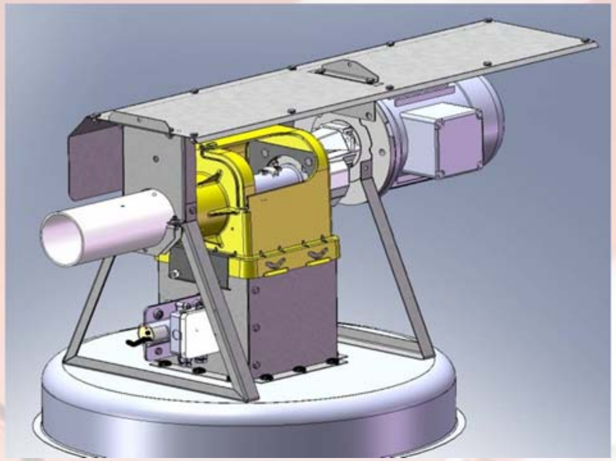
- Circulating delivery system for feeding systems in line (KiXoo/Vitoo) or rearing / laying cages.

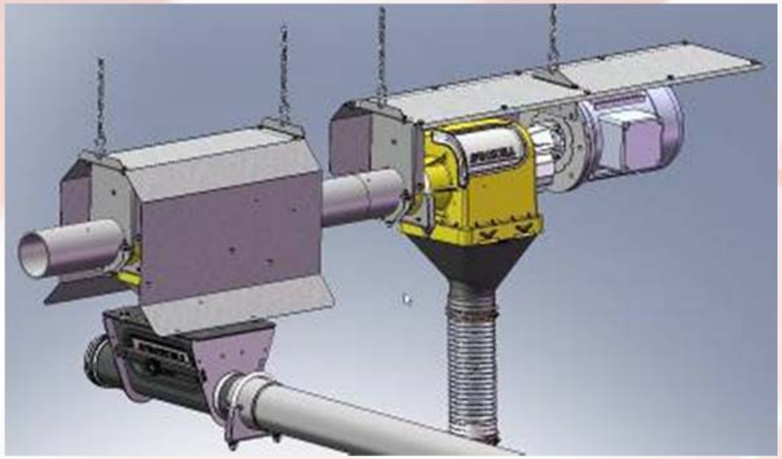


Overhead system



Overhead system





FACTS

- Protection against extreme weather
- Flex-Auger 90, 450 rpm
- Filling up of the day bin
- Fixed or suspendend drop is possible

BENEFITS

- Possibility to avoid truck on the farm
- Durable, strong and reliable

Overhead system

	Principe	Controller	Comment	Registration	Mixing
1	Filling buffers by Electronical Batch Weigher	-743	-Filling up of max. 16 filling points -Different kinds of feed possible	-Yes	-Yes
2	Filling buffers by Mechanical Batch Weigher	- Logo - Electro-mechanical Counter	-Filling up of max. 8 filling points	-Each day, no memory	-No
3	Filling day bins by load cells of day bin	- RDC	- Breeders -1 RDC/house - Dosing in/out	-Yes	-No
4	Filling buffers by maximum sensor	- Maximum sensor	- Broiler	-No	-No

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Test results with mash

Report from the AGRICULTURAL RESEARCH CENTRE in the Netherlands.

MASH IS DISTRIBUTED UNIFORMLY

TEST RESULTS WITH MASH

System 1 was 6 m long in a straight line.

System 2 was 8 m long, with 4 elbows.

One running time lasted 15 seconds.

The amount of mash delivered by systems 1 and 2 was measured for 5 running times.

RUNNING TIMES	SYSTEM 1	SYSTEM 2
1	4720 grams 0,75	4270 grams 0,75
2	4940 grams 350	4360 grams 350
3	4900 grams 1300	4720 grams 1300
4	4720 grams 1300	4330 grams 1300
5	4860 grams	4060 grams

Mash is distributed very uniformly and accurately !

Test results with pellets

Report from the AGRICULTURAL RESEARCH CENTRE in the Netherlands (continued).

PELLET BREAKAGE IS 1 % OR LESS !

TEST RESULTS WITH PELLETS

Pellet characteristics : Average diameter 8,9 mm - hardness 5 kg - length 20 mm.

The amount of pellets delivered by systems 1 and 2 was measured for 5 successive running times. After each running time these amounts were spread over three "sizes", according to the remaining pellet length :

1 : more than 5 mm (> 5 mm)

2 : between 2 and 5 mm

3 : less than 2 mm (< 2 mm)

Test results with pellets

Report from the AGRICULTURAL RESEARCH CENTRE in the Netherlands (continued).

TEST RESULTS WITH PELLETS (continued)

RUNNING TIMES	SYSTEM 1				SYSTEM 2			
	TOTAL (grams)	> 5 mm (grams)	2-5 mm (grams)	< 2 mm (grams)	TOTAL (grams)	> 5 mm (grams)	2-5 mm (grams)	< 2 mm (gram)
1	4580	4540	15	25	3760	3690	20	50
2	4345	4300	10	35	3440	3380	15	45
3	4790	4735	15	20	3530	3480	20	30
4	4625	4580	20	25	3545	3495	20	30
5	4405	4375	15	15	3625	3575	20	30
TOTALS	22745			**120** **0,52 %**	17900			**185** **1,03 %**

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Test results with pellets

Report from the AGRICULTURAL RESEARCH CENTRE in the Netherlands (continued).

TEST RESULTS WITH PELLETS (continued)

Pellet characteristics :

Average diameter 5,2 mm.

Average hardness 6 kg.

Average length 13,5 mm.

RUNNING TIMES	SYSTEM 1			SYSTEM 2		
	TOTAL (grams)	2-5 mm (grams)	< 2 mm (grams)	TOTAL (grams)	2-5 mm (grams)	< 2 mm (grams)
1	5360	5330	30	4980	4910	70
2	5515	5360	15	5130	5060	70
3	5590	5560	30	5235	5160	75
4	5580	5530	50	4950	4875	75
5	5860	5825	35	5230	5160	70
TOTALS	27905		**300** **1,07 %**	25525		**360** **1,41 %**

The size with feed particles smaller than 2 mm was only

1 % or less of the amount delivered.