MIXED-FLOW GRAIN DRYER

EFFICIENT AND RELIABLE

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MIXED-FLOW GRAIN DRYER

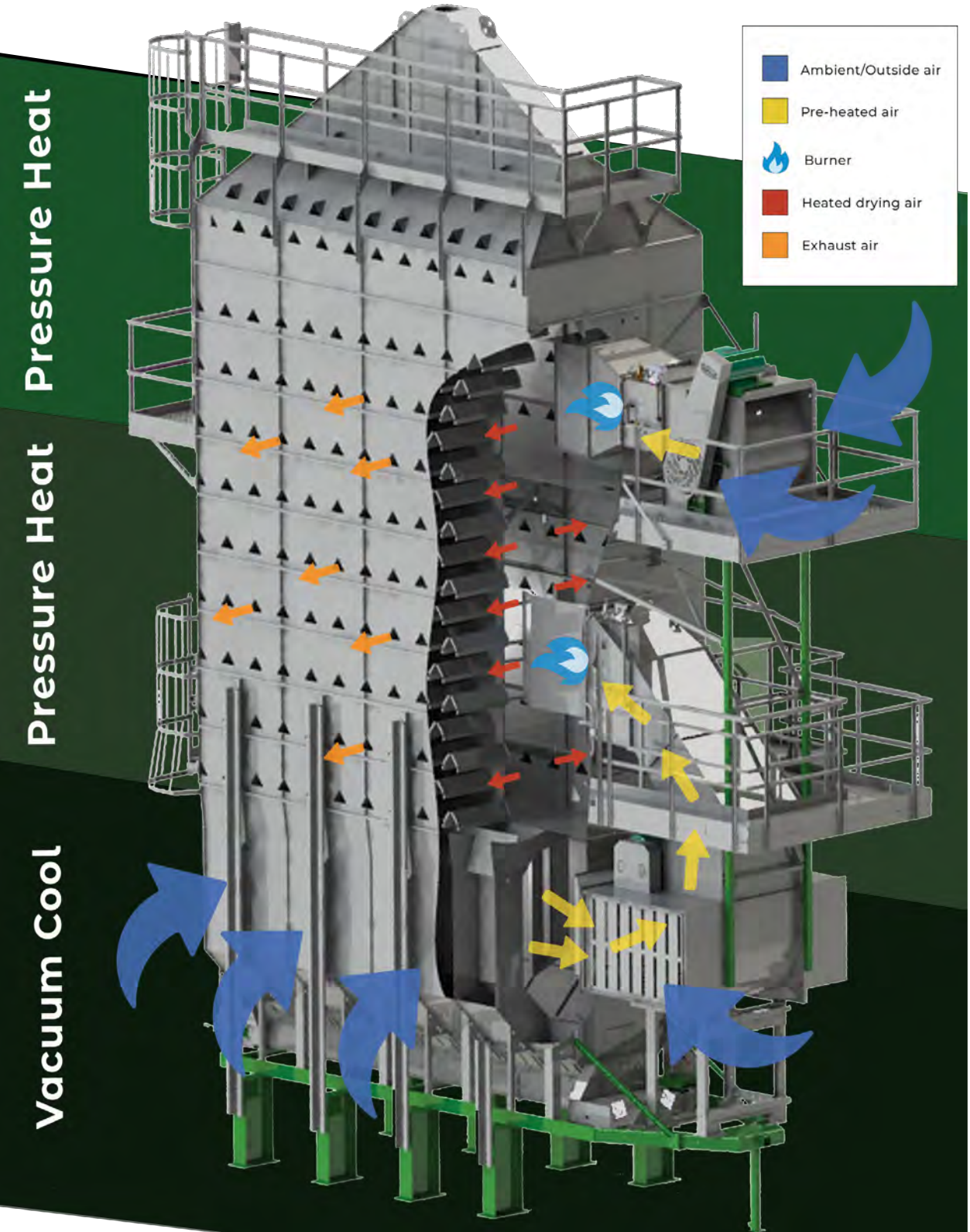
Vacuum Cooling

SUKUP® EXCLUSIVE

Sukup Manufacturing is the only company using this method in Mixed Flow Dryers.

Drying occurs in the top tiers of Sukup Mixed-Flow Dryers. Vacuum-cooling is accomplished in the bottom screened sections. Vacuum-cooling recovers heat during the cooling process, so Sukup Mixed-Flow Dryers are more fuel-efficient than traditional pressure cool dryers.

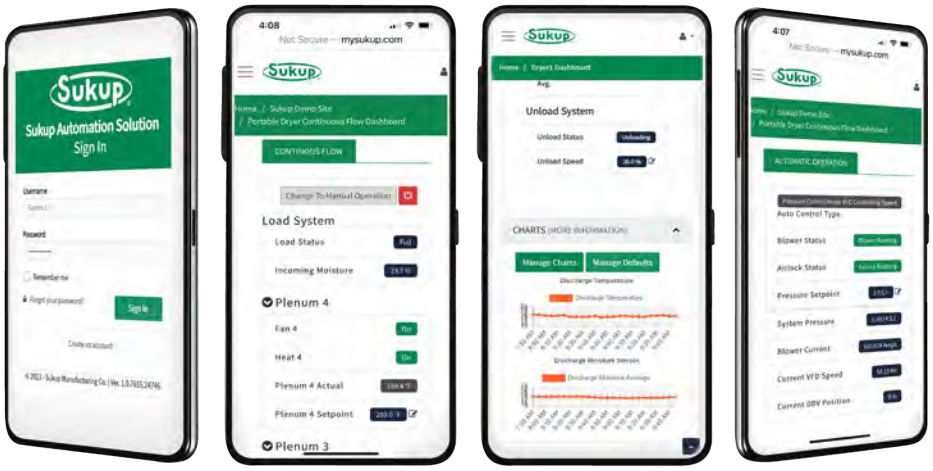
Sukup Mixed-Flow Dryers use approximately half the airflow per bushel and hold almost twice as many bushels than traditional cross-flow dryers. This results in improved grain quality and fuel efficiency.



NOTE: Because tiers are used for drying and screens are used for cooling, drying capacity of a 6-tier Sukup Mixed-Flow Dryer is comparable to competitors' 8-tier models.

MYSUKUP™ REMOTE WEB ACCESS

MySukup™ allows you to monitor and control your Sukup® Dryer from a smart phone, tablet, or PC.



FEATURES:

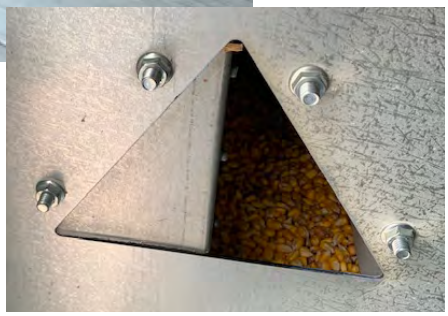
- Dryer shutdown alerts
- View dryer performance charts
- Ability to switch between manual and auto unload control
- Adjust moisture and/or temperature settings
- Shut dryer off remotely
- Set up multiple users with permission to view only, or view and make changes

Must have internet access via Ethernet cable at QuadraTouch Pro™ control system to use. Requires yearly license fee. Please note that the dryer cannot be started remotely.

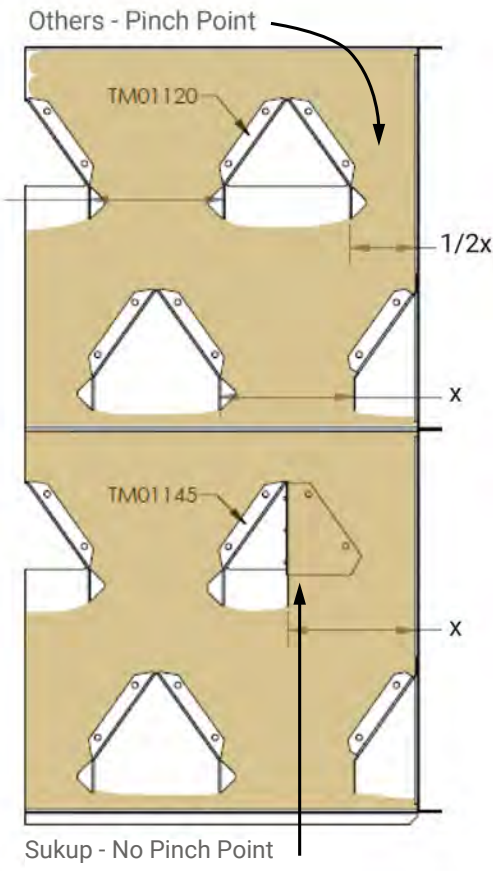
VERTICAL END DUCTS

SUKUP® EXCLUSIVE

- Patented vertical intake duct on front and back of column
- Creates more space for grain
- Decreases chance of plugging



Vertical End Duct
Patent No. 11,193,711



Screen Cleaning

NO LONGER NECESSARY

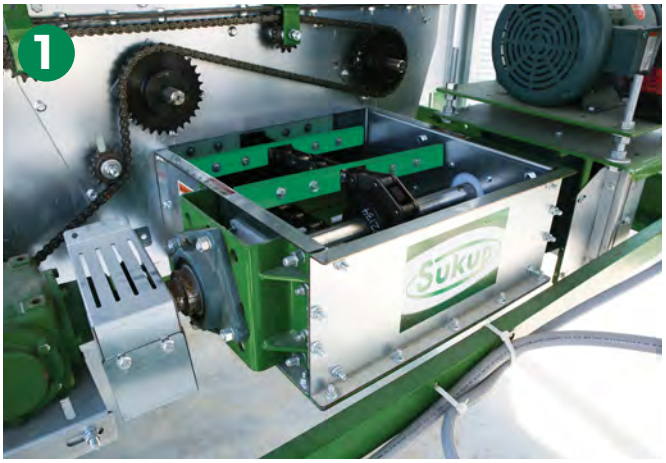
With the large, triangle ducts along the sides of the Mixed-Flow Dryers, saturated air flows through with ease without plugging up with fines and bee's wings. This eliminates any losses in capacity or efficiency due to debris build-up on conventional screen dryers. Also greatly reduces cleaning labor and time.

Single Conveyor Unloading System

SUKUP® EXCLUSIVE

Sukup Mixed-Flow Dryers allow for a single conveyor unloading system. Which minimizes moving parts as compared to competing units requiring two or three conveyors.

(1.) Drag-Chain Unload Conveyors are standard and use our **(2.) Static Moisture Sampler**. It catches a sample of discharged grain, tests the moisture, and releases it, making it more accurate than testing moving grain.



LOADING SYSTEMS

3. Auger Loading Systems or **4. Gravity Loading Systems** are available. Service platform is standard on both options.

QUADRATOUCH PRO™

UNMATCHED PERFORMANCE

The QuadraTouch Pro™ control system is featured on all Sukup® Dryers and was designed to be easy to use while **eliminating around-the-clock monitoring** and i**ncreasing productivity and efficiency.**

Simple, Menu-Driven System

The QuadraTouch Pro™ control system featured on all Sukup Dryers is extremely easy to use.

- Simple menus guide you through dryer functions for easy start-up and operation.
- Operator inputs are easy with a pop-up keypad for entering drying temps or discharge moisture set-points.

S.M.A.R.T. LOOP™

(Simultaneous Monitoring And Reaction Technology)

- Uses incoming (if equipped) and outgoing moisture and grain temperature sensors with the advanced algorithm programming to increase dryer efficiency, reduce large swings in temperature and discharge moisture, and help the dryer run more efficiently.

Automatic Control is Standard

Sukup was the first company to make true moisture sensing standard on its dryers.

- Moisture content information is collected from standard outgoing sensors.
- Critical adjustments are made to the metering roll speeds to maintain your desired discharge moisture content.
- Sukup modular moisture sensors are easily removed from the dryer for indoor storage in the off season.
- Auto control based on average grain temperature in the heat chamber is standard.

PLC-based system is built to withstand harsh environments and has superior electrical noise protection, eliminating nuisance trips and providing a dependable system.


TM3217


TM2414 EXPANDABLE

											CORN		WHEAT	CANOLA
Model	# Tiers Mixed Flow	Height[a] Level Auger	Height[a] Gravity Fill	Heating Vol. (Bu)	Total Holding (Bu)	Max Burner Output[b] (MMBtu)	Avg Burner Output[b] (MMBtu)	Lower Fan	Upper Fan	Transport Loads	Est. Cap[c] 20%-15% 220°F (bu/hr)	Est Cap[c] 25%-15% 220°F (bu/hr)	Est Cap[c] 19%-14% 180°F (bu/hr)	Est Cap[c] 15-10%, 180°F (bu/hr)
16' DRYERS														
TM1606 (e)(f)	6	26' 11"	29' 2"	584	955	5	4	30 HP	None	2	709	367	613	479
TM1608 (d)(f)	8	30' 11"	33' 2"	778	1150	7	5	40 HP	None	3	945	489	817	639
TM1609 (d)(f)	9	32' 11"	35' 2"	875	1247	8	6	50 HP	None	3	1063	551	919	719
TM1610 (d)	10	34' 11"	37' 2"	973	1344	9	7	30 HP	(1)15 HP	3	1182	612	1021	798
TM1612 (d)	12	40' 11"	43' 2"	1167	1598	11	8	40 HP	(1)15 HP	3	1418	734	1225	958
TM1613 (d)	13	42' 11"	45' 2"	1264	1695	11	9	50 HP	(1)15 HP	3	1536	795	1328	1038
TM1614	14	44' 11"	47' 2"	1362	1793	12	9	30 HP	(2)15 HP	4	1654	856	1430	1118
TM1616	16	50'11"	53' 2"	1556	2047	14	11	40 HP	(2)15 HP	4	1891	979	1634	1278
TM1617	17	52' 11"	55' 2"	1653	2144	15	11	50 HP	(2)15 HP	4	2009	1040	1736	1357
24' DRYERS														
TM2405 (e)(f)	5	24' 11"	30' 2"	729	1293	7	5	40 HP	None	3	886	459	766	599
TM2406 (e)(f)	6	26' 11"	32' 2"	875	1439	8	6	50 HP	None	3	1063	551	919	719
TM2409 (d)	9	32' 11"	38' 2"	1313	1877	12	9	40 HP	(1)20 HP	4	1595	826	1379	1078
TM2410 (d)(f)	10	34' 11"	40' 2"	1459	2023	13	10	50 HP	(1)20 HP	4	1772	918	1532	1198
TM2413	13	42' 11"	48' 2"	1896	2550	17	13	40 HP	(2)20 HP	5	2304	1193	1991	1557
TM2414 (d)	14	44' 11"	50' 2"	2042	2695	18	14	50 HP	(2)20 HP	5	2481	1285	2144	1677
TM2418	18	54' 11"	60' 2"	2626	3399	24	18	50 HP	(3)20 HP	7	3190	1652	2757	2156
32' DRYERS														
TM3209 (d)(f)	9	32' 11"	41' 2"	1751	2506	16	12	(2)50 HP	None	4	2127	1101	1838	1437
TM3210 (d)	10	34' 11"	43' 2"	1945	2701	18	13	(2)30 HP	(1)30 HP	4	2363	1223	2042	1597
TM3212 (d)	12	40' 11"	49' 2"	2334	3208	21	16	(2)40 HP	(1)30 HP	5	2836	1468	2451	1916
TM3213 (d)	13	42' 11"	51' 2"	2529	3403	23	17	(2)50 HP	(1)30 HP	5	3072	1590	2655	2076
TM3214	14	44' 11"	53' 2"	2723	3597	25	18	(2)30 HP	(2)30 HP	5	3309	1713	2859	2236
TM3216	16	50' 11"	59' 2"	3112	4105	28	21	(2)40 HP	(2)30 HP	7	3781	1958	3268	2555
TM3217	17	52' 11"	61' 2"	3307	4300	30	22	(2)50 HP	(2)30 HP	7	4018	2080	3472	2715

(a) Height is frame to fill, legs not included. 3', 4' or 5' legs available, see previous page. NOTE: Expandable option adds 2' to height, double expandable option adds 4'.

(b) Maximum burner output based on 200°F temperature rise. Average burner output is 150°F temperature rise.

(c) Capacities are wet bushels based on computer estimates, drying principles, and field results. Variations may occur due to grain kernel size, cleanliness, variety, maturity levels, weather conditions, growing season, etc. Some varieties or applications require different plenum temperatures which may affect drying capacity.

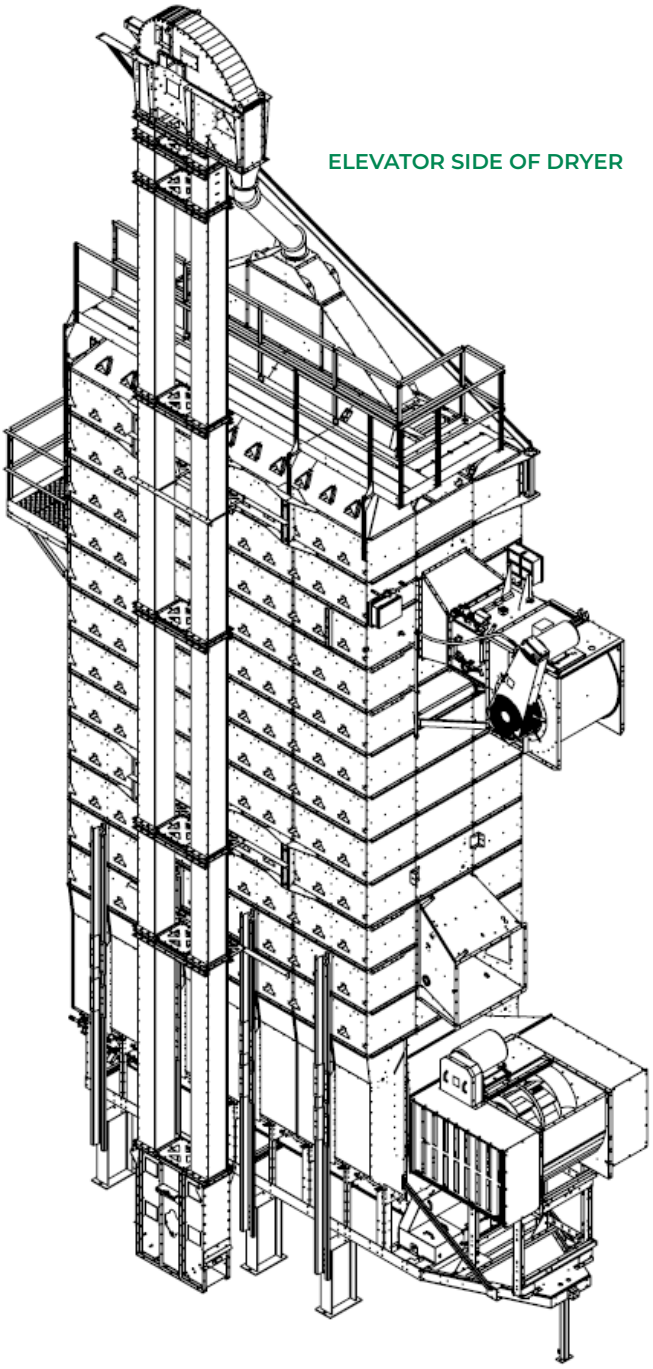
(d) Models may be ordered with Expandable Option, specify at order. NOTE: add 1 transport load where indicated, see chart above.

(e) Models are expandable as standard, heights reflect this.

(f) Models may be ordered with Double Expandable Option, specify at order. NOTE: add 1 transport load where indicated, see chart above.

NOTE: Sukup Manufacturing Co. provides the information contained within this brochure to assist you in choosing the optimal equipment for your situation. Many factors, such as grain variety, maturity levels, grain cleanliness, weather conditions and operation/management, can affect the performance of your dryer and results may vary. This information is calculated and is not a guarantee of product specifications or performance. Based on these factors, Sukup specifications should only be used as estimates, and not as a warranty, express or implied, of how a particular Sukup unit will perform under your operating conditions. Because we are continually advancing Sukup products, changes may occur that may not be reflected in the specifications.

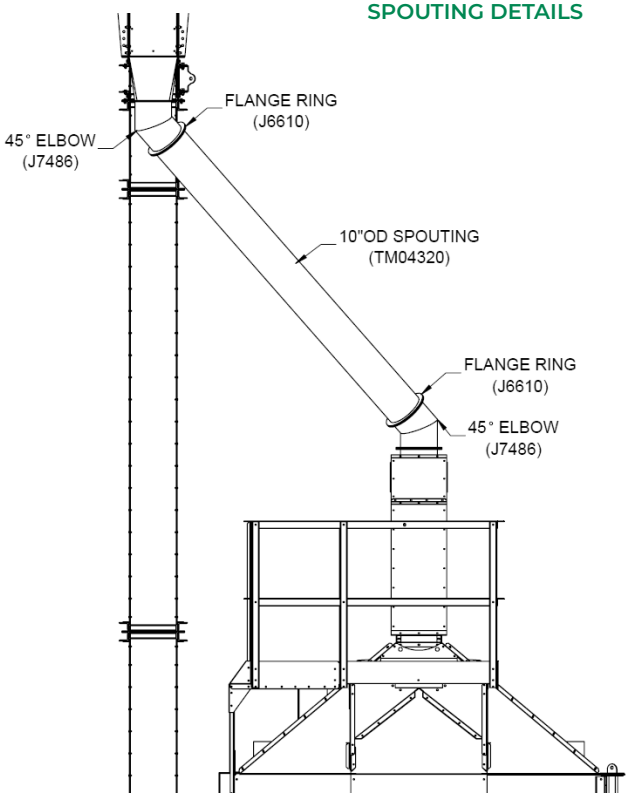
BUCKET ELEVATOR TO MIXED-FLOW DRYER



ELEVATOR SIDE OF DRYER

- Elevator must be 24". Service platform around head section may be added with use of this kit.
- Mixed-Flow Dryer must be gravity-fill.
- Height of bucket elevator required must take into consideration height of dryer legs being used and extra height from dryers ordered as expandable.
- Order standard 24” bucket elevator with a discharge height 8’ taller than dryer fill height. When 1’ section included in attachment kit is added, height difference must be 9', no greater.

SPOUTING DETAILS



Attachment Kits

DESCRIPTION	PART #	LBS.
16’ MIXED-FLOW DRYER	TM16620	1512
24’ MIXED-FLOW DRYER	TM24620	1595
32’ MIXED-FLOW DRYER	TM32620	1685

10” Options

DESCRIPTION	PART #	LBS.
45° ELBOW, GALVANIZED	J7486	21
FLANGE RING	J6610	2.7
TUBE, GALVANIZED, 10’	TM04320	141

INCLUDES:

- Brackets, round tubing, hardware to attached 24” elevator head to gravity-fill roof
- 1’ special trunking section for 24” elevator *note this adds 1’ to elevator discharge height*
- Brackets and hardware to attach elevator trunking to side of mixed-flow dryer

FULL-HEAT MIXED-FLOW DRYER™

Better grain quality than cross-flow full-heat dryers

- Wide (30”) grain columns hold more grain in process compared to 14” or narrower cross-flow columns.
- Grain is dried slower, using about half the airflow per bushel, but holding more bushels in process.
- Variable-speed drag-conveyor unload compared to high-speed auger unload.

Full-heat dryers only heat the grain. It’s then cooled in a grain bin, making the dryer smaller and less expensive than dryers that heat and cool grain.

- The grain is slowly cooled in a grain bin over 24-48 hours lowering potential for stress cracks in the kernels.
- Low-speed centrifugal fans make the dryer very quiet.
- Sukup line burners provide excellent fuel efficiency and low emissions.
- Standard large 7” metering rolls allow grain with foreign material to flow without plugging. They are also ideal for specialty crops such as rice or pistachios.
- One variable-speed motor drives both the standard unload drag-conveyor and the metering rolls, making it extremely gentle on the product.

Drying occurs in the tiers of the Sukup Full-Heat Mixed-Flow dryer. Each tier has a row of inlet ducts open to the center of the dryer and a row of exhaust ducts open to the outside of the dryer.

Hot air from the fan & heater enters the inlet ducts and moves through the grain in mixed directions to the nearest exhaust ducts. This gives more even drying air temperature to all the grain in the dryer, resulting in better fuel efficiency and grain quality.

SUKUP MANUFACTURING FULL-HEAT MIXED-FLOW DRYERS										CORN - FULL-HEAT		WHEAT FULL-HEAT	CANOLA FULL-HEAT
MODEL	NUMBER OF TIERS	TOTAL HEIGHT LEVEL AUGER (FT)(a)	(TOTAL HEIGHT GRAVITY FILL (FT) (a)	HEATING GRAIN VOLUME (BU)	TOTAL HOLDING (BU)	MAX BURNER OUTPUT (MMBTU/HR)(b)	AVERAGE OUTPUT (MMBTU/HR)(b)	FAN(S)		CORN ESTIMATED CAPACITY 20-17%, 220°F (BU/HR)(c)	CORN ESTIMATED CAPACITY 25-17%, 220°F (BU/HR)(c)	WHEAT EST CAPACITY 19-14%, 180°F (BU/HR) (c)	CANOLA EST CAPACITY 15-10%, 180°F (BU/HR) (c)
TB1604	4	18.39	20.61	389	666	4	3	(1)	15 HP	663	327	408	319
TB1608	8	26.39	28.61	778	1055	7	5	(2)	15 HP	1327	654	817	639
TB1612	12	34.39	36.61	1167	1444	11	8	(3)	15 HP	1990	980	1225	958
TB2404	4	18.39	23.61	584	1005	5	4	(1)	20 HP	995	490	613	479
TB2408	8	26.39	31.61	1167	1589	11	8	(2)	20 HP	1990	980	1225	958
TB2412	12	34.39	39.61	1751	2172	16	12	(3)	20 HP	2985	1471	1838	1437

(a) Height is frame to fill, legs not included. 3', 4' or 5' legs available.

(b) Maximum burner output based on 200°F temperature rise. Average burner output is 150°F temperature rise.

(c) Capacities are wet bushels based on computer estimates, drying principles, and field results. Variations may occur due to grain kernel size, cleanliness, variety, maturity levels, weather conditions, growing season, etc. Some varieties or applications require different plenum temperatures which may affect drying capacity.

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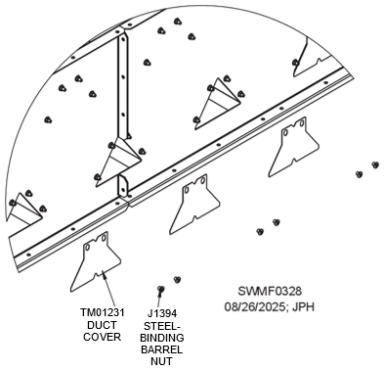
MIXED-FLOW DRYER EXHAUST DUCT COVERS

WHAT THEY DO

Duct covers block exhaust air ducts when dryer is not running, helping to prevent pests, debris, and rain from entering mixed-flow grain dryer.

Unique features:

- Covers deter birds from entering and building nests inside dryer, and hamper raccoons from being able to squeeze into ducts.
- Amount of rain entering dryer is minimized. Moisture is easily absorbed in crops like soybeans and rice.
- Covers swing open to allow exhaust air to escape without restricting airflow, and need for cleaning dryer during drying season is minimized.
- Amount of grain that bounces out of the exhaust ducts during initial filling is reduced.



Tables below show quantities of duct covers and attachment hardware. Duct covers should be attached to all ducts on roof and all tiers.

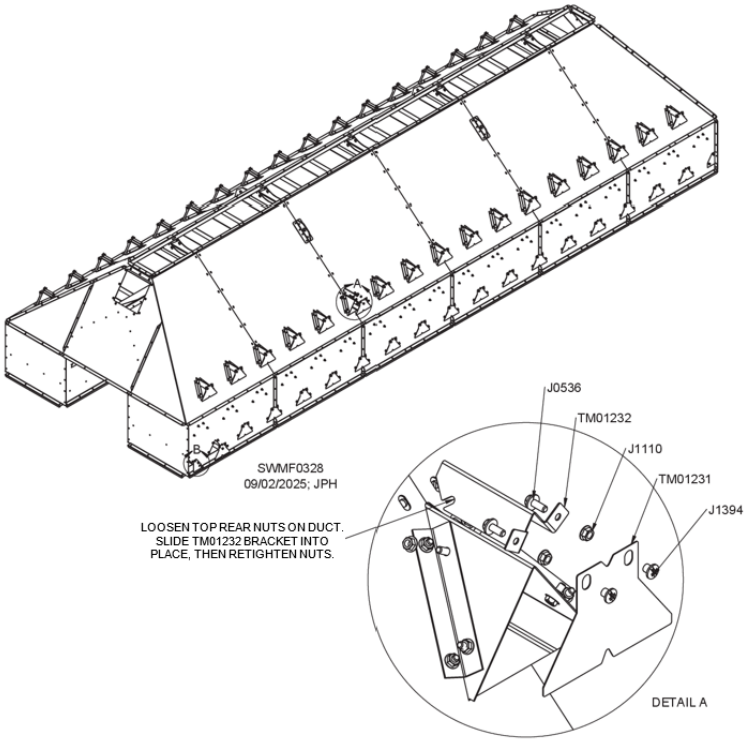
DESCRIPTION	PART #	16' QTY	24' QTY	32' QTY
BARREL NUT	J1394	52	76	100
DUCT COVER	TM01231	22	34	46
HALF DUCT COVER	TM01233	4	4	4

Table 1 - Duct cover parts for each tier

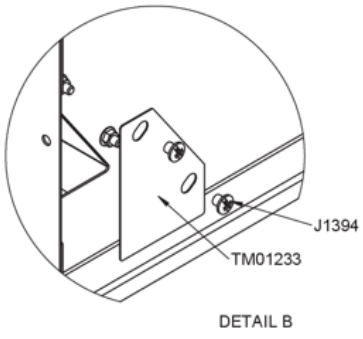
DESCRIPTION	PART #	16' QTY	24' QTY	32' QTY
SCREW, 5/16 - 18 X 3/4"	J0536	44	68	92
WHIZ NUT, 5/16" - 18	J1110	44	68	92
BARREL NUT	J1394	44	68	92
DUCT COVER	TM01231	22	34	46
DUCT BRACKET	TM01232	22	34	46

Table 2 - Duct cover parts for roof module

Duct covers open while dryer running



- Two different duct cover styles - full and half pieces
- Special brackets for attaching covers to ducts on slanted roof of dryer



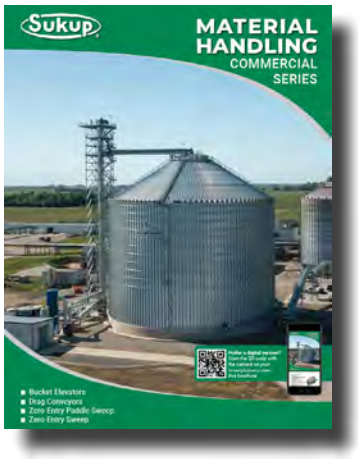
Sukup Manufacturing Co. is the world's largest family-owned and operated manufacturer of grain storage, drying, and handling equipment. The company is headquartered in America's heartland – Sheffield, Iowa – and covers over one million square feet of office, manufacturing, and warehouse space.

Sukup® constantly strives to push the boundaries of innovation and quality and currently holds the record for the world's largest grain bin that holds 2.2 million bushels of corn. The company prides itself on their philanthropic efforts in giving back to local, statewide, and international charities including the design and construction of Safe T Home®, a patented structure suitable for recovery efforts.

Take a look at Material Handling

COMMERCIAL SERIES

SUKUP SOLUTIONS™ SINCE 1963



Commercial Paddle Sweep

- Sukup's Zero-Entry Commercial Paddle Sweeps eliminate the need for personnel to enter the bin, offering a safer and more efficient grain handling solution.

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