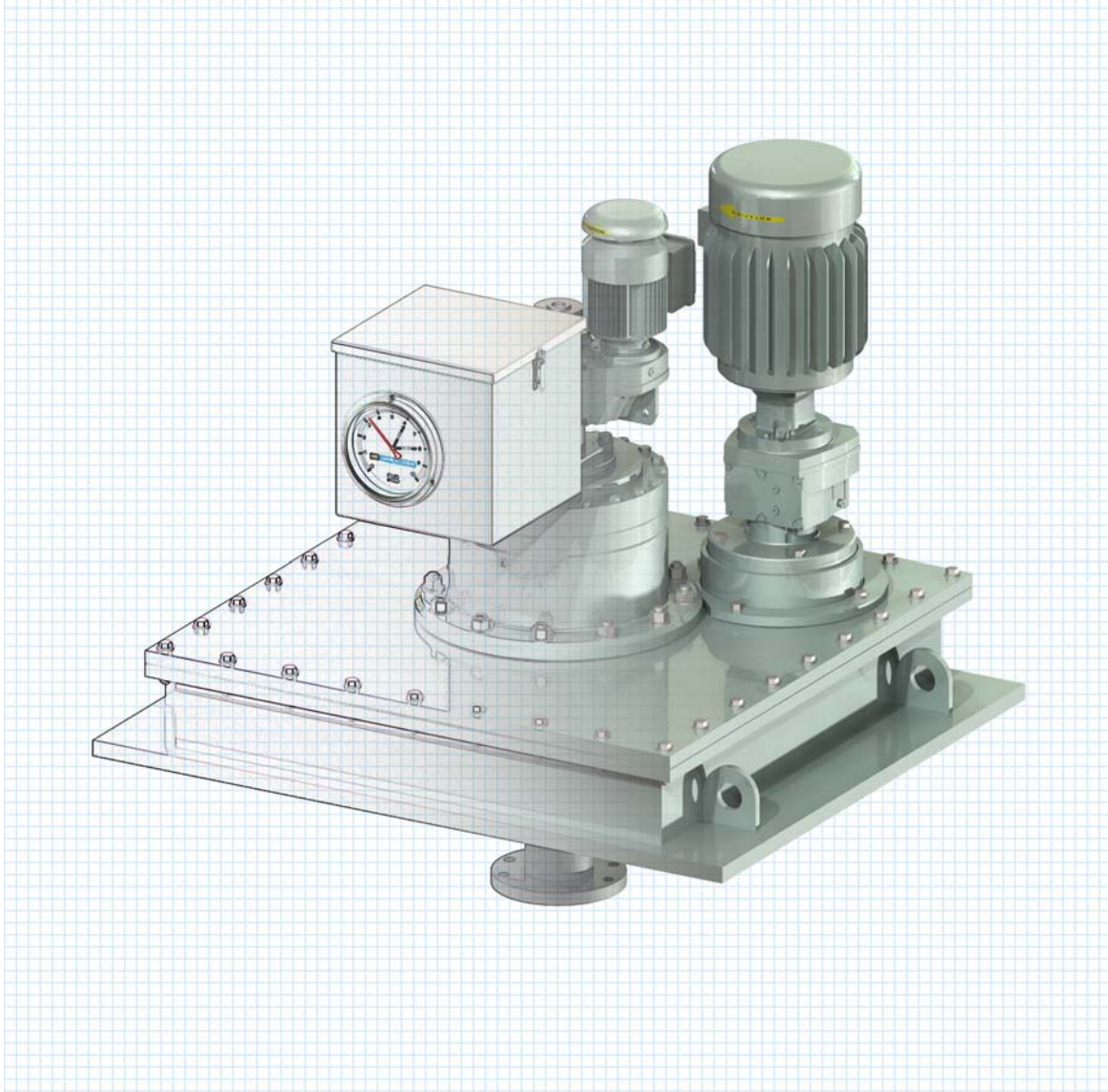


# Bridge-Mounted Dual Concentric Output Shaft Drive Units



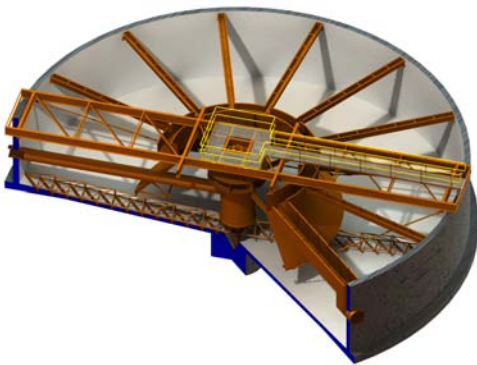
**DBS MANUFACTURING®**

# Bridge-Mounted Dual Concentric Output Shaft Drive Units



## Description

- Drive unit has two concentric output drive shafts
- Used on solids contact and flocculating clarifiers or softeners
- Rake drive section is a low-speed, high-torque, totally enclosed gear drive with positive overload protection
- Turbine drive section is a heavy-duty, higher speed, totally enclosed gear drive
- The drive unit is supported by a bridge completely spanning the tank
- The drive unit has a central output shaft to drive the rakes
- Used in industrial, municipal and mining clarifiers and thickeners
- Typically used on tank sizes from 10 to 100 ft (3 to 30 m) in diameter



## Features

- Forged alloy steel main gears and pinions designed for 20 years of life calculated per AGMA 2001-C95
- Precision, four-point-contact main bearing, with a 10-year warranty
- Rake drive has accurate torque gauge calibrated in ft-lbf, N-m or any units desired
- Variable speed turbine drive is standard
- Alarm and cutoff switches and maximum torque limiting via shear pin or pressure relief valve
- Dry well lubrication on turbine output
- Designed for minimum maintenance with permanently lubricated rake intermediate gearbox

RAKE TORQUE CAPACITY - BRIDGE-MOUNTED DUAL DRIVE UNITS							TURBINE DRIVE POWER <sup>1</sup>	
Model	Continuous		Maximum Overload		Yield		Allowable Horsepower	Max. Speed rpm
	ft-lb	N-m	ft-lb	N-m	ft-lb	N-m		
SX-A*-D25	3,000	4,100	6,000	8,200	8,100	11,000	10	56
SX-B*-D25	6,000	8,200	12,000	16,400	16,200	22,000	10	56
SX-C*-D25	10,000	14,000	20,000	28,000	27,000	36,500	10	56
S25-A*-D25	14,000	19,000	28,000	38,000	54,000	73,000	20	56
S34-A*-D34	18,500	25,000	37,000	50,000	120,000	163,000	25	39
S34-B*-D34	27,000	36,500	54,000	73,000	120,000	163,000	25	39
S44-B*-D44	35,000	47,500	70,000	95,000	195,000	264,000	50	29
S44-C*-D44	47,000	64,000	94,000	128,000	195,000	264,000	50	29
S60-C*-D60	65,000	88,000	130,000	176,000	440,000	597,000	75	21
S60-D*-D60	125,000	169,500	250,000	339,000	440,000	597,000	75	21
S44-B*2-D44	70,000	95,000	140,000	190,000	390,000	528,000	50	29
S44-C*2-D44	94,000	128,000	188,000	256,000	390,000	528,000	50	29
S60-C*2-D60	130,000	176,000	260,000	352,000	880,000	1,194,000	75	21
S60-D*2-D60	250,000	339,000	500,000	678,000	880,000	1,194,000	75	21

<sup>1</sup> For higher horsepower requirements or higher speed, consult factory.

Replace the \* with the primary reducer option selected.

**Continuous:** Torque at which main gear will have a life in excess of 20 years at normal operating speeds.

**Maximum Overload:** The maximum safe, short term operating torque.

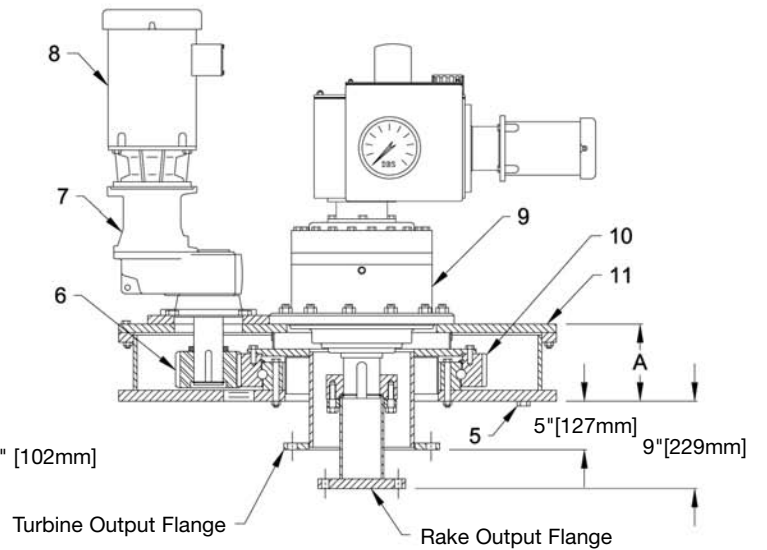
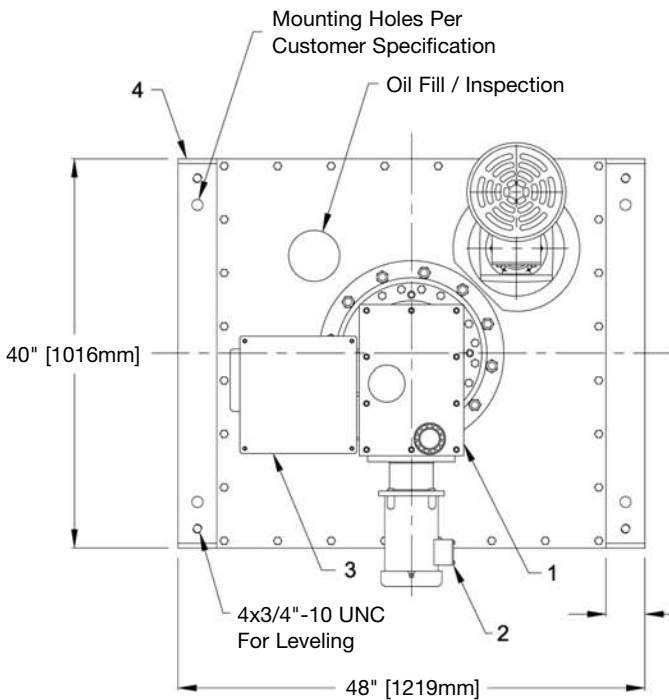
**Yield:** The structural maximum torque based on the minimum yield strength of the main gear.

# Bridge-Mounted Dual Concentric Output Shaft Drive Units

## SX-D25 Series Dimensions



- | Item | Description             |
|------|-------------------------|
| 1    | Primary reducer, rake   |
| 2    | Electric motor, rake    |
| 3    | Torque gauge box        |
| 4    | Lift lug                |
| 5    | Drain plug              |
| 6    | Turbine pinion          |
| 7    | Speed reducer, turbine  |
| 8    | Electric motor, turbine |
| 9    | Planetary gearbox, rake |
| 10   | Turbine gear-bearing    |
| 11   | Main housing            |



Model	A		Rake Output Flange <sup>1</sup>	Turbine Output Flange <sup>1</sup>	Weight	
	in	mm			lb	kg
SX-A*-D25	7.935	201.5	4"	10"	3,000	1,361
SX-B*-D25	7.935	201.5	4"	10"	3,250	1,477
SX-C*-D25	10.250	260.4	4" with oversized 15/16" dia holes	10"	3,500	1,591

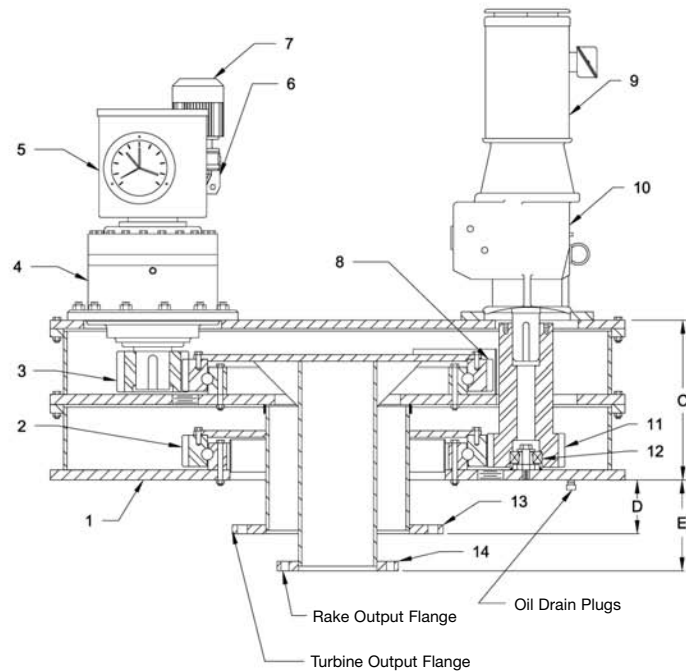
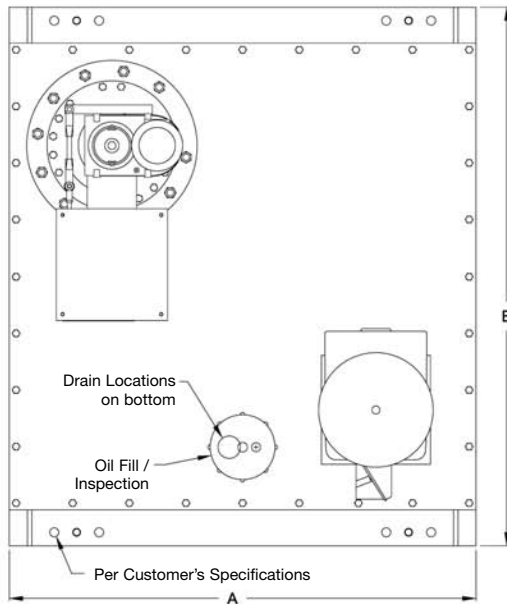
<sup>1</sup>Metric flanges are available.  
Replace the \* with the primary reducer option selected.

# Bridge-Mounted Dual Concentric Output Shaft Drive Units

## SD-Series Dimensions



- | Item | Description                     |
|------|---------------------------------|
| 1    | Machine frame                   |
| 2    | Main gear-bearing, turbine      |
| 3    | Pinion, rake                    |
| 4    | Planetary gearbox, rake         |
| 5    | Torque gauge                    |
| 6    | Primary speed reducer, rake     |
| 7    | Electric motor, rake            |
| 8    | Main gear-bearing, rake         |
| 9    | Electric motor, turbine         |
| 10   | Primary speed reducer, turbine  |
| 11   | Pinion, turbine                 |
| 12   | Pinion support bearing, turbine |
| 13   | Drive hub, turbine              |
| 14   | Drive hub, rake                 |



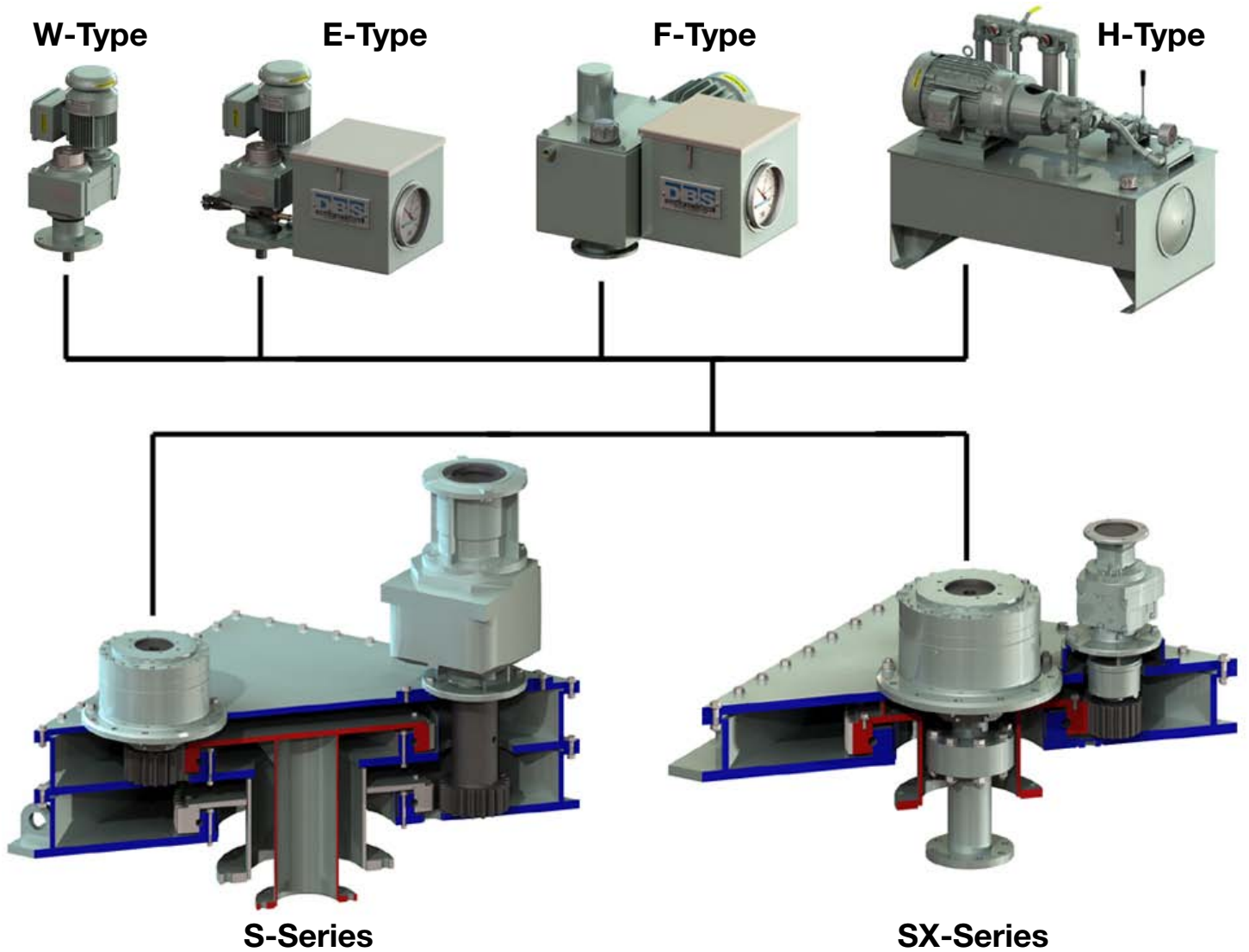
Model	A		B		C		D		E		Rake Flange <sup>1</sup>	Turbine Flange <sup>1</sup>	Weight	
	in	mm	in	mm	in	mm	in	mm	in	mm			lb	kg
S25-A*-D	40	1,016	48	1,219	14	356	4	102	8	203	5"	10"	4,600	2,087
S34-A*-D	48	1,219	56	1,422	14.5	368	6	152	10	254	8"	16"	6,800	3,084
S34-B*-D	52	1,321	60	1,524	17.75	451	6	152	10	254	8"	16"	7,800	3,538
S44-B*-D	60	1,524	68	1,727	17.75	451	6	152	10	254	10"	20"	8,400	3,810
S44-C*-D	64	1,626	72	1,829	19.75	502	6	152	10	254	10"	20"	9,000	4,082
S60-C*-D	76	1,930	84	2,134	21	533	8	203	14	356	16"	30"	13,400	6,078
S60-D*-D	80	2,032	88	2,235	26	660	8	203	14	356	16"	30"	15,000	6,804

<sup>1</sup>Metric flanges are available.  
Replace the \* with the primary reducer option selected.



# Bridge-Mounted Dual Concentric Output Shaft Drive Units

## Rake Primary Speed Reducer Options



One of the items above will be used with one of the items below to make a complete drive unit assembly.

## Rake Primary Speed Reducer Options

### E-type primary speed reducer

The E-type design uses helical gears for speed reduction. It has alarm and cutoff switches and a shear pin to provide triple protection of the drive unit. This design is used where the output speed is outside the limits of the F-type primary speed reducers or when an electro-mechanical type drive unit is desired.



### F-type primary speed reducer

The F-type design uses a hydraulic pump-motor combination for speed reduction. It has alarm and cutoff switches and hydraulic relief (equivalent to a shear pin in the E-type primary speed reducer) to provide triple protection of the drive unit. This design is positive torque-limiting and will operate under stalled and semi-stalled conditions. Optional reversing rotation and variable speed are available. The torque indication and protection system is equally accurate for operation in either direction.



### H-type primary speed reducer

The H-type design has all the features of the F-type primary speed reducer. It uses a stand-alone industrial hydraulic power unit. This design is used on higher horsepower and multiple pinion drive applications.



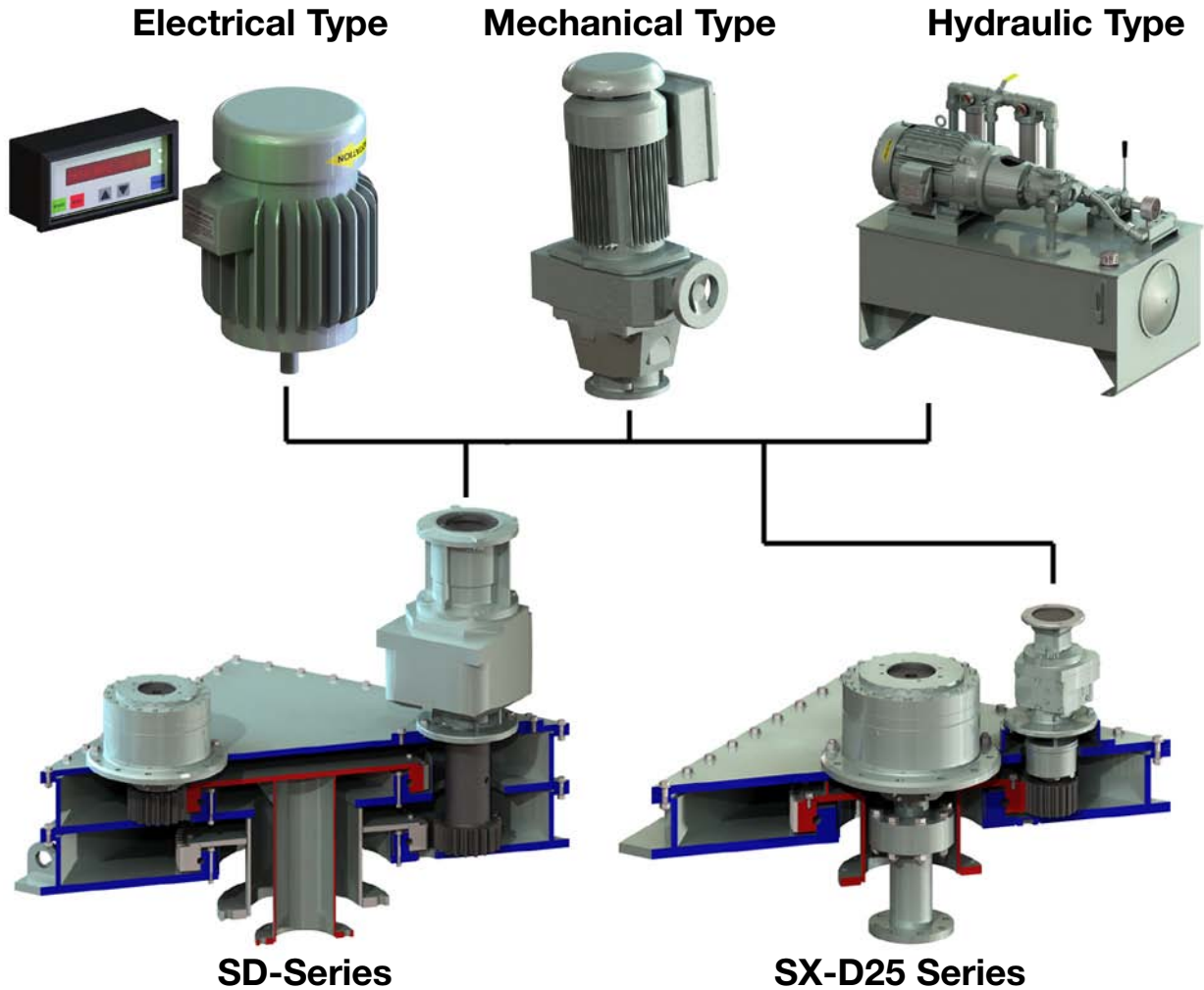
### W-type primary speed reducer

The W-type design uses helical gears for speed reduction. It has shear pin and shear pin activated cutoff switch to protect the drive unit. This is simplified E-type design used where a torque gauge and adjustable alarm switch are not required.



# Bridge-Mounted Dual Concentric Output Shaft Drive Units

## Turbine Variable Speed Primary Reducer Options



### Electrical type variable speed reducer

The electrical type variable speed reducer is a variable frequency drive (VFD) that controls the output speed of the electric motor. The VFD can be mounted near the drive unit or at a remote location. VFDs provide a clean, maintenance-free, and economical way of attaining variable speed. Standard features include forward and reverse, speed indication, motor overload protection, soft-start, 4-20 mA signal, and monitoring of operating conditions. These reducers provide a 5:1 variable speed range or 10:1 when used with an inverter duty motor.

### Mechanical type variable speed reducer

The mechanical variable speed reducer is a ring-cone or a disc design. The output speed varies as the pitch-line distance between two rotating components decreases or increases. The speed variation is adjusted by turning a hand-wheel on the reducer. These reducers include a standard NEMA C-frame on both the input and output connections for easy installation and removal. The reducers provide a 5:1 variable speed range.

### Hydraulic type variable speed reducer

The hydraulic type variable speed reducer is a stand-alone industrial hydraulic power unit with a variable volume piston pump and hydraulic motor combination for speed reduction. This design is used when the rake primary speed reducer is an H-type design. A screw located on the pump is turned to change the stroke of the pump pistons and vary the amount of oil delivered to the hydraulic motor, thus varying the final output speed of the drive unit. These speed reducers provide a 3:1 variable speed range.

# Bridge-Mounted Dual Concentric Output Shaft Drive Units

## Ordering Information

Bridge-Mounted Solid Contact Drive Model Number					Turbine Specification Extension				
Series	Rake Gear Pitch Dia. (inches)	-	Secondary Speed Reducer	Primary Speed Reducer	Number of Pinions	-	Turbine <sup>1</sup>	Turbine Gear Pitch Diameter (inches)	Maximum Turbine HP
S	X for no final gear-bearing		A	E F	(N/A)		D	20	5
			B			25		10	
			C			10			
	25	A	E F H	1 (omit) 2	25	10			
	34	A			34	25			
		B		44	50				
	44	B		44	50				
		C		60	75				
	60	C		60	75				
		D	60	75					
			60	75					

<sup>1</sup>For solid contact drive units with lifts, consult factory.

### Example: Model S34-AF-D345

S is for a bridge-mounted drive unit; 34 is the size of the final gear pitch diameter in inches; A is the size of the secondary speed reducer; F is the type of the primary reducer; L is for a lift mechanism; 10 is the lift capacity in tons; 12 is the lift travel in inches; F is the type of the lift actuator.

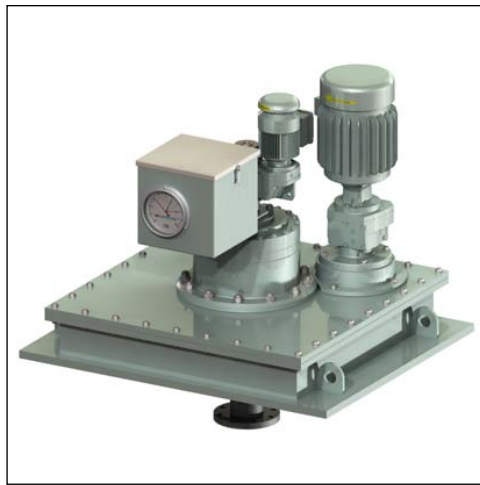
### Standard Features

- Alarm and cutoff switches
- 3 sets of O&M manuals
- 6" torque gauge indicating real torque  
(not available on H-type primary reducer)

### Optional Features

- 4-20 mA torque transducer
- Bi-directional operation (available for F and H-type primary reducers)
- Loss motion switch
- 4-20 mA lift position transducer
- Variable speed, turbine
- Variable speed, rake
- Special electric motor
- Oil heater (available for F and H-type primary reducers and main gear housing)
- Oil temperature switch
- Oil level switch
- Explosion proof switches





**Bridge-Mounted Dual Concentric Output Shaft  
Drive Units  
Model SX-BE-D25**

**Clarifier & Thickener Drives**

**Retrofits**

**Low-Speed Surface Aerators**

**Rotary Distributor Center Mechanisms**

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