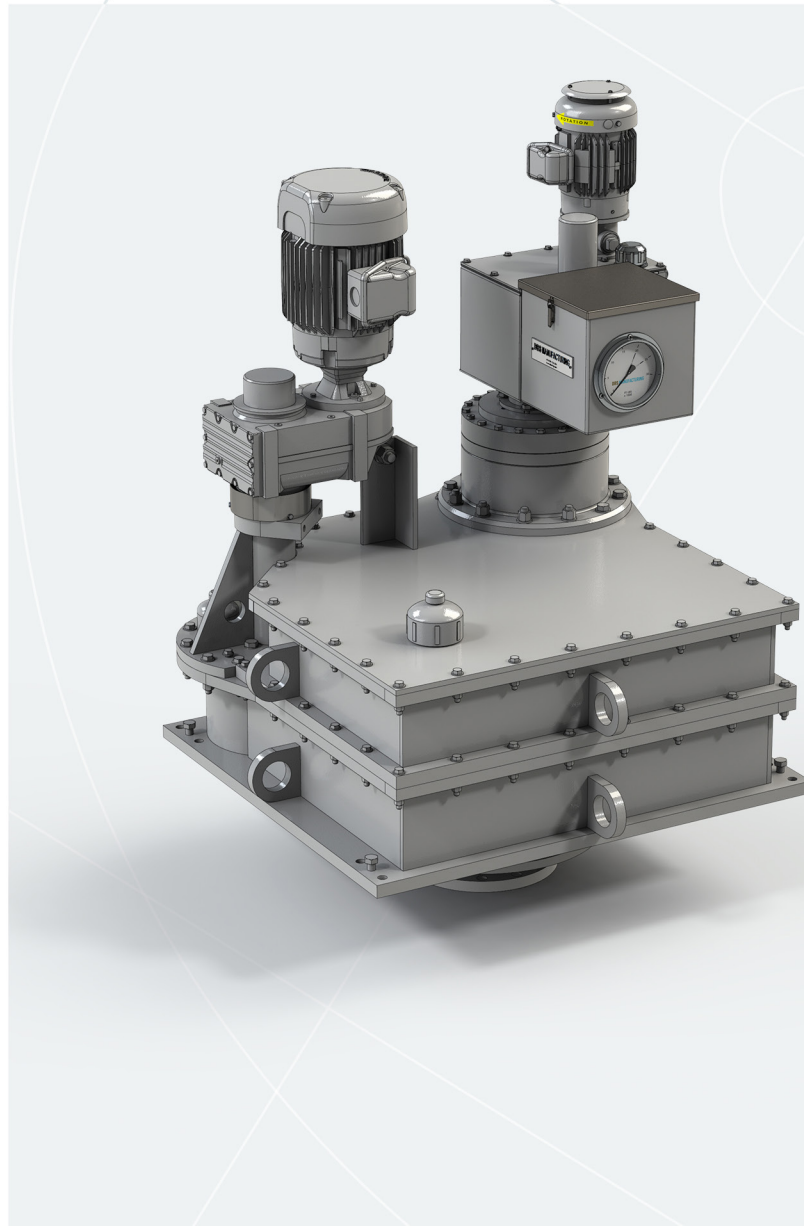


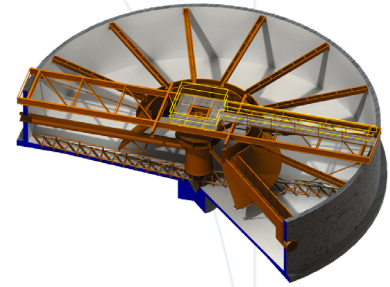
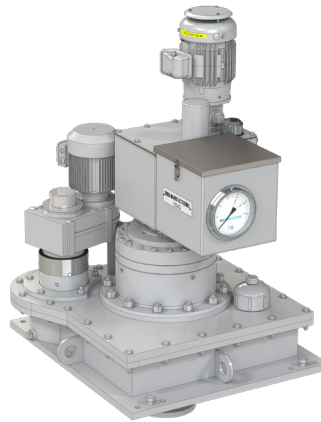
BRIDGE-MOUNTED | DUAL CONCENTRIC  
OUTPUT SHAFT DRIVE UNITS



ENGINEERED FIRSTS | BUILT TO LAST

## OVERVIEW

With over 40 years of experience in designing and building drive units, DBS will provide you with the right solution for every application. The SX-Series and SD-Series drive units are specifically designed for solids contact clarifiers with a full span bridge and a drive shaft.



## DESCRIPTION

- Drive unit has two concentric output drive shafts
- For solids contact, 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
- Drive unit supported by a bridge completely spanning the tank
- 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 30m) in diameter

## FEATURES

- Forged alloy steel main gears and pinions designed for 20 years of life calculated per AGMA 2001-D04
- 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
- Dry well lubrication on turbine output
- Alarm and cutoff switches and maximum torque limiting via shear pin or pressure relief valve
- No lower pinion bearing, eliminating a common source of drive failure
- Designed for minimum maintenance with permanently lubricated intermediate gearbox

RAKE TORQUE CAPACITY - BRIDGE-MOUNTED DUAL DRIVE UNIT							TURBINE DRIVE POWER <sup>1</sup>	
MODEL	CONTINUOUS		MAXIMUM OVERLOAD		YIELD		ALLOWABLE HORSEPOWER	MAXIMUM SPEED RPM
	FT-LBF	N-m	FT-LBF	N-m	FT-LBF	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	51,000	69,000	102,000	138,000	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	170,000	250,000	340,000	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	102,000	138,000	204,000	276,000	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	340,000	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.

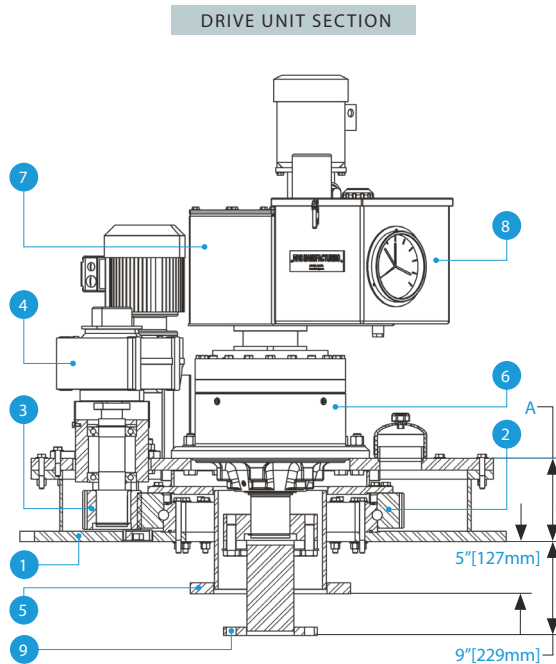
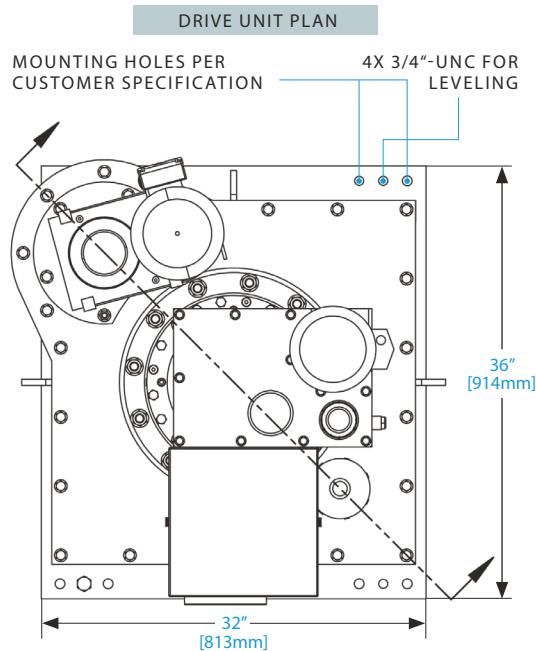
Maximum Overload: The maximum safe, short term operating torque.

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

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

## SX-D25 SERIES DIMENSIONS

Designed for smaller tanks with a full span bridge and a drive shaft, the SX-D25 Series drives feature a planetary gearbox with large tapered roller bearings for the rake and a large combination gear and ball bearing for the turbine.



### ITEM DESCRIPTION

- 1 Machine Frame
- 2 Main Gearbearing
- 3 Pinion, Turbine
- 4 Speed Reducer, Turbine
- 5 Output Flange, Turbine
- 6 Planetary Gearbox, Rake
- 7 Primary Speed Reducer, Rake
- 8 Torque Gauge Box, Rake
- 9 Output Flange, Rake

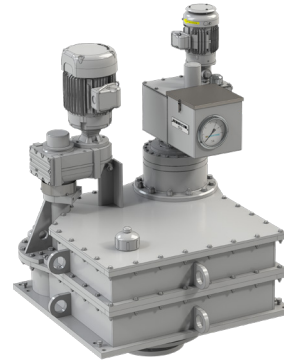
MODEL	A		RAKE OUTPUT FLANGE <sup>1</sup>	TURBINE OUTPUT FLANGE <sup>1</sup>	WEIGHT	
	IN	MM			LB	KG
SX-A*-D25	7.9	201	4"	10"	2,000	910
SX-B*-D25	7.9	201	4"	10"	2,200	1,000
SX-C*-D25	10.3	262	4"with oversized 15/16"dia holes	10"	2,500	1,140

<sup>1</sup> Metric flanges are available.

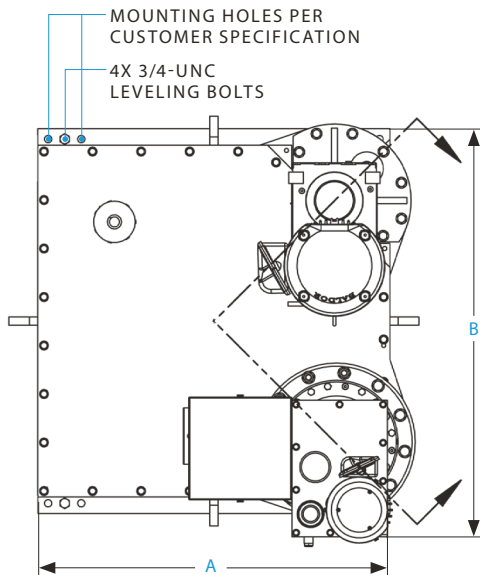
Replace the \* with the primary reducer option selected.

## SD-SERIES DIMENSIONS

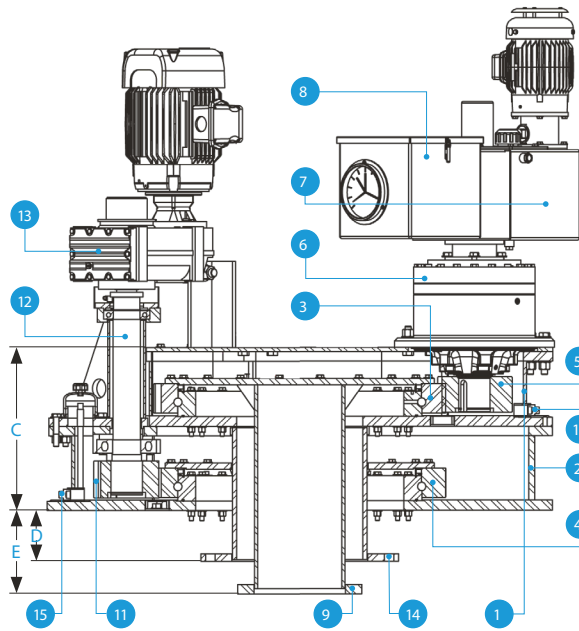
Designed for large tanks with a full span bridge and a drive shaft, the SD-Series drives feature a large combination gear and precision ball bearing for both the rake and turbine sections.



DRIVE UNIT PLAN



DRIVE UNIT SECTION



### ITEM DESCRIPTION

- 1 Main Gear Housing Rake
- 2 Main Gear Housing, Turbine
- 3 Main Gearbearing, Rake
- 4 Main Gearbearing, Turbine
- 5 Pinion, Rake
- 6 Planetary Gearbox, Rake
- 7 Primary Speed Reducer, Rake
- 8 Torque Gauge Box, Rake
- 9 Output Flange, Rake
- 10 Oil Drain, Rake
- 11 Pinion, Turbine
- 12 Turbine Drive Bearing Adapter
- 13 Helical Gearbox, Turbine
- 14 Output Flange, Turbine
- 15 Oil Drain, Turbine

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	IN	IN	LB	KG
S25-A*-D	36	914	40	1,016	16.8	425	4	102	8	203	5"	10"	2,500	1,140
S34-A*-D	42.5	1,080	46.5	1,181	18.1	461	6	152	10	254	8"	16"	3,900	1,770
S34-B*-D	42.5	1,080	46.5	1,181	19.4	492	6	152	10	254	8"	16"	5,000	2,270
S44-B*-D	54	1,372	58	1,473	19.2	488	6	152	10	254	10"	20"	5,800	2,630
S44-C*-D	54	1,372	58	1,473	21.2	538	6	152	10	254	10"	20"	6,900	3,130
S60-C*-D	68	1,727	73	1,854	22.5	572	8	203	14	356	16"	30"	11,200	5,080
S60-D*-D	68	1,727	73	1,854	20.1	511	8	203	14	356	16"	30"	14,000	6,360

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

## RAKE PRIMARY SPEED REDUCER OPTIONS

DBS drive units are made up several reducers: primary, secondary, and a final reduction unit consisting of a pinion and combination gear-bearing for larger mechanisms. All reducers are directly coupled. A selection of primary reduction units is available to meet customer requirements.



E-TYPE

L-TYPE

F-TYPE

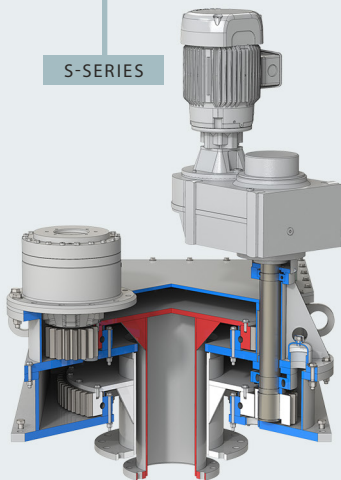
H-TYPE

W-TYPE

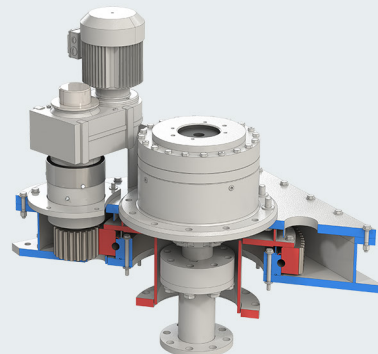
PRIMARY REDUCER  
OPTIONS

ONE OF THE REDUCERS ABOVE  
WILL BE ASSEMBLED TO ONE OF  
THE DRIVE UNITS BELOW.

S-SERIES



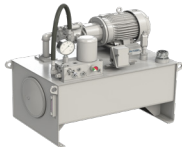
SX-SERIES



## PRIMARY SPEED REDUCER OPTIONS

Primary reduction units are available in mechanical and hydraulic versions, with unique advantages to each design. A selection is made based on customer requirements and drive unit application.

### RAKE PRIMARY SPEED OPTIONS



#### E-TYPE

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.

#### L-TYPE

The L type design is similar to the E type except that the force indicator is digital and measures the force through a load cell.

#### F-TYPE

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

#### H-TYPE

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

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

### TURBINE VARIABLE SPEED OPTIONS



#### ELECTRICAL-TYPE VARIABLE SPEED REDUCER

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 for clean, maintenance-free, and economical 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 with an inverter duty motor.

## ORDERING INFORMATION

The DBS model number nomenclature is designed to easily identify size and lift option. Contact DBS or a DBS representative for assistance in deciding your equipment requirements.

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	TURBINE GEAR PITCH DIAMETER (INCHES)	MAXIMUM TURBINE HP	
S	X for no final gear-bearing	A	E	(N/A)	D	25	5	
		B	F				10	
		C					10	
	25	A	E F H	1 (omit) 2		25	10	
	34	A				34	25	
	44	B				44	50	
		B		1 (omit) 2 3 4		44	50	
		C				60	75	
	60	C				60	75	
	D	60				75		

### EXAMPLE:

MODEL S34-AF-D345 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; D is for a turbine drive; 34 is the size of the turbine gear pitch diameter in inches; 5 is the turbine horsepower.

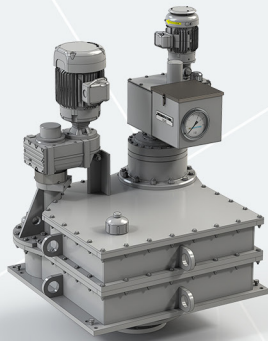
## STANDARD FEATURES

- Alarm and cutoff switches
- O&M manual in PDF format
- 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
- Stainless steel construction





**BRIDGE-MOUNTED DUAL DRIVE UNIT**

CONCENTRIC SHAFT OUTPUT  
MODEL S34-BF-D34

- CLARIFIER & THICKENER DRIVES
- RETROFITS
- LOW-SPEED SURFACE AERATORS
- ROTARY DISTRIBUTOR CENTER MECHANISMS

**DBS MANUFACTURING**

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