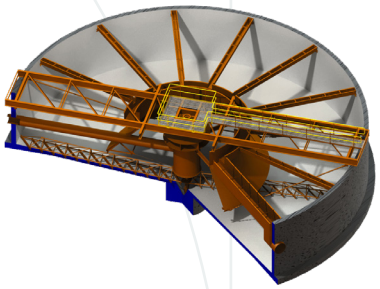
DBS MANUFACTURING

PIER-MOUNTED | DUAL CONCENTRIC DRUM OUTPUT 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 DBS Pier-Mounted dual concentric drum output drive unit represents state-of-the-art in reliability and performance.



DESCRIPTION

- Drive unit has two concentric output drive drums
- Used on solids contact and flocculating clarifiers or softeners
- Rake drive section is a low-speed, high-torque, fully enclosed gear drive with positive overload protection
- Turbine drive section is a heavy-duty, higher speed,fully enclosed gear drive
- The drive unit is supported by a column in the center of the tank
- The drive unit has an external rotating drive drum with attachment points for the rake cage
- Used in industrial, municipal and mining clarifiers and thickeners
- Typically used on tank sizes,40 to 300 ft (12 to 100 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
- Designed for minimum maintenance with permanently lubricated rake intermediate gearbox
- Dry well lubrication on turbine output

RAKE TORQUE CAPACITY - PIER-MOUNTED DUAL DRIVE UNITS							TURBINE DRIVE POWER[1]	
MODEL	CONTINUOUS		MAXIMUM OVERLOAD		YIELD		ALLOWABLE HORESPOWER	MAXIMUM SPEED RPM
	FT-LBF	N-m	FT-LBF	N-m	FT-LBF	N-m		
D30-A*-D30	16,000	22,000	32,000	44,000	94,000	127,000	25	32
D30-B*-D30	27,000	36,500	54,000	73,000	94,000	127,000	25	32
D42-B*-D42	35,000	47,500	70,000	95,000	195,000	264,000	50	24
D42-C*-D42	51,000	69,000	102,000	138,000	195,000	264,000	50	24
D60-C*-D60	65,000	88,000	130,000	176,000	440,000	597,000	75	17
D60-D*-D60	125,000	170,000	250,000	339,000	440,000	597,000	75	17
D80-E*-D80	350,000	475,000	700,000	950,000	950,000	1,290,000	100	13
D42-B*2-D42	70,000	95,000	140,000	190,000	390,000	528,000	50	24
D42-C*2-D42	100,000	140,000	204,000	276,000	390,000	528,000	50	24
D60-C*2-D60	130,000	176,000	260,000	350,000	880,000	1,194,000	75	17
D60-D*2-D60	250,000	340,000	500,000	680,000	880,000	1,194,000	75	17
D80-E*2-D80	700,000	950,000	1,400,000	1,900,000	1,900,000	2,580,000	100	13

1 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

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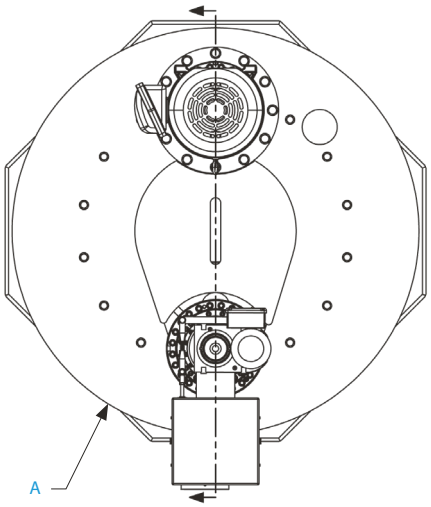
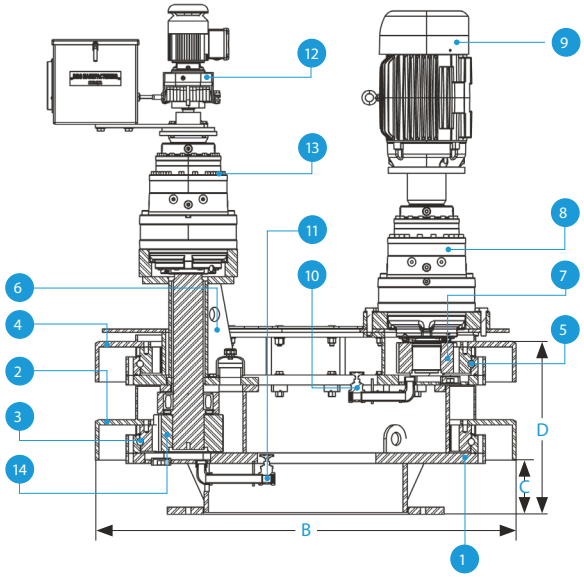
DD-SERIES DIMENSIONS

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

DRIVE UNIT PLAN



DRIVE UNIT SECTION



ITEM DESCRIPTION

1. Machine Frame
2. Drive Drum, Rake
3. Main Gearbearing, Rake
4. Drive Drum, Turbine
5. Main Gearbearing, Turbine
6. Rake Pinion Drive Adapter
7. Pinion, Turbine
8. Primary Speed Reducer, Turbine
9. Electrical Motor, Turbine
10. Oil Drain Assembly, Turbine
11. Oil Drain Assembly, Rake
12. Primary Speed Reducer, Rake
13. Planetary Gearbox, Rake
14. Pinion,Rake

MODEL	A		B		C		D		STD MOUNTING FLANGE[1]		WEIGHT	
	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	LB	KG
D30-A*-D	48	1,219	47	1,194	5	127	14.25	362	32	813	5,200	2,359
D30-B*-D	48	1,219	47	1,194	5	127	14.25	362	32	813	6,400	2,903
D42-B*-D	60	1,524	60	1,524	5	127	14.5	368	44	1,118	8,000	3,629
D42-C*-D	60	1,524	60	1,524	5	127	14.5	368	44	1,118	8,600	3,901
D60-C*-D	84	2,134	80	2,032	6	152	17.75	451	62	1,575	12,800	5,806
D60-D*-D	84	2,134	80	2,032	6	152	17.75	451	62	1,575	14,800	6,713

1 Maximum standard outside diameter of mounting flange. For larger flange sizes, consult factory.

* Replace the * with the primary reducer option selected.

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RAKE PRIMARY REDUCER OPTIONS

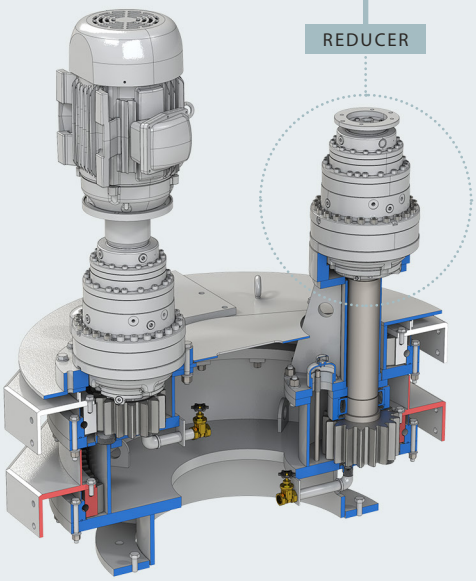
DBS drive units are made up several reducers: primary, secondary, and a final reduction unit consisting of a pinion and combination gear-bearing for larger mechanisms. All reducers are directly coupled. A selection of primary reduction units is available to meet customer requirements.

E-TYPE | L-TYPE | F-TYPE | H-TYPE | W-TYPE

PRIMARY REDUCER OPTIONS

DD SERIES

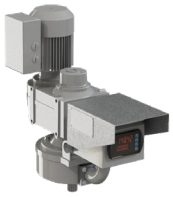
REDUCER



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.

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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.

PIER-MOUNTED DUAL CONCENTRIC DRUM DRIVE UNIT 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 (INCHES)
D	30	A		1 (omit)	D	30	25
		B				42	50
	42	B	E	1 (omit)		42	50
		C	F	2		60	75
	60	C	H	1 (omit)		60	75
		D	W	2		80	100
	80	D		3		80	100
		E		4			

EXAMPLE: MODEL D30-AF-D3015 D is for a pier-mounted drive unit; 30 is the size of the final rake 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 turbine drive; 30 is the size of the turbine gear pitch diameter in inches; 15 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 coating
- 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

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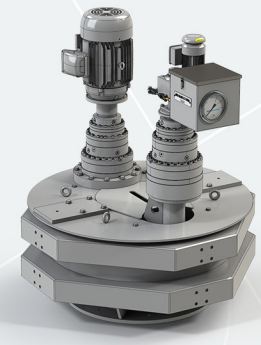

PIER-MOUNTED DUAL CONCENTRIC DRUM OUTPUT DRIVE UNIT

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

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