

# **CECO Dean**

## **DEAN PUMP® SERIES DL200/DL230**

**Inline Centrifugal Process Pumps**

# **DATA PAK**

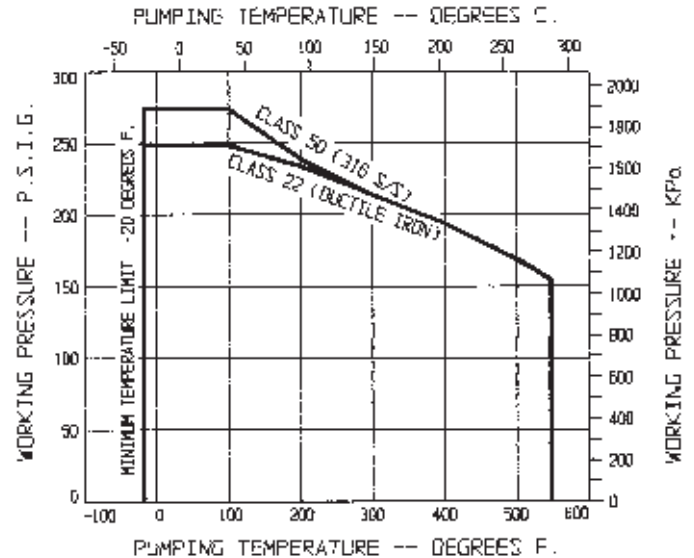
### STANDARD, INLINE, SINGLE STAGE, OPEN IMPELLER, CENTRIFUGAL PROCESS PUMPS TYPES DL201, DL202; DL231, DL232

#### MECHANICAL DESIGN SPECIFICATIONS

Direction of Rotation from Motor End .....CW  
 Bearings in Motor .....Ball Type  
 Bearing Lubrication .....Grease  
 Casing Thickness, Minimum .....5/16"  
 Flanges — ASME/ANSI Rating:  
     Ductile Iron (CL 22), 316 S/S (CL 50) .....Class 150  
 Facing .....FF  
 Finish .....125 Ra  
 Impeller Balance .....Single Plane Dynamic Balance  
 Allowable Pump Suction Pressure (2 year min. thrust bearing life) .....100 psig  
 Stuffing Box Jacket Pressure, Maximum .....125 psig

	DL201 DL202	DL231 DL232
Horsepower Rating — max. rated		
Driver HP not to exceed @ 1750 rpm	7 1/2 HP	50 HP
@ 3500 rpm	15 HP	100 HP
Max. Hydrostatic Test Pressure		
Ductile Iron (CL 22), and 316 S/S (CL 50)	430 psig	430 psig
Shaft Packing		
Size (square)	5/16"	3/8"
Rings with Lantern Ring	5	5
Spacing	2-R-3	2-R-3
Rings without Lantern Ring	6	7
Stuffing Box Dimensions		
Length (depth)	2 1/8"	2 3/4"
Inside Diameter (bore dia.)	1 5/8"	2 1/2"
Shaft Sleeve Diameter	1"	1 3/4"
Lantern Gland Width	7/16"	5/8"
Distance Lantern Gland to Open End of Stuffing Box	1 3/8"	1 3/4"

#### ALLOWABLE WORKING PRESSURE VS. PUMPING TEMPERATURE



All mechanically sealed pumps contain a seal face flushing connection in the gland and internal seal circulating piping as standard.

All mechanically sealed DL202 and DL232 pumps used with cooling jackets require a Min-Flo Bushing.

#### STANDARD MATERIALS OF CONSTRUCTION

Part No.	Part Name	Class 22	Class 50
3	Impeller	C.I. (1)	316 S/S (10)
5	Casing Class 22	D.I. (5)	316 S/S (10)
* 5D	Casing Cap Screw	Steel (11)	
7	Adapter Cradle	Cast Iron (1)	
7G	Adapter Cradle Cap Screw	Steel (4)	
* 10†	Shaft Sleeve	316 S/S (2)	
* 10A	Shaft Packing	Standard Sets	
* 10K †	Shaft Sleeve Key (DL231, DL232 only)	Steel (4)	316 S/S (2)
* 13 †	Gland	Steel (3)	316 S/S (10)

Part No.	Part Name	Class 22	Class 50
* 14 †	Gland Stud	AISI 304	
* 15 †	Gland Stud Nut	AISI 304	
17 †	Lantern Ring	Teflon (9)	
* 18 †	Splash Collar	Cadmium Plated Steel	
* 22	Backhead	Steel (3)	316 S/S (10)
* 22A †	Backhead Indexing Cap Screw	Steel (4)	
* 37 †	Clearance Shim	Steel	
* 77 †	Casing Gasket	Teflon (9)	
* 77A †	Impeller Gasket	Teflon (9)	

\* Denotes DL200 Series parts interchangeable with pH200 Series Pumps, and DL230 Series parts interchangeable with pH230 Series Pumps.

† Denotes part interchangeable within DL200 Series Pumps, or within DL230 Series Pumps.

NOTE: MECHANICAL SEAL MATERIALS: Please refer to specific seal drawing in Stuffing Box Section.

#### MATERIAL SPECIFICATIONS

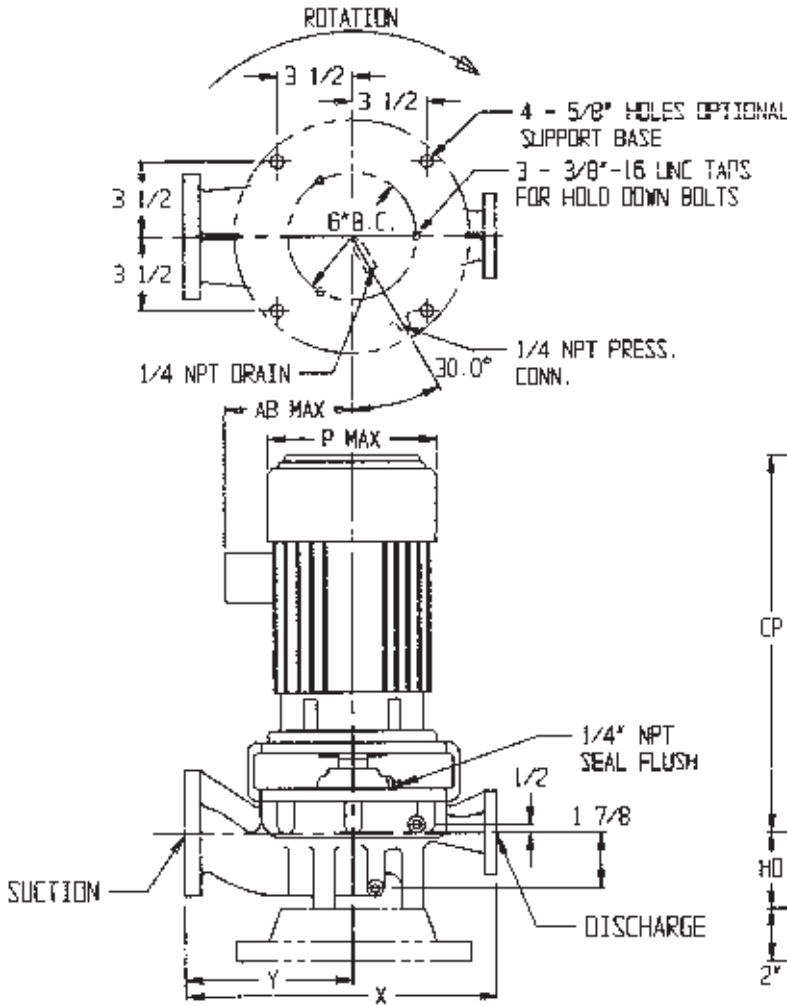
- |                                       |                            |  |
|---------------------------------------|----------------------------|--|
| (1) Cast Iron                         | (4) AISI 1020              | (9) TM E.I. du Pont de Nemours & Co.   |
| (2) AISI 316 S/S                      | (5) Ductile Iron ASTM A395 | (10) 316 S/S – ASTM #A744, Grade CF-8M |
| (3) Cast Steel – ASTM #216, Grade WCB | (6) ASTM A193, Grade B7    | (11) ASTM A449                         |
|                                       | (7) ASTM A194, Grade 2     |  |

Specifications are subject to change without notice

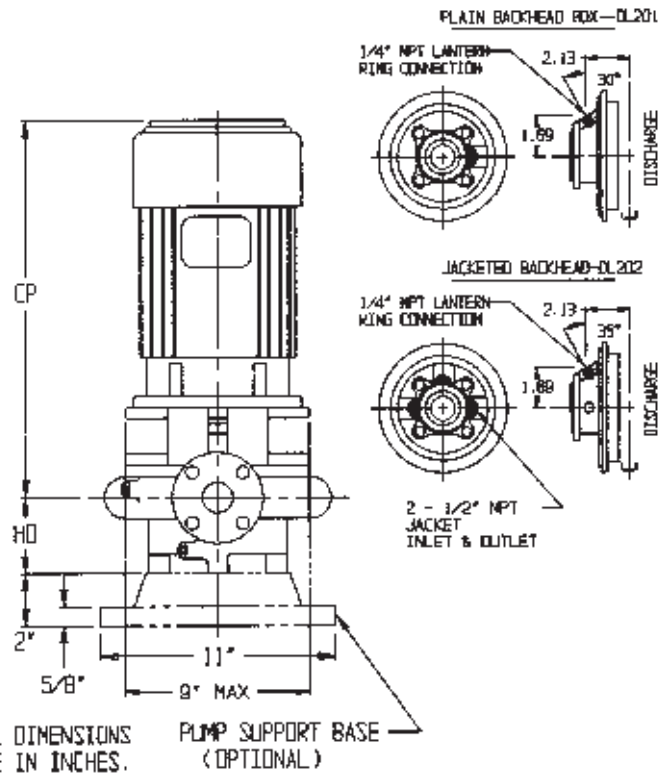
**STANDARD, INLINE, OPEN IMPELLER, CENTRIFUGAL PUMP**  
**DL200 SERIES**

**FLANGES:**  
 A.N.S.I. RATING .....CLASS 150  
 FACING .....FLAT  
 FINISH .....125 Ra

SIZE	X	Y	HD	SUCTION					DISCHARGE				
				SIZE	OD	BC	BOLTS	THK	SIZE	OD	BC	BOLTS	THK
1x1 1/2x6	12 1/2	6 1/2	2 3/8	1 1/2	5	3 7/8	4-1/2	3/4	1	4 1/4	3 1/8	4-1/2	5/8
1 1/2x3x6	14 1/2	8	2 7/8	3	7 1/2	6	4-5/8	1	1 1/2	5	3 7/8	4-1/2	3/4



FRAME	P (MAX.)	CP (MAX.)	AB (MAX.)
143TC	9	21 1/4	9 1/4
145TC	9	22 1/4	9 1/4
182TC	10 1/2	23 1/4	10 3/4
184TC	10 1/2	23 1/4	10 3/4
213TC	11 5/8	26 1/4	11 3/8
215TC	11 5/8	26 1/4	11 3/8
254TC	13 1/4	31 1/2	12 1/4



ALL DIMENSIONS ARE IN INCHES.  
 PUMP SUPPORT BASE (OPTIONAL)

CERTIFICATION	IMPORTANT: Do not use for construction unless certified.
Customer _____	
Customer's Order No. _____	Item No. _____
Dean Pump Serial No. _____	
Certified By _____	Date _____
<p>The construction shown is standard for this machine. Any change may involve additional cost, a corresponding increase in selling price and delay in shipment. If changes are necessary, mark them carefully and in detail on this print and return. You will be advised promptly as to the additional price. Meanwhile, details involved will be held up until we receive your authorization to proceed.</p>	

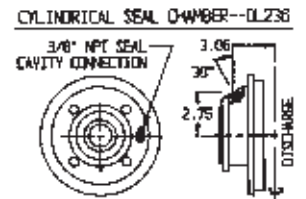
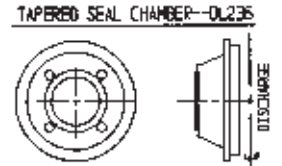
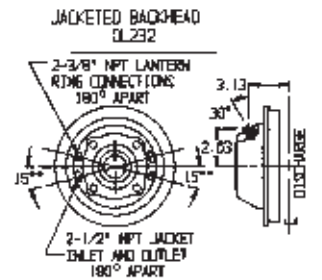
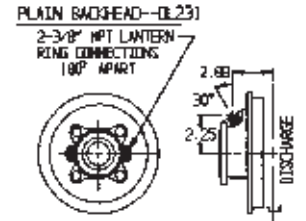
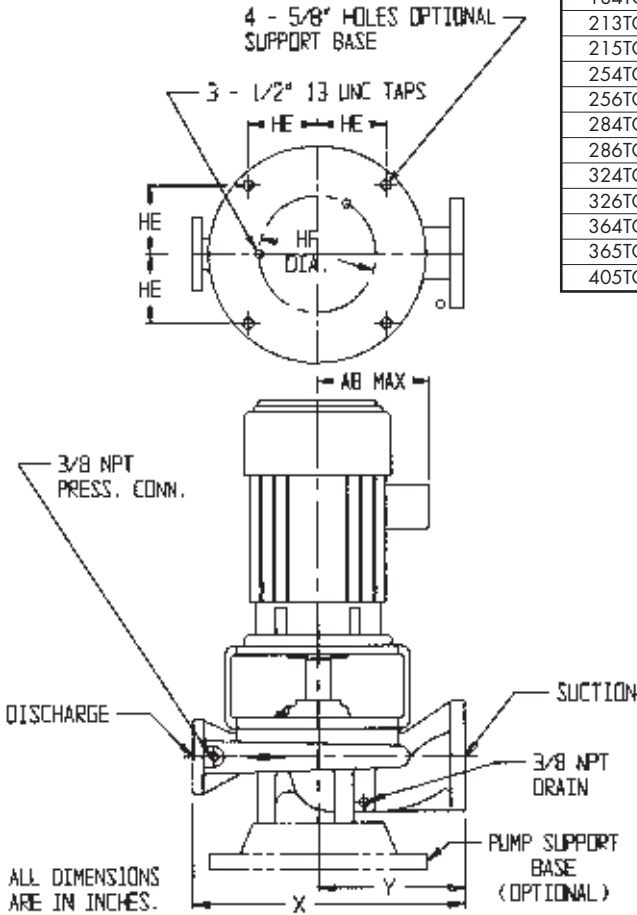
**DIMENSION DWG.**  
**NO. D-1501**

**STANDARD, INLINE, OPEN IMPELLER, CENTRIFUGAL PUMP**  
**DL230 SERIES**

**FLANGES:**

A.N.S.I. RATING .....CLASS 150  
 FACING .....FLAT  
 FINISH .....125 Ra

FRAME	P (MAX.)	CP (MAX.)	AB (MAX.)
182TC	10 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>4</sub>	10 <sup>3</sup> / <sub>4</sub>
184TC	10 <sup>1</sup> / <sub>2</sub>	26 <sup>1</sup> / <sub>4</sub>	10 <sup>3</sup> / <sub>4</sub>
213TC	12 <sup>3</sup> / <sub>4</sub>	30	11 <sup>3</sup> / <sub>8</sub>
215TC	12 <sup>3</sup> / <sub>4</sub>	30	11 <sup>3</sup> / <sub>8</sub>
254TC	14	32 <sup>1</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>2</sub>
256TC	14	32 <sup>1</sup> / <sub>4</sub>	12 <sup>1</sup> / <sub>2</sub>
284TC	16 <sup>1</sup> / <sub>4</sub>	34 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>2</sub>
286TC	16 <sup>1</sup> / <sub>4</sub>	34 <sup>1</sup> / <sub>2</sub>	14 <sup>1</sup> / <sub>2</sub>
324TC	17 <sup>3</sup> / <sub>4</sub>	36 <sup>1</sup> / <sub>4</sub>	17 <sup>1</sup> / <sub>2</sub>
326TC	17 <sup>3</sup> / <sub>4</sub>	36 <sup>1</sup> / <sub>4</sub>	17 <sup>1</sup> / <sub>2</sub>
364TC	20	42 <sup>1</sup> / <sub>4</sub>	18 <sup>1</sup> / <sub>2</sub>
365TC	20	42 <sup>1</sup> / <sub>4</sub>	18 <sup>1</sup> / <sub>2</sub>
405TC	22	44 <sup>1</sup> / <sub>4</sub>	19



PUMP SIZE	SUCTION					DISCHARGE					HA	HD	HE	HF	T	T <sub>1</sub>	X	Y
	SIZE	OD	BC	BOLTS	THK	SIZE	OD	BC	BOLTS	THK								
1 <sup>1</sup> / <sub>2</sub> x3x8 <sup>1</sup> / <sub>2</sub>	3	7 <sup>1</sup> / <sub>2</sub>	6	4- <sup>5</sup> / <sub>8</sub>	15/16	1 <sup>1</sup> / <sub>2</sub>	5	3 <sup>7</sup> / <sub>8</sub>	4- <sup>1</sup> / <sub>2</sub>	11/16	13	4 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>8</sub>	7	5 <sup>3</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>2</sub>	18 <sup>1</sup> / <sub>2</sub>	10
2x3x8 <sup>1</sup> / <sub>2</sub>	3	7 <sup>1</sup> / <sub>2</sub>	6	4- <sup>5</sup> / <sub>8</sub>	15/16	2	6	4 <sup>3</sup> / <sub>4</sub>	4- <sup>5</sup> / <sub>8</sub>	3/4	13	4 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>8</sub>	7	6 <sup>5</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	20 <sup>1</sup> / <sub>2</sub>	11
3x4x8 <sup>1</sup> / <sub>2</sub>	4	9	7 <sup>1</sup> / <sub>2</sub>	8- <sup>5</sup> / <sub>8</sub>	1	3	7 <sup>1</sup> / <sub>2</sub>	6	4- <sup>5</sup> / <sub>8</sub>	15/16	13	5 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>8</sub>	7	7 <sup>3</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>2</sub>	24	13
2x3x11 <sup>1</sup> / <sub>2</sub>	3	7 <sup>1</sup> / <sub>2</sub>	6	4- <sup>5</sup> / <sub>8</sub>	15/16	2	6	4 <sup>3</sup> / <sub>4</sub>	4- <sup>5</sup> / <sub>8</sub>	3/4	17	4 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>2</sub>	10	7 <sup>5</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>8</sub>	22 <sup>1</sup> / <sub>2</sub>	12
3x4x11 <sup>1</sup> / <sub>2</sub>	4	9	7 <sup>1</sup> / <sub>2</sub>	8- <sup>5</sup> / <sub>8</sub>	1	3	7 <sup>1</sup> / <sub>2</sub>	6	4- <sup>5</sup> / <sub>8</sub>	15/16	17	5 <sup>3</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>2</sub>	10	8 <sup>3</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	25	14

**CERTIFICATION**

**IMPORTANT: Do not use for construction unless certified.**

Customer \_\_\_\_\_  
 Customer's Order No. \_\_\_\_\_ Item No. \_\_\_\_\_  
 Dean Pump Serial No. \_\_\_\_\_  
 Certified By \_\_\_\_\_ Date \_\_\_\_\_

The construction shown is standard for this machine. Any change may involve additional cost, a corresponding increase in selling price and delay in shipment. If changes are necessary, mark them carefully and in detail on this print and return. You will be advised promptly as to the additional price. Meanwhile, details involved will be held up until we receive your authorization to proceed.

**DIMENSION DWG.**  
**NO. D-1510**

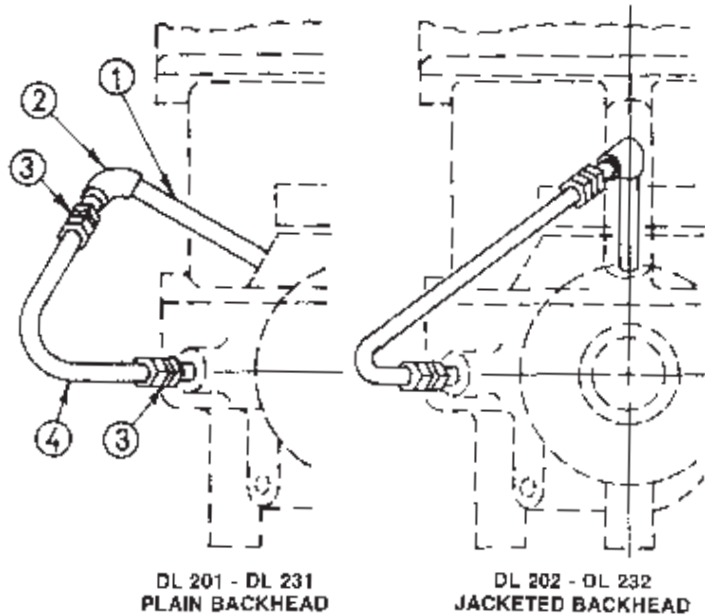
**TYPICAL PIPE CONFIGURATIONS FOR SEAL FACE FLUSHING CONNECTIONS**  
**STANDARD ON ALL MECHANICALLY SEALED DL201-202, DL231-232 PUMPS**

These pipe connections, required on all mechanically sealed Inline pumps with plain or jacketed backheads, provide liquid to seal faces which are positioned above the direct flow of fluid. Inlines with packed stuffing boxes do not require the piping. Refer to "Starting the Pump" on page 6 of Instruction Manual MC1.2.21.5 for more details. Dean will designate particular piping arrangement based on suction and discharge conditions. Jacketed backhead types also require a Min-Flo Bushing.

**HIGH PRESSURE CONNECTION**  
**DISCHARGE TO STUFFING BOX**

ITEM	QUANTITY	DESCRIPTION
1	1	PIPE NIPPLE
2	1	ELBOW
3	2	TUBE CONNECTOR
4	1	1/4 O.D. TUBE

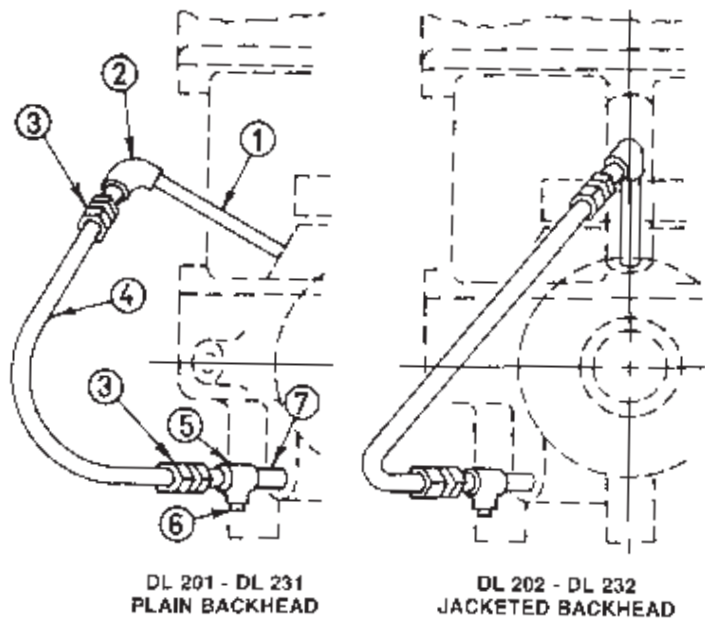
Ref. Head Sheet Option 48  
Sketch SK1374C

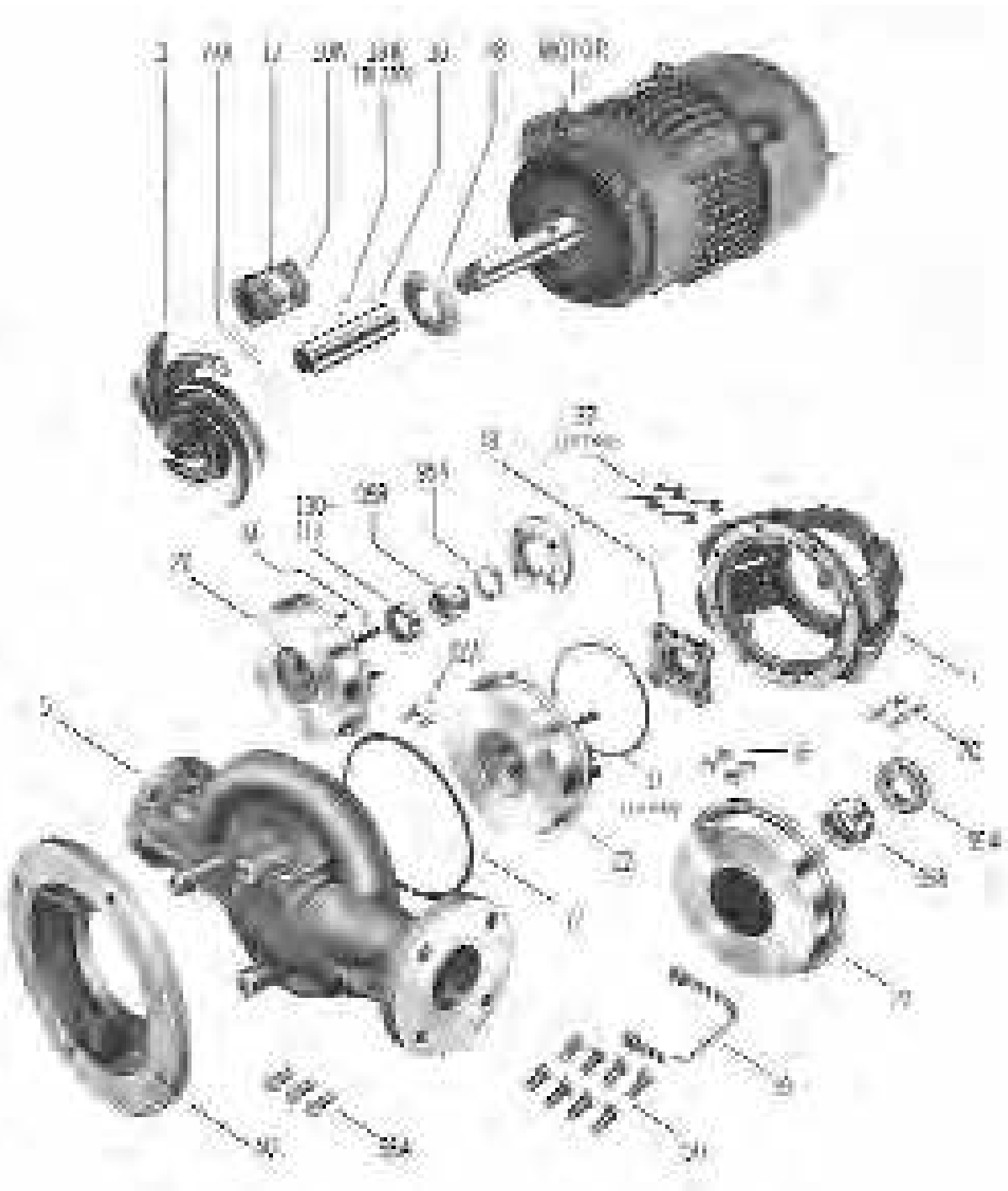


**LOW PRESSURE CONNECTION**  
**STUFFING BOX TO SUCTION**

ITEM	QUANTITY	DESCRIPTION
1	1	PIPE NIPPLE
2	1	ELBOW
3	2	TUBE CONNECTOR
4	1	1/4 O.D. TUBE
5	1	PIPE TEE
6	1	PIPE PLUG
7	1	PIPE NIPPLE

Ref. Head Sheet Option 49  
Sketch SK1374D





### PARTS LIST

PART NO.	PART NAME	PART NO.	PART NAME	PART NO.	PART NAME	PART NO.	PART NAME
3	Impeller	10A	Shaft Packing	18	Splash Collar	56A	Baseplate Capscrew
5	Casing	10K	Shaft Sleeve Key	19	Internal Seal Circ. Piping	77	Casing Gasket
5D	Casing Cap Screw	13	Packing Gland	22	Backhead	77A	Impeller Gasket
7	Cradle Spacer	14	Stuffing Box Gland Stud	22A	Backhead Screw	95A	Stationary Seal Element
7G	Cradle Spacer Cap Screw	15	Stuffing Box Gland Stud Nut	37	Clearance Shim	95B	Rotating Seal Face
10	Shaft Sleeve	17	Lantern Ring	56	Baseplate	110-111	Min-Flo Bushing

# CECO Dean

(317) 293-2930 • E-mail: infohhs@onececo.com

CENTRIFUGAL PUMP PERFORMANCE DATA: CURVE pHAA-1060

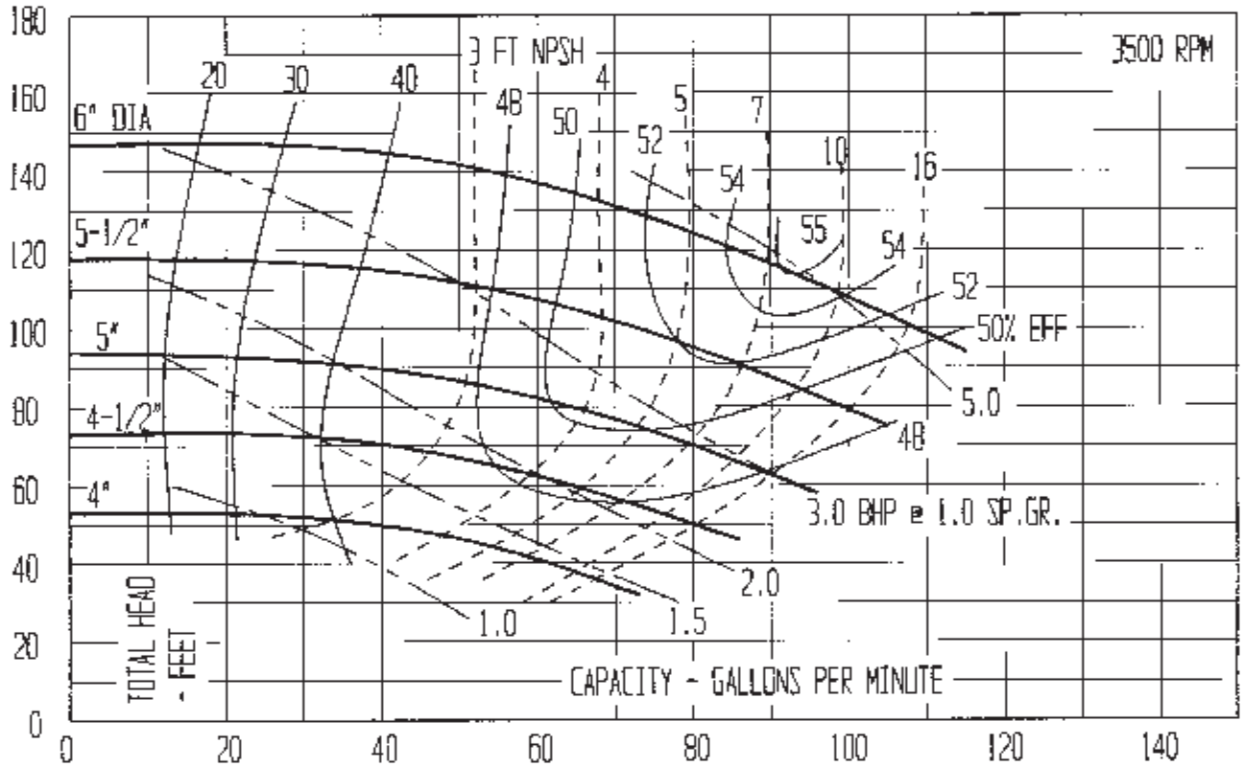
PUMP SIZE: 1" X 1-1/2" X 6"

MAX. SOLIDS: 5/16" DIAMETER

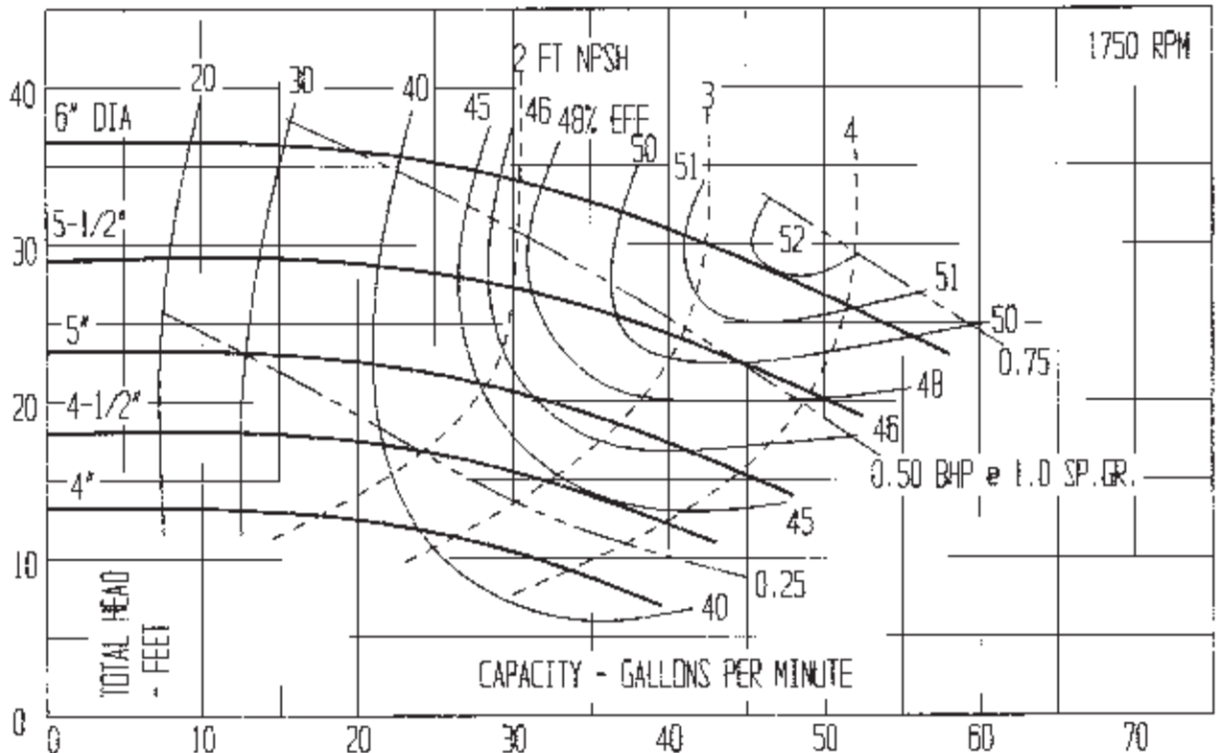
PUMP TYPE: DL200, CNV206

1" DISCHARGE X 1-1/2" SUCTION

**PUMP PERFORMANCE:** This curve, based on extensive tests, defines the average performance of this pump for liquids having a viscosity of 70 SSU or less. Actual performance of individual units may differ slightly from the performance indicated on this curve. Pump applications made from the data contained herein are subject to confirmation and acceptance by our Engineering Department at our Indianapolis Office.



Customer _____	Item No. _____
Customer's Order No. _____	Factory Order No. _____
Dean Pump Serial No. _____	



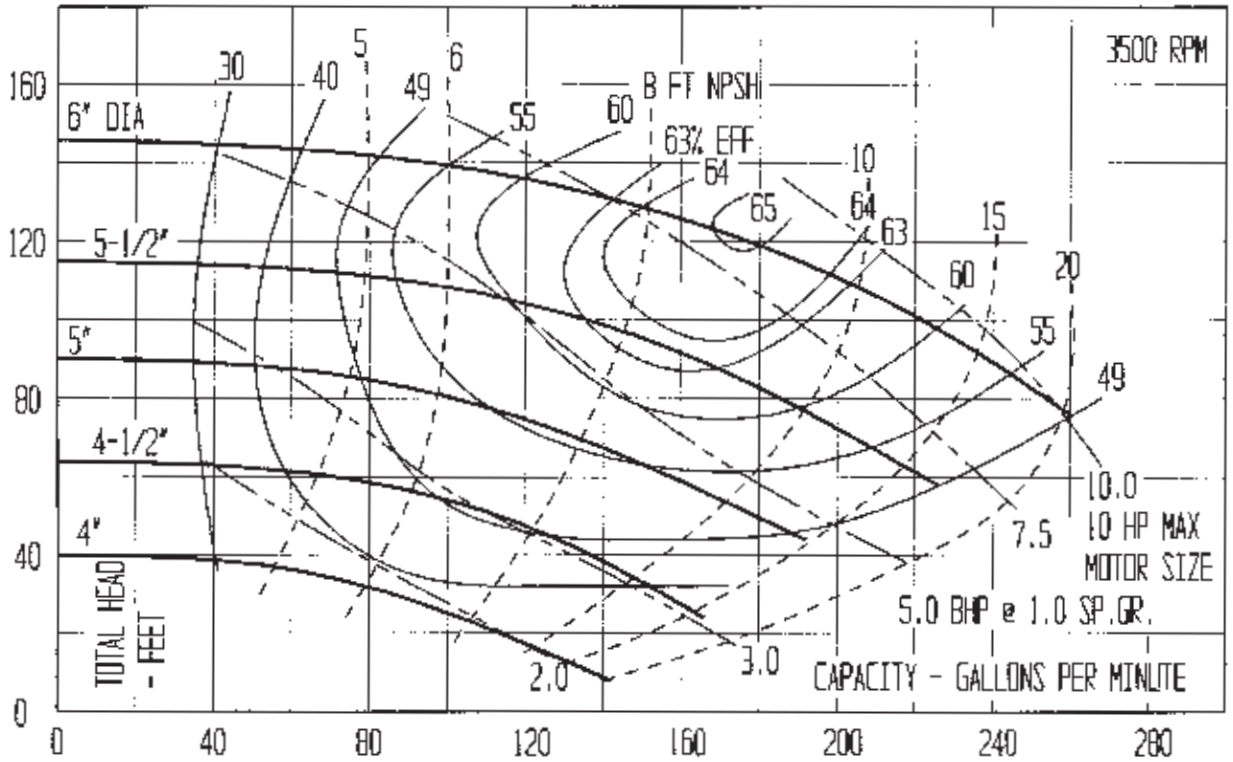
# CECO Dean

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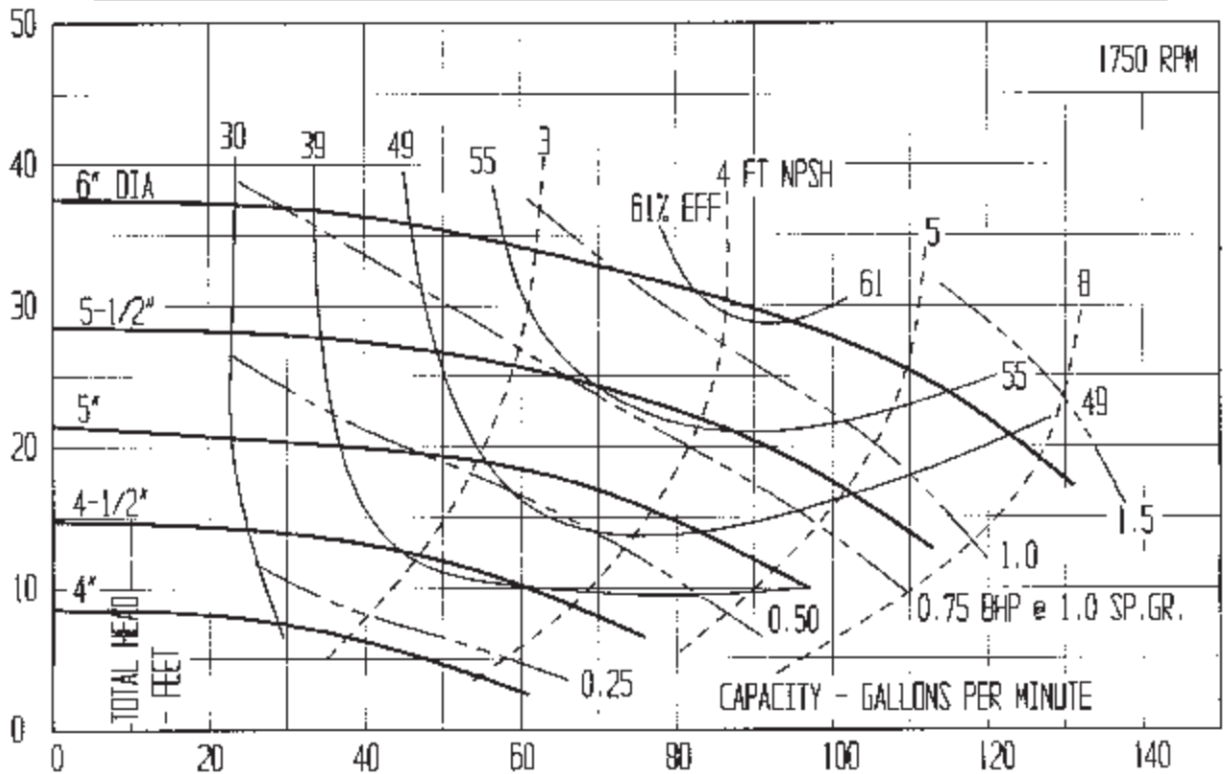
CENTRIFUGAL PUMP PERFORMANCE DATA: CURVE pHAB1560  
 PUMP SIZE: 1-1/2" X 3" X 6"  
 MAX. SOLIDS: 9/16" DIAMETER  
 PUMP TYPE: DL200, CNV206

1-1/2" DISCHARGE X 3" SUCTION

**PUMP PERFORMANCE:** This curve, based on extensive tests, defines the average performance of this pump for liquids having a viscosity of 70 SSU or less. Actual performance of individual units may differ slightly from the performance indicated on this curve. Pump applications made from the data contained herein are subject to confirmation and acceptance by our Engineering Department at our Indianapolis Office.



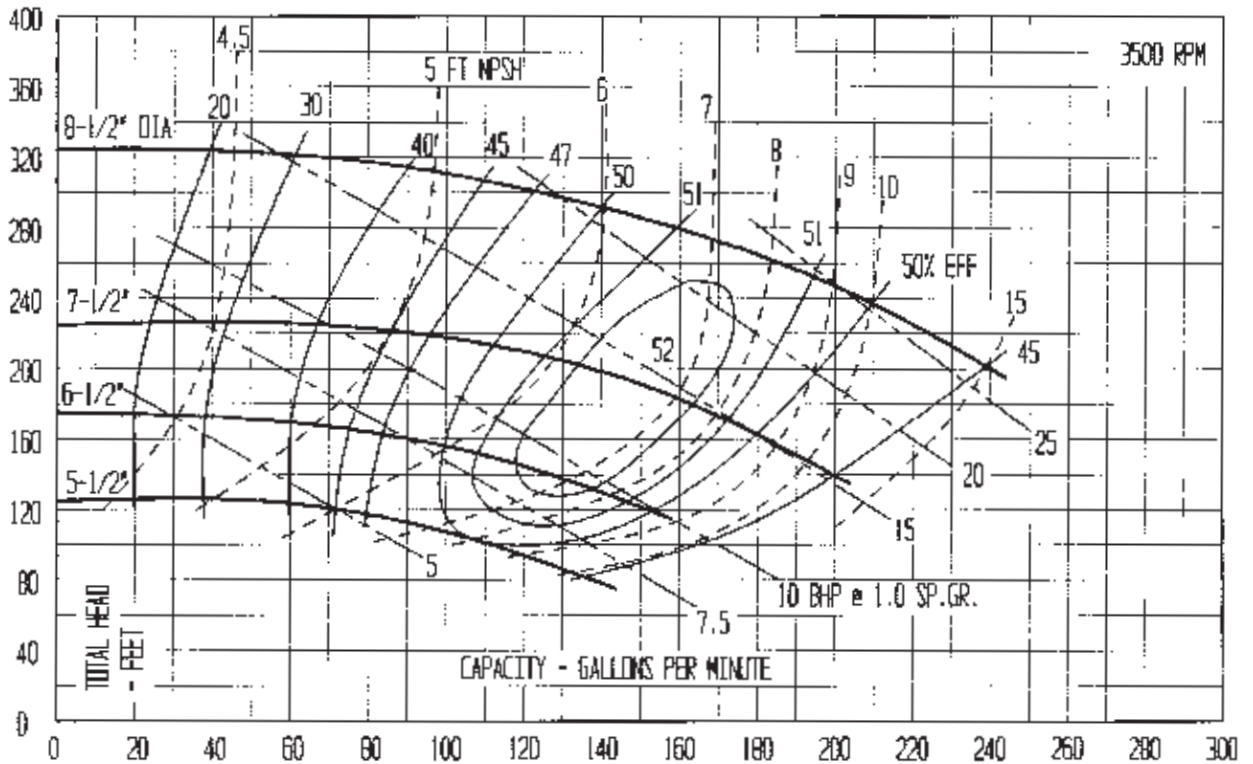
Customer	_____	Item No.	_____
Customer's Order No.	_____	Dean Pump Serial No.	_____
Factory Order No.	_____		



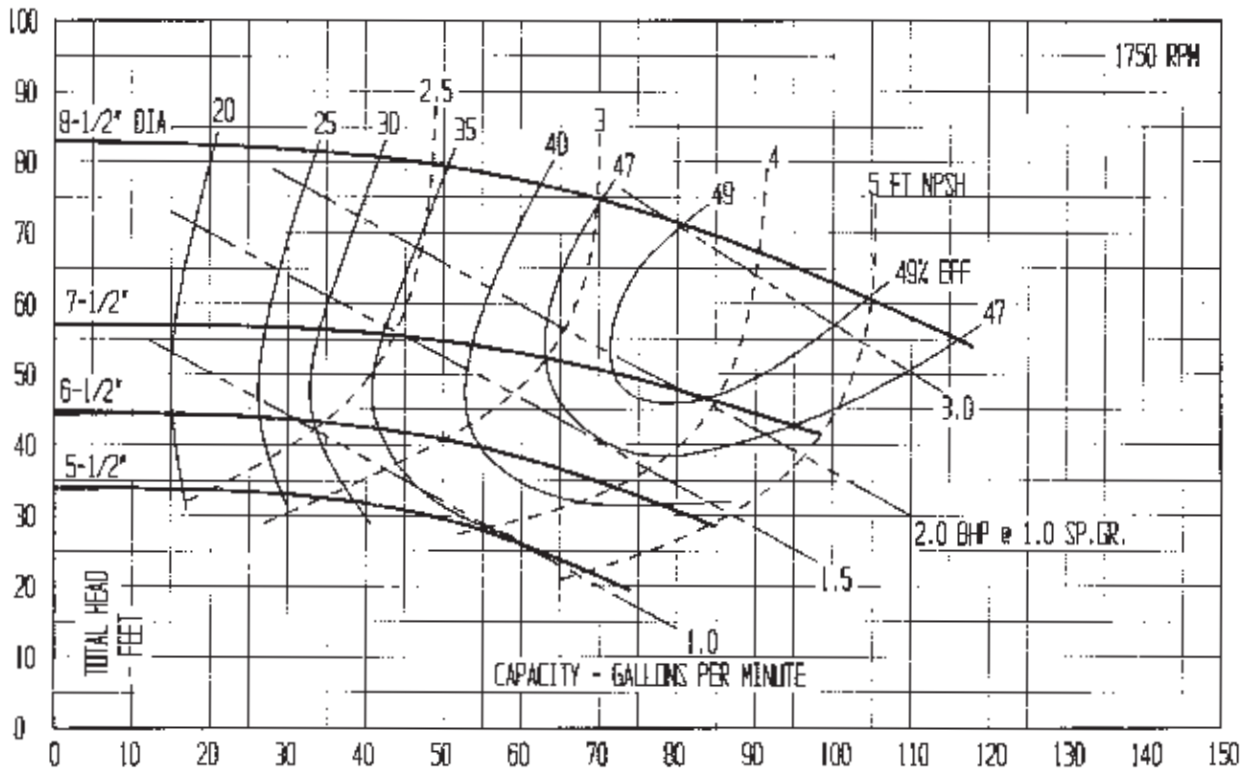


1-1/2" DISCHARGE X 3" SUCTION

**PUMP PERFORMANCE:** This curve, based on extensive tests, defines the average performance of this pump for liquids having a viscosity of 70 SSU or less. Actual performance of individual units may differ slightly from the performance indicated on this curve. Pump applications made from the data contained herein are subject to confirmation and acceptance by our Engineering Department at our Indianapolis Office.



Customer	_____		
Customer's Order No.	_____	Item No.	_____
Dean Pump Serial No.	_____	Factory Order No.	_____



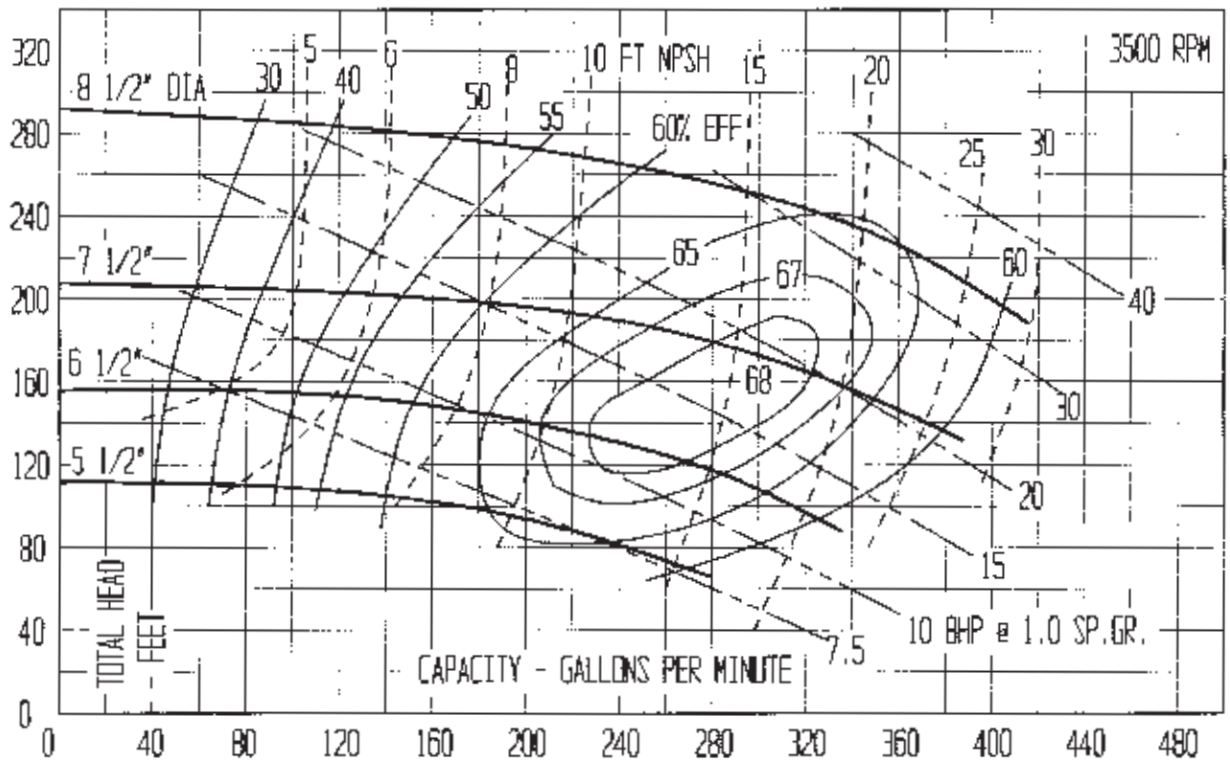
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(317) 293-2930 • E-mail: infohhs@onececo.com

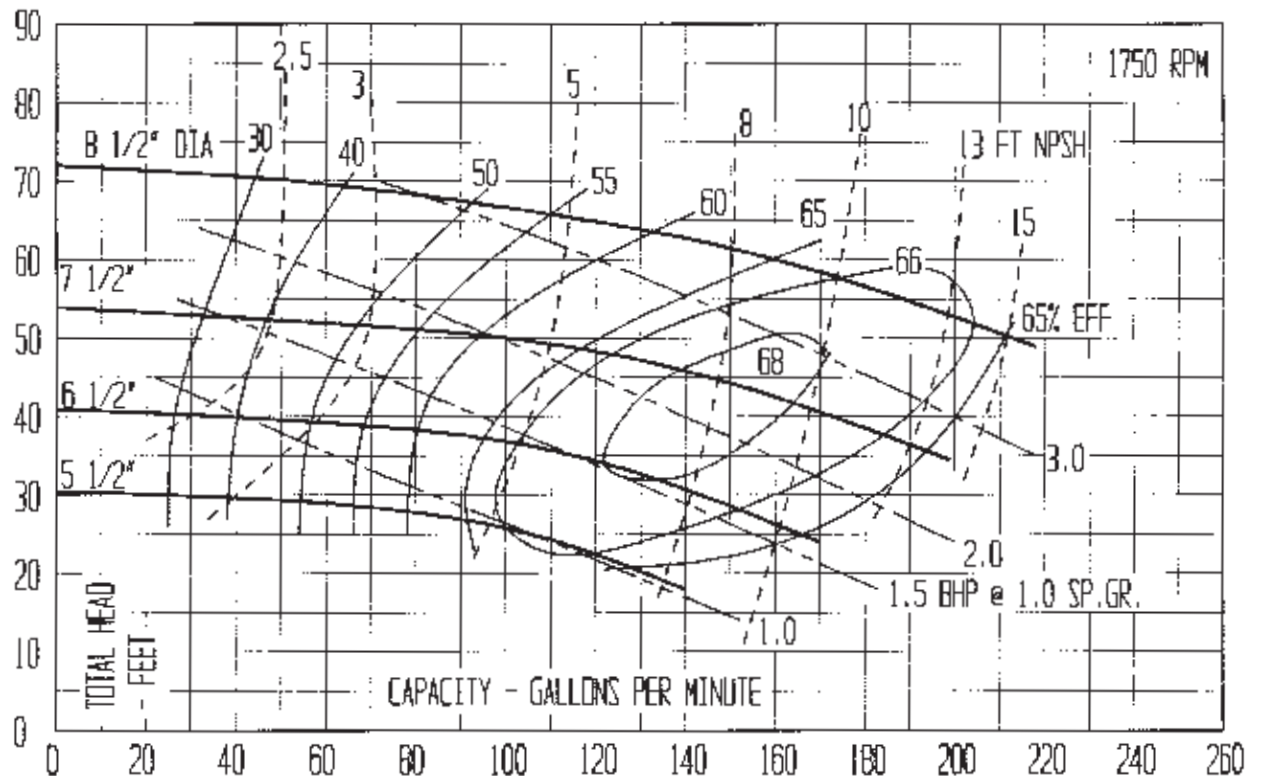
**CENTRIFUGAL PUMP PERFORMANCE DATA: CURVE DL2085-A**  
**PUMP SIZE: 2" X 3" X 8-1/2"**  
**MAX. SOLIDS: 7/16" DIAMETER**  
**PUMP TYPE: DL230, CNV236**

**2" DISCHARGE X 3" SUCTION**

**PUMP PERFORMANCE:** This curve, based on extensive tests, defines the average performance of this pump for liquids having a viscosity of 70 SSU or less. Actual performance of individual units may differ slightly from the performance indicated on this curve. Pump applications made from the data contained herein are subject to confirmation and acceptance by our Engineering Department at our Indianapolis Office.



Customer	_____	Item No.	_____
Customer's Order No.	_____	Dean Pump Serial No.	_____
Factory Order No.	_____		



# CECO Dean

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CENTRIFUGAL PUMP PERFORMANCE DATA: CURVE DL20115-A1

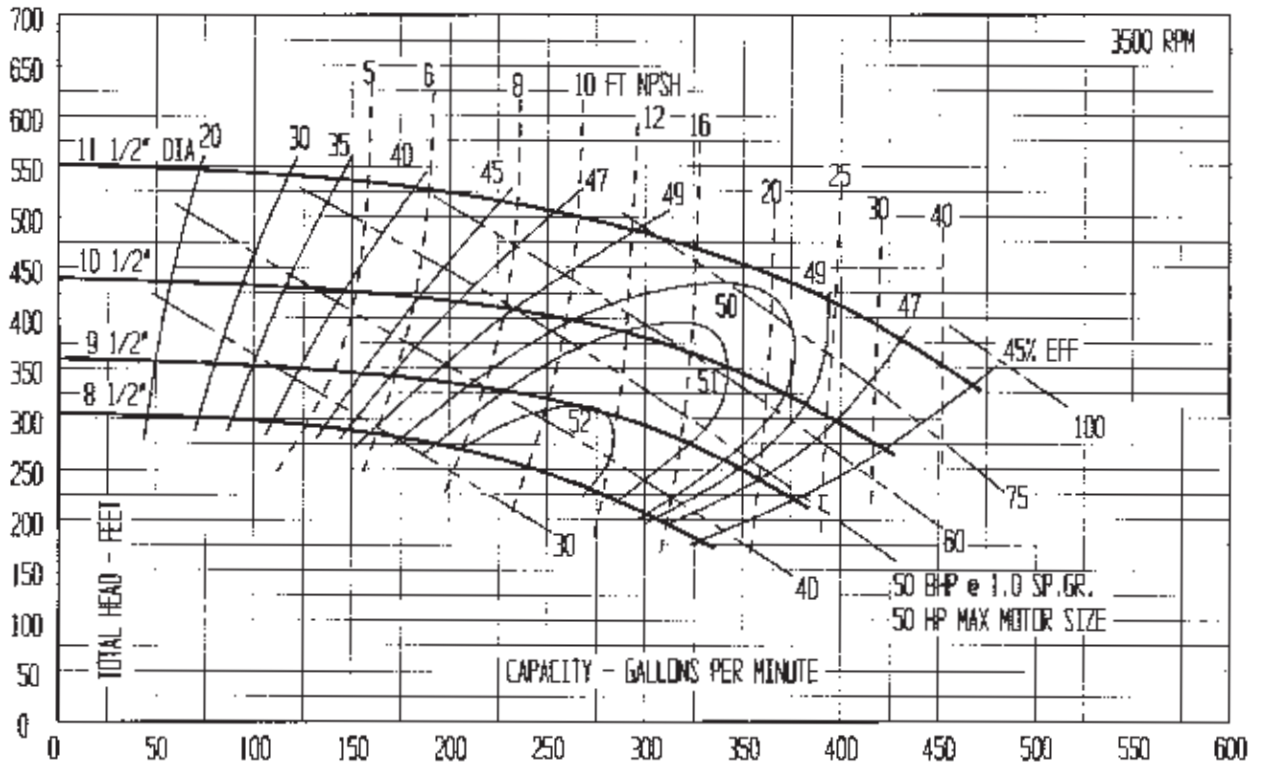
PUMP SIZE: 2" X 3" X 11-1/2"

MAX. SOLIDS: 1/2" DIAMETER

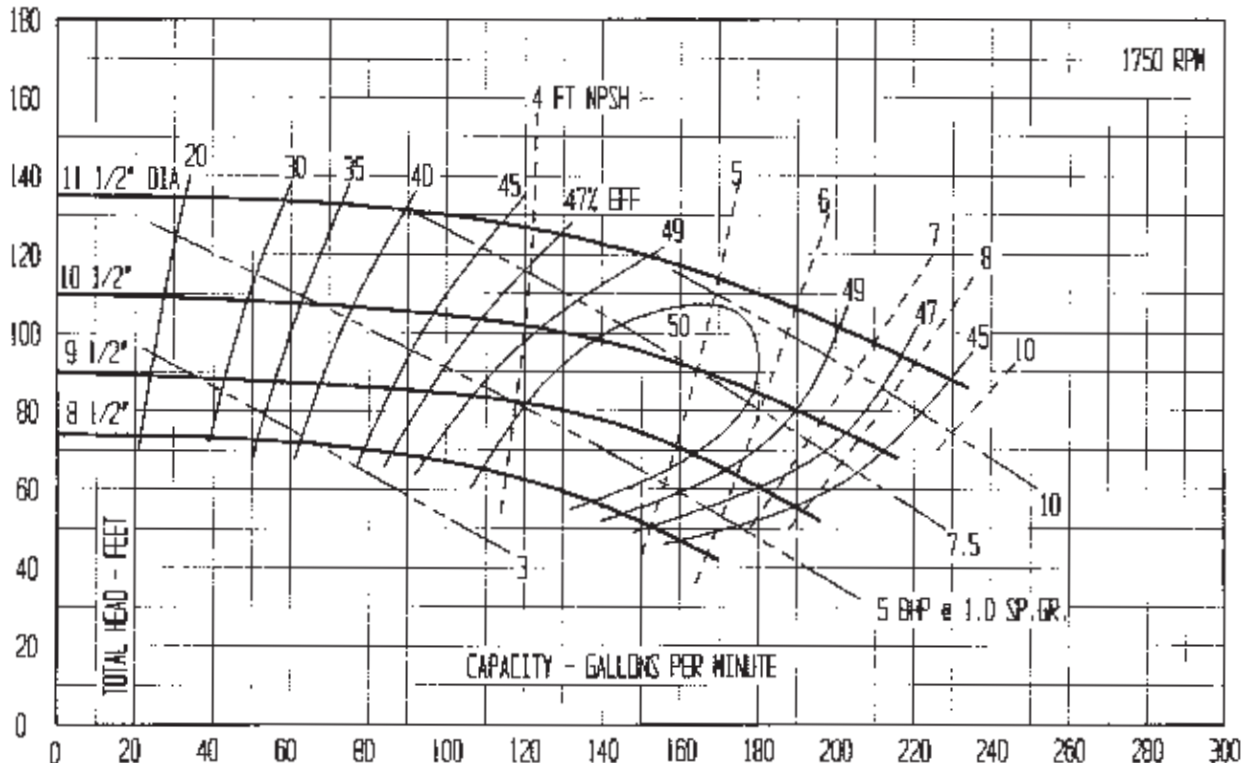
PUMP TYPE: DL230, CNV236

2" DISCHARGE X 3" SUCTION

**PUMP PERFORMANCE:** This curve, based on extensive tests, defines the average performance of this pump for liquids having a viscosity of 70 SSU or less. Actual performance of individual units may differ slightly from the performance indicated on this curve. Pump applications made from the data contained herein are subject to confirmation and acceptance by our Engineering Department at our Indianapolis Office.



Customer _____	Item No. _____
Customer's Order No. _____	Factory Order No. _____
Dean Pump Serial No. _____	



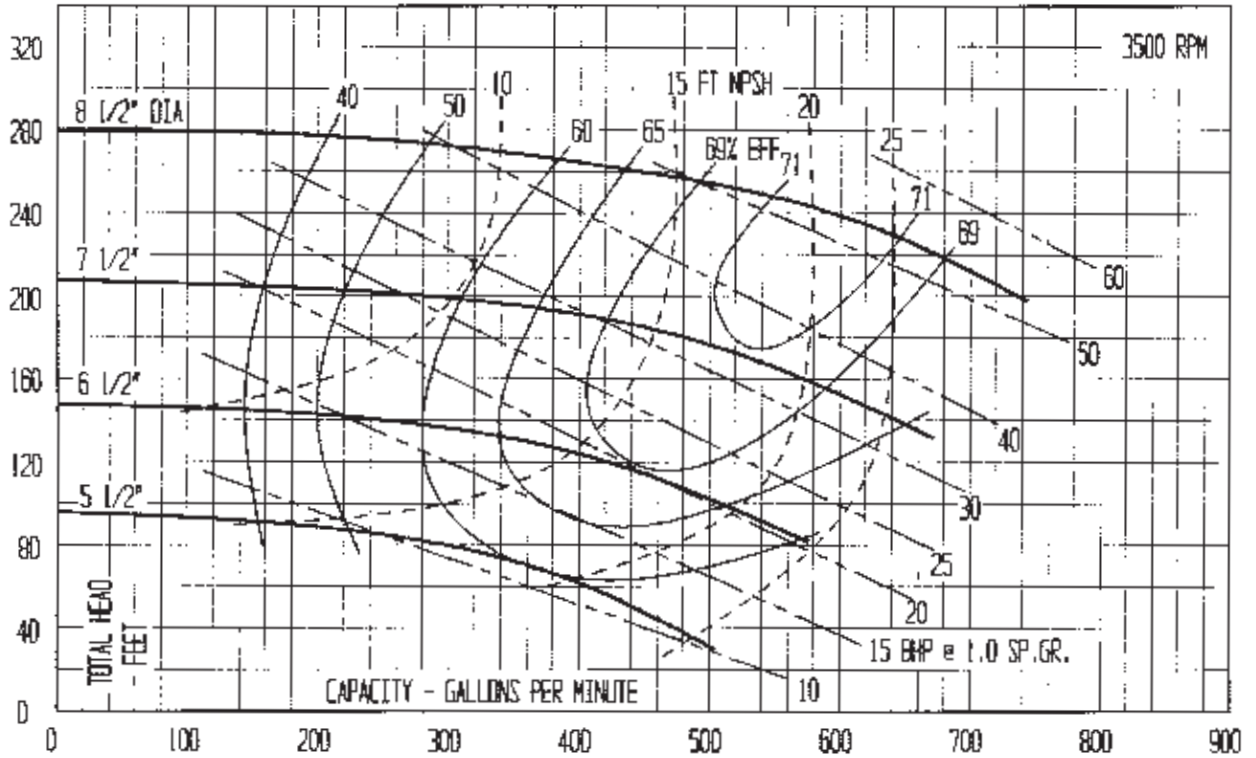
# CECO Dean

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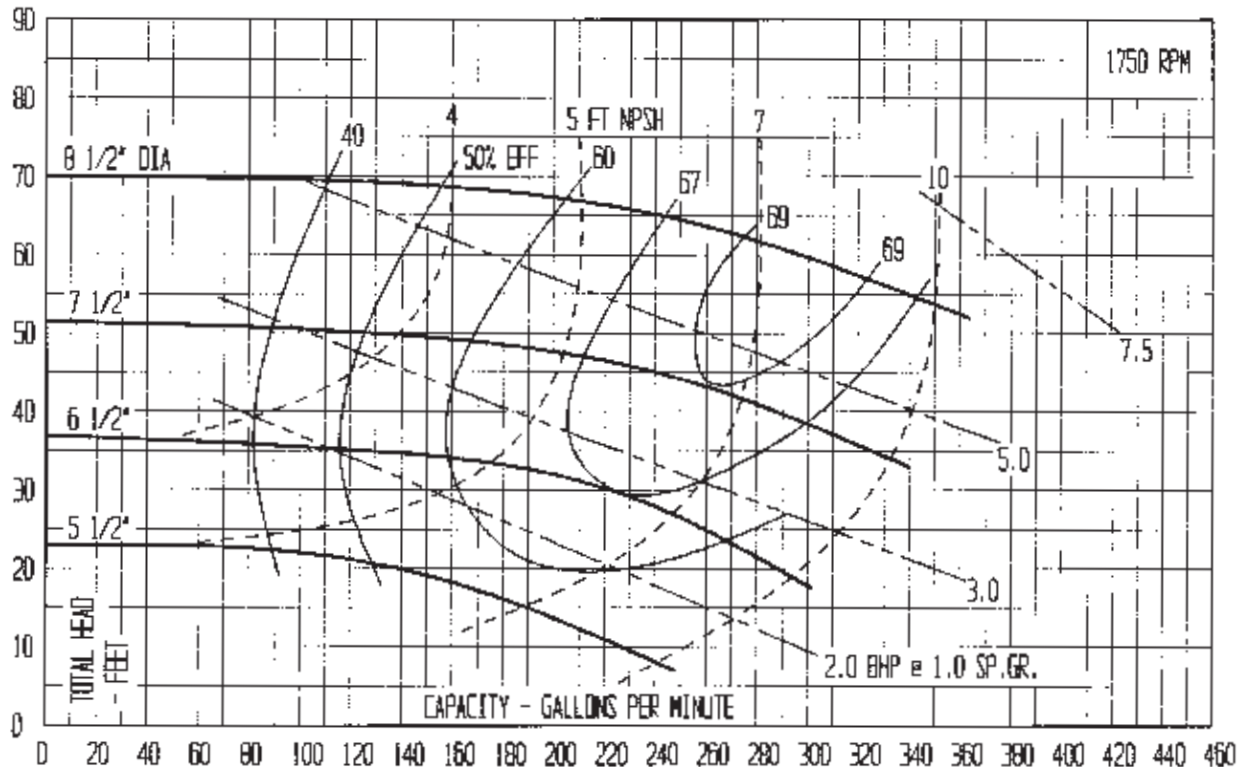
**CENTRIFUGAL PUMP PERFORMANCE DATA: CURVE DL3085-A**  
**PUMP SIZE: 3" X 4" X 8-1/2"**  
**MAX. SOLIDS: 11/16" DIAMETER**  
**PUMP TYPE: DL230, CNV236**

**3" DISCHARGE X 4" SUCTION**

**PUMP PERFORMANCE:** This curve, based on extensive tests, defines the average performance of this pump for liquids having a viscosity of 70 SSU or less. Actual performance of individual units may differ slightly from the performance indicated on this curve. Pump applications made from the data contained herein are subject to confirmation and acceptance by our Engineering Department at our Indianapolis Office.



Customer _____	Item No. _____
Customer's Order No. _____	Factory Order No. _____
Dean Pump Serial No. _____	



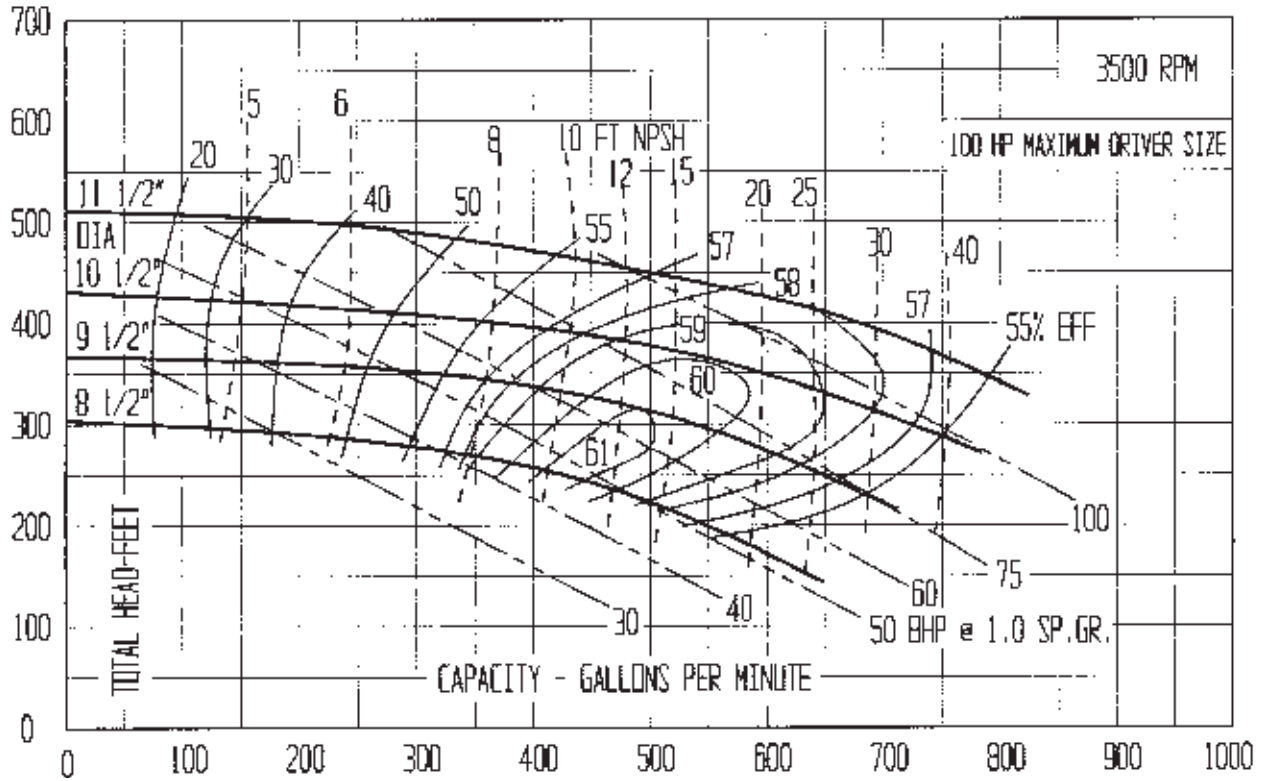
# CECO Dean

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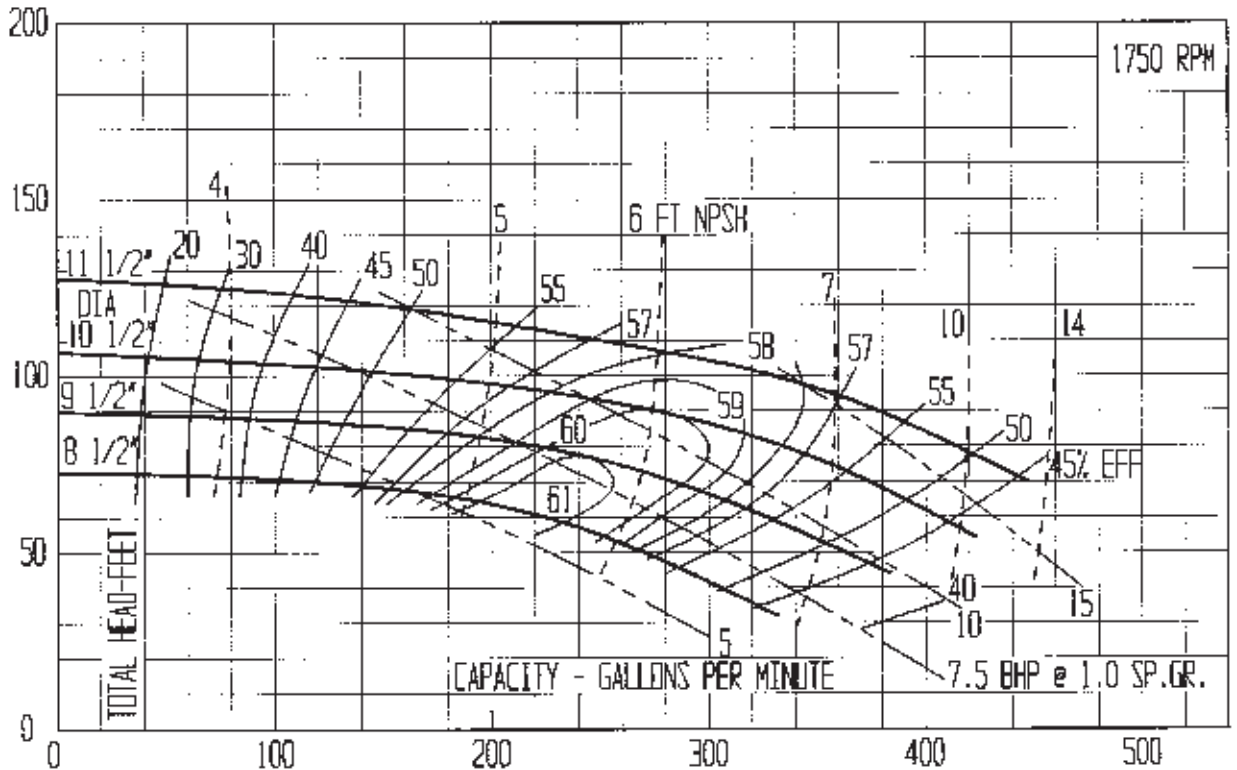
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**PUMP SIZE: 3" X 4" X 11-1/2"**  
**MAX. SOLIDS: 7/16" DIAMETER**  
**PUMP TYPE: DL230, CNV236**

**3" DISCHARGE X 4" SUCTION**

**PUMP PERFORMANCE:** This curve, based on extensive tests, defines the average performance of this pump for liquids having a viscosity of 70 SSU or less. Actual performance of individual units may differ slightly from the performance indicated on this curve. Pump applications made from the data contained herein are subject to confirmation and acceptance by our Engineering Department at our Indianapolis Office.



Customer _____	Item No. _____
Customer's Order No. _____	Factory Order No. _____
Dean Pump Serial No. _____	





# CECO Dean

6040 Guion Road • Indianapolis, IN 46254  
(317) 293-2930 • FAX: (317) 297-7028  
E-mail: [info@onececo.com](mailto:info@onececo.com) • Web Site: [www.cecoenviro.com](http://www.cecoenviro.com)

Member of:  
**Hydraulic**  
INSTITUTE

