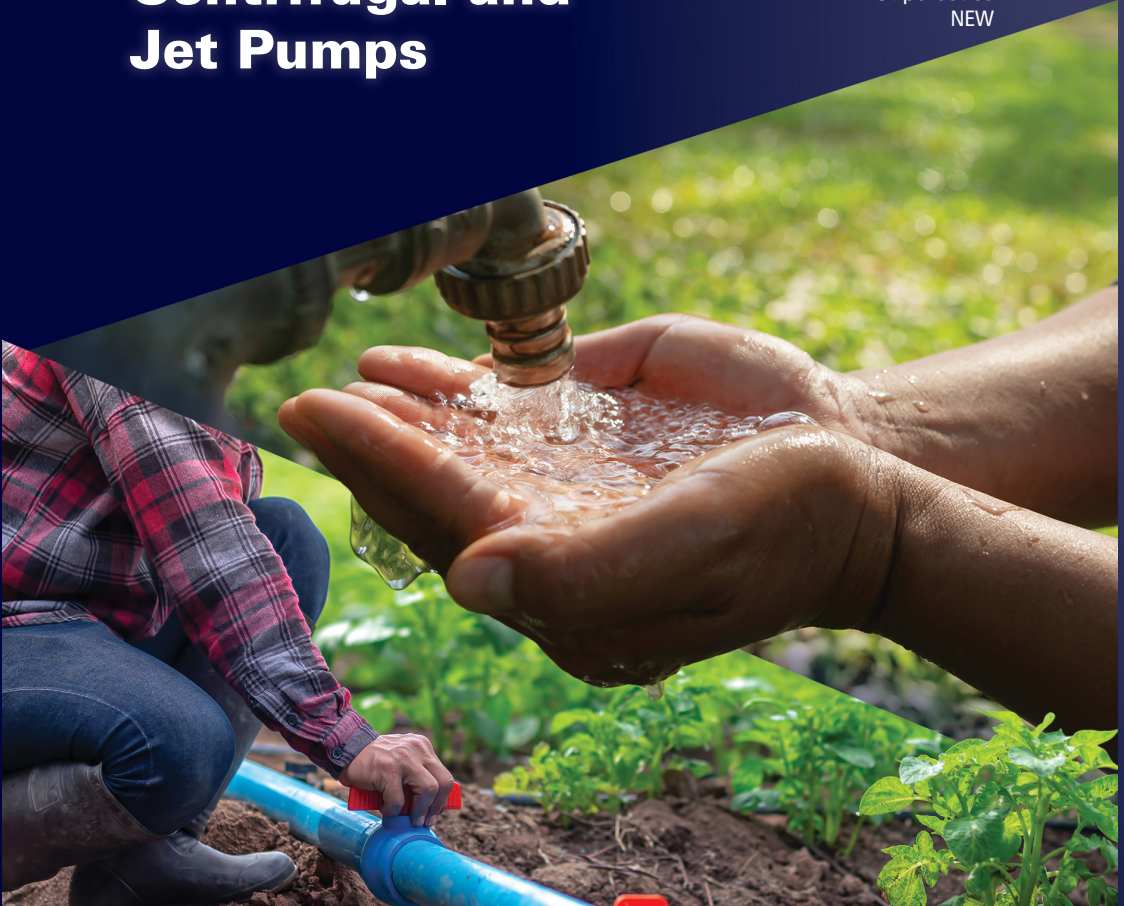


Centrifugal and Jet Pumps

FW2273
1122
Supersedes
NEW



DEDICATED
DOMESTIC
SUPPORT

Family Owned. American Proud.™

The majority of F&W branded products are manufactured in the U.S. using a majority of U.S. content.

FIELD REFERENCE GUIDE

1/2 through 7 1/1 HP



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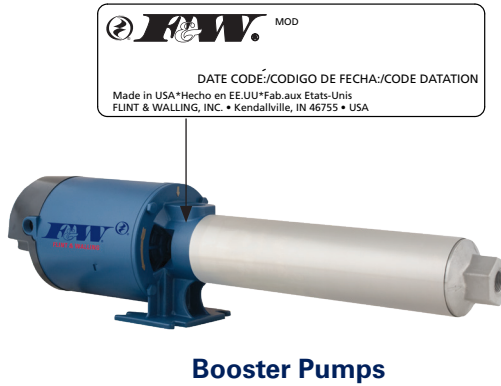
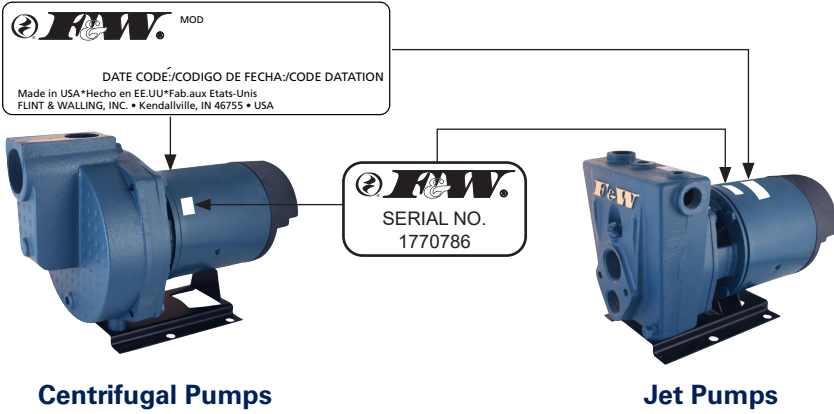
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Model Date and Number Codes

Serial Number & Date Code Location



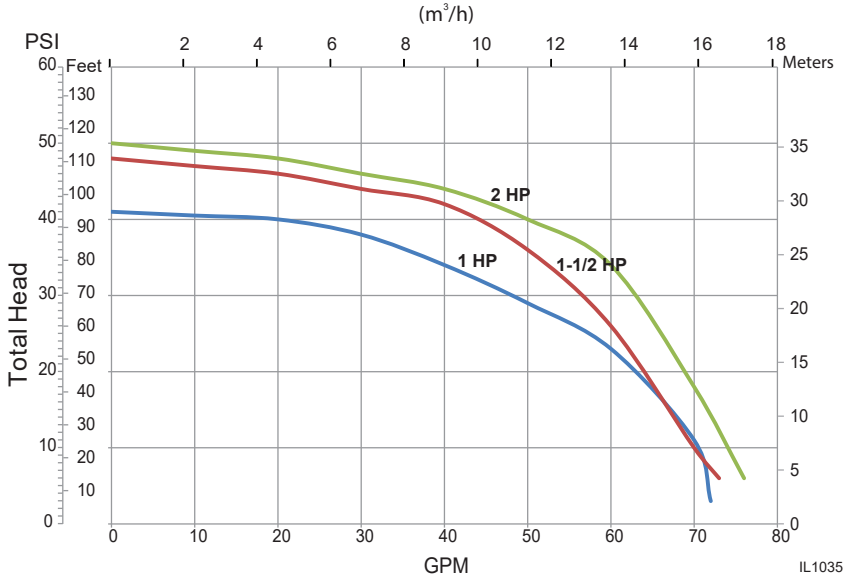
*F&W motor model number and date code are listed on the motor label.



Centrifugal Pumps

SP Self Priming Lawn Sprinkling / Irrigation Pumps

1 thru 2 HP



SP Series



Centrifugal Pumps

Model #	HP	Suction Lift (Ft.)	Discharge Pressure (PSI)							Shut Off Pressure @ 0 Lift (PSI)	Suction Pipe	Discharge Pipe
			15	20	25	30	35	40	45			
SP10P1	1	5	65	61	53	44	32			39	2 in.	1-1/2 in.
		10	64	58	49	39	24					
		15	62	55	45	34						
		20	59	51	41	28						
		25	56	46	36	2						
SP15P1	1-1/2	5	66	63	59	54	48	40	8	45	2 in.	1-1/2 in.
		10	64	61	57	52	45	28				
		15	63	60	55	49	41	15				
		20	62	58	53	46	32					
		25	60	56	50	42	21					
SP20P1	2	5	70	68	65	62	56	46	24	48	2 in.	1-1/2 in.
		10	69	66	63	60	52	39	6			
		15	68	65	62	57	47	27				
		20	67	64	60	53	41	13				
		25	65	62	58	48	30					

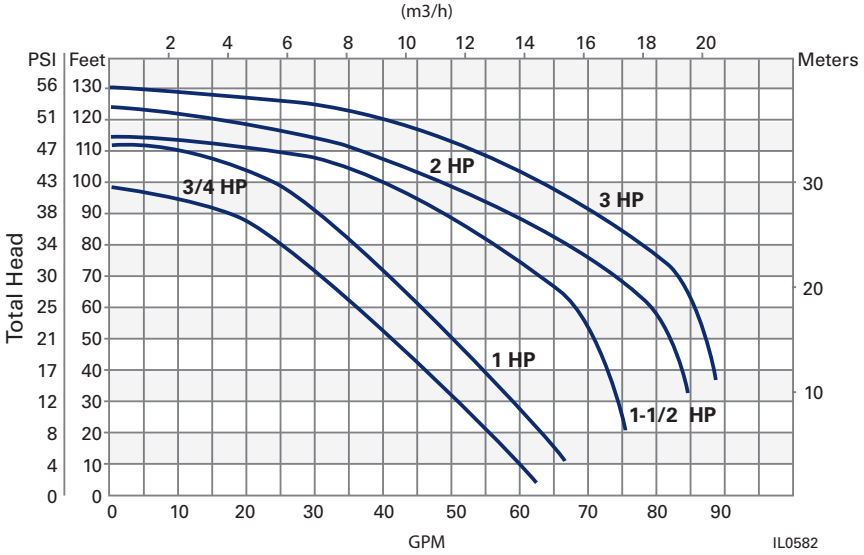
Max. Case Pressure: 100 PSI

Centrifugal Pumps

SPJ Self-Priming Pumps - Single or Three Phase

3/4 thru 3 HP

HP



SPJ Series



Centrifugal Pumps

Model Number	HP	Suction Lift Ft.	Discharge Pressure PSI								Shut-Off Pressure PSI	Suction Pipe Tap	Disch. Pipe Tap		
			1 Phase	3 Phase	10	15	20	25	30	35				40	45
SPJ07P1	3/4	5			56	48	42	37	29	21			41	2"	1-1/2"
SPJ07P3		15		47	42	37	29	22	12			37			
		25		43	37	31	22	10					33		
SPJ10P1	1	5		58	53	48	43	38	32				48	2"	1-1/2"
SPJ10P3		15		53	48	45	37	31	24	11		43			
		25		48	44	38	33	25	14				39		
SPJ15P1	1-1/2	5		78	77	74	70	62	53				47	2"	1-1/2"
SPJ15B3		15		70	68	66	62	53	43	30		41			
SPJ15B1		25		47	46	45	44	42	34				36		
SPJ20B1	2	5		86	84	81	77	71	62				50	2"	1-1/2"
		15		76	74	72	69	64	55	43	25	45			
		25		52	51	50	47	45	42	30		40			
SPJ30B1	3	5		88	86	85	84	80	73				54	2"	1-1/2"
SPJ30B3**		15		77	76	75	74	72	65	55	43	50			
		25		54	53	52	51	50	49	45		45			

Motor voltage: Single Phase 3/4 - 2 HP - 115/230V; 3 HP - 230V, 60Hz

Three Phase 3/4 - 2 HP - 208 - 230/460V, 50/60Hz; 3 HP - 208 - 230/460V; 60Hz

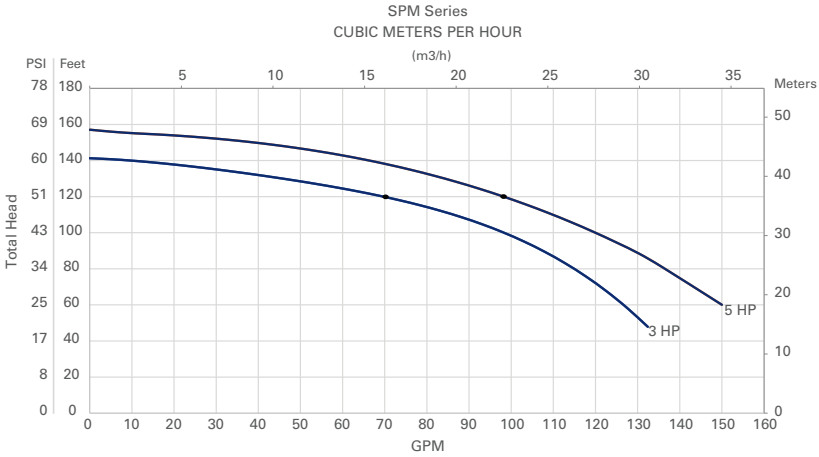
Maximum Case Pressure: 100 PSI

**Less than 50% US content

Centrifugal Pumps

SPM High Power - Single or Three Phase

3 & 5 HP



Centrifugal Pumps

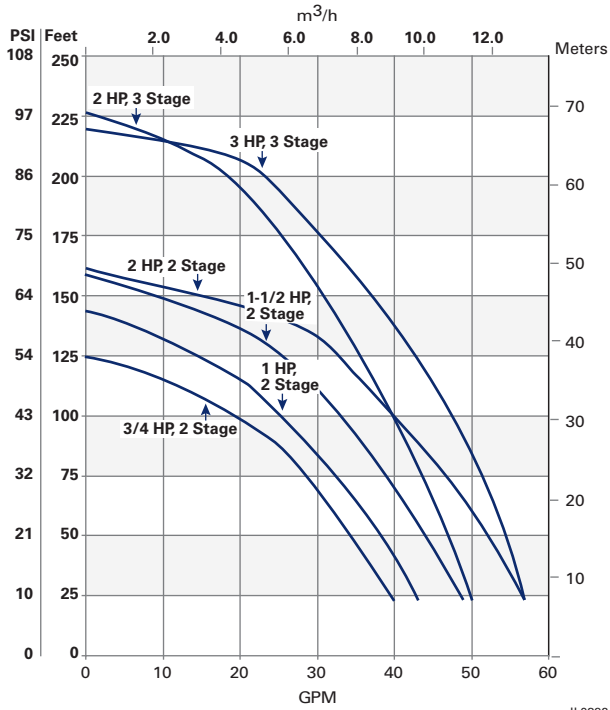
MODEL NO.		HP	LIFT FT.	Discharge Pressure PSI					SHUT-OFF PRESS. PSI	SUCTION PIPE TAP	DISC. PIPE TAP	
1 PHASE	3 PHASE			10	20	30	40	50				60
		CAPACITY U.S. GPM										
SPM301	SPM303	3	5	88	86	82	66	43	60	2"	1-1/2"	
			10	79	77	75	62	37				
			15	65	63	61	56	23				54
SPM501	SPM503	5	20	53	50	48	45	50	50	66	2-1/2"	2"
			5	127	124	119	104	80	47			
			10	110	108	105	98	75	35			
			15	88	87	85	82	70	56			
			20	62	60	58	56	52	41			

*Suction flange sold separately
 3 HP - 024912, 5 HP - 024913

Centrifugal Pumps

CJ101 Low Lead Brass Impellers

3/4 thru 3 HP



MADE IN THE USA
USING A MAJORITY OF U.S. CONTENT

CJ101



Centrifugal Pumps

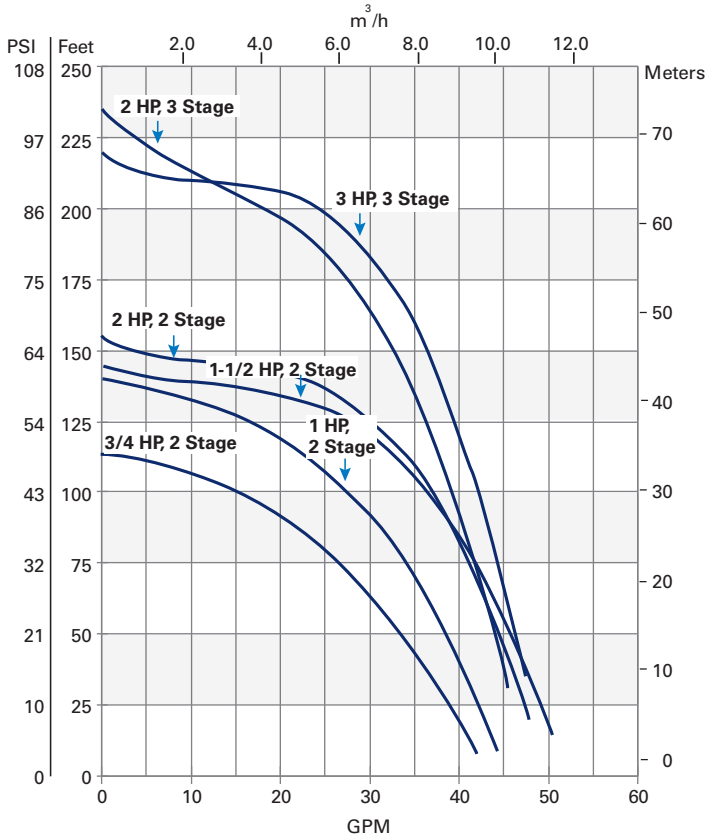
MODEL NO.		HP	STAGES	LIFT FT.	Discharge Pressure PSI										MAX. PRESS. PSI	*MAX. CASE PRESS.	*MAX. LIQUID TEMP.		
					10	20	30	40	50	60	70	80	90						
1 PHASE	3 PHASE	LESS MOTOR	CAPACITY U.S. GPM																
CJ101B071AB CJ101B071TAB	CJ101B073AB CJ101B073TAB	CJ101B0710AB	3/4	5	39	34	29	21	5								54	160psig	200° F
CJ101B101AB CJ101B101TAB	CJ101B103AB CJ101B103TAB	CJ101B1010AB	1	5	42	38	33	26	18								62	160psig	200° F
CJ101B151AB CJ101B151TAB	CJ101B153AB CJ101B153TAB	CJ101B1510AB	1 1/2	5	48	44	39	34	27	17							69	160psig	200° F
CJ101B201AB CJ101B201TAB	CJ101B203AB CJ101B203TAB	CJ101B2010AB	2	5	56	52	47	41	34	24							70	160psig	200° F
CJ101C201AB CJ101C201TAB	CJ101C203AB CJ101C203TAB		2	5	50	49	45	39	31	19							98	160psig	200° F
CJ101C301AB CJ101C301TAB	CJ101C303AB Δ CJ101C303TAB		3	5	49	47	43	40	36	32	28	22	12				95	160psig	200° F
			3	5	56	54	51	48	44	39	33	27	18						
			3	15	50	49	48	46	42	37	31	24							
			3	25	37	36	36	35	34	33	29	20							

Δ Less than 50% US content

Centrifugal Pumps

CJ101 Thermoplastic Impellers

3/4 thru 3 HP



IL0393



Centrifugal Pumps

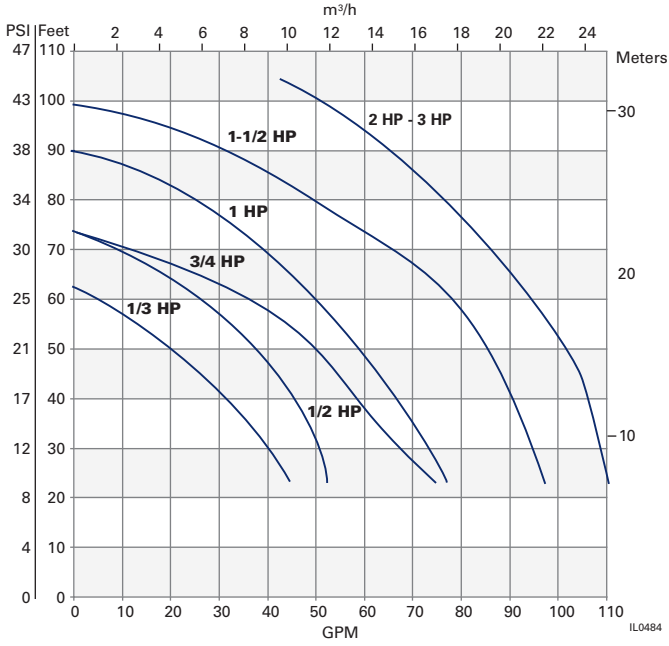
MODEL NO.		HP	STAGES	LIFT FT.	Discharge Pressure PSI										MAX. PRESS. PSI	*MAX. CASE PRESS.	*MAX. LIQUID TEMP.
1 PHASE	3 PHASE				10	20	30	40	50	60	70	80	90				
CJ101P071	CJ101P073	3/4	2	5 15 25	41 38 32	28 26 29	20 13 22								49	160psig	160° F
CJ101P101	CJ101P103	1	2	5 15 25	45 42 35	40 39 33	28 26 22	20 15							60	160psig	160° F
CJ101P151	CJ101P153	1 1/2	2	5 15 25	54 48 37	50 46 35	44 42 33	28 23 17							61	160psig	160° F
CJ101P201	CJ101P203	2	2	5 15 25	55 49 37	52 47 36	41 39 32	23 17							67	160psig	160° F
CJ101D201	CJ101D203	2	3	5 15 25	44 36 26	44 36 26	41 36 24	37 30 24	28 25 20	22 11 15					101	160psig	160° F
	CJ101D303	3	3	5 15 25	54 48 36	52 47 36	50 46 35	44 42 33	25 22 19	15 11					95	160psig	160° F

*Do not exceed the maximum case pressure and maximum liquid temperature rating of the pump. Performance shown for 60Hz models. 50 Hz models also available. Suction and Discharge Tappings 1-1/2" X 1-1/4"

Centrifugal Pumps

CJ103 Low Lead Brass Impellers

1/3 thru 3 HP



CJ103



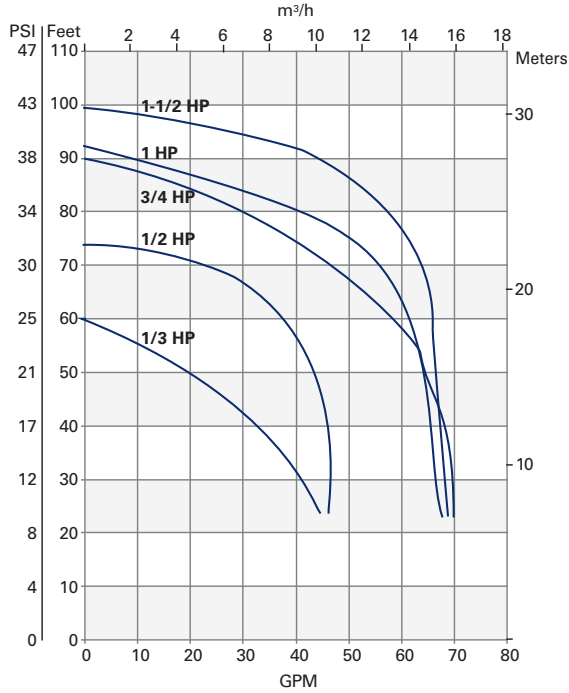
Centrifugal Pumps

MODEL NO.		HP	STAGES	LIFT FT.	Discharge Pressure PSI										MAX. PRESS. PSI	*MAX. CASE PRESS.	*MAX. LIQUID TEMP.	
1 PHASE	3 PHASE				10	15	20	25	30	35	40	45	50					
		CAPACITY U.S. GPM																
C-J103031AB		1/3	1	5 15 25	42 36 28	34 26	21								27	100psig	200° F	
C-J103051AB C-J103051TAB		1/2	1	5 15 25	50 43 33	47 40 30	37 29 15	25							32	100psig	200° F	
C-J103071 C-J103071T	C-J103073 C-J103073T	3/4	1	5 15 25	71 66 57	62 54 43	51 40 25	36 19	11						32	100psig	200° F	
C-J103101 C-J103101T	C-J103103T	1	1	5 15 25	76 73 66	69 65 57	61 54 45	50 41 29	36 24	16					39	100psig	200° F	
C-J103151 C-J103151T	C-J103153T	1 1/2	1	5 15 25	94 92 74	88 85 72	80 75 66	70 63 52	59 49 34	44 27	18				43	100psig	200° F	
C-J103201		3	1	5 15 25	109 109 90	103 103 89	96 94 85	86 82 71	75 67 51	61 45	39				44	100psig	200° F	
C-J103201T	C-J103203T	2																

Centrifugal Pumps

CJ103 Thermoplastic Impellers

1/3 thru 3 HP



IL0485

CJ103 DOE Compliance

PUMP MODEL	Impeller Dia.	P.E.I.CL	PUMP MODEL	Impeller Dia.	P.E.I.CL	PUMP MODEL	Impeller Dia.	P.E.I.CL
CJ103101	4.870"	0.98	CJ103P151	5.090"	0.90	CJ103103T	4.870"	0.91
CJ103151	5.090"	0.99	CJ103101T	4.870"	0.99	CJ103153T	5.090"	0.93
CJ103201	5.090"	0.98	CJ103151T	5.090"	0.99	CJ103203T	5.090"	0.91
CJ103P101	5.000"	0.98	CJ103201T	5.090"	0.99			



Centrifugal Pumps

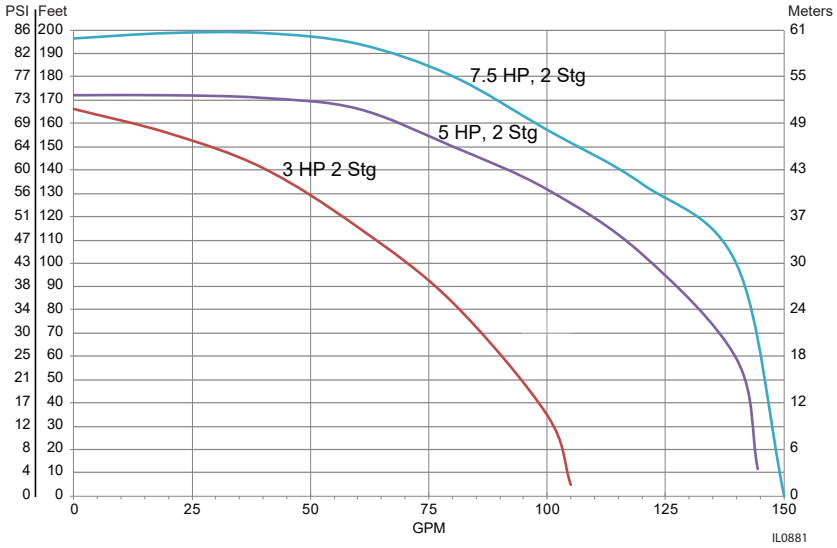
MODEL NO.		HP	STAGES	LIFT FT.	Discharge Pressure PSI										MAX. PRESS. PSI	*MAX. CASE PRESS.	*MAX. LIQUID TEMP.
1 PHASE	3 PHASE				10	15	20	25	30	35	40	45	50				
		CAPACITY U.S. GPM															
CJ103P031		1/3	1	5 15 25	43 35 26	35 24	21								26	100psig	160° F
CJ103P051	CJ103P053	1/2	1	5 15 25	45 41 31	45 41 29	44 38 27	36 24	19						32	100psig	160° F
CJ103P071	CJ103P073	3/4	1	5 15 25	69 64 49	68 57 48	64 46 31	57 46 28	42 28						38	100psig	160° F
CJ103P101		1	1	5 15 25	67 61 47	65 58 46	64 55 43	62 51 43	51 41 23	35					40	100psig	160° F
CJ103P151		1 1/2	1	5 15 25	68 62 48	67 61 47	66 59 46	65 55 41	63 55 41	52 39	31				44	100psig	160° F

*Do not exceed the maximum case pressure and maximum liquid temperature rating of the pump. Performance shown for 60Hz models. 50 Hz models also available. Models with suffix T denotes TEFC motor. All other models utilize ODP motors. Suction and Discharge Tappings 1-1/2" X 1-1/4"

Centrifugal Pumps

C22000 Series - Single or Three Phase

3 thru 7 1/2 HP



C22000 Series



Centrifugal Pumps

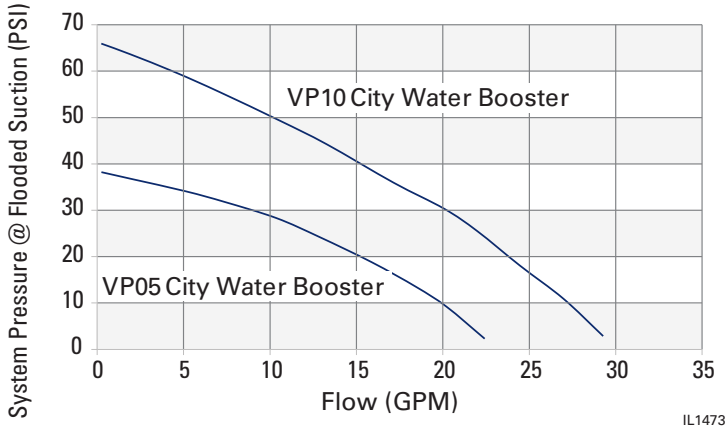
MODEL NUMBER		HP	STAGES	DISCHARGE PRESSURES (PSI)					MAX SUCTION LIFT (FT)	SUCT PIPE TAP (NPT)	DISCH PIPE TAP (NPT)	
1 PHASE	3 PHASE			20	30	40	50	60				70
CAPACITY - U.S. GALLONS PER MINUTE (0 LIFT)												
C22231	C22233	3	2	95	86	75	60	40	12	20	3	2
C22251	C22253	5	2	143	137	124	111	91	65	20	3	2
--	C22273	7 1/2	2	145	140	138	135	121	95	20	3	2

MOTOR VOLTAGE: 3HP 1 Phase 208-230V 60 Hz, 5HP 1 Phase 208-230V 60 Hz, 3, 5 & 7.5HP 3 Phase 208-230/480V 60Hz.
120 PSI Maximum Case Pressure

Centrifugal Pumps

City Water Booster Pumps

1/2 & 1 HP



IL1473



Centrifugal Pumps

DO NOT EXCEED 30 PSI incoming pressure

Inlet PSI	VP05 System Pressure (PSI) at Flow Rates (GPM)							HP
	3	6	9	12	15	18	21	
10	43	36	35	31	26	-	-	1/2
20	53	46	45	41	36	-	-	
30	63	56	55	51	46	-	-	

DO NOT EXCEED 50 PSI INCOMING PRESSURE

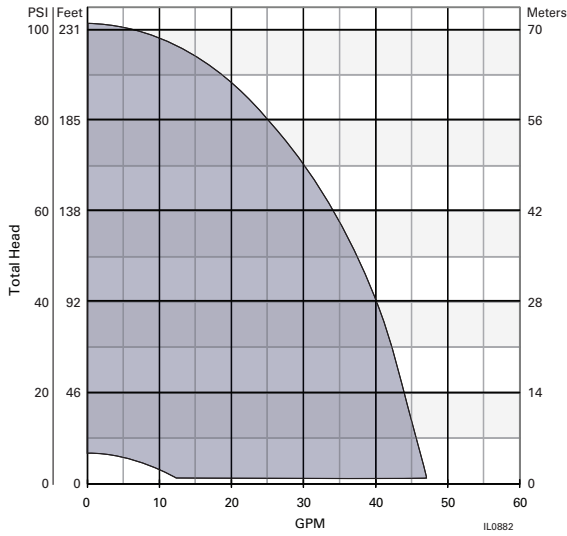
Inlet PSI	VP10 System Pressure (PSI) at Flow Rates (GPM)							HP
	3	6	9	12	15	18	21	
10	72	67	61	56	50	45	39	1
20	82	77	71	66	60	55	49	
30	92	87	81	76	70	65	59	
40	102	97	91	86	80	75	69	
50	112	107	101	96	90	85	79	

Variable Speed Drive Packages



VFD Pumping Stations

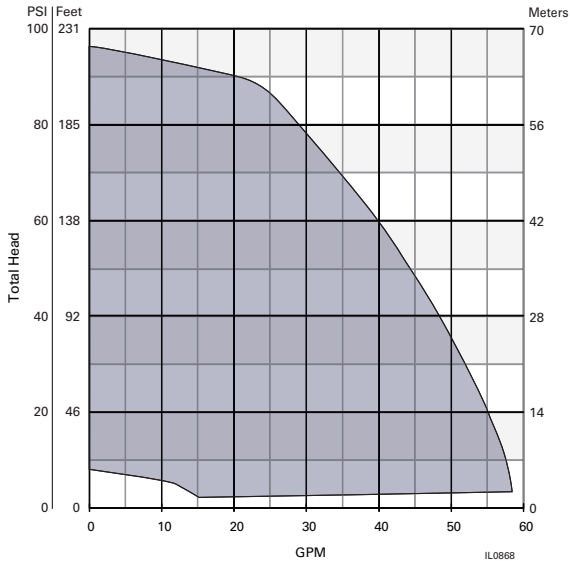
Model: ADS101C203 2 HP



2 HP 3 Phase with 1 Phase Incoming

System Includes		
Pump	Drive	Tank
CJ101C203	AD096074	132661 AT44

Model: ADS101C303 3 HP



2 HP 3 Phase with 1 Phase Incoming

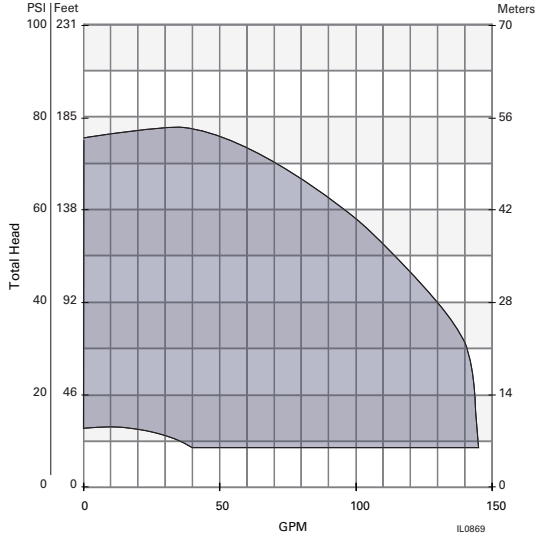
System Includes		
Pump	Drive	Tank
CJ101C203	AD096074	132661 AT44

Variable Speed Drive Packages Continued



VFD Pumping Stations

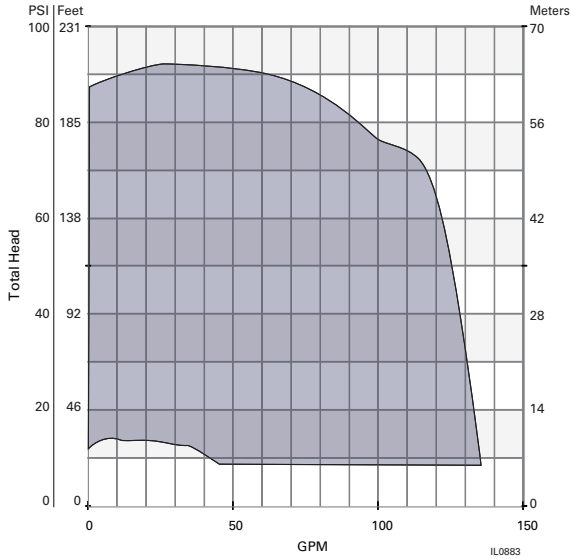
Model: ADS22253 5 HP



5 HP 3 Phase with 1 Phase Incoming

System Includes		
Pump	Drive	Tank
C22253	AD150145	132661 AT44

Model: ADS22273 7.5 HP



7.5 HP 3 Phase with 3 Phase Incoming

System Includes		
Pump	Drive	Tank
C22273	AD220210	132661 AT44

Constant Pressure Pumping Stations

Systems Include:

- Artesian Drive® variable speed controller drive assembly can rotate 90° for flexibility
- Centrifugal pump with brass impellers and 'Power Plus' motor
- Air-E-Tainer® diaphragm tank
- Thermal sensor (not shown)
- Sealtight conduit
- 2" Stainless steel manifold for gauge, transducer and hose bib
- 3 Phase output to motor
- 2" brass outlet check valve
- Premium liquid filled gauge
- 'Powder-coated tough' skid
- Pressure transducer
- Hose bib



Front



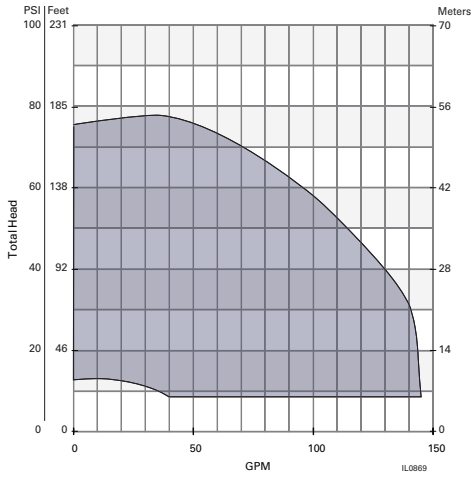
Back



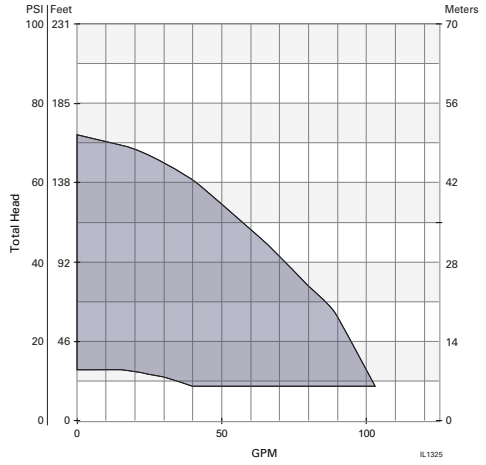
ADW2W31, ADW2W51,
ADW2W71, ADW2W73,
& ADW2W53



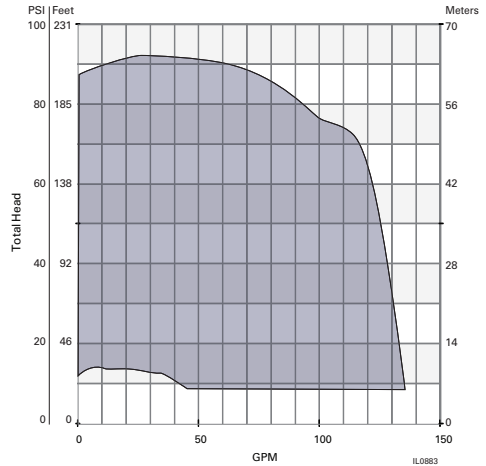
Performance Charts



ADW2W51
5 HP Single Phase
ADW2W53E
5 HP Three Phase



ADW2W31
3 HP Single Phase



ADW2W71
7-1/2 HP Single Phase,
ADW2W73
7-1/2 HP Three Phase

EK Series Jet Pumps

EKS Shallow Well Jet Pump

- Includes:
- Pump
- Motor
- Pressure switch
- Ejector



EK Convertible Jet Pump

- Includes:
- Pump
- Motor
- Pressure switch

*Purchase ejector separately



*Products may not be exactly as shown



EK Series & EK Tank Systems



Jet Pumps - Horizontal

Model	HP	Suction Lift Ft.	Discharge Pressures (PSI)			Shut Off Pressure @ 0 Lift (PSI)	Suction & Discharge	Pressure Switch Setting - PSI	Pump Shipping Weight							
			20	30	40					50						
EK05S	1/2	5	10.5	9.5	5.8	4.0	1-1/4" x 3/4"	20-40	40							
		15	7.6	7.3	4.5	2.5										
		25	4.5	4.2	3.5	2.0										
EK07S	3/4	5	15.5	15.0	10.0	5.8	1-1/4" x 3/4"	30-50	41							
		15	11.3	11.7	9.1	3.8										
		25	6.0	5.8	5.2	2.0										
EK10S	1	5	20.0	20.0	19.5	18.3	1-1/4" x 1"	30-50	51							
		15	15.8	15.5	15.0	14.5										
		25	10.0	9.7	9.5	9.0										
Pump Model No. and Motor HP	Ejector Model No.	Discharge Pressure	Shallow Well Ejector					Deep Well Ejector in 4" ID well or Larger					DW Minimum Operating Pressure PSI			
			Capacity - US Gallons Per Minute													
			5	15	25	20	30	40	50	60	70	80	90	100	110	
EK05* 1/2 HP	SW03E-1626	20	11.3	8.7	5.3											--
	DW40E-1726	40	9.5	7.8	5.2											20
EK07* 3/4 HP	DW40E-1622	40				10.8	8.3	7.0								24
	DW40E-1622	40				6.0	4.7	3.8								
	DW40E-1622	40							7.0	6.2	5.5	4.7				
	SW05E-1630	50	17.0	12.9	7.8				4.3	3.5	3.0	2.3				
	DW40E-1730	30	10.0	8.0	5.5											
	DW40E-1828	50				12.5	10.8	8.7								
EK10** 1 HP	DW40E-1622	30				11.2	10.8	8.8	7.2	5.0						
	DW40E-1622	50				6.7	5.5	3.8	2.3	1.0						
	SW07E-1432	30	19.5	15.2	9.5				6.7	6.0	5.3	4.3	3.3	2.5	1.7	1.0
EK10** 1 HP	DW40E-1630	30	18.0	14.2	8.8				4.3	3.8	3.3					--
	DW40E-1630	50				16.7	14.2	12.2	8.3							35-37
	DW40E-1726	30				12.5	8.3	5.0	2.5							37-39
DW40E-1520	30				11.7	11.7	11.5	10.3	9.0	7.7	6.2	4.8				
DW40E-1520	50				9.2	9.2	8.2	7.0	5.7	4.3	3.2	1.7				
DW40E-1520	30										5.0	4.8	4.3	3.7	3.0	3.0
DW40E-1520	50										3.7	3.3	3.0	2.7		3.0

Maximum Pump Case Pressure = 150 PSI, Suction & pressure pipe tapping 1-1/4" x 1", *Discharge 3/4", **Discharge 1" -- reduced pipe sizes will result in lower than published performance.

Jet Pumps - Horizontal

CPHS and CPJS Shallow Well Jet Pumps

CPHS Series • 1/2, 3/4 & 1 HP

- Includes:
- Pump
- Motor
- Pressure switch
- Shallow well ejector



CPJS Series • 1/3 thru 1-1/2 HP

- Includes:
- Pump
- Motor
- Pressure switch
- Shallow well ejector



*Products may not be exactly as shown



CPH, CPJS, CPJ Series



CPJS AND CPHS SHALLOW WELL PERFORMANCE WITH SHALLOW WELL EJECTORS

Model No.	HP	Ejector* Assembly	Suction Lift Ft.	Discharge Pressures (PSI)						Suction & Discharge	Pressure Switch Setting	Shut Off Pressure PSI	Pump Shipping Weight
				20	30	40	50	60	CAPACITY - U.S. GALLONS PER MINUTE				
CP-J03SB	1/3	SW03E-1626	5	11.3	10.7	9.5	6.7		1-1/4" X 3/4"	30-50	74	49	
			15	8.7	8.5	7.8	5.3						
CP-J05SB CPH05S	1/2	SW05E-1630	5	17.2	16.8	14.8	10.0		1-1/4" X 3/4"	30-50	69	50	
			15	12.8	12.7	12.2	7.7						
CP-J07SB CPH07S	3/4	SW07E-1432	5	19.8	19.5	19.2	18.0		1-1/4" X 1"	30-50	65	58	
			15	15.5	15.2	14.8	14.2						
CP-J10SB CPH10S	1	SW10E-1334	5	23.7	23.5	23.3	23.0		1-1/4" X 1"	30-50	70	62	
			15	18.3	18.3	18.2	18.0						
CP-J15S	1-1/2	SW15E-1238	5	30.0	29.8	29.8	29.8	23.3	1-1/4" X 1"	30-50	77	72	
			15	24.0	23.8	23.7	23.5	18.7					
			25	15.0	15.0	15.0	14.8	8.0			63		

* Ejector assembly included
Maximum Pump Case Pressure = 150 PSI



**SW Single Pipe
Shallow Well Ejector**

CPJ & CPH Shallow Well Capacities with Convertible Ejector

Model No.	HP	Ejector Assembly	Suct. Lift Ft.	Discharge Pressures (PSI)										Suction & Discharge	Pressure Switch Setting	Shut Off Pressure PSI	Pump Ship Weight	
				20	30	40	50	60	70	80	90							
CPJ05B CPH05 CPH05RT	1/2	DW40E-1730	5	14.8	14.5	13.2	10.0	6.7							1-1/4" X 3/4"	30-50	76	46
			15	11.8	11.3	11.2	8.3	5.0									67	
			25	7.3	7.2	7.0	6.5	3.3										
CPJ07B CPH07 CPH07RT	3/4	DW40E-1828	5	12.0	11.5	11.3	10.2	7.8	5.0						1-1/4" X 3/4"	30-50	90	38
			15	9.0	8.8	8.7	8.5	6.7	4.2							85		
			25	5.3	5.3	5.2	5.2	5.0	3.3							80		
CPJ07B CPH07 CPH07RT	3/4	DW40E-1630	5	16.0	15.7	15.5	15.0	10.3							1-1/4" X 1"	30-50	75	56
			15	12.5	12.3	12.3	12.2	7.0								66		
			25	8.3	8.3	8.2	8.0	4.2										
CPJ10B CPH10 CPH10RT	1	DW40E-1726	5	10.2	10.0	9.7	9.5	9.3	9.2	7.5	5.7				1-1/4" X 1"	30-50	120	49
			15	8.0	7.5	7.3	7.2	7.2	7.2	6.7	5.0					115		
			25	4.8	4.7	4.5	4.3	4.2	4.2	4.2	3.3					110		
CPJ10B CPH10 CPH10RT	1	DW40E-1634	5	20.8	20.8	20.5	20.3	15.8							1-1/4" X 1"	30-50	80	58
			15	16.7	16.7	16.3	16.2	13.0								70		
			25	11.7	11.5	11.3	11.2	9.3										
CPJ15 CPH15 CPH15RT	1-1/2	DW40E-1736	5	12.2	11.7	11.7	11.3	11.2	11.2	10.8	8.0				1-1/4" x 1"	30-50	125	66
			15	9.5	9.2	9.0	8.8	8.8	8.7	6.7	6.7					120		
			25	5.7	5.5	5.3	5.2	5.0	5.0	5.0	5.0					115		
CPJ15 CPH15 CPH15RT	1-1/2	DW40E-1736	5	23.8	23.3	23.3	23.0	18.7	13.8	8.3					1-1/4" x 1"	30-50	93	66
			15	18.0	17.8	17.5	17.3	16.3	11.7	6.0						88		
			25	11.0	10.7	10.7	10.5	10.3	8.3	2.0						82		

*"R" models include pressure switch and 134349 control package. Order ejector separately.

Maximum Pump Case Pressure = 150 PSI

NOTE: The DW40E ejector can be bolted to the pump as a shallow well ejector or submerged in casing as a convertible deep well ejector.



***DW40E Cast Iron Two Pipe Convertible Ejector**

CPJ & CPH Deep Well Capacities with Two-Pipe Convertible Ejector

Model No.	HP	Ejector Assembly	Min. Oper. Press.	Disch. Press. PSI	Vertical Distance to Water in Feet															Press. Switch Setting	Pump Ship Wt.												
					CAPACITY - U.S. GALLONS PER MINUTE																												
					20	30	40	50	60	70	80	90	100	110	120	130	140																
CPJ05B CPH05	1/2	DW40E-1730	25	30 50 Shut Off	12.5	10.8	8.7												30-50	46 38													
					5.5	3.7	2.0																										
					67	63	57																										
DW40E-1828	30	11.2	10.8	8.8	7.2	5.0																											
																				6.7	5.5	3.8	2.3	0.8									
																				75	69	64	59	54									
DW40E-1622	30	6.7	6.0	5.3	4.3	3.3	2.5																										
																				4.3	3.8	3.3	2.5	1.7	0.8								
																				91	86	80	74	68	60								
DW40E-1630	30	16.7	14.2	12.2	8.3																												
																				12.5	8.3	5.0	2.5										
																				75	70	65	59										
DW40E-1726	3/4	30	11.7	11.5	10.3	9.0	7.7	6.2	4.8																								
																				9.2	9.2	8.21	7.0	5.7	4.3	3.2	1.7						
																				98	91	86	80	74	69	65	58						
DW40E-1520	30	50	Shut Off	30																													
																				19.2	15.0	11.7	8.3										
																				10.0	7.5	5.0	2.5										
DW40E-1634	30	Shut Off	71	66	62	57																											
																				13.0	13.0	12.8	12.5	10.5	9.0	7.5	5.8	4.0					
																				12.0	12.0	10.8	9.5	7.8	6.2	5.0	3.5	2.0					
DW40E-1828	1	30	Shut Off	110	105	99	93	87	81	76	70	64																					
																				5.5	5.5	5.0	4.5	3.8	3.5	2.7							
																				4.7	4.2	3.7	3.2	2.7	2.2	1.8							
DW40E-1520	30	Shut Off	130	123	117	110	104	98	92																								
																				21.7	17.5	13.3	10.0	6.7									
																				15.0	11.7	8.3	5.0	2.7									
DW40E-1736	30	80	76	71	65	60																											
																				12.8	12.5	10.7	9.0	7.7	6.2	5.0	3.5	2.5					
																				11.7	11.3	9.7	7.8	6.7	5.0	3.3	2.5						
DW40E-1728	1-1/2	30	Shut Off	105	98	92	87	82	77	72	65																						
																				5.3	5.3	5.2	5.0	4.3	3.8	3.3							
																				5.2	5.0	4.7	4.2	3.8	3.3	2.8							
DW40E-1520	30	Shut Off	135	128	123	118	112	105	100																								
																				5.2	5.0	4.7	4.2	3.8	3.3	2.8							
																				5.2	5.0	4.7	4.2	3.8	3.3	2.8							

Maximum Pump Case Pressure = 150 PSI. * Suction & pressure pipe tapping 1-1/4" x 1"



***DW40E Cast Iron Two Pipe Convertible Ejector**

CPJ & CPH Deep Well Capacities with 2" Single Pipe Ejector

Model No.	HP	Ejector Assembly	Min. Oper. Press.	Disch. PSI	Vertical Distance to Water in Feet														Press. Switch Setting	Pump Ship Wt.		
					CAPACITY - U.S. GALLONS PER MINUTE																	
					20	30	40	50	60	70	80	90	100	110	120	130	140	150				
CPJ05B CPH05	1/2	SP20BL-1730†	30	10.8	9.2	7.5														30-50	46 38	
			50	5.0	3.3	1.7																
			Shut Off	65	60	55																
			30	11.7	9.7	7.5	5.8	3.8														
			50	6.7	4.7	2.8	1.2															
			Shut Off	76	68	60	55	51														
CPJ07B CPH07	3/4	SP20BL-1622†	30	6.2	5.8	5.0	4.0	3.3	2.3											30-50	56	
			50	4.2	3.7	2.8	2.2	1.3	0.3													
			Shut Off	90	83	76	70	61	55													
			30	16.2	13.7	10.8	7.5															
			50	11.7	7.5	5.0	1.7															
			Shut Off	75	70	66	55															
CPJ10B CPH10	1	SP20BL-1634†	30	11.0	11.0	9.7	9.5	7.2	5.8	3.3										30-50	49	
			50	8.3	7.5	6.7	5.3	4.2	2.8	1.8												
			Shut Off	91	87	82	78	72	66	62												
			30	16.7	15.0	11.7	8.3															
			50	10.0	7.5	4.7	2.0															
			Shut Off	71	66	61	55															
CPJ15 CPH15	1-1/2	SP20BL-1728†	30	11.7	11.7	11.2	10.0	8.3	7.0	5.5	3.8	2.2								30-50	66	
			50	11.0	9.8	8.8	7.3	6.0	4.5	3.3	1.8	0.5										
			Shut Off	104	98	92	86	80	72	67	61	55										
			30	15.8	12.5	9.7	6.7															
			50	13.3	10.0	7.5	5.0	2.7														
			Shut Off	80	75	70	65	60														
CPJ15 CPH15	1-1/2	SP20BL-1520†	30	11.7	11.7	10.0	8.0	6.3	4.8	3.5										30-50	66	
			50	10.0	9.0	7.5	5.8	4.3	3.0	1.8												
			Shut Off	102	96	90	84	78	71	65												
			30	15.8	12.5	9.7	6.7															
			50	13.3	10.0	7.5	5.0	2.7														
			Shut Off	80	75	70	65	60														
Maximum Pump Case Pressure = 150 PSI		SP20BL-1520†	30	5.3	5.0	4.5	3.8	3.3	2.7	2.2	1.7									30-50	88	
			50	4.2	3.8	3.3	2.7	2.2	1.7													
			Shut Off	108	100	92	84	77	70													
			30	11.7	11.2	10.0	8.3	7.0	5.5	3.8	2.2											
			50	11.0	9.8	8.8	7.3	6.0	4.5	3.3	1.8	0.5										
			Shut Off	104	98	92	86	80	72	67	61	55										

†Not for sale in states following Proposition 65 or AB 1953



Two Inch Single Pipe Ejector

Jet Pumps - Vertical

VA & VS Series Multi-Stage Deep Well Jet Pumps

VA Series • 3/4 thru 1 1/2 HP



VS Series • 3/4 thru 1-1/2 HP



VPH Series Single Stage Deep Well Jet Pumps

VPH Series • 1 HP



VA, VS, VPH Series



Jet Pumps - Vertical

MODEL NO.	HP	SHALLOW WELL EJECTOR ASSEMBLY	SUCTION LIFT FEET	CAPACITIES - GPM AT DISCHARGE PSI										SUCTION & DISCHARGE	PRESSURE SWITCH SETTING	SHUTOFF PRESSURE PSI	SHIPPING WT
				20	30	40	50	60	70	80	90						
VA207P VS207P	3/4	SW10V-1030	5	16.0	16.0	16.0	14.5	9.5								75	67
			15	13.5	13.5	12.3	7.2	2.8									
			25	7.5	7.5	7.5	7.2	2.3								64	
VA210P VS210P	1	SW10V-1030	5	16.7	16.7	16.7	14.3	9.0								80	72
			15	13.3	13.3	13.3	11.7	5.0								75	
			25	7.2	7.2	7.2	6.8								70		
VA215P VS215P	1-1/2	SW15V-1034	5	20.7	20.7	20.7	20.7	20.3	17.0	11.0						96	76
			15	17.3	17.3	17.3	17.3	17.2	15.0	4.0						91	
			25	9.2	9.2	9.0	9.0	9.0	6.8						84		

Order shallow well ejector assembly separately.

MODEL NO. HP STAGES	TWO PIPE EJECTORS		SINGLE PIPE EJECTORS		NOZZLE VENTURI SELECTION		VERTICAL DISTANCE TO WATER IN FEET CAPACITY IN GPM												LB. PUMP DISCH. PRESS.				
	4"	2"	2"	2"	N	V	30	40	50	60	70	80	90	100	120	140	160	180		200	220	240	
VA207P VS207P 3/4 HP 2 STAGE	DW40E				13	26	13.5	12.2	10.5	9.2													
					15	24			9.4	8.7	7.9	7.2	6.3	5.6									
					14	18								4.7	4.5	4.2	3.7	3.0	2.3				
		SP20CLT SP22CLT			13	26	12.9	11.1	9.3	7.6													
					15	24			8.1	7.4	6.4	5.4	4.4	3.8									
					14	18								4.3	3.5	2.6							
VA210P VS210P 1 HP 2 STAGE	DW40E				13	28	16.5	14.7	12.5	10.1													
					15	26			12.6	11.3	10.1	8.8	7.5	6.3									
					14	20								6.2	5.5	4.8	4.2	3.5	2.8				
		SP20CLT SP22CLT			14	28	15.2	12.7	10.1	8.5													
					15	26			11.1	9.5	8.2	6.8	5.4	4.4									
					14	18								4.3	4.0	3.7							
VA215P VS215P 1-1/2 HP 2 STAGE	DW40E				12	28	17.4	15.6	13.8	11.9													
					15	26			14.3	13.1	11.9	10.8	9.5	8.3									
					14	20								7.3	6.7	6.0	5.4	4.8	4.3	3.6	2.8		
		SP20CLT SP22CLT			12	28	16.4	14.4	12.4	10.3													
					15	26			13.0	11.6	10.2	8.8	7.4	6.5									
					14	20								6.3	5.8	4.9	4.0	3.0	2.0				
					14	18												3.2	2.8	2.0			

To order complete ejector package, add nozzle and venturi suffix to ejector number (Example SP20BL-1726). For ejector package less nozzle and venturi, use suffix 0000 (Example SP20BL-0000). Complete ejector package includes ejector body, nozzle and venturi plus foot valve. For appropriate well adapter see chart below. All 2" single pipe performance data is based on 1 1/4" drop pipe. If 1" drop pipe is used the performance will be less. Pressure pipe and suction pipe tappings 1 1/4" x 1" discharge tapping 1". †Not for sale in states following Proposition 65 and AB1953

Jet Pumps - Vertical

MODEL NO. HP STAGES	TWO PIPE EJECTORS		SINGLE PIPE EJECTORS		NOZZLE VENTURI SELECTION		VERTICAL DISTANCE TO WATER IN FEET CAPACITY IN GPM													LB. PUMP DISCH. PRESS							
	4"		2"		2"		N	V	30	40	50	60	70	80	90	100	120	140	160		180	200	220	240			
	CAST IRON	BRASS	CAST IRON	BRASS																							
VPH10 1 HP 1 STAGE	DW40E				16	34	15.0	11.7	8.3																		
					18	28	13.0	12.8	12.5	10.5	9.0	7.5	5.8	4.0													
					15	20						5.5	5.5	5.0	4.5	3.8	3.5	2.7									
	SP20CLT SP22CLT	SP20BLT	16	34	15.0	11.7	8.2																				
			18	28	11.7	11.2	10.0	8.3	7.0	5.5	3.8	2.2															
			17	24		10.4	9.3	8.2	7.2	6.0	5.0	4.0	3.0														

To order complete ejector package, add nozzle and venturi suffix to ejector number (Example SP20BL-1726). For ejector package less nozzle and venturi, use suffix 0000 (Example SP20BL-0000). Complete ejector package includes ejector body, nozzle and venturi plus foot valve. For appropriate well adapter see chart below.

All 2" single pipe performance data is based on 1 1/4" drop pipe. If 1" drop pipe is used the performance will be less.

Pressure pipe and suction pipe tappings 1 1/4" x 1" discharge tapping 1". †Not for sale in states following Proposition 65 and AB1953

Single & Three Phase Jet/Centrifugals

SINGLE PHASE MOTOR DATA 60 HZ 3450 RPM ⁽¹⁾									
Motor Model No.	HP	Motor Voltage	Service Factor	Service Factor Motor AMPS		Locked Rotor Motor AMPS		KVA Code Letter	
				115V	230V	115V	230V		
98J103	1/3	115/230	1.75	8.6	4.3	26.0	13.0	K	
98J105, 98S105	1/2	115/230	1.60	13.0	6.5	36.0	18.0	K	
98J107, 98S107	3/4	115/230	1.50	14.0	7.0	52.0	26.0	K	
98H107	3/4	115/230	1.86	18.0	9.0	78.0	39.0	P	
98J110, 98S110	1	115/230	1.40	18.0	9.0	78.0	39.0	L	
98H110	1	115/230	1.95	21.0	10.5	98.0	49.0	N	
98J115, 98S115	1-1/2	115/230	1.30	21.0	10.5	98.0	49.0	J	
98H115	1-1/2	115/230	1.66	25.0	12.5	116.0	58.0	K	
98J120, 98S120	2	115/230	1.25	25.0	12.5	116.0	58.0	H	
98J610	1	230	1.70	-	8.1	-	39.0	L	
98J615	1-1/2	230	1.30	-	10.2	-	49.0	J	
98J630, 98S630	3	230	1.00	-	13.5	-	53.0	D	

⁽¹⁾ Thermal Overload Protected - Automatic Reset

THREE PHASE MOTOR DATA 60/50 ^(1,2) HZ 3450/2875 RPM									
Motor Model No.	HP	Motor Voltage	Service Factor	Service Factor Motor AMPS		Locked Rotor Motor AMPS		KVA Code Letter	
				230V	460V	230V	460V		
98J305, 98S305	1/2	208-230/460	1.60	3.5	1.75	19.0	9.5	K	
98J307, 98S307	3/4	208-230/460	1.50	3.5	1.75	19.0	9.5	K	
98J310, 98S310	1	208-230/460	1.40	4.5	2.25	26.9	13.5	K	
98J315, 98S315	1-1/2	208-230/460	1.30	5.7	2.85	33.5	16.8	K	
98J320, 98S320	2	208-230/460	1.25	7.4	3.70	44.0	22.0	K	
98J330, 98S330	3	208-230/460	1.00	9.8	4.90	48.0	24.0	D	

⁽¹⁾ 3 HP, 3 phase motors are operable on 60Hz only - 3450 RPM

⁽²⁾ Thermal Overload Protector - Not Supplied

Three phase motors must be installed with a properly sized magnetic or manual starter, both with properly sized heaters. Install starter following the instruction of the starter manufacturer.

Minimum Wire Size Chart (Gauge) - Copper Wire

Motor HP	Volts	Phase	Distance in Feet from Motor to Service Panel					Breaker Size (Amps)
			0-50	50-100	100-150	150-200	200-300	
0.33	115/230	1	14/14	14/14	12/14	10/14	8/14	15/15
0.5	115/230	1	14/14	12/14	10/14	8/14	6/12	15/15
0.75	115/230	1	14/14	10/14	8/14	8/14	6/12	15/15
1	115/230	1	12/14	10/14	8/14	6/12	4/10	20/15
1	230	1	14	14	14	12	10	15
1.5	115/230	1	10/14	8/14	6/14	6/12	4/10	30/15
1.5	230	1	14	14	14	12	10	15
2	115/230	1	10/14	8/14	6/12	4/10	4/10	30/15
3	230	1	12	12	10	10	8	20
0.75	230/460	3	14/14	14/14	14/14	14/14	14/14	15/15
1	230/460	3	14/14	14/14	14/14	14/14	14/14	15/15
1.5	230/460	3	14/14	14/14	14/14	14/14	12/14	15/15
2	230/460	3	14/14	14/14	14/14	12/14	12/14	15/15
3	230/460	3	14/14	14/14	12/14	12/14	10/14	15/15

Maximum 5% voltage drop calculated by conductor resistance in NEC Table 8 and minimum ampacity rating as defined by NEC 430.22

SINGLE PHASE TWO OR THREE WIRE CABLE, 60 HZ (SERVICE ENTRANCE TO MOTOR)

Motor Rating Volts	HP	AWG Copper Wire Size												
		14	12	10	8	6	4	3	2	1	0	00	000	0000
115	1/3	130	210	340	540	840	1300	1610	1960	2390	2910	3540	4210	5060
	1/2	100	160	250	390	620	960	1190	1460	1780	2160	2630	3140	3770
	1/3	550	880	1390	2190	3400	5250	6520	7960	9690	11770			
	1/2	400	650	1020	1610	2510	3880	4810	5880	7170	8720			
	3/4	300	480	760	1200	1870	2890	3580	4370	5330	6470	7870		
	1	250	400	630	990	1540	2380	2960	3610	4410	5360	6520		
230	1-1/2	190	310	480	770	1200	1870	2320	2850	3500	4280	5240		
	2	150	250	390	620	970	1530	1910	2360	2930	3620	4480		
	3	120*	190	300	470	750	1190	1490	1850	2320	2890	3610	2680	
	5			180*	280	450	710	890	1110	1390	1740	2170	2680	
	7-1/2				200*	310	490	610	750	930	1140	1410	1720	
	10					250*	390	490	600	750	930	1160	1430	1760
15					170*	270*	340	430	530	660	820	1020	1260	

1 Foot = .3048 Meter

THREE PHASE THREE WIRE CABLE, 60 HZ 200 AND 230 VOLTS (SERVICE ENTRANCE TO MOTOR)

Motor Rating Volts	HP	AWG Copper Wire Size												MCM Copper Wire Size							
		14	12	10	8	6	4	3	2	1	0	00	000	0000	250	300	350	400	500		
200V 60HZ Three Phase Three Wire	1/2	710	1140	1800	2840	4420															
	3/4	510	810	1280	2030	3160															
	1	430	690	1080	1710	2670	4140														
	1-1/2	310	500	790	1260	1960	3050	3780													
	2	240	390	610	970	1520	2360	2940	3610	4430	5420										
	3	180	290	470	740	1160	1810	2250	2760	3390	4130										
230V 60HZ Three Phase Three Wire	5	110*	170	280	440	690	1080	1350	1660	2040	2490	3050	3670	4440	5030						
	7-1/2			200	310	490	770	960	1180	1450	1770	2170	2900	3150	3560						
	10			230*	370	570	720	880	1090	1330	1640	1970	2390	2720	3100	3480	3800	4420			
	15			160*	250*	390	490	600	740	910	1110	1340	1630	1850	2100	2350	2570	2980			
	20				190*	300*	380	460	570	700	860	1050	1270	1440	1650	1850	2020	2360			
	25					240*	300*	370*	460	570	700	840	1030	1170	1330	1500	1640	1900			
30						250*	310*	390*	470	580	700	850	970	1110	1250	1380	1590				

Cable Selection

Motor Rating		AWG Copper Wire Size										MCM Copper Wire Size								
Volts	HP	14	12	10	8	6	4	3	2	1	0	00	000	0000	250	300	350	400	500	
230V 60Hz Three Phase Three Wire	1/2	930	1490	2350	3700	5760	8910													
	3/4	670	1080	1700	2580	4190	6490	8060	9860											
	1	560	910	1430	2260	3520	5460	6780	8290											
	1-1/2	420	670	1060	1670	2610	4050	5030	6160	7530	9170									
	2	320	510	810	1280	2010	3130	3890	4770	5860	7170	8780								
	3	240	390	620	990	1540	2400	2980	3660	4480	5470	6690	8020	9680						
	5	140*	230	370	590	920	1430	1790	2190	2690	3290	4030	4850	5870	6650	7560	8460	9220		
	7-1/2		160*	260	420	650	1020	1270	1560	1920	2340	2870	3440	4160	4710	5340	5970	6500	7510	
	10			190*	310	490	760	950	1170	1440	1760	2160	2610	3160	3590	4100	4600	5020	5840	
	15				210*	330	520	650	800	980	1200	1470	1780	2150	2440	2780	3100	3400	3940	
	20					250*	400	500	610	760	930	1140	1380	1680	1910	2180	2450	2680	3120	
	25						320*	400	500	610	750	920	1120	1360	1540	1760	1980	2160	2520	
	30							260*	330*	410*	510	620	760	930	1130	1280	1470	1650	1800	2110
	460V 60Hz Three Phase Three Wire	1/2	3770	6020	9460															
		3/4	2730	4350	6850															
1		2300	3670	5770	9070															
1-1/2		1700	2710	4270	6730															
2		1300	2070	3270	5150	8050														
3		1000	1600	2520	3970	6200														
5		590	950	1500	2360	3700	5750													
7-1/2		420	680	1070	1690	2640	4100	5100	6260	7680										
10		310	500	790	1250	1960	3050	3800	4680	5750	7050									
15			340*	540	850	1340	2090	2600	3200	3930	4810	5900	7110							
20				410*	650	1030	1610	2000	2470	3040	3730	4580	5530							
25					530*	830	1300	1620	1990	2450	3010	3700	4470	5430						
30					430*	680	1070	1330	1640	2030	2490	3060	3700	4500	5130	5860				
40						500*	790	980	1210	1490	1830	2250	2710	3290	3730	4250				
50						640*	800	800	960	1210	1480	1810	2190	2650	3010	3420	3830	4180	4850	
60					540*	670*	670*	830*	1020	1250	1540	1850	2240	2540	2890	3240	3540	4100		
75								840*	840*	1030	1260	1520	1850	2100	2400	2700	2950	3440		
100									620*	760*	940*	1130	1380	1560	1790	2010	2190	2550		
125											740*	890*	1000*	1220	1390	1560	1700	1960		
150												760*	920	1050*	1190*	1340	1460	1690		
175													810	930*	1060*	1190*	1300	1510		
200														810*	920*	1030*	1130*	1310		

CAUTION

Use of wire size smaller than listed will void warranty.

FOOTNOTES:

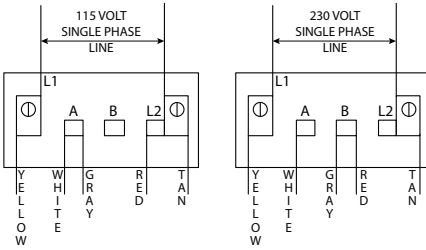
- (1) Lengths marked * meet the U.S. National Electrical Code ampacity only for individual conductor 60° C cable. Only lengths without * meet the code for jacketed 60° C cable. Local code requirements may vary.
- (2) Maximum lengths shown maintain motor voltage at 95% of service entrance voltage, running at maximum nameplate amperes. If service entrance voltage will be at least motor nameplate voltage under normal load conditions, 50% additional length is permissible for all sizes.

(3) This table is based on copper wire. If aluminum wire is used, it must be two sizes larger. Example: When the table calls for #12 copper wire, you would use #10 aluminum wire.

(4) Single phase control boxes may be connected at any point of the total cable length.

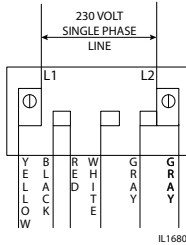
(5) Cable #14 to #0000 are AWG sizes.

Wiring Diagrams Jet/Centrifugal Motors



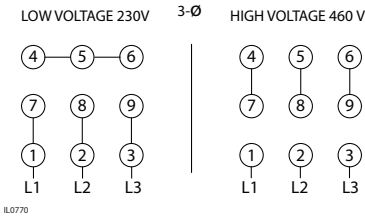
NOTE: Dual voltage motor, change the red and gray wire to voltage required.

Figure 2 - Wiring Diagram for Single Phase 1/3 - 2 HP Motors



NOTE: Single voltage (230V) motor, and cannot be connected to 115V.

Figure 3 - Wiring Diagram for Single Phase 230V only 1, 1-1/2 & 3 HP Motors



1 - Tan	4 - Yellow	7 - Purple
2 - Red	5 - Black	8 - Gray
3 - Orange	6 - Blue	9 - White

CONNECTION FOR 3 PHASE, 9 LEADS. IF YOUR 3 PHASE LEADS ARE COLOR CODED, MATCH NUMBER ABOVE TO THE CORRESPONDING COLOR.

NOTE: To reverse rotation, interchange any two incoming lines (Power) leads.

Figure 4 - Wiring Diagram for Three Phase Motors



Problem Diagnosis Chart

Problem Diagnosis Chart

Symptom	Possible Cause(s)	Corrective Action
Circuit breaker trips or fuses blow when motor starts.	1. Incorrect voltage	1. Contact power company if voltage is incorrect after first checking for correct wire size. See Wire Size Chart.
	2. Incorrect fuses or circuit breaker.	2. Replace with correctly sized components.
	3. Defective pressure switch	3. Replace pressure switch or clean contacts.
	4. Control box malfunction	4. Correct faulty wiring or tighten loose contacts.
	5. Bound pump	5. Sand bound pump can sometimes be corrected by temporarily reversing black and red leads in control box then returning to normal. If pump does not rotate freely, it must be pulled and cleaned or realigned and the well condition corrected.
	6. Defective cable or motor winding	6. The pump must be pulled and the cable disconnected and inspected. Damaged cable should be correctly spliced or replaced. If cable is good, the motor winding is grounded
	7. Shorted or open motor winding	7. The pump must be pulled and motor or drop cable repaired or replaced.
Motor runs but circuit breaker, fuses or motor overload trips.	1. Incorrect voltage	1. Contact power company.
	2. Overheated protectors	2. Shade box, provide ventilation or move box away from heat source.
	3. Improperly wired control box	3. Confirm motor and line connections.
	4. Defective motor or cable	4. If ground, short or open circuit is indicated pump must be pulled for repair.
	5. Defective pump	5. Pull pump, clean and repair to ensure pump staging is free of excess sand or debris.
Motor does not start and circuit breaker or fuses not tripped.	1. No power	1. Replace fuses or reset circuit breaker. Contact power company if no power is reaching box.
	2. Defective pressure switch	2. Clean contact points or replace switch.
	3. Defective wiring	3. Correct faulty wiring or connections/splices.
Pump runs, but delivers little or no water.	1. Air locked pump	1. Not enough water over pump. Raise and lower the pump at a fast rate to purge air from pump body.
	2. Low water level in well	2. Throttle pump delivery through restricting valve. Lower pump setting if depth of well is adequate.
	3. Check valve stuck or installed improperly	3. Replace or reinstall properly, ensure water check valve arrow oriented with flow.
	4. Leak in drop pipe	4. Raise pipe, check for leak and replace damaged section.
	5. Pump screen blocked	5. Clean screen and reset at less depth. It may be necessary to clean well.
	6. Worn pump	6. Pull pump and replace staging or pump end.
Pump keeps running	1. Pressure switch	1. Clean points or replace switch. Verify pressure switch setting and function.
	2. Low level well	2. Throttle pump output or reset pump to lower level. Do not lower if sand may clog pump.
	3. Leak in system	3. Replace damaged section. Replace all piping and joints to eliminate leaks.
	4. Misapplied pump	4. Verify pump depth/static water level vs. pump performance curve. For guidance, contact Tech Support at 1-800-742-5044.
Pump starts too often	1. Pressure switch	1. Reset limits or replace switch.
	2. Leak in system	2. Repair or replace tank or pipes.
	3. Check valve	3. Replace if column of water leaking by check valve.
	4. Water-logged tank	4. Replace tank.
	5. Pressure tank too small	5. Install larger tank.

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