Quick Guide

Motor Nameplate

Motor Size (HP)	
Nameplate FLA (A)	
Motor Voltage (V)	
Motor RPM	
Motor Frequency (Hz)	

Pump Sheave Data

Motor Sheave Size	
Pump Sheave Size	
Gearbox Reduction	

VFD Data

Model	
Serial Number	

Protection

Desired Limiting Torque Level (ft-lb)	
Desired Shutdown Torque Level (ft-lb)	

Calculations:

The following calculations are used in the parameter settings for PCP applications on the ACS550.

C1: Motor Torque

$\frac{Motor\ HP\ (\quad) x\ 5252}{Motor\ RPM\ (\quad)} =$	_____ Ft-Lbs.

C2: Rod Speed @ 60Hz

$\frac{Motor\ Sheave\ (\quad) x\ Motor\ RPM\ (\quad)}{Pump\ Sheave\ (\quad) x\ Gearbox\ Reduction\ (\quad)} =$	_____ Rod RPM

C3: Total Turndown Ratio

$\frac{Motor\ RPM\ (\quad)}{C2: Rod\ Speed\ @\ 60Hz\ (\quad)} =$	_____

C4: System Torque

$C1: Motor\ Torque\ (\quad) x\ C3: Total\ Turndown\ Ratio\ (\quad) =$	_____ Ft-Lbs

C5: Limiting Torque (%)

$\frac{Desired\ Limiting\ Torque\ (\quad)x\ 100}{C4: System\ Torque\ (\quad)} =$	_____ %

C6: Shutdown Torque (%)

$\frac{Desired\ Shutdown\ Torque\ (\quad)x\ 100}{C4: System\ Torque\ (\quad)} =$	_____ %

ACS550 PROGRAMMING:

Group 99: Startup Data

9901: LANGUAGE	= $English\ AM$	ENGLISH WITH UNITS IN HORSEPOWER
9904: MOTOR CONTROL MODE	= $Vector\ Speed$	SENSORLESS VECTOR CONTROL
9905: MOTOR VOLTAGE	= $Nameplate\ Data$	FROM MOTOR NAMEPLATE (TYPICALLY 460V)
9906: MOTOR CURRENT	= $Nameplate\ Data$	FROM MOTOR NAMEPLATE
9907: MOTOR FREQUENCY	= $Nameplate\ Data$	FROM MOTOR NAMEPLATE (TYPICALLY 60HZ)
9908: MOTOR SPEED	= $Nameplate\ Data$	FROM MOTOR NAMEPLATE
9909: MOTOR HORSEPOWER	= $Nameplate\ Data$	FROM MOTOR NAMEPLATE

Group 10: Start/Stop/Dir

1001: EXT1 COMMAND	= $DI1$	START SWITCH INPUT INTO THE VFD
1003: DIRECTION	= $Forward$	VFD IS ONLY ALLOWED TO RUN FORWARD

Group 11: Reference Select

1102: EXT1/EXT2 SEL	= $EXT\ 1$	ONLY ONE INPUT REFERENCE
1103: REF1 SELECT	= $Keypad$	SPEED SET VIA KEYPAD
1104: REF1 MIN	= $0\ RPM$	MINIMUM SPEED REFERENCE
1105: REF1 MAX (MOTOR RPM)	= $Motor\ rpm$	MAXIMUM SPEED REFERENCE

Group 12: Constant Speeds

1201: CONSTANT SPEED SEL	= $Not\ Sel$	CONSTANT SPEEDS NOT USED

Group 16: System controls (Panel Dependent)

1601: RUN ENABLE	= $Not\ Sel$	RUN ENABLE
1608: START ENABLE 1	= $DI4$	START ENABLE (BACKSPIN TIMER INPUT)

**NOTE –PANEL DESIGNS MAY UTILIZE THE RUN ENABLE OR START ENABLE SIGNAL FOR BACKSPIN TIMER CONTROL. REFER TO DRAWINGS TO DETERMINE WHICH PARAMETERS ARE REQUIRED AND PROGRAM TO THE SPECIFIED DIGITAL INPUT.*

Group 20: Limits

2001: MIN SPEED	= $0\ RPM$	MINIMUM ALLOWED SPEED
2002: MAX SPEED	= $Motor\ RPM$	MAXIMUM ALLOWED SPEED
2003: MAX CURRENT	= $Motor\ FLA$	MAXIMUM CURRENT OUTPUT FROM THE VFD
2015: MIN TORQUE SELECTION	= 0%	MINIMUM MOTOR TORQUE IN %
2017: MAX TORQUE SELECT	= $Limiting\ Torque\ (\%)$	PER CALCULATION C5:LIMITING TORQUE (MAXIMUM VFD OUTPUT TORQUE)

Group 21: Start/Stop

2101: START FUNCTION	= $Auto$	VFD WILL AUTO DETECT START SPEED

2102: STOP FUNCTION	= $Ramp\ or\ Coast$	RAMP OR COAST AS PER SITE REQUIREMENT

Group 22: Accel/Decel

2202: ACCEL TIME	= $20\ seconds$	AS PER SITE REQUIREMENTS
2203: DECEL TIME	= $20\ seconds$	AS PER SITE REQUIREMENTS

Group 30: Fault Functions

3003: EXTERNAL FAULT	= $DI2\ (INV)$	PRESCO SHUTDOWN INPUT
3004: EXTERNAL FAULT	= $DI6$	VFD OVER-TORQUE SHUTDOWN INPUT
3010: STALL FUNCTION	= $Fault$	
3011: STALL FREQUENCY	= $20Hz$	VFD WILL STALL IF BELOW 20HZ FOR 300 SECONDS. (CHANGE IF NEEDED FOR SITE REQUIREMENTS)
3012: STALL TIME	= $300\ seconds$	

NOTE: 3004 DI6 (INV) IS ONLY USED WHEN A SUPERVISORY SHUTDOWN IS REQUIRED. REFER TO AS-BUILT DRAWINGS TO CONFIRM THE DIGITAL INPUTS USED.

Group 34: Display Panel

3401: SIGNAL 1 PARAMETER	= $Speed$	THESE PARAMETERS SET LINE ONE OF THE MAIN SCREEN TO DISPLAY ROD SPEED
3402: SIGNAL 1 MIN	= 0	
3403: SIGNAL 1 MAX	= $Motor\ RPM\ (nameplate)$	
3404: OUTPUT 1 DISPLAY FORM	= $+0.0$	
3405: OUTPUT 1 UNIT	= RPM	
3406: OUTPUT 1 MIN	= 0	
3407: OUTPUT 1 MAX	= $Rod\ Speed\ @\ 60Hz$	PER CALCULATION C2:ROD SPEED @ 60HZ
3415: SIGNAL 3 PARAMETER	= $Torque$	THESE PARAMETERS SET LINE THREE OF THE MAIN SCREEN TO DISPLAY ROD TORQUE
3416: SIGNAL 3 MIN	= 0	
3417: SIGNAL 3 MAX	= 200%	
3418: OUTPUT 3 DISPLAY FORM	= $+0.0$	
3419: OUTPUT 3 UNIT	= $lb - ft$	
3420: OUTPUT 3 MIN	= 0	
3421: OUTPUT 3 MAX	= $(System\ Torque)$ X 2	PER CALCULATION C4:SYSTEM TORQUE **X 2** (DON'T MISS MULTIPLYING BY 2)

Group 37: User Load Curve

3701: USER LOAD C MODE	= $OVERLOAD$	USER CURVE IS DEFINING OVERTORQUE
3702: USER LOAD C FUNC	= $Fault$	FAULT UPON OVERTORQUE CONDITION
3703: USER LOAD C TIME	= $10s$	OVERTORQUE WILL TRIGGER IN 10S
3704: LOAD FREQ 1	= $0HZ$	FIRST POINT ON TORQUE CURVE IS AT 0HZ
3706: LOAD TORQ HIGH 1	= $Shutdown\ Torque\ (\%)$	AS CALCULATED IN C6: SHUTDOWN TORQUE
3707: LOAD FREQ 2	=$20HZ$	SECOND POINT ON TORQUE CURVE IS AT 20HZ
3709: LOAD TORQ HIGH 2	= $Shutdown\ Torque\ (\%)$	AS CALCULATED IN C6: SHUTDOWN TORQUE
3710: LOAD FREQ 3	=$40HZ$	THIRD POINT ON TORQUE CURVE IS AT 40HZ
3712: LOAD TORQ HIGH 3	= $Shutdown\ Torque\ (\%)$	AS CALCULATED IN C6: SHUTDOWN TORQUE
3713: LOAD FREQ 4	=$60HZ$	FOURTH POINT ON TORQUE CURVE IS AT 60HZ
3715: LOAD TORQ HIGH 4	= $Shutdown\ Torque\ (\%)$	AS CALCULATED IN C6: SHUTDOWN TORQUE
3716: LOAD FREQ 5	=$120HZ$	FINAL POINT ON TORQUE CURVE IS AT 120HZ
3718: LOAD TORQ HIGH 5	= $Shutdown\ Torque\ (\%)$	AS CALCULATED IN C6: SHUTDOWN TORQUE

NOTE - THE PARAMETERS LISTED IN THIS FORM ARE BASED ON A STANDARD SFC PCP PANEL. CUSTOM BUILT PANELS MAY HAVE VARIATIONS IS CONTROL & PROGRAMMING. PLEASE REFER TO THE ACS550 USER MANUAL FOR FULL PARAMETER LISTING. REFER TO AS-BUILT DRAWINGS FOR I/O CONNECTIONS.

CUSTOMER:	
LOCATION:	
CUSTOMER NAME:	SIGNATURE:
SERVICE TECHNICIAN:	SIGNATURE:
DATE:	