BASIC HYDRUALIC CALCULATION
HYDRAULIC ANCHOR WINDLASS/TOWING WINCH

INPUT KW	54	
KW TO HP	72.41508	
HP = GPM X PSIG / 1714 X EFFICIENCY	72.19953326	
GPM =	33	
PSIG	3000	
EFFICIENCY =	0.8	
HP =	72.41508	
GPM = HP X 1714 X EFF/ PSIG		
GPM =	33.09851923	MAX PUMP FLOW AT 1800 RPM

ESTIMATED TORQUE OFF THE FRONT OF THE ENGINE FOR THE SIZE 71 HYDRAULIC PUMP

TORQUE = HP X 5252 / RPM

HP =	72.41508	
RPM =	1800	
TORQUE = HP X 5252 / RPM	211.2911112	FT-LBS PTO RATED AT 400 FT-LBS

BASIC HYDRUALIC CALCULATION
HYDRAULIC TOWING WINCH

INPUT KW	30
KW TO HP	40.2306
HP = GPM X PSIG / 1714 X EFFICIENCY	43.75729288
GPM =	20
PSIG	3000
EFFICIENCY =	0.8
HP =	40.2306
GPM = HP X 1714 X EFF/ PSIG	
GPM =	18.38806624

BASIC HYDRUALIC CALCULATION
HYDRAULIC VERTICAL CAPSTAN

INPUT KW	22
KW TO HP	29.50244
HP = GPM X PSIG / 1714 X EFFICIENCY	32.81796966
GPM =	15
PSIG	3000
EFFICIENCY =	0.8
HP =	29.50244
GPM = HP X 1714 X EFF/ PSIG	
GPM =	13.48458191

William M. Hayden, PE

Digitally signed by William M. Hayden, PE
Date: 2018.09.24 15:46:39 -05'00'

WILLIAM HAYDEN
LICENSE
NO. 60106
STATE OF FLORIDA
PROFESSIONAL ENGINEER

BURST PRESSURE CALCULATION FOR 316 SS TUBING

T=	0.065		
S=	70000		
D=	0.5		
P = 2 X T X S /d			
P =	18200	PSI	BURST PRESSURE
	4550		BURST PRESSURE/4

HYDRAULIC LINES SIZING

PRESSURE LINES - 25 FT/SEC
RETURN LINES - 10 FT/SEC
SUCTION LINES - 4 FT/SEC

TUBE ID = .64 X SQRT(FLOW IN GPM/ VELOICTY IN FT/ SEC)

FLOW =	33	GPM	
VELOCITY =	15	FT/SEC	**OIL STATES USES 15 FT/SEC FOR PRESSURE LINES**
TUBE ID =	0.949273406	INCHES MIN	
OD =	1		
WALL THICKNESS	0.065		
ID =	0.87		

HYDRAULIC LINES SIZING

PRESSURE LINES - 25 FT/SEC
RETURN LINES - 10 FT/SEC
SUCTION LINES - 4 FT/SEC

TUBE ID = .64 X SQRT(FLOW IN GPM/ VELOICTY IN FT/ SEC)

FLOW =	33	GPM	
VELOCITY =	7	FT/SEC	**OIL STATES USES 7 FT/ SEC FOR RETURN LINES**
TUBE ID =	1.38959398	INCHES MINIMUM	
OD =	0.625		COY
WALL THICKNESS	0.065		
ID =	0.495