

REV	ECN	DATE	APPROVED
A	24582	11/01/01	JAF

1. REQUIREMENTS

1.1 SHAFT DIAMETER

THE HS20 HUB SHAFT BORE WILL BE .0002" TO .0008" IN DIAMETER OVER THE NOMINAL SHAFT SIZE AS SHOWN IN THE TABLE BELOW. THE TABLE ALSO SPECIFIES THE ACCEPTABLE SHAFT SIZE RANGE.

HS20 SHAFT DIAMETER SPECIFICATIONS		
NOMINAL	HS20 I.D. (IN.)	SHAFT O.D. (IN.)
1/4"	.2502 - .2511	.2495 - .2500
3/8"	.3752 - .3761	.3745 - .3750
1/2"	.5002 - .5011	.4995 - .5000
5/8"	.6252 - .6261	.6245 - .6250
5/16"	.3127 - .3136	.3120 - .3125
6 mm	.2364 - .2373	.2357 - .2362
8 mm	.3152 - .3161	.3145 - .3150
10 mm	.3939 - .3948	.3932 - .3937
12 mm	.4726 - .4735	.4719 - .4724
15 mm	.5908 - .5917	.5901 - .5906
16 mm	.6301 - .6310	.6294 - .6299

1.2 SHAFT RUNOUT

TO MAINTAIN LONG BEARING AND TETHER LIFE THE SHAFT RUNOUT SHOULD BE LESS THAN .003" TIR. SPECIAL ATTENTION SHOULD BE GIVEN TO INSTALLATIONS THAT EMPLOY A PRESS-FIT OR SCREWED-ON STUB SHAFT ADAPTER. THE SHAFT ADAPTER SHOULD BE ALIGNED TO WITHIN .003" TIR USING A DIAL INDICATOR.

1.3 SHAFT LENGTH

THE SHAFT SHOULD EXTEND A MINIMUM OF .70" INTO THE HS20 HUB. WHEN USING THE STANDARD TETHER, THE MINIMUM SHAFT LENGTH IS .80" FROM THE TETHER MOUNTING SURFACE AS SHOWN BELOW.

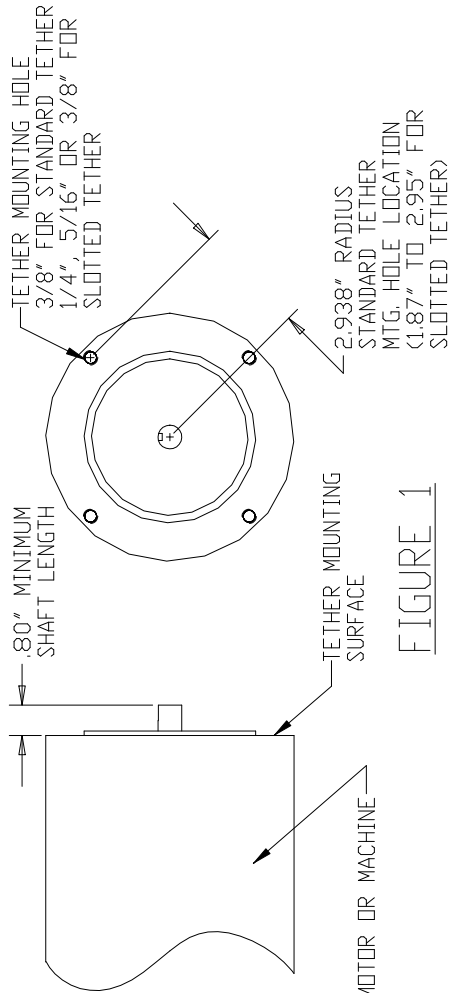


FIGURE 1

1.4 TETHER CONSIDERATIONS

THE HOUSING OF THE HS20 MUST BE PREVENTED FROM ROTATING IN ORDER TO MAINTAIN ACCURACY. A GOOD TETHER WILL PREVENT ROTATION WHILE ALLOWING MOVEMENT IN THE RADIAL AND AXIAL DIRECTIONS. USE OF THE STANDARD OR SLOTTED TETHER IS RECOMMENDED. THESE TETHERS HAVE BEEN OPTIMIZED TO PREVENT ROTATION WHILE MINIMIZING THE LOAD PLACED ON THE BEARINGS DUE TO RADIAL AND AXIAL SHAFT MOVEMENTS. THEY CAN TOLERATE MOVEMENTS OF UP TO ±.005" RADIALY AND ±.050" AXIALLY. REFER TO FIGURE 1 FOR TETHER MOUNTING HOLE LOCATION.

2. PROCEDURE

2.1 TETHER ATTACHMENT

THE TETHER CAN BE ATTACHED TO THE HS20 ENCODER IN ANY ONE OF 8 POSITIONS. SELECT THE POSITION THAT WILL ALLOW THE CABLE TO HANG VERTICALLY TOWARD THE GROUND IN THE FINAL INSTALLED POSITION. REFER TO FIGURE 2. SECURE THE TETHER TO THE HS20 USING (4) #6-32 x 1/4" LONG SCREWS PROVIDED. RECOMMENDED TORQUE: 8 TO 10 IN-LBS.

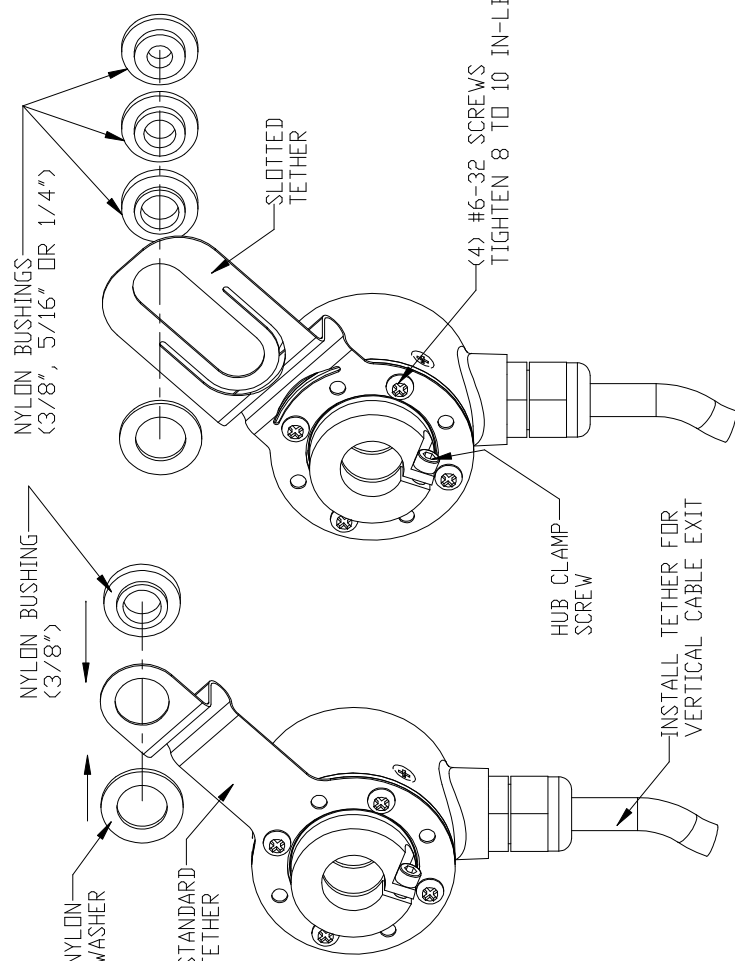
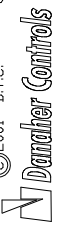


FIGURE 2

2.2 ISOLATION BUSHING ATTACHMENT

THE HS20 INCLUDES PROVISIONS FOR ELECTRICAL ISOLATION FROM STRAY MOTOR CURRENTS THAT MAY CAUSE MIS-COUNTING AND/OR DAMAGE TO THE BEARINGS. THE HS20 HUB SHAFT IS ISOLATED FROM THE MOTOR SHAFT DUE TO A HARDCOAT ANODIZED FINISH. THE TETHER CAN BE ISOLATED FROM THE MOTOR HOUSING BY INSTALLING THE SUPPLIED NYLON BUSHING AS SHOWN IN FIGURE 2. PLACE THE SHOULDER OF THE NYLON BUSHING INTO THE HOLE IN THE TETHER AND THEN SNAP THE NYLON WASHER OVER THE SHOULDER ON THE NYLON BUSHING TO HOLD IT IN PLACE.

TOLERANCES UNLESS INDICATED:		UNITS: INCHES		TITLE: HS20 INSTALLATION	
.XXX	/ .XX	ANGLES	MATERIAL	FILE NAME	SCALE
#	#	/	FINISH	200716-0001	NONE
/	/	#	#	DRAWN: J. FUHRMAN	DATE: 01-12-2001
				CHECKED: JAF	DATE: 02-07-2001
				RELEASED: JAF	DATE: 02-07-2001
				©2001 D.T.C.	*C* SIZE
				COMPLIANCE REQUIRED	
				DUL OSA DCE O TIV DECC OXCC	
				PROF MODEL: 200716-0001ASH	
				APPLICATION	
				HS20	
				DRAWING NUMBER	
				200716-0001	
				REV	
				10F 2	



2.3 INSTALLATION

SLIDE THE HS20 WITH THE TETHER ON TO THE MOTOR SHAFT UNTIL THE TETHER (NYLON WASHER) MATES WITH THE MOUNTING SURFACE. SLIDE THE METAL WASHER OVER THE TETHER BOLT AND INSTALL THE BOLT THROUGH THE TETHER INTO A THREADED HOLE IN THE MOUNTING SURFACE. TIGHTEN THE BOLT, TAKING CARE NOT TO TWIST THE TETHER. REFER TO THE TABLE BELOW FOR TORQUE VALUES.

BOLT SIZE	RECOMMENDED TORQUE
1/4"	50 to 60 IN-LBS
5/16"	70 to 80 IN-LBS
3/8"	100 to 125 IN-LBS

USE A 7/64" HEX KEY WRENCH TO TIGHTEN THE HUB CLAMP SCREW TO SECURE THE HS20 TO THE MOTOR SHAFT.

RECOMMENDED TORQUE: 16 IN-LBS.

THE TETHER SHOULD BE RESTING IN ITS NATURAL POSITION - NOT BENT, STRETCHED OR TWISTED.

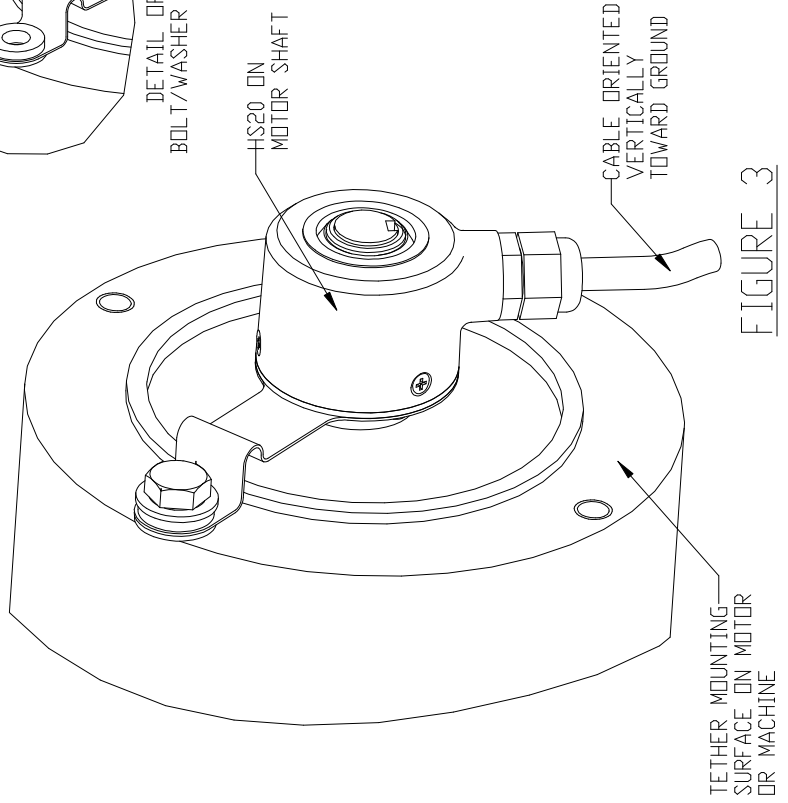
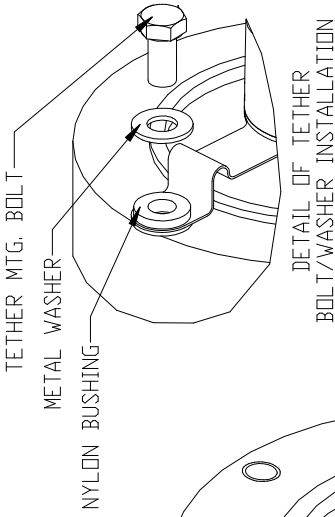


FIGURE 3

2.4 COVER INSTALLATION (OPTIONAL)

THE TETHER MUST BE ORIENTED ON THE ENCODER AS SHOWN IN FIGURE 2 FOR PROPER CABLE EXIT THROUGH THE COVER. PLACE THE COVER OVER THE ENCODER ON TO THE MOTOR OR MACHINE MOUNTING SURFACE AS SHOWN IN FIGURE 4. SECURE THE COVER WITH BOLTS AND LOCKWASHERS.

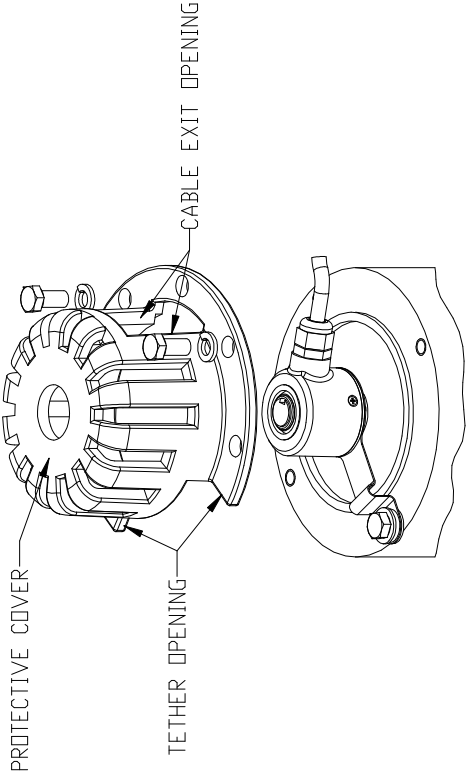


FIGURE 4

2.5 ELECTRICAL CONNECTIONS

REFER TO THE TABLE BELOW FOR CABLE AND CONNECTOR TERMINATION ASSIGNMENTS. A SHIELDED CABLE IS RECOMMENDED. TERMINATE THE SHIELD AT THE INPUT DEVICE ONLY (BUILDING OR SIGNAL GROUND AS RECOMMENDED BY THE INPUT DEVICE MANUFACTURER).

ENCODER FUNCTION	CABLE	6 PIN SINGLE ENDED	7 PIN DIFFERENTIAL	7 PIN SINGLE ENDED	10 PIN
SIGNAL A	BRN	E	A	A	A
SIGNAL B	DRN	D	B	B	B
SIGNAL Z	YEL	C	-	C	C
+V _{in}	RED	B	D	D	D
N/C	-	F	-	E	E
COMMON	BLK	A	F	F	F
CASE	GRN	-	G	G	G
SIGNAL /A	BRN/WHT	-	C	-	H
SIGNAL /B	DRN/WHT	-	E	-	I
SIGNAL /Z	YEL/WHT	-	-	-	J
SHIELD	BARE	-	-	-	-

TOLERANCES UNLESS INDICATED: .XXX # / ANGLES # / ° FINISH # / °

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TITLE HS20 INSTALLATION

FILE NAME: 200716-0001
SCALE: NONE
DATE: 01-12-2001
DRAWN: J. FUHRMAN
CHECKED: DATE: DATE: DATE: DATE: APPLICATION: HS20
COMPLIANCE REQUIRED: UL CSA CE FCC VCCI
PROF. MODEL: 200716-0000.ASM

REV: 200716-0001 20F2 A
DRAWING NUMBER: 200716-0001 20F2 A
RELEASED: DATE: DATE: DATE: DATE: REV: REV

REV	ECN	DATE	APPROVED