Professional Show spa : Main Quarter : Via Praimbole 15 - 35010 Limena (Padova) Italy Phone +39-049-8657111 Fax +39-049-8657222

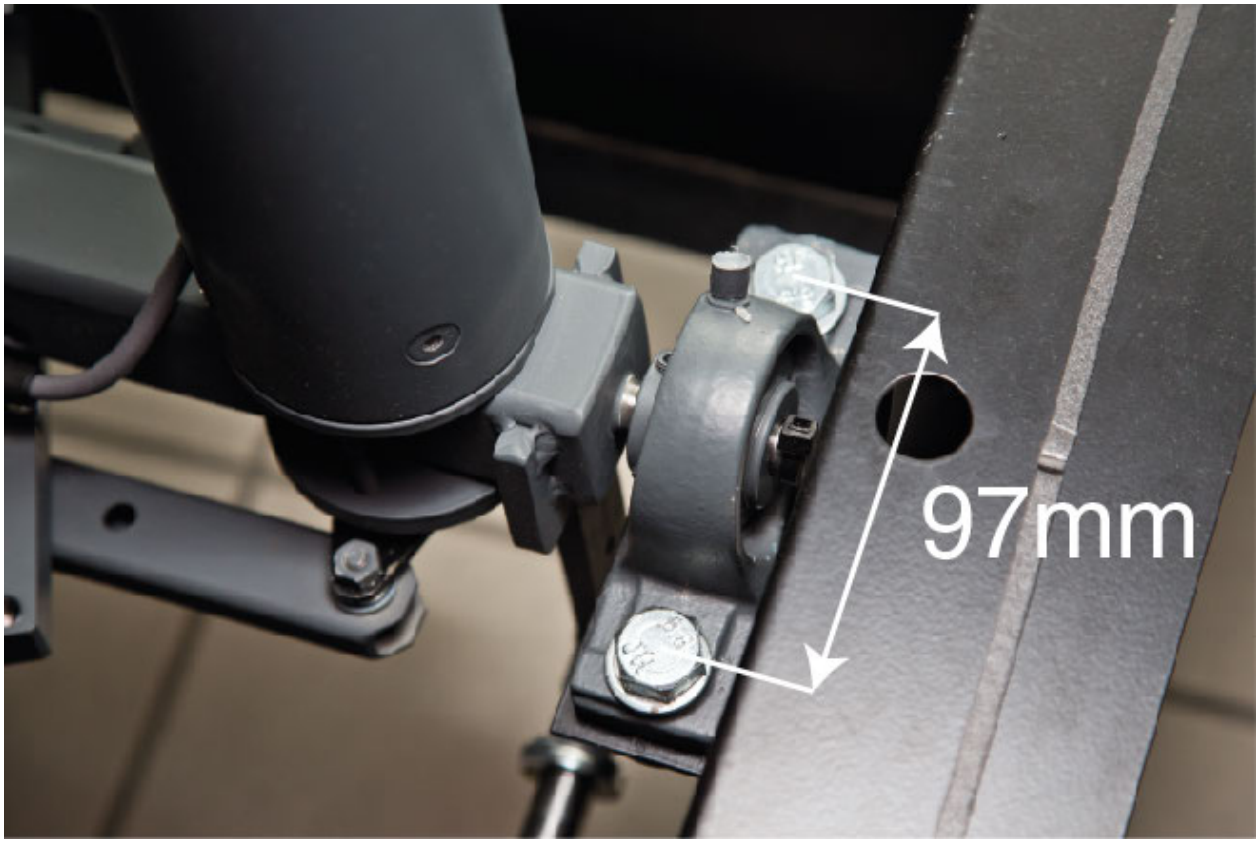
FSC 737NG-YOKE-DUAL-LINKED-PRO Assembly guide

ME141059 Vers.3.0 Date:11/24/2017

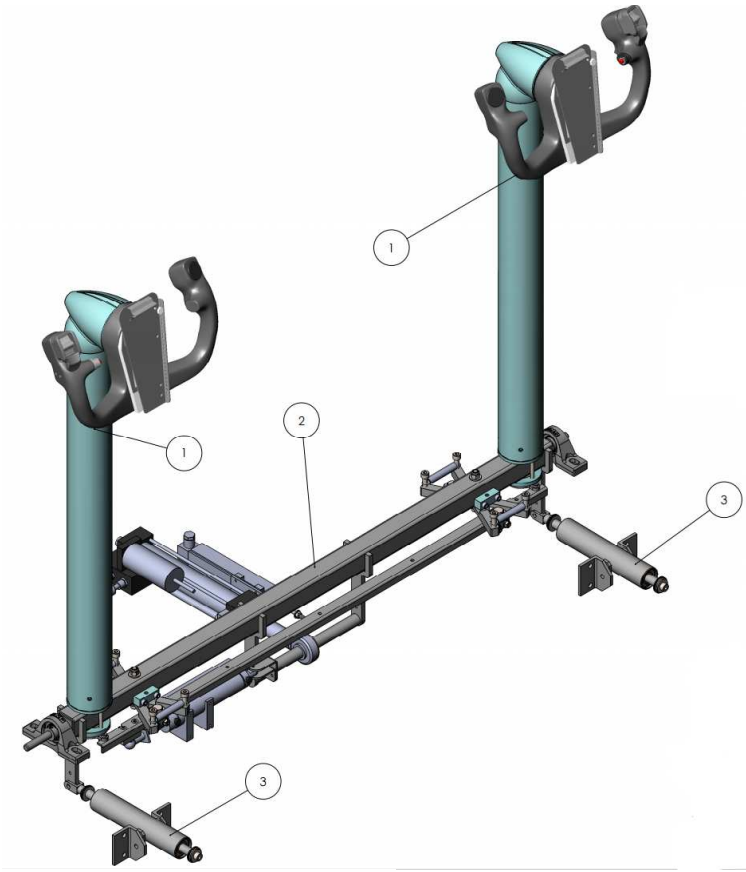
Product: 219914 737NG-YOKE-DUAL-LINKED-PROFESSIONAL (Passive Force)

Unpacking The Yoke.

The Yoke system is fitted on 2 Ball bearing supports, with 4 fixing holes, 4 M12 bolts, 97mm center to center distance.

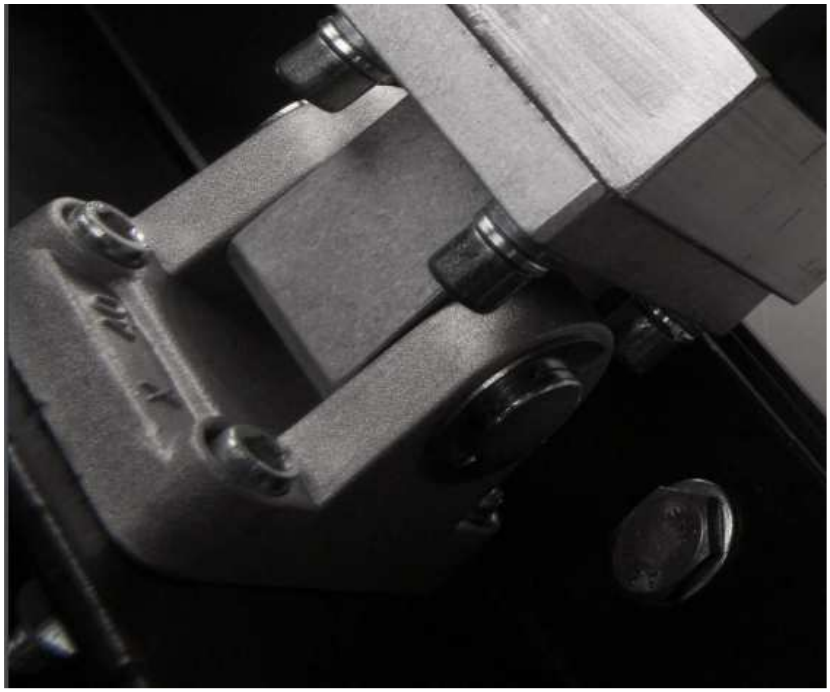


The vertical column has 2 springs (items n°3) , fixed with a distance of 161mm from the center. You can fix the springs with brackets in vertical or horizontal position. There is also an hydraulic damper (item n°2).
The link between the springs and Yoke is made by a fork head.



The damper /linear pot is connected to the Yoke system with an uniball link:

On the other side of damper complex there is a bracket with 4 holes with 40mm distance, fixed with 4 M6 bolts.



After the mechanical system is ready, connect the pitch axis linear pot:

And finally connect the DB44 plug to USB joystick interface box:

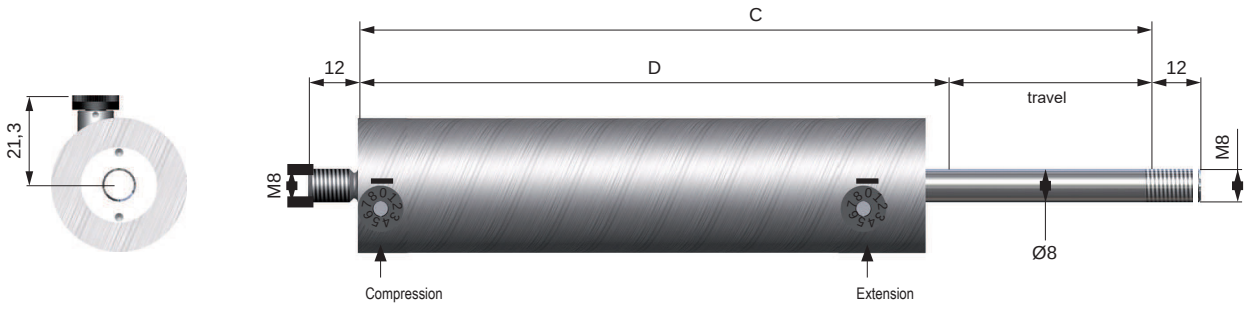
You can regulate the roll force with 4 springs:

You can install or remove from 4 to 2 springs to regulate the "return to center" force.

Spring Forces table

4 springs	start ~2Kgf	half way ~5,0Kgf	full deflection ~7,5Kgf
3 springs	start ~2Kgf	half way ~4,0Kgf	full deflection ~6,5Kgf
2 springs	start ~2Kgf	half way ~3,4Kgf	full deflection ~5,0Kgf

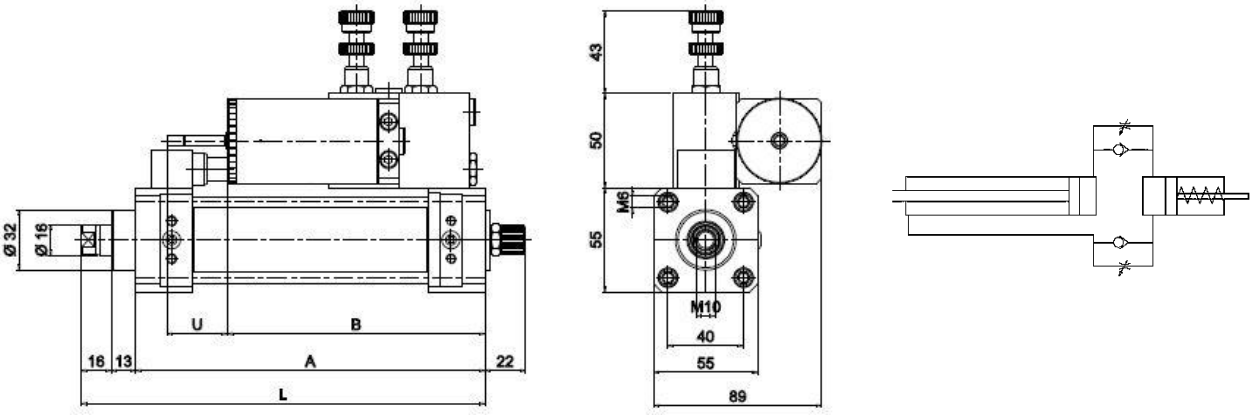
For damping effect, You can regulate the compression and extension of damper , compression for left and extension for right , obviously for roll axis the values must be the same for each side.



SPECIFICATIONS AND DIMENSIONS

	travel	Extension	Compression	Extension - Compression	Travel speed				C	D	Weight
	mm	N max.	N max.	N min.	m/min				mm	mm	g
WM-VD32-100	100	2000	1700	40	0,015 - 40				290	190	470

But You can have a different setting for elevator axis:

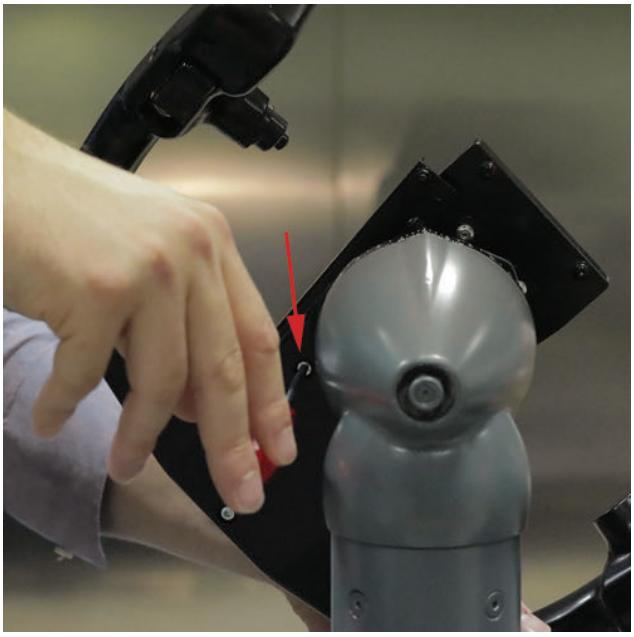


DATI TECNICI E DIMENSIONI – SPECIFICATIONS AND DIMENSIONS

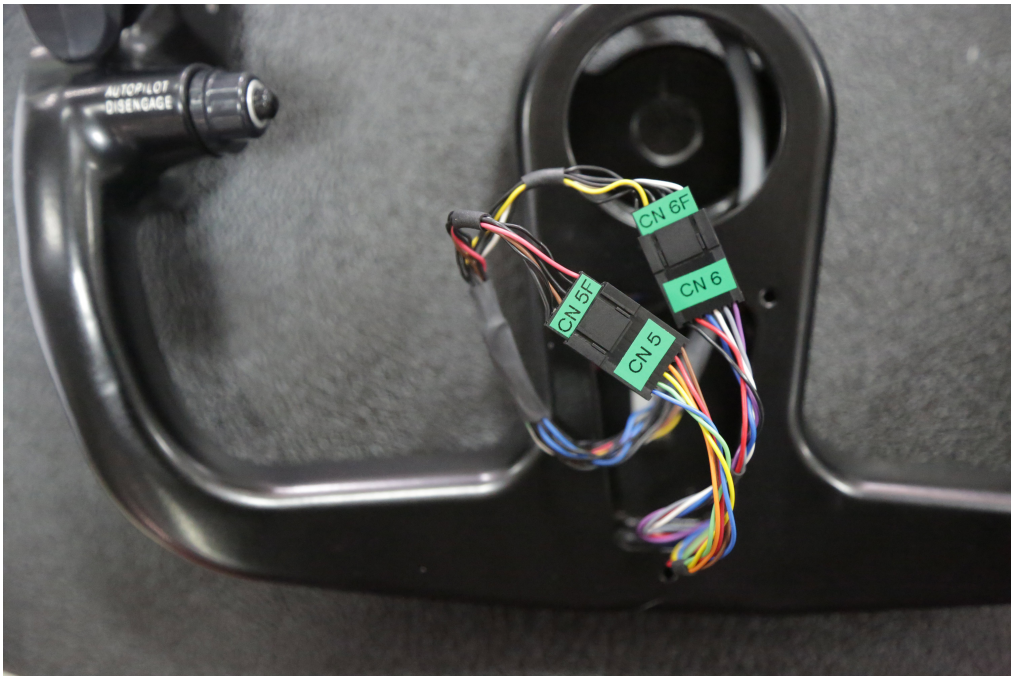
MODELLO - MODEL	CORSA - STROKE	Dimensioni – Dimensions			
		A	B	L	U
40.RPD.200.NO	200	286	158	315	47

How to regulate the "NULL ZONE" on bevel Gear

Remove the Chart Holder unscrewing the 3 hex screws on the back:

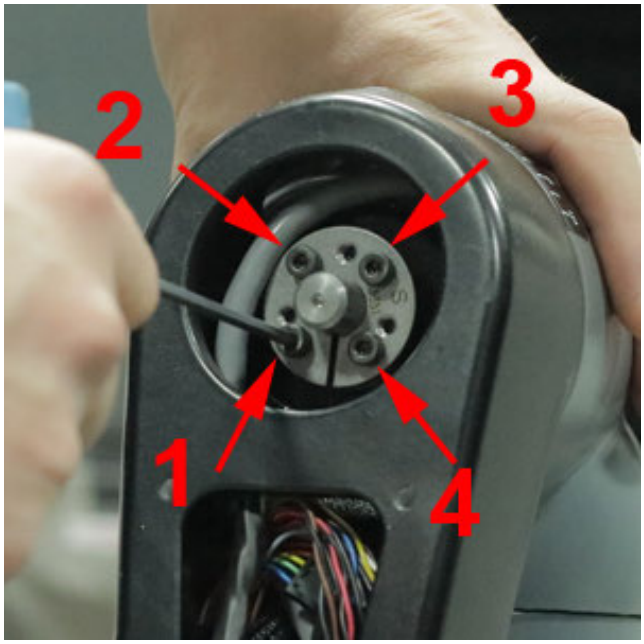


Detach electrical connectors

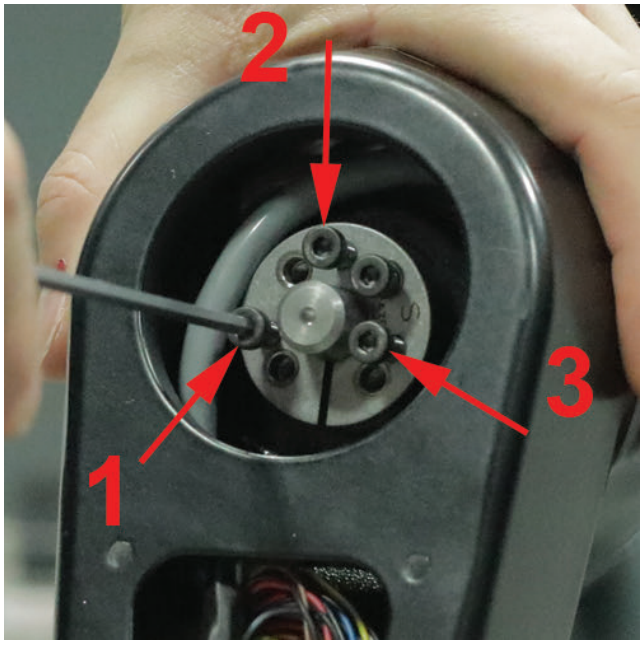


Self Locking unit disassemble:

The Control Wheel is locked with a self locking unit: you must unscrew the 4 bolts first, each a bit at a time, in circular order:



Then you have to screw 3 of them (each a bit at a time in circular order) in the extracting holes until you hear a "click"



Now, the wheel is decoupled from the shaft and free to move:

Now you must loose 4 nuts, to regulate the 4 grub screws.

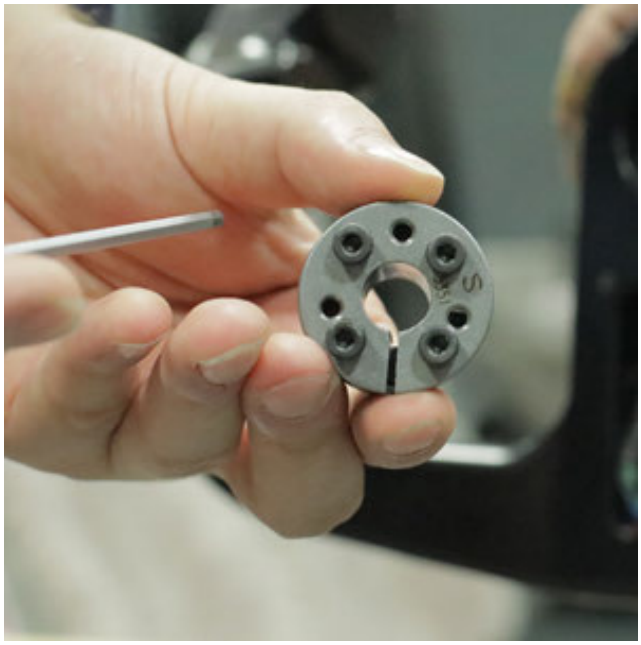
And loose or thight the gooseneck nut:

Regulate the “null zone” of the
Yoke thightening or loosening the nut (1) located in back of gooseneck:

and loose or thigh the 4 grub screws (2) to “pack” the Yoke shaft, and eliminate dead zone.
Then, screw the 4 nuts back.

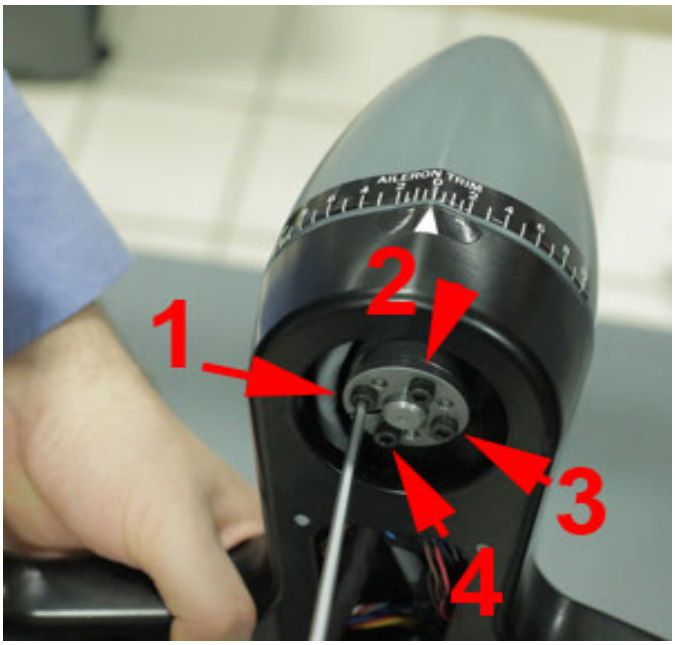
Self Locking unit reassemble:

To fix the control wheel back to the gooseneck shaft, put the 4 screws back in original position:



Then, screw them tightly, each a bit at a time, in circular order:

Pay attention to Gooseneck/Control Wheel Alignment when reassembling:



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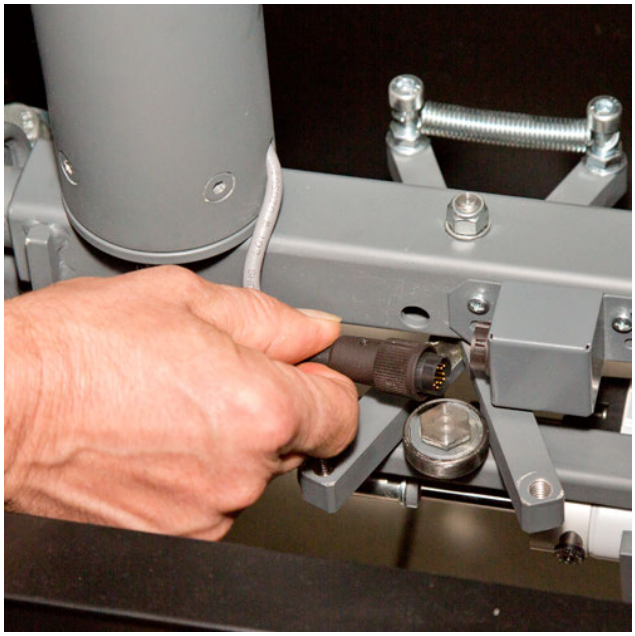
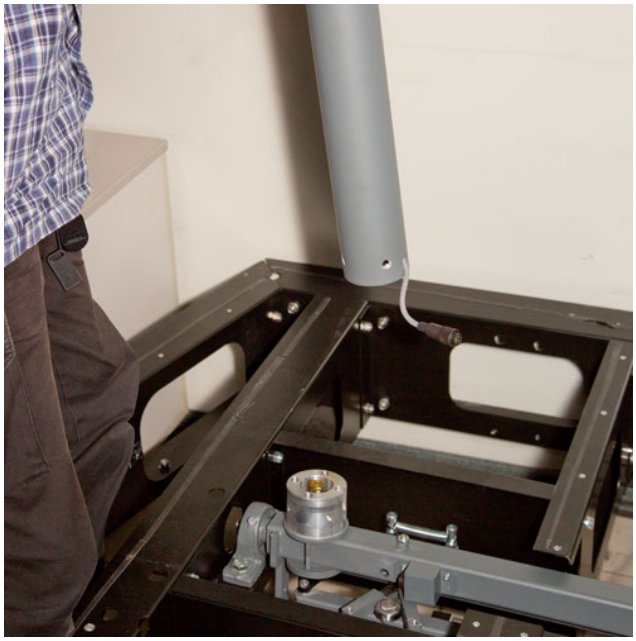
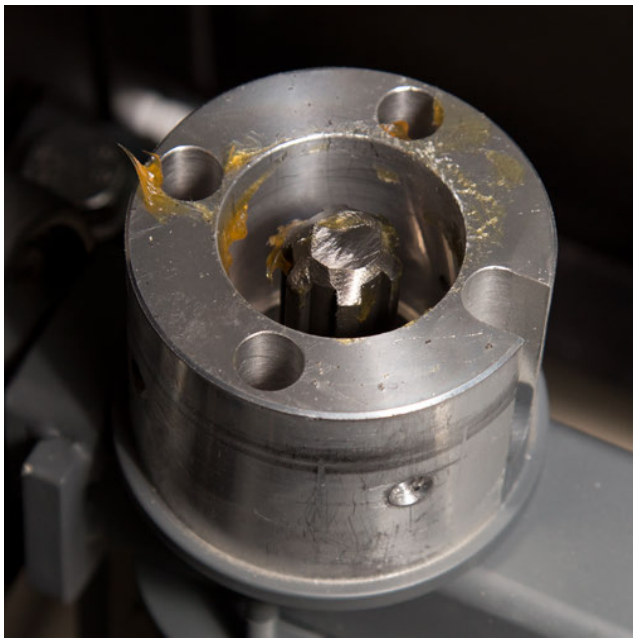
How to Remove the Yoke Column

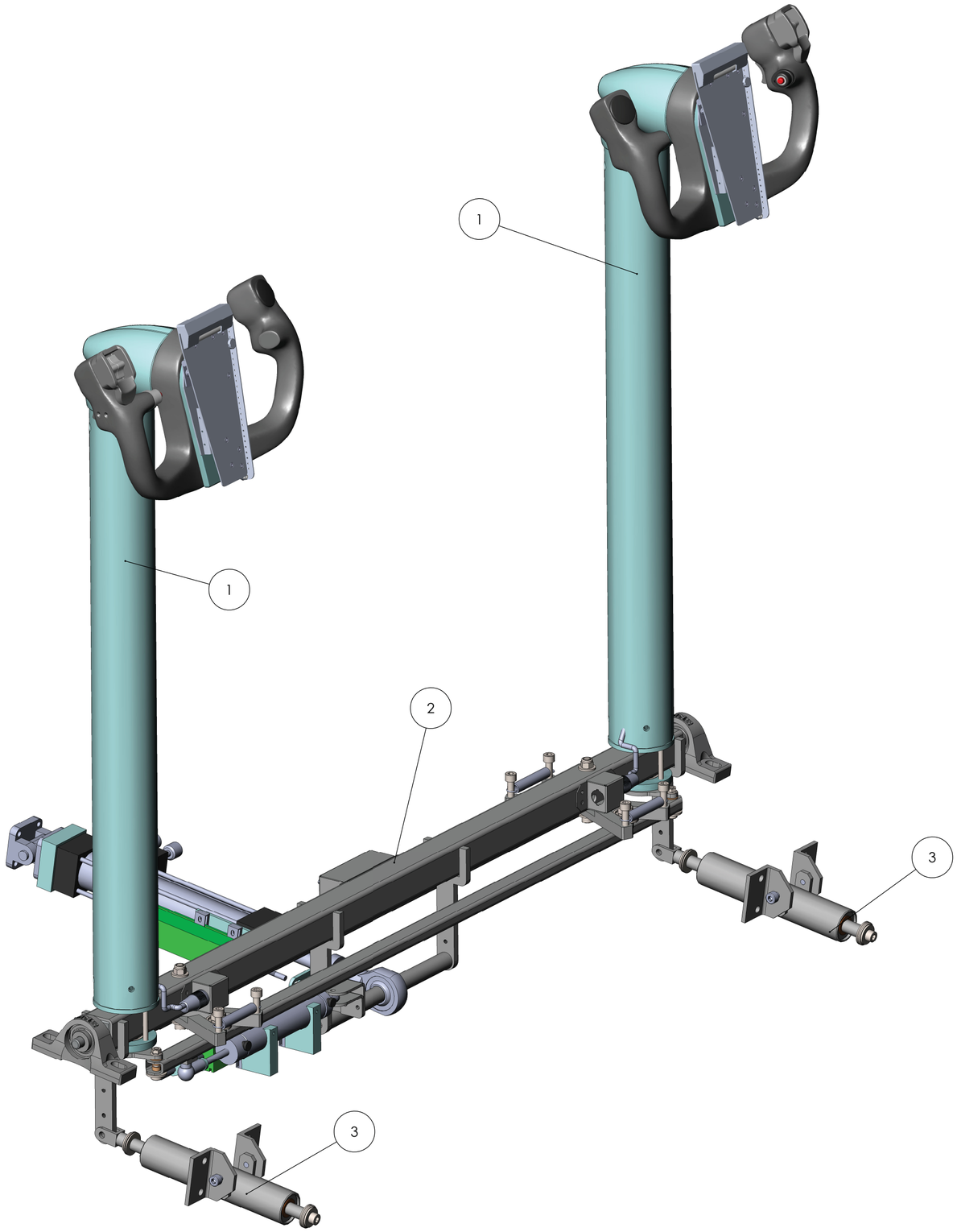
You must leave an inspection panel over the central movement bar, is important to inspect the wiring.
Open the panel and unplug the HR10 plug, then unscrew and remove the 4 bolts located on the base of column:



Now remove column.







Num. articolo	Num. parte	Descrizione	Materiale	Quantità
1	219914_01	gruppo verticale yoke	vario	2
2	219914_02	asse orizzontale yoke	vario	1
3	219914-05	ammortizzatore pitch	vario	2

REV.	DESCRIZIONE	EMISSIONE	APPROVATO
03	...	...	...
02	...	...	...
01	...	...	...

FSC Flight Simulator Center

TOLLERANZE GENERICHE PER QUOTE DI LAVORAZIONE (UNI 5307-63)
segnare con una croce il grado di precisione indicato per questo particolare

GRADO DI PRECISIONE	0 ÷ 6	6 ÷ 30	30 ÷ 120	120 ÷ 315	315 ÷ 1000	1000 ÷ 2000	2000 ÷ 4000	> 4000
GROSSOLANO	± 0,2	±0,5	±0,8	±1,2	±2	±3	±4	±5
MEDIO	± 0,1	±0,2	±0,3	±0,5	±0,8	±1,2	±2	±3
PRECISO	±0,05	±0,1	±0,15	±0,2	±0,3	±0,5	/	/

MASSIMO GRADO DI RUGOSITA' AMMESSA

RIMUOVERE BAVE DI LAVORAZIONE

UNI EN ISO 22768

MATERIALE

TRATTAMENTO SUPERFICIALE

PESO Kg

SVILUPPO mm

QUANTITA'

SE NON DIVERSAMENTE SPECIFICATO:
TUTTE LE PIEGHE SONO A 90°
ALTEZZA SALDATURE 0,7 VOLTE LO SPESSORE MINIMO DEL MATERIALE

TITOLO: Assieme NEW YOKE universale

Nº DISEGNO: 219914-00

PROGETTO:

Progettista/Designer: Luca Pranovi

SCALA 1:4 FOGLIO 1

Data 27/09/2017

A2

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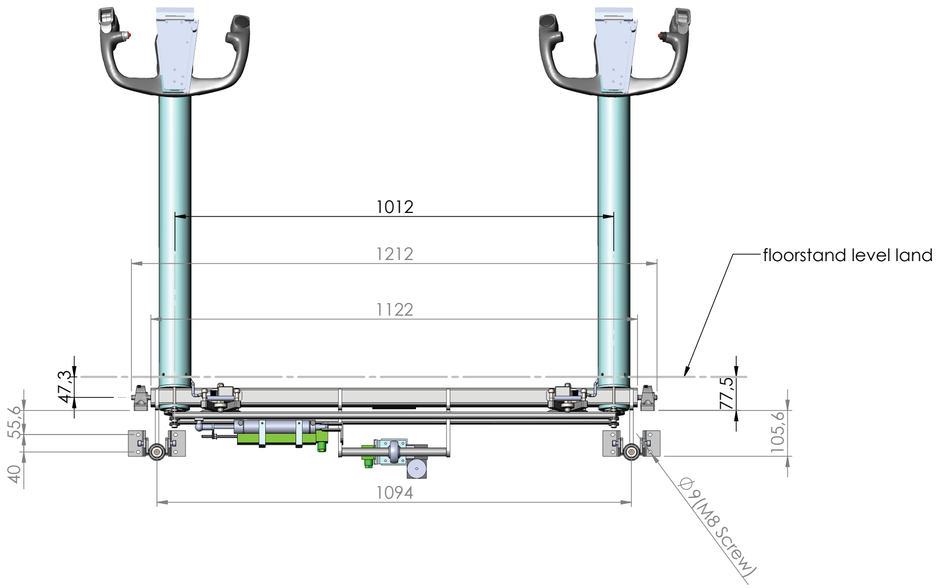
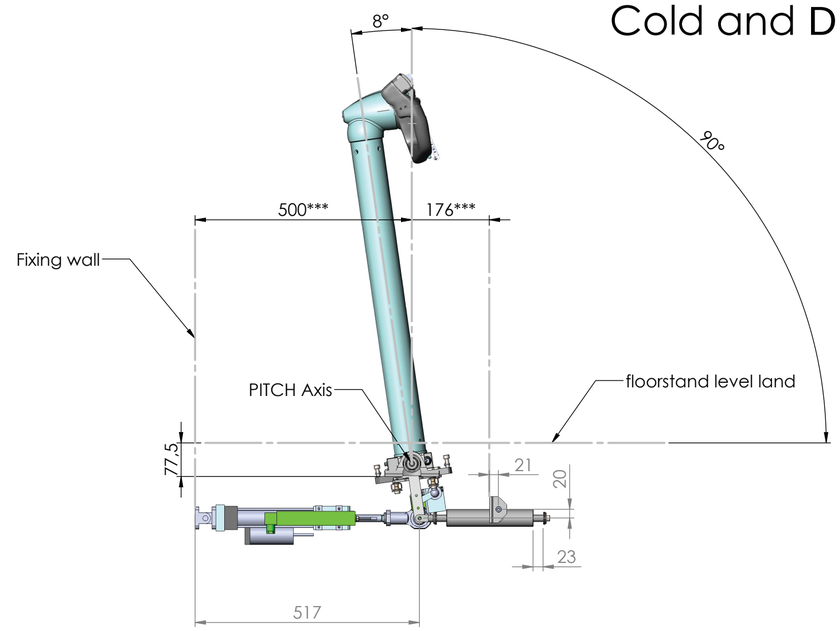
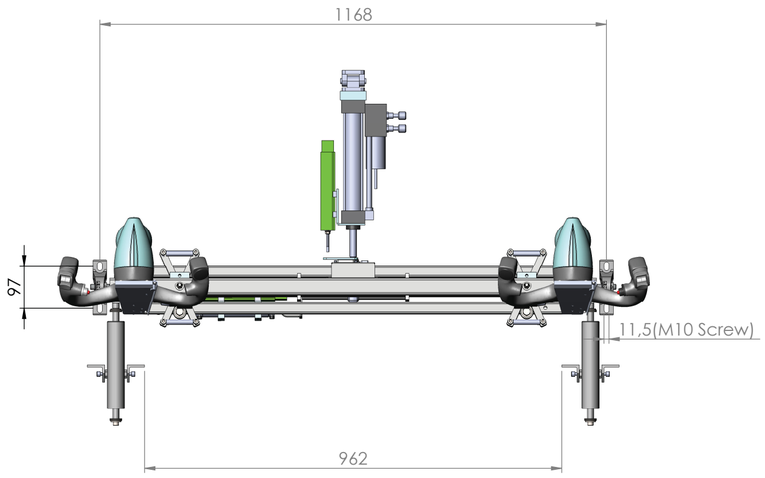
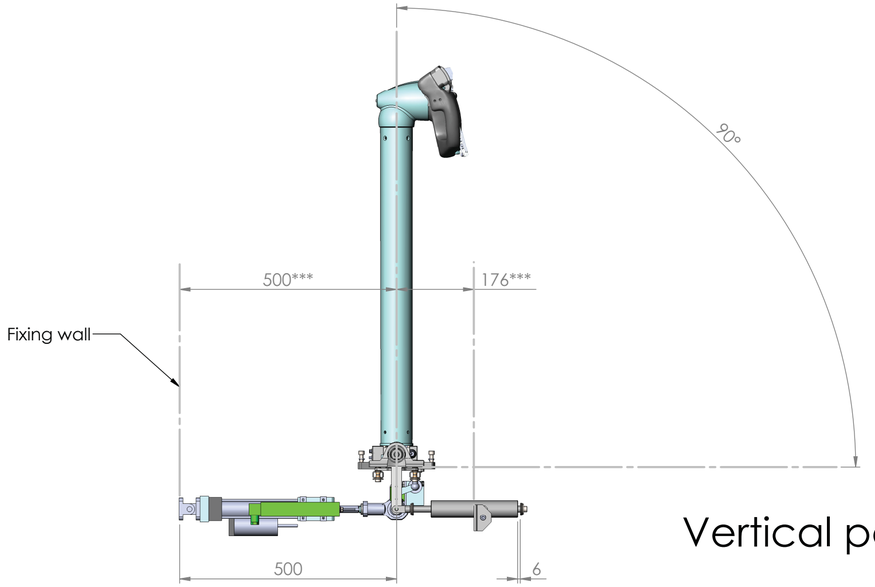




Cold and **Dark** position

*** recommended distance





Vertical position

REV.	DESCRIZIONE	EMISSIONE	APPROVATO
03	...	...	...
02	...	...	...
01	...	...	...

FSC Flight Simulator Center

TOLLERANZE GENERICHE PER QUOTE DI LAVORAZIONE (UNI 5307-63)
segnare con una croce il grado di precisione indicato per questo particolare

GRADO DI PRECISIONE	0 ÷ 6	6 ÷ 30	30 ÷ 120	120 ÷ 315	315 ÷ 1000	1000 ÷ 2000	2000 ÷ 4000	> 4000
GROSSOLANO	± 0,2	±0,5	±0,8	±1,2	±2	±3	±4	±5
MEDIO	± 0,1	±0,2	±0,3	±0,5	±0,8	±1,2	±2	±3
PRECISO	±0,05	±0,1	±0,15	±0,2	±0,3	±0,5	/	/

MASSIMO GRADO DI RUGOSITA' AMMESSA

RIMUOVERE BAVE DI LAVORAZIONE

UNI EN ISO 22768

MATERIALE	
TRATTAMENTO SUPERFICIALE	
PESO Kg	
SVILUPPO mm	
QUANTITA'	

SE NON DIVERSAMENTE SPECIFICATO:
TUTTE LE PIEGHE SONO A 90°
ALTEZZA SALDATURE 0,7 VOLTE LO SPESSORE MINIMO DEL MATERIALE

TITOLO: Assiene NEW YOKE universale

Nº DISEGNO: 219914-00

PROGETTO:

Progettista/Designer: Luca Pranovi

SCALA 1:10 FOGLIO 2

Data 27/09/2017

A2

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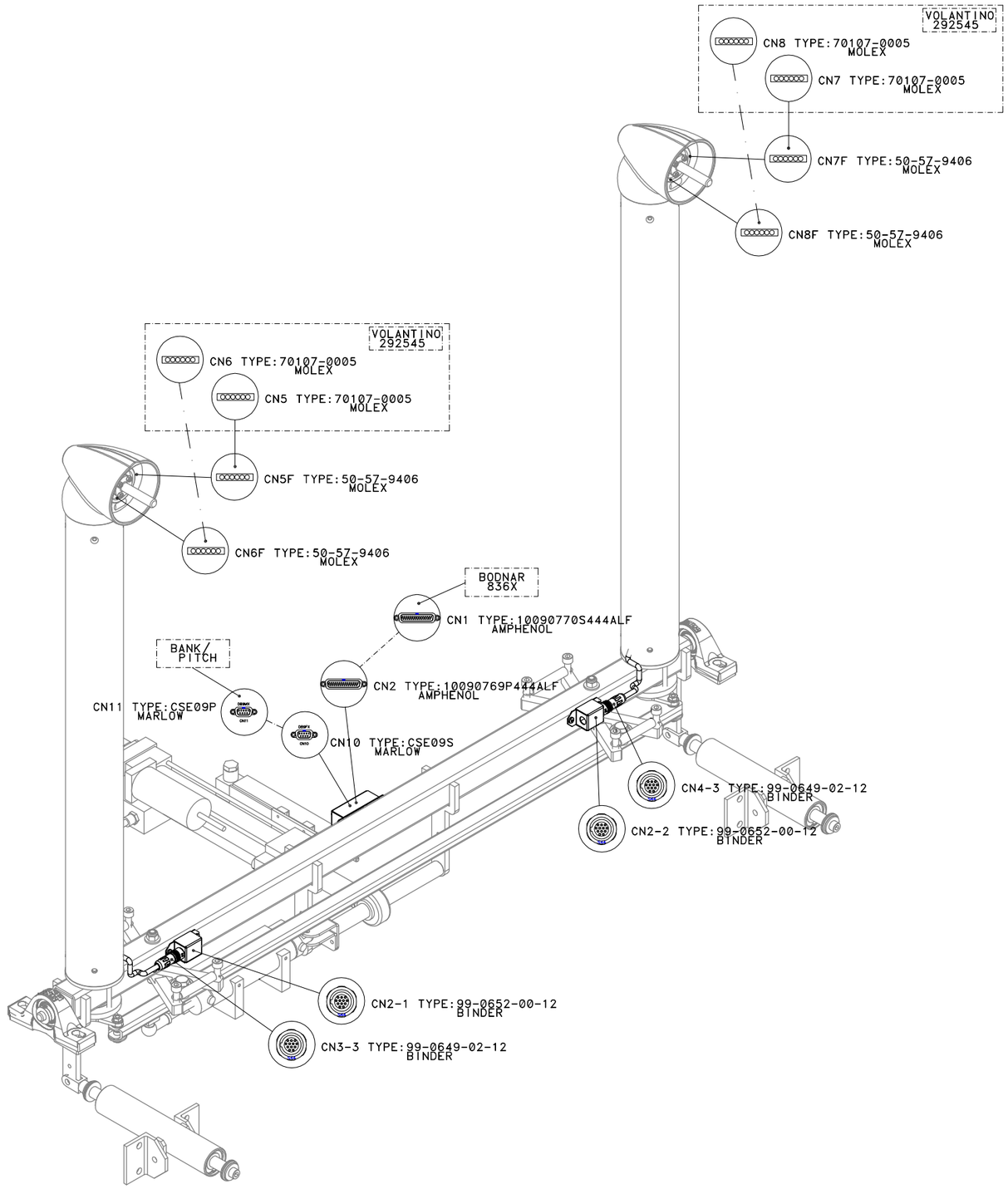
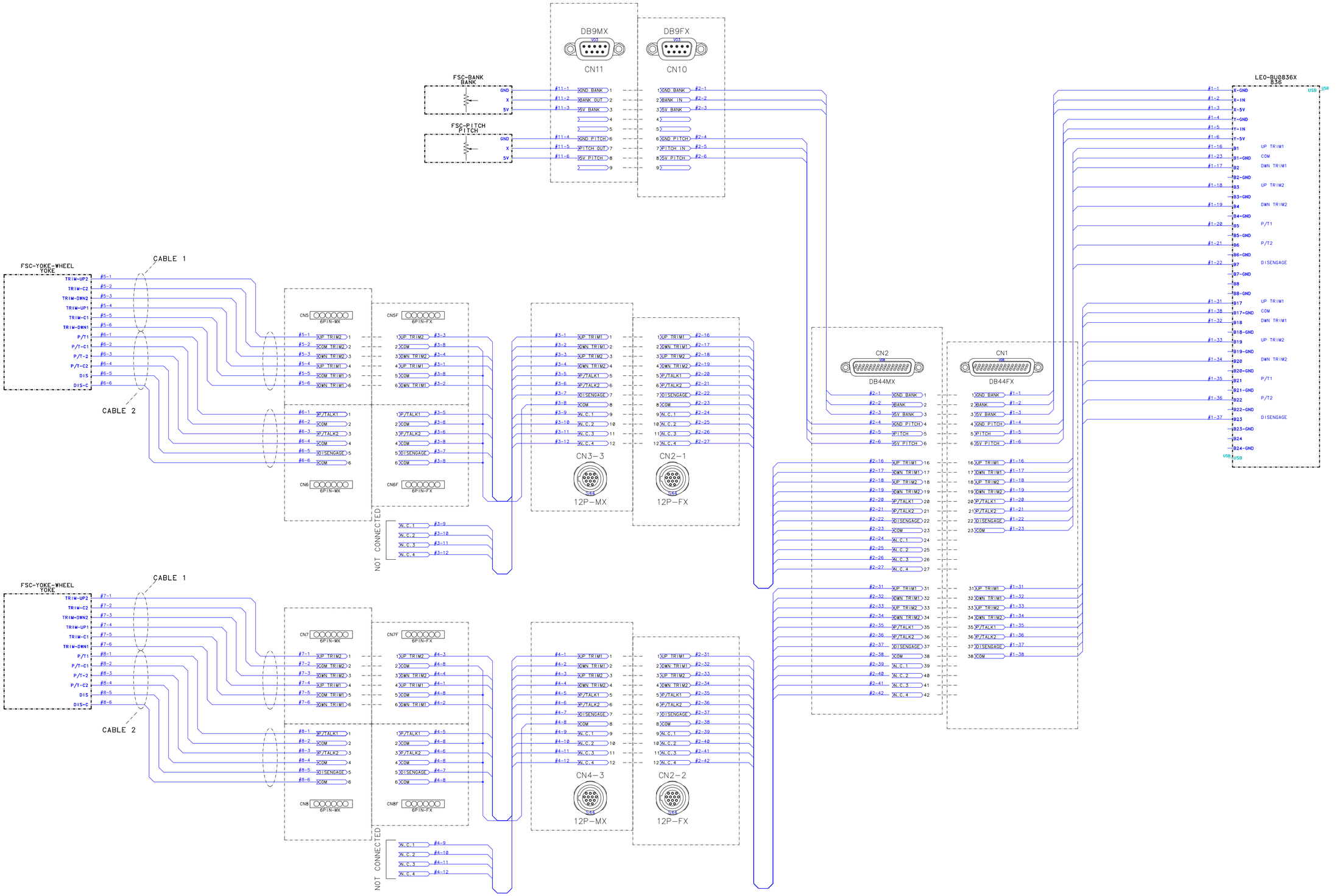


Client Name:	FSC	PROFESSIONAL SHOW S.p.a.	
Project:	219914 737NG YOKE	Via Praimbole,15	
Author:	M.B. ----	35010 LIMENA - (PD)	
Drawing:	---- ----	WWW.FSC.IT	
Revision/Issue:	---- ----	SIZE A3	SHEET NAME: 219914 737NG YOKE LAYOUT
Last mods:	9/29/2017	SCALE:	REV: 1.0
		COPYRIGHT: 2017	SHEET NO: 1 of 1

Professional Show S.p.a. 09/11/2006 219914 737NG YOKE.dwg



Client Name:	FSC	PROFESSIONAL SHOW S.p.a.	
Project:	219914 737NG YOKE	Via Pralmbole,15 35010 LIMENA - (PD) WWW.FSC.IT	
Author:	M.B.	SIZE: A2	SHEET NAME: 219914 737NG YOKE SCHEMATIC
Drawing:	---		COPYRIGHT: 2017
Revision/Issue:	---	SCALE:	REV: 1.0
Last mods:	9/29/2017		SHEET NO: 1 of 1

Professional Show S.p.a. 09/11/2006 219914 737NG YOKE.dwg

CN11 TO POTENTIOMETER BANK/PITCH					
CN11 (DB9MX)	NUMBER	COLOR		BANK	PITCH
PIN	CABLE	CABLE:1508ENH		POTENTIOMETER	POTENTIOMETER
1	#11-1	BLACK	>	P1=GND	
2	#11-2	WHITE	>	P2=X	
3	#11-3	RED	>	P3=5V	
6	#11-4	BLACK	>		P1=GND
7	#11-5	WHITE	>		P2=X
8	#11-6	RED	>		P3=5V

CN1 TO BODNAR836X (2mt cable type CA2025G)					
CN1 (DB44FX)	NUMBER	COLOR		BODNAR 836X	
PIN	CABLE	CABLE:CA2025G		PINOUT	FUNCTION
1	#1-1	BROWN	>	X-GND	POTENTIOMETER BANK
2	#1-2	RED	>	X-IN	
3	#1-3	ORANGE	>	X-5V	
4	#1-4	YELLOW	>	Y-GND	POTENTIOMETER PITCH
5	#1-5	GREEN	>	Y-IN	
6	#1-6	BLUE	>	Y-5V	
16	#1-16	VIOLET	>	B1	UP TRIM 1-CPT
17	#1-17	GREY	>	B2	DWN TRIM 1-CPT
18	#1-18	WHITE	>	B3	UP TRIM 2-CPT
19	#1-19	BLACK	>	B4	DWN TRIM 2-CPT
20	#1-20	BLACK/BROWN	>	B5	P/TALK 1-CPT
21	#1-21	BLACK/RED	>	B6	P/TALK 2-CPT
22	#1-22	BLACK/ORANGE	>	B7	DISENGAGE-CPT
23	#1-23	BLACK/YELLOW	>	B1-GND	COM-GND-CPT
31	#1-31	BLACK/GREEN	>	B17	UP TRIM 1-F/O
32	#1-32	BLACK/LIGHTBLUE	>	B18	DWN TRIM 1-F/O
33	#1-33	BLACK/PINK	>	B19	UP TRIM 2-F/O
34	#1-34	BLACK/GREY	>	B20	DWN TRIM 2-F/O
35	#1-35	GREEN/YELLOW	>	B21	P/TALK 1-F/O
36	#1-36	LIGHTBLUE	>	B22	P/TALK 2-F/O
37	#1-37	PINK	>	B23	DISENGAGE-F/O
38	#1-38	WHITE ORANGE	>	B17-GND	COM-GND-F/O

PINOUT YOKE CPT TO CN5/CN6					
YOKE CPT	NUMBER	COLOR		CN5	CN6
PIN	CABLE	CABLE		70107-0005 MOLEX	70107-0005 MOLEX
UP TRIM 2	#5-1	BROWN	>	1	
COM TRIM 2	#5-2	RED	>	2	
DWN TRIM 2	#5-3	ORANGE	>	3	
UP TRIM 1	#5-4	YELLOW	>	4	
COM TRIM 1	#5-5	GREEN	>	5	
DWN TRIM 1	#5-6	BLUE	>	6	
P/TALK 1	#6-1	PURPLE	>		1
COM P/TALK 1	#6-2	GREY	>		2
P/TALK 2	#6-3	WHITE	>		3
COM P/TALK 2	#6-4	LIGHT BLUE	>		4
DISENGAGE	#6-5	RED	>		5
COM DISENGAGE	#6-6	BLACK	>		6

PINOUT YOKE F/O TO CN7/CN8					
YOKE F/O	NUMBER	COLOR		CN7	CN8
PIN	CABLE	CABLE		70107-0005 MOLEX	70107-0005 MOLEX
UP TRIM 2	#7-1	BROWN	>	1	
COM TRIM 2	#7-2	RED	>	2	
DWN TRIM 2	#7-3	ORANGE	>	3	
UP TRIM 1	#7-4	YELLOW	>	4	
COM TRIM 1	#7-5	GREEN	>	5	
DWN TRIM 1	#7-6	BLUE	>	6	
P/TALK 1	#8-1	PURPLE	>		1
COM P/TALK 1	#8-2	GREY	>		2
P/TALK 2	#8-3	WHITE	>		3
COM P/TALK 2	#8-4	LIGHT BLUE	>		4
DISENGAGE	#8-5	RED	>		5
COM DISENGAGE	#8-6	BLACK	>		6

PINOUT CN2 TO CN2-1/CN2-2/CN10							
CN2 (DB44MX)	NUMBER	COLOR	COLOR		CN10 (DB9FX)	CN2-1 (BINDER-FX)	CN2-2 (BINDER-FX)
PIN	CABLE	CABLE:9506BELD	CABLE:1508ENH		PIN	PIN 99-0652-00-12	PIN 99-0652-00-12
1	#2-1		BLACK	>	1		
2	#2-2		WHITE	>	2		
3	#2-3		RED	>	3		
4	#2-4		BLACK	>	6		
5	#2-5		WHITE	>	7		
6	#2-6		RED	>	8		
16	#2-16	BROWN		>		A	
17	#2-17	BLACK/BROWN		>		B	
18	#2-18	RED		>		C	
19	#2-19	BLACK/RED		>		D	
20	#2-20	WHITE		>		E	
21	#2-21	BLACK/WHITE		>		F	
22	#2-22	YELLOW		>		G	
23	#2-23	BLACK/YELLOW		>		H	
24	#2-24	GREEN		>		J	
25	#2-25	BLACK/GREEN		>		K	
26	#2-26	BLUE		>		L	
27	#2-27	BLACK/BLUE		>		M	
31	#2-31	BROWN		>			A
32	#2-32	BLACK/BROWN		>			B
33	#2-33	RED		>			C
34	#2-34	BLACK/RED		>			D
35	#2-35	WHITE		>			E
36	#2-36	BLACK/WHITE		>			F
37	#2-37	YELLOW		>			G
38	#2-38	BLACK/YELLOW		>			H
39	#2-39	GREEN		>			J
40	#2-40	BLACK/GREEN		>			K
41	#2-41	BLUE		>			L
42	#2-42	BLACK/BLUE		>			M

PINOUT CN3-3 TO CN5F/CN6F							
CN3-3 (BINDER-MX)	NUMBER	COLOR		CN5F	CN6F	FUNCTION	PINOUT BODNAR
PIN 99-0649-02-12	CABLE	CABLE:9506BELD		50-57-9406 MOLEX	50-57-9406 MOLEX		
A	#3-1	BROWN	>	4		UP TRIM 1	B1
B	#3-2	BLACK/BROWN	>	6		DWN TRIM 1	B2
C	#3-3	RED	>	1		UP TRIM 2	B3
D	#3-4	BLACK/RED	>	3		DWN TRIM 2	B4
E	#3-5	WHITE	>		1	P/TALK 1	B5
F	#3-6	BLACK/WHITE	>		3	P/TALK 2	B6
G	#3-7	YELLOW	>		5	DISENGAGE	B7
H	#3-8	BLACK/YELLOW	>	2 - 5	2 - 4 - 6	COM	
J	#3-9	GREEN	>				
K	#3-10	BLACK/GREEN	>				
L	#3-11	BLUE	>				
M	#3-12	BLACK/BLUE	>				

PINOUT CN4-3 TO CN7F/CN8F							
CN4-3 (BINDER-MX)	NUMBER	COLOR		CN7F	CN8F		
PIN 99-0649-02-12	CABLE	CABLE:9506BELD		50-57-9406 MOLEX	50-57-9406 MOLEX	FUNCTION	PINOUT BODNAR
A	#4-1	BROWN	>	4			
B	#4-2	BLACK/BROWN	>	6		UP TRIM 1	B17
C	#4-3	RED	>	1		DWN TRIM 1	B18
D	#4-4	BLACK/RED	>	3		UP TRIM 2	B19
E	#4-5	WHITE	>		1	DWN TRIM 2	B20
F	#4-6	BLACK/WHITE	>		3	P/TALK 1	B21
G	#4-7	YELLOW	>		5	P/TALK 2	B22
H	#4-8	BLACK/YELLOW	>	2 - 5	2 - 4 - 6	DISENGAGE	B23
J	#4-9	GREEN	>			COM	
K	#4-10	BLACK/GREEN	>				
L	#4-11	BLUE	>				
M	#4-12	BLACK/BLUE	>				

Client Name:	FSC	PROFESSIONAL SHOW S.p.a.	
Project:	219914 737NGYOKE	Via Praimbole,15	
Author:	M.B.	35010 LIMENA - (PD)	
Drawing:	----	WWW.FSC.IT	
Revision/Issue:	----		
Last mods:	9/29/2017		

SIZE	SHEET NAME:	COPYRIGHT: 2017
A3	219914 737NGYOKE TABLE	
SCALE:	REV: 1.0	SHEET NO: 1 of 1

Professional Show S.p.a. 09/11/2006 219914 737NG YOKE.dwg