

LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY

- LIGO -

CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

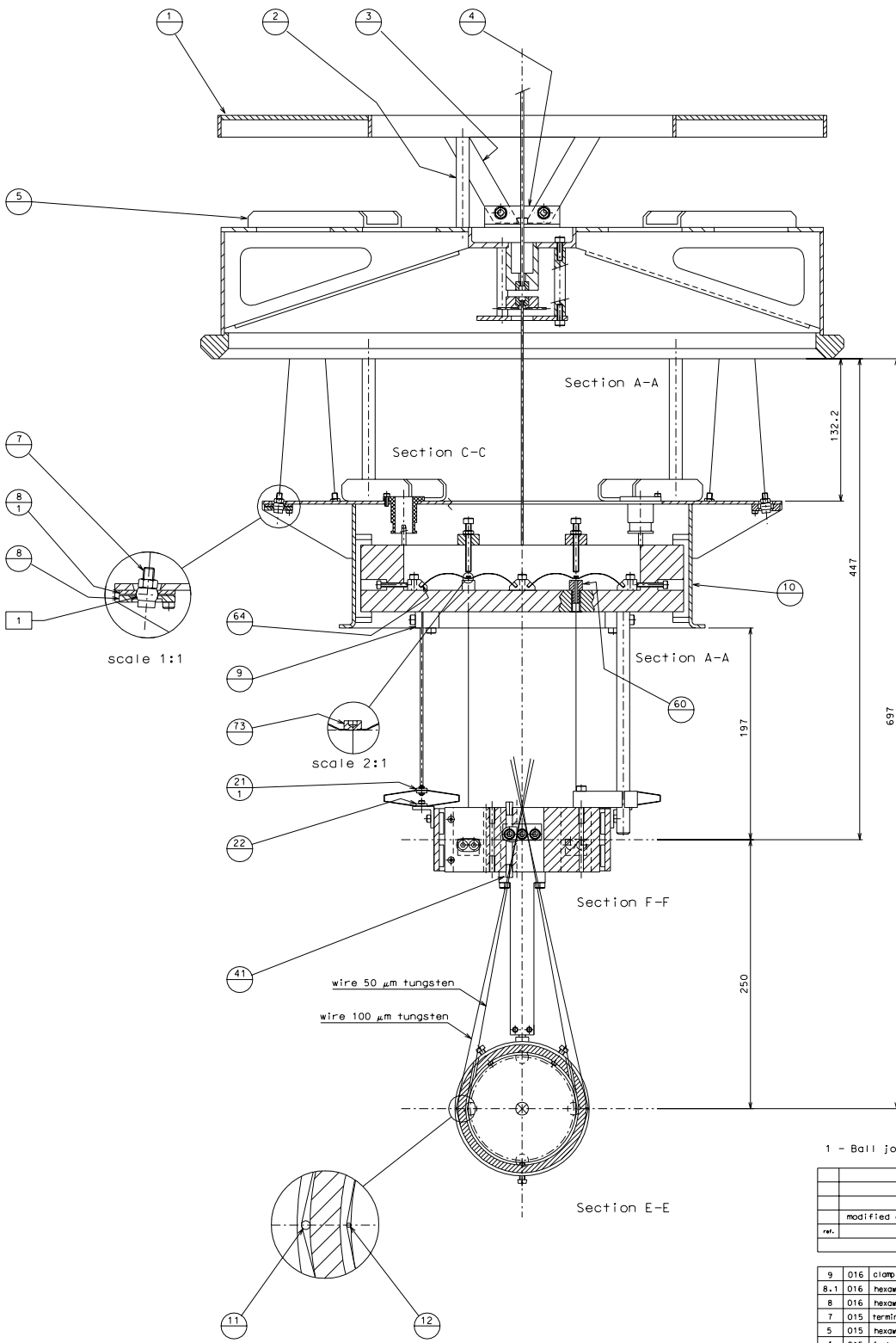
Document Type Technical Note	DCC Number LIGO-D-010250-00-R	Date 30 th October 2001
TAMA Seismic Attenuation System (SAS) Mirror Suspension System (SUS) Mechanical drawings		
Akiteru Takamori (LIGO and University of Tokyo), Gianni Gennaro, Tatiana Zelenova (PROMEC), Riccardo DeSalvo (LIGO)		

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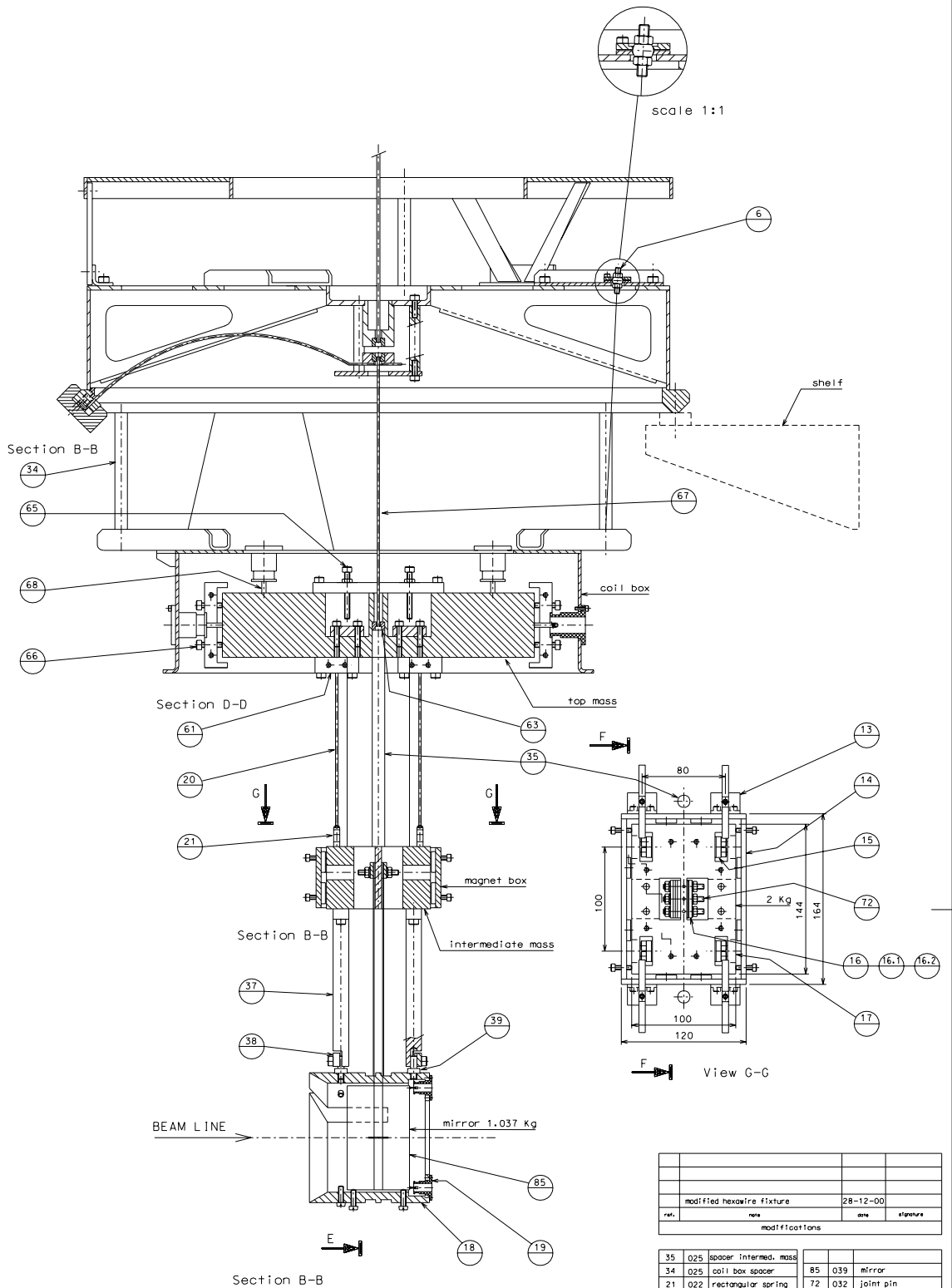
www: <http://www.ligo.caltech.edu/>



ref.	note	date	signature
	modified detail 8	28-12-00	
modifications			

9	016	clamp	73	032	head wire
8.1	016	hexawire fixture	64	031	wedge
8	016	hexawire fixture	60	016	blade spacer
7	015	terminal wire	41	016	cabling cones
5	015	hexawire strut	22	022	plate
4	015	fastening angular	21.1	022	plate
3	015	fastening strip	12	016	spacer rod
2	015	stiffening rod	11	016	spacer rod
1	014	counterweight support	10	026	coil box
ref.	draw.	called upon	ref.	draw.	called upon

TAMA PROJECT		designed for: A. Takamarai
PAYLOAD 3		des. num.: payload-000
VIEW ALONG BEAM LINE		draw. PRGMEC 18-8-00
Scale 1:2		scale 1:2
Size A1		ref/issue dr. num.



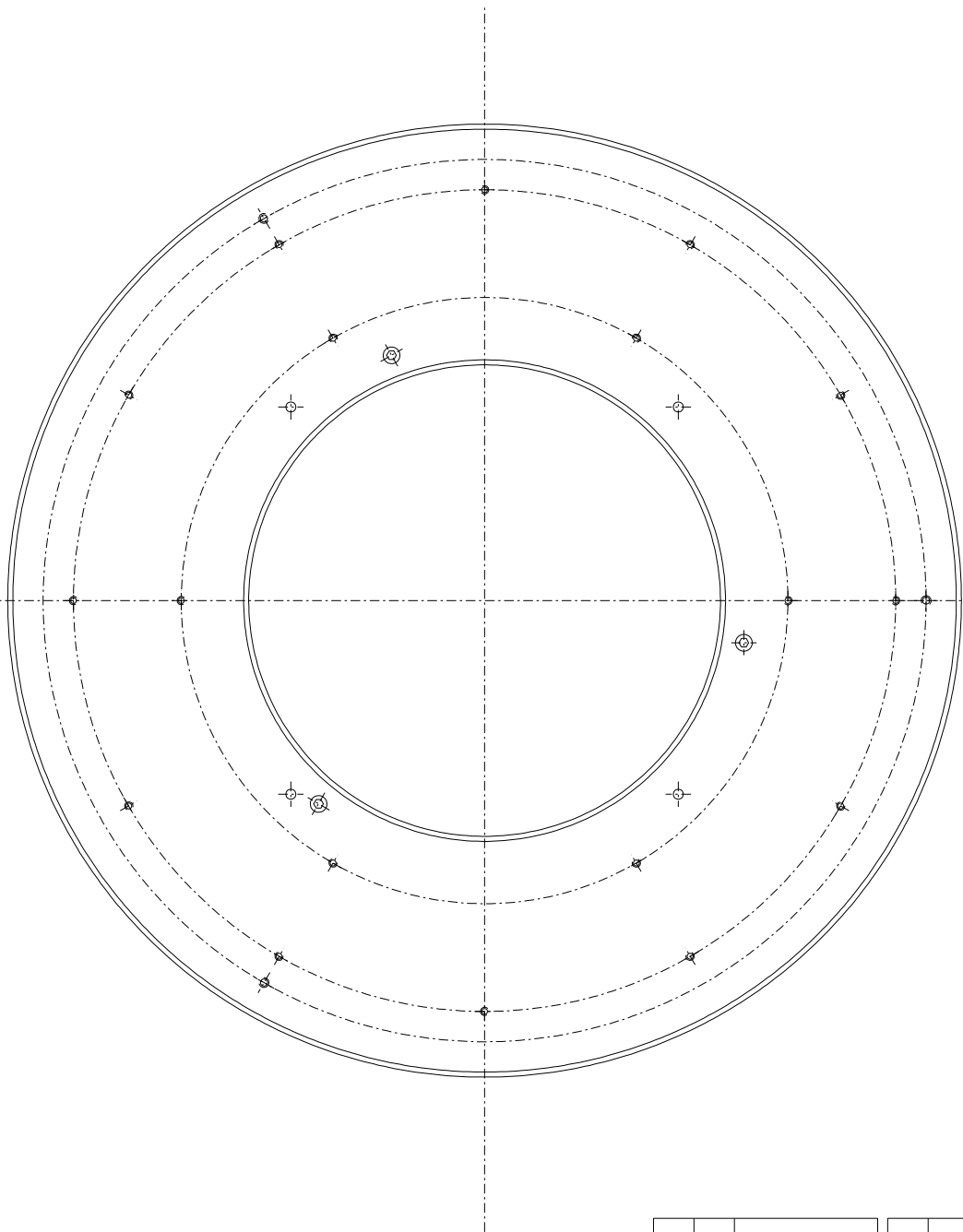
Top mass 14.06 Kg
 Magnet box 1.28 Kg
 Intermediate mass 1.91 Kg
 Recoil mass 0.96 Kg

ref.	date	signature
modified hexawire fixture 28-12-00		
modifications		

35	025	spacer Intermed. mass	85	039	mirror
34	025	coil box spacer	72	032	joint pin
21	022	rectangular spring	68	032	support magnet
20	025	suspens. magnet mass	66	030	screw
19	029	coil holder	67	032	suspension wire
18	028	recoil mass	66	030	screw
17	023	Intermediate mass	65	030	screw
16	022	clamp	63	025	wire cup
15	022	clamp	61	016	clamp
14	022	magnet box	39	025	pin
13	022	spring block	38	025	clamp
6	015	terminal wire	37	025	spacer recoil mass
ref.	date	signature	ref.	date	signature

Size A1

		designed for A. Takamaru des. num. payload.001
PAYLOAD 3 ORTHOGONAL VIEW TO BEAM LINE		scale 1:2 reference or. num.




ref.	draw.	added legend

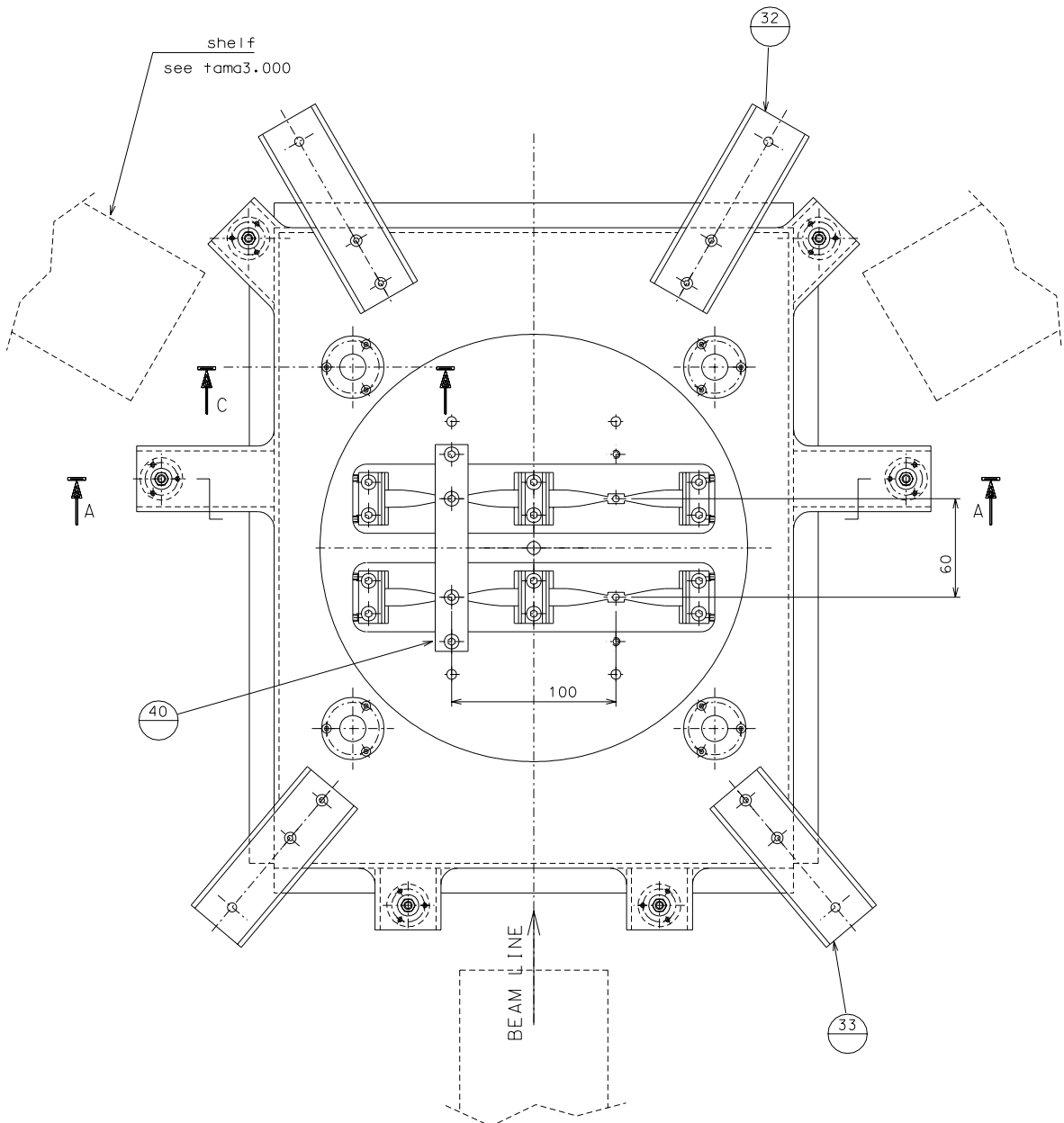
ref.	draw.	added legend

Size A2

ref.	note	date	signature
modifications			


TAMA PROJECT
 title
PAYLOAD 3
 RING FOR LOADING

designed for	A. Takamar i
ass. numb.	payload.002
draw.	PROMEC 18-8-00
scale	1:2
replaces dr. numb.	



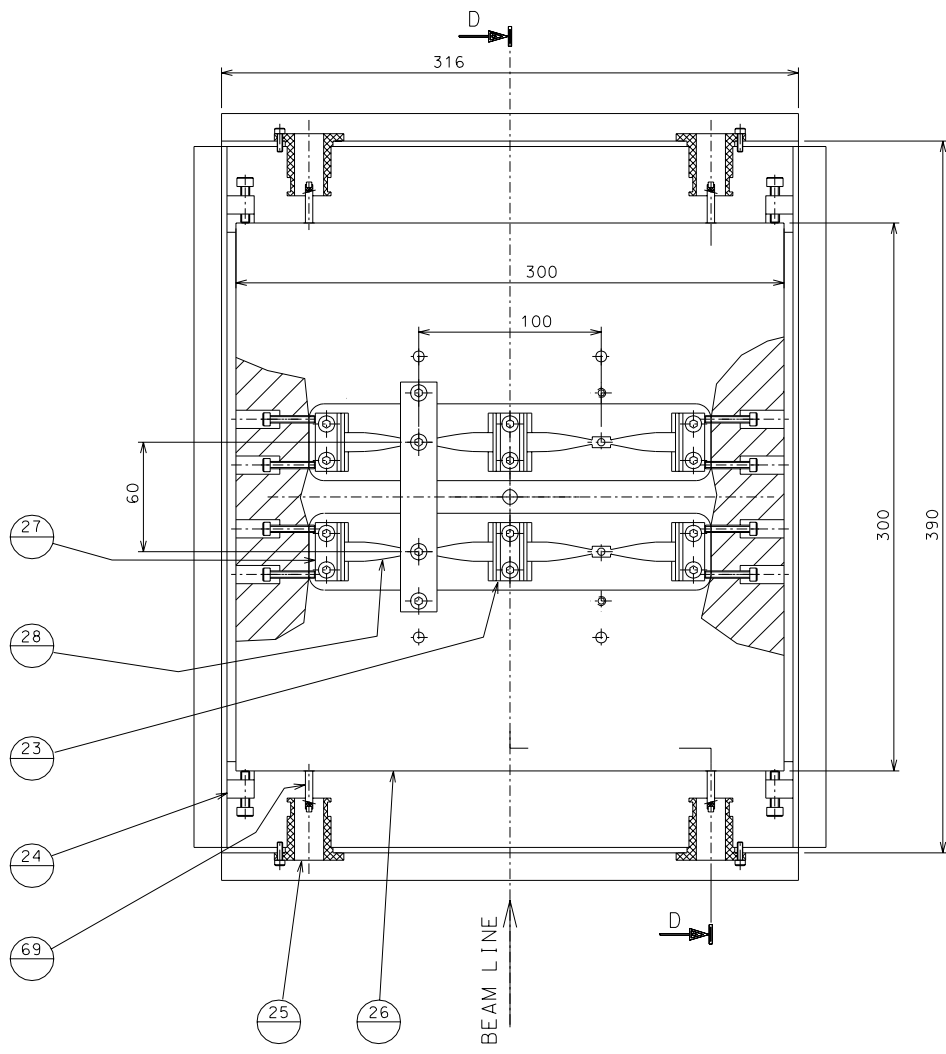
ref.	note	date	signature
modifications			

40	030	blade range limiter
33	030	transport fixture
32	030	transport fixture
ref.	draw.	added legend

ref.	draw.	added legend

Size A2

	TAMA PROJECT	designed for: A. Takamaru
		ass. numb. payload.004
		draw. PROMEC18-8-00
		scale 1:2
	PAYLOAD 3 TOP VIEW OF TOP MASS	replaces dr. Numb.



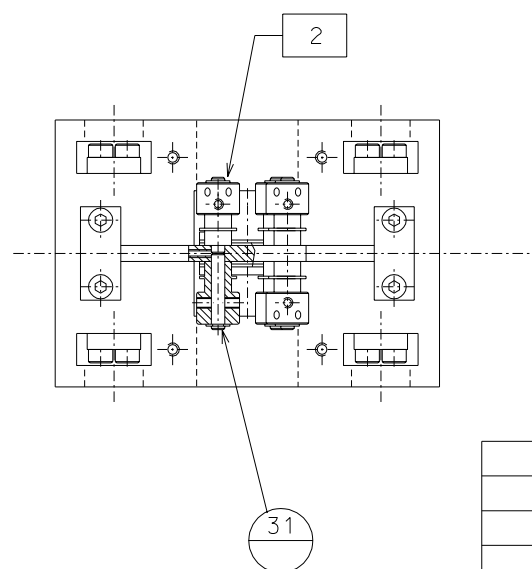
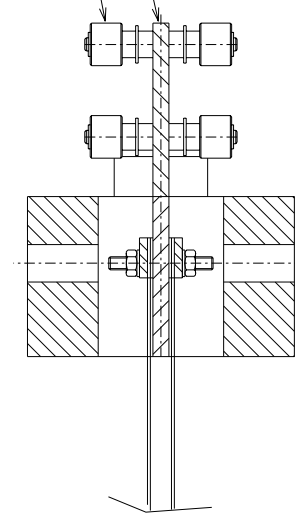
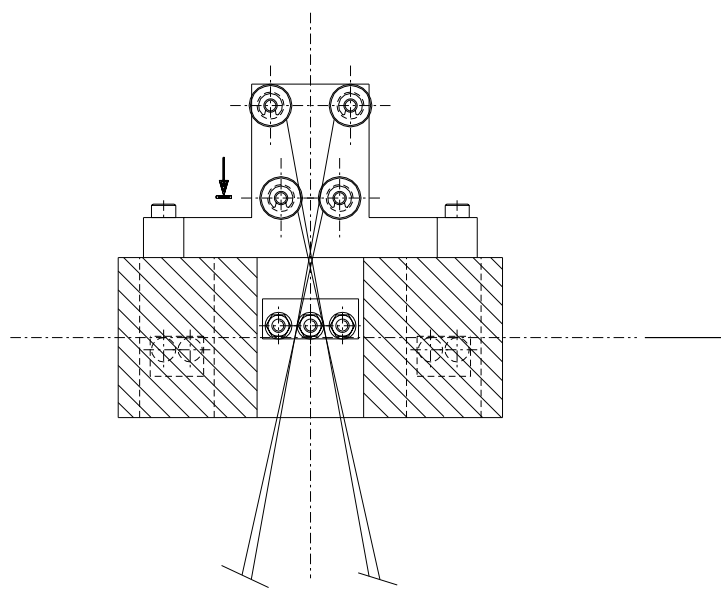
ref.	note	date	signature
modifications			

28	031	blade			
27	031	side blade clamp			
26	027	top mass			
25	029	coil			
24	029	transport clamp			
23	031	center blade clamp	69	032	support magnet
ref.	draw.	added legend	ref.	draw.	added legend

Size A2

	TAMA PROJECT		designed for A. Takamaru
			ass. numb. payload.005
	title PAYLOAD 3 TOP MASS		draw. PROMEC 18-8-00
			scale 1:2
			replaces dr. numb.

29 30



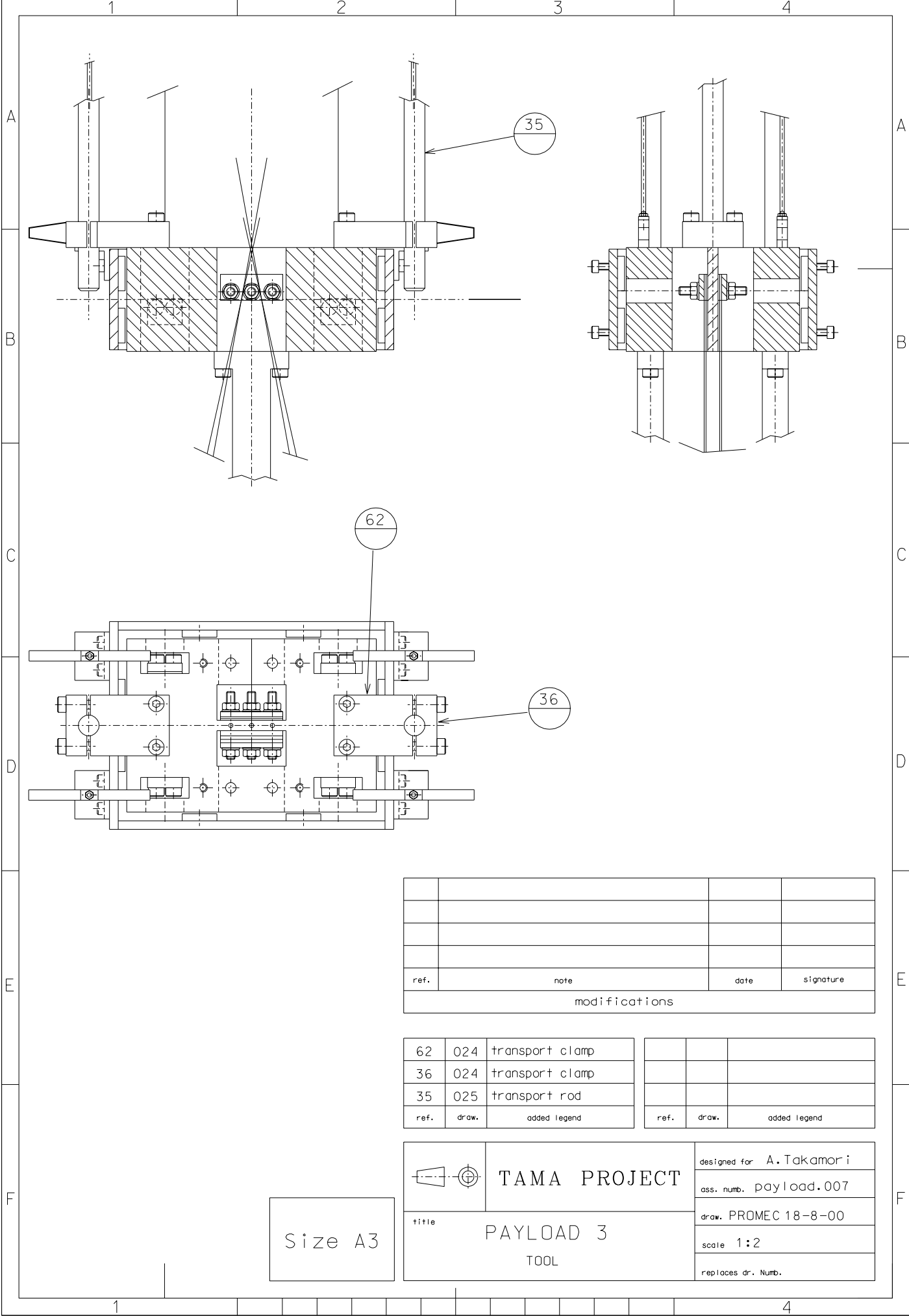
2 - Ring UNI 7434-5

ref.	note	date	signature
modifications			

31	024	pin			
30	024	mirror adjustment jig			
29	024	knob			
ref.	draw.	added legend	ref.	draw.	added legend

Size A3

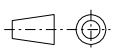
	TAMA PROJECT	designed for A. Takamori
	title PAYLOAD 3 TOOL	ass. numb. payload.006
		draw. PROMEC 18-8-00
		scale 1:2
		replaces dr. Numb.

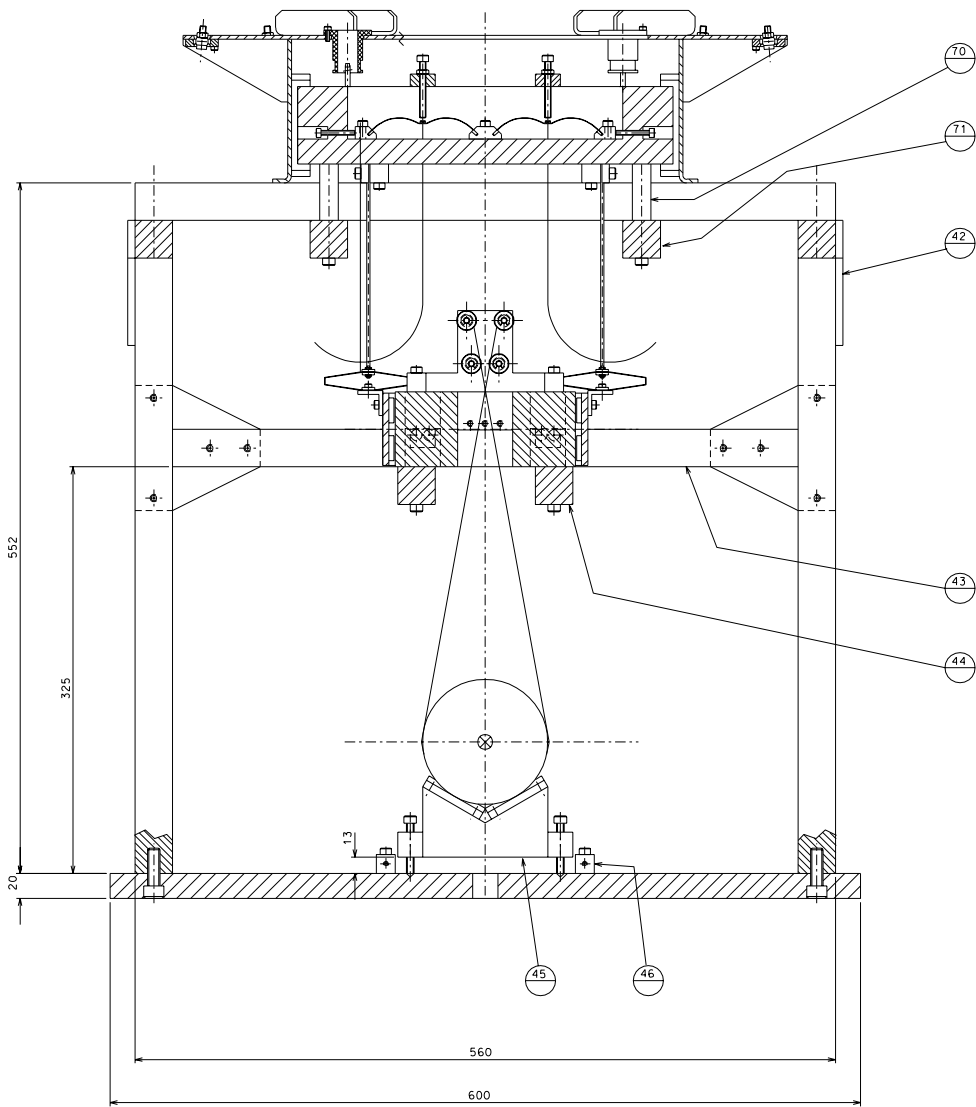


ref.	note	date	signature
modifications			

62	024	transport clamp			
36	024	transport clamp			
35	025	transport rod			
ref.	draw.	added legend	ref.	draw.	added legend

Size A3

	TAMA PROJECT		designed for A. Takamori
	PAYLOAD 3 TOOL		ass. numb. payload.007
			draw. PROMEC 18-8-00
	title		scale 1:2
replaces dr. Numb.			



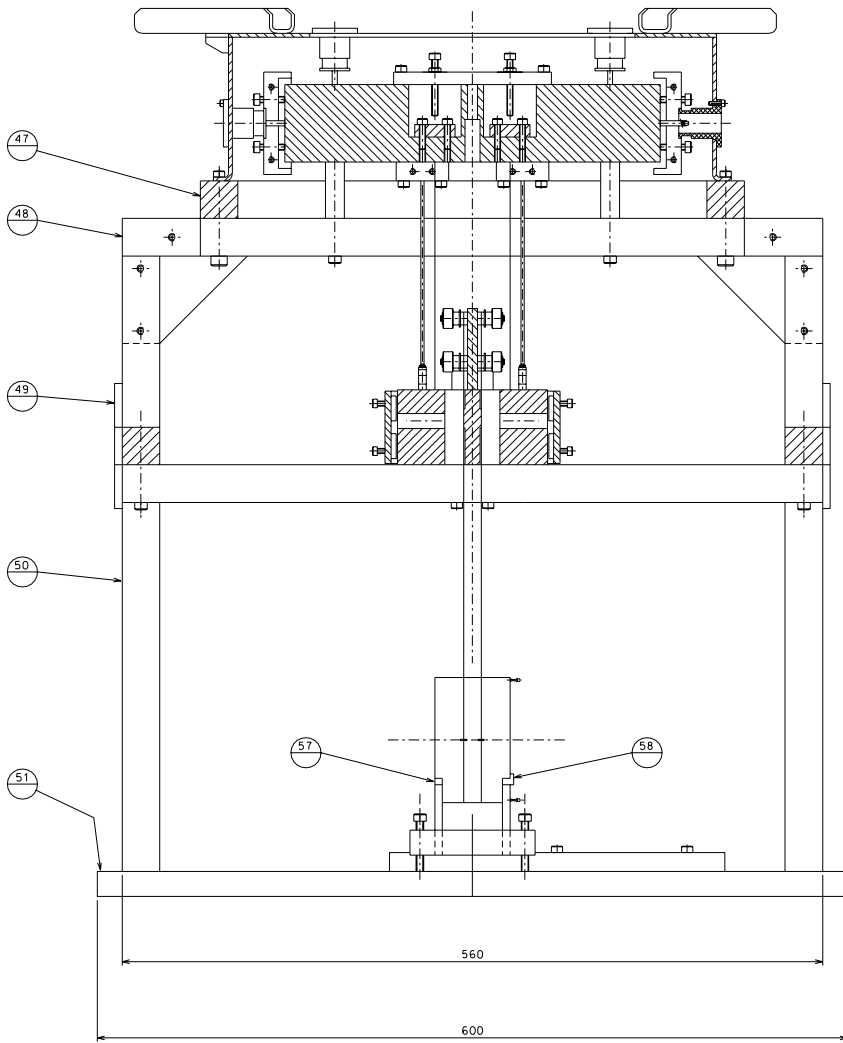
FIRST STEP

ref.	note	date	signature
modifications			

70	018	support pin			
46	020	guide			
45	018	mirror support			
44	019	support bar			
43	018	support bar			
42	020	joint plate	71	018	support bar
ref.	draw.	added / removed	ref.	draw.	added / removed

	TAMA PROJECT	designed by: A. Takamaru
		draw. num.: payload_008
PAYLOAD 3 MOUNTING'S TOOL		draw. PRGMEC 26-8-00
		scale: 1:2
		material: dr. num.

Size A1



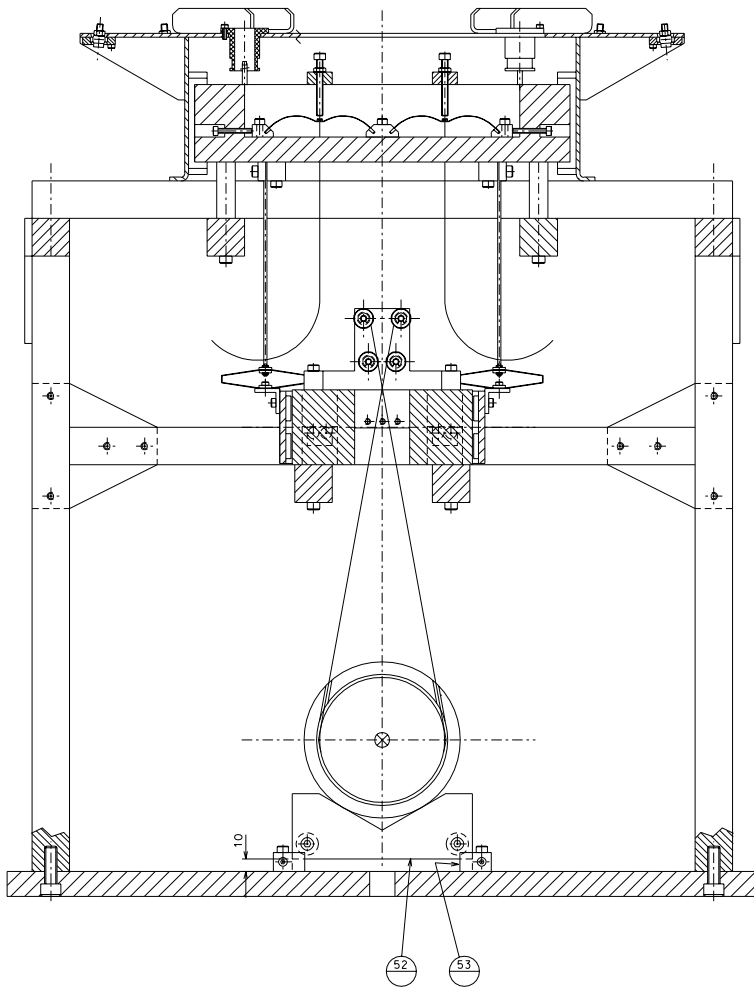
FIRST STEP

ref.	note	date	signature
modifications			

58	021	spacer			
57	021	spacer			
51	017	base			
50	018	rammer's rod			
49	020	joint rod			
48	019	rammer's rod			
47	019	rammer's rod			
ref.	draw.	added legend	ref.	draw.	added legend

	TAMA PROJECT		designed by A. Takahashi
	PAYLOAD 3		des. num. Payload.009
MOUNTING'S TOOL		scale 1:2	ref/rev. dr. num.

Size A1



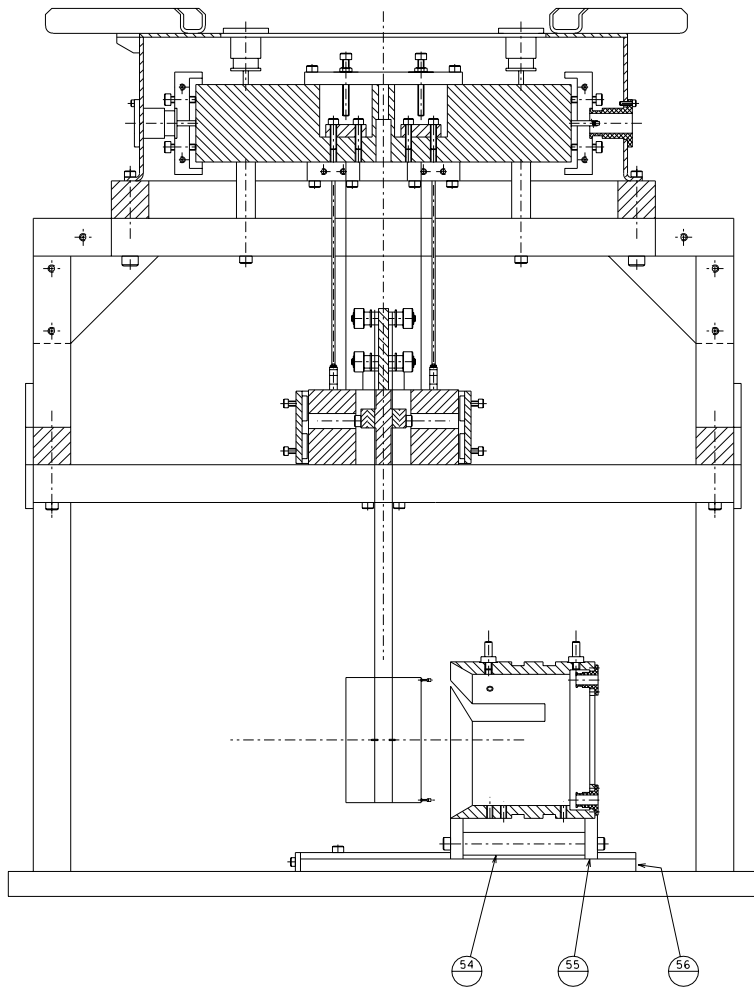
SECOND STEP

ref.	note	date	signature
	modifications		

53	021	end stop			
52	021	recoil mass support			
ref.	draw.	added legend	ref.	draw.	added legend

		designer: A. Takamaru ass. num.: payload-010 draw. PRGMEC 26-8-00 scale: 1:2 ref/issue dr. num.
Title: PAYLOAD 3 MOUNTING'S STEP		

Size A1



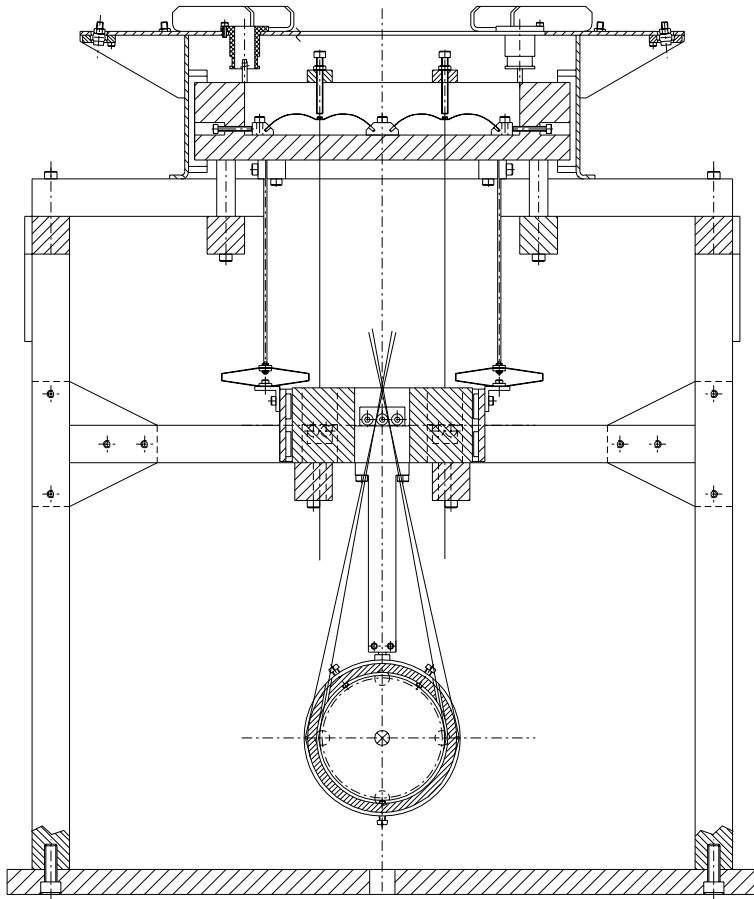
SECOND STEP

ref.	note	date	signature
modifications			

56	020	spacer			
55	021	recoll support			
54	021	spacer			
ref.	draw.	added legend	ref.	draw.	added legend

	TAMA PROJECT	designed for: A. Takamar'i
		des. num.: Dayload.011
		draw. PRGMEC 26-8-00
		scale 1:2
PAYLOAD 3 MOUNTING'S TOOL		ref./scale dr. num.

Size A1



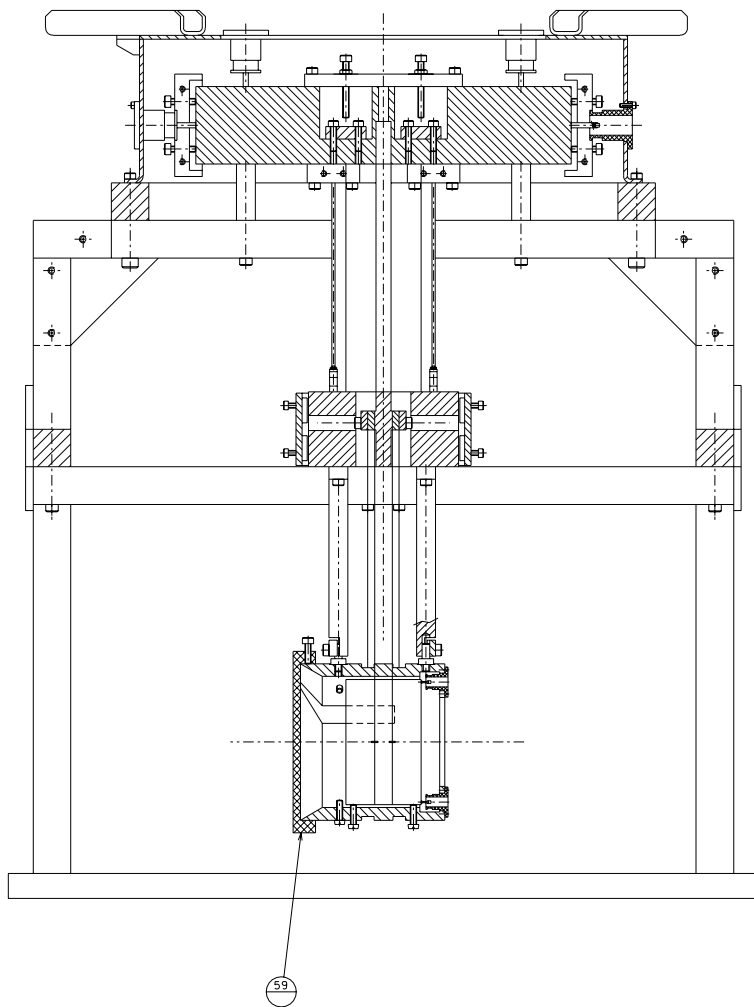
THIRD STEP

ref.	date	signature
modifications		

ref.	date	added legend
ref.	date	added legend

Size A1

	TAMA PROJECT	designed for: A. Takamaru
	PAYLOAD 3	des. num.: payload.012
	MOUNTING'S TOOL	des. PRGMEC 26-8-00
		scale: 1:2
		ref/issue dr. num.

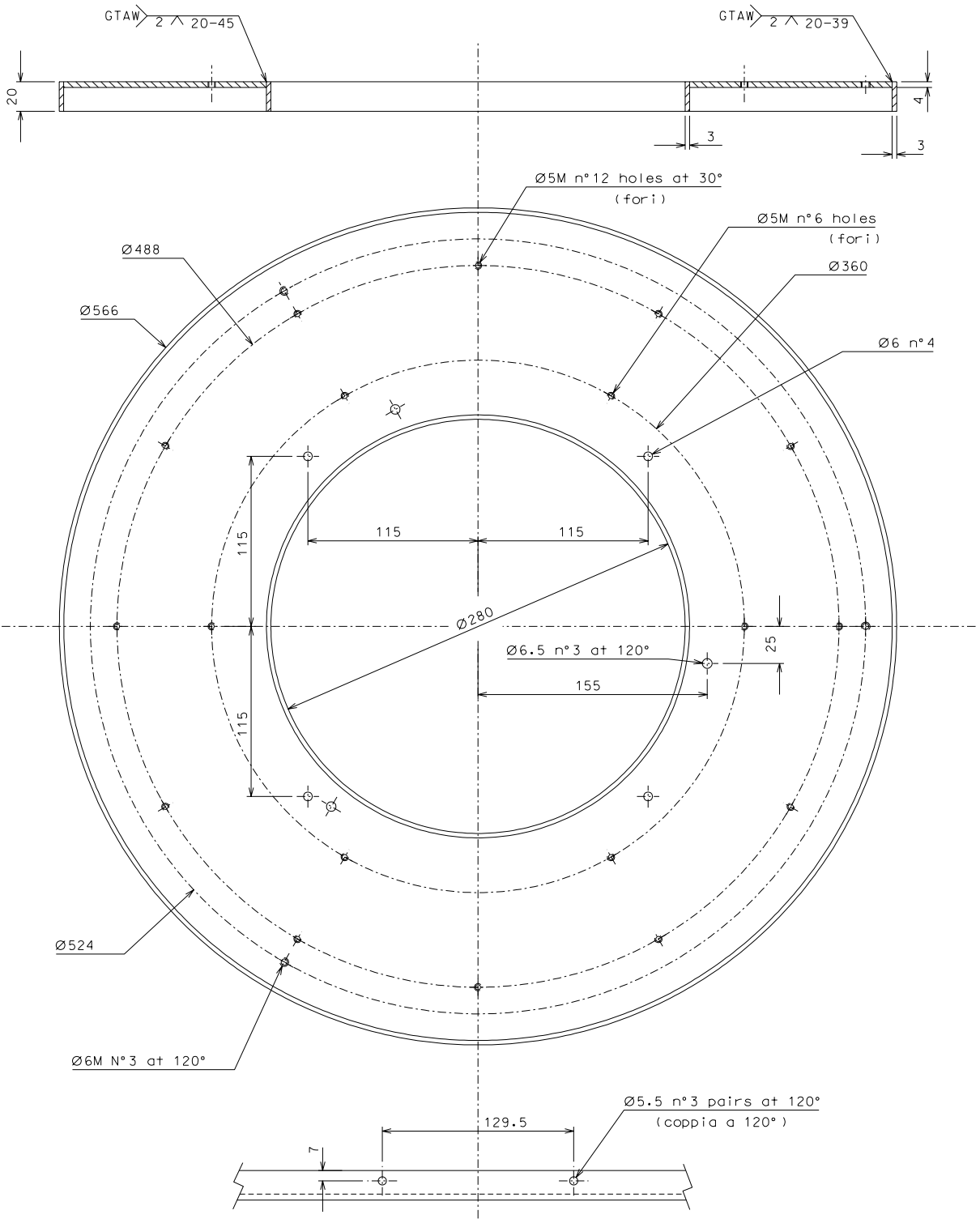


THIRD STEP

ref.	note	date	signature
modifications			

59	029	cover			
ref.	draw.	added	signature	ref.	draw.

	TAMA PROJECT		designed for: A. Takamaru
	PAYLOAD 3		des. num.: payload_013
	MOUNTING'S TOOL		draw. PRGMEC 26-8-00
	Size A1		scale 1:2
			ref/issue dr. num.



1	1	AISI 304 L	1:2				
ref.	pieces	mat. and treatments	scale	ref.	pieces	mat. and treatments	scale

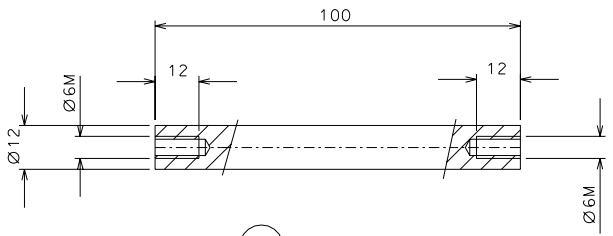
General machining tolerances UNI 5307-63								
Dimensions	< 6	>6-30	>30-120	>120-315	>315-1000	>1000-2000	>2000-4000	>4000
linear toll.	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2	± 3
angular toll.	± 1'	± 30'	± 20'	± 10' referred to the shortest side				

designed for	A. Takamar i
N.	payload.014
draw.	PROMEC 30-8-00
details from	000
replaces dr. Numb.	

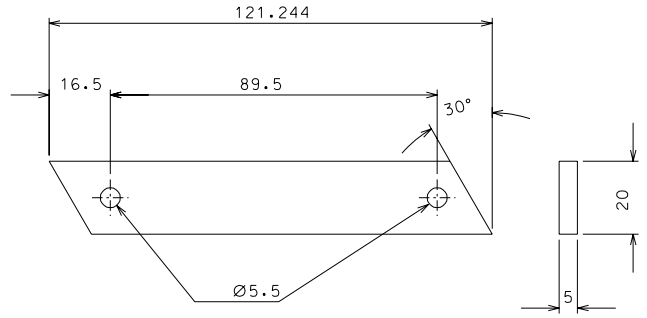
Size A2

ref.	note	date	signature
modifications			

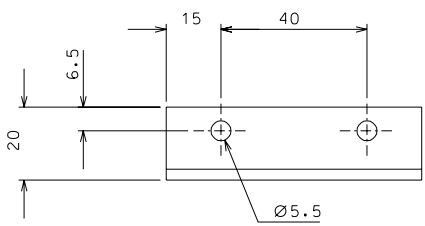
LIGO PROJECT
 PAYLOAD 3
 DETAILS



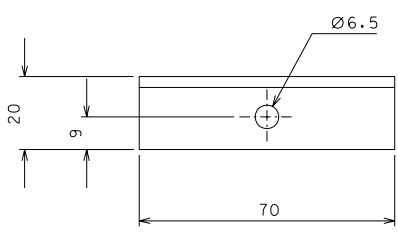
2



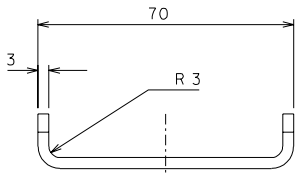
3 bend for assembly
(piegare durante il montaggio)



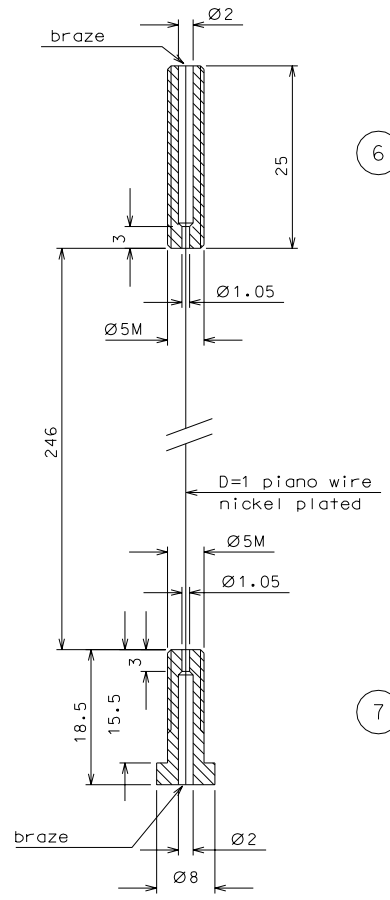
4



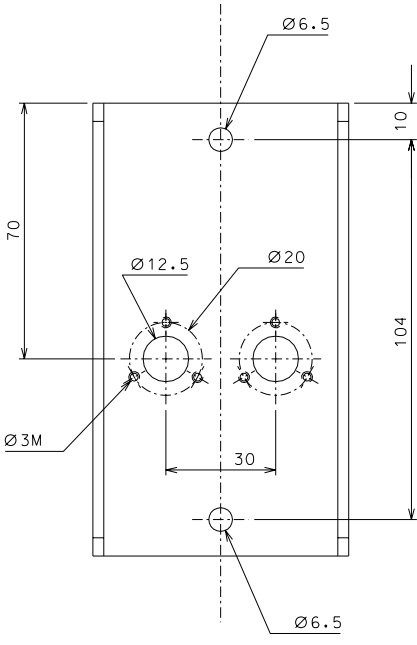
5



6



7



15

Size A2

ref.	note	date	signature
modifications			

6	6	bronze	2:1				
5	3	AISI 304	1:1				
4	3	"	1:1				
3	6	"	1:1				
2	3	"	1:1				
ref.	pieces	mat. and treatments	scale	7	6	bronze	2:1

General machining tolerances UNI 5307-63							
Dimensions	< 6	>=6-30	>=30-120	>=120-315	>=315-1000	>=1000-2000	>=2000-4000
linear toll.	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 3
angular toll.	± 1'	± 30'	± 20'	± 10' referred to the shortest side			

designed for A. Takamar i

TAMA PROJECT

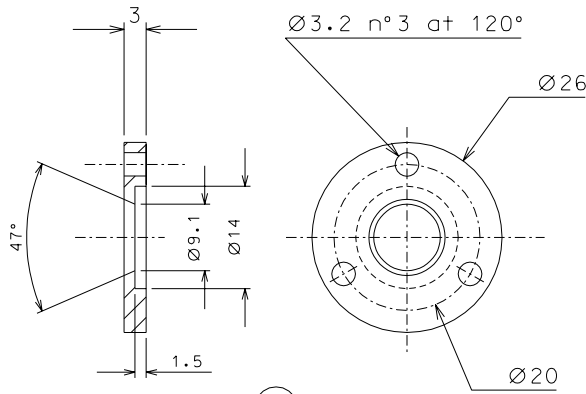
N. payload.015

draw. PROMEC 30-8-00

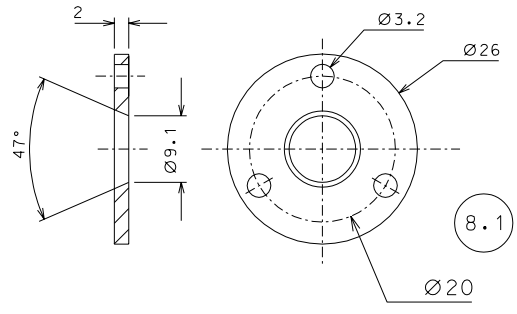
details from 000-001

replaces dr. Num.

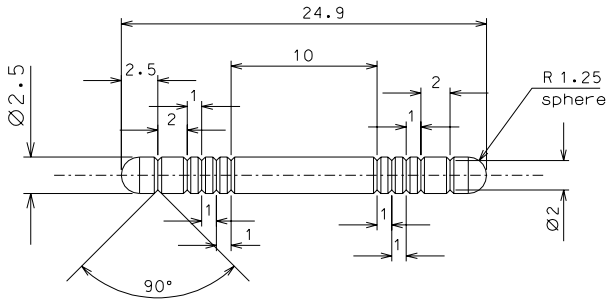
title
PAYLOAD 3
DETAILS



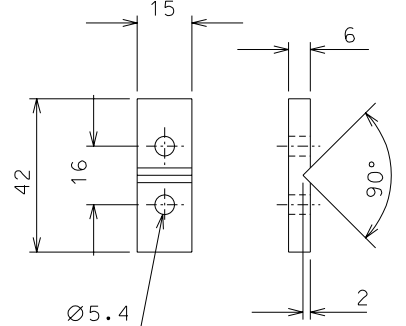
8



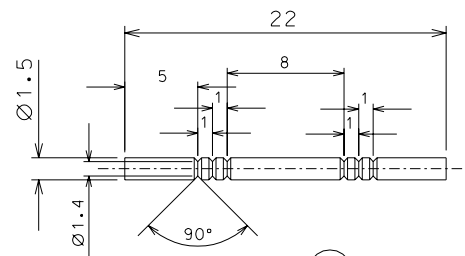
8.1



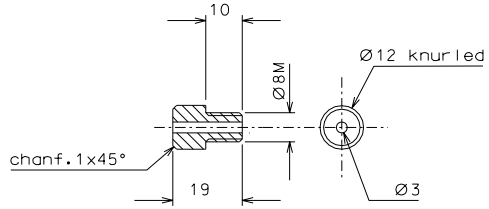
11



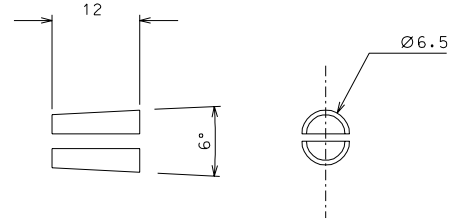
9



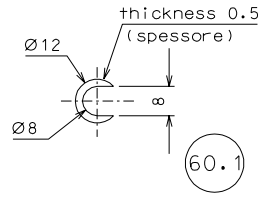
12



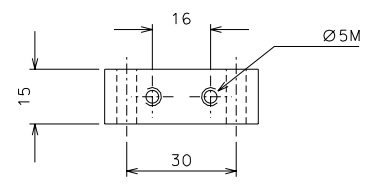
60



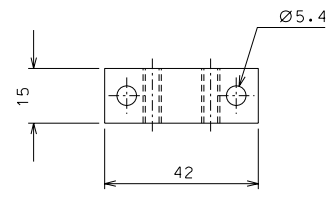
41



60.1



61

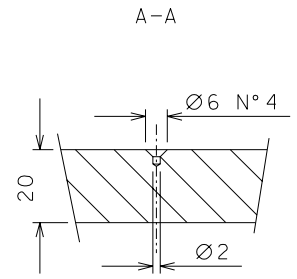
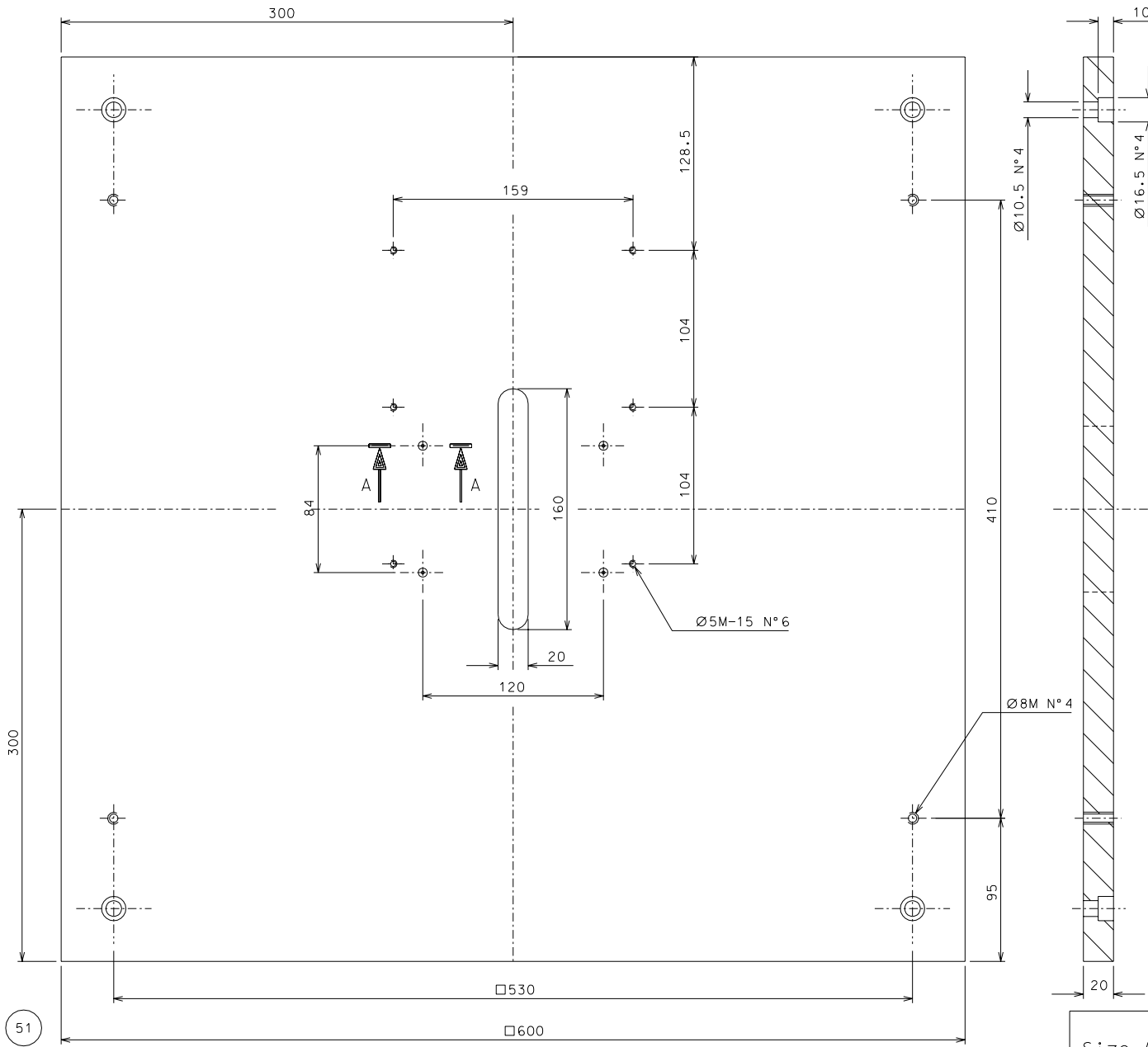


Side A2

ref.	note	date	signature
modified detail 8		28-12-00	
modifications			

12	2	AISI 304	4:1	61	4	AISI 304	1:1
11	4	"	4:1	60.1	10	"	1:1
9	4	"	1:1	60	4	"	1:1
8.1	12	"	2:1	41	16	peek	2:1
ref.	pieces	mat. and treatments	scale	ref.	pieces	mat. and treatments	scale

General machining tolerances UNI 5307-63								
Dimensions	< 6	6-30	30-120	120-315	315-1000	1000-2000	> 2000-4000	> 4000
linear Toli.	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2	± 3
angular Toli.	± 1	± 30'	± 20'	± 10' referred to the shortest side				
TAMA PROJECT				designed for A. Takamar i N. payload.016				
title PAYLOAD 3 DETAILS				draw. PROMEC 4-9-00 details from 000-001				
replaces dr. Numb.								



scala 1:1

ref.	note	date	signature
modifications			

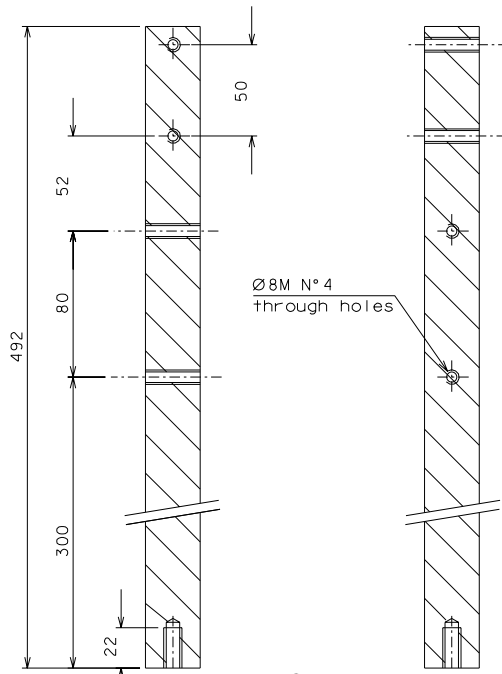
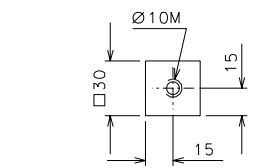
51	1	UNI9006/4	1:2				
ref.	pieces	mat. and treatments	scale	ref.	pieces	mat. and treatments	scale

General machining tolerances UNI 5307-63							
Dimensions	< 6	> 6-30	> 30-120	> 120-315	> 315-1000	> 1000-2000	> 2000-4000
Linear Toli.	± 0,1	± 0,2	± 0,3	± 0,5	± 0,8	± 1,2	± 2
angular Toli.	± 1'	± 30'	± 20'	± 10' referred to the shortest side			

	TAMA PROJECT		designed for A. Takamori N. payload.017
	title Payload 3 DETAILS		draw. PROMEC 11.09.00 details from 009 replaces dr. Num.

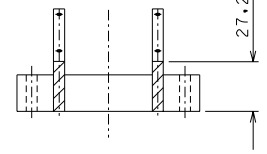
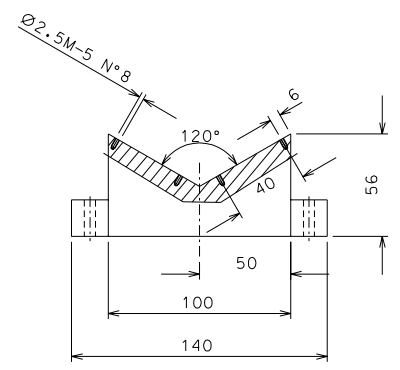
Size A2

51

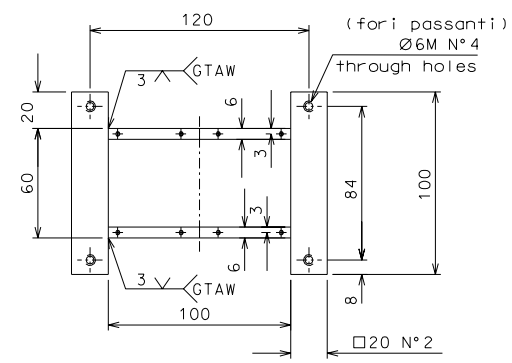
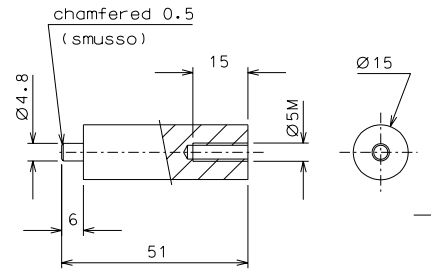


Ø8M N°4
through holes

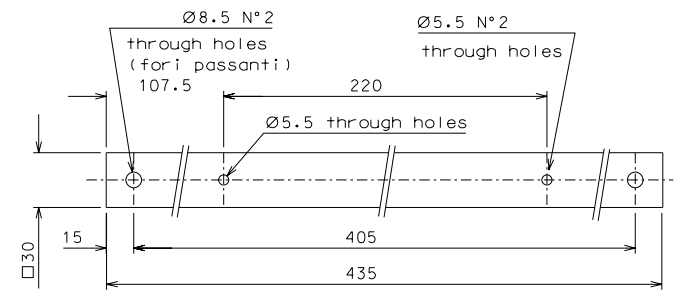
50



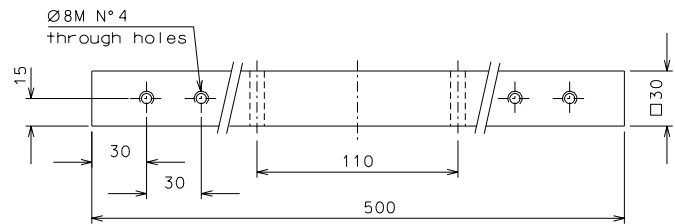
70



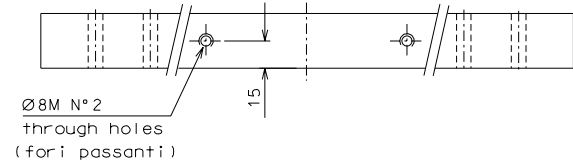
45



71



43



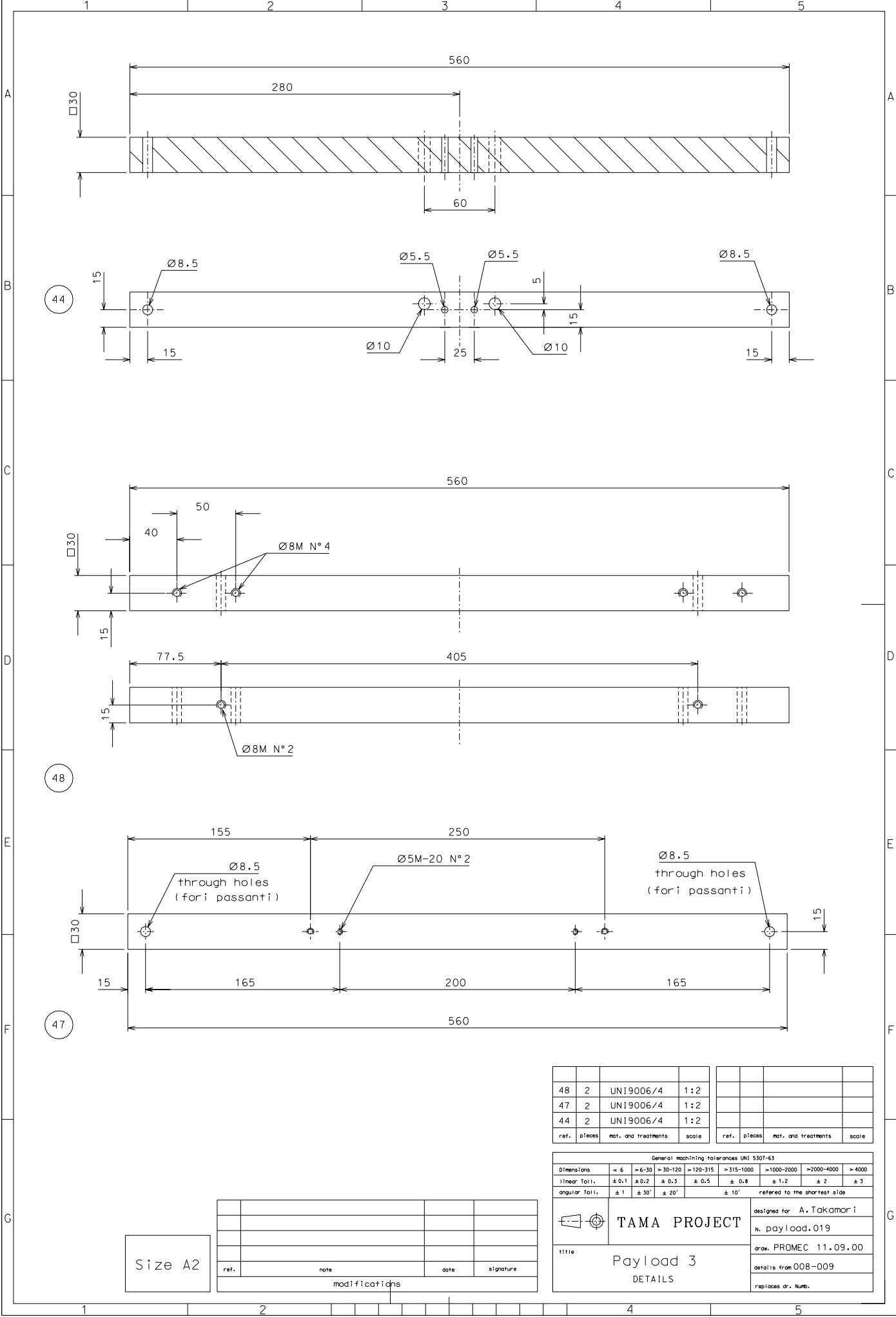
ref.	note	date	signature
modifications			

ref.	pieces	mat. and treatments	scale	ref.	pieces	mat. and treatments	scale
70	4	UNI 9006/4	1:1				
50	4	UNI 9006/4	1:2				
45	1	UNI 9006/4	1:2				
43	2	UNI 9006/4	1:2	71	2	UNI 9006/4	1:2

General machining tolerances UNI 5307-63							
Dimensions	< 6	6-30	30-120	120-315	315-1000	>1000-2000	>2000-4000
Linear Toli.	±0,1	±0,2	±0,3	±0,5	±0,8	±1,2	±2
angular Toli.	±1	±30'	±20'	±10' referred to the shortest side			

	TAMA PROJECT	designed for A. Takamor i
		N. payload.018
title Payload 3 DETAILS		draw. PROMEC 11.09.00
		details from 008-009
		replaces dr. Num.

Size A2



44

48

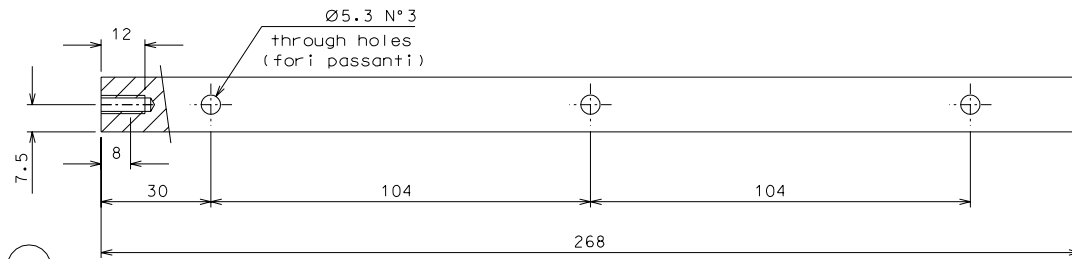
47

Size A2

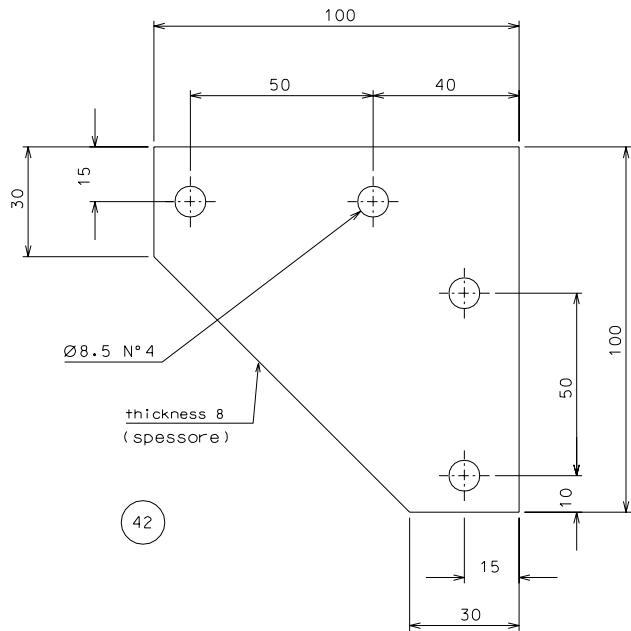
ref.	note	date	signature
modifications			

48	2	UNI9006/4	1:2				
47	2	UNI9006/4	1:2				
44	2	UNI9006/4	1:2				
ref.	pieces	mat. and treatments	scale	ref.	pieces	mat. and treatments	scale

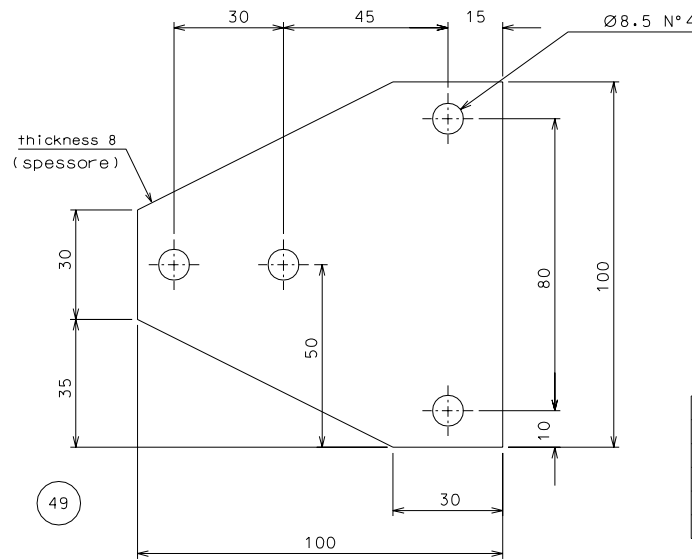
General machining tolerances UNI 5307-63								
Dimensions	< 6	>6-30	>30-120	>120-315	>315-1000	>1000-2000	>2000-4000	>4000
linear Toli.	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2	± 3
angular Toli.	± 1'	± 30'	± 20'	± 10'				
referred to the shortest side								
TAMA PROJECT				designed for A. Takamar i				
Payload 3				n. payload.019				
DETAILS				draw. PROMEC 11.09.00				
				details from 008-009				
				replaces dr. Numb.				



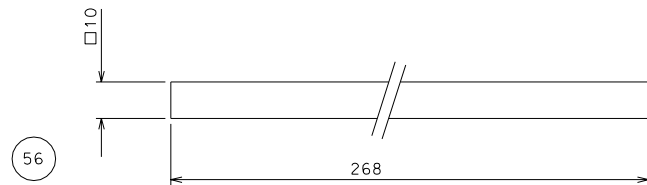
46



42



49



56

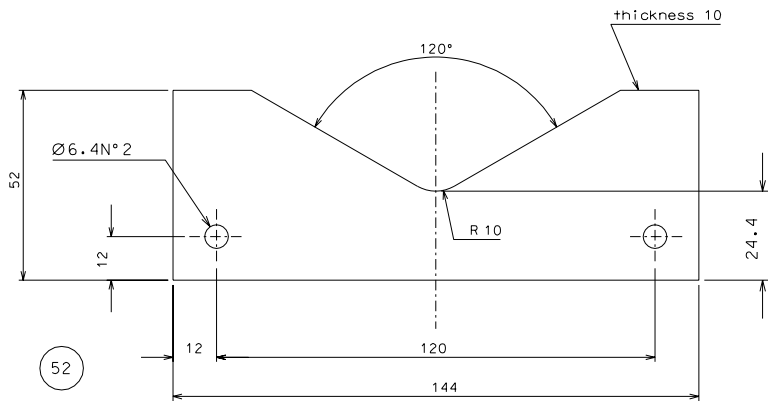
ref.	note	date	signature
modifications			

56	2	UNI9006/4	1:1				
49	4	UNI9006/4	1:1				
46	2	UNI9006/4	1:1				
42	4	UNI9006/4	1:1				
rif.	pezz?	mat. e trattamento	scale	rif.	pezz?	mat. e trattamento	scale

Tolleranze generali di lavorazione UNI 5307-63							
Dimensioni	< 6	>6-30	>30-120	>120-315	>315-1000	>1000-2000	>2000-4000
Toll. linear:	± 0,1	± 0,2	± 0,3	± 0,5	± 0,8	± 1,2	± 2
Toll. angolari:	± 1	± 30'	± 20'	± 10' riferito al lato più corto			

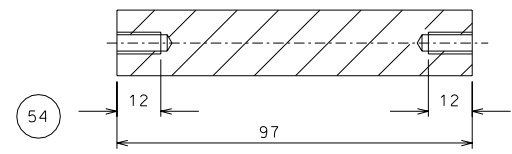
<p>TAMA PROJECT</p> <p>titolo Payload 3 DETAILS</p>	cliente A. Takamor i N. payload.020 dis. PROMEC 11.09.00 part. dal 008-009-011 sost. il N.
---	--

Size A2

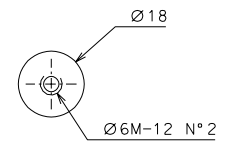


52

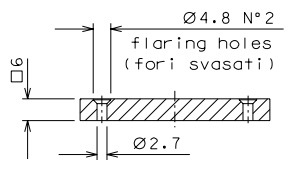
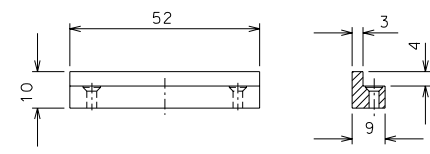
Note: Assembly parts 52, 54, 55 on reference flat surface.
(assemblare part. 52, 54, 55 con riferimento al piano inferiore)



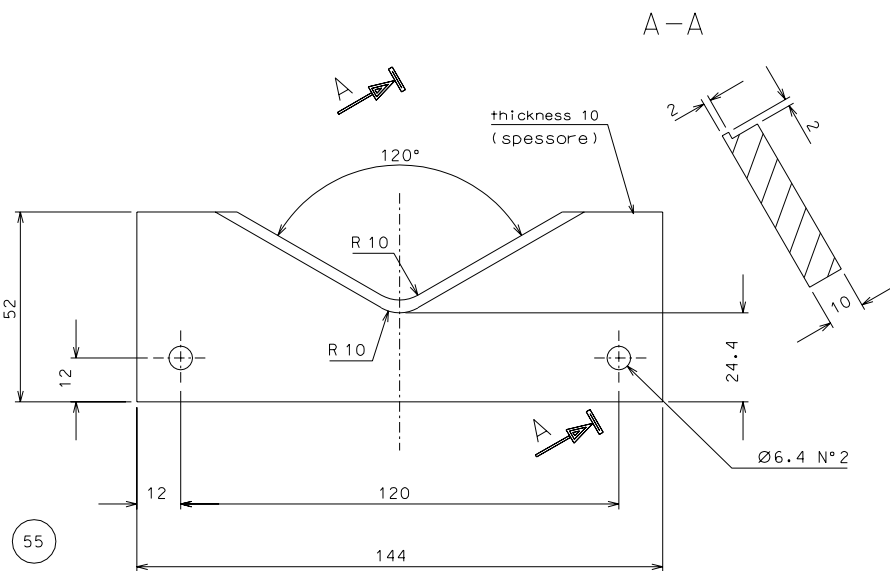
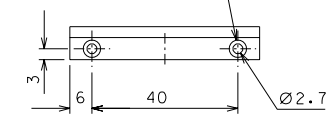
54



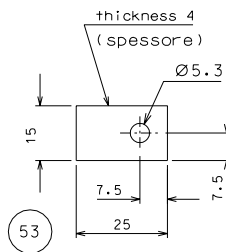
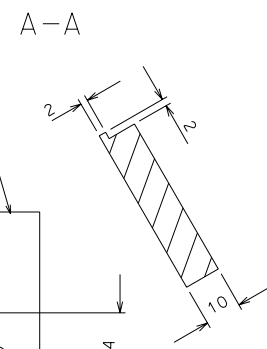
58



57



55



53

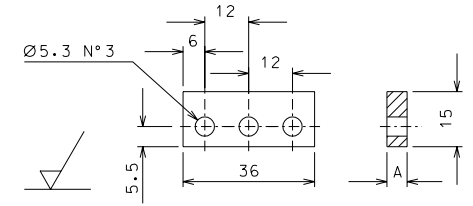
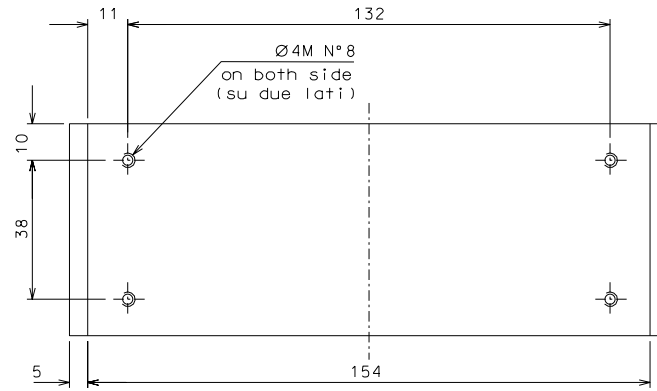
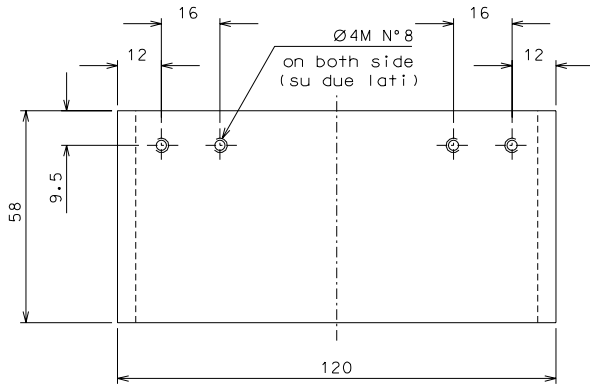
ref.	note	date	signature
modifications			

57	2	teflon	1:1				
55	1	UNI9006/4	1:1				
54	2	UNI9006/4	1:1				
53	2	UNI9006/4	1:1				
52	1	UNI9006/4	1:1	58	2	teflon	1:1
rif.	pezz?	mat. e trattamento	scale	rif.	pezz?	mat. e trattamento	scale

Tolleranze generali di lavorazione UNI 5307-63							
Dimensioni	< 6	>= 6-30	>= 30-120	>= 120-315	>= 315-1000	>= 1000-2000	>= 2000-4000
Toll. linear	± 0,1	± 0,2	± 0,3	± 0,5	± 0,8	± 1,2	± 3
Toll. angolari	± 1'	± 30'	± 20'	± 10' riferito al lato più corto			

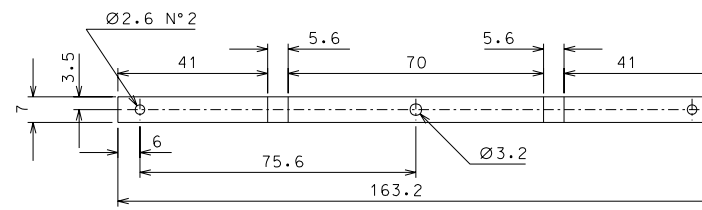
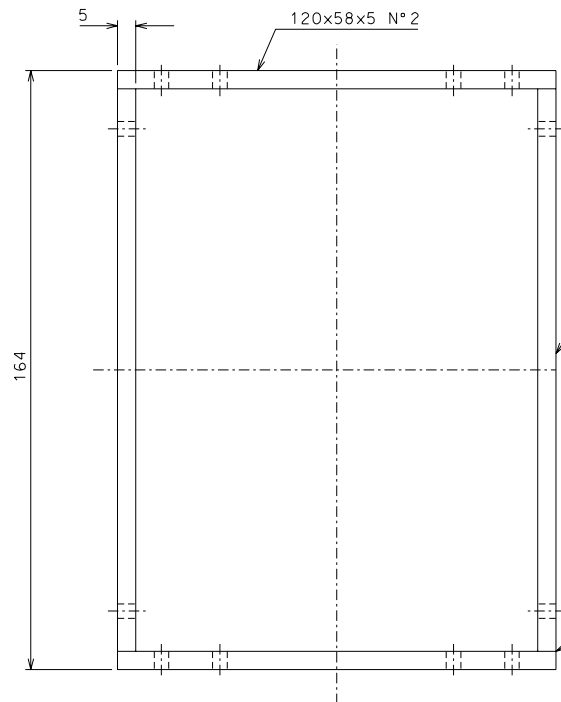
	TAMA PROJECT cliente A. Takamori N. payload.021	dis. PROMEC 11.09.00 part. dal 009-010-011 sost. 11 N.

Size A2

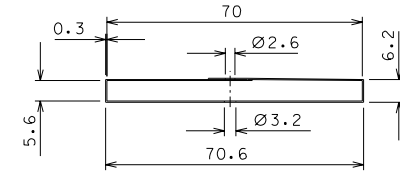


16

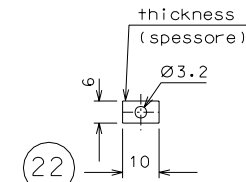
	A
16	1
16.1	2
16.2	3



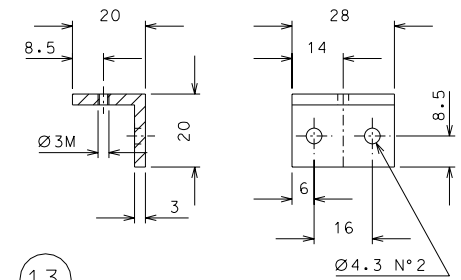
21



21.1



22



13

A	two type thickness	26-11-00	
ref.	note	date	signature
modifications			

16.1	8	AISI 304	1:1				
16	8	AISI 304	1:1	22	4	AISI 304	1:1
15	4+4	AISI 304	1:1	21.1	8	AISI 304	1:1
14	1	SUS 403	1:1	21	4	phosphor bronze	1:1
13	4	UNI9006/4	1:1	16.2	8	AISI 304	1:1
ref.	pezz?	mat. e trattamento	scale	ref.	pezz?	mat. e trattamento	scale

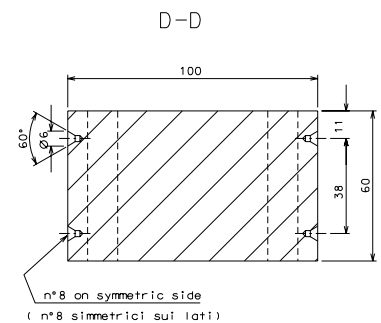
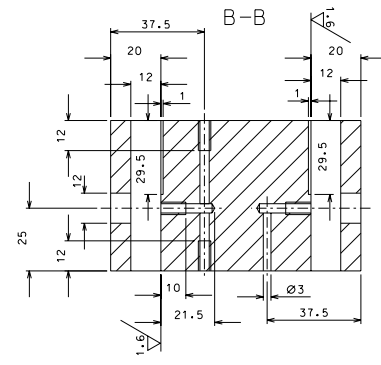
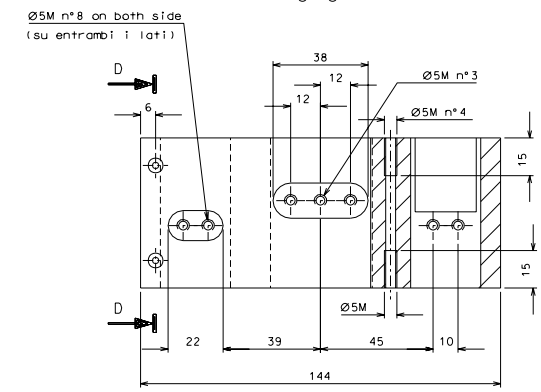
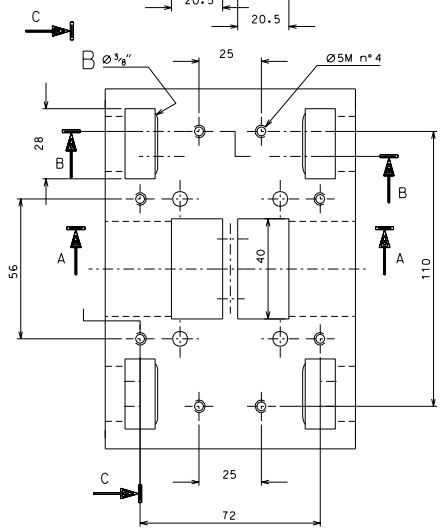
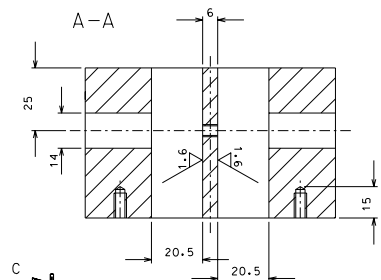
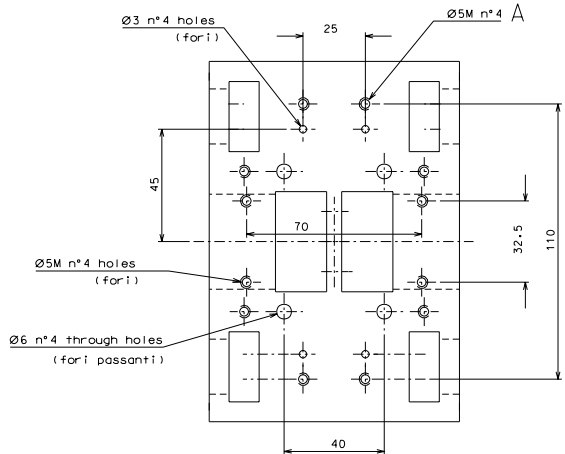
Tolleranze generali di lavorazione UNI 5307-63							
Dimensioni	< 6	> 6-30	> 30-120	> 120-315	> 315-1000	> 1000-2000	> 2000-4000
Toll. linear	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 3
Toll. angolari	± 1	± 30'	± 20'	± 10' riferito al lato più corto			

	TAMA PROJECT	cliente A. Takamor i
		N. payload.022
titolo Payload 3 DETAILS		dis. PROMEC 13.09.00 part. dal 000-001 sost. 11 N.

Size A2

14

15

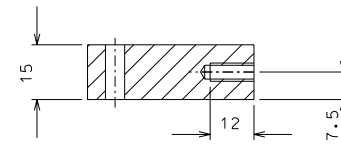
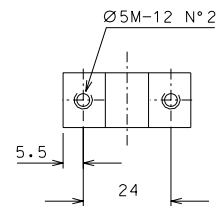
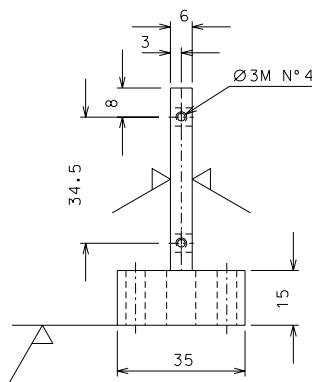
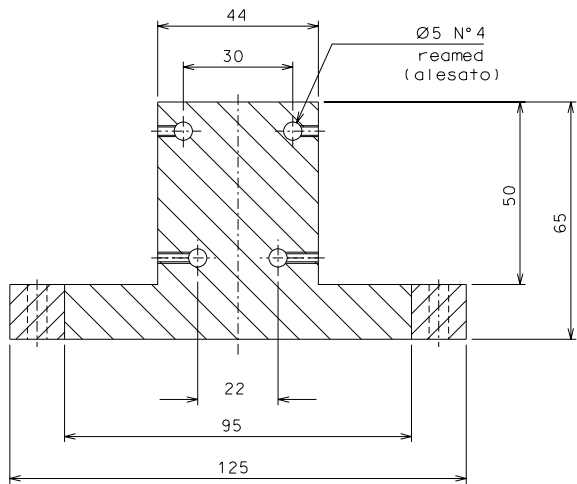


B	new milling		23-12-00		
A	new holes		26-11-00		
ref.	desc.	note	date	signature	
modifications					

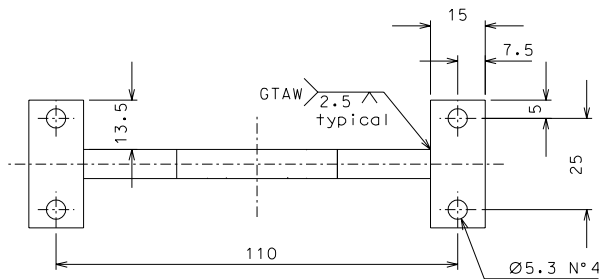
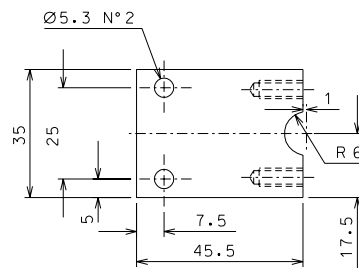
17	1	UNI 9006/4	1:1				
ref.	desc.	ref. a trattamento	scala	ref.	desc.	ref. a trattamento	scala

Tolleranze generali di lavorazione UNI 5307-83							
Dimensioni	< 4	4-30	30-100	100-315	315-1000	1000-4000	> 4000
Toll. linear:	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2
Toll. angolari	± 1'	± 30"	± 20"	± 10"	riferito al lato più ampio		
		TAMA PROJECT		sistema A. Takamor i w. payload.023			
Payload 3 DETAILS		parte. det. 001		parte. 11 N.			

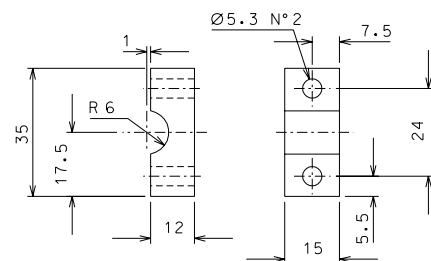
Size A1



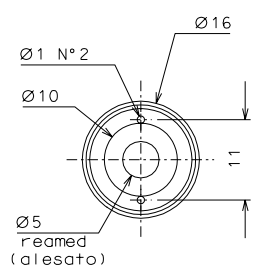
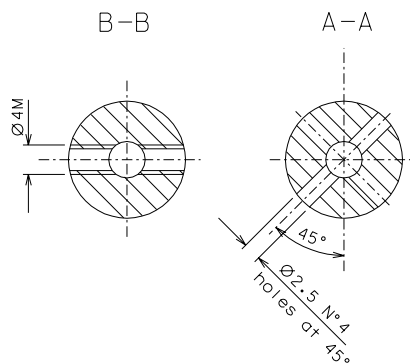
62



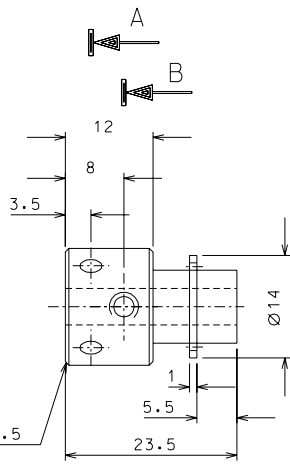
30



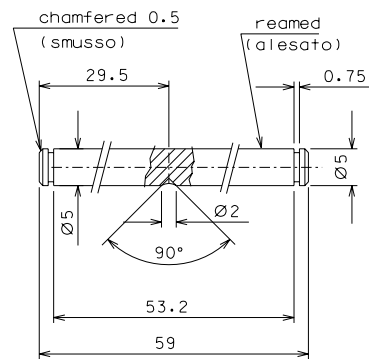
36



29



31



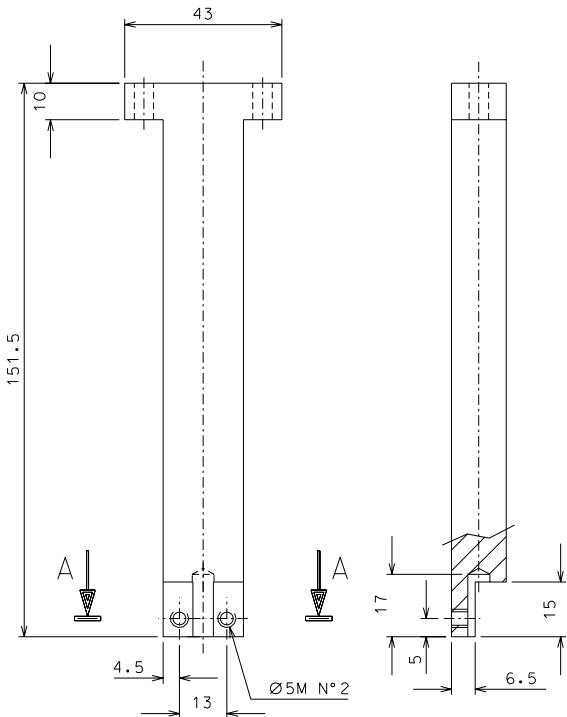
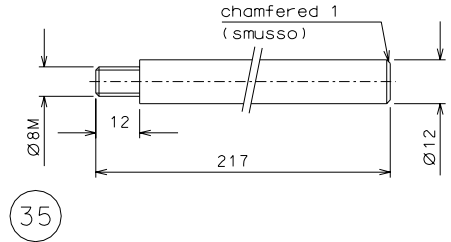
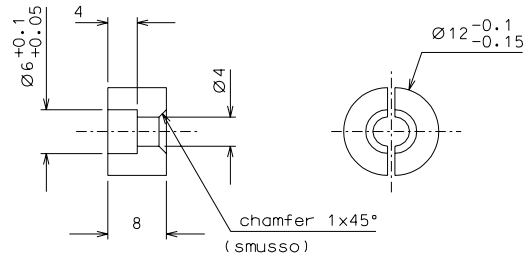
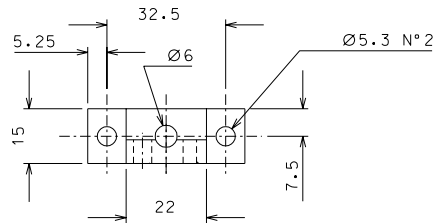
Size A2

ref.	note	date	signature
modifications			

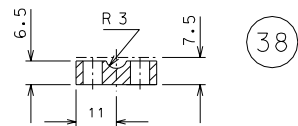
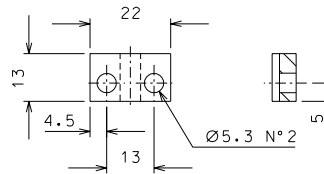
62	2	UNI9006/4	1:1				
36	2	UNI9006/4	1:1				
31	4	AIISI 304	2:1				
30	1	AIISI 304	1:1				
29	8	bronze	2:1				
rif.	pezz?	mat. e trattamento	scale	rif.	pezz?	mat. e trattamento	scale

Tolleranze generali di lavorazione UNI 5307-63							
Dimensioni	< 6	6-30	30-120	120-315	315-1000	>1000-2000	>2000-4000
Toll. linear	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2
Toll. angolari	± 1	± 30'	± 20'	± 10' riferito al lato più corto			

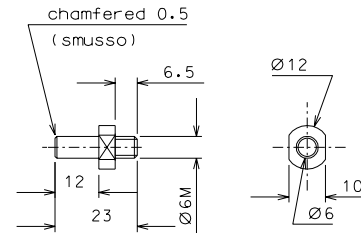
	TAMA PROJECT	cliente A. Takamar i
		N. payload.024
titolo Payload 3 DETAILS		dis. PROMEC 13.09.00 part. del 006-007 sost. 11 N.



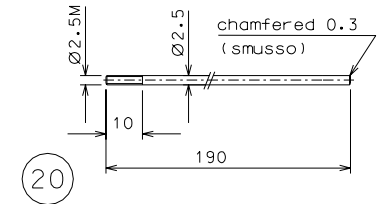
63 light nickel plate
(nichelatura leggera)



38



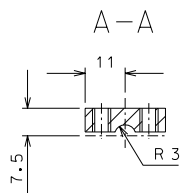
39



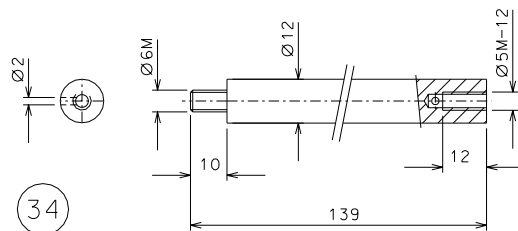
20

ref.	note	date	signature
modifications			

38	2	UNI 9006/4	1:1				
37	2	UNI 9006/4	1:1				
35	2	AISI 304	1:1				
34	4	AISI 304	1:1	63	1	maraging	2:1
20	4	AISI 304	1:1	39	2	AISI 304	1:1
ref.	pezz.	mat. e trattamento	scale	ref.	pezz.	mat. e trattamento	scale



37

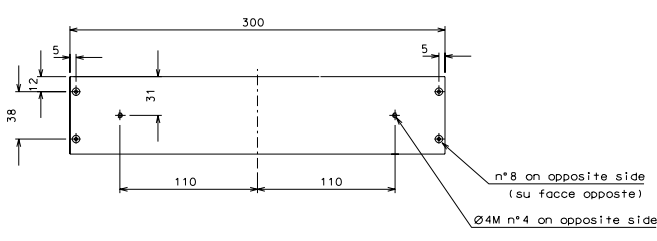
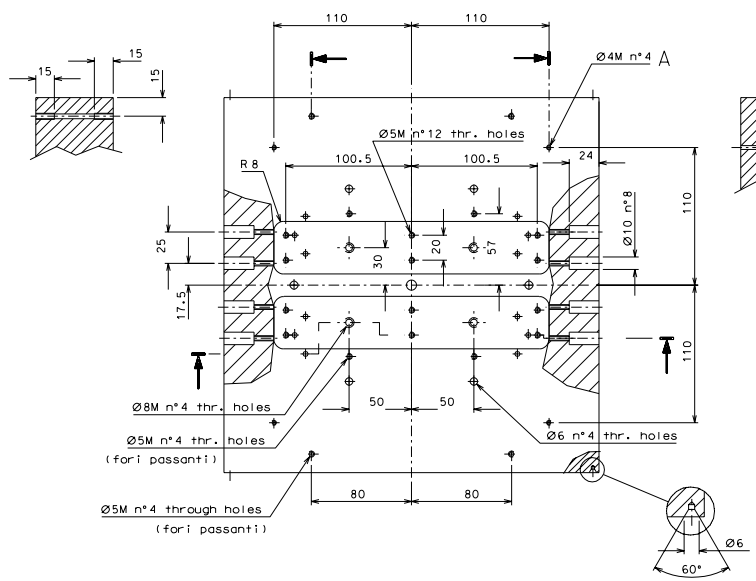
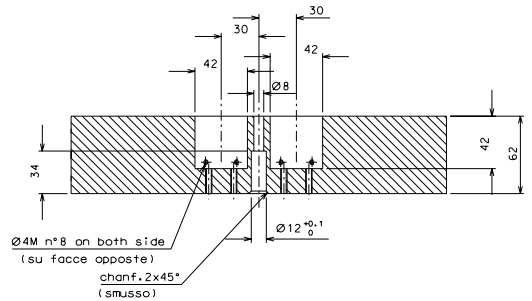
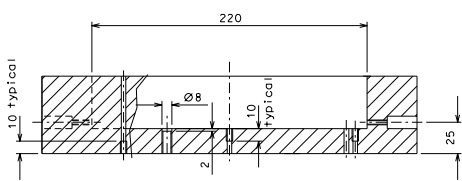
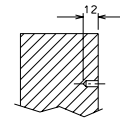
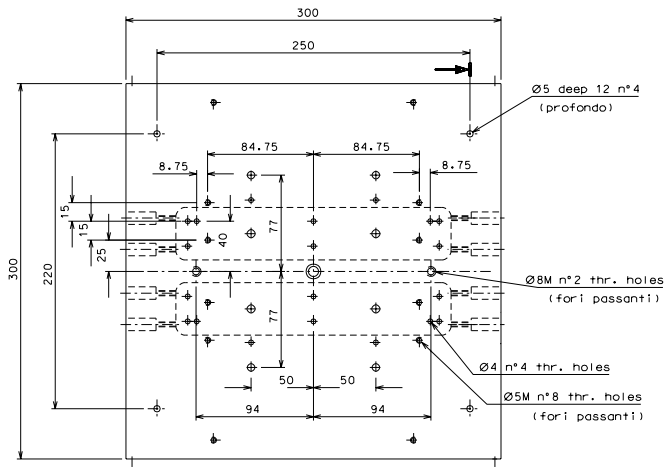


34

Size A2

Tolleranze generali di lavorazione UNI 5307-63							
Dimensioni	< 6	6-30	30-120	120-315	315-1000	>1000-2000	>2000-4000
Tol. linear	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2
Tol. angolari	± 1	± 30'	± 20'	± 10' riferito al lato più corto			

	TAMA PROJECT	cliente A. Takamar i
		N. payload.025
titolo Payload 3 DETAILS		dis. PROMEC 13.09.00
		part. dal 001-007
		scat. 11 N.

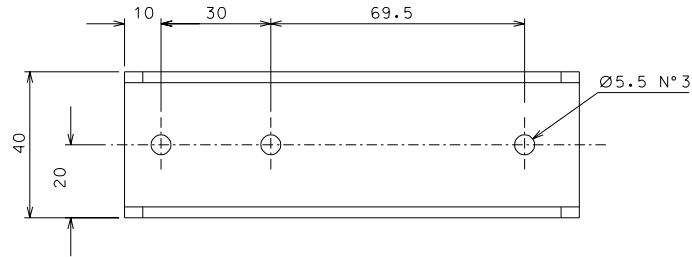
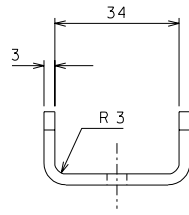
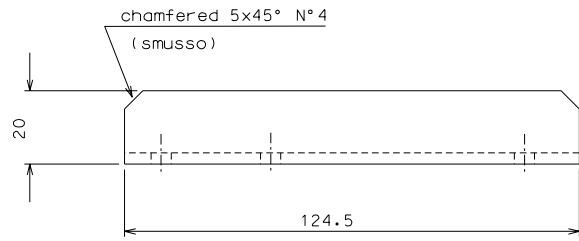


A	new dimension	26-11-00
ref.	note	date
modifications		
ref.	date	signature

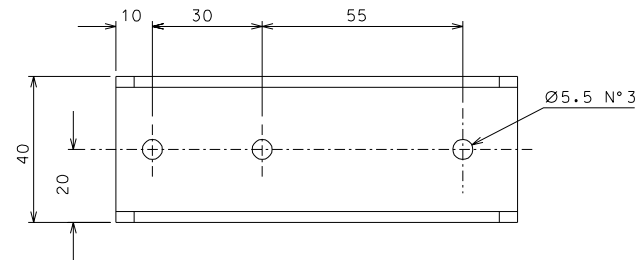
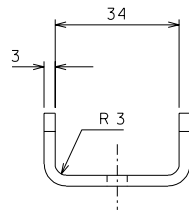
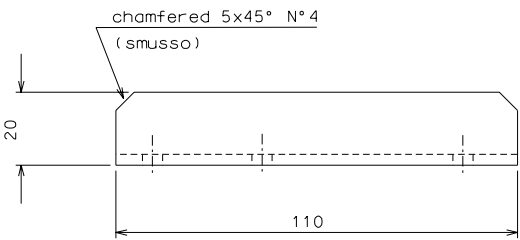
26	1	UNI 9006/4	1:2	ref.	date	signature
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General machining tolerances UNI 5107-63								
Dimensione	< 6	6-30	> 30-120	> 120-315	> 315-1000	> 1000-2000	> 2000-4000	> 4000
Linear tol.	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	±3
Angular tol.	±1'	±30'	±20'	±10'	referred to the nearest side			
							designed for A. Takamar i n. payload.027	
Title PAYLOAD 3 DETAIL							draw. PRGMEC 9-9-00 details from 005 ref. case dr. built.	

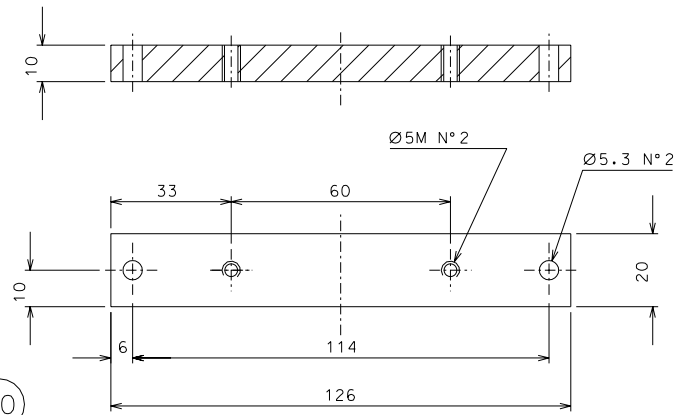
Size A1



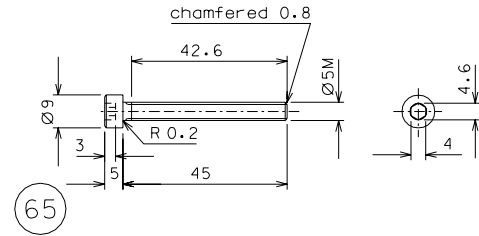
32



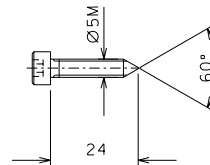
33



40



65



66

ref.	note	date	signature
modifications			

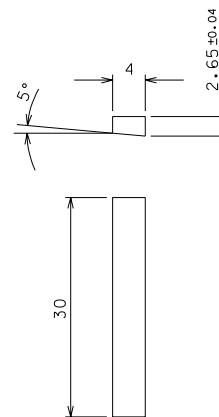
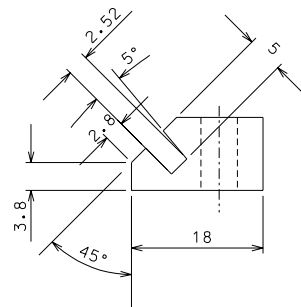
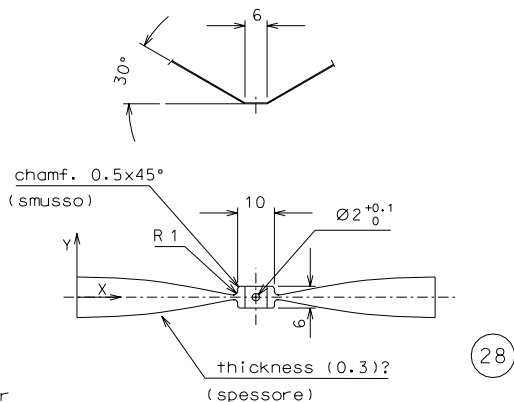
rif.	pezz?	mat. e trattamento	scale	rif.	pezz?	mat. e trattamento	scale
66	16	stainless steel	1:1				
65	4	stainless steel	1:1				
40	2	UNI 9006/4	1:1				
33	2	AISI 304	1:1				
32	2	AISI 304	1:1				

Tolleranze generali di lavorazione UNI 5307-63							
Dimensioni	< 6	> 6-30	> 30-120	> 120-315	> 315-1000	> 1000-2000	> 2000-4000
Toll. linear:	± 0,1	± 0,2	± 0,3	± 0,5	± 0,8	± 1,2	± 2
Toll. angolari:	± 1'	± 30'	± 20'	± 10' riferito al lato più corto			

	TAMA PROJECT		cliente A. Takamori
			N. payload.030
			dis. PROMEC 18.09.00
			part. dal 001-004
titolo		sost. 11 N.	
Payload 3 DETAILS			

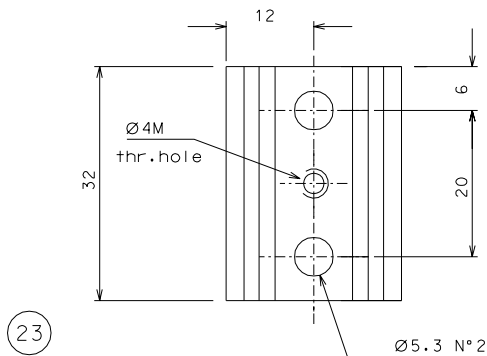
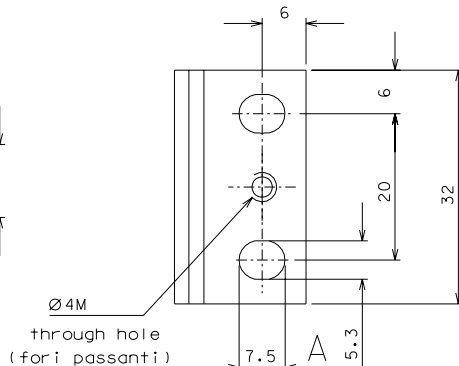
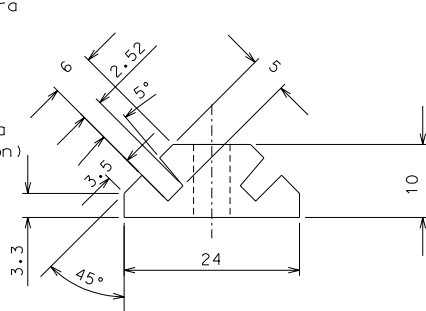
Size A2

X	Y
0	5.38
10.7	5.25
19.03	4.66
23.2	4.125
31.53	2.78
41.94	.75
42.75	.65
43.07	.65
49	0 center



Surface treatment: Electropolishing
and light nickel-plating
(Trattamento superfice: Elettropulitura
e nichelatura leggera)

Thermal treatment: Baking at 435° for
100 hours in argon atmosphere
(Trattamento termico: Riscaldamento a
435° per 100 ore in atmosfera di argon)



(64) ground surface
(lati rettificati)

ref.	note	date	signature
A	modification hole	26-11-00	
modifications			

64	12	AISI 304	2:1				
28	4	maraging	1:1				
27	4	AISI 304	2:1				
23	2	AISI 304	2:1				
ref.	pezz?	mat. e trattamento	scale	ref.	pezz?	mat. e trattamento	scale

Tolleranze generali di lavorazione UNI 5307-63							
Dimensioni	< 6	> 6-30	> 30-120	> 120-315	> 315-1000	> 1000-2000	> 2000-4000
Toll. linear	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2
Toll. angolari	± 1'	± 30'	± 20'	± 10' riferito al lato più corto			

		cliente A. Takamori
TAMA PROJECT		N. payload.031
titolo Payload 3 DETAILS		dis. PROMEC 11.09.00
		part. dal 000-005
		scat. 11 N.

Size A2

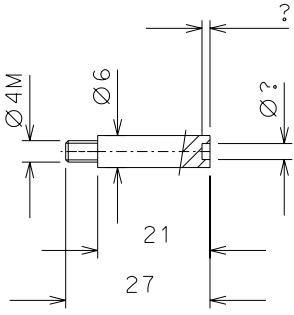
(23)

(27)

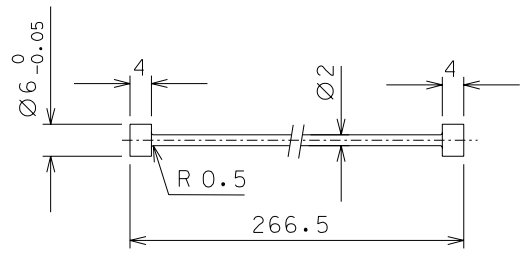
(28)

(64)

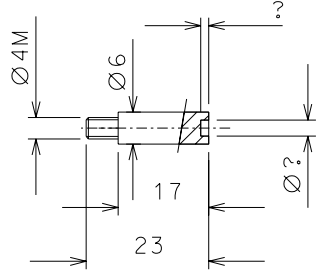
69



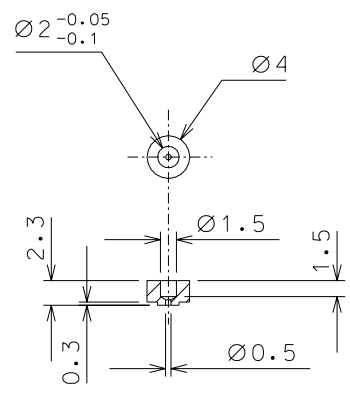
67



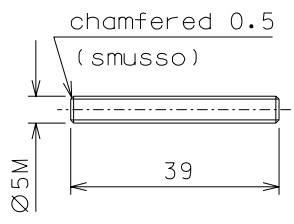
68



73



72



ref.	note	date	signature
modifications			

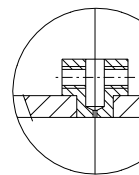
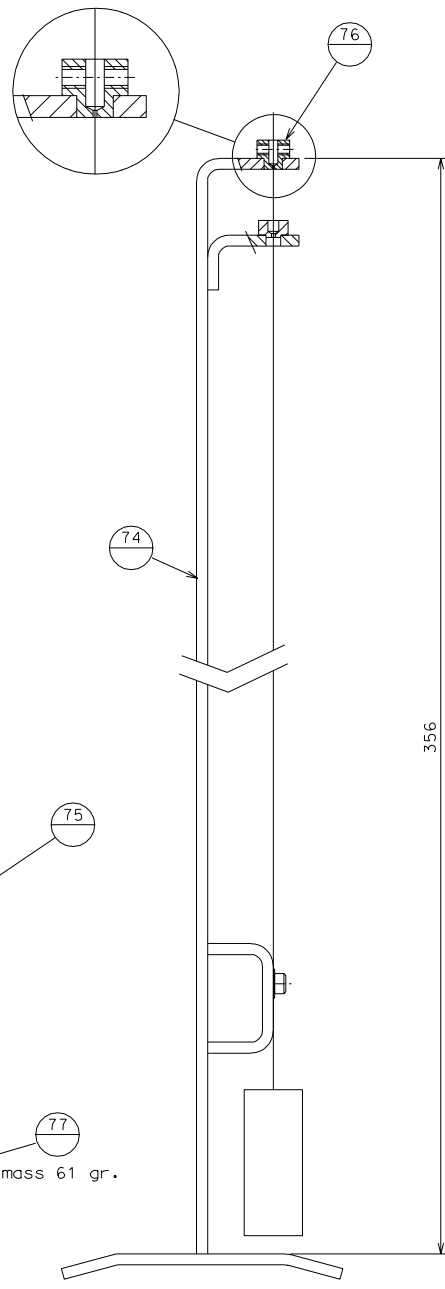
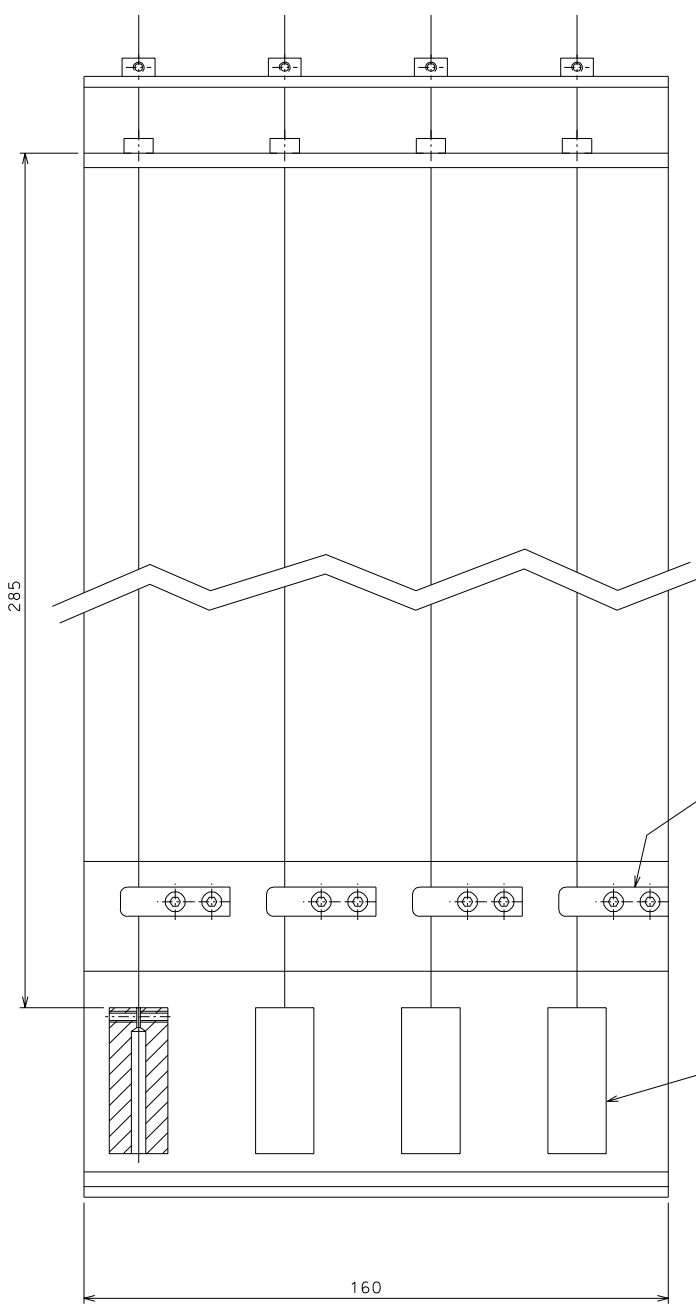
73	4	bronze	1:1				
72	3	stainless steel	1:1				
69	4	peek	1:1				
68	4	peek	1:1				
67	1	maraging	1:1				
rif.	pezzi	mat. e trattamento	scale	rif.	pezzi	mat. e trattamento	scale

Tolleranze generali di lavorazione UNI 5307-63								
Dimensioni	< 6	> 6-30	> 30-120	> 120-315	> 315-1000	> 1000-2000	> 2000-4000	> 4000
Toll. lineari	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2	± 3
Toll. angolari	± 1	± 30'	± 20'	± 10'				riferito al lato piu corto

Size A3

titolo	TAMA PROJECT	cliente	A. Takamori
		N.	payload.032
		dis.	PRMEC 18.09.00
		part. dal	000-001-005
		sost.	il N.

Payload 3
DETAILS



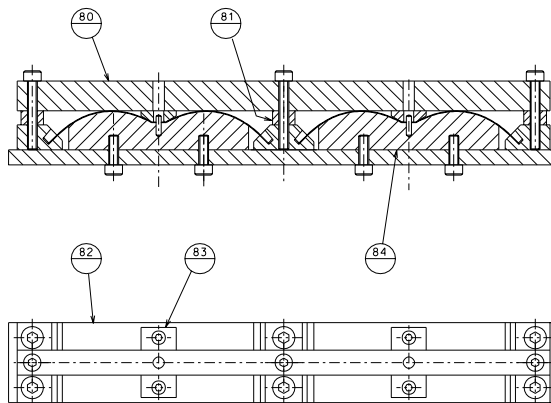
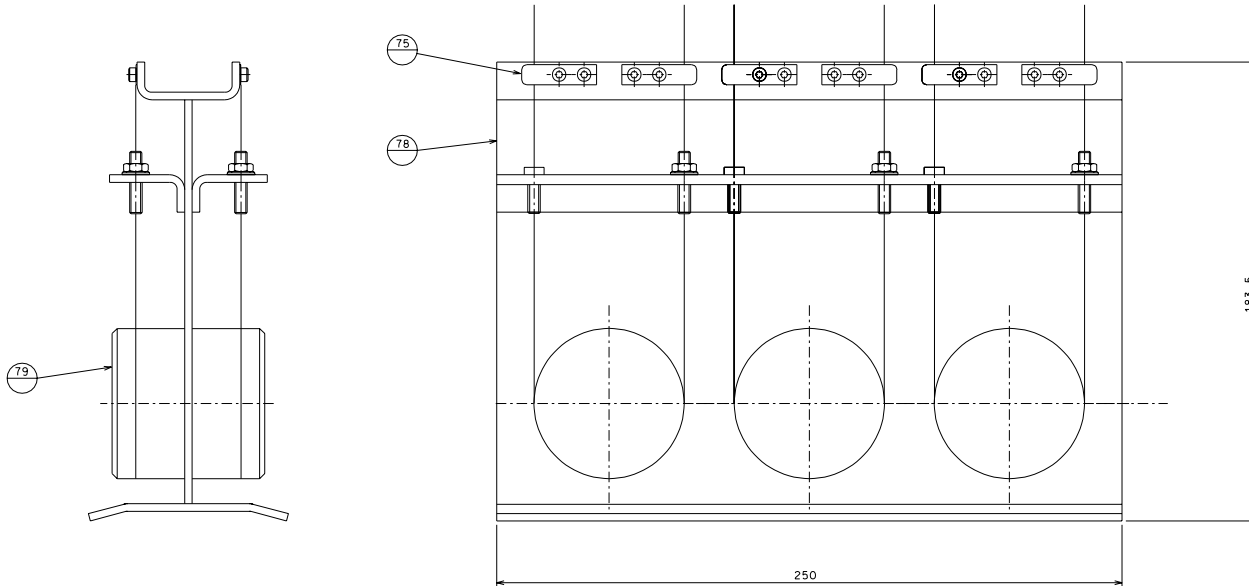
Note: to use wire d=0.4

ref.	note	date	signature
modifications			

77	035	dummy mass			
76	035	clamp wires			
75	035	fix wires			
74	038	wires support			
ref.	draw.	added legend	ref.	draw.	added legend

	TAMA PROJECT	designed for A. Takamar i
		ass. numb. payload3.033
	title	draw. PROMEC 7-10-00
	PAYLOAD 3 BRAZING JIG	scale 1:1
		replaces dr. numb.

Size A2

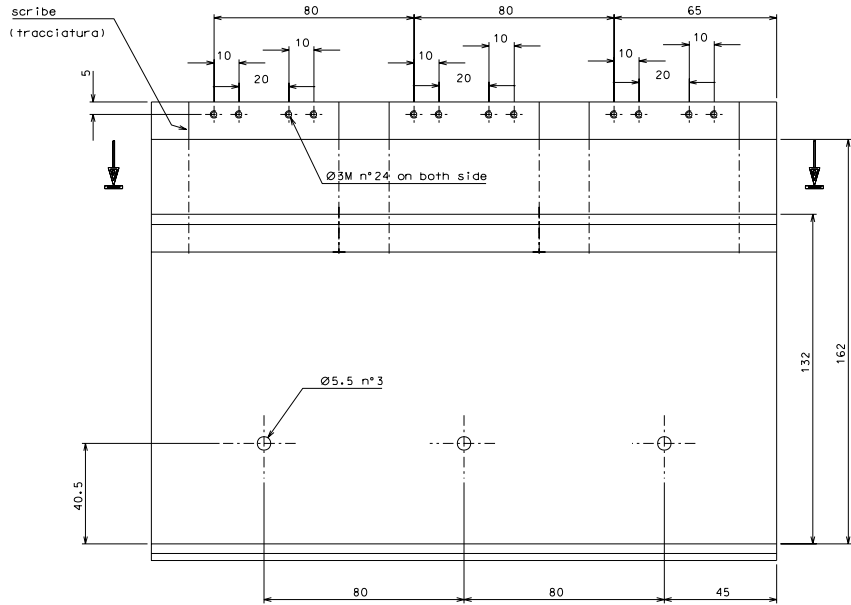


ref.	modified details 80, 82, 83	date	6-01-01
	note		signature
modifications			

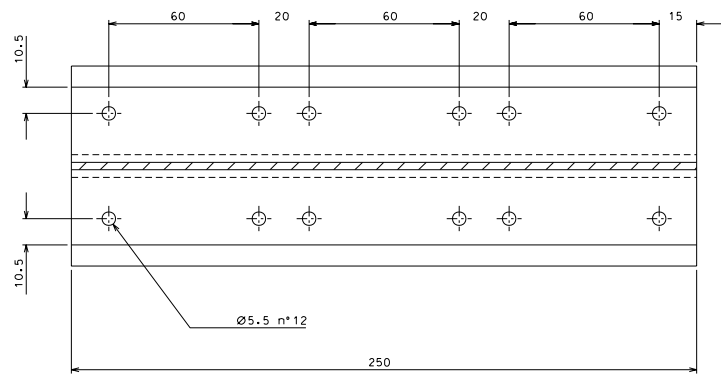
82	036				
81	036				
80	036				
79	035				
78	035		84	036	
75	033		83	036	
ref.	draw.	date	checked	signed	
ref.	draw.	date	checked	signed	

	TAMA PROJECT	designed for: A. Takamaru i
		des. num.: payload3.034
title: PAYLOAD 3 TOOLS ASSEMBLY		draw. PROMEC 10-10-00
scale: 1:1		ref. / draw. / date / checked / signed

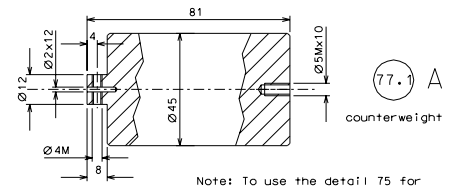
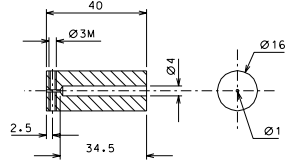
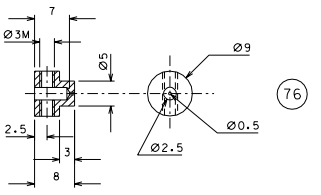
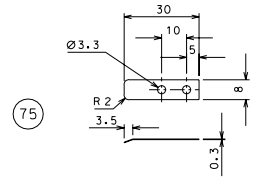
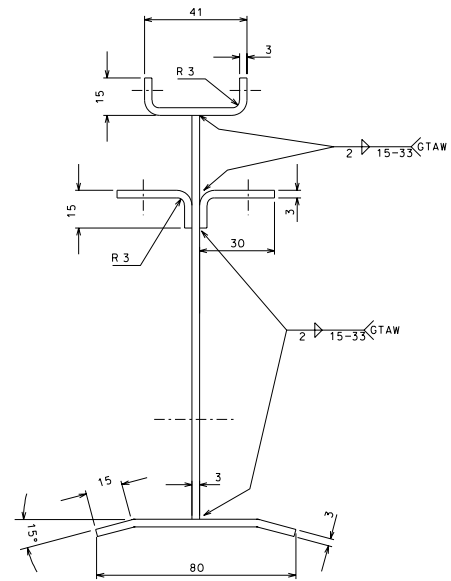
Size A1



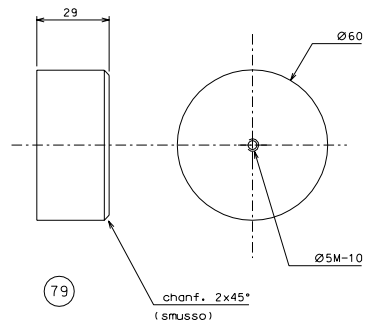
78



79



Note: To use the detail 75 for design 033 and 034
(Usare il part. 75 per il dis. 033 e 034)



79

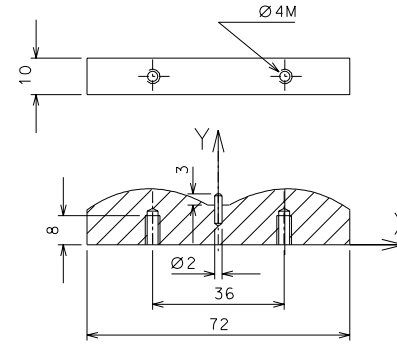
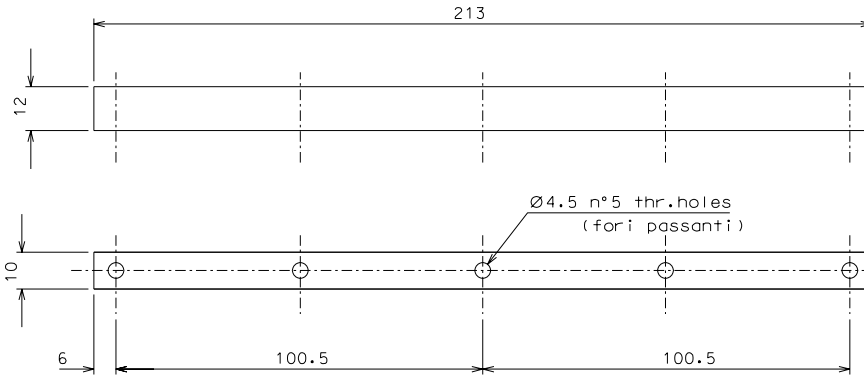
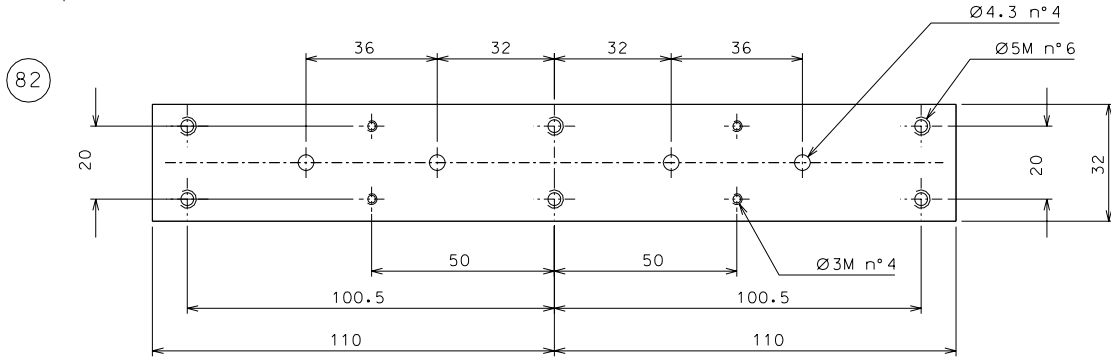
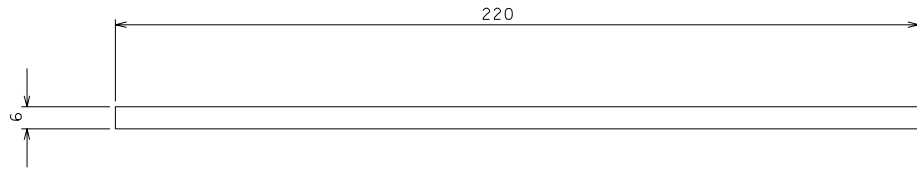
chanf. 2x45°
(smusso)

A counterweight for blades				26-10-00
ref.	note	date	signature	
modifications				

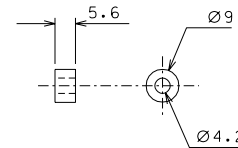
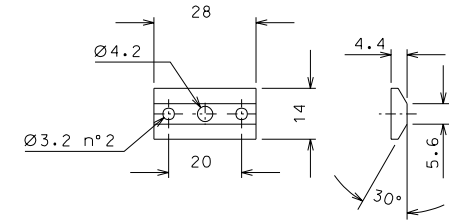
79	6	AISI 304	1:1				
78	1	AISI 304 L	1:1				
77	4	AISI 304	1:1				
76	4	brass	2:1				
75	20	Steel	1:1	77.1	4	brass	1:1
ref.	piece	mat. and treatments	scale	ref.	piece	mat. and treatments	scale

General machining tolerances UNI 5007-63							
dimensions	< 4	4-30	30-120	> 120-315	> 315-1000	> 1000-5000	> 5000
linear fall.	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2
angular fall.	± 1'	± 30'	± 20'	± 10'	related to the shortest side		
TAMA PROJECT							
designed for R. De Salvo				w. payload3-035			
area. PROMEC 12-10-00				details from 033-034			
replaces or. Num.							

Size A1



X	Y
0	10.9
3.2	10.9
8.2	13.3
13.2	14.74
18.2	15.31
23.2	14.99
28.2	13.7
33.2	11.36
36	9.53



ref.	note	date	signature
modified details 80, 82, 83		6-01-01	
modifications			

ref.	pieces	mat. and treatments	scale	ref.	pieces	mat. and treatments	scale
84	2	UNI 9006/4	1:1				
83	4	stainless steel	1:1				
82	1	UNI 9006/4	1:1				
81	3	UNI 9006/4	1:1				
80	1	UNI 9006/4	1:1				

General machining tolerances UNI 5307-63								
Dimensions	< 6	6-30	30-120	120-315	315-1000	>1000-2000	>2000-4000	> 4000
Linear Toli.	± 0,1	± 0,2	± 0,3	± 0,5	± 0,8	± 1,2	± 2	± 3
angular Toli.	± 1'	± 30'	± 20'	± 10' referred to the shortest side				

TAMA PROJECT		designed for
		A. Takamor i
title TOOLS DETAILS		n. payload3.036
		draw. PROMEC 12-10-00
		details from 034
		replaces dr. Numb.

Size A2

1 2 3 4 5 6

A

B

C

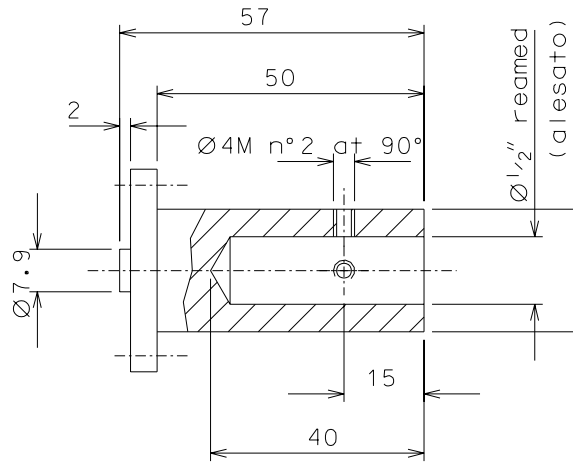
D

A

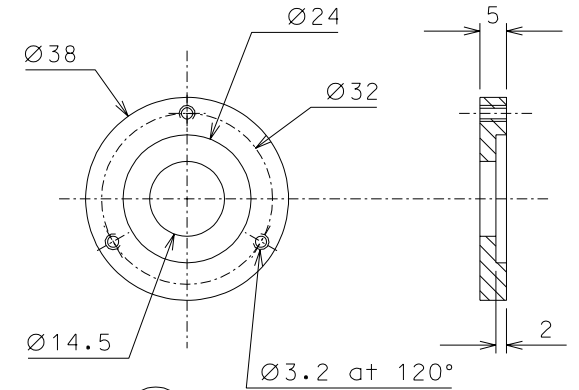
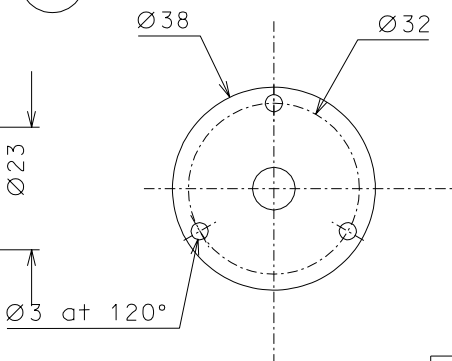
B

C

D

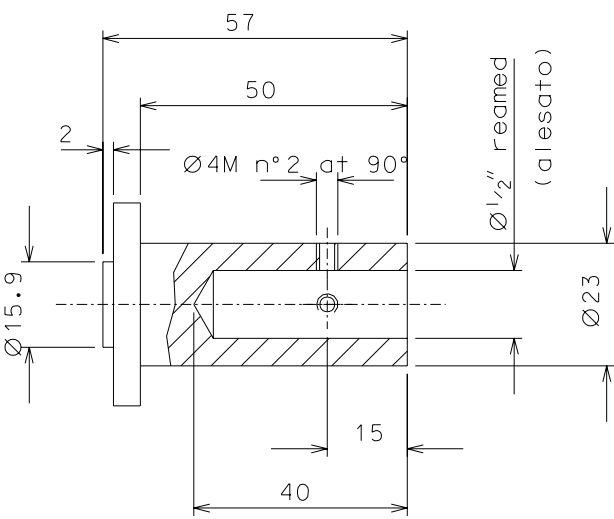


86

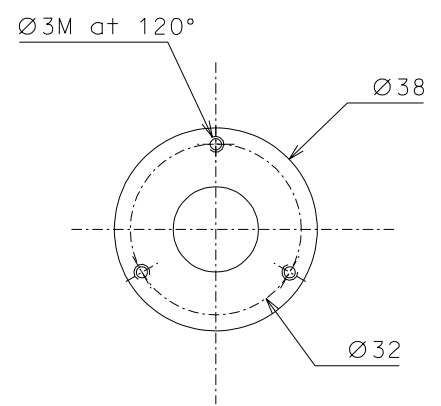


87

ref.	note	date	signature
modifications			



88



ref.	pieces	mat. and treatments	scale	ref.	pieces	mat. and treatments	scale
88	1	UNI 9006/4	1:1				
87	1	UNI 9006/4	1:1				
86	1	UNI 9006/4	1:1				

General machining tolerances UNI 5307-63

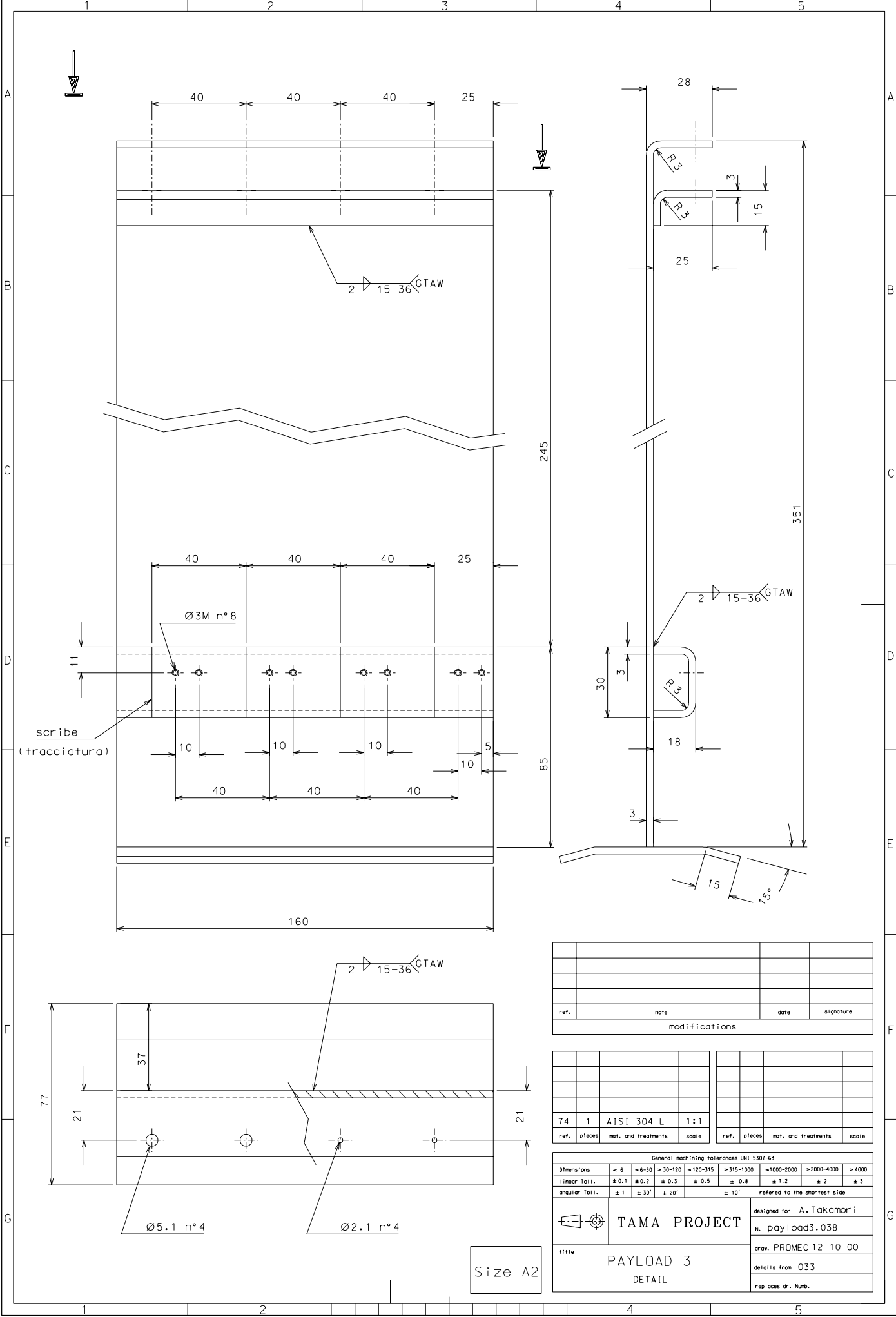
Dimensions	< 6	>6-30	>30-120	>120-315	>315-1000	>1000-2000	>2000-4000	> 4000
linear Toll.	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2	± 3
angular Toll.	± 1	± 30'	± 20'	± 10' referred to the shortest side				

<p>TAMA PROJECT</p>	designed for A. Takamori
	n. payload3.037
	draw. PROMEC12-10-00
	replaces dr. Numb.

title **PAYLOAD 3 TOOLS**

Size A3

1 2 3 4 5 6



ref.	note	date	signature
modifications			

74	1	AISI 304 L	1:1	ref.	pieces	mat. and treatments	scale
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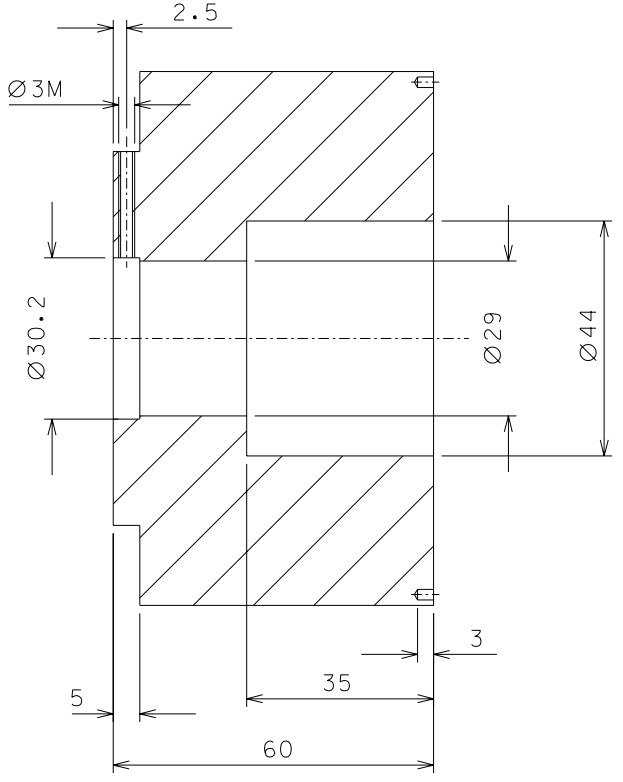
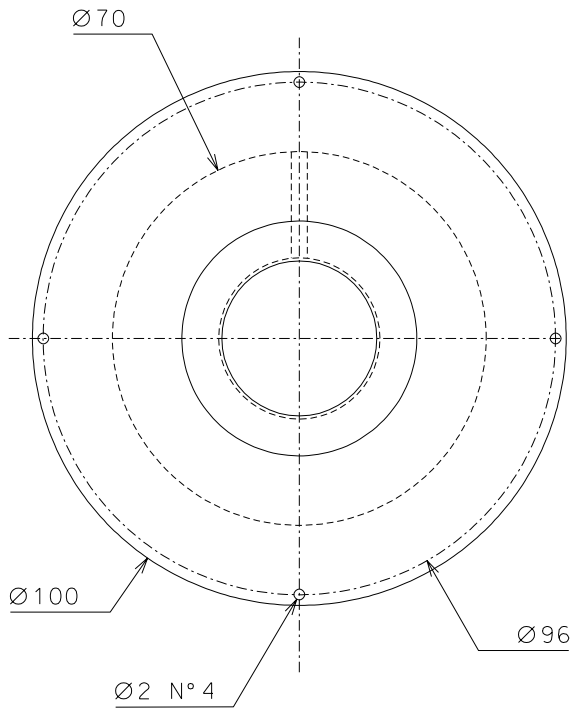
General machining tolerances UNI 5307-63

Dimensions	< 6	> 6-30	> 30-120	> 120-315	> 315-1000	> 1000-2000	> 2000-4000	> 4000
linear Toli.	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2	± 3
angular Toli.	$\pm 1'$	$\pm 30''$	$\pm 20''$	$\pm 10'$ referred to the shortest side				

designed for: A. Takamar i
 N. payload3.038
 draw: PROMEC 12-10-00
 details from: 033
 replaces dr. Num.

TAMA PROJECT
 PAYLOAD 3
 DETAIL

Size A2



ref.	note	date	signature
modifications			

85	1	UNI 9006/4	1:1				
ref.	pieces	mat. and treatments	scale	ref.	pieces	mat. and treatments	scale

General machining tolerances UNI 5307-63								
Dimensions	< 6	> 6-30	> 30-120	> 120-315	> 315-1000	> 1000-2000	> 2000-4000	> 4000
linear Toll.	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2	± 3
angular Toll.	± 1	± 30'	± 20'	± 10'				referred to the shortest side

Size A3

	TAMA PROJECT	designed for A. Takamori
		N. payload3.039
		draw. PROMEC 12-10-00
		details from 001
title PAYLOAD 3 DUMMY MIRROR		replaces dr. Numb.