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# Instruction Manual



OIL DAMPED ONE-POINT SUPPORT  
STEREO TONE ARM

***AC-3000***SILVER, ***AC-3000***BLACK & ***AC-3000***MC

***AC-4000***SILVER, ***AC-4000***BLACK & ***AC-4000***MC



— 取扱説明書 —

## First of All

### Greeting

Thank you so much for buying Audio Craft,AC3000,AC4000.

Our company continued produce Stereo Tone Arm for Oil Damped one-point support type since establishment company.

High Quality series for this type Tone Arm bore fruit by long term research and deep experience.

This booklet is covered instruction manual for rightly usage.

Please read this instruction manual when before using.

Note: This instruction manual shown the illustration for AC3000 silver, black. But AC3000MC,4000MC not different in basically except special portion.

## When using Tone arm

This Tone Arm equipped suspension for One point support type in based mechanism, and Oil damped mechanism of continuous variable system for damping with oil tank in center axis of rotation, in addition pipe arm exchange system for mass,type,length, this tone arm have a most advanced, leading edge technology in future Tone arm.

In existing handling feeling for Tone arm, these complicated mechanism is awkward to use, too difficult to use, but you should master outline for basic mechanism and point of usability, you should know it is easy and free to turning the cartridge, you may once again listen the good sound for your familiar disc.

When beginning the operation, and usual day, you have any question, displeasure, accessories parts, please contact to below address.

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# 1.Standard Specification

Standard Specification of AC3000 and AC4000, each model have 2 type, the packing description shown as below table.[ ] is black and MC type.

	AC-3000SILVER (AC-3000BLACK) (AC-3000MC)	AC-3000SILVER. S/T (AC-3000BLACK. S/T) (AC-3000MC. S/T)	AC-4000SILVER (AC-4000BLACK) (AC-4000MC)	AC-4000SILVER. SL/T (AC-4000BLACK. SL/T) (AC-4000MC. SL/T)
Arm Pipe	MC-300SILVER (MC-300)	MC-S/T SILVER (MC-S/T)	MC-400SILVER (MC-400)	MC-SL/T SILVER (MC-SL/T)
Head shell	AS-4PL SILVER (AS-4PL)	—	AS-4PL SILVER (AS-4PL)	—
Standard weight	AW-300II SILVER (AW-300II)		AW-400II SILVER (AW-400II)	
Heavy weight	AW-3SILVER (AW-3)		AW-4SILVER (AW-4)	
Standard sub weight	AW-34 SILVER (AW-34)			
Heavy sub weight	AW-5 SILVER (AW-5)			
lateral weight	LW-1 SILVER (LW-1)			
Sub lateral weight	LW-2 SILVER (LW-2)			
Arm base	Brass with velour Ni [Black finish]			
Locknut stabilizer	Silver ,Black series is Brass(540g), MC series is Iron			
Damping oil	AO-20 (viscosity 300Kcs )with Injector ,cotton swab			
Output cable	ARR-T/120(Low resistance type,1.2m,with Gold plating plug)			
Others	Template for installation, Instruction manual, Users card			

# 2.Output cable

Regarding output cable for AC3000,4000 have Low Resistance type, New ARR-T/120(1.2m) as standard equipment. We prepared for Optional cable as ARR-T/50(50cm),ARR-T/75(75cm),ARR-T/100(1m),ARR-T/150(1.5m).

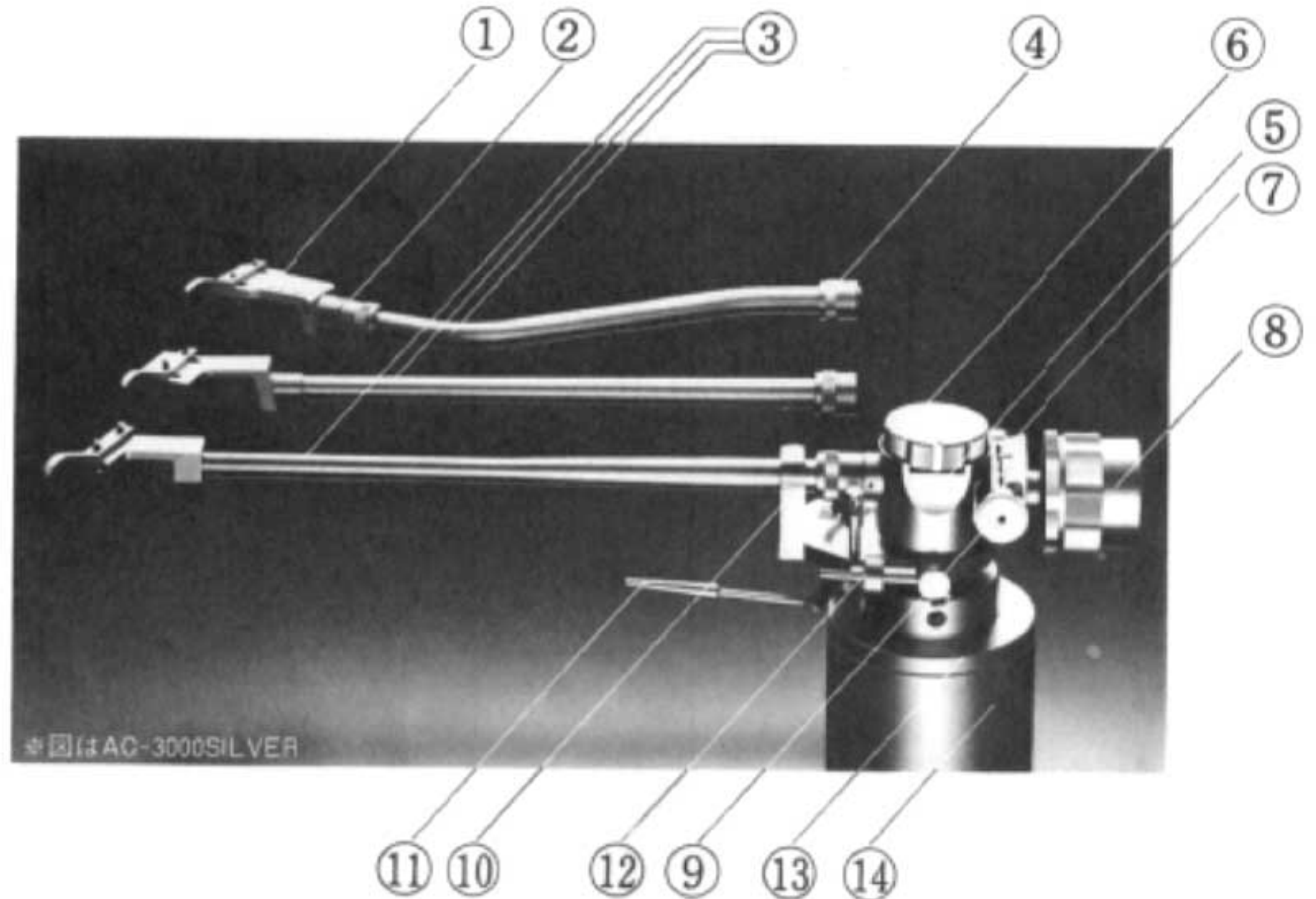
These Optional cables are suitable for MM type, MI type as low resistance and low capacity.

But we prefer to use low capacity type as ARC-T type as ideals.



### 3.Name of parts

- ①Head shell: AS-4PL Silver [AS-4PL]
- ②Head shell locknut:  
Turn around when exchange the head shell
- ③Arm pipe
- ④Arm pipe locknut:  
Turn around when exchange the arm pipe, refer page 6.
- ⑤Center block
- ⑥Damping value adjustment knob:  
Adjust damping value much to cartridge property, refer to page 12.
- ⑦Lateral balance gage:  
Indicate the lateral balance position, good repeatability.
- ⑧Main weight
- ⑨Lateral balance adjustment knob:  
Turn to this knob, you can adjust lateral balance as moving the weight in lateral balance.
- ⑩Arm rest
- ⑪lifter lever
- ⑫Inside force canceller: refer to page 14
- ⑬Arm base
- ⑭Big stabilizer with locknut: refer to Page 4~5

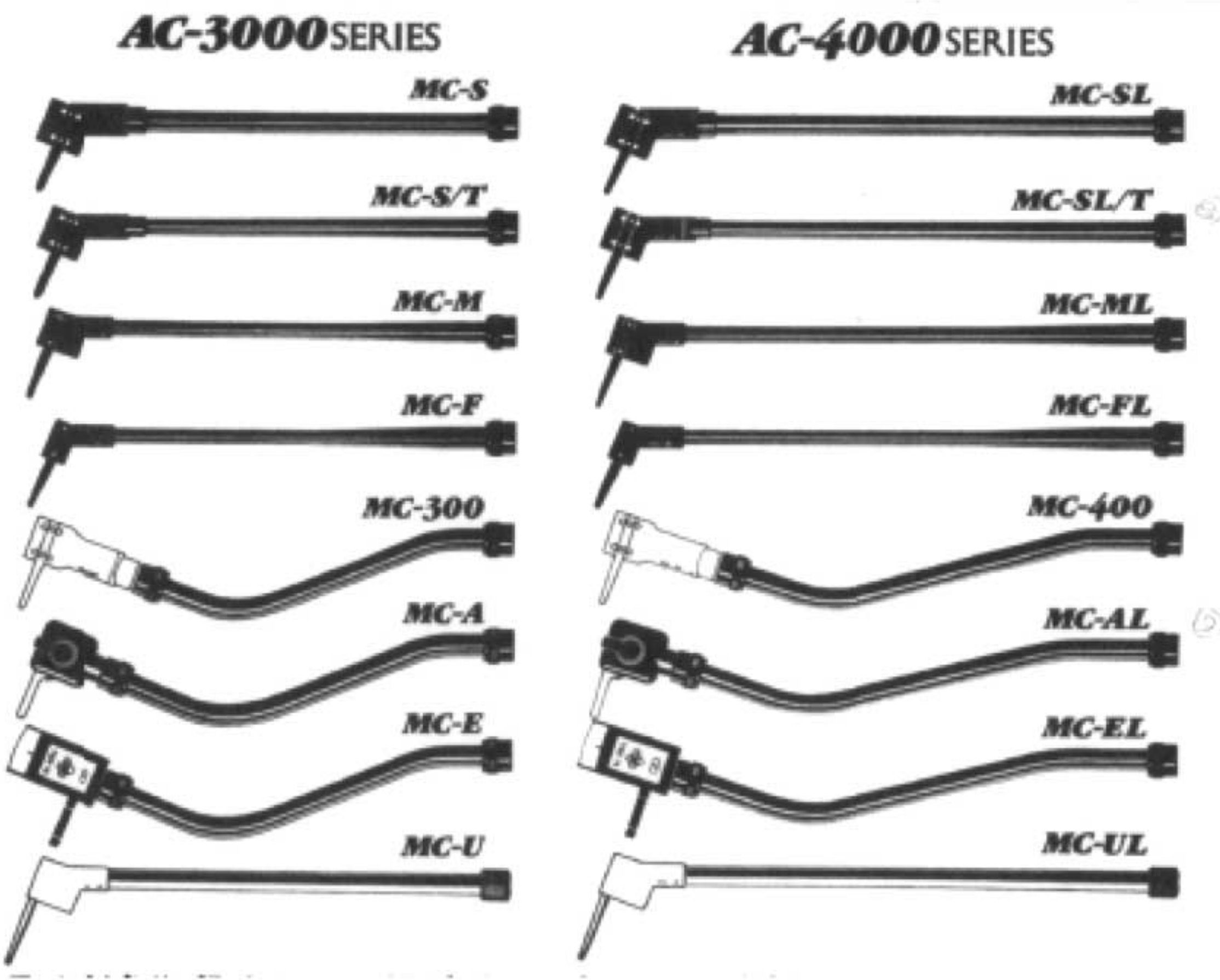




# 4.Specification

項目 \ 型名	AC-3000	AC-4000
Type	Oil damped one-point support type	
Length	333mm	379mm
Effective Length	237mm	283mm
Overhang	15mm	13mm
Pivot center to turn table center	222mm	270mm
Offset angle	22°	17.5°
Tracking error	0 deg ,inner circumference	
Needle pressure adjustment	Double weight system 0~5g(0.25g step)direct reading	
Lateral balance	Quick balance AC type with gage	
Output cable	ARR-T/120	

Note: Standard specification and Specification may be change without information when improved performance.



Note: Arm pipe have 2type, Black and Silver type.(Correspondence table for cartridge , refer to page 16~17). (Regarding MC-U,MC-UL have only silver type.)

## 5.Installation for player cabinet

Please be selected over 15mm thickness robust board for player cabinet. Especially , be selected non warpage , good flatness high quality one for motor board.(If you installed warped , no good flatness motor board, not fully demonstrate original performance for one-point support system)

- ① Positioning center of arm base using by provided “installation gage”.
- ② Bore a 40mm OD hole based by positioning center mark.
- ③ Arm base into the hole and fixed locknut stabilizer from down side.(Fig.B)

\* When player cabinet is slim type(exp. Linsondick LP12,Torence TD 126MK3BC,Lux PD441,444),standard locknut is over sized, we prepared small size locknut, please contact to us.

- ④ Provided output cable into the arm base, to connect to connector for end of center shaft of tone arm.

When you should combine guide slit of tail area and guide convex of out put cable connector.(Fig.C)

(When tone arm install first, finally connect output cable, there is a possibility that tone arm may sway, leak the oil from oil damped system. Then you must connect output cable first before installed tone arm.)

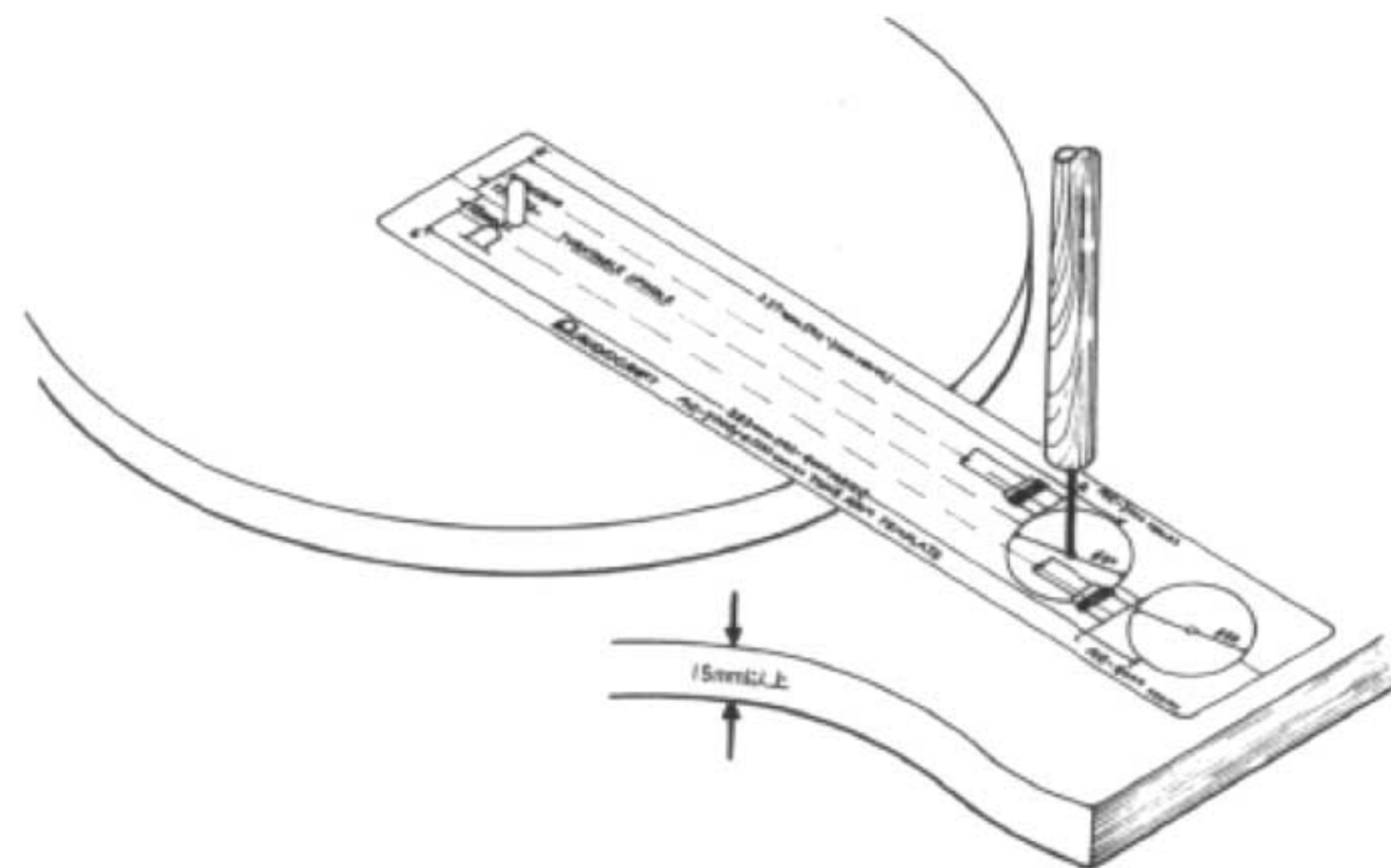
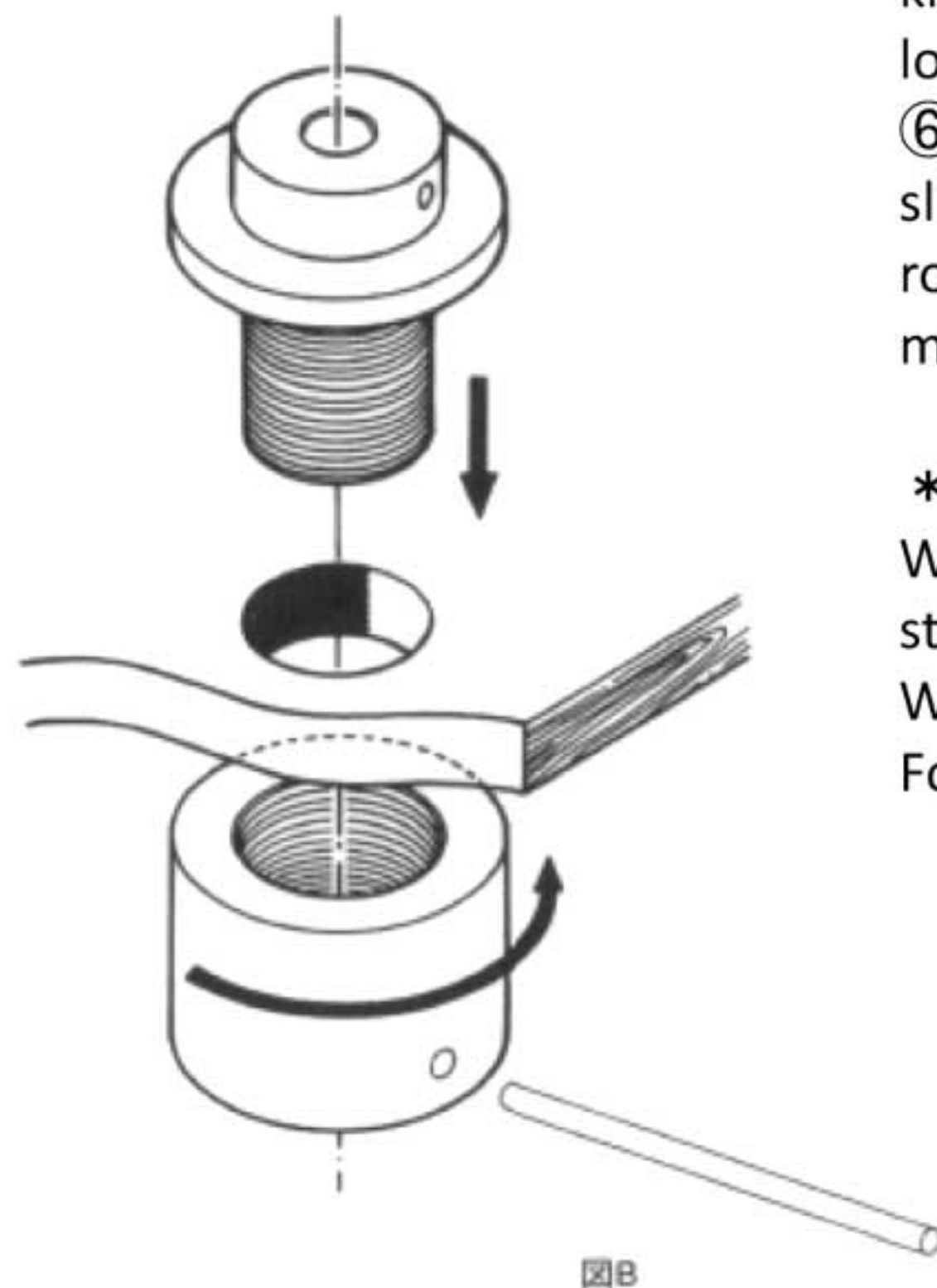
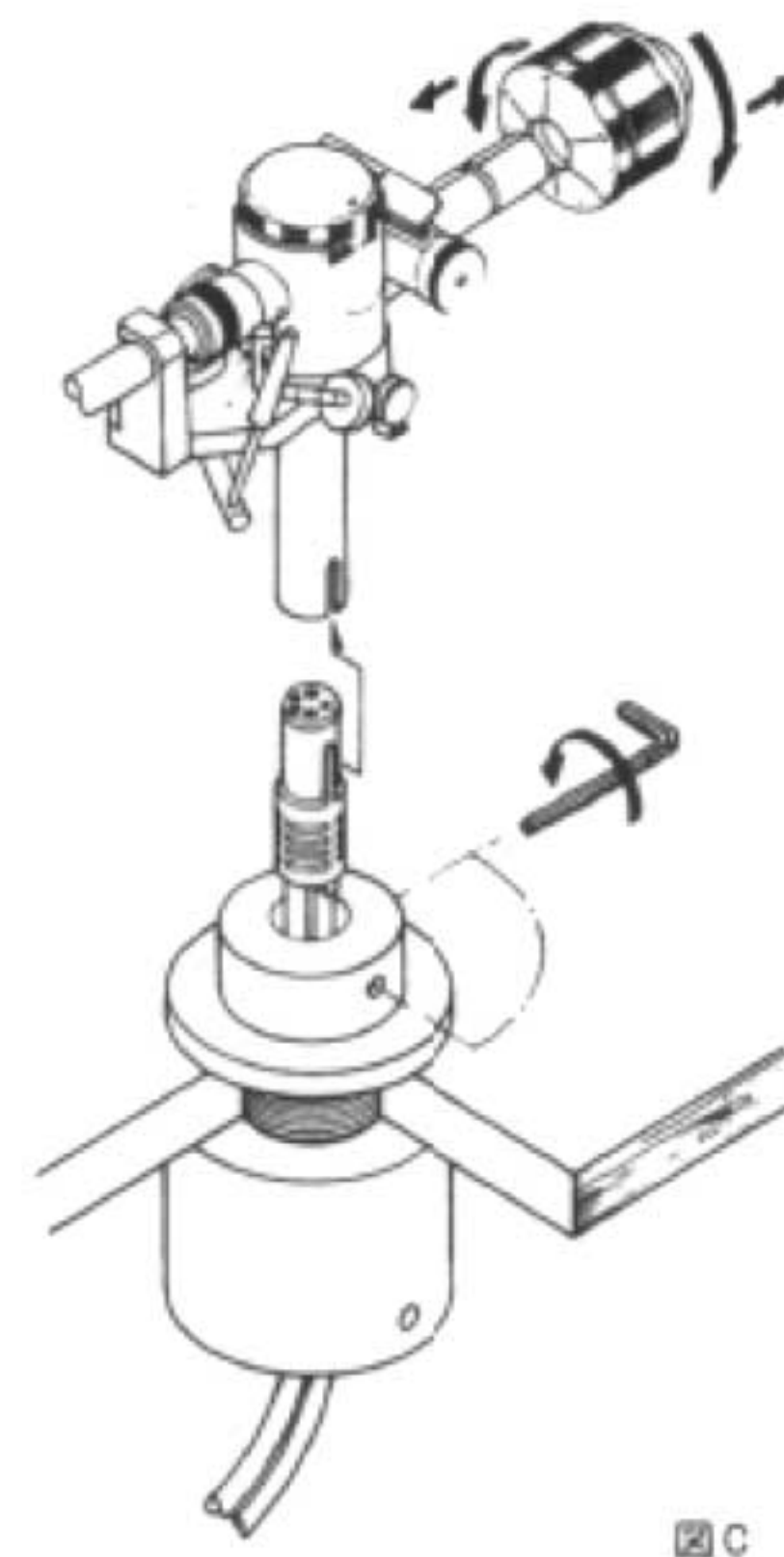


Fig. A



- ⑤ Arm center shaft into Arm base, then fixed lock knob. When adjusting the arm height finished, fixed lock screw by Hex wrench.(Fig.C)
- ⑥ Weight assembly into weight rod of tone arm end, slide downed one or 2 crick , turn to left(Anti clockwise rotation) moved front, turn to right (clockwise rotation) moved back.(Fig.C)

\* Small lock nut stabilizer.  
When player cabinet is slim type, you can not use standard lock nut.  
We prepared small size lock nut stabilizer .  
For AC3000,4000 AL-10 made by brass.





## 6. Exchange for Arm pipe

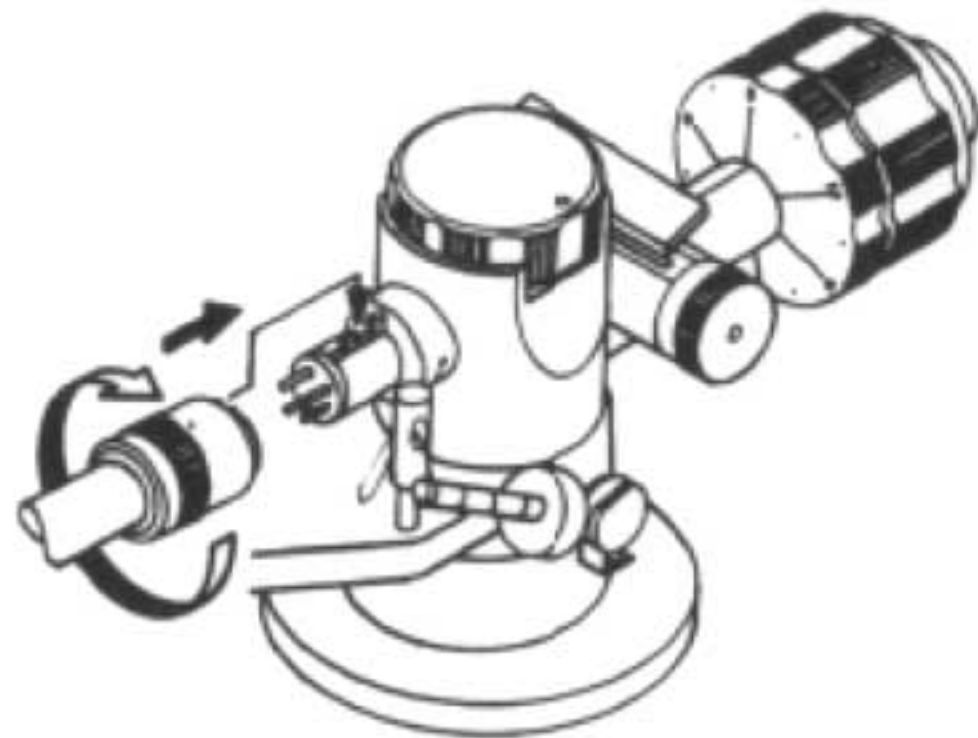
You can easily exchange the arm pipe. When exchange the arm pipe, center block wavered but you do not afraid, pivot hardness is too high, then not damaged in normal usage.

We prepared optional several arm pipe and standard arm pipe.

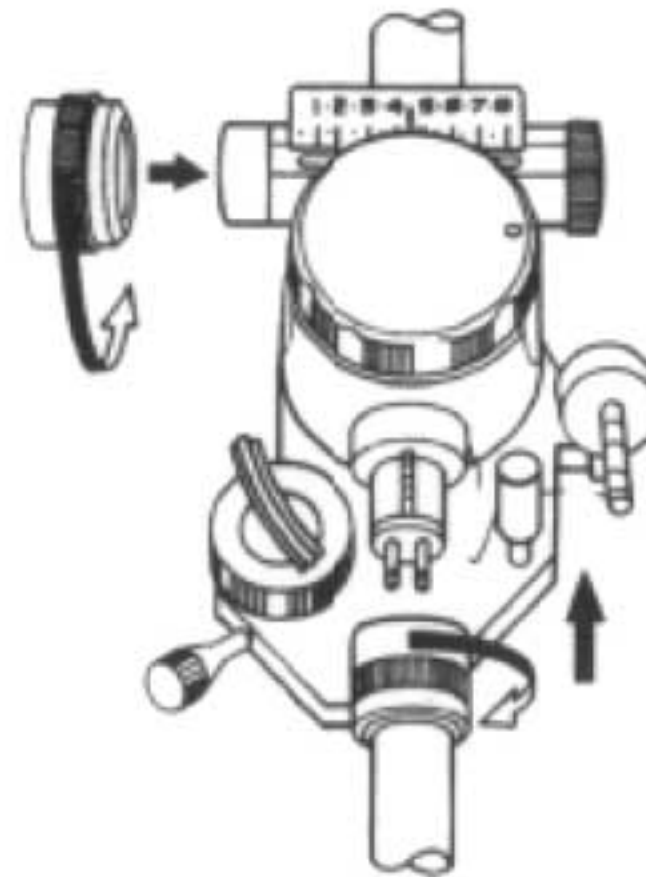
Please selected weight, shape, length for your cartridge.

If you have any question for suitable arm pipe, please contact to us.

① Hold the center block by hand, lock nut of center block turn to left (Anti clockwise rotation) to release, pull out arm pipe.



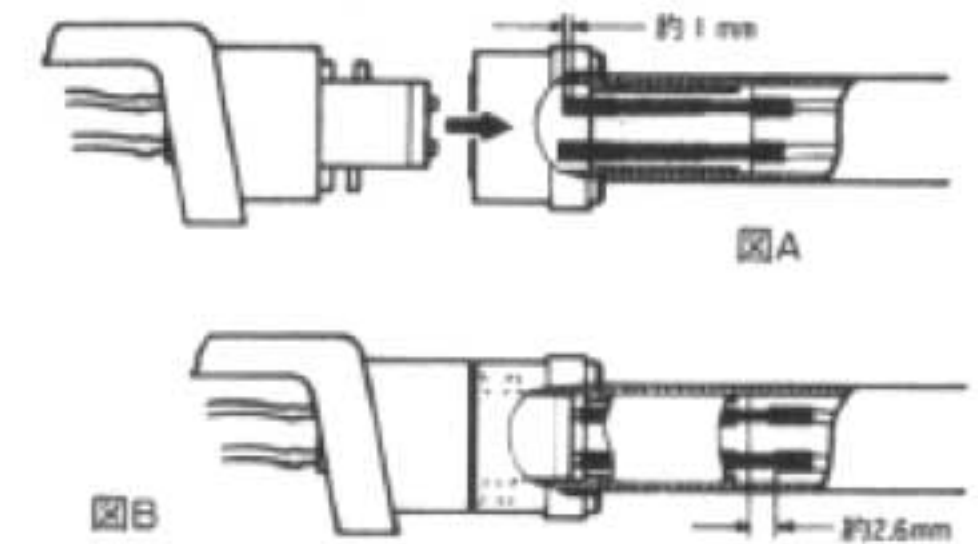
② When attach the arm pipe, pay attention to not bend the contact pin, install arm pipe. Hold the center block by hand, lock nut turn to right (clockwise rotation) to fix.



[Attention]

When change to straight type arm, please remove the left side lateral weight LW-1, turn to left (anti clock wise rotation).

### Contact point of S shape arm



Regarding head shell connector (receptacle connector) of S shape arm pipe for AC3000,4000, shows upper connector (L,R plus) behind 1mm compare than lower connector (L,R minus) but it is not trouble. This is "Minus contact system" avoid the unconsidered crick noise, when connect from minus side of head shell contact.

## 7.Filling of Damping oil

This tone arm is oil damped one support system using silicon oil for damping.

Damping oil quantity is very important for oil damped system, then you should keep 0.3cc (provided red line of syringe).

When too much oil or less oil will not exercise for good performance.

Especially attention, too much oil bring on leak oil, caused depression tracing ability, loose connection.

① Hold the center block by hand, turn to the left (anti clock wise) for damping knob to release.

② Remove the cap for provided oil bottle(double capped, upper cap is screwed, mid cap is inset type).provided syringe put in the bottle, suck off to red line level(0.3cc) when wait the silicon oil fixed down the bottle.

This oil is high viscosity then not quickly suck off same as normal liquid.

But syringe head put in the bottle and sucking, oil slowly sucking into the syringe after a short time.

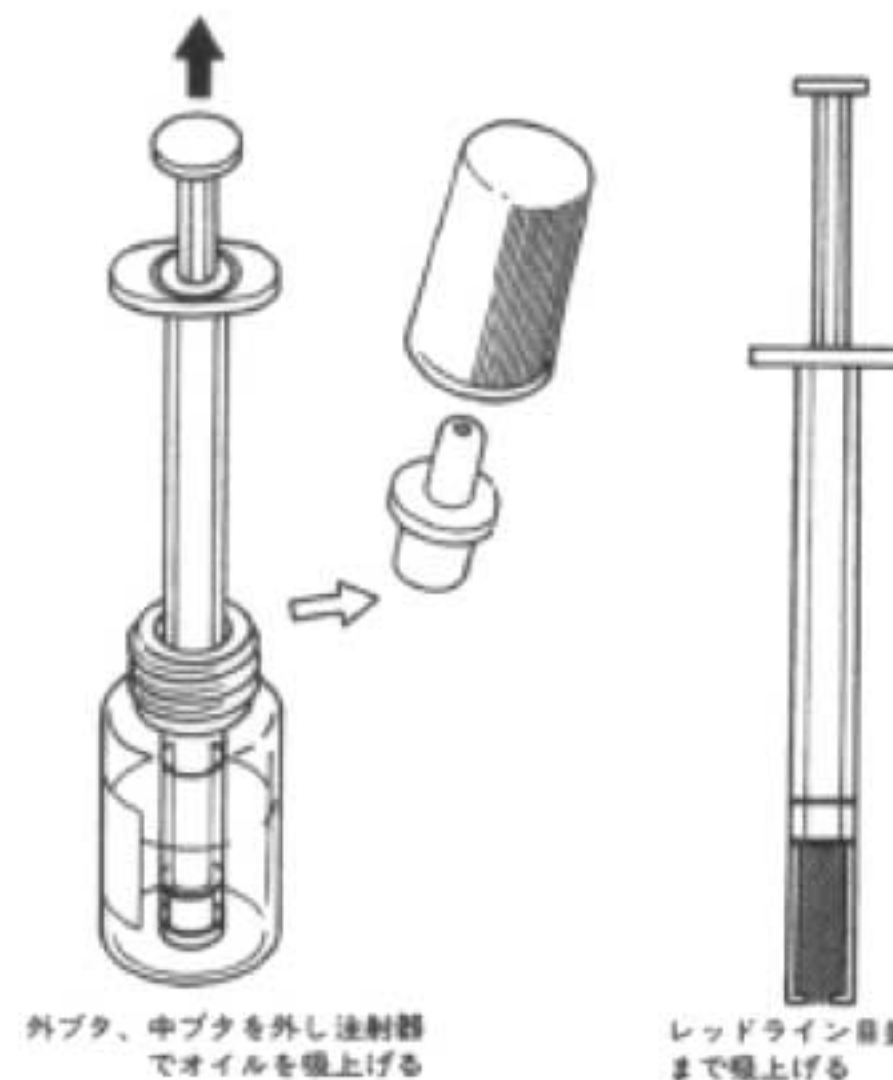
When little bit air bubble sucking, then you should sucking oil until over red line, after you should remove air bubble for adjust to red line.

③ Wipe out the syringe head and around, syringe put in the oil inlet after removing damping knob.

Pick up the center block by one hand, inject oil. When pick up the center block, make a enough clearance between oil cap and oil ball, then oil sink in very well. When oil adhere around, please wipe out by cotton swab.

④ When finished inject oil, fix the damping knob to lock.

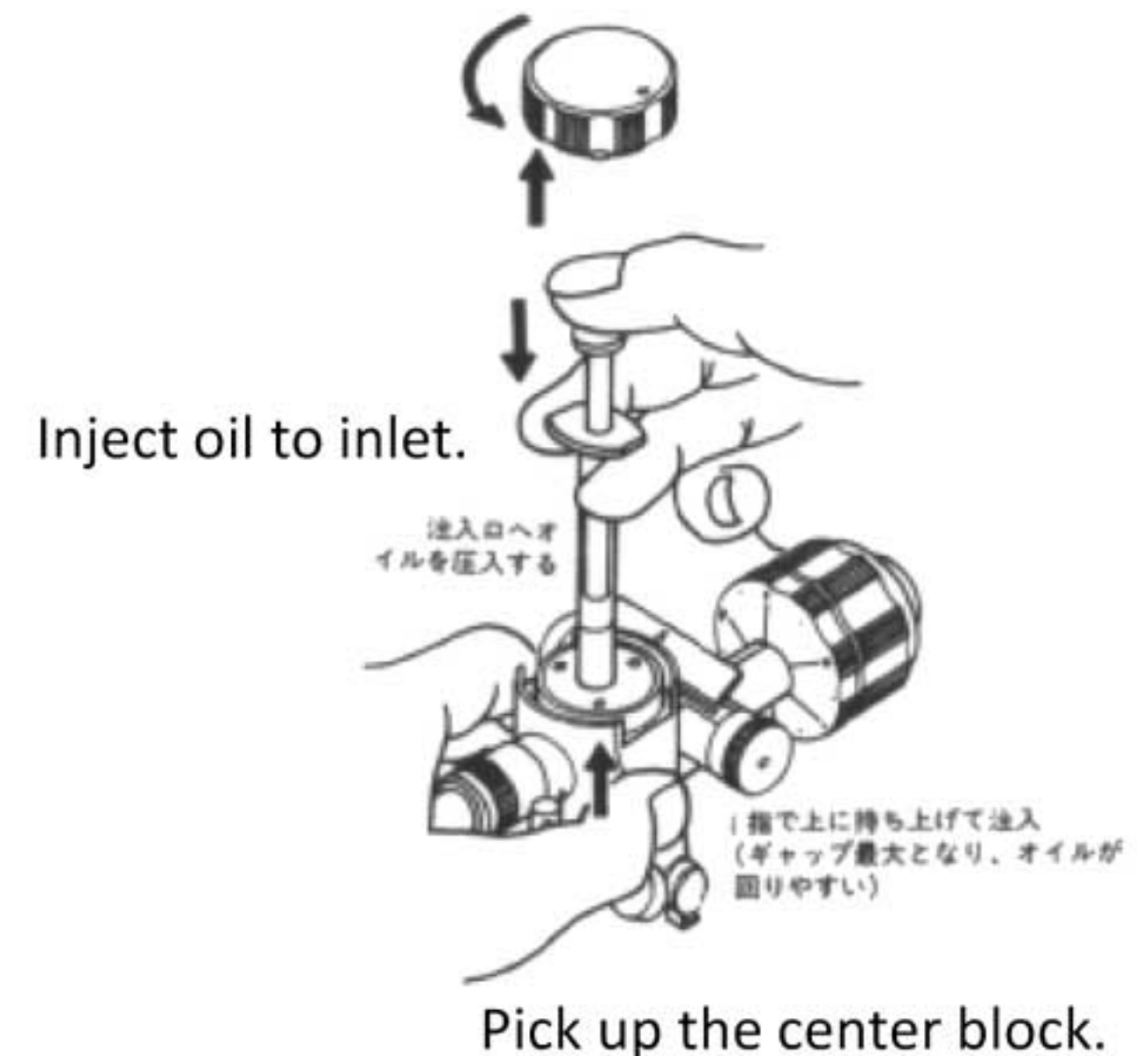
⑤ Settle in the oil, leave the arm, not move the arm around 15min.



[Attention]

After filling oil, not laydown and sway the arm.

When leak the oil from oil cap, caused depression tracing ability, loose connection. When leak the oil by too much oil filling, sway the arm, please refer to “oil change items”.

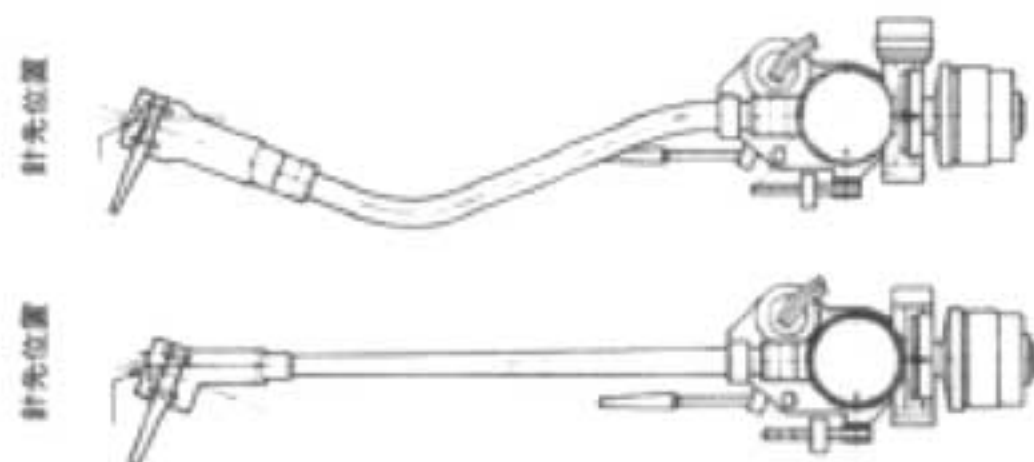




## 8. Cartridge Installation for head shell

### Accurate the overhang (Cartridge position)

When not accurate for overhang(Cartridge position),difficult to adjust lateral balance.



The reason, when install a Cartridge to right position, needle tip locate on center line of arm as shown Fig.

If cartridge install to wrong position, needle tip locate on offset on center line of arm.

Right position , AC3000 is 237mm,AC4000 is 283mm from center of center line.

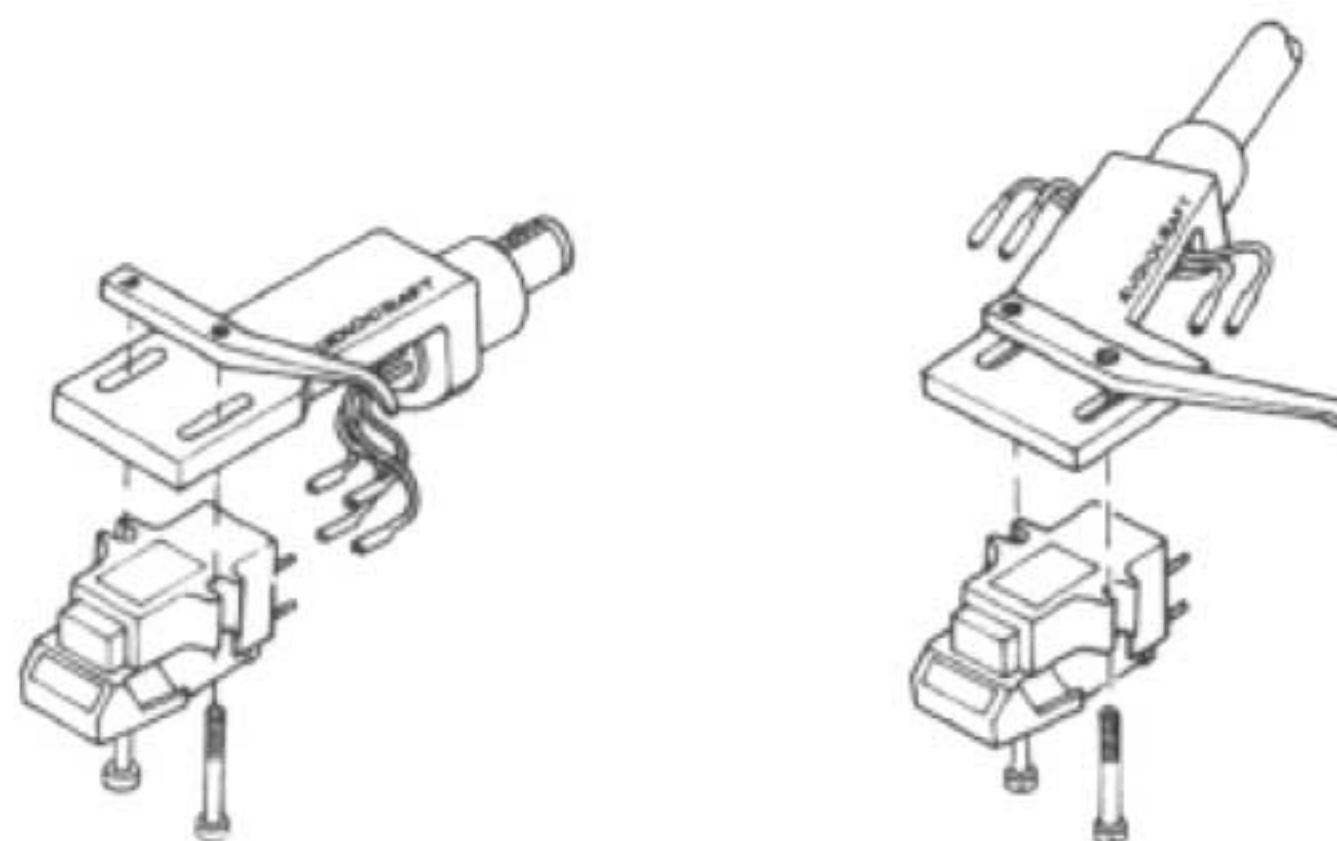
Please adjust needle tip point to right position using by provided template.

The over hang against turn table spindle, AC3000 is 15mm,AC4000 is 13mm.

But when install right way the arm and cartridge , over hang should be settle 15mm and 13mm.

### Match cartridge direction to center line of head shell.

When not match cartridge direction to center line of head shell, it is “installation distortion”, it is difficult to adjust lateral balance.



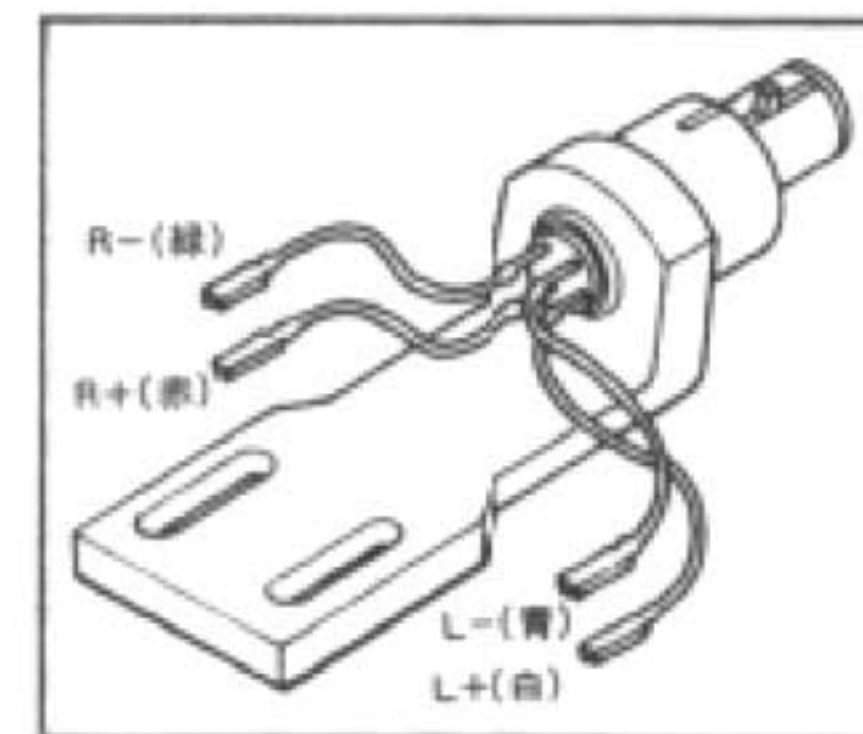
Cartridge must install as reference.

Right way for cartridge installation, please refer to Page 18.

### Use provided screw for head shell

We are provided selective brass screw for head shell.

Please use match the length for cartridge.





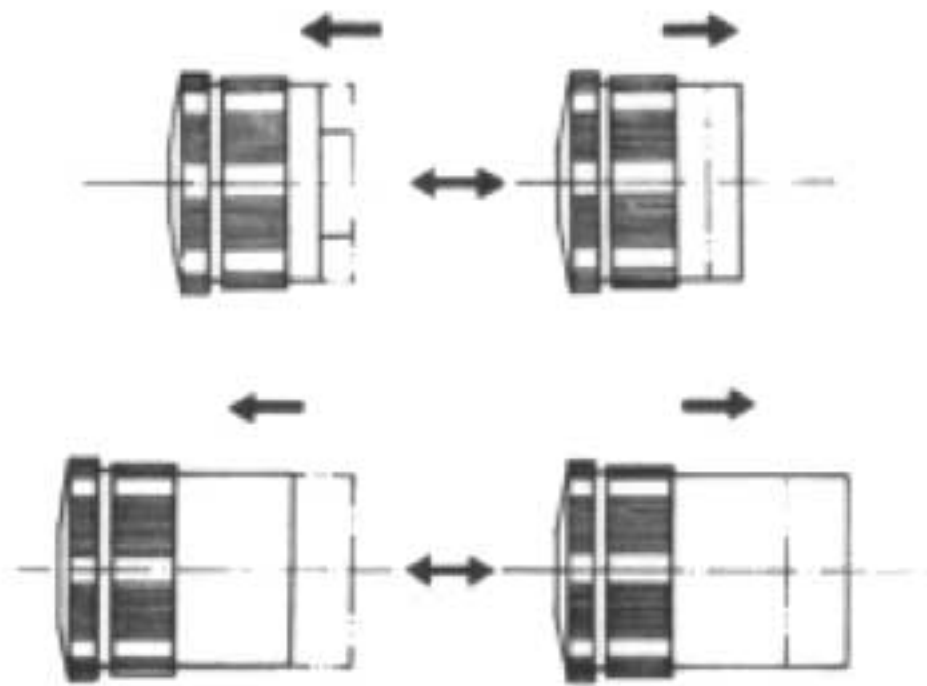
## 9.Adjustment for needle pressure

### Corresponding weight system for any weight cartridge.

Weight system for AC3000,4000 is fully quipped shown as Fig.A.

Then we can corresponding from head shell mass 6.5g Ortofon concord20,30 to head shell mass 33g SPU/GT,SPU/A(acceptance adapter) needle pressure for any weight cartridge with combine these weight.

### Useful double weight system for needle pressure



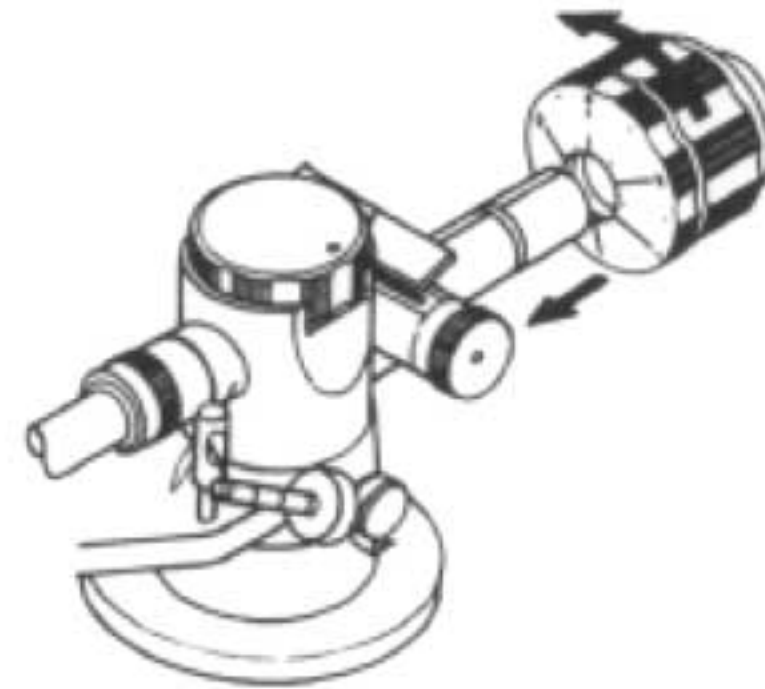
Main weight is double weight system , end of weight can move front and back.

You can adjust turn to the weight and slide to weight for horizontal balance of needle pressure.

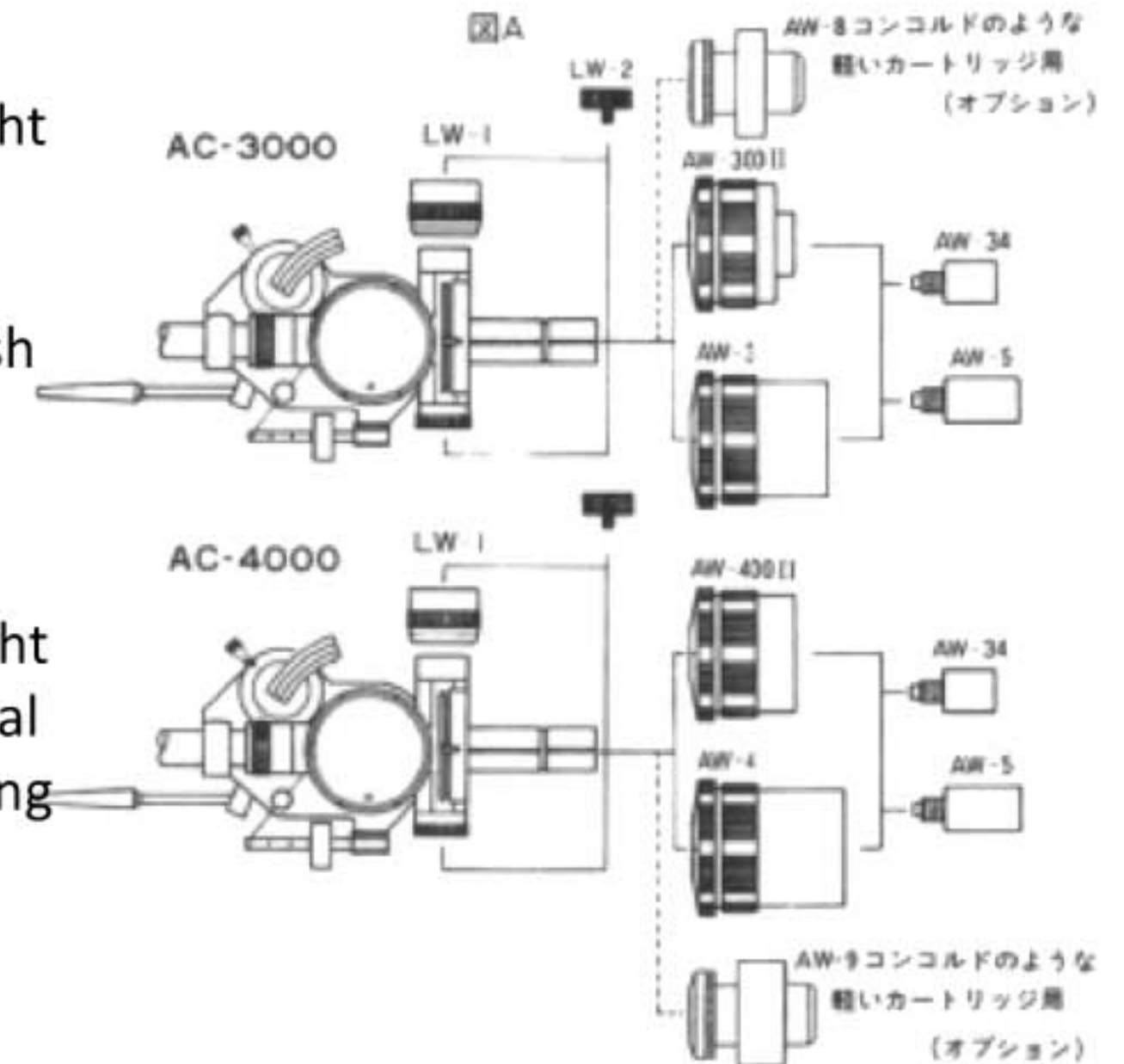
When you will adjust the weight the near the rotation axis, the balance is good for tone arm operation.(especially, light weight type cartridge)

### Adjust for needle pressure.

- ① Before adjust horizontal balance, push the inside force canceller for lock. Turn on the damping knob to fix, most lightly for damping.
- ② Main weight assembly is double weight system, then it is easily to adjust horizontal balance for turn to the needle pressure ring and slide for main weight.



For light weight AW-8 concord cartridge(optional)



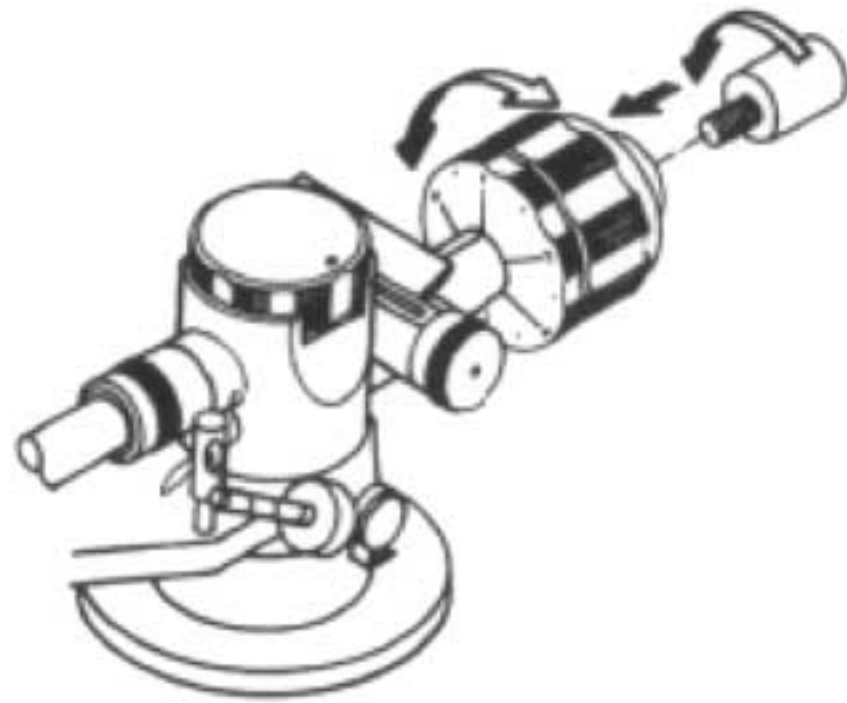
For light weight AW-9 concord cartridge(optional)

## 10. Adjustment for lateral balance

You will adjust for horizontal balance, change main weight, add sub weight, depend on cartridge and head shell total mass.

③ When finish the adjustment horizontal balance, you should adjust needle pressure ring "0", to indicator of weight rod or center line of 4 and 5 of lateral balance indicator. Please don't move the weight assembly.

④ When needle pressure ring turn to left (anti clockwise rotation), pressure increasing. One rotation, standard weight is 3g, AW-3 and AW-4 is 5g.

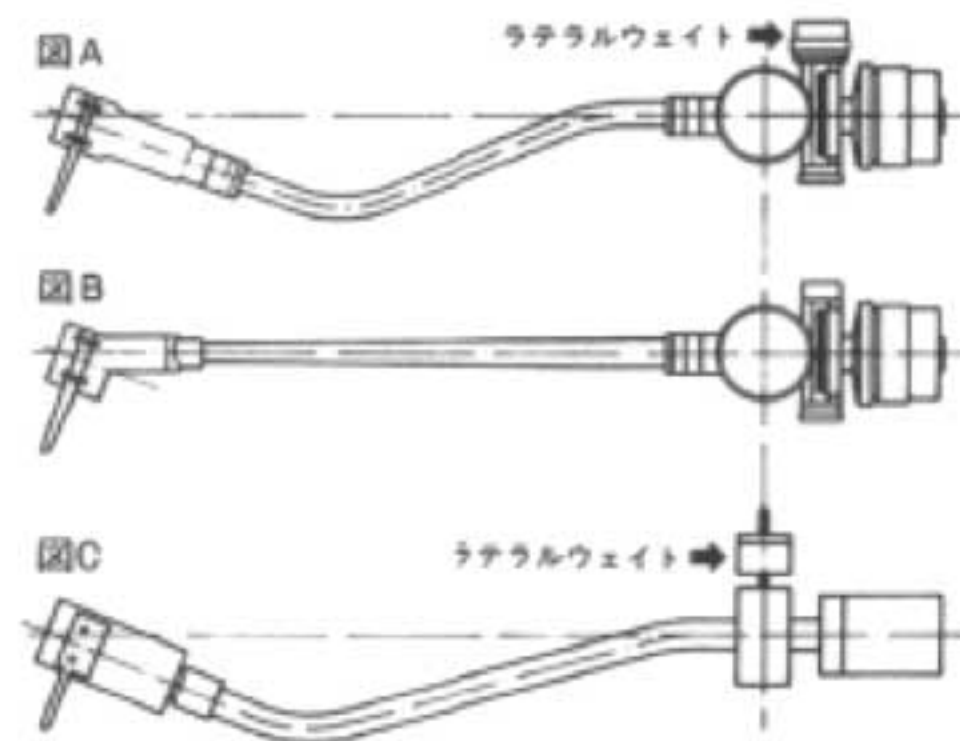


⑤ When you want to add over 3g needle pressure, please add the 2<sup>nd</sup> rotation indicator value.

### Mechanism for Lateral balancer

You can find out when installed S type arm, right side is heavy as shown Fig.A. Then you can adjust lateral balance put in lateral weight in left side.

As shown Fig.C, bearing type tone arm also have a lateral balance, but it looks like not find out sway of lateral balance when change the mass for exchange the cartridge, because keep under by bearing system. But when not adjust lateral balance any stress happen in the pivot bearing. But it looks good lateral balance the in many case not adjust lateral balance.

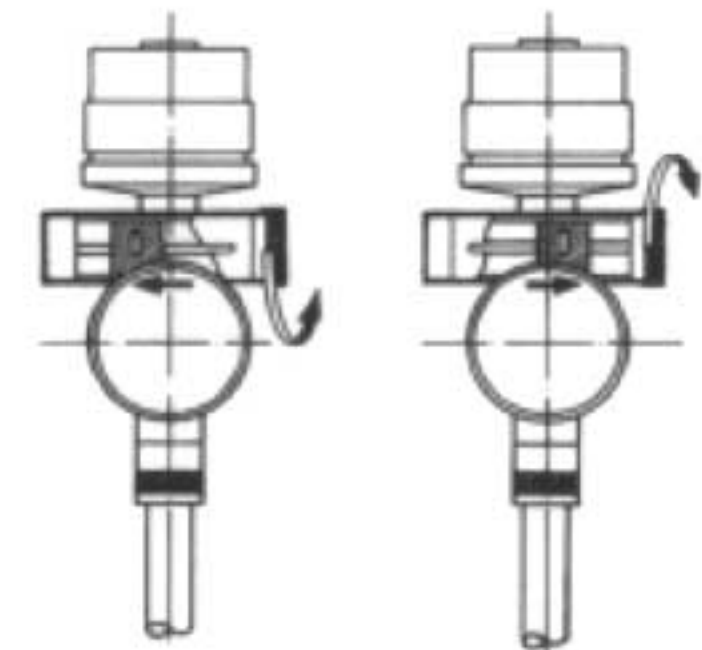


Cartridge progress through high compliance and light needle pressure, tone arm need to achieve right weight and high sensitivity, this unbalanced lateral balance problem will be review.

In this one point support system, left and right sway happen when exchange the cartridge, then must adjust lateral balance and operated tone arm under best condition.

As shown Fig.D, you can adjust fine turning when lateral knob turned, weight move to left and right in lateral block.

Fig. D





This is lateral adjustment system for tone arm. As shown Fig.B when using straight arm pipe, it is different from S shape typ. Right side is heavy ,then remove the lateral weight, adjust balance by moving the weight in lateral block, gravity center concentrate to on the center line of tone arm, then it is easy to adjust lateral balance compare than S shape arm.

Tone arm operation is very stable and weight is light. Head shell is fixed and ratting not happen in head area ,nothing unbalance contact between shell and arm ,then getting good sound quality.

#### **Accurate the lateral balance**

- Player settled in horizontally. If no good horizontally, it is difficult to adjust lateral balance.

- Adjust tone arm height in parallel to disk surface. Extreme unbalanced (end is higher ,lower), it is difficult to adjust lateral balance ,not adjust vertical angle, then bad effect to sound.

- Accurate the needle point of cartridge ,not accuracy adjust when needle point using by provided overhang gage, it is difficult to adjust lateral balance.

When accuracy adjust needle point, which is on the center line of tone arm when add the needle pressure horizontal balance, not change the lateral balance.

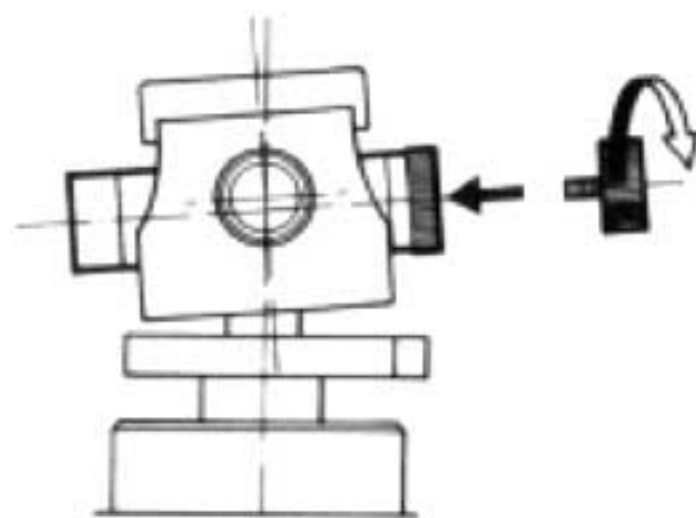
- When using straight type arm pipe, remove the lateral weight LW-1, could not adjust the balance.

#### **How to adjust lateral balance**

In generally speaking , it is difficult to adjust lateral balance in one point support type, it is not true. But you should master some know-how for adjustment and need habituation for operating.

You should master previously “mechanism of lateral balance”, “Accurate the lateral balance” you study character of tone arm, it is not difficult to adjust lateral balance. It may be no exaggeration to say that you should master lateral balance adjustment, it is master the tone arm.

① Damping knob fully turn to right , it is most little damping effect, light position. Then getting big sway for center block , it is easily to adjust lateral balance.



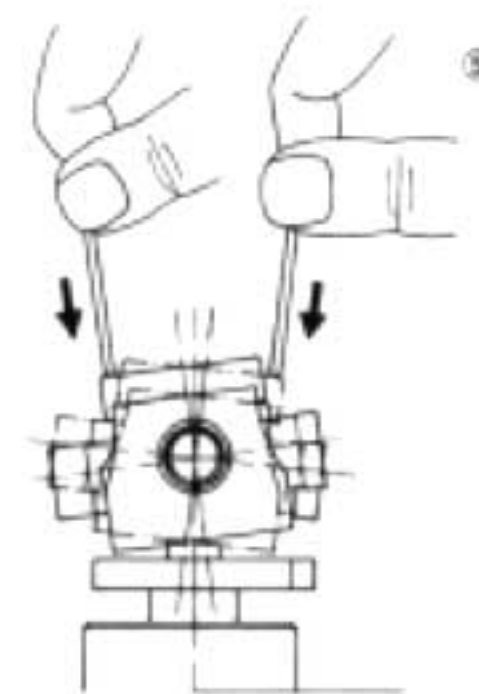
② Look the inside force canceller.(How to lock and release, please refer to the “Adjustment for inside force canceller, page 14”).

③ Adjust horizontal balance for back and forth tone arm (between head shell and weight)

④ When finished horizontal balance, you should push the right and left both side of damping knob by finger tip or match stick. Same swayed angle(2.5deg) as right and left, it is shown good lateral balance.

⑤ Which big swayed right or left , you should turn to lateral balance knob for adjustment .

For example, big swayed right, little swayed left, it is shown left side is heavy, you should turn to the lateral balance knob to the back side. Then spindle in the lateral block move to right (indicator in the lateral gage shown move to right), right side getting heavy.





## 11. Adjustment for Damping

⑥ When lateral balance knob moved reasonable point, once you push the right and left both side of damping knob, you should check the sway same as right and left side.

⑦ You could not adjust the lateral balance when move the spindle right side and left side in Maximum, you should install a provided sub lateral weight (LW-2) to light side knob. When used sub lateral weight, you must once adjust horizontal balance of tone arm, because tail weight getting heavy.

⑧ When adjust same sway right and left of center block, it is habituation work, add prescribed needle pressure of cartridge, release the lock of inside force canceller, adjust the canceller counter weight match to prescribed needle pressure.

⑨ Put needle on the disk, check the parallelism between cartridge and disk from front side.(When disk have waving, you could not adjust in accuracy.)

When you find little bit sway , turn a lateral balance knob to  $\frac{1}{4}$  for adjustment.

### Damping adjustment is must item for tone arm

In current tone arm only equipped that adjust the needle pressure for cartridge and adjust the weight for head shell.

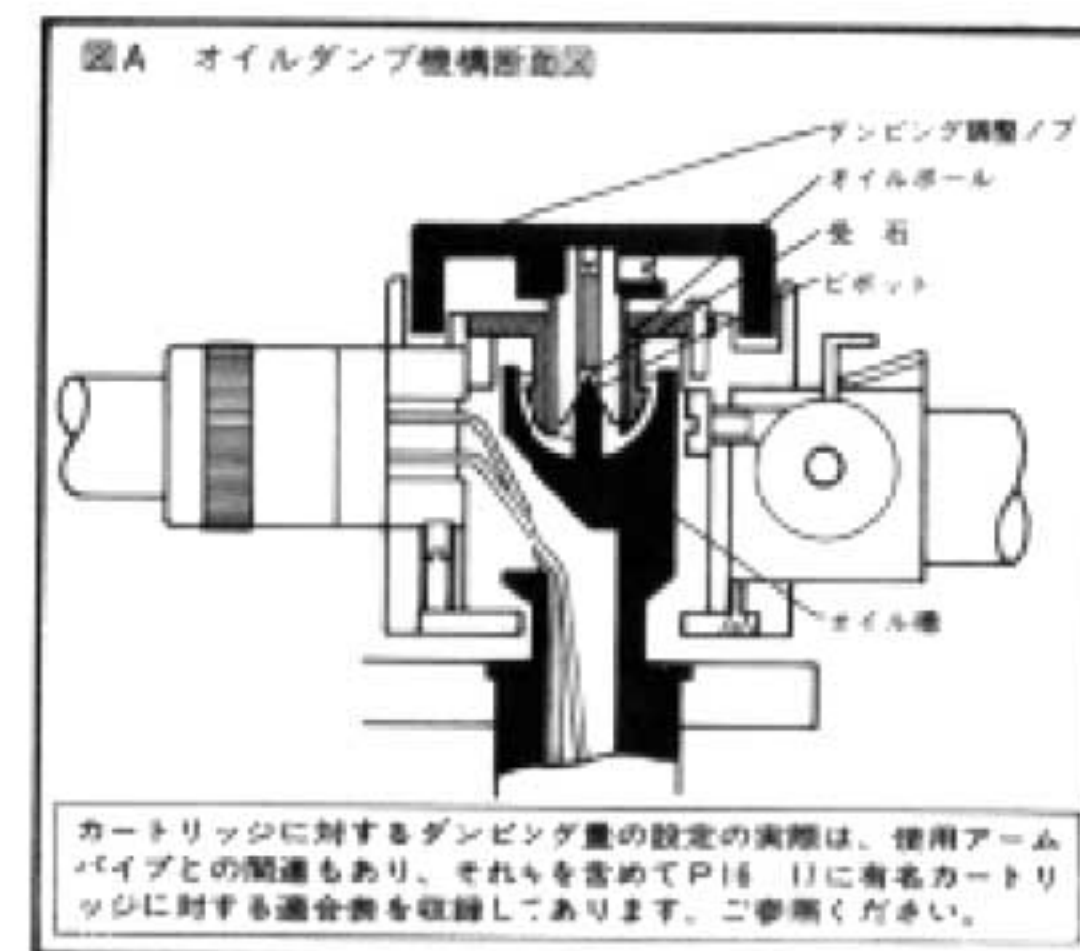
It is impossible to fulfill the cartridge performance.

This tone arm's main feature what is exchange the arm pipe, arm type, arm length match to cartridge character, advanced different way more than current tone arm, in addition adjust the damping value for seek the original cartridge character.

So many cartridge in the market place, they have a original character, when fulfill the cartridge performance, you must add damping in natural match to mechanical impedance. Then appeared good sounds of original cartridge character ,not appeared by current tone arm with out enough damping.

### Mechanism for adjustment of damping

Center block mechanism showed by Fig.A. Damping oil (0.3cc) filling in the gap between oil ball and oil cap, when turn to the damping knob, the gap expansion and reduced.



Actual damping value for cartridge related using arm pipe, then please refer to Page 16,17 .

Turn to fully right (clockwise rotation) the gap is 2mm, back to left one rotation gap is 1mm, add one rotation gap is 0mm, only oil film existence.

The damping adjustment mechanism is that oil capacity is constant in oil cap, then damping is small, when gap is become big, damping is big when gap become narrow.



### The damping adjustment mechanism

Adjust continuous variable damping value. Fully turn the knob to right (clockwise rotation), the convex of knob must located to right side. This location is min light position(gap is 2mm), turn to left from this location, damping is getting more and more. One turn to left is normal position(gap is 1mm),add more one turn to left is max heavy position(gap is 0, only oil film),add turn to left side, tone arm could not operating. In this 2 turn area is continuous variable damping value. Damping value almost get decide by cartridge character, it is not fixing , depend on amplifier, speaker, listening room, your preference sound. It is best way shown as below, you can turning when listening the disk and using your system, you can fine tune when turn knob to  $\frac{1}{4}$  is big change the sound.

### For high compliance right needle pressure cartridge.

You will start to fully turn to right , max light position for tuning.

ADC:XLM ,ZLM,Pickaring :XVS3000,4000,AK G:P25MD,Empire :4000D3,B&O:MMC4000, MMC20, Ortofon :Concord. For Share , the best position is turn back to half turn. For Ortofon, min light position is better.]

This position prefer for needle pressure 0.75-1.25g cartridge.

### For MC type cartridge.

Turn back to one turn, for normal position, it is preferred to new designed MC type cartridge.

For DENON, prefer right arm pipe, light damping, it is getting good sound.

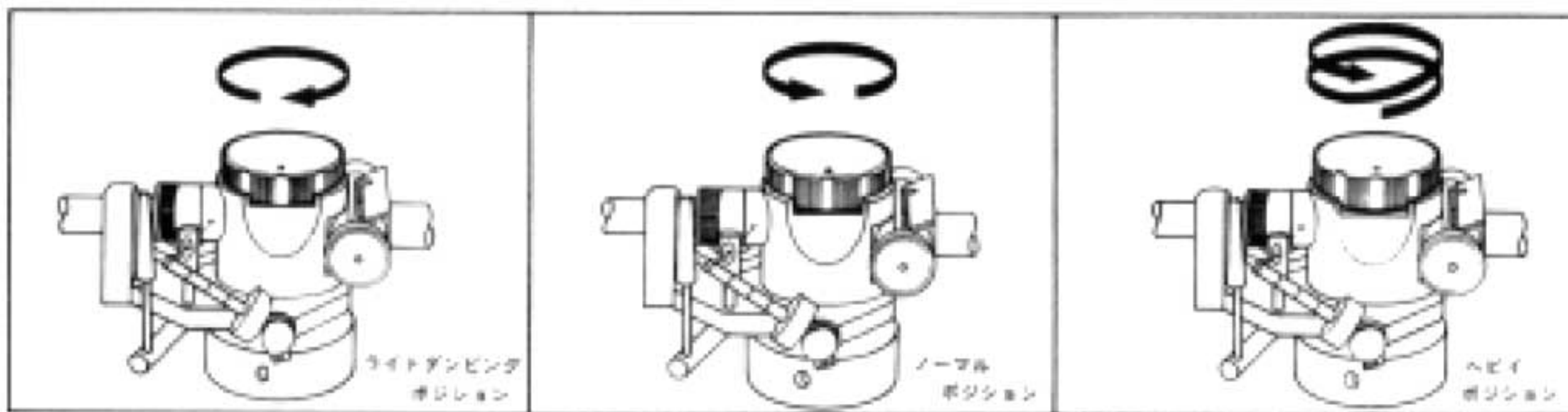
For Dinavector , add damping , it is good perform the cartridge character.

Then not fixed the best damping position, you will find out best damping value depend on your equipment and listening room.

**If you add more damping value, please chose optional AO-30,AO-50 high viscosity oil and more lighter , please chose AO-10,AO-0 low viscosity oil.**

### [Attention]

When adjust damping value , center block (including arm position) height change +/- 1mm from center of normal position, you must adjust arm lifter height. Please refer to “ Adjustment for arm lifter”, Page 14.



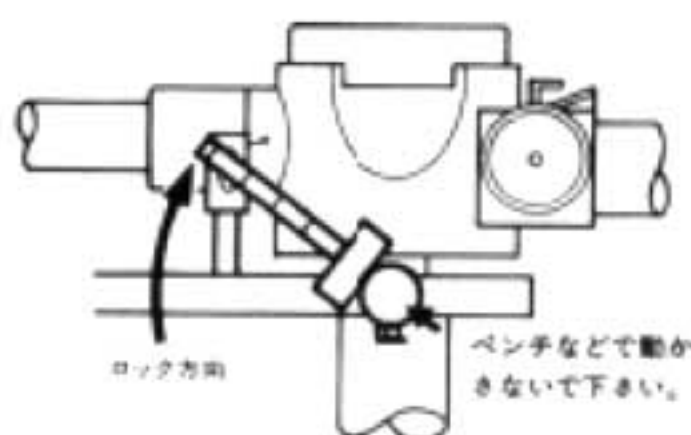
Right damping position

Normal damping position

Heavy damping position

## 12. Adjustment for inside force canceller

① Regarding inside force canceller , when up the lever is locked, when down the lever is released.(Don't operate the root of rotor by Nipper, when operated lever by constraint, it is easily broken, the reason rotor axis is fixed.)



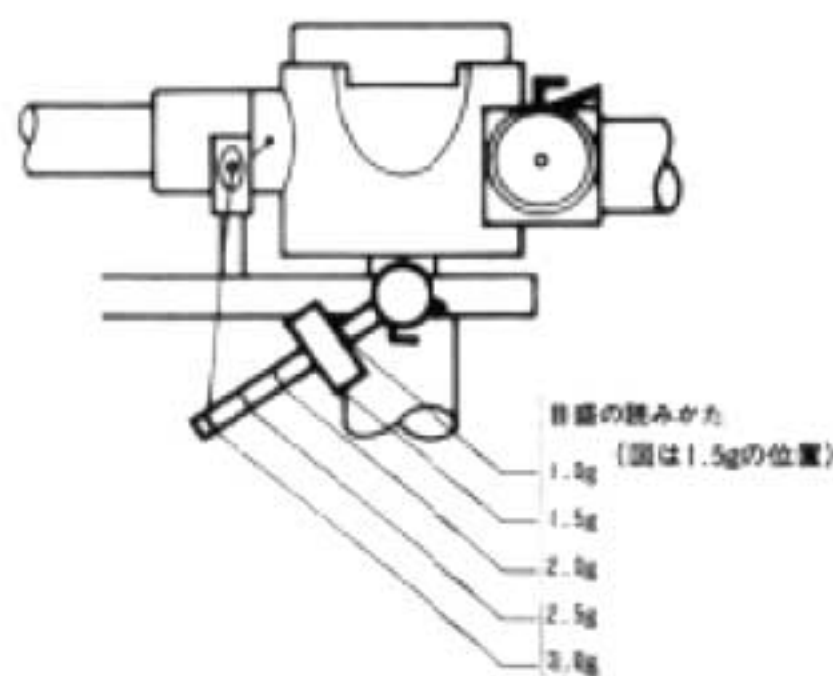
② Adjust the canceller weight depend on needle pressure. The scale is 1.0g,1.5g,2.0g,2.5g,3.0g from root, please adjust from side of canceller weight to scale line.

### [Attention]

When used locked canceller, please back the canceller weight to root of rotor. If weight existing 1.0-2.5g position, lateral knob attached to weight in inner circumference of disk, an not operation.

“Disk for inside force canceller test” as non grooved disk is sold in market , but it is not enough generated inside force at no grooved disk.

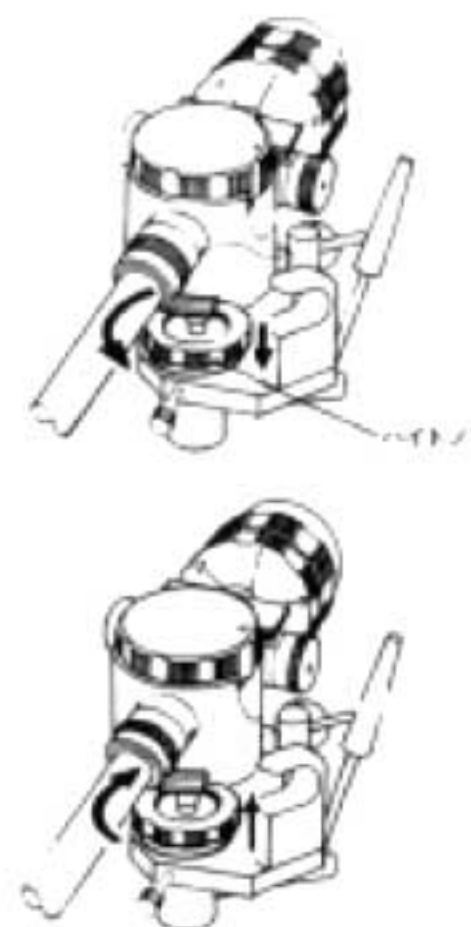
For example, when needle pressure is 1.5g, adjusted canceller weight to 1.5g, for tone arm, put on non grooved disk , certainly tone arm move to outside. It is not enough generated inside force against groove.



## 13. Adjustment for arm lifter

When adjustment for damping , center block will move +/- 1mm from center of normal damping position, must adjust the height of arm lifter.

- ① When one turned height knob of lifter header, lifter cylinder will move +/- 3mm up and down.
- ② When finished adjustment for arm lifter, please hold by small screw for fixed the lifter.



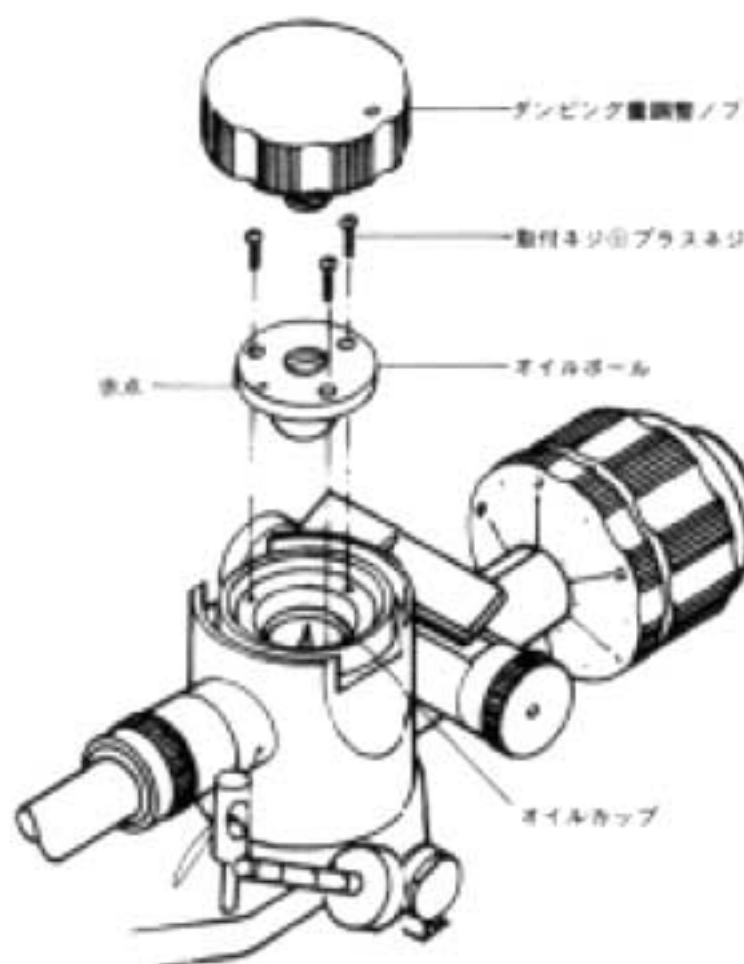


## 14. Change of damping oil

You need to change the damping oil every 2 years. When you will use different viscosity oil(optional), oil leak(sway the player), over flowed oil, you should drain the oil and filling the oil again.

You expected to sway the player when move the player, please drain the oil , first.

- ① Remove the damping knob.
- ② Remove 3 screw on the oil ball by using + driver.
- ③ Damping knob screwed (2-3turn) in oil inlet, pull up, you can remove oil ball and can see the oil cap.
- ④ Wipe off the oil around oil cap and oil ball by provided cotton swab.
- ⑤ Re installed the oil ball by reversed method, adjust red point on oil ball to arm tip side, carefully screwed.
- ⑥ Filling damping oil (Please refer to filling of damping oil , page 7)



### For damping oil

We used low temperature variation, and non volatile high purity silicon oil.

We heard that it is problem of silicon oil for tone arm freeze in winter season, it is nonsense story.

Silicon oil is low viscosity change in temperature, compare than other organic oil, when viscosity is 1.000 in 25 degC, when 0 degC is 1.7 ,it is very small change value. We repeated test that leave tone arm in -10 degC, refrigerator,24hrs, at once operation, when used needle pressure 1.0g, high compliance cartridge , it is completely no problem.

Instead, it is problem that cartridge (MC type, damper harder) and disk against low temperature.

When you should take care that when room temp is low, please wait to increasing the room temp and cartridge and disk, it is need for listening for good sound.

Standard specification, AO-20 (Viscosity 200KCS), For heavy AO-30(300KCS),AO-50(500KCS).

For light AO-10(100KCS), AO-5(50KCS),AO-1(10KCS) by optional.

When using human living temp. standard oil AO-20 is enough to use, except to use special purpose(EX, using AO-50 oil ,damping value adjustment to light position.)

# 15. Matching cartridge and arm pipe

## アームパイプのキーパー

SK-4 VER.600



Audio craft tone arm AC3000,4000 is adopted unique plug in arm pipe changeable system.  
You can chose suitable arm pipe match as each performance same as current head shell changeable system, it is advanced system, then eliminate bit of tip section same as current head shell changeable system, it is advanced to ideal integrated system.  
SK-4 is keeper for change arm pipe for both 3000,4000 type, in addition store main weight and sub weight other small parts.

Audio craft Ac3000,4000 tone arm can chose and change for weight and figure, in addition adopted oil damping adjustment system for match as mechanical impedance for cartridge, designed corresponding for commercially many cartridge.  
The latest cartridge trend to be high compliance, low mass, it is difficult to guarantee enough trace by heavy tone arm,. Other hand , Ortofon SPU series, DENON DL 103 are low compliance type, it is not enough for current constant mass tone arm system.  
Changeable arm pipe system is craft policy for established real universal tone arm system.  
The next reference sheet, matching for cartridge and arm pipe , oil for damping adjustment , there are collected data by listening in Audio Craft listening room.  
Please tune by yourself depend on your equipment and listening room , disks, suitable sounds, especially, damping value, for normal listening , it is not much different from data sheet.

アームパイプ	型番	価格(円)	重量(g)	長さ(mm)	外径(mm)	内径(mm)	材質	備考
AC3000	AC-1	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	AC-2	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	AC-3	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	AC-4	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
ALBA-SERVO	AL-1	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	AL-2	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	AL-3	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	AL-4	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
ORFON	OR-1	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	OR-2	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	OR-3	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	OR-4	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
DENON	DN-1	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	DN-2	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	DN-3	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	DN-4	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
SOUND	SO-1	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	SO-2	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	SO-3	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	SO-4	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
ORFON	OR-1	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	OR-2	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	OR-3	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	OR-4	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
SOUND	SO-1	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	SO-2	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	SO-3	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	SO-4	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
ORFON	OR-1	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	OR-2	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	OR-3	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	OR-4	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
SOUND	SO-1	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	SO-2	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	SO-3	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1
	SO-4	¥38,000	15.12	1.5	1.5	1.5	AL	MC-5.1

Note:  
Using AC3000 silver tone arm, Room temp 20degC, damping value, light position(fully turn to clockwise rotation) is 0, Normal position (one turn to anti clockwise rotation) is 1, heavy position (2turn to anti clockwise rotation ) is 2.  
Including head shell.







## 16. Instruction for installation template

When install tone arm to player board ,  
using template for positioning.

You can use this template when install  
cartridge to head shell and straight arm ,  
then please keep importantly.

① For AC3000 series, lock nut of root of  
arm match to "A" position, install needle  
point to "a" position.

For AC4000 series, positioning to "B" and  
"b".

② When you adjusted needle point by this  
template , for AC 3000 , the pitch from pivot  
center is 237mm.

For AC400 is 283mm. The needle point fixed  
on center line of arm.

③ If out of alignment around 1mm from  
237mm(AC3000), 283mm(AC4000) , it is not  
effect to lateral balance, but when it is 2-  
3mm(exp. Head shell and cartridge  
combined type), please adjust lateral  
balance actually put the needle on the disk  
(please use non warping disk).

