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## **Proposed Thermal Marks for Brood Year 2003 Salmon in Japan**

by

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## **Abstract**

Brood year 2003 salmon (approximately 114 million chum, 2.7 million pink, and 2.6 million masu salmon) will be marked at 11 hatcheries with 40 discrete patterns in Japan. We plan to mark chum salmon at the Nijibetsu Hatchery and masu salmon at the Shiribetsu Hatchery in Hokkaido for the first time. All chum salmon released from the Chitose, Tokushibetsu, Shari, Nijibetsu, Tsurui, Shizunai, and Yakumo Hatcheries will be marked. All pink salmon released from the Tokushibetsu Hatchery will be marked.

## **Introduction**

The aim of thermal mark programs is to provide information for the ocean migration and survival of each regional salmon stocks in Japan (Urawa et al. 2000). Thermal marks are used for juvenile migration, growth, survival, and feeding surveys, and for offshore migration surveys in the Sea of Okhotsk, North Pacific Ocean, and Bering Sea. In addition, we will determine hatchery origins of returning adults using thermal marks. The present report proposes thermal otolith marks applied to brood year 2003 salmon in Japan.

## **Plan for 2003 brood year stocks**

The proposed thermal marks for the 2003 brood year salmon is shown in Tables 1 and 2. We plan to mark brood year 2003 salmon (approximately 114 million chum, 2.7 million pink, and 2.6 million masu salmon) at 11 hatcheries with 40 discrete patterns. We plan to mark chum salmon at the Nijibetsu Hatchery and masu salmon at the Shiribetsu Hatchery in Hokkaido for the first time. All chum salmon released from the Chitose, Tokushibetsu, Shari, Nijibetsu, Tsurui, Shizunai, and Yakumo Hatcheries will be marked. All pink salmon released from the

Tokushibetsu Hatchery will be marked.

The marking pattern is presented as the RBr notation (Munk and Geiger 1998; Hagen 1999) and Hatch code notation (Hagen et al. 2000). We propose to extend the RBr and Hatchcode notation to describe a wide spaced band, which are opposite to a narrow spaced band. The letter 'w' following a ring number is used to indicate a wide spaced band. As base mark two rings in the first band have been adopted to distinguish Japanese chum and pink salmon from other stocks since 1999 brood year stocks (Kawana et al. 2000, 2001, 2002; Urawa et al. 2000). Thermal rings are induced by cooler temperature exposures except for a chum salmon stock at the Shizunai Hatchery (Shizunai03chum-tr) and all masu salmon stocks at the Shiribetsu Hatchery.

### References

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- Urawa, S., M. Kawana, and T. Ishiguro. 2000. Releases of thermally marked salmon from Japan in 1999 and 2000 with a thermal mark plan for 2000 brood year stocks. (NPAFC Doc. 461) 7 p. National Salmon Resources Center, Fisheries Agency of Japan, Sapporo 062-0922, Japan.

**Table1.** Proposed thermal mark releases from Japan for 2003 brood year stocks of chum and pink salmon.

No	BROOD YEAR	YEAR OF RELEASE	SPECIES	COUNTRY	STATE/ PROVINCE	REGION	AGENCY	FACILITY	STOCK	FINAL RELEASE SITE
J03-1	2003	2004	CHUM	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Chitose Hatchery	Chitose River	Chitose River
J03-2	2003	2004	CHUM	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Chitose Hatchery	Chitose River	Chitose River
J03-3	2003	2004	CHUM	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Chitose Hatchery	Chitose River	Chitose River
J03-4	2003	2004	CHUM	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Chitose Hatchery	Chitose River	Chitose River
J03-5	2003	2004	CHUM	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Chitose Hatchery	Chitose River	Chitose River
J03-6	2003	2004	CHUM	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Chitose Hatchery	Chitose River	Chitose River
J03-7	2003	2004	CHUM	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Chitose Hatchery	Chitose River	Chitose River
J03-8	2003	2004	CHUM	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Chitose Hatchery	Chitose River	Chitose River
J03-9	2003	2004	CHUM	JAPAN	HOKKAIDO	Okhotsk Sea coast	NASREC	Tokushibetsu Hatchery	Tokushibetsu River	Tokushibetsu River
J03-10	2003	2004	CHUM	JAPAN	HOKKAIDO	Okhotsk Sea coast	NASREC	Tokushibetsu Hatchery	Tokushibetsu River	Tokushibetsu River
J03-11	2003	2004	CHUM	JAPAN	HOKKAIDO	Okhotsk Sea coast	NASREC	Tokushibetsu Hatchery	Tokushibetsu River	Tokushibetsu River
J03-12	2003	2004	CHUM	JAPAN	HOKKAIDO	Okhotsk Sea coast	NASREC	Shari Hatchery	Shari River	Shari River
J03-13	2003	2004	CHUM	JAPAN	HOKKAIDO	Okhotsk Sea coast	NASREC	Shari Hatchery	Shari River	Shari River
J03-14	2003	2004	CHUM	JAPAN	HOKKAIDO	Okhotsk Sea coast	NASREC	Shari Hatchery	Shari River	Shari River
J03-15	2003	2004	CHUM	JAPAN	HOKKAIDO	Nemuro Strait coast	NASREC	Ichani Hatchery	Ichani River	Ichani River
J03-16	2003	2004	CHUM	JAPAN	HOKKAIDO	Nemuro Strait coast	NASREC	Ichani Hatchery	Ichani River	Ichani River
J03-17	2003	2004	CHUM	JAPAN	HOKKAIDO	Nemuro Strait coast	NASREC	Ichani Hatchery	Ichani River	Ichani River
J03-18	2003	2004	CHUM	JAPAN	HOKKAIDO	Nemuro Strait coast	NASREC	Nijibetsu Hatchery	Nijibetsu River	Nijibetsu River

No	REARING TREATMENT	STAGE	PRELIMINARY NUMBER OF		RBR CODE	HATCH CODE	GRAPHIC IMAGE		MARKING SYSTEM
			TM RELEASED	OM ID			PREHATCH	POSTHATCH	
J03-1	fed	fry	3,750,000	Chitose03chum-1	1:1.2,2.3-3.2	2,3-2H			CHILLER
J03-2	fed	fry	3,750,000	Chitose03chum-2	1:1.2,2.3-3.3	2,3-3H			CHILLER
J03-3	fed	fry	3,750,000	Chitose03chum-3	1:1.2,2.3-3.4	2,3-4H			CHILLER
J03-4	fed	fry	3,750,000	Chitose03chum-4	1:1.2,2.3-3.5	2,3-5H			CHILLER
J03-5	fed	fry	3,750,000	Chitose03chum-5	1:1.2,2.3-3.2-4.2	2,3-2-2H			CHILLER
J03-6	fed	fry	3,750,000	Chitose03chum-6	1:1.2,2.3-3.6	2,3-6H			CHILLER
J03-7	fed	fry	3,750,000	Chitose03chum-7	1:1.2,2.3-3.2-4.3	2,3-2-3H			CHILLER
J03-8	fed	fry	3,750,000	Chitose03chum-8	1:1.2,2.3-3.3-.4.2	2,3-3-2H			CHILLER
J03-9	fed	fry	3,700,000	Tokushibetsu03chum-1	1:1.2,2.1n-3.3n	2,1n-3nH			CHILLER
J03-10	fed	fry	3,700,000	Tokushibetsu03chum-2	1:1.2,2.3n-3.3n	2,3n-3nH			CHILLER
J03-11	fed	fry	3,700,000	Tokushibetsu03chum-3	1:1.2,2.3n	2,3nH			CHILLER
J03-12	fed	fry	3,900,000	Shari03chum-1	1:1.2/2.2w-3.3	2/2w-3H			CHILLER
J03-13	fed	fry	3,900,000	Shari03chum-2	1:1.2/2.2w,3.2-4.2	2/2w,2-2H			CHILLER
J03-14	fed	fry	3,900,000	Shari03chum-3	1:1.2/2.2w-3.4	2/2w-4H			CHILLER
J03-15	fed	fry	1,700,000	Ichani03chum-early	1:1.2,2.9n	2,9nH			CHILLER
J03-16	fed	fry	1,700,000	Ichani03chum-mid	1:1.2,2.7n	2,7nH			CHILLER
J03-17	fed	fry	1,700,000	Ichani03chum-late	1:1.2-2.8n	2-8nH			CHILLER
J03-18	fed	fry	25,000,000	Nijibetsu03chum	1:1.2,2.5n	2,5nH			CHILLER

No	OTOLITH MARK SCHEDULE	TEMP SHIFT		COMMENTS
		DIRECTION	TEMP	
J03-1	(1X)12C:12H,(1X)12C:24H,(2X)12C:12H,(1X)12C:36H,(2X)12C:12H	down	(8-4°C)	
J03-2	(1X)12C:12H,(1X)12C:24H,(2X)12C:12H,(1X)12C:36H,(3X)12C:12H	down	(8-4°C)	
J03-3	(1X)12C:12H,(1X)12C:24H,(2X)12C:12H,(1X)12C:36H,(4X)12C:12H	down	(8-4°C)	
J03-4	(1X)12C:12H,(1X)12C:24H,(2X)12C:12H,(1X)12C:36H,(5X)12C:12H	down	(8-4°C)	
J03-5	(1X)12C:12H,(1X)12C:24H,(2X)12C:12H,(1X)12C:36H,(1X)12C:12H,(1X)12C:36H,(2X)12C:12H	down	(8-4°C)	
J03-6	(1X)12C:12H,(1X)12C:24H,(2X)12C:12H,(1X)12C:36H,(6X)12C:12H	down	(8-4°C)	
J03-7	(1X)12C:12H,(1X)12C:24H,(2X)12C:12H,(1X)12C:36H,(1X)12C:12H,(1X)12C:36H,(3X)12C:12H	down	(8-4°C)	
J03-8	(1X)12C:12H,(1X)12C:24H,(2X)12C:12H,(1X)12C:36H,(2X)12C:12H,(1X)12C:36H,(2X)12C:12H	down	(8-4°C)	
J03-9	(1X)24C:24H,(1X)24C:48H,(1X)12C:36H,(3X)12C:12H	down	(8-5°C)	
J03-10	(1X)24C:24H,(1X)24C:48H,(2X)12C:12H,(1X)12C:36H,(3X)12C:12H	down	(8-5°C)	
J03-11	(1X)24C:24H,(1X)24C:48H,(3X)12C:12H	down	(8-5°C)	
J03-12	(1X)12C:12H,(1X)12C:48H,(1X)24C:24H,(1X)24C:72H,(3X)12C:12H	down	(8-4°C)	
J03-13	(1X)12C:12H,(1X)12C:48H,(1X)24C:24H,(1X)24C:48H,(1X)12C:12H,(1X)12C:36H,(2X)12C:12H	down	(8-4°C)	
J03-14	(1X)12C:12H,(1X)12C:48H,(1X)24C:24H,(1X)24C:72H,(4X)12C:12H	down	(8-4°C)	
J03-15	(1X)24C:24H,(1X)24C:48H,(9X)12C:12H	down	(9-5°C)	spawning date: early October
J03-16	(1X)24C:24H,(1X)24C:48H,(7X)12C:12H	down	(8-4°C)	spawning date: late October
J03-17	(1X)24C:24H,(1X)24C:72H,(8X)12C:12H	down	(8-4°C)	spawning date: middle November
J03-18	(1X)24C:24H,(1X)24C:48H,(5X)12C:12H	down	(8-4°C)	

Table1. Continued.

No	BROOD YEAR	YEAR OF RELEASE	SPECIES	COUNTRY	STATE/ PROVINCE	REGION	AGENCY	FACILITY	STOCK	FINAL RELEASE SITE
J03-19	2003	2004	CHUM	JAPAN	HOKKAIDO	East Pacific coast	NASREC	Tsurui Hatchery	Kushiro River	Kushiro River
J03-20	2003	2004	CHUM	JAPAN	HOKKAIDO	East Pacific coast	NASREC	Tsurui Hatchery	Kushiro River	Kushiro River
J03-21	2003	2004	CHUM	JAPAN	HOKKAIDO	East Pacific coast	NASREC	Tsurui Hatchery	Kushiro River	Kushiro River
J03-22	2003	2004	CHUM	JAPAN	HOKKAIDO	West Pacific coast	NASREC	Shizunai Hatchery	Shizunai River	Shizunai River
J03-23	2003	2004	CHUM	JAPAN	HOKKAIDO	West Pacific coast	NASREC	Shizunai Hatchery	Shizunai River	Shizunai River
J03-24	2003	2004	CHUM	JAPAN	HOKKAIDO	West Pacific coast	NASREC	Shizunai Hatchery	Shizunai River	Shizunai River
J03-25	2003	2004	CHUM	JAPAN	HOKKAIDO	West Pacific coast	NASREC	Shizunai Hatchery	Shizunai River	Shizunai River
J03-26	2003	2004	CHUM	JAPAN	HOKKAIDO	West Pacific coast	NASREC	Yakumo Hatchery	Yurappu River	Yurappu River
J03-27	2003	2004	CHUM	JAPAN	HOKKAIDO	West Pacific coast	NASREC	Yakumo Hatchery	Yurappu River	Yurappu River
J03-28	2003	2004	CHUM	JAPAN	HOKKAIDO	West Pacific coast	NASREC	Yakumo Hatchery	Yurappu River	Yurappu River
J03-29	2003	2004	CHUM	JAPAN	HONSHU	Pacific coast	NASREC	Katagishi Hatchery	Katagishi River	Katagishi River
J03-30	2003	2004	CHUM	JAPAN	HONSHU	Pacific coast	NASREC	Katagishi Hatchery	Katagishi River	Katagishi River
J03-31	2003	2004	CHUM	JAPAN	HONSHU	Pacific coast	NASREC	Katagishi Hatchery	Katagishi River	Katagishi River
J03-32	2003	2004	CHUM	JAPAN	HONSHU	Pacific coast	NASREC	Katagishi Hatchery	Katagishi River	Katagishi River
J03-33	2003	2004	CHUM	JAPAN	HONSHU	Pacific coast	NASREC	Omine Hatchery	Kitakami River	Kitakami River
J03-34	2003	2004	PINK	JAPAN	HOKKAIDO	Okhotsk Sea coast	NASREC	Tokushibetsu Hatchery	Tokushibetsu River	Tokushibetsu River
J03-35	2003	2004	PINK	JAPAN	HOKKAIDO	Nemuro Strait coast	NASREC	Ichani Hatchery	Ichani River	Ichani River

No	REARING TREATME		PRELIMINARY NUMBER OF		RBr CODE	HATCH CODE	GRAPHIC IMAGE		MARKING SYSTEM
	NT	STAGE	TM RELEASED	OM ID			PREHATCH	POSTHATCH	
J03-19	fed	fry	3,030,000	Kushiro03chum-1	1:1,2,2,5-3,2	2,5-2H			CHILLER
J03-20	fed	fry	3,030,000	Kushiro03chum-2	1:1,2,2,5-3,3	2,5-3H			CHILLER
J03-21	fed	fry	3,030,000	Kushiro03chum-3	1:1,2,2,5-3,4	2,5-4H			CHILLER
J03-22	fed	fry	330,000	Shizunai03chum-early	1:1,2,2,2n,3,4n	2,2n,4nH			CHILLER
J03-23	fed	fry	330,000	Shizunai03chum-tr	1:1,2-2,3	2,3H			CHILLER
J03-24	fed	fry	2,650,000	Shizunai03chum-mid	1:1,2,2,6n	2,6nH			CHILLER
J03-25	fed	fry	2,730,000	Shizunai03chum-late	1:1,2,2,1n-3,5n	2,1n-5nH			CHILLER
J03-26	fed	fry	2,500,000	Yurappu03chum-1	1:1,2,2,2w	2,2wH			CHILLER
J03-27	fed	fry	2,500,000	Yurappu03chum-2	1:1,2,2,2w-3,2	2,3w-2H			CHILLER
J03-28	fed	fry	2,500,000	Yurappu03chum-3	1:1,2,2,2w-3,3	2,3w-3H			CHILLER
J03-29	fed	fry	4,000,000	Katagishi03chum-1	1:1,2,2,4	2,4H			CHILLER
J03-30	fed	fry	1,000,000	Katagishi03chum-2	1:1,2-2,2,3,2	2-2,2H			CHILLER
J03-31	fed	fry	1,000,000	Katagishi03chum-3	1:1,2,2,2,3,3	2,2,3H			CHILLER
J03-32	fed	fry	1,000,000	Katagishi03chum-4	1:1,2,2,2	2,2H			CHILLER
J03-33	fed	fry	1,500,000	Omine03chum	1:1,2	2H			CHILLER
J03-34	fed	fry	1,700,000	Tokushibetsu03pink	1:1,2-2,3	2,3H			CHILLER
J03-35	fed	fry	1,000,000	Ichani03pink	1:1,2,2,5	2,5H			CHILLER

No	OTOLITH MARK SCHEDULE	TEMP SHIFT		COMMENTS
		DIRECTION		
J03-19	(1X)12C:12H,(1X)12C:36H,(4X)12C:12H,(1X)12C:36H,(2X)12C:12H	down	(8-4°C)	
J03-20	(1X)12C:12H,(1X)12C:36H,(4X)12C:12H,(1X)12C:36H,(3X)12C:12H	down	(8-4°C)	
J03-21	(1X)12C:12H,(1X)12C:36H,(4X)12C:12H,(1X)12C:36H,(4X)12C:12H	down	(8-4°C)	
J03-22	(1X)24C:24H,(1X)24C:48H,(1X)12C:12H,(1X)12C:36H,(4X)12C:12H	down	(10-6°C)	spawning date: early October
J03-23	(1X)24H:24C,(1X)24H:72C,(3X)24H:24C	up	(6-10°C)	spawning date: early October
J03-24	(1X)24C:24H,(1X)24C:48H,(6X)12C:12H	down	(10-6°C)	spawning date: late October and early November
J03-25	(1X)24C:24H,(1X)24C:48H,(1X)12C:36H,(5X)12C:12H	down	(10-6°C)	spawning date: middle November and December
J03-26	(1X)12C:12H,(1X)12C:24H,(2X)24C:24H	down	(8-4°C)	
J03-27	(1X)12C:12H,(1X)12C:24H,(1X)24C:24H,(1X)24C:48H,(2X)12C:12H	down	(8-4°C)	
J03-28	(1X)12C:12H,(1X)12C:24H,(1X)24C:24H,(1X)24C:48H,(3X)12C:12H	down	(8-4°C)	
J03-29	(1X)12C:12H,(1X)12C:24H,(4X)12C:12H	down	(12-8°C)	
J03-30	(1X)12C:12H,(1X)12C:36H,(1X)12C:12H,(1X)12C:36H,(2X)12C:12H	down	(12-8°C)	
J03-31	(1X)12C:12H,(1X)12C:24H,(1X)12C:12H,(1X)12C:24H,(3X)12C:12H	down	(12-8°C)	
J03-32	(1X)12C:12H,(1X)12C:24H,(2X)12C:12H	down	(12-8°C)	
J03-33	(2X)24C:24H	down	(8-4°C)	
J03-34	(1X)24C:24H,(1X)24C:72H,(3X)24C:24H	down	(7-4°C)	
J03-35	(1X)24C:24H,(1X)24C:48H,(5X)24C:24H	down	(8-4°C)	

**Table2.** Proposed thermal mark releases from Japan for 2003 brood year stocks of masu salmon.

No	BROOD YEAR	YEAR OF RELEASE	SPECIES	COUNTRY	STATE/ PROVINCE	REGION	AGENCY	FACILITY	STOCK	FINAL RELEASE SITE
J03-36	2003	2004	MASU	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Shiribetsu Hatchery	Shiribetsu River	Shubuto River
J03-37	2003	2004	MASU	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Shiribetsu Hatchery	Shiribetsu River	Shiribetsu River
J03-38	2003	2004	MASU	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Chitose Hatchery	Shiribetsu River	Shiribetsu River
J03-39	2003	2004	MASU	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Chitose Hatchery	Chitose River	Chitose River
J03-40	2003	2004	MASU	JAPAN	HOKKAIDO	Okhotsk Sea Coast	NASREC	Shari Hatchery	Shari River	Shari River
J03-41	2003	2004	MASU	JAPAN	HOKKAIDO	Okhotsk Sea Coast	NASREC	Shari Hatchery	Shari River	Shari River
J03-42	2003	2004	MASU	JAPAN	HOKKAIDO	West Pacific coast	NASREC	Yakumo Hatchery	Yurappu River	Yurappu River
J03-43	2003	2004	MASU	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Yakumo Hatchery	Shiribetsu River	Shiribetsu River
J03-44	2003	2005	MASU	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Chitose Hatchery	Shiribetsu River	Shiribetsu River
J03-45	2003	2005	MASU	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Chitose Hatchery	Chitose River	Chitose River
J03-46	2003	2005	MASU	JAPAN	HOKKAIDO	Okhotsk Sea Coast	NASREC	Shari Hatchery	Shari River	Shari River
J03-47	2003	2005	MASU	JAPAN	HOKKAIDO	West Pacific coast	NASREC	Chitose Hatchery	Shizunai River	Shizunai River
J03-48	2003	2005	MASU	JAPAN	HOKKAIDO	West Pacific coast	NASREC	Yakumo Hatchery	Yurappu River	Yurappu River
J03-49	2003	2005	MASU	JAPAN	HOKKAIDO	Japan Sea coast	NASREC	Shiribetsu Hatchery	Shiribetsu River	Shiribetsu River

No	REARING TREATMENT	STAGE	PRELIMINARY NUMBER OF		RBr CODE	HATCH CODE	GRAPHIC IMAGE		MARKING SYSTEM
			TM RELEASED	OM ID			PREHATCH	POSTHATCH	
J03-36	fed	fry	580,000	Shubuto03masu-f	1:1,2,2,2	2,2H		CHILLER	
J03-37	fed	fry	650,000	Shiribetsu03masu-s-f	1:1,2,2,2	2,2H		CHILLER	
J03-38	fed	juvenile	40,000	Shiribetsu03masu-c-j	1:1,3,2,3n	3,3nH		CHILLER	
J03-39	fed	fry / juvenile	30,000 / 40,000	Chitose03masu-fj	1:1,3,2,3n	3,3nH		CHILLER	
J03-40	fed	fry / juvenile	400,000 / 100,000	Shari03masu-fj	1:1,6	6H		CHILLER	
J03-41	unfed	egg	-	Shari03masu-e	1:1,4	4H		CHILLER	
J03-42	fed	fry / juvenile	100,000 / 60,000	Yurappu03masu-fj	1:1,5	5H		CHILLER	
J03-43	fed	juvenile	180,000	Shiribetsu03masu-y-j	1:1,5	5H		CHILLER	
J03-44	fed	smolt	40,000	Shiribetsu03masu-c-s	1:1,3,2,3n	3,3nH		CHILLER	
J03-45	fed	smolt	30,000	Chitose03masu-fj	1:1,3,2,3n	3,3nH		CHILLER	
J03-46	fed	smolt	100,000	Shari03masu-s	1:1,6	6H		CHILLER	
J03-47	fed	smolt	10,000	Shizunai03masu-s	1:1,3,2,3n	3,3nH		CHILLER	
J03-48	fed	smolt	30,000	Yurappu03masu-s	1:1,5	5H		CHILLER	
J03-49	fed	smolt	180,000	Shiribetsu03masu-s-s	1:1,2,2,2	2,2H		CHILLER	

No	OTOLITH MARK SCHEDULE	TEMP SHIFT	
		DIRECTION	COMMENTS
J03-36	(1X)24H:24C,(1X)24H:48C,(2X)24H:24C	up (6-10°C)	
J03-37	(1X)24H:24C,(1X)24H:48C,(2X)24H:24C	up (6-10°C)	
J03-38	(2X)24C:24H,(1X)24C:48H,(3X)12C:12H	down (8-4°C)	
J03-39	(2X)24C:24H,(1X)24C:48H,(3X)12C:12H	down (8-4°C)	
J03-40	(6X)24C:24H	down (8-4°C)	
J03-41	(4X)24C:24H	down (8-4°C)	
J03-42	(5X)24C:24H	down (8-4°C)	
J03-43	(5X)24C:24H	down (8-4°C)	
J03-44	(2X)24C:24H,(1X)24C:48H,(3X)12C:12H	down (8-4°C)	
J03-45	(2X)24C:24H,(1X)24C:48H,(3X)12C:12H	down (8-4°C)	include TM + Finclips
J03-46	(6X)24C:24H	down (8-4°C)	include TM + Finclips
J03-47	(2X)24C:24H,(1X)24C:48H,(3X)12C:12H	down (8-4°C)	TM + Ribbon Tag
J03-48	(5X)24C:24H	down (8-4°C)	include TM + Ribbon Tag (10,000)
J03-49	(1X)24H:24C,(1X)24H:48C,(2X)24H:24C	up (6-10°C)	include TM + Finclips +Ribbon Tag