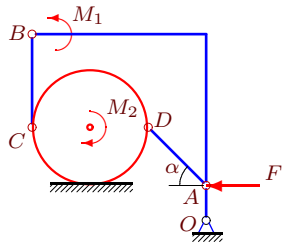
Принцип возможных перемещений (2)

Механизм с идеальными стационарными связями находится в равновесии под действием силы F и моментов M_1, M_2. Длины звеньев даны в сантиметрах. Стержни, направление которых не указано, считать горизонтальными или вертикальными. Диск касается горизонтальной поверхности без проскальзывания. Найти величину F.

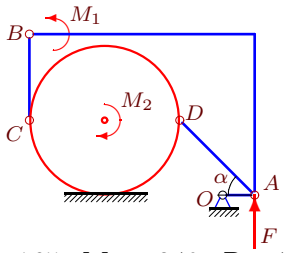
Кирсанов М.Н. **Решебник. Теоретическая механика**/Под ред. А. И. Кириллова.– М.: ФИЗМАТЛИТ, 2008. — 384 с. (с.158.)

Задача D-24.1. *Алексеев Р.О.*



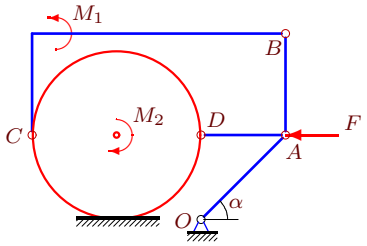
$M_1 = 174$, $M_2 = 238$, $R = 5$, $OA = 3$, $AD = 5\sqrt{2}$, $BC = 8$, $\alpha = 45°$.

Задача D-24.2. *Ананьев А.Е.*



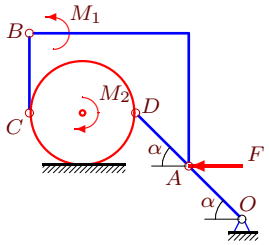
$M_1 = 165$, $M_2 = 249$, $R = 7$, $OA = 3$, $AD = 7\sqrt{2}$, $BC = 8$, $\alpha = 45°$.

Задача D-24.3. *Арчаков А.Д.*



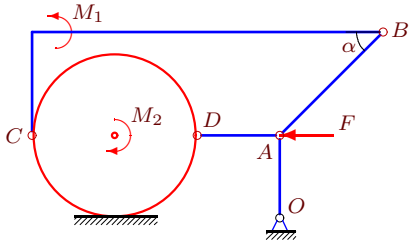
$M_1 = 27$, $M_2 = 58$, $R = 5$, $OA = 5\sqrt{2}$, $AB = 6$, $AD = 5$, $\alpha = 45°$.

Задача D-24.4. *Бакленев Н.*



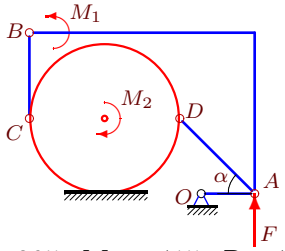
$M_1 = 180$, $M_2 = 111$, $R = 4$, $OA = 4\sqrt{2}$, $AD = 4\sqrt{2}$, $BC = 6$, $\alpha = 45°$.

Задача D-24.5. *Болтунова В.О.*



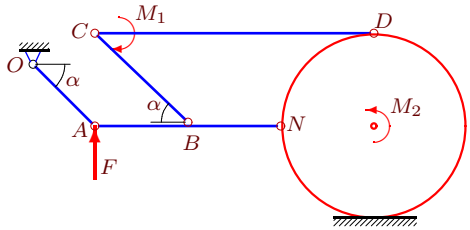
$M_1 = 33$, $M_2 = 35$, $R = 4$, $OA = 4$, $AB = 5\sqrt{2}$, $AD = 4$, $\alpha = 45°$.

Задача D-24.6. *Васильева А. А.*



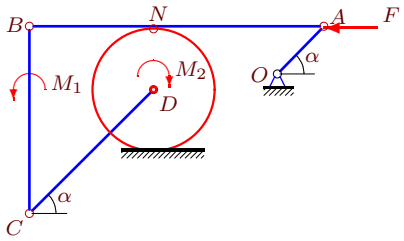
$M_1 = 205$, $M_2 = 415$, $R = 7$, $OA = 5$, $AD = 7\sqrt{2}$, $BC = 8$, $\alpha = 45°$.

Задача D-24.7. *Видякин В.Г.*



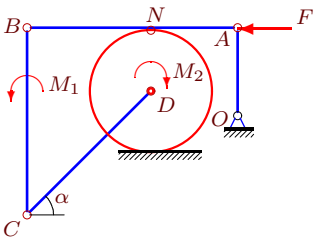
$M_1 = 78$, $M_2 = 184$, $R = 6$, $OA = 4\sqrt{2}$,
$AB = 6$, $BN = 6$, $BC = 6\sqrt{2}$, $CD = 18$, α=45°

Задача D-24.8. *Воробьева Д.*



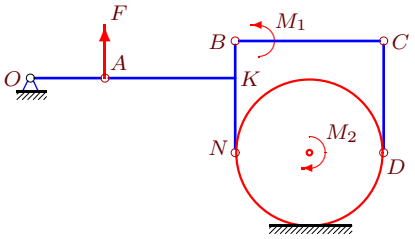
$M_1 = 495$, $M_2 = 501$, $R = 8$, $OA = 6\sqrt{2}$,
$CD = 16\sqrt{2}$, $AN = 22$, $AB = 38$, $\alpha = 45°$.

Задача D-24.9. *Гарт Е.А.*



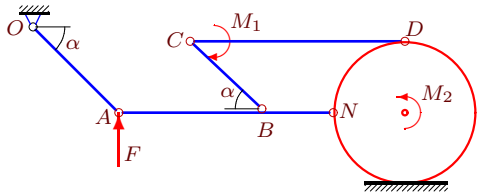
$M_1 = 399$, $M_2 = 203$, $R = 5$, $OA = 7$,
$CD = 10\sqrt{2}$, $AN = 7$, $AB = 17$, $\alpha = 45°$.

Задача D-24.10. *Гурьева Т.В.*



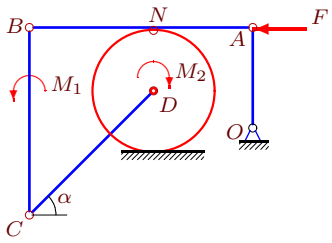
$M_1 = 56$, $M_2 = 44$, $R = 4$, $OA = 4$,
$AK = 7$, $BK = 2$, $KN = 4$, $CD = 6$.

Задача D-24.11. *Дронов С.А.*



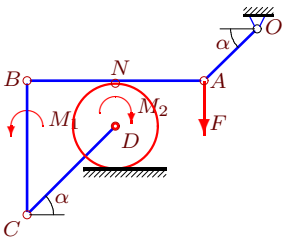
$M_1 = 156$, $M_2 = 124$, $R = 5$, $OA = 6\sqrt{2}$,
$AB = 10$, $BN = 5$, $BC = 5\sqrt{2}$, $CD = 15$, α=45°

Задача D-24.12. *Зыков А.*



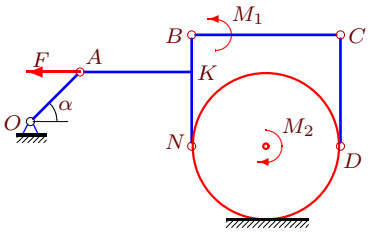
$M_1 = 348$, $M_2 = 476$, $R = 5$, $OA = 8$,
$CD = 10\sqrt{2}$, $AN = 8$, $AB = 18$, $\alpha = 45°$.

Задача D-24.13. *Касимов Д.Р.*



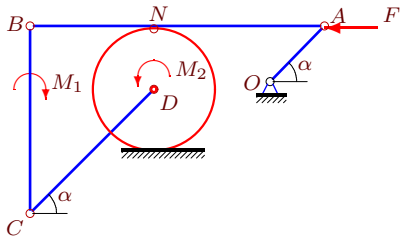
$M_1 = M_2 = 453$, $R = 5$, $OA = 6\sqrt{2}$,
$CD = 10\sqrt{2}$, $AN = 10$, $AB = 20$, $\alpha = 45°$.

Задача D-24.14. *Ковальчук В*



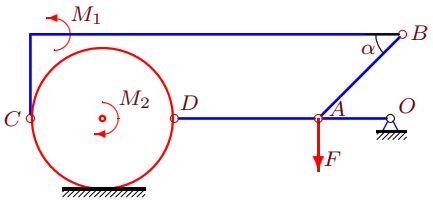
$M_1 = 38$, $M_2 = 62$, $R = 6$, $OA = 4\sqrt{2}$,
$AK = 9$, $BK = 3$, $KN = 6$, $CD = 9$, $\alpha = 45°$.

Задача D-24.15. *Косенок Д.А.*



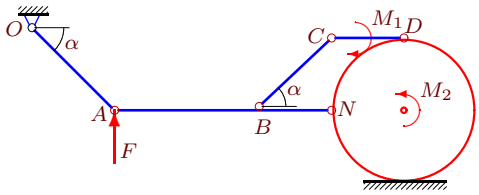
$M_1 = 77$, $M_2 = 63$, $R = 8$, $OA = 7\sqrt{2}$,
$CD = 16\sqrt{2}$, $AN = 22$, $AB = 38$, $\alpha = 45°$.

Задача D-24.16. *Лукьянов Л.М.*



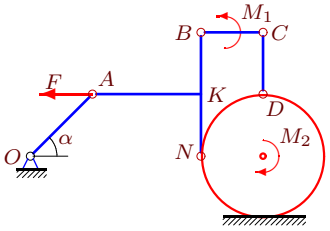
$M_1 = 120$, $M_2 = 121$, $R = 6$, $OA = 6$,
$AB = 7\sqrt{2}$, $AD = 12$, $\alpha = 45°$.

Задача D-24.17. *Моргун Е.В.*



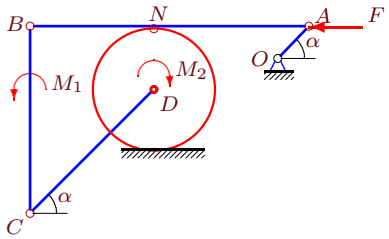
$M_1 = 288$, $M_2 = 336$, $R = 7$, $OA = 8\sqrt{2}$,
$AB = 14$, $BN = 7$, $BC = 7\sqrt{2}$, $CD = 7$, α=45°

Задача D-24.18. *Павлова Е.А.*



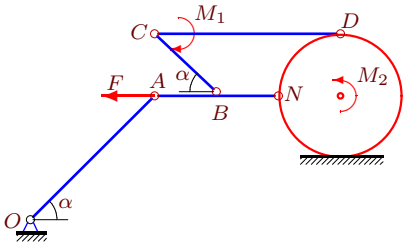
$M_1 = 49$, $M_2 = 37$, $R = 4$, $OA = 4\sqrt{2}$,
$AK = 7$, $BK = 4$, $KN = 4$, $CD = 4$, $\alpha = 45°$.

Задача D-24.19. *Панфилов К.*



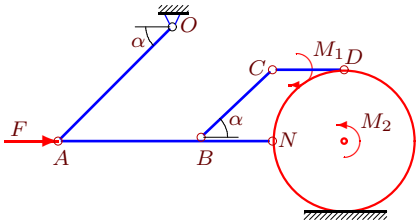
$M_1 = 225$, $M_2 = 227$, $R = 8$, $OA = 4\sqrt{2}$,
$CD = 16\sqrt{2}$, $AN = 20$, $AB = 36$, $\alpha = 45°$.

Задача D-24.20. *Плетнева Е. А.*



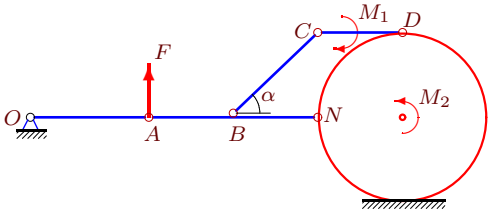
$M_1 = 114$, $M_2 = 70$, $R = 4$, $OA = 8\sqrt{2}$,
$AB = 4$, $BN = 4$, $BC = 4\sqrt{2}$, $CD = 12$, α=45°

Задача D-24.21. *Пономарева А.*



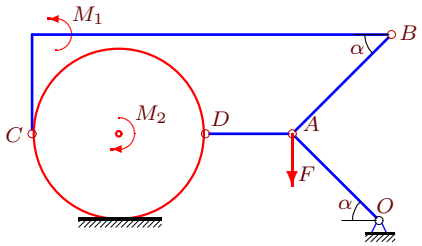
$M_1 = 504$, $M_2 = 464$, $R = 5$, $OA = 8\sqrt{2}$,
$AB = 10$, $BN = 5$, $BC = 5\sqrt{2}$, $CD = 5$, α=45°

Задача D-24.22. *Пузин М. О.*



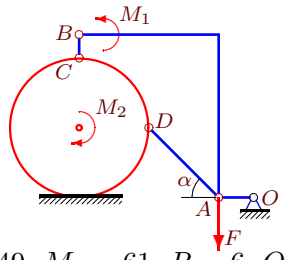
$M_1 = 210$, $M_2 = 287$, $R = 5$, $OA = 7$,
$AB = 5$, $BN = 5$, $BC = 5\sqrt{2}$, $CD = 5$, α=45°

Задача D-24.23. *Рассолов А.*



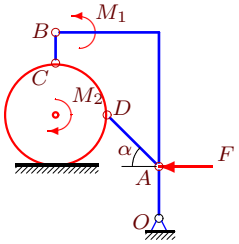
$M_1 = 27$, $M_2 = 42$, $R = 7$, $OA = 7\sqrt{2}$,
$AB = 8\sqrt{2}$, $AD = 7$, $\alpha = 45°$.

Задача D-24.24. *Рябов М.Н.*



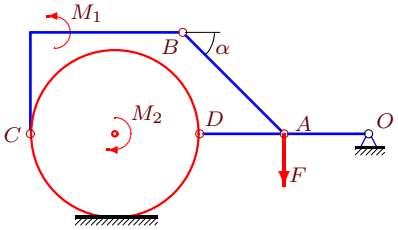
$M_1 = 49$, $M_2 = 61$, $R = 6$, $OA = 3$,
$AD = 6\sqrt{2}$, $BC = 2$, $\alpha = 45°$.

Задача D-24.25. *Сапко П. А.*



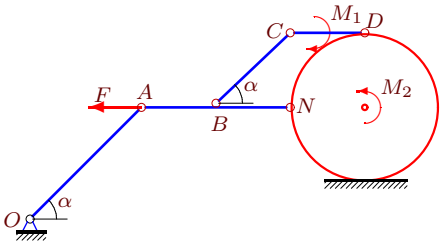
$M_1 = 19$, $M_2 = 40$, $R = 5$, $OA = 5$,
$AD = 5\sqrt{2}$, $BC = 3$, $\alpha = 45°$.

Задача D-24.26. *Солдаткин Л.И.*



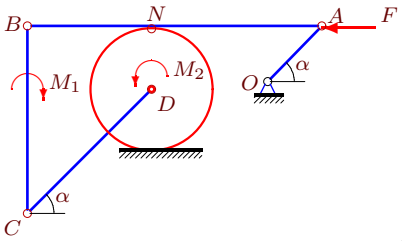
$M_1 = 75$, $M_2 = 61$, $R = 5$, $OA = 5$,
$AB = 6\sqrt{2}$, $AD = 5$, $\alpha = 45°$.

Задача D-24.27. *Софроницкий А.П.*



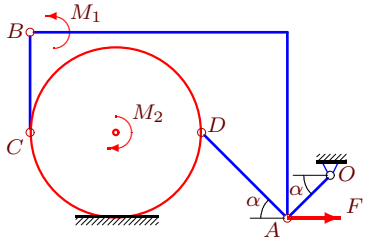
$M_1 = 57$, $M_2 = 39$, $R = 4$, $OA = 6\sqrt{2}$,
$AB = 4$, $BN = 4$, $BC = 4\sqrt{2}$, $CD = 4$, α=45°

Задача D-24.28. *Сохина Н. М.*



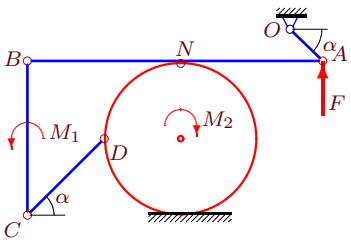
$M_1 = 77$, $M_2 = 63$, $R = 8$, $OA = 7\sqrt{2}$,
$CD = 16\sqrt{2}$, $AN = 22$, $AB = 38$, $\alpha = 45°$.

Задача D-24.29. *Терлецкий А.С.*



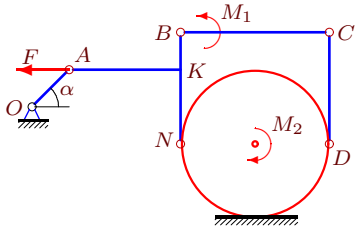
$M_1 = 525$, $M_2 = 644$, $R = 6$, $OA = 3\sqrt{2}$,
$AD = 6\sqrt{2}$, $BC = 7$, $\alpha = 45°$.

Задача D-24.30. *Умрихин А.Ю*



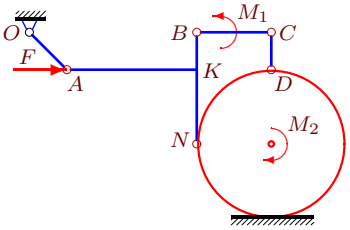
$M_1 = 39$, $M_2 = 504$, $R = 7$, $OA = 3\sqrt{2}$,
$CD = 7\sqrt{2}$, $AN = 13$, $AB = 27$, $\alpha = 45°$.

Задача D-24.31. *Филиппов А.С.*



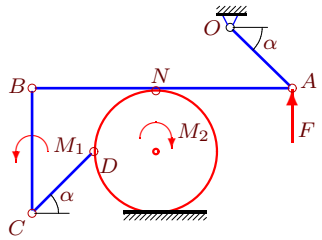
$M_1 = 19$, $M_2 = 31$, $R = 6$, $OA = 3\sqrt{2}$,
$AK = 9$, $BK = 3$, $KN = 6$, $CD = 9$, $\alpha = 45°$.

Задача D-24.32. *Финогенова Е.М.*



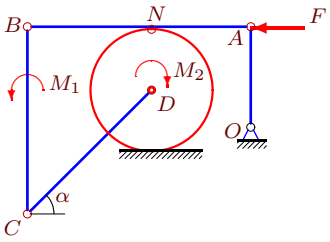
$M_1 = 13$, $M_2 = 17$, $R = 4$, $OA = 2\sqrt{2}$,
$AK = 7$, $BK = 2$, $KN = 4$, $CD = 2$, $\alpha = 45°$.

Задача D-24.33. *Фоломкин М.А.*



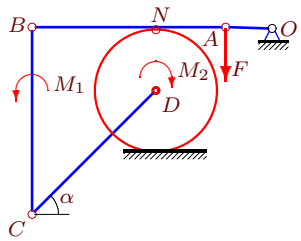
$M_1 = 341$, $M_2 = 650$, $R = 5$, $OA = 5\sqrt{2}$,
$CD = 5\sqrt{2}$, $AN = 11$, $AB = 21$, $\alpha = 45°$.

Задача D-24.34. *Цымбалюк А.*



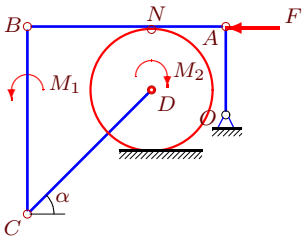
$M_1 = 348$, $M_2 = 476$, $R = 5$, $OA = 8$,
$CD = 10\sqrt{2}$, $AN = 8$, $AB = 18$, $\alpha = 45°$.

Задача D-24.35. *Чумаченко Н. Д.*



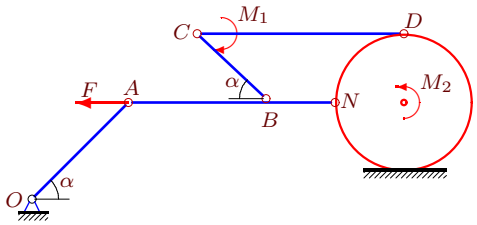
$M_1 = 324$, $M_2 = 166$, $R = 8$, $OA = 6$,
$CD = 16\sqrt{2}$, $AN = 9$, $AB = 25$, $\alpha = 45°$.

Задача D-24.36. *Шаталов А. В.*



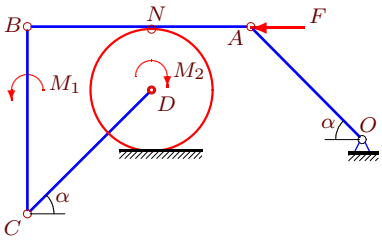
$M_1 = 399$, $M_2 = 203$, $R = 5$, $OA = 7$,
$CD = 10\sqrt{2}$, $AN = 6$, $AB = 16$, $\alpha = 45°$.

Задача D-24.37. *Швыдков Д. М.*



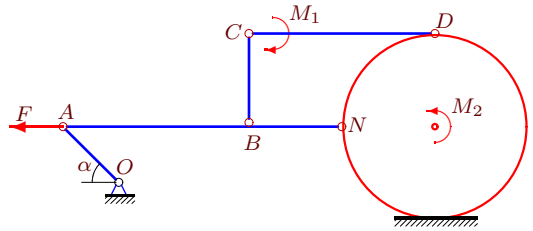
$M_1 = 1512$, $M_2 = 1232$, $R = 5$, $OA = 7\sqrt{2}$,
$AB = 10$, $BN = 5$, $BC = 5\sqrt{2}$, $CD = 15$, α=45°

Задача D-24.38. *Шмелев Д.О.*



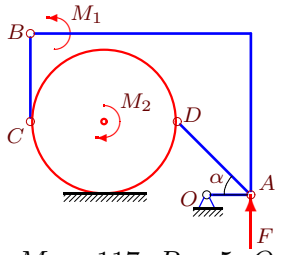
$M_1 = 324$, $M_2 = 378$, $R = 5$, $OA = 9\sqrt{2}$,
$CD = 10\sqrt{2}$, $AN = 8$, $AB = 18$, $\alpha = 45°$.

Задача D-24.39. *Щербинина А.К.*



$M_1 = 54$, $M_2 = 117$, $R = 5$, $OA = 3\sqrt{2}$,
$AB = 10$, $BN = BC = 5$, $CD = 10$, α=45°

Задача D-24.40. *Щур В.С.*



$M_1 = M_2 = 117$, $R = 5$, $OA = 3$,
$AD = 5\sqrt{2}$, $BC = 6$, $\alpha = 45°$.

Ответы.

Принцип возможных перемещений (2)

23-Nov-17

№	ω_{AB_z}	ω_{BC_z}	ω_{CD_z}	ω_{DA_z}	$\omega_{\text{диск}_z}$	ω_{OA_z}	F	
1	2	7	–	-6	6	20	18	Алексеев Р.О.
2	3	3	–	3	3	14	6	Ананьев А.Е.
3	2	2	–	0	3	3	8	Арчаков А.Д.
4	-3	1	–	-9	0	9	15	Бакленев Н.
5	1	1	–	-3	3	3	6	Болтунова В.О.
6	5	5	–	5	5	14	15	Васильева А. А.
7	0	-6	-4	–	-6	9	22	Видякин В.Г.
8	24	27	24	–	33	88	6	Воробьева Д.
9	0	7	0	–	21	30	7	Гарт Е.А.
10	-4	4	-4	–	4	3	−4	Гурьева Т.В.
11	0	-6	-4	–	-6	5	4	Дронов С.А.
12	0	4	0	–	12	15	36	Зыков А.
13	-3	-3	-3	–	-3	5	0	Касимов Д.Р.
14	-8	10	-8	–	10	3	20	Ковальчук В
15	56	63	56	–	77	176	0	Косенок Д.А.
16	-1	-1	–	-2	0	4	5	Лукьянов Л.М.
17	0	-8	0	–	-8	7	48	Моргун Е.В.
18	-8	11	-27	–	11	3	−11	Павлова Е.А.
19	12	13	12	–	15	60	2	Панфилов К.
20	-6	6	2	–	6	3	−8	Плетнева Е. А.
21	16	-24	16	–	-24	15	160	Пономарева А.
22	-7	0	-7	–	0	10	−21	Пузин М. О.
23	0	0	–	-2	1	1	6	Рассолов А.
24	-1	-1	–	-1	-1	4	−1	Рябов М.Н.
25	0	0	–	-1	1	2	4	Сапко П. А.
26	-1	-1	–	-3	0	3	5	Солдаткин Л.И.
27	-3	3	-3	–	3	2	−24	Софроницкий А.П.
28	56	63	56	–	77	176	0	Сохина Н. М.
29	-14	-26	–	0	-21	42	−49	Терлецкий А.С.
30	42	42	123	–	-39	182	−39	Умрихин А.Ю
31	-4	5	-4	–	5	2	10	Филиппов А.С.
32	0	-1	2	–	-1	2	−1	Финогенова Е.М.
33	10	10	31	–	-11	22	−96	Фоломкин М.А.
34	0	4	0	–	12	15	36	Цымбалюк А.
35	-6	-4	-6	–	0	9	24	Чумаченко Н. Д.
36	0	7	0	–	21	30	7	Шаталов А. В.
37	-42	63	28	–	63	45	−112	Швыдков Д. М.
38	-45	-18	-45	–	36	40	54	Шмелев Д.О.
39	0	6	3	–	6	10	−18	Щербинина А.К.
40	3	3	–	3	3	10	0	Щур В.С.

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