
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-Q**

(Mark One)

- QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended March 28, 2020

OR

- TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____

Commission file number 1-05129

MOOG Inc.

(Exact name of registrant as specified in its charter)

New York

(State or other jurisdiction of
incorporation or organization)

16-0757636

(I.R.S. Employer Identification No.)

400 Jamison Rd East Aurora, New York

(Address of Principal Executive Offices)

14052-0018

(Zip Code)

(716) 652-2000

Registrant's telephone number, including area code

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Class A common stock	MOG.A	New York Stock Exchange
Class B common stock	MOG.B	New York Stock Exchange

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports); and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

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Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act).
Yes No

The number of shares outstanding of each class of common stock as of April 20, 2020 was:

Class A common stock, 30,003,471 shares

Class B common stock, 2,580,775 shares

Moog Inc.
QUARTERLY REPORT ON FORM 10-Q
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PART I FINANCIAL INFORMATION

Item 1. Financial Statements



Consolidated Condensed Statements of Earnings
(Unaudited)

(dollars in thousands, except share and per share data)	Three Months Ended		Six Months Ended	
	March 28, 2020	March 30, 2019 (1)	March 28, 2020	March 30, 2019 (1)
Net sales	\$ 765,277	\$ 718,811	\$ 1,520,120	\$ 1,398,487
Cost of sales	557,223	521,410	1,100,809	1,001,584
Gross profit	208,054	197,401	419,311	396,903
Research and development	26,688	31,344	54,896	63,220
Selling, general and administrative	107,251	99,860	205,618	196,186
Interest	10,251	9,939	20,483	19,621
Other	2,333	2,342	9,879	7,477
Earnings before income taxes	61,531	53,916	128,435	110,399
Income taxes	11,786	12,857	28,663	26,571
Net earnings	\$ 49,745	\$ 41,059	\$ 99,772	\$ 83,828
Net earnings per share				
Basic	\$ 1.49	\$ 1.18	\$ 2.94	\$ 2.41
Diluted	\$ 1.48	\$ 1.17	\$ 2.91	\$ 2.38
Dividends declared per share	\$ 0.25	\$ 0.25	\$ 0.50	\$ 0.50
Average common shares outstanding				
Basic	33,434,420	34,886,541	33,972,635	34,850,898
Diluted	33,685,395	35,241,113	34,236,399	35,183,471

See accompanying Notes to Consolidated Condensed Financial Statements.
(1) As adjusted, see Note 1 - Basis of Presentation.



Consolidated Condensed Statements of Comprehensive Income (Loss)
(Unaudited)

(dollars in thousands)	Three Months Ended		Six Months Ended	
	March 28, 2020	March 30, 2019 (1)	March 28, 2020	March 30, 2019 (1)
Net earnings	\$ 49,745	\$ 41,059	\$ 99,772	\$ 83,828
Other comprehensive income (loss), net of tax:				
Foreign currency translation adjustment	(23,418)	1,106	(1,885)	(8,281)
Retirement liability adjustment	6,116	5,977	10,479	12,096
Change in accumulated income (loss) on derivatives	(1,163)	(79)	239	585
Other comprehensive income (loss), net of tax	(18,465)	7,004	8,833	4,400
Comprehensive income (loss)	\$ 31,280	\$ 48,063	\$ 108,605	\$ 88,228

See accompanying Notes to Consolidated Condensed Financial Statements.

(1) As adjusted, see Note 1 - Basis of Presentation.

MOOG^{Inc.}
Consolidated Condensed Balance Sheets
(Unaudited)

(dollars in thousands)	March 28, 2020	September 28, 2019 (1)
ASSETS		
Current assets		
Cash and cash equivalents	\$ 115,984	\$ 89,702
Restricted cash	3,281	2,846
Receivables	1,007,730	957,287
Inventories, net	589,493	534,974
Prepaid expenses and other current assets	44,002	44,164
Total current assets	1,760,490	1,628,973
Property, plant and equipment, net	617,369	586,767
Operating lease right-of-use assets	66,193	—
Goodwill	810,354	784,240
Intangible assets, net	96,742	79,646
Deferred income taxes	19,651	19,992
Other assets	14,174	14,619
Total assets	\$ 3,384,973	\$ 3,114,237
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities		
Current installments of long-term debt	\$ —	\$ 249
Accounts payable	244,708	257,677
Accrued compensation	111,280	143,765
Contract advances	182,822	137,242
Accrued liabilities and other	206,800	188,725
Total current liabilities	745,610	727,658
Long-term debt, excluding current installments	1,093,966	832,984
Long-term pension and retirement obligations	161,973	160,034
Deferred income taxes	50,259	40,528
Other long-term liabilities	87,487	30,552
Total liabilities	2,139,295	1,791,756
Shareholders' equity		
Common stock - Class A	43,800	43,795
Common stock - Class B	7,480	7,485
Additional paid-in capital	449,720	510,546
Retained earnings	2,211,462	2,128,739
Treasury shares	(957,082)	(769,569)
Stock Employee Compensation Trust	(60,386)	(111,492)
Supplemental Retirement Plan Trust	(42,672)	(71,546)
Accumulated other comprehensive loss	(406,644)	(415,477)
Total shareholders' equity	1,245,678	1,322,481
Total liabilities and shareholders' equity	\$ 3,384,973	\$ 3,114,237

See accompanying Notes to Consolidated Condensed Financial Statements.
(1) As adjusted, see Note 1 - Basis of Presentation.



Consolidated Condensed Statements of Shareholders' Equity
(Unaudited)

(dollars in thousands)	Three Months Ended		Six Months Ended	
	March 28, 2020 (1)	March 30, 2019 (1)	March 28, 2020 (1)	March 30, 2019 (1)
COMMON STOCK				
Beginning and end of period	\$ 51,280	\$ 51,280	\$ 51,280	\$ 51,280
ADDITIONAL PAID-IN CAPITAL				
Beginning of period	518,822	491,945	510,546	502,257
Issuance of treasury shares	(722)	(1,390)	3,767	1,070
Equity-based compensation expense	890	1,683	3,271	3,691
Adjustment to market - SECT, SERP and other	(69,270)	18,300	(67,864)	3,520
End of period	449,720	510,538	449,720	510,538
RETAINED EARNINGS				
Beginning of period	2,170,105	2,023,114	2,128,739	1,974,125
Net earnings	49,745	41,059	99,772	83,828
Dividends	(8,388)	(8,727)	(17,049)	(17,430)
Adoption of ASC 606	—	—	—	14,923
End of period	2,211,462	2,055,446	2,211,462	2,055,446
TREASURY SHARES AT COST				
Beginning of period	(828,453)	(747,900)	(769,569)	(738,494)
Class A and B shares issued related to compensation	3,921	3,833	4,448	4,968
Class A and B shares purchased	(132,550)	(5,778)	(191,961)	(16,319)
End of period	(957,082)	(749,845)	(957,082)	(749,845)
STOCK EMPLOYEE COMPENSATION TRUST (SECT)				
Beginning of period	(115,503)	(102,182)	(111,492)	(118,449)
Issuance of shares	18,325	8,918	18,325	17,679
Purchase of shares	(3,769)	(5,424)	(6,209)	(7,354)
Adjustment to market	40,561	(10,818)	38,990	(1,382)
End of period	(60,386)	(109,506)	(60,386)	(109,506)
SUPPLEMENTAL RETIREMENT PLAN (SERP) TRUST				
Beginning of period	(71,381)	(67,597)	(71,546)	(72,941)
Adjustment to market	28,709	(7,482)	28,874	(2,138)
End of period	(42,672)	(75,079)	(42,672)	(75,079)
ACCUMULATED OTHER COMPREHENSIVE LOSS				
Beginning of period	(388,179)	(375,396)	(415,477)	(372,792)
Other comprehensive income (loss)	(18,465)	7,004	8,833	4,400
End of period	(406,644)	(368,392)	(406,644)	(368,392)
TOTAL SHAREHOLDERS' EQUITY	\$ 1,245,678	\$ 1,314,442	\$ 1,245,678	\$ 1,314,442

See accompanying Notes to Consolidated Condensed Financial Statements.

(1) As adjusted, see Note 1 - Basis of Presentation.



Consolidated Condensed Statements of Shareholders' Equity, Shares
(Unaudited)

	Three Months Ended		Six Months Ended	
	March 28, 2020	March 30, 2019	March 28, 2020	March 30, 2019
(share data)				
COMMON STOCK - CLASS A				
Beginning of period	43,796,335	43,785,435	43,794,935	43,784,489
Conversion of Class B to Class A	2,894	—	4,294	946
End of period	43,799,229	43,785,435	43,799,229	43,785,435
COMMON STOCK - CLASS B				
Beginning of period	7,483,378	7,494,278	7,484,778	7,495,224
Conversion of Class B to Class A	(2,894)	—	(4,294)	(946)
End of period	7,480,484	7,494,278	7,480,484	7,494,278
TREASURY SHARES - CLASS A COMMON STOCK				
Beginning of period	(11,767,540)	(10,897,407)	(11,101,512)	(10,872,575)
Class A shares issued related to compensation	14,521	48,122	17,599	71,863
Class A shares purchased	(1,617,591)	(33,495)	(2,286,697)	(82,068)
End of period	(13,370,610)	(10,882,780)	(13,370,610)	(10,882,780)
TREASURY SHARES - CLASS B COMMON STOCK				
Beginning of period	(3,260,602)	(3,348,499)	(3,345,489)	(3,323,996)
Class B shares issued related to compensation	44,217	39,536	138,784	98,329
Class B shares purchased	(128,492)	(38,287)	(138,172)	(121,583)
End of period	(3,344,877)	(3,347,250)	(3,344,877)	(3,347,250)
SECT - CLASS A COMMON STOCK				
Beginning and end of period	(425,148)	(425,148)	(425,148)	(425,148)
SECT - CLASS B COMMON STOCK				
Beginning of period	(914,896)	(899,864)	(886,300)	(983,772)
Issuance of shares	221,256	113,749	221,256	221,326
Purchase of shares	(40,966)	(60,412)	(69,562)	(84,081)
End of period	(734,606)	(846,527)	(734,606)	(846,527)
SERP - CLASS B COMMON STOCK				
Beginning and end of period	(826,170)	(876,170)	(826,170)	(876,170)

See accompanying Notes to Consolidated Condensed Financial Statements.



Consolidated Condensed Statements of Cash Flows
(Unaudited)

(dollars in thousands)	Six Months Ended	
	March 28, 2020	March 30, 2019 (1)
CASH FLOWS FROM OPERATING ACTIVITIES		
Net earnings	\$ 99,772	\$ 83,828
Adjustments to reconcile net earnings to net cash provided (used) by operating activities:		
Depreciation	36,962	36,074
Amortization	6,676	7,212
Deferred income taxes	(1,346)	2,182
Equity-based compensation expense	3,271	3,691
Other	5,674	1,331
Changes in assets and liabilities providing (using) cash:		
Receivables	(43,910)	(16,621)
Inventories	(49,467)	(44,428)
Accounts payable	(14,891)	10,208
Contract advances	46,468	17,127
Accrued expenses	(9,920)	(6,075)
Accrued income taxes	(12,338)	(1,767)
Net pension and post retirement liabilities	15,785	15,639
Other assets and liabilities	(2,032)	447
Net cash provided by operating activities	80,704	108,848
CASH FLOWS FROM INVESTING ACTIVITIES		
Acquisitions of businesses, net of cash acquired	(54,265)	—
Purchase of property, plant and equipment	(53,463)	(59,971)
Other investing transactions	(3,706)	2,447
Net cash used by investing activities	(111,434)	(57,524)
CASH FLOWS FROM FINANCING ACTIVITIES		
Net short-term repayments	—	(3,560)
Proceeds from revolving lines of credit	829,000	327,300
Payments on revolving lines of credit	(758,500)	(361,300)
Proceeds from long-term debt	4,300	—
Payments on long-term debt	(4,300)	(167)
Proceeds from senior notes, net of issuance costs	491,769	—
Payments on senior notes	(300,000)	—
Payments on finance lease obligations	(412)	—
Payment of dividends	(17,049)	(17,430)
Proceeds from sale of treasury stock	3,199	2,443
Purchase of outstanding shares for treasury	(191,961)	(16,319)
Proceeds from sale of stock held by SECT	14,278	9,479
Purchase of stock held by SECT	(6,209)	(7,354)
Other financing transactions	(5,877)	—
Net cash provided (used) by financing activities	58,238	(66,908)
Effect of exchange rate changes on cash	(791)	(50)
Increase (decrease) in cash, cash equivalents and restricted cash	26,717	(15,634)
Cash, cash equivalents and restricted cash at beginning of period	92,548	127,706
Cash, cash equivalents and restricted cash at end of period	\$ 119,265	\$ 112,072
SUPPLEMENTAL CASH FLOW INFORMATION		
Treasury shares issued as compensation	\$ 9,063	\$ 11,795
Equipment acquired through lease financing	13,090	148

See accompanying Notes to Consolidated Condensed Financial Statements.

(1) As adjusted, see Note 1 - Basis of Presentation.



Notes to Consolidated Condensed Financial Statements
Six Months Ended March 28, 2020
(Unaudited)
(dollars in thousands, except per share data)

Note 1 - Basis of Presentation

The accompanying unaudited consolidated condensed financial statements have been prepared by management in accordance with U.S. generally accepted accounting principles for interim financial information and with the instructions to Form 10-Q and Article 10 of Regulation S-X. In the opinion of management, all adjustments consisting of normal recurring adjustments considered necessary for the fair presentation of results for the interim period have been included. The results of operations for the three and six months ended March 28, 2020 are not necessarily indicative of the results expected for the full year. The accompanying unaudited consolidated condensed financial statements should be read in conjunction with the financial statements and notes thereto included in our Form 10-K for the fiscal year ended September 28, 2019. All references to years in these financial statements are to fiscal years.

Certain prior year amounts have been reclassified to conform to current year's presentation. Management does not consider the amounts reclassified to be material.

Recent Accounting Pronouncements Adopted

Standard	Description	Financial Statement Effect or Other Significant Matters
ASU no. 2016-02 <i>Leases</i> <i>(and all related ASUs)</i>	The standard requires most lease arrangements to be recognized in the balance sheet as lease assets and lease liabilities. The standard also requires additional disclosures about the leasing arrangements. The provisions of the standard are effective for fiscal years beginning after December 15, 2018 and interim periods within those years. Early adoption is permitted.	We adopted this standard using the modified retrospective method, without adjusting prior comparative periods. We recorded a initial right-of-use (ROU) assets of \$68,126 and lease liabilities of \$71,776, which included reclassifying deferred rent as a component of the ROU asset on the Consolidated Condensed Balance Sheets. There were no material changes to our Consolidated Condensed Statements of Earnings or Consolidated Condensed Statements of Cash Flows. We have completed the necessary changes to our financial statements and related disclosures, internal controls, financial policies and information systems. See Note 7 - Leases, for additional disclosure. Date adopted: Q1 2020

Recent Accounting Pronouncements Not Yet Adopted

Standard	Description	Financial Statement Effect or Other Significant Matters
ASU no. 2018-15 <i>Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract</i>	The standard amends ASC 350 to include in its scope implementation costs of a Cloud Computing Arrangement (CCA) that is a service contract and clarifies that a customer should apply ASC 350-40 to determine which implementation costs should be capitalized in a CCA that is considered a service contract. The ASU is effective for fiscal years beginning after December 15, 2019 and interim periods within those fiscal years. Early adoption is permitted. The amendments should be applied either retrospectively or prospectively to all implementation costs incurred after the date of adoption.	We are currently evaluating the effect on our financial statements and related disclosures. Planned date of adoption: Q1 2021
ASU no. 2016-13 <i>Measurement of Credit Losses on Financial Instruments</i>	The standard replaces the incurred loss model with the current expected credit loss (CECL) model to estimate credit losses for financial assets measured at amortized cost and certain off-balance sheet credit exposures. The CECL model requires a Company to estimate credit losses expected over the life of the financial assets based on historical experience, current conditions and reasonable and supportable forecasts. The provisions of the standard are effective for fiscal years beginning after December 15, 2019 and interim periods within those fiscal years. Early adoption is permitted. The amendment requires a modified retrospective approach by recording a cumulative-effect adjustment to retained earnings as of the beginning of the period of adoption.	We are currently evaluating the effect on our financial statements and related disclosures. Planned date of adoption: Q1 2021

We consider the applicability and impact of all ASUs. ASUs not listed above were assessed and determined to be either not applicable, or had or are expected to have an immaterial impact on our financial statements and related disclosures.

Impact of Change in Accounting Principle

Beginning in the first quarter of 2020, we changed our method of accounting for the determination of the market-related value of assets for a class of assets within the qualified U.S. defined benefit plan (the plan). This class of assets is currently comprised solely of the fixed income funds asset class held in the portfolio for the plan and provides a natural hedge (liability-hedging assets) against the changes in the recorded amount of net periodic pension cost. Refer to Note 13 - Employee Benefit Plans, in our Form 10-K for the fiscal year ended September 28, 2019, for our fair value disclosure by asset classification. Our previous method of accounting was to calculate the market-related value of assets for all the plan's assets recognizing investment gains and losses ratably over a five-year period. We have elected to use the fair value of our liability-hedging assets, which represent approximately 80% of the plan's assets, to determine the market-related value of the assets beginning in the first quarter of 2020. This change in accounting principle is preferable as the recognition of the gains and losses on this class of assets will affect net periodic pension cost in the period in which they occur. No change is being made to the accounting principle for the other classes of pension assets, which represent the remaining 20% of the pension asset portfolio for the plan. The gains and losses for these other plan assets will continue to be amortized into earnings over a five-year period.

The change in accounting principle requires retrospective application and prospective disclosure. The tables below represent the impact of this change on the Consolidated Condensed Statements of Earnings and the Consolidated Condensed Statements of Comprehensive Income (Loss) for the three and six months ended March 28, 2020, the Consolidated Condensed Balance Sheets for the period ended March 28, 2020, the Consolidated Condensed Statements of Earnings and the Consolidated Statements of Comprehensive Income (Loss) for the three and six months ended March 30, 2019 and the Consolidated Condensed Balance Sheets for the periods ended March 30, 2019, September 28, 2019 and September 29, 2018, respectively. The change in accounting principle had no impact on the Consolidated Condensed Statements of Cash Flows for these periods.

The tables below represent the impact of the change in accounting principle on the Consolidated Condensed Statements of Earnings and the Consolidated Statements of Comprehensive Income (Loss) for the three and six months ended March 28, 2020.

	Three Months Ended			Six Months Ended		
	As Reported (With Change), March 28, 2020	Impact of Change	Without Change, March 28, 2020	As Reported (With Change), March 28, 2020	Impact of Change	Without Change, March 28, 2020
Other	\$ 2,333	\$ 2,875	\$ 5,208	\$ 9,879	\$ 5,751	\$ 15,630
Earnings before income taxes	61,531	(2,875)	58,656	128,435	(5,751)	122,684
Income taxes	11,786	(678)	11,108	28,663	(1,357)	27,306
Net earnings	\$ 49,745	\$ (2,197)	\$ 47,548	\$ 99,772	\$ (4,394)	\$ 95,378
Net earnings per share						
Basic	\$ 1.49	\$ (0.07)	\$ 1.42	\$ 2.94	\$ (0.13)	\$ 2.81
Diluted	\$ 1.48	\$ (0.07)	\$ 1.41	\$ 2.91	\$ (0.12)	\$ 2.79
Retirement liability adjustment	\$ 6,116	\$ 2,197	\$ 8,313	\$ 10,479	\$ 4,394	\$ 14,873
Other comprehensive income (loss), net of tax	\$ (18,465)	\$ 2,197	\$ (16,268)	\$ 8,833	\$ 4,394	\$ 13,227
Comprehensive income (loss)	\$ 31,280	\$ —	\$ 31,280	\$ 108,605	\$ —	\$ 108,605

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The table below represents the impact of the change in accounting principle on the Consolidated Condensed Balance Sheet as of March 28, 2020.

	As Reported (With Change), March 28, 2020	Impact of Change	Without Change, March 28, 2020
Shareholders' equity			
Retained earnings	\$ 2,211,462	\$ 195	\$ 2,211,657
Accumulated other comprehensive loss	(406,644)	(195)	(406,839)
Total shareholders' equity	\$ 1,245,678	\$ —	\$ 1,245,678

The tables below represent the impact of the change in accounting principle on the Consolidated Condensed Statements of Earnings and the Consolidated Condensed Statements of Comprehensive Income (Loss) for the three and six months ended March 30, 2019.

	Three Months Ended			Six Months Ended		
	As Previously Reported, March 30, 2019	Impact of Change	As Reported (With Change), March 30, 2019	As Previously Reported, March 30, 2019	Impact of Change	As Reported (With Change), March 30, 2019
Other	\$ 640	\$ 1,702	\$ 2,342	\$ 4,074	\$ 3,403	\$ 7,477
Earnings before income taxes	55,618	(1,702)	53,916	113,802	(3,403)	110,399
Income taxes	13,259	(402)	12,857	27,374	(803)	26,571
Net earnings	\$ 42,359	\$ (1,300)	\$ 41,059	\$ 86,428	\$ (2,600)	\$ 83,828
Net earnings per share						
Basic	\$ 1.21	\$ (0.03)	\$ 1.18	\$ 2.48	\$ (0.07)	\$ 2.41
Diluted	\$ 1.20	\$ (0.03)	\$ 1.17	\$ 2.46	\$ (0.08)	\$ 2.38
Retirement liability adjustment	\$ 4,677	\$ 1,300	\$ 5,977	\$ 9,496	\$ 2,600	\$ 12,096
Other comprehensive income (loss), net of tax	\$ 5,704	\$ 1,300	\$ 7,004	\$ 1,800	\$ 2,600	\$ 4,400
Comprehensive income	\$ 48,063	\$ —	\$ 48,063	\$ 88,228	\$ —	\$ 88,228

The table below represents the impact of the change in accounting principle on the Consolidated Condensed Balance Sheet as of March 30, 2019.

	As Previously Reported, March 30, 2019	Impact of Change	As Reported (With Change), March 30, 2019
Shareholders' equity			
Retained earnings	\$ 2,057,435	\$ (1,989)	\$ 2,055,446
Accumulated other comprehensive loss	(370,381)	1,989	(368,392)
Total shareholders' equity	\$ 1,314,442	\$ —	\$ 1,314,442

The table below represents the impact of the change in accounting principle on the Consolidated Condensed Balance Sheet as of September 28, 2019.

	As Previously Reported, September 28, 2019	Impact of Change	As Reported (With Change), September 28, 2019
Shareholders' equity			
Retained earnings	\$ 2,133,328	\$ (4,589)	\$ 2,128,739
Accumulated other comprehensive loss	(420,066)	4,589	(415,477)
Total shareholders' equity	\$ 1,322,481	\$ —	\$ 1,322,481

See Note 13 - Employee Benefit Plans and Note 16 - Accumulated Other Comprehensive Income (Loss) for adjusted reporting for prior periods.

Note 2 - Revenue from Contracts with Customers

We recognize revenue from contracts with customers using the five-step model prescribed in ASC 606. The first step is identifying the contract. The identification of a contract with a customer requires an assessment of each party's rights and obligations regarding the products or services to be transferred, including an evaluation of termination clauses and presently enforceable rights and obligations. Each party's rights and obligations and the associated terms and conditions are typically determined in purchase orders. For sales that are governed by master supply agreements under which provisions define specific program requirements, purchase orders are issued under these agreements to reflect presently enforceable rights and obligations for the units of products and services being purchased.

Contracts are sometimes modified to account for changes in contract specifications and requirements. When this occurs, we assess the modification as prescribed in ASC 606 and determine whether the existing contract needs to be modified (and revenue cumulatively caught up), whether the existing contract needs to be terminated and a new contract needs to be created, or whether the existing contract remains and a new contract needs to be created. This is determined based on the rights and obligations within the modification as well as the associated transaction price.

The next step is identifying the performance obligations. A performance obligation is a promise to transfer goods or services to a customer that is distinct in the context of the contract, as defined by ASC 606. We identify a performance obligation for each promise in a contract to transfer a distinct good or service to the customer. As part of our assessment, we consider all goods and/or services promised in the contract, regardless of whether they are explicitly stated or implied by customary business practices. The products and services in our contracts are typically not distinct from one another due to their complexity and reliance on each other or, in many cases, we provide a significant integration service. Accordingly, many of our contracts are accounted for as one performance obligation. In limited cases, our contracts have more than one distinct performance obligation, which occurs when we perform activities that are not highly complex or interrelated or involve different product life cycles. Warranties are provided on certain contracts, but do not typically provide for services beyond standard assurances and are therefore not distinct performance obligations under ASC 606.

The third step is determining the transaction price, which represents the amount of consideration we expect to be entitled to receive from a customer in exchange for providing the goods or services. There are times when this consideration is variable, for example a volume discount, and must be estimated. Sales, use, value-added, and excise taxes are excluded from the transaction price, where applicable.

The fourth step is allocating the transaction price. The transaction price must be allocated to the performance obligations identified in the contract based on relative stand-alone selling prices when available, or an estimate for each distinct good or service in the contract when standalone prices are not available. Our contracts with customers generally require payment under normal commercial terms after delivery. Payment terms are typically within 30 to 60 days of delivery. The timing of satisfaction of our performance obligations does not significantly vary from the typical timing of payment.

The final step is the recognition of revenue. We recognize revenue as the performance obligations are satisfied. ASC 606 provides guidance to help determine if we are satisfying the performance obligation at a point in time or over time. In determining when performance obligations are satisfied, we consider factors such as contract terms, payment terms and whether there is an alternative use of the product or service. In essence, we recognize revenue when or as control of the promised goods or services transfer to the customer.

Under ASC 606, revenue recognized over time using an input method that uses costs incurred to date to measure progress toward completion ("cost-to-cost") for the three and six months ended March 28, 2020 was 65% and 64%, respectively. The over time method of revenue recognition is predominantly used in Aircraft Controls and Space and Defense Controls. We use this method for U.S. Government contracts and repair and overhaul arrangements as we are creating or enhancing assets that the customer controls as the assets are being created or enhanced. In addition, many of our large commercial contracts qualify for over-time accounting as our performance does not create an asset with an alternative use and we have an enforceable right to payment for performance completed to date. Our over-time contracts are primarily firm fixed price.

Revenue is recognized on contracts using the cost-to-cost method of accounting as work progresses toward completion as determined by the ratio of cumulative costs incurred to date to estimated total contract costs at completion, multiplied by the total estimated contract revenue, less cumulative revenue recognized in prior periods. We believe that cumulative costs incurred to date as a percentage of estimated total contract costs at completion is an appropriate measure of progress toward satisfaction of performance obligations as this measure most accurately depicts the progress of our work and transfer of control to our customers. Changes in estimates affecting sales, costs and profits are recognized in the period in which the change becomes known using the cumulative catch-up method of accounting, resulting in the cumulative effect of changes reflected in the period. Estimates are reviewed and updated quarterly for substantially all contracts. For the three and six months ended March 28, 2020 we recognized lower revenues of \$4,941 and higher revenues of \$9,678, respectively for adjustments made to performance obligations satisfied (or partially satisfied) in previous periods. For the three and six months ended March 30, 2019 we recognized lower revenues of \$1,321 and higher revenue of \$10,438, respectively for adjustments made to performance obligations satisfied (or partially satisfied) in previous periods.

Contract costs include only allocable, allowable and reasonable costs which are included in cost of sales when incurred. For applicable U.S. Government contracts, contract costs are determined in accordance with the Federal Acquisition Regulations and the related Cost Accounting Standards. The nature of these costs includes development engineering costs and product manufacturing costs such as direct material, direct labor, other direct costs and indirect overhead costs. Contract profit is recorded as a result of the revenue recognized less costs incurred in any reporting period. Variable consideration and contract modifications, such as performance incentives, penalties, contract claims or change orders are considered in estimating revenues, costs and profits when they can be reliably estimated and realization is considered probable. Revenue recognized on contracts for unresolved claims or unapproved contract change orders was not material for the three and six months ended March 28, 2020.

As of March 28, 2020, we had contract reserves of \$65,409. For contracts with anticipated losses at completion, a provision for the entire amount of the estimated remaining loss is charged against income in the period in which the loss becomes known. Contract losses are determined considering all direct and indirect contract costs, exclusive of any selling, general or administrative cost allocations that are treated as period expenses. Loss reserves are more common on firm fixed-price contracts that involve, to varying degrees, the design and development of new and unique controls or control systems to meet the customers' specifications. In accordance with ASC 606, we calculate contract losses at the contract level, versus the performance obligation level. Recall reserves are recorded when additional work is needed on completed products for them to meet contract specifications. Contract-related loss reserves are recorded for the additional work needed on completed and delivered products in order for them to meet contract specifications.

Revenue recognized at the point in time control was transferred to the customer was 35% and 36%, respectively for the three and six months ended March 28, 2020. This method of revenue recognition is used most frequently in Industrial Systems. We use this method for commercial contracts in which the asset being created has an alternative use. We determine the point in time control transfers to the customer by weighing the five indicators provided by ASC 606 - the entity has a present right to payment; the customer has legal title; the customer has physical possession; the customer has the significant risks and rewards of ownership; and the customer has accepted the asset. When control has transferred to the customer, profit is generated as cost of sales is recorded and as revenue is recognized. Inventory costs include all product manufacturing costs such as direct material, direct labor, other direct costs and indirect overhead cost allocations. Shipping and handling costs are considered costs to fulfill a contract and not considered performance obligations. They are included in cost of sales as incurred.

Contract Assets and Liabilities

Unbilled receivables (contract assets) primarily represent revenues recognized for performance obligations that have been satisfied but for which amounts have not been billed. These are included as Receivables on the Consolidated Condensed Balance Sheets. Contract advances (contract liabilities) relate to payments received from customers in advance of the satisfaction of performance obligations for a contract. We do not consider contract advances to be significant financing components as the intent of these payments in advance are for reasons other than providing a significant financing benefit and are customary in our industry.

Total contract assets and contract liabilities are as follows:

	March 28, 2020	September 28, 2019
Unbilled receivables	\$ 510,760	\$ 468,824
Contract advances	182,822	137,242
Net contract assets	\$ 327,938	\$ 331,582

The increase in contract assets reflects the net impact of additional unbilled revenues recorded in excess of revenue recognized during the period. The increase in contract liabilities reflects the net impact of additional deferred revenues recorded in excess of revenue recognized during the period. For the three and six months ended March 28, 2020, we recognized \$25,780 and \$61,540 of revenue, respectively, that was included in the contract liability balance at the beginning of the period.

Remaining Performance Obligations

As of March 28, 2020, the aggregate amount of the transaction price allocated to the performance obligations that are unsatisfied (or partially unsatisfied), also known as backlog, was approximately \$2,603,000. We expect to recognize approximately 69% of that amount as sales over the next twelve months and the balance thereafter.

Disaggregation of Revenue

See Note 19, Segments, for disclosures related to disaggregation of revenue.

Note 3 - Acquisitions and Divestitures

On November 28, 2019, we acquired Gesellschaft für Antriebstechnik mbH and GAT Inc. (GAT), headquartered in Geisenheim, Germany for a purchase price of \$54,265, net of acquired cash. GAT designs and manufactures high-end fluid rotating unions and slip rings. This operation is included in our Industrial Systems segment. The purchase price allocation is subject to adjustments as we obtain additional information for our estimates during the measurement period.

In the first quarter of 2020, we sold a non-core business of our Industrial Systems segment for \$1,775 in net consideration and recorded a gain in other income of \$169.

In the first quarter of 2019, we sold a non-core business of our Industrial Systems segment for \$4,191 in cash and recorded a gain in other income of \$2,641.

Note 4 - Receivables

Receivables consist of:

	March 28, 2020	September 28, 2019
Accounts receivable	\$ 489,069	\$ 477,154
Unbilled receivables	510,760	468,824
Other	13,265	16,711
Less allowance for doubtful accounts	(5,364)	(5,402)
Receivables	\$ 1,007,730	\$ 957,287

We securitize certain trade receivables in transactions that are accounted for as secured borrowings (Securitization Program). We maintain a subordinated interest in a portion of the pool of trade receivables that are securitized. The retained interest, which is included in Receivables in the consolidated condensed balance sheets, is recorded at fair value, which approximates the total amount of the designated pool of accounts receivable. Refer to Note 9, Indebtedness, for additional disclosures related to the Securitization Program.

Note 5 - Inventories

Inventories, net of reserves, consist of:

	March 28, 2020	September 28, 2019
Raw materials and purchased parts	\$ 221,736	\$ 189,875
Work in progress	305,725	276,538
Finished goods	62,032	68,561
Inventories	\$ 589,493	\$ 534,974

There are no material inventoried costs relating to over-time contracts where revenue is accounted for using the cost-to-cost method of accounting as of March 28, 2020 and September 28, 2019.

Note 6 - Property, Plant and Equipment

Property, plant and equipment consists of:

	March 28, 2020	September 28, 2019
Land	\$ 36,591	\$ 33,111
Buildings and improvements	482,869	469,867
Machinery and equipment	814,828	775,378
Computer equipment and software	144,305	137,221
Property, plant and equipment, at cost	1,478,593	1,415,577
Less accumulated depreciation and amortization	(861,224)	(828,810)
Property, plant and equipment, net	\$ 617,369	\$ 586,767

Note 7 - Leases

On September 29, 2019, we adopted ASC 842: Leases, and the related amendments (ASC 842), using the modified retrospective method, as described in Note 1, Basis of Presentation, without adjusting prior comparative periods.

We lease certain manufacturing facilities, office space and machinery and equipment globally. At inception we evaluate whether a contractual arrangement contains a lease. Specifically, we consider whether we control the underlying asset and have the right to obtain substantially all the economic benefits or outputs from the asset. If the contractual arrangement contains a lease, we then determine the classification of the lease, operating or finance, using the classification criteria described in ASC 842. We then determine the term of the lease based on terms and conditions of the contractual arrangement, including whether the options to extend or terminate the lease are reasonably certain to be exercised. We have elected to not separate lease components from non-lease components, such as common area maintenance charges and instead, account for the lease and non-lease components as a single component.

Our lease ROU assets represent our right to use an underlying asset for the lease term and our lease liabilities represent our obligation to make lease payments. Operating lease ROU assets are included in Operating lease right-of-use assets and operating lease liabilities are included in Accrued liabilities and other and Other long-term liabilities on the Consolidated Condensed Balance Sheets. Finance lease ROU assets are included in Property, plant and equipment and finance lease liabilities are included in Accrued liabilities and other and Other long-term liabilities on the Consolidated Condensed Balance Sheets. Operating lease cost is included in Cost of sales and Selling, general and administrative on the Consolidated Condensed Statements of Earnings. Finance lease cost is included in Cost of sales, Selling, general and administrative and Interest on the Consolidated Condensed Statements of Earnings.

The ROU assets and lease liabilities for both operating and finance leases are recognized as of the commencement date at the net present value of the fixed minimum lease payments over the term of the lease, using the discount rate described below. Variable lease payments are recorded in the period in which the obligation for the payment is incurred. Variable lease payments based on an index or rate are initially measured using the index or rate as of the commencement date of the lease and included in the fixed minimum lease payments. For short-term leases that have a term of 12 months or less as of the commencement date, we do not recognize a ROU asset or lease liability on our balance sheet; we recognize expense as the lease payments are made over the lease term.

The discount rate used to calculate the present value of our leases is the rate implicit in lease. If the information necessary to determine the rate implicit in the lease is not available, we use our incremental borrowing rate for collateralized debt, which is determined using our credit rating and other information available as of the lease commencement date.

The components of lease expense were as follows:

	Three Months Ended March 28, 2020	Six Months Ended March 28, 2020
Operating lease cost	\$ 5,956	\$ 12,116
Finance lease cost:		
Amortization of right-of-use assets	\$ 336	\$ 412
Interest on lease liabilities	80	128
Total finance lease cost	\$ 416	\$ 540

Supplemental cash flow information related to leases was as follows:

	Six Months Ended March 28, 2020
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flow for operating leases	\$ 11,731
Operating cash flow for finance leases	128
Financing cash flow for finance leases	412
Assets obtained in exchange for lease obligations:	
Operating leases	8,848
Finance leases	4,242

Supplemental balance sheet information related to leases was as follows:

	March 28, 2020
Operating Leases	
Operating lease right-of-use assets	\$ 66,193
Accrued liabilities and other	\$ 13,194
Other long-term liabilities	54,966
Total operating lease liabilities	\$ 68,160
Finance Leases	
Property, plant, and equipment, at cost	\$ 7,966
Accumulated depreciation	(694)
Property, plant, and equipment, net	\$ 7,272
Accrued liabilities and other	\$ 929
Other long-term liabilities	6,385
Total finance lease liabilities	\$ 7,314
Weighted average remaining lease term in years	
Operating leases	7.6
Finance leases	17.7
Weighted average discount rate	
Operating leases	4.7%
Finance leases	4.9%

Maturities of lease liabilities were as follows:

	March 28, 2020	
	Operating Leases	Finance Leases
2020	\$ 7,895	\$ 608
2021	16,432	1,187
2022	13,961	1,033
2023	10,178	955
2024	6,993	899
Thereafter	35,498	7,584
Total lease payments	90,957	12,266
Less: imputed interest	(22,797)	(4,952)
Total	\$ 68,160	\$ 7,314

Note 8 - Goodwill and Intangible Assets

The changes in the carrying amount of goodwill are as follows:

	Aircraft Controls	Space and Defense Controls	Industrial Systems	Total
Balance at September 28, 2019	\$ 176,939	\$ 261,684	\$ 345,617	\$ 784,240
Acquisitions	—	—	25,034	25,034
Divestitures	—	—	(635)	(635)
Foreign currency translation	668	11	1,036	1,715
Balance at March 28, 2020	\$ 177,607	\$ 261,695	\$ 371,052	\$ 810,354

Goodwill in our Space and Defense Controls segment is net of a \$4,800 accumulated impairment loss at March 28, 2020.

Goodwill in our Medical Devices reporting unit, included in our Industrial Systems segment, is net of a \$38,200 accumulated impairment loss at March 28, 2020.

The components of intangible assets are as follows:

	Weighted-Average Life (years)	March 28, 2020		September 28, 2019	
		Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
Customer-related	11	\$ 141,843	\$ (100,430)	\$ 132,697	\$ (100,091)
Technology-related	9	77,471	(52,042)	69,220	(52,192)
Program-related	19	62,684	(37,937)	62,015	(35,680)
Marketing-related	8	25,222	(20,390)	23,139	(19,899)
Other	10	4,134	(3,813)	4,061	(3,624)
Intangible assets	12	\$ 311,354	\$ (214,612)	\$ 291,132	\$ (211,486)

Substantially all acquired intangible assets other than goodwill are being amortized. Customer-related intangible assets primarily consist of customer relationships. Technology-related intangible assets primarily consist of technology, patents, intellectual property and software. Program-related intangible assets consist of long-term programs represented by current contracts and probable follow on work. Marketing-related intangible assets primarily consist of trademarks, trade names and non-compete agreements.

Amortization of acquired intangible assets is as follows:

	Three Months Ended		Six Months Ended	
	March 28, 2020	March 30, 2019	March 28, 2020	March 30, 2019
Acquired intangible asset amortization	\$ 3,330	\$ 3,402	\$ 6,553	\$ 7,085

Based on acquired intangible assets recorded at March 28, 2020, amortization is estimated to be approximately:

	2020	2021	2022	2023	2024
Estimated future amortization of acquired intangible assets	\$ 13,200	\$ 12,200	\$ 10,800	\$ 9,900	\$ 9,500

Note 9 - Indebtedness

We maintain short-term line of credit facilities with banks throughout the world that are principally demand lines subject to revision by the banks.

Long-term debt consists of:

	March 28, 2020	September 28, 2019
U.S. revolving credit facility	\$ 464,439	\$ 395,712
SECT revolving credit facility	9,000	7,000
Senior notes 4.25%	500,000	—
Senior notes 5.25%	—	300,000
Securitization program	130,000	130,000
Obligations under capital leases	—	679
Senior debt	1,103,439	833,391
Less deferred debt issuance cost	(9,473)	(158)
Less current installments	—	(249)
Long-term debt	\$ 1,093,966	\$ 832,984

On October 15, 2019, we amended and restated our U.S. revolving credit facility, which matures on October 15, 2024. Our U.S. revolving credit facility has a capacity of \$1,100,000 and provides an expansion option, which permits us to request an increase of up to \$400,000 to the credit facility upon satisfaction of certain conditions. The credit facility is secured by substantially all of our U.S. assets. The loan agreement contains various covenants which, among others, specify interest coverage and maximum leverage. We are in compliance with all covenants.

The SECT has a revolving credit facility with a borrowing capacity of \$35,000, maturing on July 26, 2022. Interest is based on LIBOR plus an applicable margin. A commitment fee is also charged based on a percentage of the unused amounts available and is not material.

On December 13, 2019, we completed the sale of \$500,000 aggregate principal amount of 4.25% senior notes due December 15, 2027 with interest paid semiannually on June 15 and December 15 of each year, which will commence on June 15, 2020. The senior notes are unsecured obligations, guaranteed on a senior unsecured basis by certain subsidiaries and contain normal incurrence-based covenants and limitations such as the ability to incur additional indebtedness, pay dividends, make other restricted payments and investments, create liens and certain corporate acts such as mergers and consolidations. The aggregate net proceeds of \$491,769 were used to repay indebtedness under our U.S. revolving credit facility, thereby increasing the unused portion of our U.S. revolving credit facility.

On December 13, 2019, we issued a notice of redemption to the holders of our 5.25% senior notes due on December 1, 2022, to redeem and retire all of the outstanding notes. The notes were redeemed on January 13, 2020 at 101.313% pursuant to an early redemption right. We redeemed the aggregate principal amount of \$300,000 using proceeds drawn from our U.S. revolving credit facility. The associated loss on the redemption includes \$3,939 of call premium paid to external bondholders.

The Securitization Program was extended on October 16, 2019 and matures on October 29, 2021 and effectively increases our borrowing capacity by up to \$130,000. Under the Securitization Program, we sell certain trade receivables and related rights to an affiliate, which in turn sells an undivided variable percentage ownership interest in the trade receivables to a financial institution, while maintaining a subordinated interest in a portion of the pool of trade receivables. Interest for the Securitization Program is based on 30-day LIBOR plus an applicable margin. A commitment fee is also charged based on a percentage of the unused amounts available and is not material. The agreement governing the Securitization Program contains restrictions and covenants which include limitations on the making of certain restricted payments, creation of certain liens, and certain corporate acts such as mergers, consolidations and sale of substantially all assets. The Securitization Program has a minimum borrowing requirement equal to the lesser of either 80% of our borrowing capacity or 100% of our borrowing base, which is a subset of the trade receivables sold under this agreement. As of March 28, 2020, our minimum borrowing requirement was \$104,000.

Note 10 - Other Accrued Liabilities

Other accrued liabilities consists of:

	March 28, 2020	September 28, 2019
Contract reserves	\$ 65,409	\$ 60,914
Employee benefits	38,304	37,040
Warranty accrual	28,386	28,061
Accrued income taxes	13,613	26,532
Other	61,088	36,178
Other accrued liabilities	\$ 206,800	\$ 188,725

In the ordinary course of business, we warrant our products against defects in design, materials and workmanship typically over periods ranging from twelve to sixty months. We determine warranty reserves needed by product line based on historical experience and current facts and circumstances. Activity in the warranty accrual is summarized as follows:

	Three Months Ended		Six Months Ended	
	March 28, 2020	March 30, 2019	March 28, 2020	March 30, 2019
Warranty accrual at beginning of period	\$ 29,369	\$ 24,256	\$ 28,061	\$ 25,537
Additions from acquisitions	202	—	744	—
Warranties issued during current period	3,194	4,055	7,037	6,025
Adjustments to pre-existing warranties	(1,003)	(307)	(1,184)	(398)
Reductions for settling warranties	(3,199)	(3,892)	(6,371)	(6,869)
Foreign currency translation	(177)	105	99	(78)
Warranty accrual at end of period	\$ 28,386	\$ 24,217	\$ 28,386	\$ 24,217

Note 11 - Derivative Financial Instruments

We principally use derivative financial instruments to manage interest rate risk associated with long-term debt and foreign exchange risk related to foreign operations and foreign currency transactions. We enter into derivative financial instruments with a number of major financial institutions to minimize counterparty credit risk.

Derivatives designated as hedging instruments

Interest rate swaps are used to adjust the proportion of total debt that is subject to variable and fixed interest rates. The interest rate swaps are designated as hedges of the amount of future cash flows related to interest payments on variable-rate debt that, in combination with the interest payments on the debt, convert a portion of the variable-rate debt to fixed-rate debt. At March 28, 2020, we had interest rate swaps with notional amounts totaling \$30,000. The interest rate swaps effectively convert this amount of variable-rate debt to fixed-rate debt at 3.20%, including the applicable margin of 1.50% as of March 28, 2020. The interest will revert back to variable rates based on LIBOR plus the applicable margin upon the maturity of the interest rate swaps. These interest rate swaps mature at various times through June 23, 2020.

We use foreign currency contracts as cash flow hedges to effectively fix the exchange rates on future payments and revenue. To mitigate exposure in movements between various currencies, including the Philippine peso, the British pound and the Czech koruna, we had outstanding foreign currency forwards with notional amounts of \$60,195 at March 28, 2020. These contracts mature at various times through November 26, 2021.

We use forward currency contracts to hedge our net investment in certain foreign subsidiaries. As of March 28, 2020, we had no outstanding net investment hedges.

These interest rate swaps, foreign currency contracts and net investment hedges are recorded in the Consolidated Condensed Balance Sheets at fair value and the related gains or losses are deferred in Shareholders' Equity as a component of Accumulated Other Comprehensive Income (Loss) (AOCIL). These deferred gains and losses are reclassified into the Consolidated Condensed Statements of Earnings, as necessary, during the periods in which the related payments or receipts affect earnings. However, to the extent the interest rate swaps and foreign currency contracts are not perfectly effective in offsetting the change in the value of the payments and revenue being hedged, the ineffective portion of these contracts is recognized in earnings immediately. Ineffectiveness was not material in the first six months of 2020 or 2019.

Derivatives not designated as hedging instruments

We also have foreign currency exposure on balances, primarily intercompany, that are denominated in foreign currencies and are adjusted to current values using period-end exchange rates. The resulting gains or losses are recorded in the Consolidated Condensed Statements of Earnings. To minimize foreign currency exposure, we had foreign currency contracts with notional amounts of \$77,687 at March 28, 2020. The foreign currency contracts are recorded in the Consolidated Condensed Balance Sheets at fair value and resulting gains or losses are recorded in the Consolidated Condensed Statements of Earnings. We recorded the following gains or losses on foreign currency contracts which are included in other income or expense and generally offset the gains or losses from the foreign currency adjustments on the intercompany balances that are also included in other income or expense:

	Statements of Earnings location	Three Months Ended		Six Months Ended	
		March 28, 2020	March 30, 2019	March 28, 2020	March 30, 2019
Net gain (loss)					
Foreign currency contracts	Other	\$ (2,342)	\$ 2,419	\$ (771)	\$ 769

Summary of derivatives

The fair value and classification of derivatives is summarized as follows:

	Balance Sheets location	March 28, 2020	September 28, 2019
Derivatives designated as hedging instruments:			
Foreign currency contracts	Other current assets	\$ 873	\$ 1,060
Foreign currency contracts	Other assets	—	261
Interest rate swaps	Other current assets	—	57
	Total asset derivatives	\$ 873	\$ 1,378
Foreign currency contracts	Accrued liabilities and other	\$ 824	\$ 736
Foreign currency contracts	Other long-term liabilities	165	152
Interest rate swaps	Accrued liabilities and other	35	—
	Total liability derivatives	\$ 1,024	\$ 888
Derivatives not designated as hedging instruments:			
Foreign currency contracts	Other current assets	\$ 1,293	\$ 93
Foreign currency contracts	Accrued liabilities and other	\$ 1,036	\$ 359

Note 12 - Fair Value

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Depending on the nature of the asset or liability, various techniques and assumptions can be used to estimate fair value. The definition of the fair value hierarchy is as follows:

Level 1 – Quoted prices in active markets for identical assets and liabilities.

Level 2 – Observable inputs other than quoted prices in active markets for similar assets and liabilities.

Level 3 – Inputs for which significant valuation assumptions are unobservable in a market and therefore value is based on the best available data, some of which is internally developed and considers risk premiums that a market participant would require.

Our derivatives are valued using various pricing models or discounted cash flow analyses that incorporate observable market data, such as interest rate yield curves and currency rates, and are classified as Level 2 within the valuation hierarchy.

The following table presents the fair values and classification of our financial assets and liabilities measured on a recurring basis, all of which are classified as Level 2.

	Balance Sheets location	March 28, 2020	September 28, 2019
Foreign currency contracts	Other current assets	\$ 2,166	\$ 1,153
Foreign currency contracts	Other assets	—	261
Interest rate swaps	Other current assets	—	57
	Total assets	\$ 2,166	\$ 1,471
Foreign currency contracts	Accrued liabilities and other	\$ 1,860	\$ 1,095
Foreign currency contracts	Other long-term liabilities	165	152
Interest rate swaps	Accrued liabilities and other	35	—
	Total liabilities	\$ 2,060	\$ 1,247

Our only financial instrument for which the carrying value differs from its fair value is long-term debt. At March 28, 2020, the fair value of long-term debt was \$1,047,841 compared to its carrying value of \$1,103,439. The fair value of long-term debt is classified as Level 2 within the fair value hierarchy and was estimated based on quoted market prices.

Note 13 - Employee Benefit Plans

Net periodic benefit costs for our defined benefit pension plans are as follows:

	Three Months Ended		Six Months Ended	
	March 28, 2020	March 30, 2019	March 28, 2020	March 30, 2019
U.S. Plans				
Service cost	\$ 5,758	\$ 5,251	\$ 11,517	\$ 10,502
Interest cost	7,649	9,231	15,298	18,462
Expected return on plan assets	(11,021)	(11,264)	(22,042)	(22,528)
Amortization of prior service cost (credit)	34	47	67	93
Amortization of actuarial loss	6,329	6,661	12,658	13,321
Pension expense for U.S. defined benefit plans	\$ 8,749	\$ 9,926	\$ 17,498	\$ 19,850
Non-U.S. Plans				
Service cost	\$ 1,666	\$ 1,248	\$ 3,337	\$ 2,494
Interest cost	695	1,101	1,392	2,202
Expected return on plan assets	(1,135)	(1,303)	(2,274)	(2,601)
Amortization of prior service cost (credit)	—	(4)	—	(9)
Amortization of actuarial loss	1,212	638	2,428	1,278
Pension expense for non-U.S. defined benefit plans	\$ 2,438	\$ 1,680	\$ 4,883	\$ 3,364

Pension expense for our defined contribution plans consists of:

	Three Months Ended		Six Months Ended	
	March 28, 2020	March 30, 2019	March 28, 2020	March 30, 2019
U.S. defined contribution plans	\$ 7,206	\$ 4,713	\$ 12,604	\$ 9,327
Non-U.S. defined contribution plans	1,388	1,340	2,790	2,536
Total pension expense for defined contribution plans	\$ 8,594	\$ 6,053	\$ 15,394	\$ 11,863

Note 14 - Restructuring

Restructuring activity for severance and other costs is as follows:

	Space and Defense Controls	Industrial Systems	Total
Balance at September 28, 2019	\$ 27	\$ 4,096	\$ 4,123
Adjustments to provision	(1)	(969)	(970)
Cash payments - 2018 plan	(26)	(414)	(440)
Foreign currency translation	—	48	48
Balance at March 28, 2020	\$ —	\$ 2,761	\$ 2,761

As of March 28, 2020, the restructuring accrual consists of \$2,761 for the 2018 plan. Restructuring is expected to be paid within a year, except for the non-current portion of the facility closure accrual, which is classified as a long-term liability.

Note 15 - Income Taxes

The effective tax rate for the three and six months ended March 28, 2020 were 19.2% and 22.3%, respectively. The effective tax rate for the three months ended March 28, 2020 is lower than expected due to the reduction in tax rate associated with taxes accrued on accumulated earnings in one of our foreign jurisdictions. Additionally, legal entity restructuring resulted in reduced withholding taxes previously accrued in another foreign jurisdiction. The effective tax rate for the six months ended March 28, 2020 is higher than expected due to tax on earnings generated outside the U.S.

The effective tax rate for the three and six months ended March 30, 2019 were 23.8% and 24.1%, respectively. The effective tax rate for all periods is higher than would be expected by applying the U.S. federal statutory tax rate of 21% to earnings before income taxes primarily due to tax on earnings generated outside of the U.S.

Note 16 - Accumulated Other Comprehensive Income (Loss)

The changes in AOCIL, net of tax, by component for the six months ended March 28, 2020 are as follows:

	Accumulated foreign currency translation (1)	Accumulated retirement liability	Accumulated gain (loss) on derivatives	Total
AOCIL at September 28, 2019	\$ (129,399)	\$ (285,734)	\$ (344)	\$ (415,477)
Other comprehensive income (loss) before reclassifications	(1,392)	(717)	444	(1,665)
Amounts reclassified from AOCIL	(493)	11,196	(205)	10,498
Other comprehensive income (loss)	(1,885)	10,479	239	8,833
AOCIL at March 28, 2020	\$ (131,284)	\$ (275,255)	\$ (105)	\$ (406,644)

(1) Net gains and losses on net investment hedges are recorded as cumulative translation adjustments in AOCIL to the extent that the instruments are effective in hedging the designated risk.

The amounts reclassified from AOCIL into earnings are as follows:

Statements of Earnings location	Three Months Ended		Six Months Ended	
	March 28, 2020	March 30, 2019	March 28, 2020	March 30, 2019
Retirement liability:				
Prior service cost (credit)	\$ (31)	\$ (75)	\$ (63)	\$ (151)
Actuarial losses	7,388	7,627	14,782	15,256
Reclassification from AOCIL into earnings (2)	7,357	7,552	14,719	15,105
Tax effect	(1,761)	(1,848)	(3,523)	(3,696)
Net reclassification from AOCIL into earnings	\$ 5,596	\$ 5,704	\$ 11,196	\$ 11,409
Derivatives:				
Foreign currency contracts Sales	\$ 5	\$ (67)	\$ 7	\$ (100)
Foreign currency contracts Cost of sales	(274)	235	(234)	895
Interest rate swaps Interest	—	(317)	(41)	(717)
Reclassification from AOCIL into earnings	(269)	(149)	(268)	78
Tax effect	63	35	63	(22)
Net reclassification from AOCIL into earnings	\$ (206)	\$ (114)	\$ (205)	\$ 56

(2) The reclassifications are included in the computation of non-service pension expense, which is included in Other on the Consolidated Condensed Statement of Earnings.

The amounts deferred in AOCIL are as follows:

	Net deferral in AOCIL - effective portion			
	Three Months Ended		Six Months Ended	
	March 28, 2020	March 30, 2019	March 28, 2020	March 30, 2019
Foreign currency contracts	\$ (1,162)	\$ 150	\$ 632	\$ 1,049
Interest rate swaps	(36)	(107)	(40)	(342)
Net gain (loss)	(1,198)	43	592	707
Tax effect	241	(8)	(148)	(178)
Net deferral in AOCIL of derivatives	\$ (957)	\$ 35	\$ 444	\$ 529

Note 17 - Stock Employee Compensation Trust and Supplemental Retirement Plan Trust

The Stock Employee Compensation Trust (SECT) assists in administering and provides funding for equity-based compensation plans and benefit programs, including the Moog Inc. Retirement Savings Plan (RSP) and the Employee Stock Purchase Plan (ESPP). The Supplemental Retirement Plan (SERP) Trust provides funding for benefits under the SERP provisions of the Moog Inc. Plan to Equalize Retirement Income and Supplemental Retirement Income. Both the SECT and the SERP Trust hold Moog shares as investments. The shares in the SECT and SERP Trust are not considered outstanding for purposes of calculating earnings per share. However, in accordance with the trust agreements governing the SECT and SERP Trust, the trustees vote all shares held by the SECT and SERP Trust on all matters submitted to shareholders.

Note 18 - Earnings per Share and Dividends

Basic and diluted weighted-average shares outstanding are as follows:

	Three Months Ended		Six Months Ended	
	March 28, 2020	March 30, 2019	March 28, 2020	March 30, 2019
Basic weighted-average shares outstanding	33,434,420	34,886,541	33,972,635	34,850,898
Dilutive effect of equity-based awards	250,975	354,572	263,764	332,573
Diluted weighted-average shares outstanding	33,685,395	35,241,113	34,236,399	35,183,471

For the three and six months ended March 28, 2020, there were 77,414 and 53,521 common shares from equity-based awards, respectively, excluded from the calculation of diluted earnings per share as they would be anti-dilutive. For the three and six months ended March 30, 2019, there were 29,839 and 38,132 common shares from equity-based awards, respectively, excluded from the calculation of diluted earnings per share as they would be anti-dilutive.

We declared and paid cash dividends of \$0.25 per share on our Class A and Class B common stock in the first and second quarters of 2020 and 2019.

Note 19 - Segment Information

Disaggregation of net sales by segment for the three and six months ended March 28, 2020 and March 30, 2019 are as follows:

Market Type	Three Months Ended		Six Months Ended	
	March 28, 2020	March 30, 2019	March 28, 2020	March 30, 2019
Net sales:				
Military	\$ 175,784	\$ 155,016	\$ 349,478	\$ 301,817
Commercial	165,623	165,611	331,883	322,855
Aircraft Controls	341,407	320,627	681,361	624,672
Space	73,564	53,349	136,304	103,525
Defense	119,446	111,476	242,946	217,368
Space and Defense Controls	193,010	164,825	379,250	320,893
Energy	36,772	29,977	66,711	59,274
Industrial Automation	106,177	116,369	213,008	225,499
Simulation and Test	25,647	31,245	54,115	60,295
Medical	62,264	55,768	125,675	107,854
Industrial Systems	230,860	233,359	459,509	452,922
Net sales	\$ 765,277	\$ 718,811	\$ 1,520,120	\$ 1,398,487

Customer Type	Three Months Ended		Six Months Ended	
	March 28, 2020	March 30, 2019	March 28, 2020	March 30, 2019
Net sales:				
Commercial	\$ 165,623	\$ 165,611	\$ 331,883	\$ 322,855
U.S. Government (including OEM)	140,677	122,779	272,886	239,960
Other	35,107	32,237	76,592	61,857
Aircraft Controls	341,407	320,627	681,361	624,672
Commercial	34,184	32,188	68,336	62,241
U.S. Government (including OEM)	141,735	121,821	276,422	236,286
Other	17,091	10,816	34,492	22,366
Space and Defense Controls	193,010	164,825	379,250	320,893
Commercial	223,128	226,894	443,647	437,462
U.S. Government (including OEM)	5,022	4,511	11,443	10,953
Other	2,710	1,954	4,419	4,507
Industrial Systems	230,860	233,359	459,509	452,922
Commercial	422,935	424,693	843,866	822,558
U.S. Government (including OEM)	287,434	249,111	560,751	487,199
Other	54,908	45,007	115,503	88,730
Net sales	\$ 765,277	\$ 718,811	\$ 1,520,120	\$ 1,398,487

Operating profit is net sales less cost of sales and other operating expenses, excluding interest expense, equity-based compensation expense and other corporate expenses. Cost of sales and other operating expenses are directly identifiable to the respective segment or allocated on the basis of sales, number of employees or profit. Operating profit by segment for the three and six months ended March 28, 2020 and March 30, 2019 and a reconciliation of segment operating profit to earnings before income taxes are as follows:

	Three Months Ended		Six Months Ended	
	March 28, 2020	March 30, 2019	March 28, 2020	March 30, 2019
Operating profit:				
Aircraft Controls	\$ 34,701	\$ 27,122	\$ 73,293	\$ 60,321
Space and Defense Controls	24,652	20,504	49,934	38,977
Industrial Systems	24,775	30,228	51,574	57,933
Total operating profit	84,128	77,854	174,801	157,231
Deductions from operating profit:				
Interest expense	10,251	9,939	20,483	19,621
Equity-based compensation expense	890	1,683	3,271	3,691
Non-service pension expense	3,598	4,889	7,199	9,783
Corporate and other expenses, net	7,858	7,427	15,413	13,737
Earnings before income taxes	\$ 61,531	\$ 53,916	\$ 128,435	\$ 110,399

Note 20 - Related Party Transactions

John Scannell, Moog's Chairman of the Board and Director and Chief Executive Officer, is a member of the Board of Directors of M&T Bank Corporation and M&T Bank. We currently engage with M&T Bank in the ordinary course of business for various financing activities, all of which were initiated prior to the election of Mr. Scannell to the Board. M&T Bank provides credit extension for routine purchases, which for the three and six months ended March 28, 2020 totaled \$4,220 and \$8,794, respectively. Credit extension for the three and six months ended March 30, 2019 totaled \$5,070 and \$10,359, respectively. At March 28, 2020, we held outstanding leases with a total original cost of \$26,021. M&T Bank also maintains an interest of approximately 12% in our U.S. revolving credit facility. Further details of the U.S. revolving credit facility can be found in Note 9, Indebtedness.

Note 21 - Commitments and Contingencies

From time to time, we are involved in legal proceedings. We are not a party to any pending legal proceedings which management believes will result in a material adverse effect on our financial condition, results of operations or cash flows.

We are engaged in administrative proceedings with governmental agencies and legal proceedings with governmental agencies and other third parties in the normal course of our business, including litigation under Superfund laws, regarding environmental matters. We believe that adequate reserves have been established for our share of the estimated cost for all currently pending environmental administrative or legal proceedings and do not expect that these environmental matters will have a material adverse effect on our financial condition, results of operations or cash flows.

In the ordinary course of business we could be subject to ongoing claims or disputes from our customers, the ultimate settlement of which could have a material adverse impact on our consolidated results of operations. While the receivables and any loss provisions recorded to date reflect management's best estimate of the projected costs to complete a given project, there may still be significant effort required to complete the ultimate deliverable. Future variability in internal cost as well as future profitability is dependent upon a number of factors including deliveries, performance and government budgetary pressures. The inability to achieve a satisfactory contractual solution, further unplanned delays, additional developmental cost growth or variations in any of the estimates used in the existing contract analysis could lead to further loss provisions. Additional losses could have a material adverse impact on our financial condition, results of operations or cash flows in the period in which the loss may be recognized.

We lease certain facilities and equipment under operating lease arrangements. These arrangements may include fair market renewal or purchase options. Rent expense under operating leases amounted to \$25,510 at September 28, 2019 and \$26,594 at September 29, 2018. As of September 28, 2019, future minimum rental payments required under non-cancellable operating leases are \$20,993 in 2020, \$19,118 in 2021, \$15,636 in 2022, \$11,344 in 2023, \$7,151 in 2024 and \$41,670 thereafter.

We are contingently liable for \$35,511 of standby letters of credit issued to third parties on our behalf at March 28, 2020.

Note 22 - Subsequent Event

On March 11, 2020, the World Health Organization classified the COVID-19 outbreak as a pandemic. The pandemic did not have a material impact on our financial statements for the three and six months ended March 28, 2020. We have implemented actions to maintain our financial health and liquidity. We are also monitoring the impacts of COVID-19 on the fair value of assets. We do not currently anticipate any material impairments on assets as a result of COVID-19. Future changes in sales, earnings and cash flows related to long-lived assets to be held and used and goodwill could cause these assets to become impaired. COVID-19 is discussed in more detail throughout “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations.

The following should be read in conjunction with Management's Discussion and Analysis of Financial Condition and Results of Operations contained in the Company's Annual Report filed on Form 10-K for the fiscal year ended September 28, 2019. All references to years in this Management's Discussion and Analysis of Financial Condition and Results of Operations are to fiscal years and amounts may differ from reported values due to rounding.

OVERVIEW

We are a worldwide designer, manufacturer and systems integrator of high performance precision motion and fluid controls and control systems for a broad range of applications in aerospace and defense and industrial markets.

Within the aerospace and defense market, our products and systems include:

- Defense market - primary and secondary flight controls for military aircraft, stabilization and automatic ammunition loading controls for armored combat vehicles, tactical and strategic missile steering controls and gun aiming controls.
- Commercial aircraft market - primary and secondary flight controls for commercial aircraft.
- Commercial space market - satellite positioning controls and thrust vector controls for space launch vehicles.

In the industrial market, our products are used in a wide range of applications including:

- Industrial automation market - injection molding, metal forming, heavy industry, material and automotive testing and pilot training simulators.
- Medical market - enteral clinical nutrition and infusion therapy pumps, ultrasonic sensors and surgical handpieces and CT scanners.
- Energy market - power generation and oil and gas exploration.

We operate under three segments, Aircraft Controls, Space and Defense Controls and Industrial Systems. Our principal manufacturing facilities are located in the United States, Philippines, United Kingdom, Germany, Czech Republic, Italy, Costa Rica, China, Netherlands, Luxembourg, Japan, Canada, India and Lithuania.

Under ASC 606, 65% of revenue was recognized over time for the quarter ended March 28, 2020, using the cost-to-cost method of accounting. The over time method of revenue recognition is predominantly used in Aircraft Controls and Space and Defense Controls. We use this method for U.S. Government contracts and repair and overhaul arrangements as we are creating or enhancing assets that the customer controls. In addition, many of our large commercial contracts qualify for over time accounting as our performance does not create an asset with an alternative use and we have an enforceable right to payment for performance completed to date.

For the quarter ended March 28, 2020, 35% of revenue was recognized at the point in time control transferred to the customer. This method of revenue recognition is used most frequently in Industrial Systems. We use this method for commercial contracts in which the asset being created has an alternative use. We determine the point in time control transfers to the customer by weighing the five indicators provided by ASC 606. When control has transferred to the customer, profit is generated as cost of sales is recorded and as revenue is recognized.

We concentrate on providing our customers with products designed and manufactured to the highest quality standards. Our technical experts work collaboratively around the world, delivering capabilities for mission-critical solutions. These core operational principles are necessary as our products are applied in demanding applications, "When Performance Really Matters®." By capitalizing on these core foundational strengths, we believe we have achieved a leadership position in the high performance, precision controls market. Additionally, these strengths yield a broad control product portfolio, across a diverse base of customers and end markets.

By focusing on customer intimacy and commitment to solving their most demanding technical problems, we have been able to expand our control product franchise to multiple markets; organically growing from a high-performance components manufacturer to a high-performance systems designer, manufacturer and systems integrator. In addition, we continue expanding our content positions on our current platforms, seeking to be the dominant supplier in the niche markets we serve. We also look for innovation in all aspects of our business, employing new technologies to improve productivity and operational performance.

Our fundamental long-term strategies to achieve our goals center around talent, lean and innovation and include:

- a strong leadership team that has positioned the Company for growth,
- utilizing our global capabilities and strong engineering heritage to innovate,
- maintaining our technological excellence by solving our customers' most demanding technical problems in applications "When Performance Really Matters[®],"
- continuing to invest in talent development to strengthen employee performance, and
- maximizing customer value by implementing lean enterprise principles.

These activities will help us achieve our financial objective of increasing shareholder value with sustainable competitive advantages across our segments. In doing so, we expect to maintain a balanced, diversified portfolio in terms of markets served, product applications, customer base and geographic presence.

We focus on improving shareholder value through strategic revenue growth, both acquired and organic, through improving operating efficiencies and manufacturing initiatives and through utilizing low cost manufacturing facilities without compromising quality. Historically, we have taken a balanced approach to capital deployment in order to maximize shareholder returns over the long-term. Our activities have included strategic acquisitions, share buybacks and dividend payments. In the current COVID-19 environment, we have shifted our capital deployment strategies from a long-term perspective that balances growth and capital returns with one that focuses on liquidity and leverage in the near-term. We are committed to ensuring that we have adequate liquidity during this crisis, protecting the long-term health of the Company and emerging financially strong and ready to capitalize on opportunities once this situation passes.

Acquisitions, Divestitures and Equity Method Investments

All of our acquisitions are accounted for under the purchase method and, accordingly, the operating results for the acquired companies are included in the consolidated condensed statements of earnings from the respective dates of acquisition. Under purchase accounting, we record assets and liabilities at fair value and such amounts are reflected in the respective captions on the consolidated condensed balance sheets. The purchase price described for each acquisition below is net of any cash acquired, includes debt issued or assumed and the fair value of contingent consideration.

On November 28, 2019, we acquired Gesellschaft für Antriebstechnik mbH and GAT Inc. (GAT), headquartered in Geisenheim, Germany for a purchase price of \$54 million, net of acquired cash. GAT designs and manufactures high-end fluid rotating unions and slip rings. This operation is included in our Industrial Systems segment. The purchase price allocation is subject to adjustments as we obtain additional information for our estimates during the measurement period.

In the first quarter of 2020, we sold a non-core business in our Industrial Systems segment for \$2 million in net consideration and recorded a minimal gain in other income.

In the first quarter of 2019, we sold a non-core business in our Industrial Systems segment for \$4 million in cash and recorded a gain in other income of \$3 million.

CRITICAL ACCOUNTING POLICIES

On a regular basis, we evaluate the critical accounting policies used to prepare our consolidated financial statements, including revenue recognition on long-term contracts, contract reserves, reserves for inventory valuation, reviews for impairment of goodwill, reviews for impairment of long-lived assets, pension assumptions and income taxes.

RECENT ACCOUNTING PRONOUNCEMENTS

See Note 1 of the Consolidated Condensed Financial Statements included in Item 1, Financial Statements of this report for further information regarding Financial Accounting Standards Board issued Accounting Standards Updates ("ASU").

COVID-19 IMPACTS ON OUR BUSINESS

The spread of the COVID-19 outbreak has disrupted businesses on a global scale. On March 11, 2020, the World Health Organization classified the outbreak as a pandemic. As we entered this crisis, the Company established two clear priorities: first and foremost the health and safety of our employees and their families, and second, continuing to meet the needs of our customers and secure the financial well-being of the Company. Substantially all of our operations and production activities have, to-date, been operational. Many are considered essential and are exempt from closure directives. However, such directives could change at any time. We have implemented changes in our work practices maintaining a safe working environment for production employees at our facilities, while enabling other employees to productively work from home.

Recognizing the unprecedented nature, scope and uncertainty associated with this global health crisis, the duration and extent of the ongoing impact cannot be reasonably estimated at this time. We have suspended our practice of providing an outlook for fiscal 2020. Our businesses are facing varying levels of pressure depending on the markets they serve. Specifically, we believe defense and space businesses may only face modest pressures associated with supply chain risks and productivity levels as government funding remains stable. Also, demand for our medical applications may increase in response to this pandemic. Together, these businesses represent over half of our sales. However, we believe our industrial business may see supply chain, productivity and demand challenges from the macroeconomic slowdown, while our commercial aircraft business will be impacted the most with dramatic reductions in air travel. This suggests sales across the second half of 2020 could decline between 10% and 20% as compared to the first half of 2020. Additionally, given the time required to align our business with the expected lower demand, we could experience a marginal loss on the reduced sales in a range between 30% and 40% in the second half of 2020.

In response to this situation, we have implemented short term actions to maintain the financial health and liquidity of the Company including:

- temporarily suspending dividend payments,
- temporarily suspending share buyback activities,
- minimizing capital spend,
- reducing discretionary spending,
- implementing hiring and salary freezes,
- aligning company resources and incoming inventory to be in line with expected customer demand,
- optimizing the timing of cash flow and
- implementing vendor financing programs.

We will continue to monitor the situation, assessing further possible implications on our operations, supply chain, liquidity, cash flow and customer orders, and will take action in an effort to mitigate adverse consequences. We believe that our existing financial arrangements, along with the actions we are taking to mitigate the business pressures we are facing will be sufficient to meet our operating needs over the short-term. We have available borrowings under short and long-term arrangements that could provide relief should the situation become more stressed.

CONSOLIDATED RESULTS OF OPERATIONS

(dollars and shares in millions, except per share data)	Three Months Ended				Six Months Ended			
	March 28, 2020	March 30, 2019	\$ Variance	% Variance	March 28, 2020	March 30, 2019	\$ Variance	% Variance
Net sales	\$ 765	\$ 719	\$ 46	6%	\$ 1,520	\$ 1,398	\$ 122	9%
Gross margin	27.2%	27.5%			27.6%	28.4%		
Research and development expenses	\$ 27	\$ 31	\$ (5)	(15%)	\$ 55	\$ 63	\$ (8)	(13%)
Selling, general and administrative expenses as a percentage of sales	14.0%	13.9%			13.5%	14.0%		
Interest expense	\$ 10	\$ 10	\$ —	3%	\$ 20	\$ 20	\$ 1	4%
Other	\$ 2	\$ 2	\$ —	—%	\$ 10	\$ 7	\$ 2	32%
Effective tax rate	19.2%	23.8%			22.3%	24.1%		
Net earnings	\$ 50	\$ 41	\$ 9	21%	\$ 100	\$ 84	\$ 16	19%
Diluted earnings per share	\$ 1.48	\$ 1.17	\$ 0.31	26%	\$ 2.91	\$ 2.38	\$ 0.53	22%
Total backlog					\$ 2,603	\$ 2,230	\$ 373	17%
Twelve-month backlog					\$ 1,793	\$ 1,636	\$ 157	10%

Net sales increased in the second quarter and in the first half of 2020 compared to the second quarter and first half of 2019, largely attributable to higher defense sales within Space and Defense Controls and Aircraft Controls.

Gross margin declined in the first half of 2020 compared to the first half of 2019. Gross profit in the second quarter of 2019 included a \$10 million charge associated with a supplier quality issue within Aircraft Controls. Excluding this charge, gross profit in the first half of 2020 would have declined further as compared to the first half of 2019. In the first half of 2020, gross margin declined in Industrial Systems, driven by a less favorable sales mix; and in Aircraft Controls due to higher operating costs and due to charges on a development program.

Research and development expenses declined in both the second quarter and the first half of 2020 compared to the same periods of 2019. Lower activity, primarily in our major commercial OEM programs, in Aircraft Controls reduced expenses \$4 million during the second quarter of 2020 and \$7 million in the first half of 2020. Also lower activity in Industrial Systems reduced research and development expenses \$2 million in the first half of 2020.

Selling, general and administrative expenses as a percentage of sales decreased in the first half of 2020 compared to the first half of 2019. Within Space and Defense Controls, the incremental sales growth offset slightly higher expenses.

Other expense in the first half of 2020 includes a \$4 million call premium as we redeemed our \$300 million aggregate principal 5.25% senior notes, partially offset by a \$2 million gain associated with foreign currencies.

The effective tax rate in the second quarter of 2020 included benefits associated with changes in enacted tax rates and assumptions for withholding taxes on accumulated offshore earnings.

The change in twelve-month backlog at March 28, 2020 compared to March 30, 2019 was driven by increases in both our aerospace and defense business and in our industrial businesses. Within Aircraft Controls, backlog increased due to the timing of orders of the F-35 program, additional military development program orders, as well as higher military aftermarket orders. Partially offsetting these aircraft increases are lower orders for legacy Boeing and 787 programs. Within Space and Defense Controls, backlog increased supporting the expected incremental sales for launch vehicles and for satellites. The twelve-month backlog increased in Industrial Systems due to higher orders for our medical products.

Other comprehensive loss in the second quarter of 2020 includes \$23 million of foreign currency translation loss, whereas other comprehensive income in 2019 includes \$1 million of foreign currency translation gain. The change in foreign currency translation in the second quarter 2020 compared to the second quarter of 2019 was primarily attributable to the depreciation of the British Pound relative to the U.S. Dollar. Other comprehensive income in the first half of 2020 includes \$2 million of foreign currency translation loss, whereas other comprehensive income in the first half of 2019 includes \$8 million of foreign currency translation loss. The change in foreign currency translation in the first half of 2020 compared to the first half of 2019 was primarily attributable to the appreciation of the Euro offset by the depreciation of other foreign currencies relative to the U.S. Dollar.

SEGMENT RESULTS OF OPERATIONS

Operating profit, as presented below, is net sales less cost of sales and other operating expenses, excluding interest expense, equity-based compensation expense and other corporate expenses. Cost of sales and other operating expenses are directly identifiable to the respective segment or allocated on the basis of sales, manpower or profit. Operating profit is reconciled to earnings before income taxes in Note 19 of the Notes to Consolidated Condensed Financial Statements included in this report.

Aircraft Controls

(dollars in millions)	Three Months Ended				Six Months Ended			
	March 28, 2020	March 30, 2019	\$ Variance	% Variance	March 28, 2020	March 30, 2019	\$ Variance	% Variance
Net sales - military aircraft	\$ 176	\$ 155	\$ 21	13%	\$ 349	\$ 302	\$ 48	16%
Net sales - commercial aircraft	166	166	—	—%	332	323	9	3%
	\$ 341	\$ 321	\$ 21	6%	\$ 681	\$ 625	\$ 57	9%
Operating profit	\$ 35	\$ 27	\$ 8	28%	\$ 73	\$ 60	\$ 13	22%
Operating margin	10.2%	8.5%			10.8%	9.7%		

The increase in Aircraft Controls' net sales in the second quarter and in the first half of 2020 compared to the second quarter and the first half of 2019 was driven by increases in our military OEM and aftermarket programs. Additionally, commercial OEM sales increased slightly in the first half of 2020 compared to the first half of 2019.

In the second quarter of 2020 compared to the second quarter of 2019, military OEM sales increased \$13 million and military aftermarket sales increased \$8 million. Within military OEM, higher volumes due to the ramp up of the F-35 program increased sales \$8 million. Additionally, military OEM sales increased \$5 million on the Black Hawk helicopter and KC-46 programs. Also, military aftermarket sales for F-35 spares and for the F-15 program increased sales \$4 million and \$1 million, respectively. Within commercial OEM, sales were unchanged as higher activity on the Boeing 787 program was offset by lower orders for the Boeing 737 Max and Airbus A350 programs.

In the first half of 2020 compared to the first half of 2019, military OEM sales increased \$32 million and military aftermarket sales increased \$16 million. Within military OEM, sales increased \$11 million on foreign military programs, \$6 million on the F-35 program, \$5 million on funded development programs, in addition to increases on helicopters and KC-46 programs. The sales increase in military aftermarket was mostly driven by higher spares sales on the F-35 program. Within commercial OEM, sales for Boeing programs increased \$9 million as higher activity on the Boeing 787 was partially offset by lower sales for the Boeing 737 Max.

Operating margin increased in the second quarter of 2020 compared to the second quarter of 2019 due mostly to the absence of last year's \$10 million charge related to a supplier quality issue. Excluding this charge, operating margin decreased in the second quarter of 2020, as we recorded a \$4 million charge on a development program. After excluding last year's supplier quality charge in the first half of 2019, operating margin in the first half of 2020 also decreased. The same factors in the second quarter as well as higher operating costs offset the incremental margin from higher foreign military sales and \$7 million of lower research and development expenses.

Space and Defense Controls

(dollars in millions)	Three Months Ended				Six Months Ended			
	March 28, 2020	March 30, 2019	\$ Variance	% Variance	March 28, 2020	March 30, 2019	\$ Variance	% Variance
Net sales	\$ 193	\$ 165	\$ 28	17%	\$ 379	\$ 321	\$ 58	18%
Operating profit	\$ 25	\$ 21	\$ 4	20%	\$ 50	\$ 39	\$ 11	28%
Operating margin	12.8%	12.4%			13.2%	12.1%		

The increase in Space and Defense Controls' net sales growth in the second quarter and in the first half of 2020 compared to the second quarter and the first half of 2019 was driven by our space and our defense markets.

In the second quarter of 2020 compared to the second quarter of 2019, sales increased \$20 million in our space market. Sales for launch vehicle programs increased \$15 million due to higher amounts of development work and higher NASA activity. Sales also increased \$4 million for satellite controls, due mostly to higher satellite engine and space avionics activity. Within our defense market, sales increased \$8 million. Increased sales across our defense controls, naval and missile programs offset a \$6 million sales decrease for our security programs as planned shipments were delayed.

In the first half of 2020 compared to the first half of 2019, sales in our space market increased \$33 million. Sales increased \$23 million and \$7 million for launch vehicles and satellite controls, respectively, due to the same factors in the second quarter. Within our defense market, sales increased \$26 million. Sales for defense controls applications across our components and foreign programs increased \$10 million. In addition, higher volumes on both legacy and funded development missile applications increased sales \$9 million. Additionally, sales increased \$6 million across a variety of our defense components programs and sales increased \$5 million for naval applications. These increases offset an \$8 million sales decline for security sales due to the same factor as the second quarter.

Operating margin increased in the first half of 2020 compared to first half of 2019 due primarily to higher sales volumes for our defense and our components products. Also, the sales growth contributed to incremental margins beyond our selling and administrative expenses.

Industrial Systems

(dollars in millions)	Three Months Ended				Six Months Ended			
	March 28, 2020	March 30, 2019	\$ Variance	% Variance	March 28, 2020	March 30, 2019	\$ Variance	% Variance
Net sales	\$ 231	\$ 233	\$ (2)	(1%)	\$ 460	\$ 453	\$ 7	1%
Operating profit	\$ 25	\$ 30	\$ (5)	(18%)	\$ 52	\$ 58	\$ (6)	(11%)
Operating margin	10.7%	13.0%			11.2%	12.8%		

The decline in Industrial Systems' net sales in the second quarter of 2020 compared to the second quarter of 2019 was driven by the macroeconomic factors on our legacy industrial products, but were mostly offset by acquired sales and by increased sales for medical devices. In the first half of 2020 compared to the first half of 2019, the increased medical device and acquired sales offset legacy industrial product declines.

In the second quarter of 2020 compared to the second quarter of 2019, sales declined \$16 million in our industrial automation market, in part due to the continued slowdown of capital investments and lower sales to China due to the COVID-19 effects. Also, sales decreased \$6 million in our simulation and test market due to lower automobile and aerospace test orders. Mostly offsetting these sales declines was the \$12 million of incremental sales from our GAT acquisition. Medical product sales increased \$6 million due to higher demand for our medical pumps.

In the first half of 2020 compared to the first half of 2019, sales in our medical market increased \$18 million. Sales for medical devices increased \$16 million as we had higher demand for our enteral and IV products, and sales for medical components products increased \$2 million. Acquired sales for GAT in the first half of 2020 were \$15 million. These increases offset sales declines in our industrial automation and simulation and test markets, driven by the same factors as the second quarter.

Operating margin decreased in the second quarter and in the first half of 2020 compared to the second quarter and the first half of 2019 due to unfavorable sales mix on lower sales volume, first year accounting impacts from our GAT acquisition and the absence of last year's gain associated with selling a non-core business.

FINANCIAL CONDITION AND LIQUIDITY

(dollars in millions)	Six Months Ended		
	March 28, 2020	March 30, 2019	\$ Variance
Net cash provided (used) by:			
Operating activities	\$ 81	\$ 109	\$ (28)
Investing activities	(111)	(58)	(54)
Financing activities	58	(67)	125

Our available borrowing capacity and our cash flow from operations have provided us with the financial resources needed to run our operations, reinvest in our business and make strategic acquisitions.

At March 28, 2020, our cash balances were \$119 million, which was primarily held outside of the U.S. Cash flow from our U.S. operations, together with borrowings on our credit facility, fund on-going activities, debt service requirements and future growth investments.

Operating activities

Net cash provided by operating activities decreased in the first half of 2020 compared to the first half of 2019. In the first half of 2020, receivables activity used \$27 million more cash, driven primarily by customer activity within our Aircraft Controls segment and by the timing of tax payments. Also, accounts payable used \$25 million more cash, due to the timing of vendor receipts. Partially offsetting the uses of cash was cash provided by customer advances, which increased \$29 million, driven by growth in Aircraft Controls.

Investing activities

Net cash used by investing activities in the first half of 2020 included \$54 million for our acquisition of GAT and \$53 million for capital expenditures.

Net cash used by investing activities in the first half 2019 included \$60 million for capital expenditures.

Financing activities

Net cash provided by financing activities in the first half of 2020 included the net proceeds of issuing our \$500 million aggregate principal 4.25% senior notes, which were used to repay a portion of our outstanding borrowings. Additionally, financing activities in the first half of 2020 included \$179 million to fund our stock repurchase program, and \$17 million of cash dividends.

Net cash used by financing activities in first half of 2019 included \$38 million of net payments on our credit facilities, \$17 million of cash dividends and \$4 million to fund our stock repurchase program.

Off Balance Sheet Arrangements

We do not have any material off balance sheet arrangements that have or are reasonably likely to have a material future effect on our results of operations or financial condition.

Contractual Obligations and Commercial Commitments

Our contractual obligations and commercial commitments have not changed materially from the disclosures in our 2019 Annual Report on Form 10-K.

CAPITAL STRUCTURE AND RESOURCES

We maintain bank credit facilities to fund our short and long-term capital requirements, including for acquisitions. From time to time, we also sell debt and equity securities to fund acquisitions or take advantage of favorable market conditions.

On October 15, 2019, we amended and restated our U.S. revolving credit facility, which matures on October 15, 2024. Our U.S. revolving credit facility has a capacity of \$1.1 billion and also provides an expansion option, which permits us to request an increase of up to \$400 million to the credit facility upon satisfaction of certain conditions. The U.S. revolving credit facility had an outstanding balance of \$464 million at March 28, 2020. The weighted-average interest rate on primarily all of the outstanding credit facility borrowings was 2.52% and is based on LIBOR plus the applicable margin, which was 1.50% at March 28, 2020. The credit facility is secured by substantially all of our U.S. assets.

The U.S. revolving credit facility contains various covenants. The covenant for minimum interest coverage ratio, defined as the ratio of EBITDA to interest expense for the most recent four quarters, is 3.0. The covenant for the maximum leverage ratio, defined as the ratio of net debt to EBITDA for the most recent four quarters, is 4.0. We are in compliance with all covenants. EBITDA is defined in the loan agreement as (i) the sum of net income, interest expense, income taxes, depreciation expense, amortization expense, other non-cash items reducing consolidated net income and non-cash equity-based compensation expenses minus (ii) other non-cash items increasing consolidated net income.

We are generally not required to obtain the consent of lenders of the U.S. revolving credit facility before raising significant additional debt financing; however, certain limitations and conditions may apply that would require consent to be obtained. In recent years, we have demonstrated our ability to secure consents to access debt markets. We have also been successful in accessing equity markets from time to time. We believe that we will be able to obtain additional debt or equity financing as needed.

The SECT has a revolving credit facility with a borrowing capacity of \$35 million, maturing on July 26, 2022. Interest was 3.11% as of March 28, 2020 and is based on LIBOR plus a margin of 2.13%. As of March 28, 2020, there was \$9 million of outstanding borrowings.

On December 13, 2019, we completed the sale of \$500 million aggregate principal amount of 4.25% senior notes due December 15, 2027 with interest paid semiannually on June 15 and December 15 of each year, which will commence on June 15, 2020. The senior notes are unsecured obligations, guaranteed on a senior unsecured basis by certain subsidiaries and contain normal incurrence-based covenants and limitations such as the ability to incur additional indebtedness, pay dividends, make other restricted payments and investments, create liens and certain corporate acts such as mergers and consolidations. The aggregate net proceeds of \$492 million were used to repay indebtedness under our U.S. bank facility, thereby increasing the unused portion of our U.S. revolving credit facility.

On December 13, 2019, we issued a notice of redemption to the holders of our 5.25% senior notes due on December 1, 2022, to redeem and retire all of the outstanding notes. The notes were redeemed on January 13, 2020 at 101.313%, pursuant to an early redemption right. We redeemed the aggregate principal amount of \$300 million using proceeds drawn from our U.S. revolving credit facility. The associated loss on the redemption includes \$4 million of call premium paid to external bondholders. We had a total outstanding balance on our senior notes of \$500 million at March 28, 2020.

We have a trade receivables securitization facility (the "Securitization Program"), which was extended on October 16, 2019 and matures on October 29, 2021. The Securitization Program provides up to \$130 million of borrowing capacity and lowers our cost to borrow funds as compared to the U.S. revolving credit facility. Under the Securitization Program, we sell certain trade receivables and related rights to an affiliate, which in turn sells an undivided variable percentage ownership interest in the trade receivables to a financial institution, while maintaining a subordinated interest in a portion of the pool of trade receivables. We had an outstanding balance of \$130 million at March 28, 2020. The Securitization Program has a minimum borrowing requirement, which was \$104 million at March 28, 2020. Interest on the secured borrowings under the Securitization Program was 1.86% at March 28, 2020 and is based on 30-day LIBOR plus an applicable margin.

At March 28, 2020, our leverage ratio covenant limits our unused borrowing capacity to \$536 million as of March 28, 2020.

Net debt to capitalization was 44% at March 28, 2020 and 36% at September 28, 2019. The increase in net debt to capitalization is primarily due to our share repurchases.

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We declared and paid cash dividends of \$0.25 per share on our Class A and Class B common stock in the first and second quarters of 2020.

The Board of Directors has authorized a share repurchase program. This program has been amended from time to time to authorize additional repurchases that includes both Class A and Class B common stock, and allows us to buy up to an aggregate 13 million common shares. Under this program, we have purchased approximately 12.2 million shares for \$852 million as of March 28, 2020.

In response to the COVID-19 situation, we have implemented short term actions to maintain the financial health and liquidity of the Company including temporarily suspending dividend payments and share buyback activities.

ECONOMIC CONDITIONS AND MARKET TRENDS

We operate within the aerospace and defense and industrial markets. Our businesses are facing varying levels of pressure from the COVID-19 pandemic.

Within our aerospace and defense markets, our defense and space businesses represent approximately half of our sales through the first half of 2020. We expect these businesses may face modest supply chain and production level risks, as they are more directly affected by program funding levels which, to-date, are stable. However, our commercial aircraft market, which represents less than 25% of our first half 2020 sales, will face the greatest pressures with the dramatic reductions in air travel.

Within our industrial markets, our industrial automation, simulation and test and energy niche markets, which represents less than 25% of our sales through the first half of 2020, may face supply chain, productivity and demand challenges from the macroeconomic slowdown and reduced capital investments. However, our medical business, which represents less than 10% of our sales in the first half of 2020, has seen increased demand for our medical applications essential in the fight against the pandemic.

A common factor throughout our markets is the continuing demand for technologically advanced products.

Aerospace and Defense

Within aerospace and defense, we serve three end markets: defense, commercial aircraft and space.

The defense market is dependent on military spending for development and production programs, which to-date, have not been impacted by the COVID-19 pandemic. We have a growing development program order book for future generation aircraft and hypersonic missiles. We hope to embed our technologies within these high-performance military programs of the future. Aircraft production programs are typically long-term in nature, offering predictability as to capacity needs and future revenues. We maintain positions on numerous high priority programs, including the Lockheed Martin F-35 Joint Strike Fighter, FA-18E/F Super Hornet and V-22 Osprey. The large installed base of our products led to attractive aftermarket sales and service opportunities. The tactical and strategic missile, missile defense and defense controls markets are dependent on many of the same market conditions as military aircraft, including overall military spending and program funding levels. At times when there are perceived threats to national security, U.S. Defense spending can increase; at other times, defense spending can decrease. Future levels of defense spending are uncertain, subject to congressional debate and could be reduced if the pandemic is extended. Our security and surveillance product line is dependent on government funding at federal and local levels, as well as private sector demand, which may face pressures as governments shift their funding to support the COVID-19 pandemic.

The commercial aircraft market has depended on a number of factors, including the last decade's increasing global demand for air travel and increasing fuel prices. Both factors contributed to the demand for new, more fuel-efficient aircraft with lower operating costs that lead to large production backlogs for Boeing and Airbus. However, the impact of the COVID-19 pandemic has drastically reduced air traffic as travel restrictions and social distancing measures were implemented to help control the spread of the virus. The reduced air traffic has applied financial pressures on airlines, which have in turn dramatically reduced flight hours and delayed the purchases of new aircraft in order to preserve cash and liquidity. Given the uncertain length of this pandemic, the commercial market may shift away from wide-body aircraft to longer range narrow-body aircraft. Additionally, given the abruptly stalled global economies and social pauses, global oil production is now over-supplied, creating drastic reductions in the prices of oil. The lower prices for jet fuel mitigates the advantage of new, more fuel-efficient aircraft that created record backlogs for the OEMs. Furthermore, as companies and employees become accustomed to working remotely, business travel and the associated flight hours may not reach the pre-crisis levels. As such, we believe Boeing and Airbus will directionally match their production rates with the reduced air traffic volume, which will lower their demand for our flight control systems. We believe the commercial OEM market will face these pressures for a prolonged period of time.

The commercial aftermarket is driven by usage and age of the existing aircraft fleet for passenger and cargo aircraft, which drives the need for maintenance and repairs. Given the dramatic reductions in flight hours and the cash preservation measures by the airlines due to the impacts of COVID-19, we believe the demand volume for our maintenance services and spare parts will decrease substantially over the short-term. Also, with fewer expected new aircraft deliveries, we would see lower initial provisioning and spares sales. However, as domestic and international travel begins to recover, we expect a faster recovery in this market.

The space market is comprised of four customer markets: the civil market, namely NASA, the department of defense market, the commercial space market and the new space market. The civil market is driven by investment for commercial and exploration activities, including NASA's return to the moon. The department of defense market is driven by governmental-authorized levels of funding for satellite communications, as well as funding for hypersonic defense technologies. The commercial space market is comprised of large satellite customers, which traditionally sell to communications companies. Trends for this market, as well as for commercial launch vehicles, follow demand for increased capacity. This, in turn tends to track with underlying demand for increased consumption of telecommunication services, satellite replacements and global navigation needs. The new space market is driven by investments to increase the speed and access to space through smaller satellites, at reduced cost. Similar to the defense market, the funding for these markets have not been impacted by the COVID-19 pandemic to-date.

Industrial

Within the industrial market, we serve industrial automation, energy, simulation and test and medical niche markets.

In general, the industrial automation market we serve is influenced by several factors including capital investment, product innovation, economic conditions, cost-reduction efforts and technology upgrades. Due to the COVID-19 pandemic and governments around the world implementing increasingly stringent measures to help control the spread of the virus, the subsequent economic downturn will constrain capital investment and slow investments in product innovation. These unfavorable economic conditions have, and could for an extended period of time, affected our supply chain, productivity and customer demand. Our customers are also impacted by international and domestic economic conditions.

Our simulation and test products operate in a market that is largely affected by these same factors and investment challenges stemming from the COVID-19 pandemic. Reduced air travel and the subsequent reduction in new commercial aircraft will reduce the need for flight simulator training, for which we supply motion control products. Similarly, lower capital spend will reduce the need for our automotive testing products.

Our energy generation and exploration products operate in a market that is affected by changing oil and natural gas prices, global urbanization and the resulting change in supply and demand for global energy. Historically, drivers for global growth include investments in power generation infrastructure and exploration of new oil and gas resources. However, the COVID-19 pandemic has led to reduced oil prices, which reduces the economic feasibility for these investments and explorations.

The medical market we serve, in general, is influenced by economic conditions, regulatory environments, hospital and outpatient clinic spending on equipment, population demographics, medical advances, patient demands and the need for precision control components and systems. The outbreak of the COVID-19 virus has created unprecedented demand for medical equipment and has shifted the way hospitals optimize their capacity. Our medical components products are critical motion control components for life saving medical equipment, including ventilators, oxygen concentrators and continuous positive airway pressure (CPAP) machines, among others. The COVID-19 pandemic has increased the demand for ventilators. Our products are a key component of the industry's supply chain. Additionally, our medical devices products including infusion and enteral feeding pumps, and their corresponding disposable sets, are used primarily in the home healthcare environment. Since the COVID-19 pandemic has altered the way hospitals provide care by asking non-critical patients to recuperate at home and by creating temporary hospitals to treat the surge in demand, our medical devices products have seen an increase in orders.

Foreign Currencies

We are affected by the movement of foreign currencies compared to the U.S. dollar, particularly in Aircraft Controls and Industrial Systems. About one-fifth of our 2019 sales were denominated in foreign currencies. During the first six months of 2020, average foreign currency rates generally weakened against the U.S. dollar compared to 2019. The translation of the results of our foreign subsidiaries into U.S. dollars decreased sales by \$5 million compared to the same period one year ago.

Cautionary Statement

Information included or incorporated by reference in this report that does not consist of historical facts, including statements accompanied by or containing words such as “may,” “will,” “should,” “believes,” “expects,” “expected,” “intends,” “plans,” “projects,” “approximate,” “estimates,” “predicts,” “potential,” “outlook,” “forecast,” “anticipates,” “presume” and “assume,” are forward-looking statements. Such forward-looking statements are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. These statements are not guarantees of future performance and are subject to several factors, risks and uncertainties, the impact or occurrence of which could cause actual results to differ materially from the expected results described in the forward-looking statements. These important factors, risks and uncertainties include:

- the markets we serve are cyclical and sensitive to domestic and foreign economic conditions and events, which may cause our operating results to fluctuate;
- we face various risks related to health epidemics such as the global COVID-19 pandemic, which may have material adverse consequences on our operations, financial position, cash flows, and those of our customers and suppliers;
- we operate in highly competitive markets with competitors who may have greater resources than we possess;
- we depend heavily on government contracts that may not be fully funded or may be terminated, and the failure to receive funding or the termination of one or more of these contracts could reduce our sales and increase our costs;
- we make estimates in accounting for over time contracts, and changes in these estimates may have significant impacts on our earnings;
- we enter into fixed-price contracts, which could subject us to losses if we have cost overruns;
- we may not realize the full amounts reflected in our backlog as revenue, which could adversely affect our future revenue and growth prospects;
- if our subcontractors or suppliers fail to perform their contractual obligations, our prime contract performance and our ability to obtain future business could be materially and adversely impacted;
- contracting on government programs is subject to significant regulation, including rules related to bidding, billing and accounting kickbacks and false claims, and any non-compliance could subject us to fines and penalties or possible debarment;
- the loss of The Boeing Company as a customer or a significant reduction in sales to The Boeing Company could adversely impact our operating results;
- our new product research and development efforts may not be successful which could reduce our sales and earnings;
- our inability to adequately enforce and protect our intellectual property or defend against assertions of infringement could prevent or restrict our ability to compete;
- our business operations may be adversely affected by information systems interruptions, intrusions or new software implementations;
- our indebtedness and restrictive covenants under our credit facilities could limit our operational and financial flexibility;
- the potential phase out of LIBOR may negatively impact our debt agreements and financial position, results of operations and liquidity;
- significant changes in discount rates, rates of return on pension assets, mortality tables and other factors could adversely affect our earnings and equity;
- a write-off of all or part of our goodwill or other intangible assets could adversely affect our operating results and net worth;
- our sales and earnings may be affected if we cannot identify, acquire or integrate strategic acquisitions, or if we engage in divesting activities;
- our operations in foreign countries expose us to political and currency risks and adverse changes in local legal and regulatory environments;
- unforeseen exposure to additional income tax liabilities may affect our operating results;
- government regulations could limit our ability to sell our products outside the United States and otherwise adversely affect our business;
- governmental regulations and customer demands related to conflict minerals may adversely impact our operating results;
- the failure or misuse of our products may damage our reputation, necessitate a product recall or result in claims against us that exceed our insurance coverage, thereby requiring us to pay significant damages;

- future terror attacks, war, natural disasters or other catastrophic events beyond our control could negatively impact our business;
- our operations are subject to environmental laws, and complying with those laws may cause us to incur significant costs; and
- we are involved in various legal proceedings, the outcome of which may be unfavorable to us.

These factors are not exhaustive. New factors, risks and uncertainties may emerge from time to time that may affect the forward-looking statements made herein. Given these factors, risks and uncertainties, investors should not place undue reliance on forward-looking statements as predictive of future results. We disclaim any obligation to update the forward-looking statements made in this report.

Item 3. Quantitative and Qualitative Disclosures about Market Risk.

Refer to the Company's Annual Report on Form 10-K for the year ended September 28, 2019 for a complete discussion of our market risk. There have been no material changes in the current year regarding this market risk information.

Item 4. Controls and Procedures.

- (a) Disclosure Controls and Procedures. We carried out an evaluation, under the supervision and with the participation of our management, including the Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of our disclosure controls and procedures as defined in Exchange Act Rules 13a-15(e) and 15d-15(e). Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that these disclosure controls and procedures are effective as of the end of the period covered by this report, to ensure that information required to be disclosed in reports filed or submitted under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms, and that such information is accumulated and communicated to management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosures.
- (b) Changes in Internal Control over Financial Reporting. There have been no changes during the most recent fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II OTHER INFORMATION

Item 1A. Risk Factors.

Refer to the Company's Annual Report on Form 10-K for the year ended September 28, 2019 for a complete discussion of our risk factors. There have been no material changes in the current year regarding our risk factors, other than the addition of the following:

We face various risks related to health epidemics such as the global COVID-19 pandemic, which may have material adverse consequences on our operations, financial position, cash flows, and those of our customers and suppliers. We face adverse effects related to the global COVID-19 pandemic, including disruption and volatility in the global capital markets, disruption in our global supply chain and a net reduction in our overall manufacturing activities. We would expect the COVID-19 pandemic to adversely affect our operations if significant portions of our workforce are unable to work effectively due to illness, quarantines, government actions, facility closures, or other restrictions in connection with the COVID-19 pandemic. Additionally, our financial position, supply chain, liquidity, cash flow and customer orders would also face pressures for at least the balance of this fiscal year.

Substantially all of our operations and production activities in the U.S. and globally have remained operational during the COVID-19 pandemic. Many of our facilities are considered essential activities (including work for the U.S. military and the supply of medical devices and sub-assemblies) exempt from closure directives. However, they are subject to various local and national directives curtailing operations, requiring work from home and social distancing which otherwise could impact the efficiency of our operations. Such directives could change at any time.

We continue to monitor the situation, assess further possible implications to our operations, supply chain, liquidity, cash flow and customer orders, and take actions in an effort to mitigate adverse consequences.

Recognizing the unprecedented nature, scale and uncertainty associated with this global health crisis, the duration and extent of the on-going impact cannot be reasonably estimated at this time.

The potential phase out of LIBOR may negatively impact our debt agreements and financial position, results of operations and liquidity. On July 27, 2017, the United Kingdom's Financial Conduct Authority announced that it intends to phase out LIBOR by the end of 2021. It is unclear whether new methods of calculating LIBOR will be established or whether different benchmark rates used to price indebtedness will develop. If LIBOR ceases to exist, we may need to renegotiate our debt agreements that extend beyond 2021 that utilize LIBOR as a factor in determining the interest rate, which may negatively impact the terms of such indebtedness. In addition, the overall financial markets may be disrupted as a result of the phase out or replacement of LIBOR. Disruption in the financial markets could have an adverse effect on our financial position, results of operations, and liquidity.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds.

(c) The following table summarizes our purchases of our common stock for the quarter ended March 28, 2020.

Period	(a) Total Number of Shares Purchased (1)(2)(3)	(b) Average Price Paid Per Share	(c) Total number of Shares Purchased as Part of Publicly Announced Plans or Programs (3)	(d) Maximum Number (or Approx. Dollar Value) of Shares that May Yet Be Purchased Under Plans or Programs (3)
December 29, 2019 - February 1, 2020	564,058	\$ 90.16	507,011	1,871,350
February 2, 2020 - February 29, 2020	535,257	87.91	418,612	1,452,738
March 1, 2020 - March 28, 2020	687,734	55.85	687,418	765,320
Total	1,787,049	\$ 76.28	1,613,041	765,320

- (1) Reflects purchases by the Moog Inc. Stock Employee Compensation Trust Agreement ("SECT") of shares of Class B common stock from the Moog Inc. Retirement Savings Plan ("RSP") and the Employee Stock Purchase Plan (ESPP) at average prices as follows: 12,976 shares at \$88.23 per share during January; 27,674 shares at \$93.89 per share during February and 316 shares at \$81.18 per share during March. In connection with the issuance of shares to the ESPP, we purchased 43,214 Class B shares at \$88.49 per share from the SECT in January. In connection with the issuance of equity-based awards, we purchased 84,974 Class B shares at \$92.62 per share from the SECT in February.
- (2) In connection with the exercise of equity-based compensation awards, we accept delivery of shares to pay for the exercise price and withhold shares for tax withholding obligations. In January, we accepted delivery of 857 Class A shares at \$87.82 per share and in February, we accepted delivery of 3,997 shares at \$94.66 per share in connection with the exercise of equity-based awards.
- (3) The Board of Directors has authorized a share repurchase program. This program has been amended from time to time to authorize additional repurchases up to an aggregate 13 million common shares. The program permits the purchase of shares of Class A or Class B common stock in open market or privately negotiated transactions at the discretion of management. In January, we purchased 507,011 Class A shares at an average price of \$90.36 per share. In February, we purchased 418,612 Class A shares at an average price of \$86.49 per share, and in March, we purchased 687,418 Class A shares at an average price of \$55.83 per share.

Item 6. Exhibits.

(a) Exhibits

31.1	Certification of Chief Executive Officer pursuant to Exchange Act Rule 13a-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of Chief Financial Officer pursuant to Exchange Act Rule 13a-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101	Interactive Data files (submitted electronically herewith)
(101.INS)	XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
(101.SCH)	XBRL Taxonomy Extension Schema Document
(101.CAL)	XBRL Taxonomy Extension Calculation Linkbase Document
(101.DEF)	XBRL Taxonomy Extension Definition Linkbase Document
(101.LAB)	XBRL Taxonomy Extension Label Linkbase Document
(101.PRE)	XBRL Taxonomy Extension Presentation Linkbase Document

In accordance with Rule 406T of Regulation S-T, the XBRL related information in Exhibit 101 to this Quarterly Report on Form 10-Q shall not be deemed to be “filed” for purposes of Section 18 of the Exchange Act, or otherwise subject to the liability of that section and shall not be part of any registration or other document filed under the Securities Act or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Moog Inc.

(Registrant)

Date: April 24, 2020

By /s/ John R. Scannell

John R. Scannell
Chairman of the Board and Director
Chief Executive Officer
(Principal Executive Officer)

Date: April 24, 2020

By /s/ Jennifer Walter

Jennifer Walter
Vice President and Chief Financial Officer
(Principal Financial Officer)

Date: April 24, 2020

By /s/ Michael J. Swope

Michael J. Swope
Controller (Principal Accounting Officer)